



# 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/](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**

<b>A.</b>	Permittee Name: Palm Beach County		
<b>B.</b>	Permit Name: Palm Beach County MS4		
<b>C.</b>	Permit Number: FLS000018-004		
<b>D.</b>	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:		
<b>E.</b>	Reporting Time Period (month/year): October/ 2018 through September / 2019		
<b>F.</b>	Name of the Responsible Authority: Verdenia C. Baker		
	Title: County Administrator		
	Mailing Address: 301 N. Olive Avenue		
	City: West Palm Beach	Zip Code: 33401	County: Palm Beach County
	Telephone Number: (561) 355-2030		Fax Number: (561) 355-3982
	E-mail Address: VBaker@pbcgov.org		
<b>G.</b>	Name of the Designated Stormwater Management Program Contact (if different from Section I.F above): Bonnie Finneran		
	Title: Environmental Director		
	Department: Environmental Resources Management		
	Mailing Address: 2300 North Jog Road, 4th Floor		
	City: West Palm Beach	Zip Code: 33411-2743	County: Palm Beach County
	Telephone Number: (561) 233-2400		Fax Number: (561) 233-2414
E-mail Address: bfinnera@pbcgov.org			

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

<b>A.</b>	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 <input type="checkbox"/> No <input type="checkbox"/> Not Applicable)
<b>B.</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 <input type="checkbox"/> No <input type="checkbox"/> Not Applicable)
<b>C.</b>	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**

<b>A.</b>	<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>Name and date of the approved plan: PBC Group NPDES MS4 Permittees Water Quality Monitoring Plan. 1998. Status: See Joint Annual Report for PBC Group NPDES MS4 Permittees available at the NPDES Group Permittee's website at <a href="http://www.pbco-npdes.org">www.pbco-npdes.org</a>.</p>
<b>B.</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.</p> <p>See the attached NPDES Assessment for the Cycle 4, Year 3 reporting period.</p>
<b>C.</b>	<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.</p> <p>See Joint Annual Report for PBC Group NPDES MS4 Permittees available at the NPDES Group Permittee's website at <a href="http://www.pbco-npdes.org">www.pbco-npdes.org</a>.</p>

**SECTION IV. FISCAL ANALYSIS**

<b>A.</b>	Total expenditures for the NPDES stormwater management program for the current reporting year: \$9,949,175
<b>B.</b>	Total budget for the NPDES stormwater management program for the subsequent reporting year: \$7,843,815
<b>C.</b>	<p>Did subsequent program resources decrease from the current reporting period? Y <input type="checkbox"/> / N <input checked="" type="checkbox"/></p> <p>If program resources decreased, provide a discussion of the impacts on the implementation of the 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
<input checked="" type="checkbox"/>	<input type="checkbox"/>	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	1. NPDES Annual Assessment.
<input type="checkbox"/>	<input type="checkbox"/>	If program resources have decreased from the previous year, a discussion of the impacts on the implementation of the SWMP.	Part II.F	
<input type="checkbox"/>	<input type="checkbox"/>	An explanation of why the minimum inspection frequency in Table II.A.1.a. was not met, if applicable.	Part II.A.1	
<input type="checkbox"/>	<input type="checkbox"/>	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	
<input type="checkbox"/>	<input type="checkbox"/>	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 VI.B.2.	
<input type="checkbox"/>	<input type="checkbox"/>	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	
<input type="checkbox"/>	<input type="checkbox"/>	YEAR 2: A summary review of codes and regulations to reduce the stormwater impact from development.	Part III.A.2	
<input type="checkbox"/>	<input type="checkbox"/>	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	See Joint Annual Report.
<input type="checkbox"/>	<input type="checkbox"/>	YEAR 3: Summary of TMDL Monitoring Results (if applicable).	Part VIII.B.2	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	YEAR 3: Bacteria Pollution Control Plan (if applicable).	Part VIII.B.3	2. Bacterial Pollution Control Plan for E-1 Canal (WBID 3264A)
<input type="checkbox"/>	<input type="checkbox"/>	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	
<input type="checkbox"/>	<input type="checkbox"/>	YEAR 4: A report on any amendments to the applicable legal authority (if applicable).	Part III.A.7.a	
<input type="checkbox"/>	<input type="checkbox"/>	YEAR 4: Permit re-application information in accordance with Rule 62-624.420(2), F.A.C. <ul style="list-style-type: none"> <li>The monitoring plan (with revisions, if applicable).</li> <li>If the total annual pollutant loadings have not decreased over the past two permit cycles, revisions to the SWMP, as appropriate.</li> </ul>	Part V.B.3 Part V.A.3	
<input type="checkbox"/>	<input type="checkbox"/>	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): Verdenia C. Baker

Title: County Administrator

Signature:  Date: 3/6/2020



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
								Bridge	operation records DEP granted a request from PBC to inspect all major outfall during the permit cycle. The number of major outfalls increased to 173 due to a reconciliation of two separate outfall databases.
	<b>Weirs or other control structures</b>	101	187	100%	10%	10%	Dredge Job Cost	Road & Bridge	
	<b>MS4 pipes / culverts (miles)</b>	20.30	264	70%	153	40%	Job Perf. Report	Road & Bridge	
	<b>Inlets / catch basins / grates</b>	45,652	17,636	38%	3,644	10%	Job Perf. Report	Road & Bridge	
	<b>Ditches / conveyance swales (miles)</b>	21.38	577	100%	555	100%	Job Perf. Report	Road & Bridge	
	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.				<input type="checkbox"/>				

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Part III.A.1 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.3 of the permit.  Strengths: Experienced staff. Limitations: None. SWMP revisions implemented to address limitations: None.								
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.								
	<table border="1" data-bbox="516 703 589 934"> <tr> <td data-bbox="516 703 540 934">Number of significant development projects reviewed</td> <td data-bbox="516 703 540 934">48</td> </tr> <tr> <td data-bbox="540 703 565 934">Number of significant development projects approved</td> <td data-bbox="540 703 565 934">48</td> </tr> </table>	Number of significant development projects reviewed	48	Number of significant development projects approved	48		Project Files Project Files	Engineering Engineering	
Number of significant development projects reviewed	48								
Number of significant development projects approved	48								
	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.	<table border="1" data-bbox="621 703 678 934"> <tr> <td data-bbox="621 703 646 934">Year 2 ONLY: Attach the summary report of the review activity</td> <td data-bbox="621 703 646 934"><input type="checkbox"/></td> </tr> <tr> <td data-bbox="646 703 670 934">Year 4 ONLY: Attach the follow-up report on plan implementation</td> <td data-bbox="646 703 670 934"><input type="checkbox"/></td> </tr> </table>	Year 2 ONLY: Attach the summary report of the review activity	<input type="checkbox"/>	Year 4 ONLY: Attach the follow-up report on plan implementation	<input type="checkbox"/>			
Year 2 ONLY: Attach the summary report of the review activity	<input type="checkbox"/>								
Year 4 ONLY: Attach the follow-up report on plan implementation	<input type="checkbox"/>								
Part III.A.2 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.3 of the permit.  Strengths: Experienced Engineering staff. Limitations: None observed. SWMP revisions implemented to address limitations: None at this time.								
Part III.A.3	Roadways								
	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>								
	CONTRACTOR Litter Control: Frequency of litter collection	16	Vendor Reports and Dept. records	Streetscape Section's Service Vendor					
	CONTRACTOR Litter Control: Estimated amount of area maintained (If)	681,542	Vendor Reports and Dept. records	Streetscape Section's Service Vendor					
	CONTRACTOR Litter Control: Estimated amount of litter collected (tons)	20.17	Vendor Reports and Dept. records	Streetscape Section's Service Vendor					
	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".								

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Permit Citation/ SWMP Element	Permit Requirement/Quantifiable SWMP Activity	Number of Activities Performed	Documentation / Record	Entity Performing the Activity	Comments
	<p><b>Trash Pick-up Events: Total miles cleaned</b></p> <p><b>Trash Pick-up Events: Estimated amount of litter collected (tons)</b></p> <p><b>Adopt-A-Road: Total miles cleaned</b></p> <p><b>Adopt-A-Road: Estimated amount of litter collected (bags, 30 gallon)</b></p> <p>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.</p>	<p>293</p> <p>30.7</p> <p>54</p> <p>81</p>	<p>Event site reports and records</p> <p>Event site reports</p> <p>Adopt a Road files</p> <p>Adopt a Road files</p>	<p>Keep Palm Beach County (KPBC) Beautiful</p> <p>KPBC Beautiful</p> <p>PBCENG</p> <p>PBCENG</p>	
	<p><b>Frequency of street sweeping</b></p> <p><b>Total miles swept</b></p> <p><b>Estimated quantity of sweeping material collected (cubic yards)</b></p> <p><b>Total phosphorous loadings removed (pounds)</b></p> <p><b>Total nitrogen loadings removed (pounds)</b></p> <p>Report the equipment yards and maintenances shops that support road maintenance activities, and the number of inspections conducted for each facility.</p>	<p>2 times per year</p> <p>1,417</p> <p>1,168.00</p> <p>967</p> <p>1508</p>	<p>Job Perf. Report</p> <p>Job Perf. Report</p> <p>Road Material cost Employee Report</p> <p>FDEP/FSA Nutrient Load Reduction Assessment tool spreadsheet</p> <p>FDEP/FSA Nutrient Load Reduction Assessment tool spreadsheet</p>	<p>Road &amp; Bridge</p> <p>Road &amp; Bridge</p> <p>Road &amp; Bridge</p> <p>PBC ERM</p> <p>PBC ERM</p>	<p></p> <p></p> <p></p> <p>Decrease due to street sweeping equipment issues.</p> <p>Decrease due to street sweeping equipment issues.</p>
	<p><b>Name of Facility</b></p> <p>PBC Vista Fleet Maintenance</p>	<p><b>Number of Inspections</b></p> <p>1</p>	<p>Inspection Report</p>	<p>PBC Facilities Compliance Section</p>	

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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.3 Summary	<p>Provide an evaluation of the Stormwater Management Program according to Part VI.B.3 of the permit.</p> <p><b>Strengths: Well organized maintenance program</b></p> <p><b>Limitations: Occasional equipment maintenance issues.</b></p> <p><b>SWMP revisions implemented to address limitations: None.</b></p>																			
Part III.A.4	<p><b>Flood Control Projects</b></p> <p>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.</p> <p>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.</p>	<table border="1"> <tr> <td data-bbox="621 699 703 932">Flood control projects completed during the reporting period</td> <td data-bbox="621 489 703 699">0</td> <td data-bbox="621 300 703 489">Funding for MSTUs exhausted.</td> </tr> <tr> <td data-bbox="711 699 792 932">Flood control projects completed that did not include stormwater treatment</td> <td data-bbox="711 489 792 699">0</td> <td data-bbox="711 300 792 489">No Flood Control Projects currently under construction.</td> </tr> <tr> <td data-bbox="800 699 881 932">Stormwater retrofit projects planned/under construction</td> <td data-bbox="800 489 881 699">0</td> <td data-bbox="800 300 881 489"></td> </tr> <tr> <td data-bbox="889 699 971 932">Stormwater retrofit projects completed</td> <td data-bbox="889 489 971 699">0</td> <td data-bbox="889 300 971 489">Engineering &amp; Public Works</td> </tr> <tr> <td data-bbox="979 699 1060 932">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.</td> <td data-bbox="979 489 1060 699"><input type="checkbox"/></td> <td data-bbox="979 300 1060 489"></td> </tr> </table>	Flood control projects completed during the reporting period	0	Funding for MSTUs exhausted.	Flood control projects completed that did not include stormwater treatment	0	No Flood Control Projects currently under construction.	Stormwater retrofit projects planned/under construction	0		Stormwater retrofit projects completed	0	Engineering & Public Works	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.	<input type="checkbox"/>		Dept. Records	Engineering & Public Works	
Flood control projects completed during the reporting period	0	Funding for MSTUs exhausted.																		
Flood control projects completed that did not include stormwater treatment	0	No Flood Control Projects currently under construction.																		
Stormwater retrofit projects planned/under construction	0																			
Stormwater retrofit projects completed	0	Engineering & Public Works																		
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.	<input type="checkbox"/>																			
Part III.A.4 Summary	<p>Provide an evaluation of the Stormwater Management Program according to Part VI.B.3 of the permit.</p> <p><b>Strengths: Experienced Engineering staff and contracting methods.</b></p> <p><b>Limitations: PBC MSTU funding exhausted which provided 50% of projects costs.</b></p> <p><b>SWMP revisions implemented to address limitations: None at this time. MSTU projects may still proceed if property owners agree to the assessments.</b></p>		Dept. Records	Engineering & Public Works																



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<b>Part III.A.5</b>	<b>Municipal Waste Treatment, Storage, and Disposal Facilities Not Covered by an NPDES Stormwater Permit</b>				
	Report the applicable facilities and the number of the inspections conducted for each facility.				
	<b>Name of Facility</b>	<b>Number of Inspections</b>			
	South County Transfer Station	14	Inspection Report	Env. Programs	
	Central County Transfer Station	14	Inspection Report	Env. Programs	
	Glades Regional Transfer Station	14	Inspection Report	Env. Programs	
	West Central Transfer Station	14	Inspection Report	Env. Programs	
	North County Transfer Station	14	Inspection Report	Env. Programs	
	Southwest County Transfer Station	14	Inspection Report	Env. Programs	
<b>Part III.A.5 Summary</b>	Provide an evaluation of the Stormwater Management Program according to Part VI.B.3 of the permit. <b>Strengths: Well managed facilities designed to retain 100 year storm event.</b> <b>Limitations: None observed</b> <b>SWMP revisions implemented to address limitations: None at this time.</b>				
<b>Part III.A.6</b>	<b>Pesticides, Herbicides, and Fertilizer Application</b>				
	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.				
	<b>PERSONNEL: FDACS public applicators of pesticides/herbicides</b>	6	Parks & Recreation IFAS Documentation	PBC UF/IFAS	
	<b>CONTRACTORS: FDACS commercial applicators of pesticides/ herbicides</b>	7	Parks & Recreation IFAS Documentation	PBC UF/IFAS	
	<b>PERSONNEL: Green Industry BMP Program training completed</b>	5	Parks & Recreation IFAS Documentation	FYN	
	<b>CONTRACTORS: FDACS certified / licensed applicators of fertilizer</b>	8	Parks & Recreation IFAS Documentation	FYN	
	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.				

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	<p><b>Year 2 ONLY: Attach copy of adopted Florida-friendly ordinance</b></p> <p>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 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).</p>	<p><input type="checkbox"/></p>			
	<p><b>Brochures/Flyers/Fact sheets distributed</b></p>	8,315	IFAS Monthly Reports	PBC UF/IFAS	
	<p><b>Neighborhood presentations: Number conducted</b></p>	1	IFAS Monthly Reports	PBC UF/IFAS	
	<p><b>Neighborhood presentations: Number of participants</b></p>	35	IFAS Monthly Reports	PBC UF/IFAS	
	<p><b>Newspapers &amp; newsletters: Number of articles/notices published</b></p>	0	IFAS Monthly Reports	PBC UF/IFAS	Activity Not Performed This Permit Year.
	<p><b>Newsletters: Number of newsletters distributed</b></p>	0	IFAS Monthly Reports	PBC UF/IFAS	Activity Not Performed This Permit Year.
	<p><b>Public displays (e.g., kiosks, storyboards, posters, etc.)</b></p>	3	IFAS Monthly Reports	PBC UF/IFAS	
	<p><b>School presentations: Number conducted</b></p>	35	IFAS Monthly Reports	PBC UF/IFAS	
	<p><b>School presentations: Number of participants</b></p>	1,744	IFAS Monthly Reports	PBC UF/IFAS	
	<p><b>Seminars/Workshops: Number conducted</b></p>	147	IFAS Monthly Reports	PBC UF/IFAS	
	<p><b>Seminars/Workshops: Number of participants</b></p>	4,368	IFAS Monthly Reports	PBC UF/IFAS	
	<p><b>Special events: Number conducted</b></p>	24	IFAS Monthly Reports	PBC UF/IFAS	
	<p><b>Special events: Number of participants</b></p>	471	IFAS Monthly Reports	PBC UF/IFAS	
	<p><b>Number of visitors to stormwater-related pages</b></p>	1,143	IFAS Monthly Reports	PBC UF/IFAS	
	<p><b>FYN: Brochure/Flyers/Fact sheets distributed</b></p>	17,618	IFAS Monthly Reports	FYN	
	<p><b>FYN: Neighborhood presentations: Number conducted</b></p>	5	IFAS Monthly Reports	FYN	
	<p><b>FYN: Neighborhood presentations: Number of participants</b></p>	102	IFAS Monthly Reports	FYN	
	<p><b>FYN: Public displays (e.g., kiosks, storyboards, posters, etc.)</b></p>	28	IFAS Monthly Reports	FYN	
	<p><b>FYN: Radio or television Public Service Announcements (PSAs)</b></p>	0	IFAS Monthly Reports	FYN	Activity Not Performed This

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	FYN: School presentations: Number conducted	0	IFAS Monthly Reports	FYN	Permit Year. Activity Not Performed This Permit Year.
	FYN: School presentations: Number of participants	0	IFAS Monthly Reports	FYN	Activity Not Performed This Permit Year.
	FYN: Seminars/Workshops: Number conducted	57	IFAS Monthly Reports	FYN	
	FYN: Seminars/Workshops: Number of participants	2,166	IFAS Monthly Reports	FYN	
	FYN: Special events: Number conducted	12	IFAS Monthly Reports	FYN	
	FYN: Special events: Number of participants	3,551	IFAS Monthly Reports	FYN	
	Provide an evaluation of the Stormwater Management Program according to Part VI.B.3 of the permit.				
<b>Part III.A.6 Summary</b>	<b>Strengths: Extensive range of training, certification and educational programs.</b>				
	<b>Limitations: None observed.</b>				
	<b>SWMP revisions implemented to address limitations: None at this time.</b>				
<b>Part III.A.7.a</b>	<b>Illicit Discharges and Improper Disposal — Inspections, Ordinances, and Enforcement Measures</b>				
	Report amendments in Year 4.				
	Year 4 ONLY: Attach a report on amendments to applicable legal authority	<input type="checkbox"/>			
<b>Part III.A.7.c</b>	<b>Illicit Discharges and Improper Disposal — Investigation of Suspected Illicit Discharges and/or Improper Disposal</b>				
	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	17	Proactive Insp. database	PBC ERM	
	Illicit discharges found during a proactive inspection	0	Proactive Insp. database	PBC ERM	No violations observed.
	NOV/WL/citation/fines issued for illicit discharges found during proactive inspection	0		PBC ERM	No violations observed.
	Year 1 ONLY: Attach the written proactive inspection program plan	<input type="checkbox"/>			
	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.				
	Reports of suspected illicit discharges received	10	Complaint Log.	PBC ERM	
	Reactive investigations of reports of suspected illicit discharges etc.	10	Complaint Log.	PBC ERM	
	Illicit discharges etc. found during reactive investigation	8	Complaint Log.	PBC ERM	
	NOV/WL/citation/fines issued for illicit discharges etc. found during	1		PBC ERM	NCL issued, NFA

**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
	reactive investigation				achieved.
	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.	1	Attendance Log.	PBC NPDES Steering Committee.	
	Personnel trained	1	Attendance Log.	PBC NPDES Steering Committee.	
	Contractors trained	N.A.			Contractors are not utilized.
<b>Part III.A.7.d</b>	<b>Illicit Discharges and Improper Disposal — Spill Prevention and Response</b>				
	Report on the spill prevention and response activities, including the number of spills addressed.				
	Hazardous and non-hazardous material spills responded to	466	Special Operations Situation Dispatches	PBC Fire-Rescue	
	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.				
	Personnel trained	1,481	HazMat Competency Database	PBC Fire-Rescue	Contractors not utilized.
	Contractors trained	N.A.			
<b>Part III.A.7.e</b>	<b>Illicit Discharges and Improper Disposal — Public Reporting</b>				
	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).				
	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 available at the Group Permittee's website at <a href="http://www.pbco-npdes.org">www.pbco-npdes.org</a> .				
<b>Part III.A.7.f</b>	<b>Illicit Discharges and Improper Disposal — Oils, Toxics, and Household Hazardous Waste Control</b>				
	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).				
	Estimated percentage of the population reached by Palm Beach County Home Chemical Collection Program Brochures/Flyers/Fact sheets distributed	80%		Solid Waste Authority	
	Brochures/Flyers/Fact sheets distributed	137,000	Brochures	Recycling/HHW Services/	
	Household Hazardous Waste (HHW) Collection Day: Events	2,170	Disposal Records	HHW 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
	<p>HHW Collection Day: Amount of waste collected/recycled/disposed (tons)</p> <p>Neighborhood presentations: Number conducted</p> <p>Neighborhood presentations: Number of participants</p> <p>Newspapers &amp; newsletters: Number of articles/notices published</p> <p>Newsletters: Number of newsletters distributed</p> <p>Public displays (e.g., kiosks, storyboards, posters, etc.)</p> <p>Radio or television Public Service Announcements (PSAs)</p> <p>School presentations: Number conducted</p> <p>School presentations: Number of participants</p> <p>Seminars/Workshops: Number conducted</p> <p>Seminars/Workshops: Number of participants</p> <p>Special events: Number conducted</p> <p>Special events: Number of participants</p>	<p>2,112</p> <p>184</p> <p>6,727</p> <p>0</p> <p>7</p> <p>137</p> <p>4,000</p> <p>220</p> <p>8,644</p> <p>5</p> <p>70</p> <p>65</p> <p>58,170</p>	<p>Disposal Records</p> <p>Samples</p> <p>Samples</p> <p>N.A.</p> <p>E-Newsletter</p> <p>Samples</p> <p>Jump Drive</p> <p>Samples</p> <p>Samples</p> <p>Samples</p> <p>Samples</p> <p>Samples</p> <p>Samples</p> <p>Samples</p>	<p>HHW Services</p> <p>Recycling</p> <p>Recycling</p> <p>Media Arts</p> <p>Recycling/ Com. Service</p> <p>Public Affairs</p> <p>Recycling</p> <p>Recycling</p> <p>Recycling</p> <p>Recycling</p> <p>Recycling</p> <p>Recycling/ Community Services</p> <p>Recycling/ Com. Service</p>	
<b>Part III.A.7.g</b>	<b>Illicit Discharges and Improper Disposal — Limitation of Sanitary Sewer Seepage</b>				
	<p>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>				
	<p><b>Owner of the sanitary sewer system</b></p> <p><b>Activity to reduce/eliminate SSOs and I&amp;I: Repair / lining of sanitary sewer system (ft.)</b></p> <p><b>Activity to reduce/eliminate SSOs and I&amp;I: Lift Station Rehabilitation / Conversion</b></p> <p><b>SSO incidents discovered</b></p> <p><b>SSO incidents resolved</b></p> <p><b>Inflow / infiltration incidents discovered</b></p> <p><b>Inflow / infiltration incidents resolved</b></p>	<p>17,700</p> <p>2</p> <p>0</p> <p>0</p> <p>0</p> <p>0</p>	<p>I &amp; I Monthly Activity Report</p> <p>I &amp; I Monthly Activity Report</p> <p>I &amp; I Monthly Activity Report</p> <p>I &amp; I Monthly Activity Report</p> <p>I &amp; I Monthly Activity Report</p> <p>I &amp; I Monthly Activity Report</p>	<p>Palm Beach County Water Utilities</p> <p>WUD Const. Group</p> <p>WUD Const. Group</p> <p>WUD Const. Group</p> <p>WUD Const. Group</p> <p>WUD Const. Group</p> <p>WUD Const. Group</p>	<p>LS Basin 4101 rehab of sewer pipeline.</p> <p>No SSO to MS4 or water bodies.</p> <p>No SSO to MS4 or water bodies.</p> <p>None reported.</p> <p>None reported.</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
<p><b>Part III.A.7 Summary</b></p>	<p>For activities required by Part III.A.7: Provide an evaluation of the Stormwater Management Program according to Part VI.B.3 of the permit.</p> <p><b>Strengths: Well trained and motivated staff</b></p> <p><b>Limitations: None Observed</b></p> <p><b>SWMP Revisions implemented to address limitations: None at this time.</b></p>				
<p><b>Part III.A.8.a</b></p>	<p><b>Industrial and High-Risk Runoff — Identification of Priorities and Procedures for Inspections</b></p> <p>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.</p> <p>Report on the high risk facilities inspection program, including the number of inspections conducted and the number and type of enforcement actions taken.</p>				
	<p><b>Type of Facility</b></p>	<p><b>Number of Facilities</b></p>	<p><b>Number of Inspections</b></p>	<p><b>Enforcement Actions</b></p>	
	<p>Operating municipal landfills</p>	<p>1</p>	<p>0</p>	<p>0</p>	<p>The PBC Solid Waste Authority has one operating landfill with a NPDES Permit and does not discharge to any MS4.</p>
	<p>Hazardous waste treatment, storage, disposal and recovery (HWTSDR) facilities</p>	<p>N.A.</p>			<p>None in PBC.</p>
	<p>EPCRA Title III, Section 313 facilities (TRI)</p>	<p>4</p>	<p>4</p>	<p>0</p>	<p>Database</p>
	<p>Facilities determined as high risk by the permittee</p>	<p>0</p>		<p>PBC ERM</p>	<p>None identified through the proactive inspections.</p>
<p><b>Part III.A.8.b</b></p>	<p><b>Industrial and High-Risk Runoff — Monitoring for High Risk Industries</b></p>				
	<p>Report the number of high risk facilities sampled.</p>				
	<p>High risk facilities sampled</p>	<p>N.A.</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
Part III.A.8 Summary	For activities required by Part III.A.8: Provide an evaluation of the Stormwater Management Program according to Part VI.B.3 of the permit.  Strengths: Lack of industrial activity and High-Risk facilities in PBC. Limitations: None. SWMP revisions implemented to address limitations: None at this time.				
Part III.A.9.a	<b>Construction Site Runoff — Site Planning and Non-Structural and Structural Best Management Practices</b>  Report the number of permittee and private pre-construction site plans reviewed for stormwater, erosion, and sedimentation controls, and the number approved.				
	<b>PERMITTEE SITES: Construction site plans reviewed</b>	48	List of active PBC job sites during the Permit Year.	PBC Engineering Construction Coordination.	
	<b>PERMITTEE SITES: Construction site plans approved</b>	48	List of active PBC job sites during the Permit Year.	PBC Engineering Construction Coordination.	
	<b>PRIVATE SITES: Construction site plans reviewed</b>	21	Construction Inspection database.	PBC ERM	
	<b>PRIVATE SITES: Construction site plans approved</b>	21	Construction Inspection database.		
	Report the number of development permit applicants notified of the ERP and CGP, and the number of applicants who confirmed ERP and CGP coverage.				
	<b>Notified of ERP stormwater permit requirements</b>	48	Project Files	Engineering Land Development Div	
	<b>Confirmed ERP coverage</b>	48	Project Files	Engineering Land Development Div	
	<b>Notified of CGP stormwater permit requirements</b>	165	DRO Comments and ERM Plat reviews	PBC ERM	This is a summation of Development Review Office comments and Plat review comments.
	<b>Confirmed CGP coverage</b>	21	Construction Inspection database	PBC ERM	

**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
<b>Part III.A.9.b</b>	<b>Construction Site Runoff — Inspection and Enforcement</b>				
	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.				
	<b>PERMITTEE SITES: Active construction sites</b>	22	List of active PBC job sites during the Permit Year.	PBC Engineering Construction Coordination	
	<b>PERMITTEE SITES: Pre-, During, and Post inspections of active construction sites for E&amp;S and waste control BMPs</b>	792	Inspection Reports	PBC Engineering Construction Coordination	
	<b>PERMITTEE SITES: Percentage of active construction sites inspected</b>	100%	Inspection Reports	PBC Engineering Construction Coordination	
	<b>PRIVATE SITES: Active construction sites</b>	21	Construction Inspection database.	Construction Inspection database.	
	<b>PRIVATE SITES: Pre-, During, and Post inspections of active construction sites for E&amp;S and waste control BMPs</b>	33	Construction Inspection database.	PBC ERM	
	<b>PRIVATE SITES: Percentage of active construction sites inspected</b>	100%	Construction Inspection database.	PBC ERM	Notices of Non-compliance.
	<b>Enforcement Action</b>	3		PBC ERM	
	<b>Year 1 ONLY: Attach the written construction site inspection program plan</b>	<input type="checkbox"/>			
<b>Part III.A.9.c</b>	<b>Construction Site Runoff — Site Operator Training</b>				
	Report the type of training activities, the number of inspectors, site plan reviewers and site operators trained (both in-house and outside training).				
	<b>DEP Certification</b>	<b>Annual Training</b>	DEP certification training Attendance log and Engineering Coordination pre-construction meetings and annual refresher	Florida Stormwater Erosion and Sediment Control Inspector Training/ EXCAL Visual	The largest number of Palm Beach County staff trained from both PBC Engineering and ERM to date.
	<b>Permittee construction site inspectors</b>	23	11		



**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
	Permittee construction site plan reviewers	22	for ERM staff member. PBC Engineering Coordination Preconstruction plan review meetings with selected GC/construction contractors.	PBC Engineering Coordination and ERM	All PBC inspectors have received DEP Certification.
	Permittee construction site operators	22	PBC Engineering Coordination Preconstruction plan review meetings with selected GC/construction contractors.		
For activities required by Part III.A.9: Provide an evaluation of the Stormwater Management Program according to Part VI.B.3 of the permit.					
<b>Strengths: Well trained and experienced inspection staff.</b>					
<b>Limitations: None.</b>					
<b>SWMP revisions implemented to address limitations: None.</b>					

**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.
		No changes proposed.
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)

**SECTION IX. TMDL Status Report**

**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
3264A	E-1 Canal	Fecal Coliform	<input checked="" type="checkbox"/> / <input type="checkbox"/>	97%	1	TBD	(Year 3 AR)	(Year 4 AR; N/A) if BPCP
3262A	Lake Ida	TN & TP	<input type="checkbox"/> / <input checked="" type="checkbox"/> <input type="checkbox"/> / <input type="checkbox"/>	TN 20% TP 45%	2	TBD		

**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
3264A	Fecal Coliform/ E. Coli	Year 3 AR	(Year 4 AR; N/A if BPCP)	The calculated load reduction, based on the monitoring program results, is 36%.

**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):

Monitoring Plan for E-1 Canal Fecal Coliform TMDL is complete and monitoring commenced January 2019.

# **Attachment 1**

## **Permit Year 2018-19 Annual MS4 Assessment**

## Permit Year 2018-2019 Annual MS4 Assessment

### Annual MS4 Assessment Plan

- Annual geometric mean values are calculated for individual pollutant parameters for each water quality monitoring station.
- Water quality monitoring stations are assessed by contrasting the 10-12 year geometric mean nutrient values to the Permit year geometric mean nutrient values. (The 10-12 year water quality aggregate mean serves as baseline values). The annual geometric mean values of individual pollutant parameter will prove invaluable for annual trend assessments.
- Any significant decreases in water quality (significant increase in pollutant parameter values) attributed to the MS4 shall trigger an individual assessment of the nearest PBC MS4 outfalls, including drainage areas, land use, and established pollutant loading Event Mean Concentrations (EMCs) with regard to potential individual parameter values increases.
- The assessment conclusion may include recommendations for increased street sweeping and increased inspections of stormwater treatment components such as control structure operational effectiveness.

(Please see the accompanying map with data.)

### C-18 Basin

The C-18 Basin contain no Palm Beach County (PBC) major outfalls and has several County roadways (MS4s). There are two NPDES water quality monitoring stations in this basin. Station 15 had a significant decrease in total nitrogen from 0.81 mg/L to 0.56 mg/L, a decrease in total phosphorus from 16 ppb to 11 ppb and chlorophyll a concentrations were essentially the same. Station 16 had a decrease in total nitrogen from 1.11 mg/L to 0.97 mg/L, a decrease in total phosphorus from 44 ppb to 28 ppb and chlorophyll a decreased from 6.0 µg/L to 3.8 µg/L. There was no assessment of the downstream SFWMD station C18S46. There are no PBC outfalls located upstream and between the two NPDES stations and the SFWMD monitoring stations on the C-18, thus no assessment was conducted. The C-18 Basin has the best water quality in Palm Beach County due to the large percentage of natural areas within the basin.

### C-17 Basin

The C-17 Basin contain one NPDES water quality station and one SFWMD Station. The C-17 Basin is divided between West Palm Beach and Rivera Beach. This basin has a modest amount of County roadways and 14 PBC major outfalls discharging into the C-17 Canal. NPDES Station 12A had a decrease in total nitrogen from 1.29 mg/L to 0.97 mg/L, essentially the same total phosphorus concentration and a large decrease in chlorophyll a from 15.5 µg/L to 8.5 µg/L. SFWMD Station C17S44 had a decrease in total nitrogen from 0.97 mg/L to 0.77 mg/L, total phosphorus had a very large decrease from 69 ppb to 44 ppb (Atypically low for a geometric mean of monthly sampling by the SFWMD.) SFWMD does not sample chlorophyll a at this site. Water quality is reasonably good for an urbanized basin.

### C-51 Basin

The C-51 Basin (East and West) contain two NPDES water quality stations and one SFWMD Station. NPDES Station 38B had a modest decrease in total nitrogen from 1.75 mg/L to 1.69 mg/L, a modest increase in total phosphorus from 110 ppb to 124 ppb and a slight decrease in chlorophyll a from 6.5 µg/L to 4.9 µg/L. NPDES Station 37B had a significant decrease in total nitrogen from 1.36 mg/L to 1.09 mg/L, a slight decrease in total phosphorus from 85 ppb to 75 ppb and chlorophyll a decreased from 4.5 µg/L to 3.7 µg/L. SFWMD station C51S155 had a decrease in total nitrogen from 1.15 mg/L to 0.95 mg/L and total phosphorus was essentially the same as the 10 year geometric mean of 68 ppb. Chlorophyll a is not measured by SFWMD at this site. There are 3 PBC major outfalls into the C-51 Canal downstream of monitoring station 37B and 18 major outfalls into tributary canals of the C-51. The decreases in nutrient parameters at the western monitoring locations are outside the influence of MS4 outfalls. The eastern C-51 basin is within the influence of the MS4s and private stormwater management system contributions. The C-51 Canal discharges to the central segment (WBID) of the Lake Worth Lagoon, which is listed as impaired for nutrients.

### C-16 Basin

The C-16 Basin contains three NPDES water quality stations and one former SFWMD Station. There are 21 PBC major outfalls in the basin. NPDES Station 27B had a modest decrease in total nitrogen from 1.57 mg/L to 1.34 mg/L, a slight increase in total phosphorus from 151 ppb to 166 ppb and slight decrease in chlorophyll a from 14.9 µg/L to 13.4 µg/L. (This monitoring site is outside the influence of PBC outfalls.) NPDES Station 27A had a very significant decrease in total nitrogen from 1.22 mg/L to 0.80 mg/L, a very significant decrease in total phosphorus from 124 ppb to 59 ppb and a dramatic decrease in chlorophyll a from 15.2 µg/L to 4.9 µg/L. NPDES Station 28 had a decrease in total nitrogen from 0.93 mg/L to 0.77 mg/L and total phosphorus was essentially the same. As a former SFWMD site a 10-year geometric mean for Chlorophyll a does not exist for this site, thus no discussion of chlorophyll a change. Overall, the basin water quality during the permit year is greatly improved from the 10-year geometric mean.

### C-15 Basin

The C-15 Basin contains three NPDES water quality stations and one former SFWMD Station. There are 26 PBC major outfalls in the basin. NPDES Station 31E had total nitrogen essentially the same, an increase in total phosphorus from 294 ppb to 323 ppb and a decrease in chlorophyll a from 27.9 µg/L to 10.2 µg/L. (Chlorophyll a is used as a surrogate for nutrients. However, often it is a poor surrogate. As in this case, total nitrogen was the same and phosphorus increased significantly, yet chlorophyll a decreases significantly. The total phosphorus permit year geometric mean, from a sample population of six, is extremely high and believed to be "legacy phosphorus" in this former and still partial agricultural area. PBC MS4s are not located near this monitoring location.) NPDES Station 31C had a decrease in total nitrogen from 1.18 mg/L to 1.00 mg/L, total phosphorus was essentially the same and chlorophyll a decreased from 17.5 µg/L to 13.4 µg/L. NPDES Station 31B had a decrease in total nitrogen from 1.03 mg/L to 0.88 mg/L and a very significant decrease in total phosphorus from 118 ppb to 132 ppb. As a former SFWMD site a 10-year geometric mean does not exist for this site, thus no discussion of chlorophyll a change. Water quality within the primary canal, the L-38/C-15 Canal, is fair to poor due remnant agriculture without structural BMPs in the western portion of the basin.

### Hillsboro Basin

The majority of the Hillsboro basin is within Broward County. Water quality data from the two Broward County monitoring stations was not available from the DEP Florida WIN website, thus no assessment of change was possible.



**Palm Beach County  
Pollutant Loadings Estimate (lbs/year)**

<b>Parameter</b>	<b>BOD<sup>5</sup></b>	<b>TSS</b>	<b>TP</b>	<b>CU</b>	<b>ZN</b>	<b>TN</b>
2013 Loads to C-15	49,858	230,340	2,132	208	853	16,602
2013 Loads to C-16	107,029	503,939	4,434	428	1,791	34,354
2013 Loads to C-17	19,953	88,214	905	85	339	7,232
2013 Loads to C-18	3,624	14,867	154	13	49	1,340
2013 Loads to C-51	104,962	474,148	4,702	443	1,738	36,722
2013 Loads to L-8	543	1,368	35	2	6	317
2013 Loads to S-2-6-7	30,327	141,093	1,580	104	397	10,892
2013 Loads to C-Hillsboro	93,352	335,774	3,926	306	1,305	34,899
2013 Loads to ICWWN	24,098	125,676	1,057	115	453	8,117
2013 Loads to ICWWS	2,387	14,111	107	11	45	788
2013 Loads to Lox	35,385	149,112	1,615	142	537	13,536
2013 Loads to LW Lagoon	7,121	40,302	326	33	129	2,443
2013 Loads to WPBWS	404	1,346	17	1	4	157
<b>2013 Total Loading</b>	<b>479,043</b>	<b>2,120,290</b>	<b>20,990</b>	<b>1,891</b>	<b>7,646</b>	<b>167,399</b>



<b>Parameter</b>	<b>BOD<sup>5</sup></b>	<b>TSS</b>	<b>TP</b>	<b>CU</b>	<b>ZN</b>	<b>TN</b>
2018 Loads to C-15	47,156	205,033	2,025	190	785	16,155
2018 Loads to C-16	106,487	499,775	4,418	425	1,780	34,283
2018 Loads to C-17	19,868	87,510	901	84	333	7,223
2018 Loads to C-18	3,282	13,538	148	13	46	1,248
2018 Loads to C-51	104,814	472,503	4,702	442	1,730	36,720
2018 Loads to L-8	543	1,368	35	2	6	317
2018 Loads to S-2-6-7	30,308	140,996	1,580	104	397	10,888
2018 Loads to C-Hillsboro	93,037	333,588	3,917	304	1,298	34,829
2018 Loads to ICWWN	24,028	123,617	1,049	113	449	8,109
2018 Loads to ICWWS	2,341	13,732	106	11	44	781
2018 Loads to Lox	35,040	143,902	1,588	139	529	13,428
2018 Loads to LW Lagoon	7,098	40,034	325	33	129	2,440
2018 Loads to WPBWS	404	1,346	17	1	4	157
<b>2018 Total Loading</b>	<b>474,006</b>	<b>2,076,942</b>	<b>20,811</b>	<b>1,861</b>	<b>7,530</b>	<b>166,578</b>
<b>Public Education (6%)</b>	<b>28,464</b>	<b>124,617</b>	<b>1,249</b>	<b>112</b>	<b>452</b>	<b>9,995</b>
<b>Street Sweeping</b>	<b>0</b>	<b>0</b>	<b>967</b>	<b>0</b>	<b>0</b>	<b>1,508</b>
<b>Total Loading</b>	<b>445,942</b>	<b>1,952,325</b>	<b>18,595</b>	<b>1,749</b>	<b>7,078</b>	<b>155,075</b>
<b>Percent Reduction</b>	<b>6.9%</b>	<b>7.9%</b>	<b>11.4%</b>	<b>7.5%</b>	<b>7.4%</b>	<b>7.4%</b>

Sources: 'Summary of Average Annual Pollutant Loading Model Activities' report (2019) prepared by Mock-Roos and Palm Beach County Street Sweeping for 2018-2019.

Pollutant loadings estimates for all six (6) parameters in the Palm Beach County MS4 indicate a significant reduction between 2013 and 2018.

### **Conclusions**

The Palm Beach County stormwater management programs are effective in reducing nutrient loadings. This is supported by the water quality monitoring program and the pollutant loading information. At this time there is no need to develop further stormwater management programs.

## **Attachment 2**

### **Bacterial Pollution Control Plan for E-1 Canal (WBID 3264A)**

**Bacterial Pollution Control Plan  
For  
E-1 Canal (WBID 3264A)**

**Florida Department of  
Transportation – District 4**

**Palm Beach County**



Prepared by:



February 2020

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## **1.0 INTRODUCTION**

### **1.1 Purpose and Content**

This report comprises the Bacterial Pollution Control Plan (BPCP) for the E-1 Canal in accordance with Part VIII.B.3 of the Florida Department of Environmental Protection (FDEP) issued National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit for Palm Beach County and co-permittee, the Florida Department of Transportation District 4 (FDOT), Permit Number FLS000018-004. The BPCP is required because a Total Maximum Daily Load (TMDL) was established by FDEP for the E-1 Canal in accordance with Chapter 62-303, Florida Administrative Code (F.A.C.) (**Appendix A**). It is located in the Lake Worth Lagoon-Palm Beach Coast Basin, and was verified impaired for fecal coliform. For assessment purposes, the FDEP has divided the major drainage basins in Florida into water assessment polygons with unique waterbody identification (WBID) numbers. The E-1 Canal is WBID 3264A.

The purpose of this report is to identify the possible sources of bacteria pollution discharging to the MS4, and the activities that can be implemented to reduce the sources to the maximum extent possible (MEP). This report, which fulfills the requirements to address the E-1 Canal TMDL for fecal indicator bacteria (FIB), was developed using the FDEP guidance document “Restoring Bacteria-Impaired Waters: A Toolkit to Help Local Stakeholders Identify and Eliminate Potential Pathogen Problems” (aka Toolkit) dated July 2018.

## **2.0 BACKGROUND**

### **2.1 Description of Water Body**

The E-1 Canal is part of what is generally known as a secondary canal system. It was developed and is maintained by the Lake Worth Drainage District (LWDD), which was created in 1915 to provide water control and supply (LWDD, 2019). The primary canal system in Palm Beach County and south Florida, maintained by the South Florida Water Management District (SFWMD), is the Central and South Florida (C&SF) system, which was developed to provide flood control and water supply to urban and agricultural areas (Harvey, 2010) and is one of the largest civil works projects in the world (Bridger, 2012). The C&SF system had its beginnings in the early 20<sup>th</sup> century with the dredging of four major drainage canals - Hillsboro, West Palm Beach, North New River and Miami. The E-1 canal ultimately drains, through other LWDD canals, either south to the Hillsboro Canal or east to the Intracoastal Waterway (LWDD, 2019, June). It is classified as a Class III water in accordance with Chapter 62-302, F.A.C.

Located in Palm Beach County, the E-1 Canal is approximately 25 miles in length, extending from Okeechobee Boulevard south to the Hillsboro Canal, and is bordered on the west for the most part by State Road (SR) 7 (**Figure 1**). However, WBID 3264A only includes approximately 10 miles of the southern portion of the E-1 Canal, extending from Bob West Road south to Judge Winikoff Road. The E-1 Canal forms the eastern border of the northern 5.5 miles of the WBID, from Bob West Road south to Spanish

Isles Boulevard. However, south of Spanish Isle Boulevard, the WBID widens east, and the E-1 Canal runs down the middle of the WBID. The WBID is bordered on the west by the Loxahatchee National Wildlife Refuge/Water Conservation Area 1 (WCA 1) (**Figure 2**).

Soils in the vicinity of the E-1 Canal consist of shelly sand, clay and limestone, except along the western edge near WCA 1, where the soils are predominantly peat (Bridger, 2012). Elevations range from 15 to 20 feet National Geodetic Vertical Datum (NGVD). The E-1 canal elevation is maintained at 16 feet NGVD. The predominant land uses are urban and built-up (52%), wetlands (16%), and agricultural (14%), with the remaining (18%) consisting of water and undeveloped land (Bridger, 2012).

Annual rainfall in the area can be highly variable; over the past 10 years annual rainfall ranged from 46 to 72 inches per year, with the 10-year average being 55 inches (SFWMD, 2019). The average summer temperature is 91.0°F, and the average winter temperature is 76.3°F.

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**Figure 1:** Overview of the E-1 Canal; the northern end is on the south side of Okeechobee Blvd., and the southern end connects to the Hillsboro Canal.

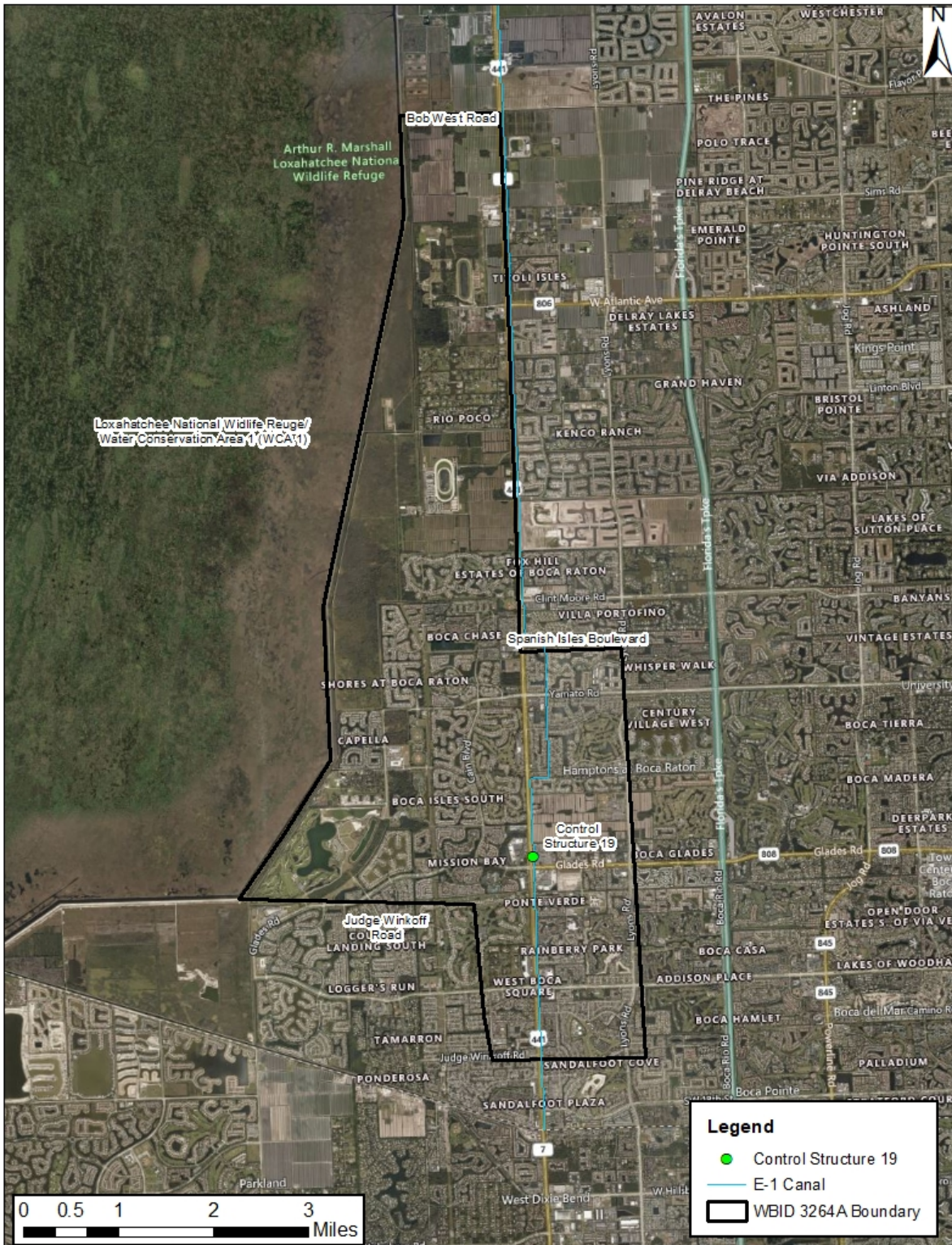


Figure 2: Map of WBID boundary, major roads and E-1 Canal.



## 2.2 Bacteria Impairment and TMDL

WBID 3264A was verified as impaired for fecal coliform by FDEP and included on the 1998 303(d) list of Impaired Waters for the Lake Worth Lagoon-Palm Beach Coast Basins that was adopted by Secretarial Order January 15, 2010. The TMDL, adopted May 15, 2012 by the FDEP, established the allowable fecal coliform loading into the portion of the E-1 Canal in WBID 3264A that would restore the waterbody so that it meets applicable water quality criteria for fecal coliform. It should be noted that in 2016, FDEP changed the bacteria criteria for freshwater streams from fecal coliform to *Escherichia coli* (*e.coli*). Therefore, the remainder of this document will usually refer to “bacteria” pollution, which is inclusive of both fecal coliform and *e. coli*.

The TMDL states that its objective is to provide a basis for allocating acceptable loads among all known pollution sources in the watershed. Therefore, it is important to identify and understand the pollution sources to ensure resources are effective and their allocations are directed toward appropriate control measures. Potential sources listed in the TMDL document include agriculture, failed septic tanks, farm animals, pets, sanitary sewer overflows (SSOs), wildlife and homeless encampments. A TMDL is the sum of point sources (wasteload allocations or WLAs), non-point sources (load allocations) and an appropriate margin of safety.

WLAs are broken into separate categories for wastewater and stormwater. There are no wastewater treatment facilities located within the E-1 Canal WBID boundary (Bridger, 2012). Therefore, there are no WLAs for wastewater.

WLAs for stormwater are typically expressed as a “percent reduction” because it is difficult to quantify the loads from MS4s given the numerous possible sources. The TMDL WLAs for stormwater and load allocations for nonpoint sources are a 94% reduction in fecal coliform (Bridger, 2012).

## 2.3 Bacteria Pollution Control Plan (BPCP) Development Overview

Potential sources of bacteria in urban areas can include but are not limited to pet waste, homeless encampments, bacterial re-growth in storm sewers and sediments, leaking sanitary sewer and septic systems, and illicit discharges. To develop this BPCP, Palm Beach County and FDOT used the assessment tools and methodology in the FDEP’s fecal coliform Toolkit that is available online at: [https://floridadep.gov/sites/default/files/Restoring\\_Bacteria-Impaired\\_Waters\\_Toolkit\\_082018.pdf](https://floridadep.gov/sites/default/files/Restoring_Bacteria-Impaired_Waters_Toolkit_082018.pdf) .

The general steps followed in accordance with the FDEP guidance document included:

1. Understanding the Basin (Sections 1 and 2)
  - Compile and evaluate existing data
  - Identify stakeholders

2. Potential Source Identification (Section 3)
  - Strategic sampling and microbial source identification, as applicable
  - Field investigations
3. Management Actions (Section 4)
  - Structural solutions
    - Sanitary sewer status and potential upgrades
    - Stormwater system status and potential upgrades
  - Nonstructural activities:
    - inspection and maintenance of sanitary sewer and stormwater infrastructure
    - compliance and enforcement
    - litter and debris removal, public outreach and education, and policy implementation.
4. Documentation and Reporting (Section 6)
  - Bacterial Pollution Control Plan
  - Monitoring Plan

### 3.0 POTENTIAL SOURCE IDENTIFICATION

#### 3.1 Identify Sources

Drainage in this area of Palm Beach County is highly regulated by LWDD and SFWMD via a series of canals, pumps and control structures. Most of the area west of the canal is kept at an elevation three feet lower than the E-1 Canal, therefore not all the land within the boundary of WBID 3264A drains to the E-1 Canal. See **Figure 3** map depicting flow directions for discharges to surface waters within the WBID Boundary. Two items to take note of in Figure 3:

1. The northern portion of the WBID narrows, so that only the land west of the E-1 Canal is included within the WBID boundary. As shown on Figure 3, this is the area that drains to the west. This northernmost approximately two miles of the WBID is predominantly agricultural.
2. Only the area highlighted in green the southern portion of the WBID, which is predominantly urban and residential, drains to the E-1 Canal.

According to the TMDL, WBID 3264A consists of 12,982 acres, however, only 2,778 acres, or approximately 21% of the WBID, is estimated to drain to the E-1 canal (Mock Roos, 2018). The remaining areas drain to either the E-1W-S (which discharges to the Hillsboro Canal) or to the Hillsboro Canal.

The land use breakdown for the approximate 2,778 acres that drain to the E-1 Canal within the WBID is provided in **Table 1** below, and as shown in **Figure 4**:

<b>Table 1. Land Use Breakdown for Area that Drains to E-1 Canal</b>		
<b>Land Use Name and Code<sup>1</sup></b>	<b>Acres</b>	<b>% of Total Acres</b>
1000 Urban Land Built Up	2,089	75.2
2000 Agriculture	289	10.4
4000 Upland Forest	17	0.6
5000 Water	208	7.5

<b>Table 1. Land Use Breakdown for Area that Drains to E-1 Canal</b>		
<b>Land Use Name and Code<sup>1</sup></b>	<b>Acres</b>	<b>% of Total Acres</b>
6000 Wetlands	22	0.8
7000 Barren Land	28	1.0
8000 Transportation	125	4.5
<b>Totals</b>	<b>2,778</b>	<b>100%</b>

<sup>1</sup> Code is the Florida Land Use, Cover and Forms code from SFWMD

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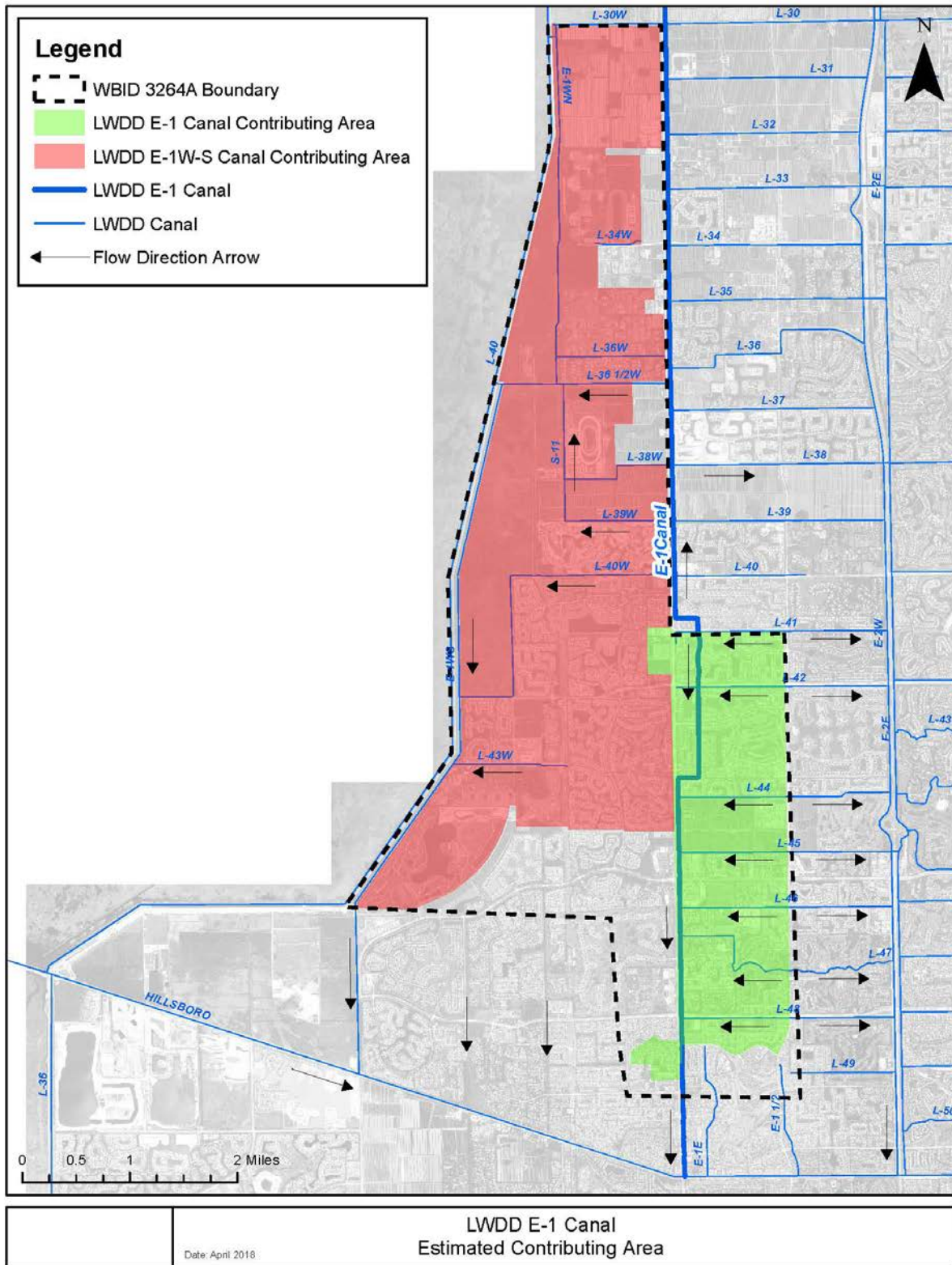
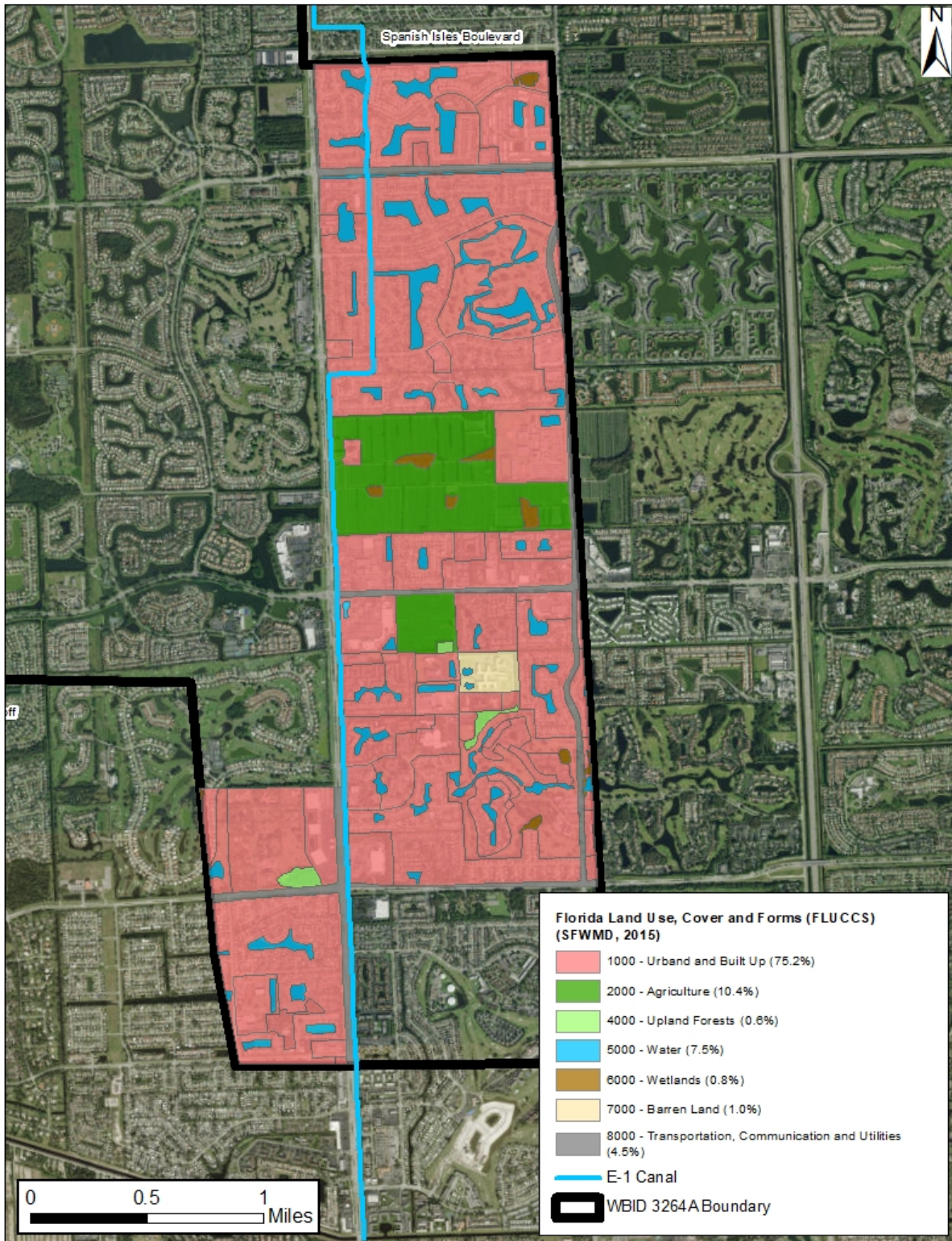


Figure 3: Map depicting drainage pattern within WBID 3264A (Mock Roos, 2018).



**Figure 4:** Land use in southern portion of WBID that is actual area in WBID that drains to the E-1 Canal

Field surveys of the WBID were conducted on April 2, 2019 and June 7, 2019. The results of these Walk the WBID surveys are discussed in more detail below in Section 3.3. Following are representative photographs (**Photos 1 – 7**) of typical drainage systems in the WBID.



**Photo 1:** Typical swale on west side of SR 7, northern section of WBID (north of Yamato Road).



**Photo 2:** Typical mitered end section in swale on west side of SR 7, connected to culvert that runs east under SR 7 and discharges treated stormwater to the E-1 Canal.



**Photo 3:** Typical FDOT outfall to E-1 Canal.



**Photo 4:** Typical swale on west side of SR 7 in southern section of WBID where west side of SR 7 are primarily single-family home communities separated from SR 7 by landscaped berms.



**Photo 5:** Typical neighborhood on sewer in southeast portion of WBID with stormwater Sheetflow to swales.



**Photos 6 and 7:** Typical curb and gutter (left photo) and typical inlet and canal system (right photo) in southern portion of WBID.



### **3.2 Maps on Table**

A “Maps on the Table” meeting was not conducted for this WBID, instead, FDOT and Palm Beach County worked closely together to identify possible sources. As noted above, only 21% of the basin within this WBID drains to the E-1 Canal.

Potential areas of concern identified during our coordination included neighborhoods still using septic, sanitary sewer overflows (SSOs), leaking wastewater lines, malfunctioning stormwater systems, vegetative debris and commercially developed areas. The result of this coordination was to develop a list of sites to visit during the Walk the WBID event.

### **3.3 Walk the WBID**

This field reconnaissance and source identification effort was carried out to gain a better understanding of conditions within the watershed, including the hydrology of the E-1 Canal and its contributing ditches and tributaries, flood-prone areas, the locations of sewer and stormwater infrastructure, and potential sources that are contributing bacteria to the canal.

Basin Management Action Plans (BMAPs) to address sources may be appropriate for some watersheds; however, they are both time and resource intensive. The Walk the WBID exercise is a low-cost, effective alternative to begin addressing bacteria pollution in the E-1 Canal Basin so that it meets state water quality standards. This first step allows stakeholders to identify the location of suspected sources, carry out easy-to-implement management actions for the E-1 Canal using existing programs and ongoing activities, and follow up on those actions to assess the degree of success and whether additional effort is needed. The exercise allows stakeholders to identify needs and opportunities for more effective adaptive management. It also contributes to improved communication between and within agencies, and provides opportunities to increase public awareness.

The Walk the WBID field exercises were conducted by E Sciences, Incorporated (E Sciences) with FDOT on April 2, 2019 and on behalf of the Palm Beach County on June 6, 2019.

### **3.4 Monitoring**

The FDEP adopted the E-1 Canal TMDL based on 17 samples collected from four locations along the E-1 Canal in 2008, and two samples collected in 2003 from stormwater ponds in neighborhoods located in the far southwest corner of the WBID, adjacent to the Loxahatchee National Wildlife Refuge, in areas that do not drain to the E-1 Canal. The monitoring stations are shown on **Figure 5**, and the results are summarized in the **Table 2** below.

<b>Table 2: Fecal Coliform Water Quality Monitoring Results used to Develop TMDL</b>		
<b>Date</b>	<b>Station</b>	<b>Result</b>
7/16/2003	21FLGW 18842	58
	21FLGW 18843	6
1/15/2008	21FLWPB 28010587	74
	21FLWPB 28010588	256
	21FLWPB 28010589	18
	21FLWPB 32008020	38
4/7/2008	21FLWPB 28010587	7,500
	21FLWPB 28010588	460
	21FLWPB 28010589	7,500
	21FLWPB 32008020	13,500
5/19/2008	21FLWPB 28010589	140
10/20/2008	21FLWPB 28010587	82
	21FLWPB 28010588	14
	21FLWPB 32008020	20
	21FLWPB28010589	4
11/13/2008	21FLWPB 28010587	616
	21FLWPB 28010588	72
	21FLWPB 28010589	66
	21FLWPB 32008020	256

Yellow highlighted text indicates fecal coliform concentrations above 400 Most Probable Number (MPN)/100mL

The four sampling locations along the E-1 Canal that were used to establish the TMDL are listed below from north to south with a brief description of the direction of canal flow and contributing drainage in the vicinity of each location:

- 28010588 (shown as 588 on Figure 5) is located on the E-1 Canal at Kimberly Blvd., approximately seven miles south of the northern boundary of WBID 3264A.
  - In this section, the E-1 flows south and then east, via Control Structure 19, to the Intracoastal Waterway.
  - Only land located east of SR 7 drains to the E-1 in this area.
  - Land west of SR 7 drains west to the E-1W-S, then south to the Hillsboro Canal.
  - There is a small farm area south of this location on septic.
  - There is agricultural land (row crops) east of SR 7 south of this location that is on septic.
- 28010587 (shown as 587 on Figure 5) is located on the E-1 Canal at Glades Road, approximately one mile south of sampling location 28010588, and less than one-quarter mile south of the CS-19 control structure.
  - The E-1 flows south to the Hillsboro Canal in this section.
  - Only land located east of SR 7 drains to the E-1 in this area.

- Land to the west of SR 7 drains south to the Hillsboro Canal.
- There are no septic systems east, west or north in the vicinity of this sampling location.
- 32008020 (shown as 020 on Figure 5) is located on the E-1 Canal between Glades Road and Palmetto Park Road, approximately one mile south of sampling location 28010587.
  - The E-1 flows south to the Hillsboro Canal in this section.
  - Only land located east of SR 7 drains to the E-1 in this area.
  - Land to the west of SR 7 drains south to the Hillsboro Canal.
  - There are no septic systems east, west or north in the vicinity of this sampling location.
- 28010589 Located on the E-1 Canal at Palmetto Park Road, approximately 1800 feet south of sampling location 32008020.
  - The E-1 flows south to the Hillsboro Canal in this section.
  - Only land located east of SR 7 drains to the E-1 in this area.
  - Land to the west of SR 7 drains south to the Hillsboro Canal.
  - There are no septic systems east, west or north in the vicinity of this sampling location.

In addition to the water quality sampling cited in the TMDL, monitoring for *e.coli* was conducted approximately every other month in 2019. The monitoring sites are in the same four locations in the E-1 Canal as cited in the TMDL. Table 3 summarizes monitoring dates for each location:

<b>TMDL Station Name (Palm Beach County Station Name)<sup>a</sup></b>	<b>TMDL Dates Sampled</b>	<b>Palm Beach County Dates Sampled</b>
21FLWPB28010587 (587)	1/15/2008 4/7/2008 10/20/2008 11/13/2008	1/17/2019 3/28/2019 5/22/2019 7/31/2019 10/2/2019 12/4/2019
21FLWPB28010588 (588)	Same as above	Same as above
21FLWPB28010589 (589)	Same as above Also 5/19/2008	Same as above
21FLWPB32008020 (020)	Same as above	Same as above
21FLGW 18842 <sup>b</sup>	7/16/2003	Not sampled
21FLGW 18843 <sup>b</sup>	7/16/2003	Not sampled

<sup>a</sup> On Figure 5, the Palm Beach County Station Names were used for the stations on the E-1 Canal.

<sup>b</sup> These two TMDL sampling sites were not located on the E-1 Canal.

The monitoring station locations are shown on **Figure 5**. The monitoring for the TMDL took place in 2003 and 2008. In 2003, one sample was collected from each of two stormwater ponds in neighborhoods west of the E-1 Canal, in the southwest portion of the WBID. Although this area does not drain to the E-1, the results indicate the stormwater ponds are not a source of bacteria pollution.

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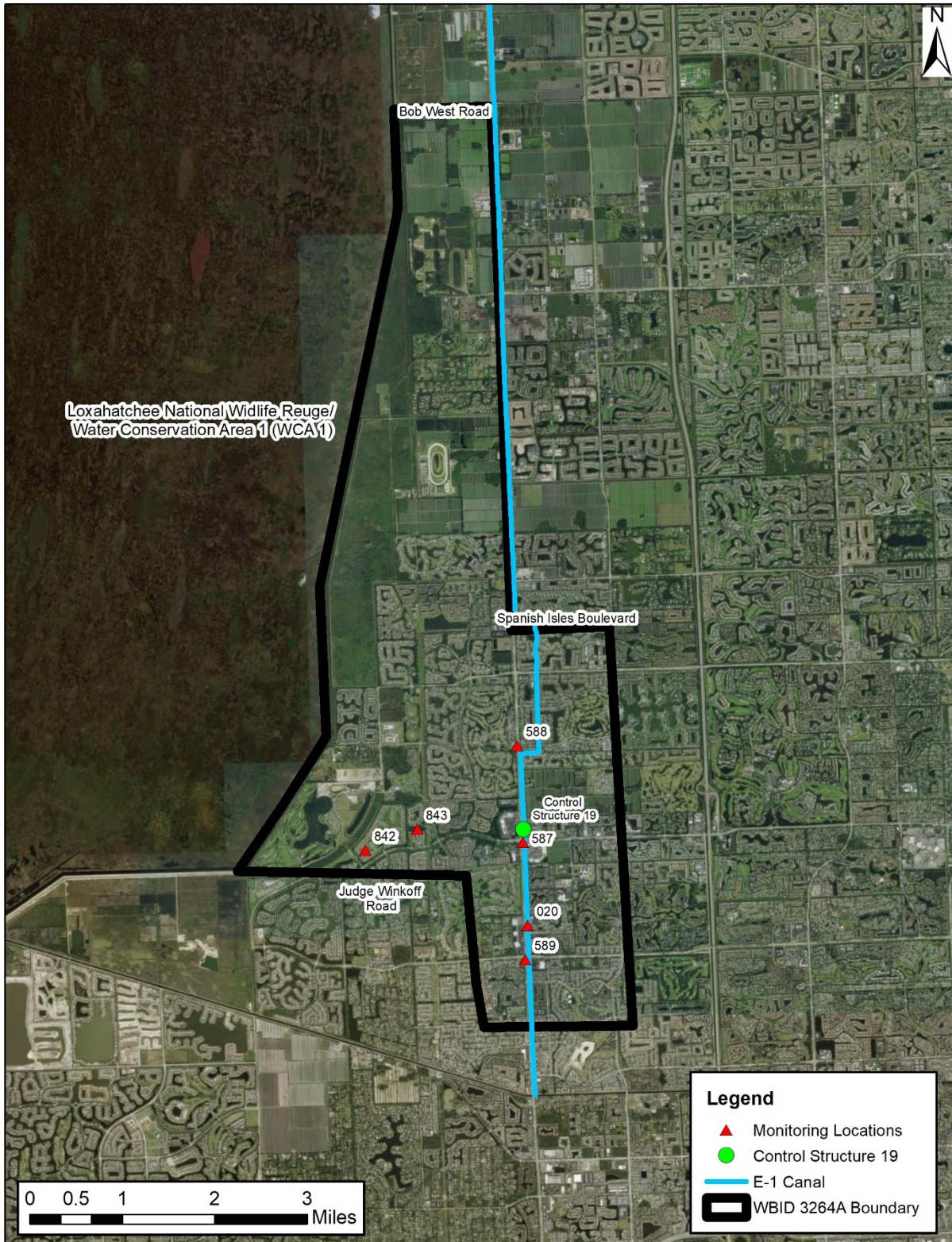


Figure 5: TMDL Fecal coliform monitoring stations

The applicable criteria at the time of the TMDL development was:

*The most probable number (MPN) or membrane filter (MF) counts per 100 mL of fecal coliform bacteria shall not exceed a monthly average of 200, nor exceed 400 in 10 percent of the samples, nor exceed 800 on any one day.*

In 2008, 17 samples were collected from four stations within the E-1 Canal. Of the 17 samples, five (29%) were above the 10 percent threshold of 400 count/100 mL criteria for fecal coliform. However, it should be noted that four of the five occurred on one day, after a 3-day precipitation event of 4.55 inches (Bridger, 2012).

In 2019, a total of 24 samples were collected from the same four stations in the E-1 Canal that were used to develop the TMDL. As noted above, the applicable surface water quality criteria in Chapter 62-302, F.A.C. for bacteria in freshwater has changed from fecal coliform to *e. coli* since the TMDL was established. The new criteria for *e. coli* in Class III waters is:

*The MPN or MF counts per 100 mL shall not exceed a monthly geometric mean of 126 nor exceed the Ten Percent Threshold Value of 410 in 10% or more of the samples. Monthly geometric means shall be based on a minimum of 10 samples taken over a 30-day period.*

Using the updated criteria, the results of the recent *e. coli* sampling results provided below in **Table 4** indicate bacteria above 410 MPN/100 mL were only found in two of 24 samples, or 8% of the samples, which is below the criteria as shown in **Table 5**.

<b>Table 4. 2019 <i>e. coli</i> Sampling Results</b>				
<b>Date</b>	<b>Station</b>	<b>Result MPN/100 mL</b>	<b>Rank</b>	<b>Percentile</b>
12/4/2019	589	10	1	2%
7/31/2019	589	20	2	6%
10/2/2019	589	20	3	10%
12/4/2019	588	20	4	15%
12/4/2019	20	30	5	19%
12/4/2019	587	30	6	23%
5/22/2019	20	50	7	27%
5/22/2019	589	50	8	31%
10/2/2019	588	50	9	35%
1/17/2019	589	60	10	40%
10/2/2019	20	60	11	44%
1/17/2019	588	90	12	48%
7/31/2019	588	90	13	52%

Table 4. 2019 <i>e. coli</i> Sampling Results				
Date	Station	Result MPN/100 mL	Rank	Percentile
3/29/2019	587	100	14	56%
1/17/2019	587	120	15	60%
3/29/2019	589	120	16	65%
7/31/2019	20	130	17	69%
7/31/2019	587	140	18	73%
1/17/2019	20	150	19	77%
3/29/2019	20	190	20	81%
3/29/2019	588	240	21	85%
5/22/2019	587	300	22	90%
5/22/2019	588	900	23	94%
10/2/2019	587	6300	24	98%

Table 5. Summary of Table 4 Data	
Total # samples	24
62-303 # samples required in 10-year period	10
Total # exceedances	2
62-302 maximum # of exceedances allowed	10%
% of exceedances	8%

To calculate the percent reduction needed to reduce the pollutant load in the TMDL, FDEP compared the existing concentrations and target concentration using **Formula 1**:

$$\text{Needed \% Reduction} = \frac{\text{Existing 90}^{\text{th}} \text{ Percentile Concentration} - \text{Allowable Concentration}}{\text{Existing 90}^{\text{th}} \text{ Percentile Concentration}} \times 100$$

Existing 90<sup>th</sup> Percentile Concentration

FDEP used the Hazen method for estimating percentiles as described in Hunter (2002), and the existing condition concentration was defined as the 90<sup>th</sup> percentile of all the bacteria data collected. The 90<sup>th</sup> percentile is also called the 10% exceedance event. This resulted in a target condition that is consistent with the state bacteriological water quality assessment threshold for Class III waters.

Using the same methodology for the 2019 sampling events as was used in the TMDL, the 2019 data were ordered from the lowest to the highest, and using **Formula 2** shown below from the TMDL, the percentile value of each data point (**Table 4**) was calculated:

$$\text{Percentile} = \text{Rank} - 0.5$$

-----  
 Total Number of Samples Collected

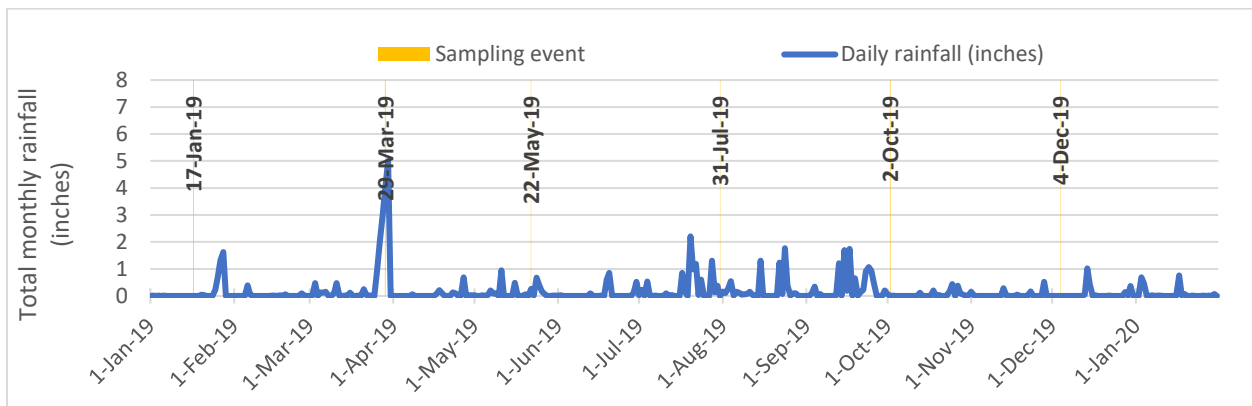
FDEP uses the 90<sup>th</sup> percentile to represent the existing condition concentration. In Table 4, the 90<sup>th</sup> percentile = 300 MPN/100 mL, which is below the Chapter 62-302, F.A.C. 10% threshold of 410 MPN/100 mL.

Using **Formula 1** (shown above) the percent reduction needed was calculated: to be -36% for WBID 3264A:

$$\text{Needed \% reduction} = (300-410) \times 100/300 = -36\%.$$

The calculated reduction is -36%. Therefore, under the new criteria, and based on the TMDL reduction calculation in **Formula 1** above, **no reduction is required**.

There did not appear to be good correlation between rainfall and water quality results.





### 3.5 Monitoring

#### 3.5.1 Sanitary Sewer Issues

In WBID 3264A, there are small pockets of neighborhoods and rural areas that are still on septic. Much of the northern half of the portion of the E-1 Canal, above Yamato Road, is rural agricultural, cow pastures and horse farms. However, this area does not drain to the E-1 Canal.

In the southern portion of the WBID that does drain to the E-1 Canal are two areas still on septic shown below in **Photo 8**:

1. The Boca Grande neighborhood located approximately one-quarter mile west of SR7, on the north side of Palmetto Park Road. There are 16 homes here spread over 90 acres. Although this area does eventually drain to the E-1 canal, based on the distance from the E-1 Canal, and the large lot size (5 or more acres per home), it is unlikely this neighborhood contributes bacteria pollution to the E-1.



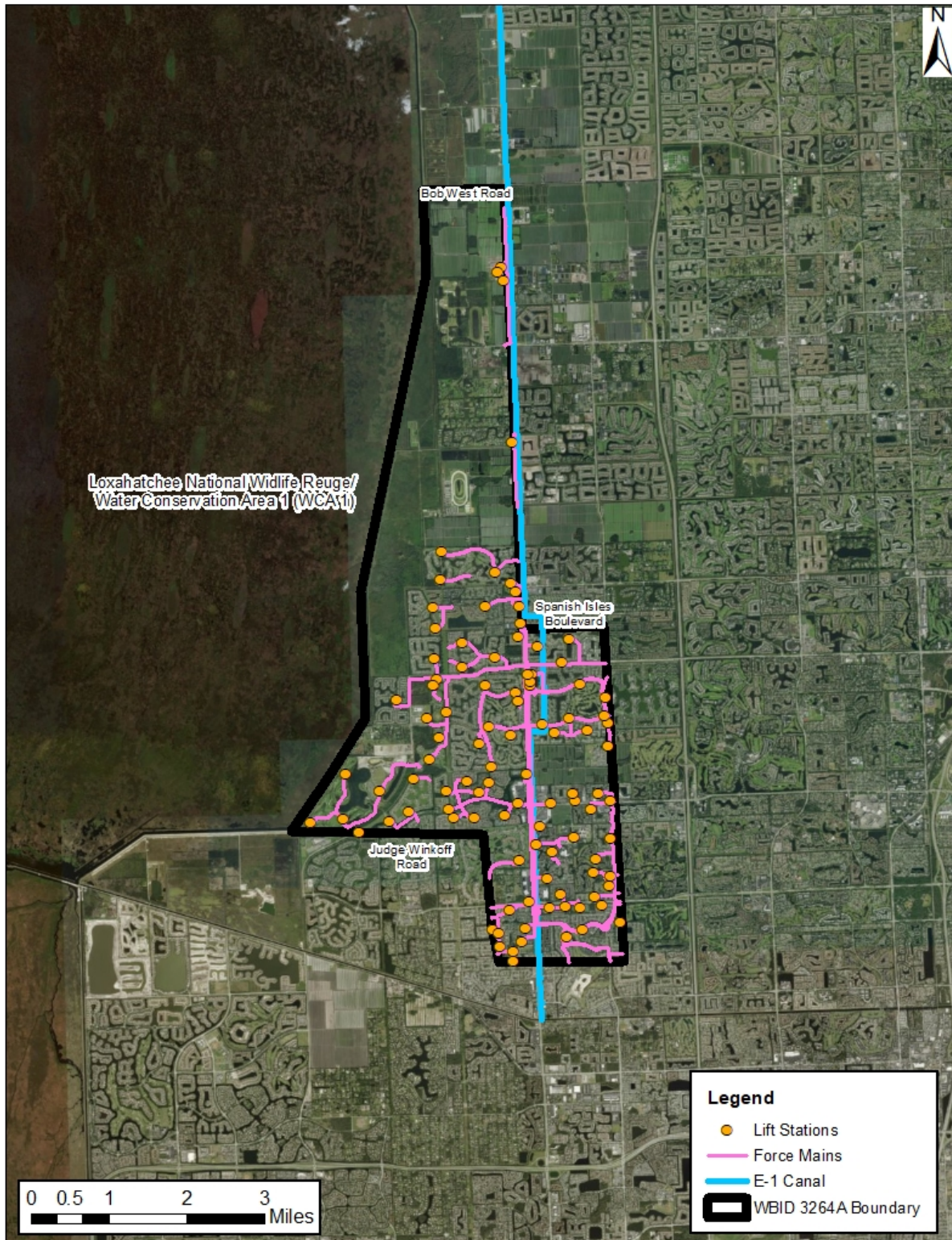
**Photo 8:** Aerial view of neighborhood on septic.

2. An agricultural area (row crops) that includes out-buildings and possibly one or two single family residences. This area is adjacent to the E-1 approximately one-half mile north of Glades Road. It appears to be too small to contribute significant bacteria pollution to the E-1.

Although there are no wastewater treatment plants within the WBID, there is sewer system infrastructure including sewer lines, force mains and lift stations operated by Palm Beach County's Water Utilities Department (PBCWUD). See **Figure 6** for locations of force mains and lift stations. In the past four years, there were two SSO discharges reported in this WBID:

- On 3/16/2016, an unknown quantity of raw sewage was released from a lift station in the Mission Bay community. Less than 1,000 gallons of wastewater reached a Mission Bay stormwater management lake from LS 1036 (located west of SR 7 and north of Glades Road). The Mission Bay surface water management system discharges to the Hillsboro Canal to the south, not the E-1 Canal. Therefore, no wastewater entered a MS4 or the E-1 canal.
- On 1/13/2018, 49,500 gallons of raw sewage leaked from a 12-inch force main located east of SR 7. There were no discharges to either a MS4 or the E-1.

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**Figure 6:** Map of Palm Beach County sanitary sewer infrastructure in WBID 3264A. Information about PBCWUD’s inspection and maintenance programs is provided below in Section 4.

FDOT has inspected the manholes and performed a video inspection of their stormwater system in this area. The seals on the manholes are tight. Several cracks were observed in the pipes along Glades Road and are scheduled to be repaired. In addition, should there be a release in this area that enters the FDOT MS4 via an inlet, the stormwater system along Glades Road has a control structure that would delay an SSO discharge into the E-1 Canal. Utilities in District 4 have historically been proactive about informing FDOT of SSOs that occur on or adjacent to FDOT ROW. FDOT's Environmental Health and Safety Department (as well as FDOT's NPDES Coordinator) receives notification of SSOs, and investigates each SSO to determine if FDOT's system was impacted, and if so, ensures the spills are cleaned up.

### **3.5.2 Homeless and Transient Populations**

Palm Beach County is not aware of areas in the WBID with homeless or transient populations, and none were observed during the WTW exercise.

The TMDL mentioned the presences of "a large homeless encampment" located at SR 7 and Glades Road, however, no evidence of such an encampment was observed.

### **3.5.3 Pet Waste**

No evidence of pet waste along roadways was observed. There does not appear to be off leash dog parks along the canal.

### **3.5.4 Litter and Debris**

No significant signs of litter or debris were noted along the roadways or in the commercial or residential areas. During the Walk the WBID exercise, dumpsters from various commercial areas were inspected, and the majority were well maintained with the lids closed and drains plugged. However, the dumpsters located between the West Boca Medical Center and the E-1 Canal were overflowing and could not be closed. Palm Beach County alerted the hospital about this violation and will follow-up. Some farm equipment was observed adjacent to the west side of SR 7, but there was no connection to the FDOT right of way. Drainage west of SR 7 in this area is to the west, not to the E-1 Canal. Also, a recent study performed by Environmental Science Associates demonstrated that grass clippings can present a significant source of bacterial contamination to our waterways (Tomasko, 2016). Therefore, the Walk the WBID exercise included looking for signs of leaf and/or vegetative debris in gutters and/or rights of way adjacent to roadways. Only minor vegetation was observed in the curb and gutter. During the site visit, roadway crews were actively picking up litter along the right of way. See photos below related to these observations.



**Above: Photos 9A (left) and B(right):** Typical well-maintained dumpsters/dumpster area behind shopping centers.

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**Photos 10A (left) and B (right):** Dumpsters behind Medical Center.



**Photo 11:** Medical waste dumpsters behind locked gate behind Medical Center.



**Photo 12:** Farm equipment west of SR 7; there was no connection to SR 7 right of way, and this area drains west.



**Photo 13:** FDOT contract workers picking up trash along SR 7; E-1 Canal is beyond guardrail.



**Photo 14:** Minor vegetative debris observed along roadways.

### **3.5.5 Illicit Connections**

No illicit connections were observed during the field investigations.

### **3.5.6 Wildlife**

There is no undeveloped property within this WBID. The northern section of the WBID is farmland, and horse and cattle pastures. The southern section is urban. No wildlife was observed during the field investigations. However, dead fish that were most likely left by recreational fishermen were observed along the canal bank.



**Photos 15 A (left) and B (right):** Dead fish left along east bank of E-1 Canal, presumably from recreational fishing activities.



### **3.5.7 Other**

The northern section of the WBID, north of approximately Yamato Road, is less developed than the southern section, dotted with nurseries, row crops, pastureland and horse farms. However, SR 7 in this area forms the eastern boundary of the WBID, and drainage for the area west of SR 7 is to the west.

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**Photo 16:** Facing north at SR 806, view of E-1 canal and adjacent tree nursery that drains to east. Typical of well-maintained swale on east side of E-1. SR 7 can be seen in background on far left side of photo, west of the canal. (Note: area east of E-1 canal is actually outside WBID boundary.)



**Photo 17:** Typical swale in northern portion of WBID on west side of SR 7 between road and agricultural lands. The agricultural lands in this section of WBID drain west, not to the E-1 Canal; however, the swale treats stormwater from SR 7 and drains east to E-1 canal via series of culverts under road (see Photos 2 and 3above.)



**Photos 18 A (left) and B (right):** of pastureland and entrance to horse farm in northern portion of WBID; this area drains to the west, not to the E-1 Canal.

#### 4.0 MANAGEMENT ACTIONS

Most management actions to reduce bacterial pollution are ongoing in the E-1 Canal Basin by both Palm Beach County and FDOT. Some of the ongoing maintenance and operations work reported in this section are for a larger area than just within WBID 3264A (ex: inspections, street sweeping and litter pickup). Management actions are divided into structural and nonstructural activities. **Table 6** provides a summary of management actions and the responsible entity

<b>Table 6. Management Actions Related to Bacteria Sources Identified</b>			
<b>Management Actions</b>	<b>FDOT</b>	<b>PB Co</b>	<b>Joint</b>
Sanitary Sewer Improvement Projects	NA	X	
Flood Control Projects	X		
Sanitary Sewer Inspection and Maintenance	NA	X	
Stormwater Inspection and Maintenance	X	X	
Code and Stormwater Enforcement	NA	X	
Street Sweeping	X	X	
Public Outreach and Education			X
Water Quality Monitoring			X
Stormwater Ordinance	NA	X	

NA = not applicable

## **4.1 Structural Management Actions**

### **4.1.1 Sanitary Sewer Improvement Projects**

The following is an estimate of the line and lift operation and maintenance activities conducted by PBCWUD within the WBID 3264A area from 2014 to 2018:

- 10 Lift Stations rehabilitated.
- Installation of 1200 linear feet (LF) of a new 12-inch force main from the E-1 Canal to LS 981 to parallel the existing 8-inch force main.
- Replacement of approximately 3,300 LF of existing 12-inch asbestos concrete force main with 16-inch PVC force main along Lyons Road from Norte Lago to Palmetto Park Road.
- Replacement of approximately 3,300 LF of existing 12-inch asbestos concrete force main with 16-inch PVC force main along Lyons road from Norte Lago to north of Pine Springs Drive.
- Completion of a sanitary sewer evaluation survey (SSES) in zones 1-5. Project will include condition assessments and rehab recommendations for gravity mainlines, laterals and manholes. The project will also include investigation and rehab design of failing dip line segments from terminal manhole to wet well.
- The construction of Phase 1 of the collection system rehabilitation project. Phase 1 includes approximately 50,000 LF of gravity sewer rehabilitation using cured-in-place pipe (CIPP) lining, lateral repairs, associated manholes rehab and 800 LF of point repairs.
- Construction of Phase 2 of collection system rehabilitation project. Phase 2 includes approximately 33,000 LF of gravity sewer rehabilitation using CIPP lining, 2000 LF of lateral replacement, the lining of approximately 139 laterals, installation of new clean outs, and various manhole repairs and point repairs.
- Lining clay pipe in lift station networks 1055 and 1054.
- Emergency repair of terminal manhole to wet well gravity sewer main within lift station 1022 basin.
- Lining of approximately 40,000 LF of sewer pipe as well as approximately 220 manholes and 40 ductile iron pipe segments.

FDOT does not have sanitary sewers.

### **4.1.2 Flood Control Projects**

In the past two years, FDOT had one flood control project in which a trench drain was installed at the end of a driveway to alleviate flooding. Palm Beach County has not constructed a flood control project in this WBID in recent years. When appropriate, both FDOT and the County incorporate stormwater treatment into their flood control projects.

## **4.2 Non-structural Management Actions**

Below is a brief description of the non-structural management actions that Palm Beach County and FDOT are implementing. Most of these are implemented by the entities individually, however, there are actions

that are being implemented jointly for all the Palm Beach County permittees via a Joint Participation Agreement (JPA), such as Water Quality Monitoring, Public Outreach and Training.

#### **4.2.1 Sanitary Sewer Inspection and Maintenance**

##### **Sanitary Sewer Interceptor Cleaning**

The County cleaning crews are given maps of the basin and schedule/route the areas to be cleaned. They start from the dead-end manholes in the system which are generally the shallow areas and proceed to flush the lines with 1200-1500 PSI water pressure jets to the down-stream manholes. They usually make 2-4 passes of each segment to breakup and remove the debris. As the debris is moved to convenient manholes the crew will draw out any heavy debris with the vacuum part of the vehicles to keep the lines cleared as they proceed. At the end of each system there is a lift station which is where the fluids end up. The vacuum trucks will remove the debris and fluids from the lift stations to inspect the walls and floor of the well.

##### **Inspections**

After the County cleaning crews finish cleaning the mains, the second part of the preventative maintenance schedule is utilizing the closed-circuit television video (CCTV) crews to assess underground damage of our sewer lines. The crews inspect for cracks, leaks, coatings peeling or other damages to the manholes, pipes/mains or wet wells. As they televise the manholes, pipes/mains or wet wells the images are measured, recorded on hard drives and saved for further reviews. Repair or issues found with the manholes, pipes/mains or wet wells are coded, then noted and reviewed for the final and best options for the repair. Generally, the inflow and infiltration (I&I) crews can make repairs, depending on severity, by means of grouting, banding or the scheduling of point repair liners. If the issues require the use of heavy equipment such as underground repairs, then PBCWUD will reach out to the Palm Beach County line crews for assistance. All information such as plans/as-builts will be modified if needed and then given to the County engineering team for review and acceptance. If the I&I crews or the line crews cannot make the repairs because of difficulties beyond our capabilities, then the County will require the help of contractors who specialize in the type or repairs to be made.

##### **Fats, Oils, and Greases**

In order to reduce SSO's and to protect the sanitary sewer system, PBCWUD has an extensive pre-treatment program to address fats, oils and greases. The PBCWUD Pretreatment Program (Program) requires new connections to the sewer system to be inspected for applicable pre-treatment equipment. Changes in existing non-residential customer accounts are reviewed for pre-treatment requirements. The Program requires all restaurants, food service and auto repair facilities to maintain and clean their Oil Grease Interceptors (OGIs) annually at a minimum.

The OGIs are sampled for Biological Oxygen Demand (BOD), Total Suspended Solids (TSS), and Oil and Grease (O&G) every six months. If test results indicate the pre-treatment limits are exceeded (400 mg/L for BOD and TSS; 100 mg/L for O&G) the customer is notified of a monthly surcharge in writing. In order

to comply and avoid the surcharge, the customer must have the OGI cleaned/serviced and provide documentation of the OGI work as well as laboratory test results from an independent certified laboratory indicating compliance limits have been met to the PBCWUD Pretreatment Coordinator prior to the deadline indicated on the surcharge notification letter.

The Program also includes permitting authority of the Industrial Users defined in Chapter 62-625, F.A.C.; however, there are no permit-required Industrial Users located in WBID 3264A. Detailed information about the Program may be found online at:

<http://discover.pbcgov.org/waterutilities/Pages/Pretreatment.aspx>

#### **4.2.2 Inflow and Infiltration Evaluation Plan**

The County Inflow and Infiltration teams (I&I) work together to ensure that the Palm Beach County basins are inspected and reviewed as often as possible. After reviewing the history of the basins, they proceed on problem areas first; then, by age of the system and types of pipes and materials that are used. Third, the I&I teams schedule basins on the last time inspected / cleaned as routine preventative maintenance.

#### **4.2.3 Stormwater Inspection and Maintenance**

FDOT and their contractors perform regular maintenance on stormwater pipes, culverts, ditches and stormwater facilities. The FDOT has a proactive inspection program that meets the requirements of the NPDES MS4 Permit and the FDEP approved FDOT Statewide Stormwater Management Program (SSWMP). During the most recent permit year (October 2017 through September 2018) the FDOT performed inspections and/or maintenance on their Palm Beach County stormwater system as needed and in accordance with their NPDES MS4 permit and SSWMP, including:

- Inspection and maintenance of over 1,000 ponds and over 450 French drains
- Inspection and maintenance of 63 pollution control boxes
- Inspection of 90 major outfalls
- Maintenance of over 30,000 feet of pipe
- Maintenance of 3,900 acres of swales

In addition, FDOT is in the process of georeferencing its entire stormwater system. In Palm Beach County, the inventory is approximately 60% complete and is on-going. Mapping will assist in identifying optimal locations for structural stormwater best management practices.

The Palm Beach County Streets and Stormwater Division perform regular maintenance on stormwater pipes, culverts, ditches and County permitted stormwater facilities. The County responds to requests and complaints and has a rotating schedule for proactive maintenance and inspections. With the new Spyder ditch cleaning equipment, ditches can now be properly maintained, thereby increasing the exposure to sunlight and reducing bacteria levels.

The County has a proactive inspection program that falls within the requirements of the MS4 Permit each year. In 2019, the County performed inspections of a total of 17,636 inventoried inlets, catch basins, and

grates and 12.1 miles of storm pipe. The County inspected 100% of ditches, and 10% of all conveyance, and treatment swales, based off the current inventory owned and operated by the County.

A comprehensive inventory is instrumental to anthropogenic source reduction for multiple reasons. Therefore, once the County has completed mapping its stormwater system, existing sanitary sewer maps will be overlain onto the stormwater inventory map in order to identify potential areas of concern, such as areas where the systems are in close proximity. Furthermore, the map will assist in identifying optimal locations for structural stormwater best management practices.

#### **4.2.4 Compliance and Enforcement**

FDOT has no enforcement authority but does have a comprehensive Illicit Discharge and Detection Elimination (IDDE) program. All maintenance personnel and inspectors are trained annually to be on the lookout for illicit discharges and connections. During the most recent permit year, 79 FDOT maintenance personnel were trained. When FDOT personnel observe what appears to be an illicit discharge or connection, they document their observation, take photos if possible, and report the information to the FDOT NPDES Coordinator. When reports are received by the Coordinator, a letter is sent to the property owner requesting corrective action. All IDDE reports are tracked to ensure they are resolved. Although it is very rare, if the property owner is non-responsive, the IDDE is reported to the county for enforcement. During the most recent permit year, FDOT received 33 reports, of which 27 were found to be illicit connections. All have been resolved or have corrective actions underway. It is noted that although it was not necessary to refer illicit discharges to the County in this WBID, the County has provided support to FDOT for enforcement of eliminating illicit discharges when needed.

In addition, FDOT has created an IDDE video that is accessible to the public via the internet:

<http://wbt.dot.state.fl.us/ois/IllicitDischarge/IDDETraining.htm>. Viewing of this video is a requirement for all FDOT Maintenance contractors.

The County Division of Environmental Resources Management, Surface Water Protection Section, is responsible for the enforcement of the County's Stormwater Ordinance. Dedicated staff investigate complaints from citizens and County staff, and proactively inspect areas of concern looking for potential illicit discharges and connections. One of the activities included in proactive inspections is conducting source-tracking investigations in areas with pollutant discharges and high bacteria counts. Palm Beach County is the only NPDES MS4 permittee in Palm Beach County with legal authority to prohibit non-stormwater discharges in all surface water management system jurisdiction-wide rather than the standard minimum of prohibiting non-stormwater discharges to municipal separate storm sewers owned and operated by a municipality.

The County also has a rigorous NPDES construction site inspection program. Sites are typically inspected daily to ensure sedimentation and erosion controls are properly installed and maintained.

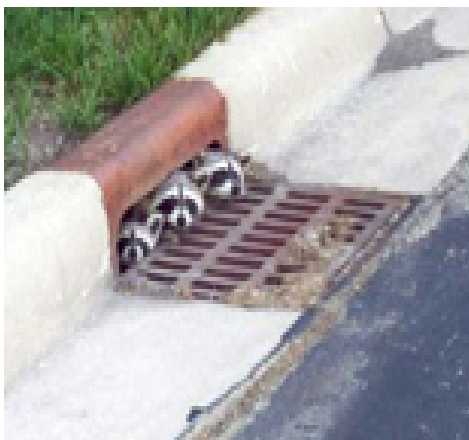
#### 4.2.5 Litter and Debris Removal

The FDOT has numerous street sweeping contracts and local agreements to ensure streets are kept free of debris. The FDOT street sweeping program maintains arterial roads at least twelve times per year, sometimes more. In the most recent annual report, FDOT reported sweeping over 11,000 miles in Palm Beach County.

The County street sweeping program maintains arterial roads and local roads at least twice per year. County contractors, under the Streetscape Program, maintain many County roads on a 16- times-a-year frequency per road.

#### 4.2.6 Public Outreach and Education

Palm Beach County NPDES MS4 permittees have joined together to develop outreach materials to educate the public about identifying and reporting illicit discharges and illegal dumping. Two to four public service announcements (PSAs) outreach topics are selected each year. An annual video PSA campaign is carried out on five Comcast channels aired in Palm Beach County. The selected videos are also exposed over 50,000 times during each campaign via pre- and mid-roll impressions on the internet. The NPDES website: (<http://www.stormwaterandme.org/>) has links to various education materials, such as the poster and pictures below, and allows the public to report illicit discharges.



*Stormwater runoff is rainfall that runs over the ground's surface and into waterways.*

Even if it flows into a storm drain, the runoff almost always ends up in our waterways without treatment.

*Along its path, runoff can collect pollutants such as:*

- Oils, greases, paints
- Pesticides, herbicides, fertilizers
- Detergents, cleaners
- Hazardous chemicals
- Leaves and grass clippings
- Sediments, trash and debris
- Pet waste



**You can help!**

Clean up, pick up, or relocate materials so runoff won't wash them into our waterways.

Call your local authority to report local water pollution activity.





#### **4.2.7 Palm Beach County Water Resources Task Force**

The Palm Beach County Water Resources Task Force was created by Resolution of the Palm Beach County Board of County Commissioners to identify and evaluate opportunities and impediments to providing future water supply, conservation, wastewater treatment, and reuse or reclaimed water opportunities in the most efficient and cost effective manner practicable.

Additionally, a Technical/Professional Working Group was established to advise the Task Force on technical, environmental, and other professional subject matters as requested by the Task Force. The Task Force and Working Group are composed of elected and appointed officials designated by government entities identified in the Resolution.

### **5.0 ANTICIPATED LOAD REDUCTIONS**

The majority of management actions included in this plan that will likely have the most impact on bacteria loads are structural controls including sanitary sewer and stormwater maintenance, and non-structural controls including street sweeping, public outreach and education. In the 10 years since the FDEP collected bacteria samples, both the County and FDOT have enhanced their stormwater management programs, particularly their non-structural programs. Advancement in technology including adding interactive capabilities to the website, has allowed the public outreach program to reach substantially more residents. In addition, in the 2007-2008 permit year, the Palm Beach County permittees, through the JPA, added more training videos and established a public education sub-committee that resulted in additional methods for reaching the public such as pamphlets and TV spots. Bacteria load reductions from these types of management activities cannot be directly measured, and the County and FDOT are unaware of any existing guidance for estimating load reductions from these programs.

Therefore, the anticipated load reductions resulting from this plan cannot be estimated with any meaningful accuracy.

Evaluating the effectiveness of this plan will therefore rely on the results of the continued ambient water quality monitoring program and future assessments against the water quality standards for bacteria. It is noted that because the bacteria levels in the most recent round of sampling meet the new Chapter 62-302, F.A.C. criteria of not exceeding 10% of the samples, the **County and FDOT have already met the bacteria criteria requirements** . In addition, based on the 2019 water quality monitoring data, the County and FDOT **are meeting the TMDL and no further reductions are required**. This demonstrates that the current stormwater management program and associated activities are working. Both the County and FDOT are committed to continuing implementation of their stormwater management programs described herein and in accordance with their NPDES permit.

## **6.0 MONITORING AND REPORTING**

Monitoring and reporting in accordance with the NPDES MS4 permit will continue.

## **7.0 SUMMARY OF ACTIVITIES**

The efforts in E-1 Canal to identify bacteria sources through targeted sampling and field investigations was successful in confirming no significant point sources of bacteria were identified. Potential anthropogenic sources of fecal coliform bacteria found in the E-1 Canal basin include:

1. Sanitary Sewers
2. Recreational fishing

Many sources were eliminated in the past through effective development and implementation of the County's and FDOT's stormwater management program. Although the permittees have met the TMDL reduction requirements, stormwater pollution reduction management strategies will continue to be implemented.

### **7.1 Structural**

Both FDOT and the County have robust inspection and maintenance programs of their MS4 that they will continue to support and maintain.

### **7.2 Non-Structural**

- Sanitary Sewer Inspection and Maintenance
  - The County will continue their sanitary sewer inspection and maintenance program.
  - The County will continue their sanitary sewer interceptor cleaning.
  - Any fat, oil, grease hotspots identified within the E-1 basin will be promptly addressed, with targeted outreach activities conducted where necessary.
- Stormwater Inspection and Maintenance
  - Both County and FDOT stormwater inspection and maintenance will continue at no less than the current level of service.
- The County will continue their proactive inspections, and applicable code enforcement, and will provide code enforcement support to FDOT as needed.
- Litter and Sediment Removal
  - The County and FDOT will continue their street sweeping programs.
- Public Outreach and Education

- Public outreach and education on water quality and stormwater issues will continue County-wide and bacterial pollution information will be added to existing outreach campaigns wherever feasible.
- Policy
  - The County will continue to enforce their respective Ordinances with regards to water quality.

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