



BACTERIA TOTAL MAXIMUM DAILY LOADS (TMDLs) UPDATE - EVERGLADES WEST COAST BASIN

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Florida Department of Environmental Protection
Virtual Public Workshop | Oct. 14, 2025



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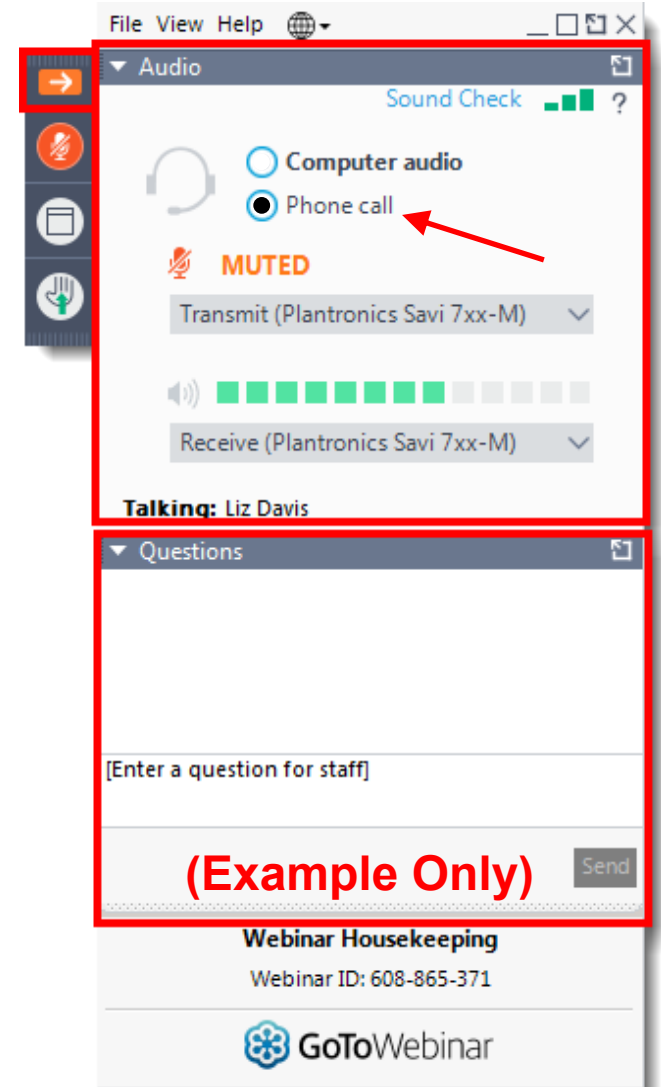
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FEDERAL TMDL PROGRAM RESPONSIBILITIES

The Federal Clean Water Act (1972) established requirements for states in Section 303(d).

States must:

- Assess and provide lists of their impaired waters to the U.S. Environmental Protection Agency (EPA).
- Develop TMDLs for impaired waters.
- Identify pollutant reductions for point and nonpoint sources.



FLORIDA WATERSHED RESTORATION ACT

Section 403.067, Florida Statutes (F.S.) - established a state framework for identifying impaired waters, developing TMDLs and developing and implementing restoration plans:

- Authorizes DEP to develop and adopt TMDLs and restoration plans in collaboration with stakeholders and other governmental entities.
- Authorizes the Florida Department of Agriculture and Consumer Services (FDACS) to work with agriculture to implement BMPs.



APPLICABLE BACTERIA CRITERIA

Bacteriological Parameter	Surface Water Classification	Criterion
Enterococci	Class II and Class III Marine	Most Probable Number (MPN) or Membrane Filter (MF) counts (number/100 ml) shall not exceed a monthly geometric mean of 35 nor exceed the Ten Percent Threshold Value (TPTV) of 130 in 10% or more of the samples during any 30-day period.
<i>E. coli</i>	Class I and Class III Fresh	MPN or MF counts shall not exceed a monthly geometric mean of 126 nor exceed the TPTV of 410 in 10% or more of the samples during any 30-day period.
Fecal Coliform	Class II	MPN or MF counts shall not exceed a median value of 14 with not more than 10% of the samples exceeding 43 (MPN) or 31 (MF).



TOTAL MAXIMUM DAILY LOAD

A TMDL is defined as:

The maximum amount of a pollutant that a waterbody can receive and still maintain its designated uses (e.g., drinking, fishing, swimming, shellfish harvesting).

$$\text{TMDL} = \text{WLA Wastewater} + \text{WLA NPDES Stormwater} + \text{LA} + \text{MOS}$$

WLA = Waste Load Allocations – Includes **Wastewater Facilities** and **NPDES MS4 Stormwater Discharges**

LA = Load Allocation to nonpoint sources

MOS = Margin of Safety

Under Section 303(d) of the federal Clean Water Act and section 403.067, F.S., TMDLs must be developed for impaired waters.

NPDES – National Pollutant Discharge Elimination System

MS4 – Municipal Separate Storm Sewer System



BACTERIA TOTAL MAXIMUM DAILY LOADS

- TMDLs can be expressed in terms of mass per time (e.g., pounds per day), toxicity or other appropriate measure.
- Fecal Indicator Bacteria (FIB) TMDLs are expressed as:
 - Concentration-based (counts/100mL) restoration targets, consistent with the expression of the bacteriological criteria.
 - The TMDL allocations for the WLA for NPDES Stormwater and the Load Allocation, previously expressed as percent reductions, were replaced with load equations (expressed as daily and monthly allowable loads for each source category).

$$\text{Allowable Load} = Q \times WQC$$

Where:

Q = the flow that is contributed by a source to receiving waters, and

WQC = the applicable water quality criterion for a bacteria indicator.



BACTERIA TMDL MARGIN OF SAFETY

Implicit MOS is applied, based on the following conservative assumptions:

- Upstream and tributary bacterial concentrations are at the maximum allowable limit (i.e., criterion);
- Although all sources are provided an allocation at the applicable water quality criterion, not all sources discharge at this maximum allocation at the same time;
- There is no bacteria die-off accounted for, when bacteria concentrations diminish downstream from their source; and,
- All wastewater sources must meet both the applicable TPTV and geometric mean (as single sample maxima) at all times.



TMDL PROJECT BASIN

- Focus on the Everglades West Coast Basin.
- Addressing impairments for *E. coli*, enterococci bacteria and fecal coliform bacteria for Class II waters.
- Serves as the template for the new approach to document bacteria TMDLs for basins or regions throughout the state.
- After the EWC Basin TMDLs are completed, progress through the state and document TMDLs in reports covering impairments in select basins or regions of the state.





BACTERIA TMDL DOCUMENTATION

Bacteria TMDLs Update: Everglades West Coast Basin



TMDL REPORT UPDATES

- The TMDL allocations assigned to the WLA for NPDES Stormwater and the Load Allocation, previously expressed as percent reductions, were replaced with load equations that are expressed as daily and monthly allowable loads for each source category.

$$\text{Allowable Load} = Q \times WQC$$

Where:

Q = the flow that is contributed by a source to receiving waters, and

WQC = the applicable water quality criterion for a bacteria indicator.

- Moved the content of Chapter 5 to an appendix – the estimates of percent reductions, necessary to meet the TPTV and geometric mean criteria components, are provided for informational purposes only.
- Added the Enterococci and *E. coli* bacteria geometric mean criteria components as explicit restoration targets in the TMDL table (Table 5.1).
- Replaced the Story Map with standard report maps.
- Added one water segment to the TMDL document - Rookery Bay (Coastal Segment), WBID 3278U, impaired for fecal coliform bacteria.



IMPAIRED MARINE WATERS

Waterbody Name	WBID	Classification ¹	Applicable Bacteriological Quality Criteria
Cocohatchee River	3259A	II	Enterococci
Estero River (Marine Segment)	3258D1	III-M	Enterococci
Gordon River (Marine Segment)	3278R5	III-M	Enterococci
Haldeman Creek (Lower)	3278R1	III-M	Enterococci
Hendry Creek	3258B2	III-M	Enterococci
Imperial River (Marine Segment)	3258EB	III-M	Enterococci
Mullock Creek (Marine Segment)	3258C4	III-M	Enterococci
Naples Bay (Coastal Segment)	3278R4	II	Enterococci
Naples Bay (Coastal Segment)	3278R4	II	Fecal Coliform ²
Rock Creek	3278R3	III-M	Enterococci
Rookery Bay (Coastal Segment)	3278U	II	Fecal Coliform ³
Spring Creek (Marine Segment)	3258H2	III-M	Enterococci

¹ F = Fresh; M = Marine

² Verified impaired for exceeding the TPTV criterion and the Class II median count criterion

³ Verified impaired for exceeding the TPTV criterion



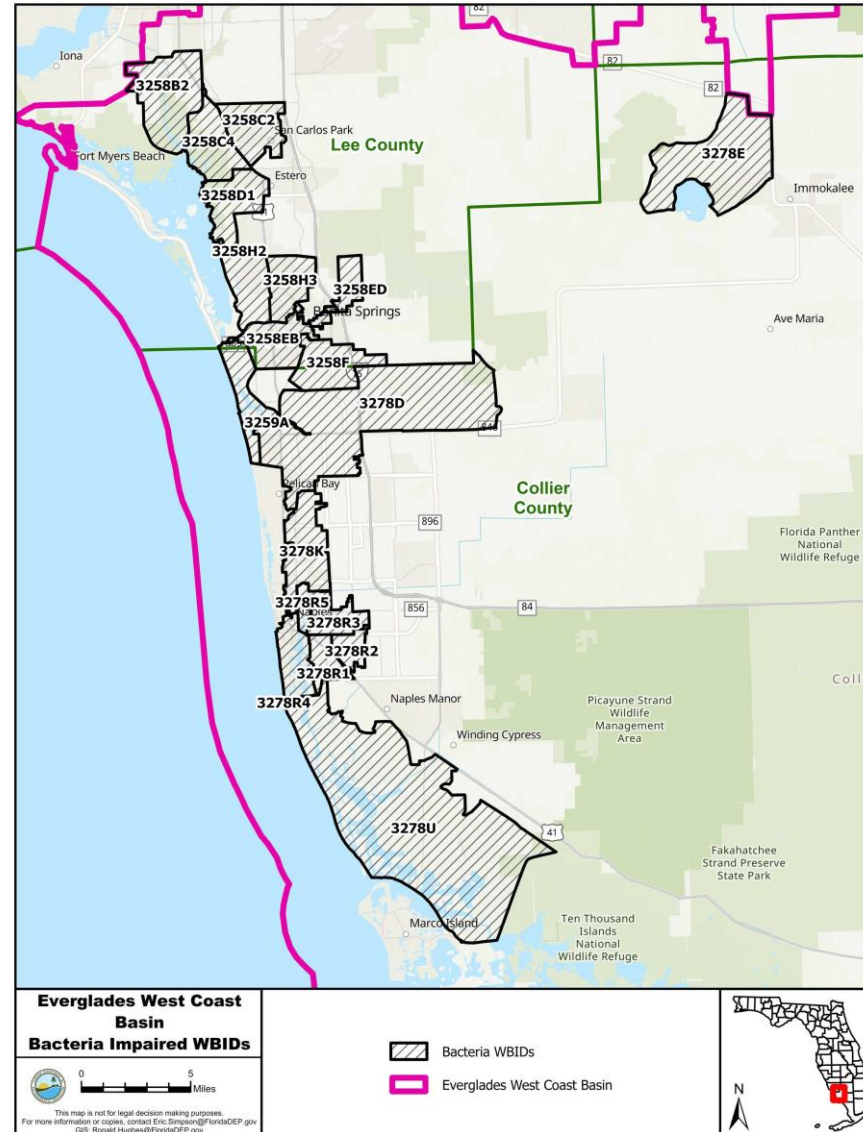
IMPAIRED FRESH WATERS

Waterbody Name	WBID	Classification ¹	Applicable Bacteriological Quality Criteria
Oak Creek	3258F	III-F	<i>E. coli</i>
Cocohatchee (Inland Segment)	3278D	III-F	<i>E. coli</i>
Cow Slough	3278E	III-F	<i>E. coli</i>
Gordon River Extension	3278K	III-F	<i>E. coli</i>
Haldeman Creek (Upper)	3278R2	III-F	<i>E. coli</i>
Leitner Creek	3258ED	III-F	<i>E. coli</i>
Mullock Creek	3258C2	III-F	<i>E. coli</i>
Spring Creek	3258H3	III-F	<i>E. coli</i>

¹ F = Fresh; M = Marine



FIB IMPAIRED WATERS ASSIGNED TMDLs





POTENTIAL BACTERIA SOURCES

- Degraded sewer infrastructure.
- Sanitary sewer overflows.
- Failing on-site sewage treatment and disposal systems (OSTDS).
- Transient camps.
- Direct illicit connections from homes or businesses.
- Improper management of agricultural animal waste.
- Mismanagement of biosolids and animal manure land application.
- Solid waste storage and disposal.
- Marinas and vessel anchorage locations.
- Pet waste.
- Wildlife.



REPORT MAPS

Appendices A – E present geographic information (Formerly in Story Map)

- Bacteria sampling stations
- NPDES wastewater facility outfalls
- Land use coverage
- On-site sewage treatment and disposal systems (OSTDS)
- Vessel anchorage areas



PERCENT REDUCTION CALCULATIONS

Appendix F Content (Formerly in Chapter 5)

- Presented for informational purposes only - documents the general magnitude of each impairment and potential level of effort necessary to attain criteria.
- Facilitates comparisons between reductions necessary to meet the TPTV and monthly geometric mean criteria components.
- For Class I, II, and III waters impaired for exceeding the TPTV applicable to Enterococci, *E. coli*, and Fecal Coliform Bacteria criteria, the Hazen method was used to determine the 90th percentile value that was applied in calculating the percent reduction needed to meet TPTV criterion.
- An estimate of monthly geometric means were derived from each waterbodies aggregated monthly results to calculate percent reductions to meet the applicable Enterococci and *E. coli* Bacteria geometric mean criteria.
- For Class II waters impaired based on exceeding the Fecal Coliform Bacteria median count criterion of 14 counts/100 mL, the existing median value of results is used in calculating percent reductions.



TMDL EXPRESSION

Water-body Class ¹	FIB Parameter	TMDL _{ind} (TPTV of MPN or MF counts/ 100mL)	TMDL _{geo} (Monthly Geometric Mean of MPN or MF counts/ 100mL)	WLA for Waste-water (counts)	WLA for NPDES Storm-water (counts/day) ²	LA (counts/day) ²
III-F	<i>E. coli</i>	410	126	Meet Permit Limits	410 x Daily Q _{WLASW} , and 126 x Monthly Q _{WLASW}	410 x Daily Q _{LA} , and 126 x Monthly Q _{LA}
II, III-M	Enterococci	130	35	Meet Permit Limits	130 x Daily Q _{WLASW} , and 35 x Monthly Q _{WLASW}	130 x Daily Q _{LA} , and 35 x Monthly Q _{LA}
II	Fecal Coliform	43 MPN	NA	Meet Permit Limits	43 x Daily Q _{WLASW}	43 x Daily Q _{LA}

¹ F = Fresh; M = Marine

²The concentration-based fecal indicator bacteria TMDLs can be converted into a daily load expression by multiplying the applicable water quality criterion by the daily average volumetric flow representative of the water segment and the appropriate conversion factor. In the equations, flows may be determined from direct measurements or derived from calculation methods following generally accepted scientific procedures.

DailyQ_{WLASW} = Total daily runoff from all MS4 urban areas conveyed through permitted storm water structures.

MonthlyQ_{WLASW} = Total monthly runoff from all MS4 urban areas conveyed through permitted storm water structures.

DailyQ_{LA} = Total daily flow from all nonpoint sources

MonthlyQ_{LA} = Total monthly flow from all nonpoint sources.



TMDL IMPLEMENTATION

NPDES Permit Requirements:

- Wastewater facilities must meet permit limits.
- MS4 (stormwater) develop restoration plans: refer to DEP's Restoring Bacteria-Impaired Waters Toolkit [link to document is in Chapter 6 of the report].

Collection Systems and Transmission Facilities Rule:

- Collection and transmission systems must be maintained and operated in accordance with Rule 62-604.500, F.A.C., so that sanitary overflows or leaks do not cause or contribute to violations of the applicable FIB criteria.

Other water quality initiatives:

- Stakeholder driven efforts.
- Surface water improvement and management (SWIM) plans.
- Basin management action plans (BMAPs).
- Site-specific focus.
- New initiatives.



TMDL REPORT CONTENT THAT REMAINS UNCHANGED

- The goal is to reduce the receiving water bacteria counts so that each water segment achieves the applicable bacteriological criteria. The TMDLs are achieved when waterbodies consistently meet the specified fecal indicator bacteria criterion.
- Permit effluent limitations for bacteria serve as the WLA for wastewater discharges. The state requires all NPDES-permitted wastewater point source dischargers to meet bacteria criteria contained in subsection 62-302.530(6), F.A.C., and the disinfection requirements of section 62-600.440, F.A.C.
- The data sufficiency evaluation for characterizing existing conditions, used for calculating percent reductions, continues to be based on data collected in the last 10 years (2013 to 2022 period).
- Implementation activities.



FORMAL PUBLIC COMMENTS

Please state:

- Full Name.
- Affiliation.
- Comment or Question.





STAKEHOLDER INVOLVEMENT

DEP will accept written comments on the Revised Draft Report through **Oct. 31, 2025**.

Please address all comments and questions to:

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**Draft TMDL
Documentation**



NEXT STEPS

- Review public comments and respond after the formal comment period.
- Proceed with rule adoption of Everglades West Coast Basin FIB TMDLs and incorporate language in Chapter 62-304, F.A.C.
- Send out public notice when TMDLs are adopted into rule.
- Submit TMDLs to EPA for review and approval.

THANK YOU



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