Caloosahatchee River Watershed Protection Plan

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South Florida Water Management District
September 2, 2020
Objectives

- Engage stakeholders and the public in a collaborative approach to meet Northern Everglades and Estuaries Protection Program (NEEPP) goals
- Identify projects, activities, and programs that can be implemented for additional watershed improvements, with an emphasis on meeting reduction goals in TMDL basins.
- Review Caloosahatchee Watershed characteristics, projects and programs, and recent data
- Prioritize areas for SFWMD focused assessments to identify sources and integrated solutions

SFWMD.gov/WPPs
Workshop Schedule

- June 26 – Kickoff and Overview
- July 21 – Lake Okeechobee Watershed
- August 28 – St. Lucie River Watershed
- September 2 – Caloosahatchee River Watershed

SFWMD.gov/WPPs

Sanibel Causeway from San Carlos Bay
Coordinating Agency Roles

Protection Plans Inform Basin Management Action Plan Annual Reports, 5-Year Reviews, & Updates

- Research and Water Quality Monitoring Program
  - Comprehensive monitoring network
    - Flow, water quality, precipitation, biology, etc.
    - Major structures, upstream, and estuarine
  - Research and modeling of a wide-range of ecosystem processes

- Watershed Construction Projects & Programs
  - Programs
  - Regional projects
  - New Projects
  - Project costs
  - Estimated and measured project performance

- When combined with information from other agencies, Watershed Protection Plans help evaluate the ecosystem, identify problems/deficiencies, and inform restoration activities.
Workshop Approach for Identifying Solutions

1. Summarize Water Quality Data
2. Identify areas of focus
3. Account for existing projects and programs
4. Define the gaps & remaining “problems”
5. Identify potential solutions via projects and programs
6. Feedback to Coordinating Agencies
7. Facilitate discussions to address remaining problems
Initial Assessments

Parameters

- **Nutrient Load**: Cumulative weight of a constituent transported (usually by stormwater) passed the point of measurement. Commonly expressed in pounds (lbs) or metric tons (t).
- **Discharge Volume**: Flow commonly expressed in acre-feet (ac-ft), i.e. amount of water required to cover 1 acre of land to a depth of 1 foot.
- **Unit Area Load (UAL)**: Nutrient load per acre of area commonly expressed in lbs/acre.
- **Flow Weighted Mean Concentration (FWMC)**: Represents the average concentration of a constituent relative to the total flow volume.

Other

- Watershed objectives
- Existing and planned projects
- Trends in data
- Impact to receiving waterbody
Caloosahatchee River Watershed (CRW)

- Five Basins
- 1,070,000 acres
Watershed Protection Plan
Objectives
Caloosahatchee Estuary TMDL

- Caloosahatchee Estuary TN TMDL adopted by FDEP in 2009
  - 23% Reduction
  - ≈ 9M lbs (≈ 4,100 metric tons)

- SFWMD Calculated Load
  - S-79 + Tidal Basin (modeled)
Caloosahatchee Tributaries TMDL

- TMDL adopted by FDEP in 2019 for Caloosahatchee Tributaries
  - S-4
  - C-19
  - Lake Hicpochee
  - Long Hammock Creek
  - Townsend Canal
- Establishes reductions for TN, TP, and BOD

Source: FDEP 2019 Caloosahatchee Tributaries TMDL
# Caloosahatchee Tributaries TMDL

Table 5.1. TMDL components for nutrients in the Caloosahatchee River Basin tributaries

1 The TMDL represents a 7-year rolling average of annual loads, not to be exceeded. Dividing by 365 yields daily TMDL loads.
2 The required percent reductions listed in this table represent the reduction from all sources.
3 MOS is implicit.
4 NA = Not applicable

<table>
<thead>
<tr>
<th>Waterbody (WBID)</th>
<th>Parameter</th>
<th>TMDL (maximum 7-year average load in lbs)</th>
<th>WLA Wastewater (% reduction)</th>
<th>WLA NPDES Stormwater (% reduction)</th>
<th>LA (% reduction)</th>
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</thead>
<tbody>
<tr>
<td>S-4 Basin (3246)</td>
<td>TN</td>
<td>430,844</td>
<td>NA</td>
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<td>S-4 Basin (3246)</td>
<td>TP</td>
<td>28,622</td>
<td>NA</td>
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<td>BOD</td>
<td>664,946</td>
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<tr>
<td>C-19 Canal (3237E)</td>
<td>TN</td>
<td>78,114</td>
<td>NA</td>
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<tr>
<td>C-19 Canal (3237E)</td>
<td>TP</td>
<td>5,167</td>
<td>NA</td>
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<td>C-19 Canal (3237E)</td>
<td>BOD</td>
<td>186,354</td>
<td>NA</td>
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<tr>
<td>Lake Hickpochee (3237C)</td>
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<td>4,175,743</td>
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<td>5,768,701</td>
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<tr>
<td>Long Hammock Creek (3237B)</td>
<td>TN</td>
<td>330,381</td>
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<td>Long Hammock Creek (3237B)</td>
<td>TP</td>
<td>25,384</td>
<td>NA</td>
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<tr>
<td>Long Hammock Creek (3237B)</td>
<td>BOD</td>
<td>773,946</td>
<td>NA</td>
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<tr>
<td>Townsend Canal (3235L)</td>
<td>TN</td>
<td>300,564</td>
<td>NA</td>
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<td>Townsend Canal (3235L)</td>
<td>TP</td>
<td>28,749</td>
<td>NA</td>
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<td>Townsend Canal (3235L)</td>
<td>BOD</td>
<td>673,151</td>
<td>NA</td>
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Source: FDEP 2019 Caloosahatchee Tributaries TMDL
Figure ES-2. Estimated progress towards meeting the Caloosahatchee Estuary TN TMDL with projects completed through October 31, 2019

Source: FDEP 2020 BMAP Update
Minimum Flows & Minimum Water Levels Rule

- Amended in 2019
  - 457 cfs 30-day moving average at S-79
  - Maintain a salinity gradient that prevents significant harm to indicator species
  - MFL recovery strategy to be fully implemented and operational

Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.
Projects & Initiatives
Watershed Construction Projects

WEST BASIN
- Mudge Ranch
- Caloosahatchee Reservoir

EAST BASIN
- Hicpochee Expansion
- Hicpochee Phase 1
- Boma
- FAVT (FDACS)
- Alico
Caloosahatchee Reservoir & Water Quality Feasibility Study

C-43 West Basin Storage Reservoir (WBSR) Water Quality Feasibility Study (Study)

July 16, 2020
Storage Targets

2009 CRWPP
- Preferred Plan set 400,000 acre-ft storage target

<table>
<thead>
<tr>
<th>Basin</th>
<th>Existing/Planned Storage (ac-ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Caloosahatchee</td>
<td>120,000</td>
</tr>
<tr>
<td>West Caloosahatchee</td>
<td>170,000</td>
</tr>
<tr>
<td>CRW Total</td>
<td>290,000</td>
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</tbody>
</table>

Model Update
- Evaluate storage requirements
Expanded Monitoring

Expanded Monitoring Station

Existing Basin Monitoring Station
Relative Contributions
TIDAL BASIN (ESTIMATED)
20% Water; 15% TP Load
TP Load: 54.33 t
TP FWMC: 0.097 mg/L

EAST BASIN
10% Water; 17% TP Load
TP Load: 63.82 t
TP FWMC: 0.217 mg/L

LAKE OKEECHOBEE
35% Water; 30% TP Load
TP Load: 111.82 t
TP FWMC: 0.108 mg/L

WEST BASIN
33% Water; 36% TP Load
TP Load: 136.06 t
TP FWMC: 0.146 mg/L

S-4 BASIN
1% Water; 3% TP Load
TP Load: 9.49 t
TP FWMC: 0.261 mg/L
Lake Okeechobee Contributions

- Interconnected Northern Everglades watersheds
- Each watershed has individual restoration goals and BMAPs
- Detailed assessments will focus on local drainage basins while important regional efforts continue
<table>
<thead>
<tr>
<th></th>
<th>TN (mt)</th>
<th>TN FWM (mg/L)</th>
<th>TN UAL (lbs/ac)</th>
<th>TP (mt)</th>
<th>TP FWM (mg/L)</th>
<th>TP UAL (lbs/ac)</th>
<th>Flow (ac-ft x 10^3)</th>
<th>Area (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td>1128.6</td>
<td>1.22</td>
<td>7.1</td>
<td>136.06</td>
<td>0.147</td>
<td>0.856</td>
<td>751.14</td>
<td>350,115</td>
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<td>East</td>
<td>513.5</td>
<td>1.88</td>
<td>5.542</td>
<td>63.82</td>
<td>0.233</td>
<td>0.689</td>
<td>221.77</td>
<td>204,093</td>
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<tr>
<td>Tidal Basins</td>
<td>510.56</td>
<td>0.92</td>
<td>4.529</td>
<td>54.33</td>
<td>0.097</td>
<td>0.482</td>
<td>151.98</td>
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<td>S-4</td>
<td>80.13</td>
<td>2.29</td>
<td>4.187</td>
<td>9.49</td>
<td>0.271</td>
<td>0.496</td>
<td>28.36</td>
<td>42,155</td>
</tr>
</tbody>
</table>

5-Year Average (WY2016 - 2020)

- **Flow**: The flow values are given in acre-feet multiplied by 10^3. For example, the flow for the West region is 751.14 x 10^3 ac-ft.
- **Area**: The area values are given in acres. For example, the area for the West region is 350,115 acres.
Next Steps

- Gather detailed information on focus area
- Perform detailed assessments to identify contributing sources and responsible entities
- Future workshops to discuss findings and recommendations
Watershed Protection Planning Website

Northern Everglades Watershed Protection Plans

Lake Okeechobee Watershed  St. Lucie River Watershed  Caloosahatchee River Watershed

The 2016 Northern Everglades and Estuaries Protection Program (NEEPP; Section 373.4595, F.S.) describes the legislative intent to protect and restore surface water resources and achieve and maintain compliance with water quality standards in the Northern Everglades through a phased, comprehensive and innovative protection program that includes long-term solutions based upon the state’s total maximum daily loads (TMDLs) established in accordance with Section 403.067, F.S. The Northern Everglades watersheds include Lake Okeechobee watershed and the Caloosahatchee and St. Lucie River watersheds and estuaries (see map).

NEEPP requires watershed protection programs to improve the quality, quantity, timing and distribution of water in the Northern Everglades ecosystem. The programs are watershed specific and comprised of research and monitoring, development and implementation of best management practices, refinement of existing regulations, and structural and nonstructural projects, including public works. The programs are driven by FDEP’s Basin Management Action Plans (BMAPs) and supported, in part, by the Watershed Protection Plans (WPPs) developed by the District and integrated with FDEP and FDACS programs to control nutrient sources at the local, subregional, and regional levels.

GEOGRAPHIC AREA

Northern Everglades map:
Map of current Northern Everglades and Estuaries Protection Program boundaries
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  - If you’re participating via phone:
    - *9 Raises Hand
    - *6 Mute/Unmute