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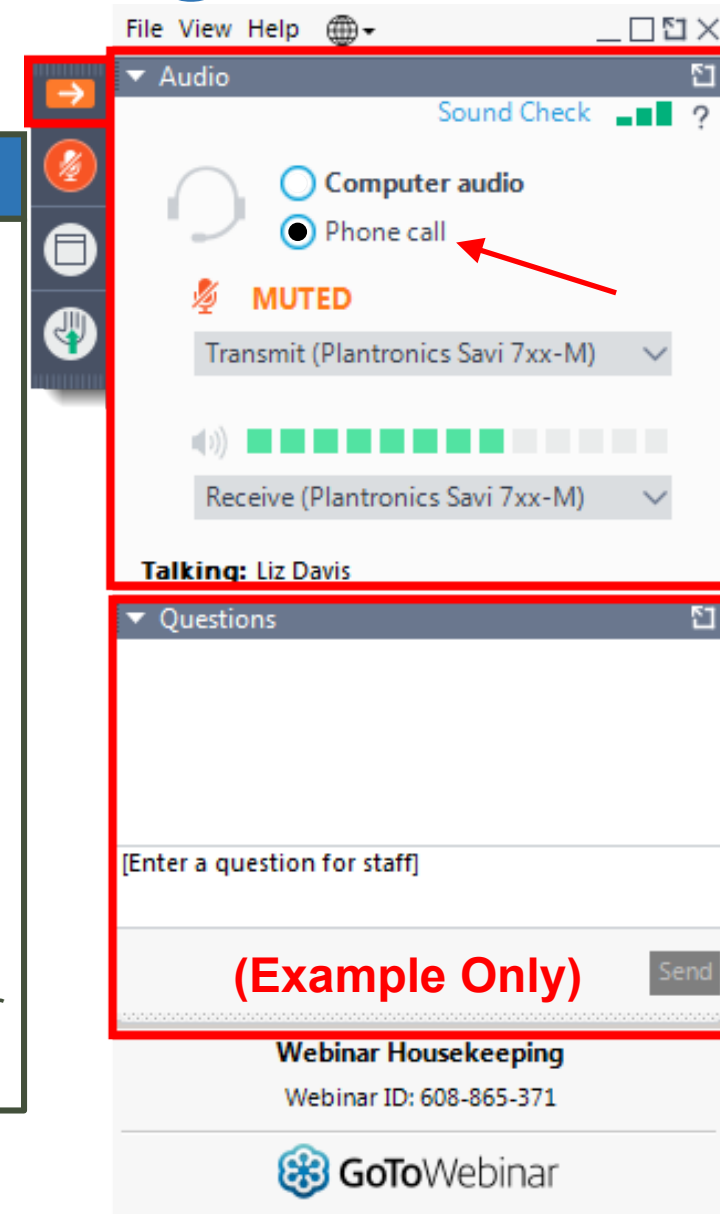
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Indian River Lagoon (IRL) Basin Management Action Plans (BMAPs)

Public Webinar

December 16, 2020



Agenda

- Welcome and Opening Remarks
- State of the Lagoon – Chuck Jacoby, St. Johns River Water Management District (SJRWMD)
- Overview of the Updated BMAPs
- Statewide Annual Report (STAR)
- Scope for Updates to Spatial Watershed Iterative Loading (SWIL) Model
- Next Steps
- Questions, Comments, and Discussion



Updated BMAPs

Overview

- **Executive Summary**
- **Chapter 1.** Background Information
- **Chapter 2.** Modeling, Load Estimates, and Restoration Approach
- **Chapter 3.** Project Zones (Banana River Lagoon [BRL] info listed for entire BMAP area)
- **Chapter 4.** Compliance and Adaptive Management
- **Chapter 5.** References
- **Appendix A.** BMAP Projects Supporting Information
- **Appendix B.** Central IRL Allocation Calculations
- **Appendix C.** Agricultural Enrollment and Reductions (Information provided by FDACS)
- **Appendix D.** Seagrass Analysis
- **Appendix E.** Water Control Districts (WCDs) and Other Special Districts (only for CIRL)



Executive Summary

- Background
 - *Added harmful algal blooms text*
- Total Maximum Daily Loads (TMDLs)
- BMAP
 - *Described future efforts to refine model*
 - *Added details about South IRL (SIRL)*
 - *Added language to emphasize adaptive management*
- Load Reductions



Executive Summary (cont.)

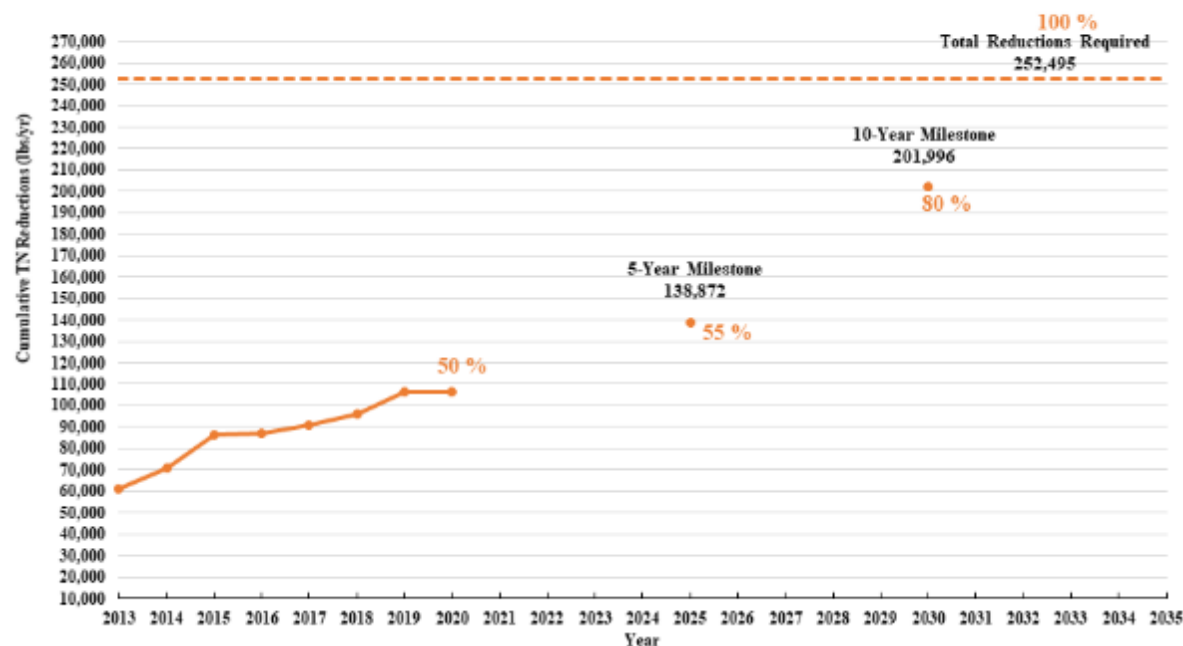
- Source Requirements
- Water Quality Monitoring
- BMAP Costs
- Milestones
 - *Replaced progress charts by Project Zone with charts by BMAP in North IRL (NIRL) and Central (CIRL)*
 - *Milestones adjusted to better reflect project reductions to date, by BMAP*



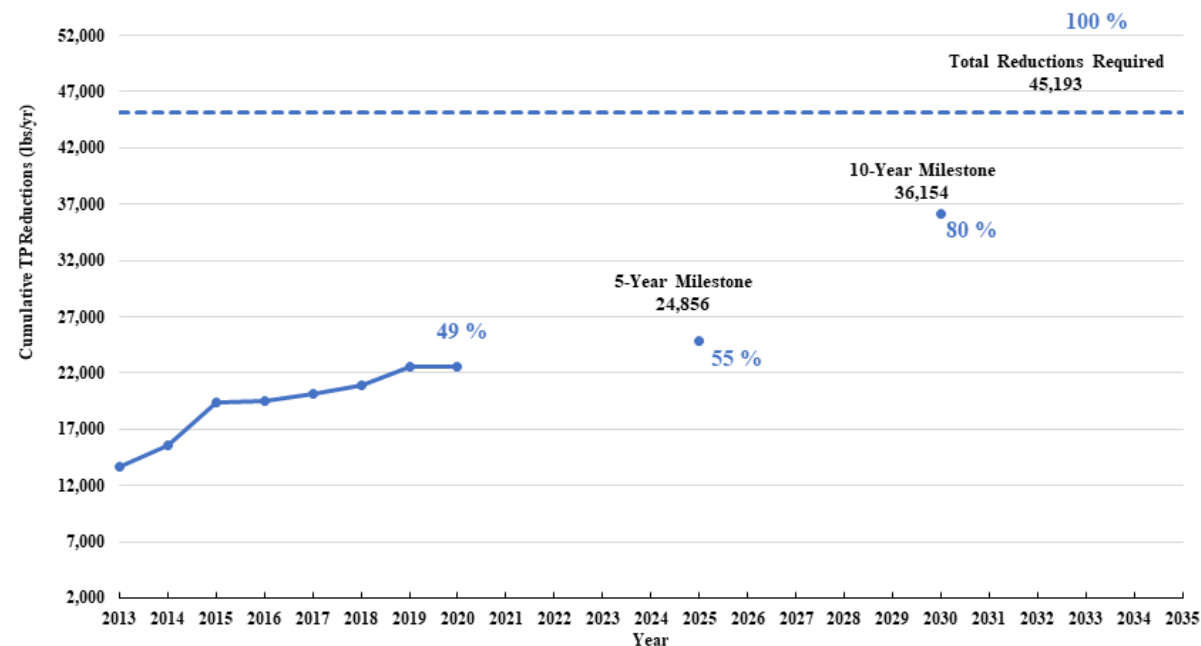
Executive Summary (cont.)

Revised NIRL Milestones

IRL - Northern Indian River Lagoon 2020 TN Project Reductions



IRL - Northern Indian River Lagoon 2020 TP Project Reductions

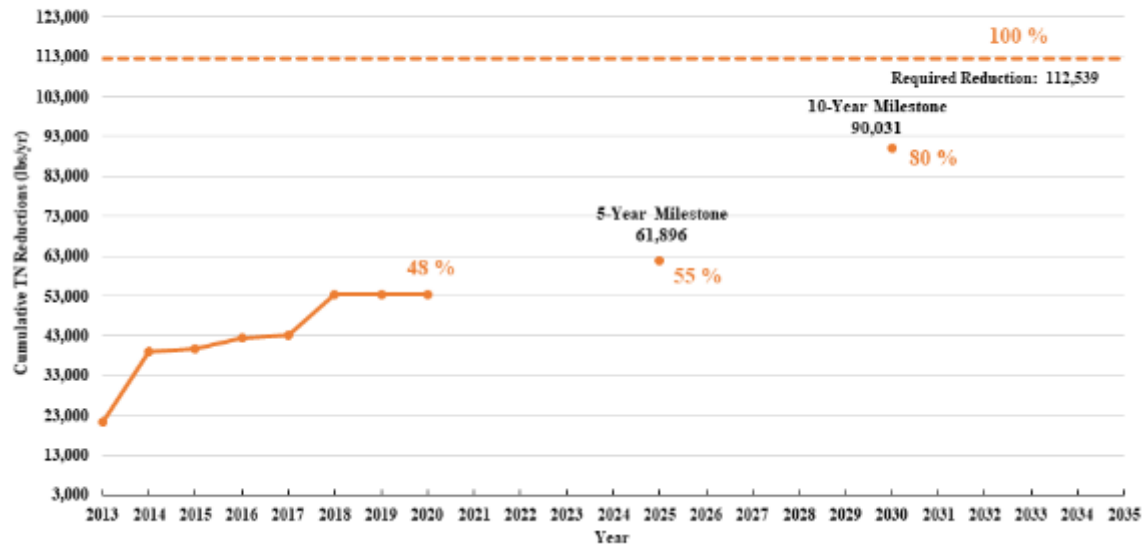




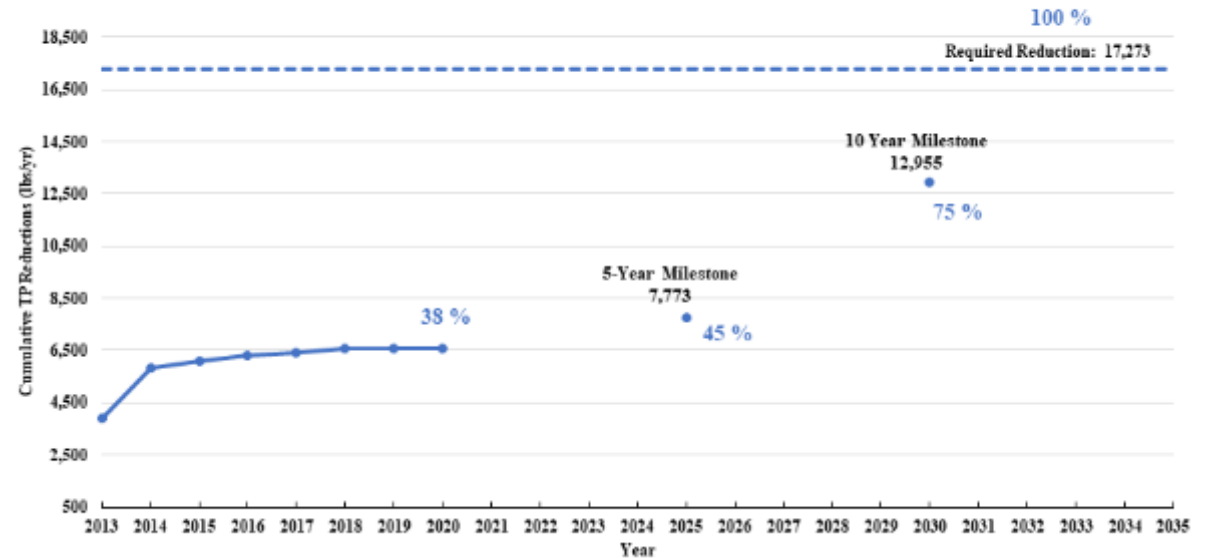
Executive Summary (cont.)

Revised BRL Milestones

IRL - Banana River Lagoon 2020 TN Project Reductions



IRL - Banana River Lagoon 2020 TP Project Reductions

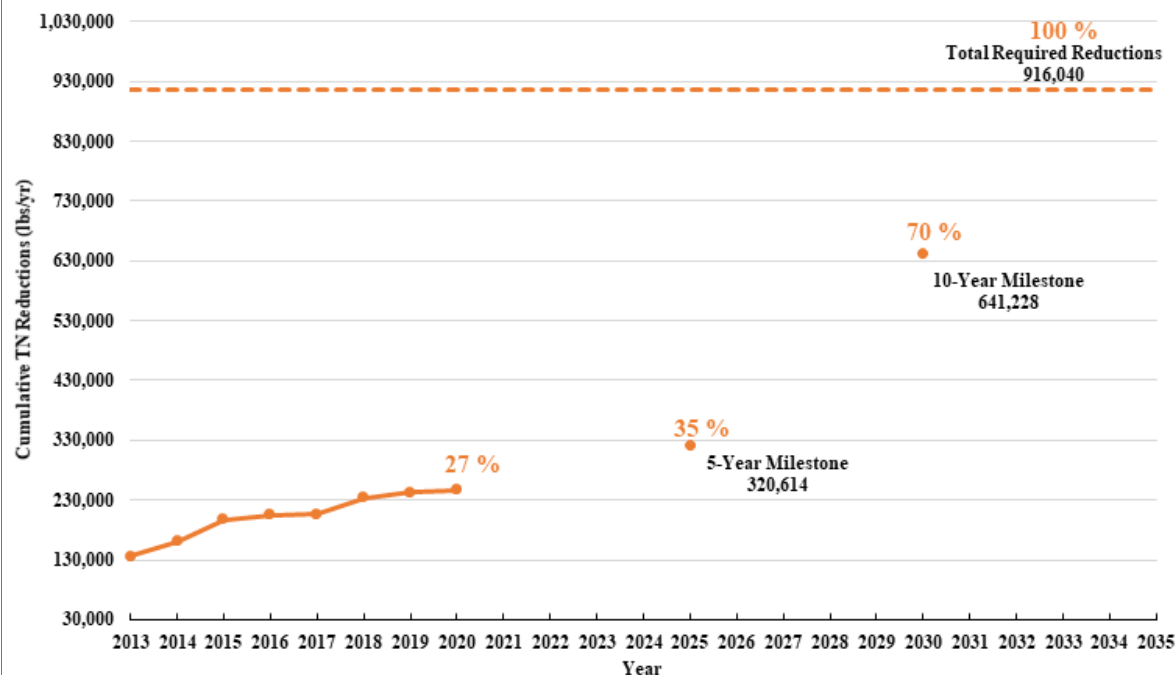




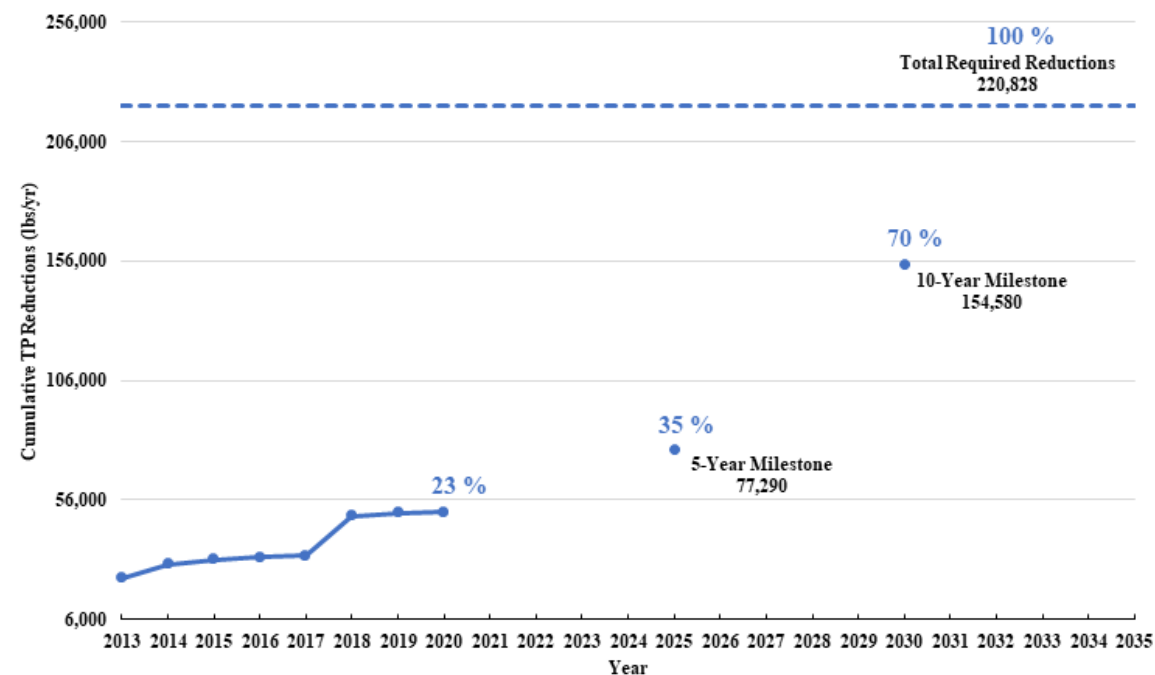
Executive Summary (cont.)

Revised CIRL Milestones

Central Indian River Lagoon 2020 TN Project Reductions



Central Indian River Lagoon 2020 TP Project Reductions





Background Information

Chapter 1

1.1 Water Quality Standards and TMDLs

1.1.1. Central IRL TMDLs

1.2 Central IRL BMAP

1.2.1. Pollutant Sources

1.2.1.1 Agricultural Nonpoint Sources

1.2.1.2 Municipal Separate Storm Sewer Systems (MS4s)

1.2.1.3 Septic Systems

1.2.1.4 Urban Nonpoint Sources

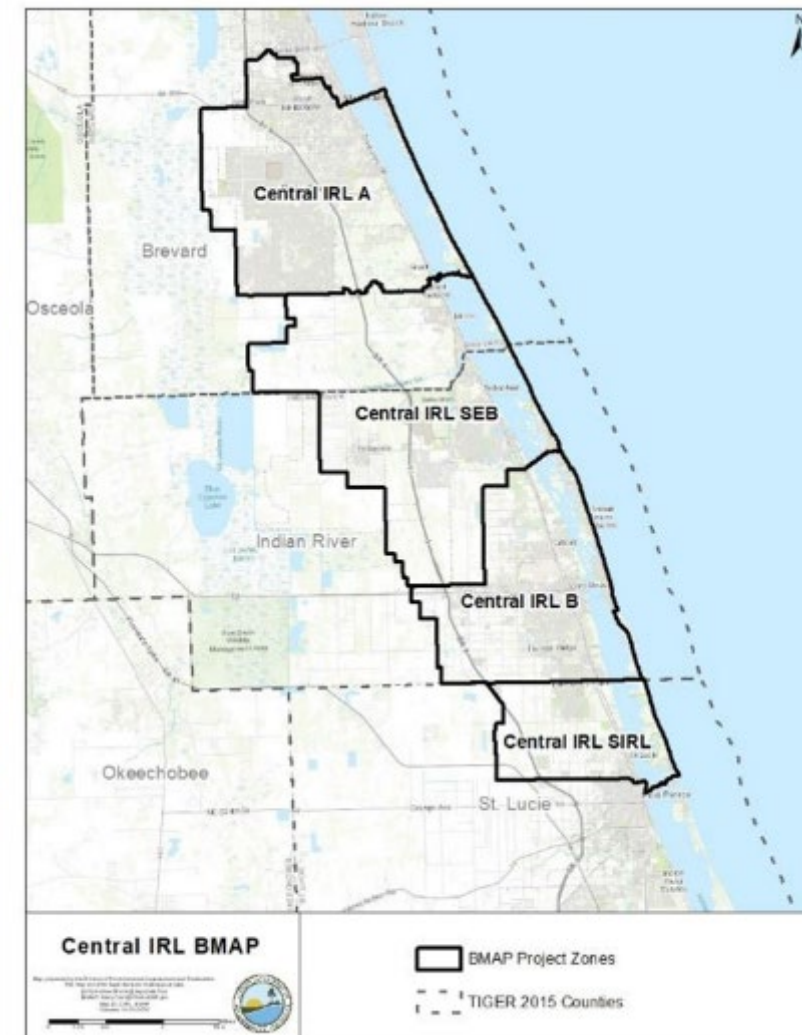
1.2.1.5 Wastewater Treatment Facilities (WWTFs)

1.2.2. Milestones and Tracking Progress

1.2.3. Assumptions

1.2.4. Considerations

1.3 Economic Benefits of the IRL System





Background Information (cont.)

1.2 BMAP

1.2.1. Pollutant Sources

- *Clarified that the BMAP focus is on watershed loading and anthropogenic activity rather than all potential nutrient sources*

1.2.2. Milestones and Tracking Progress

- *Updated milestones*

1.2.3. Assumptions

- *Revised language in one assumption bullet*

1.2.4. Considerations

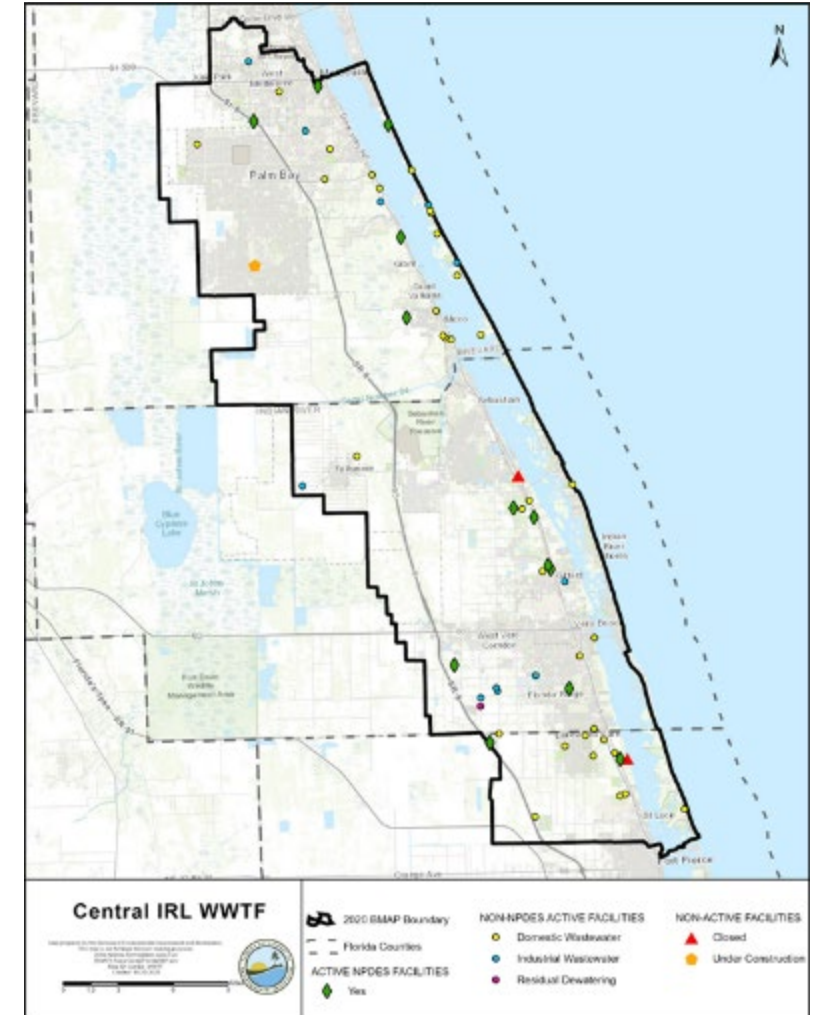
- *Added two new considerations; revised language in three others*



Background Information (cont.)

1.2.1 Pollutant Sources

- Agricultural Nonpoint Sources
 - *Edited text on agricultural monitoring to be more consistent with statute language*
- MS4s
- Septic Systems (onsite sewage treatment and disposal systems [OSTDS])
 - *Revised counts of likely and known septic systems*
- Urban Nonpoint Sources
- WWTFs
 - *Revised map legends*





Background Information (cont.)

1.2.2 Milestones & Tracking Progress

- Updated milestones to be more consistent with reductions achieved to date
 - 2025 milestone:
 - *NIRL: 55 % of TN and TP reductions.*
 - *BRL: 55 % of TN and 45 % TP reductions.*
 - *CIRL: 35 % of TN and TP reductions.*
 - 2030 milestone:
 - *NIRL: 80 % of TN and TP reductions.*
 - *BRL: 80 % of TN and 75 % TP reductions.*
 - *CIRL: 70 % of TN and TP reductions.*
 - 2035 milestone:
 - *100 % of TN and TP reductions.*
- *Clarified that milestones are set for total BMAP reductions*



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Background Information (cont.)

1.2.3 Assumptions

- *Minor edits to language in the relationship between chlorophyll a and seagrass growth*



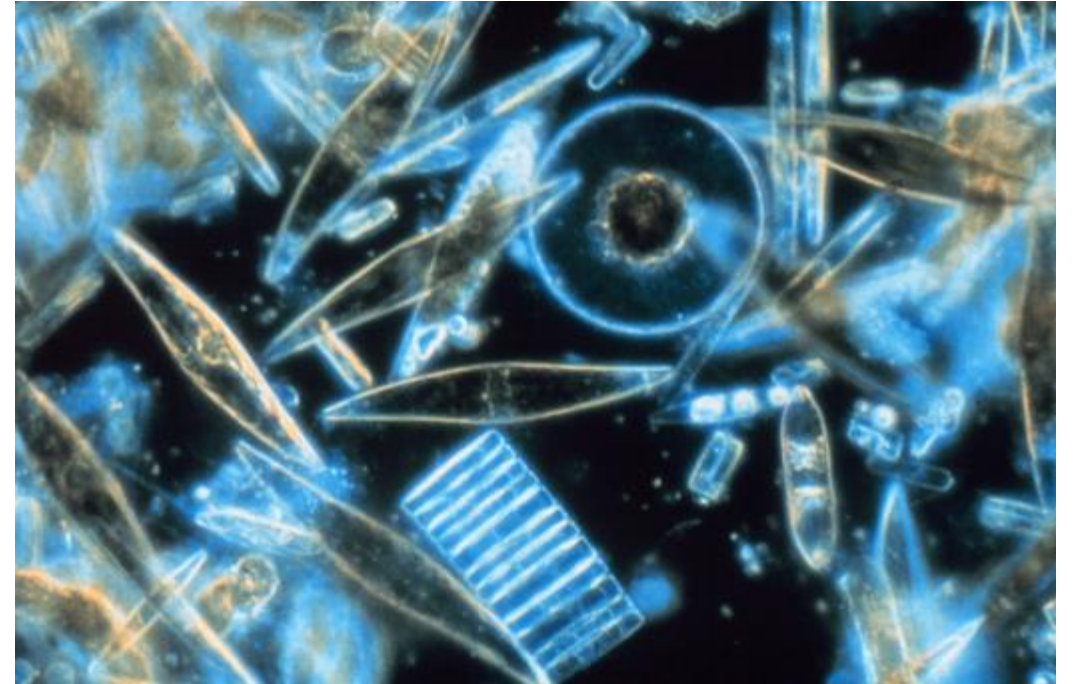
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Background Information (cont.)

1.2.4 Considerations

- Harmful Algal Blooms
 - *Added consideration*
- Land Uses
 - *Refined language to reflect future updates to model efforts*
- Basin Boundaries
- Jurisdictional Boundaries
- SWIL Model
 - *Clarified stakeholders in partnership for model development*
- Community Development District (CDD) Responsibilities



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Background Information (cont.)

1.2.4 Considerations

- Special Districts (water control, improvement, etc.)
- Complexity of the Problem
- Sea Level Rise
 - *Added a consideration*
- Previous Restoration Efforts
- Atmospheric Deposition
 - *Refined language*
- Muck Deposition
- Tributary Water Quality Impairments



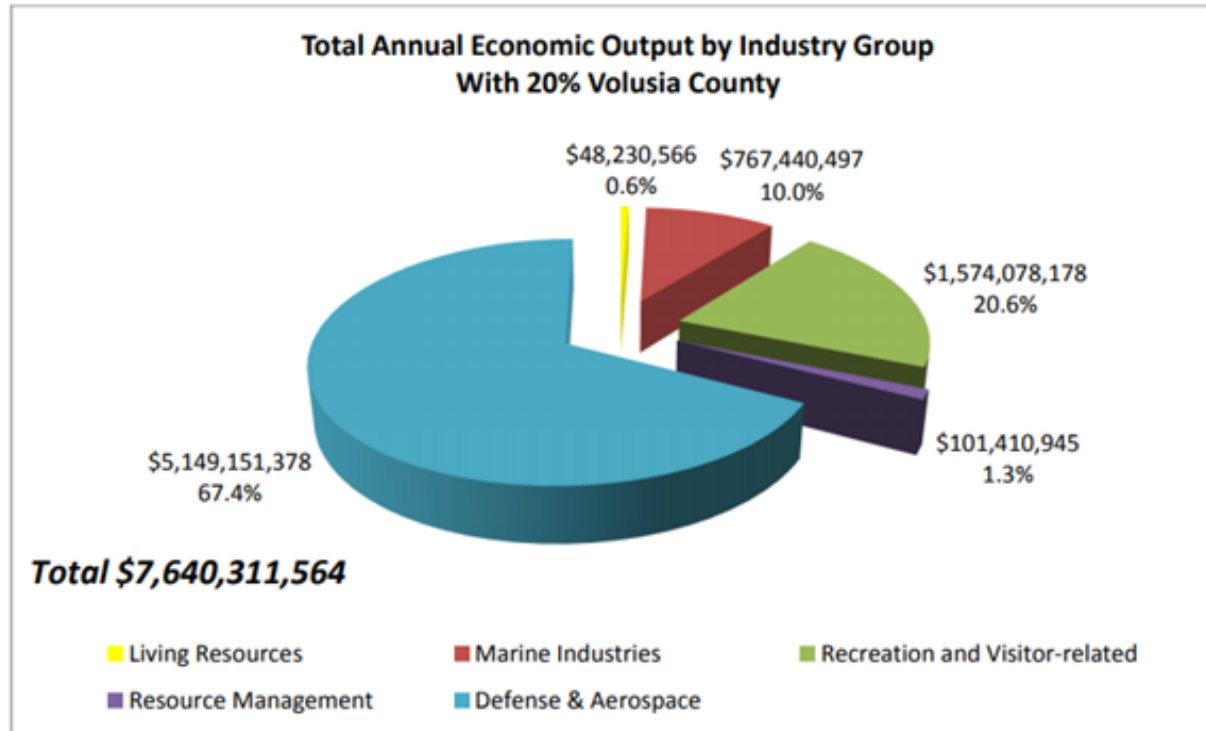
Image Source: https://149466865.v2.pressablecdn.com/wp-content/uploads/2016/09/IRL_Canal-muck-11-12-13.jpg



Background Information (cont.)

1.3 Economic Benefits of the IRL System

- *Minor language refinements*



Note: This graphic includes information from additional counties outside the BMAP areas, but within the IRL Watershed.



Modeling, Load Estimates, and Restoration Approach

Chapter 2

2.1 BMAP Modeling

- 2.1.1. SWIL Modeling
- 2.1.2. SWIL Calibration
- 2.1.3. Allocation Process
- 2.1.4. Project Credit Process

2.2 Calculation of Starting Loads and Allocations

- 2.2.1. Starting Loads and Allocation of Load Reductions
 - 2.2.1.1 Low Priority Ranking Determination
 - 2.2.1.2 Required Reductions

2.3 Basinwide Sources Approach

- 2.3.1. Agriculture
- 2.3.2. Septic Systems
- 2.3.3. Stormwater
- 2.3.4. Wastewater Treatment

2.4 Seagrass and Water Quality Monitoring Plan

- 2.4.1. Objectives
- 2.4.2. Monitoring Parameters, Frequency, and Network
- 2.4.3. Data Management and Assessment
- 2.4.4. Quality Assurance/Quality Control

2.5 Research Priorities

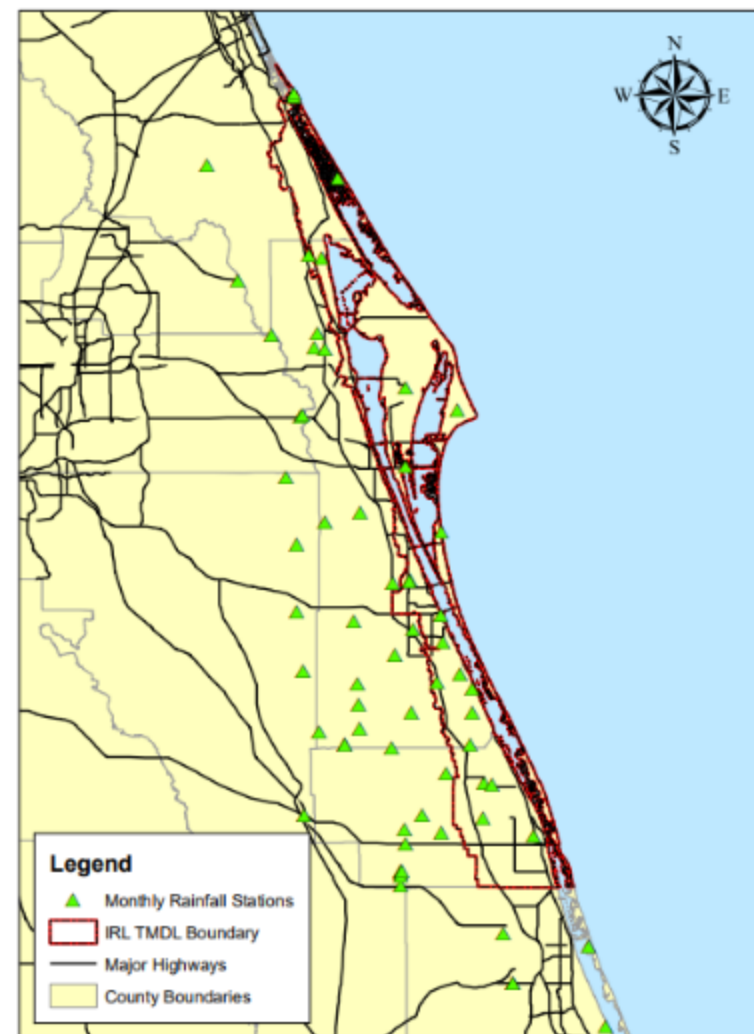


Image Source:

http://publicfiles.dep.state.fl.us/DEAR/BMAP/IndianRiverLagoon/Models/SWIL/SWILPresentation_FDEP_November18_2020_fullversion.pdf



Modeling, Load Estimates, and Restoration Approach (cont.)

2.1 BMAP Modeling

- 2.1.1. SWIL Modeling
 - *Revised language to clarify model background details*
- 2.1.2. SWIL Calibration
 - *Revised language to clarify calibration details*
- 2.1.3. Allocation Process
- 2.1.4. Project Credit Process



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Modeling, Load Estimates, and Restoration Approach (cont.)

2.2 Calculation of Starting Loads and Allocations

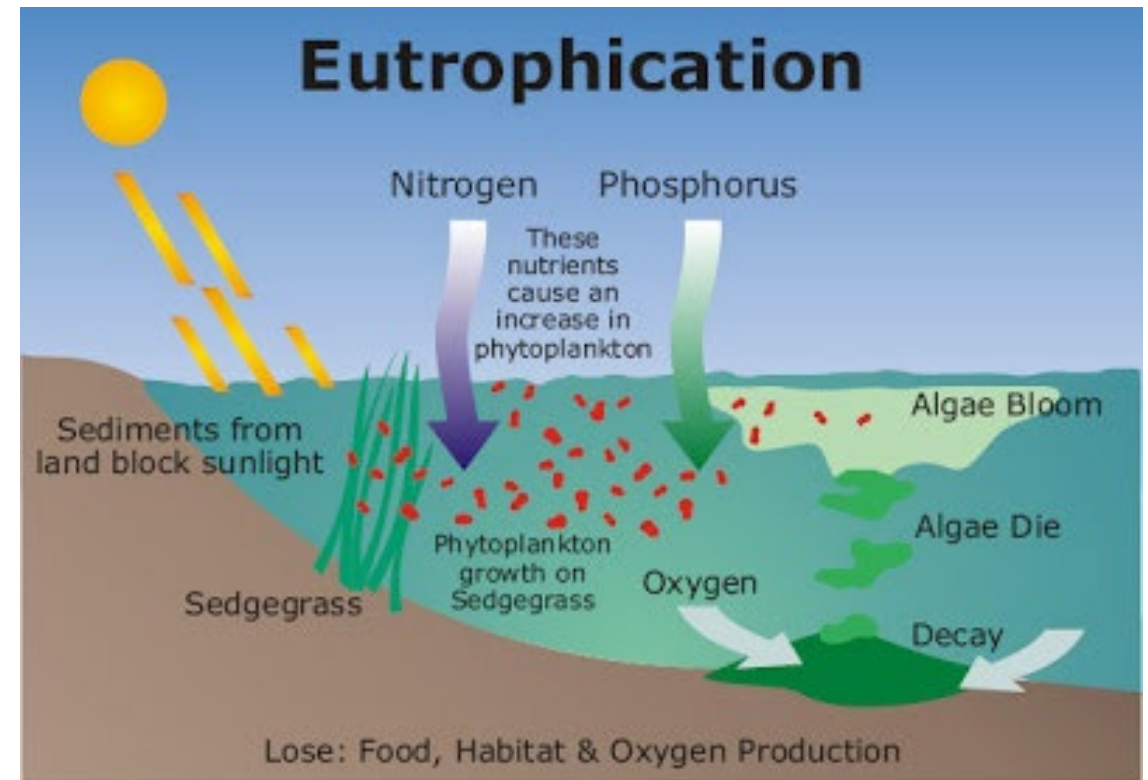
- 2.2.1. Starting Loads and Allocation of Load Reductions
 - *Created a new Appendix B with details on the allocation calculations*
 - *Minor corrections to starting load tables*
 - *Noted which project zones or segment groups were adjusted due to "Natural Load per Acre Approach"*
- 2.2.1.1 Low Priority Ranking Determination
- 2.2.1.2 Required Reductions



Modeling, Load Estimates, and Restoration Approach (cont.)

2.3 Basinwide Sources Approach

- *Added an introductory paragraph*
- 2.3.1. Agriculture
 - *Clarified text on agricultural monitoring to be more consistent with statute language*
- 2.3.2. Septic Systems
 - *Corrected numbers; now consistent with Section 1.2.1.3*
- 2.3.3. Stormwater
- 2.3.4. Wastewater Treatment
 - *Clarified language; further input from DEP permitting staff*



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Modeling, Load Estimates, and Restoration Approach (cont.)

2.4 Seagrass and Water Quality Monitoring Plan

- 2.4.1. Objectives
- 2.4.2. Monitoring Parameters, Frequency, and Network
 - *Made parameters consistent across BMAPs*
- 2.4.3. Data Management and Assessment
- 2.4.4. Quality Assurance/Quality Control



Modeling, Load Estimates, and Restoration Approach (cont.)

2.5 Research Priorities

- *Extended goals of coordinated monitoring to include insights into algal toxin production and release*
- *Removed "testing/verifying seagrass depth regression equations"*



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Project Zones (Projects)

Chapter 3

CIRL

3.1 Project Zone A

3.2 Project Zone SEB

3.3 Project Zone B

3.4 Project Zone SIRL

NIRL

3.1 Project Zone A

3.2 Project Zone B

BRL

- *BRL summary and projects listed for entire BMAP area*

**All project tables included in Chapter 3*



Project Zones (cont.)

- *Clarified that land use table excludes acres associated with lagoon water; however, note that the IRL Load Estimation Tool (LET) includes all water acres*
- *Added progress charts by project zone (no change in BRL)*
- *Explained reason for several projects with "canceled" status; projects missing from Pollutant Load Screening Model (PLSM), now considered in the SWIL Model*
- *Corrected set of transposed credit numbers in two CIRL projects*
- *Reassigned project FDOT4-34 from CIRL-SIRL to CIRL-B*



Compliance and Adaptive Management

Chapter 4

4.1 Future Growth

4.2 Compliance

4.2.1 TMDL Compliance

4.2.2 BMAP Compliance

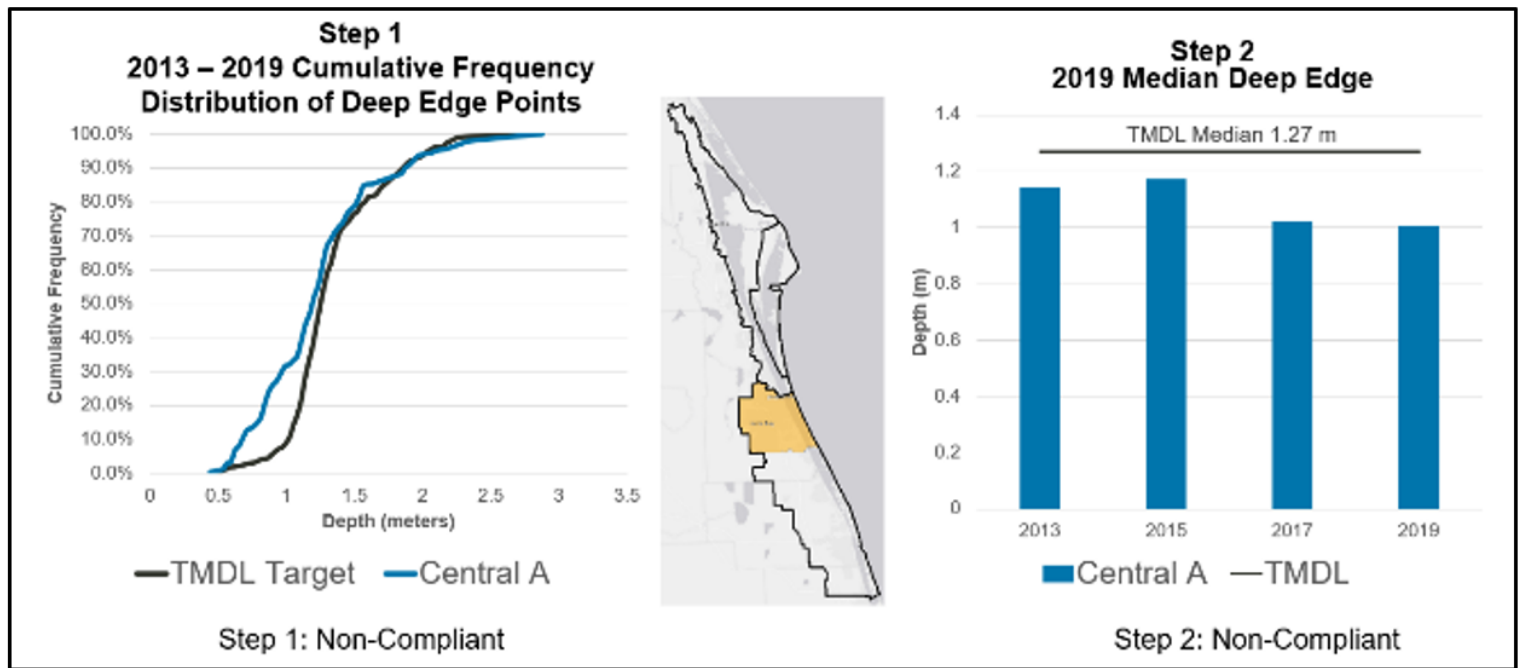


Figure 21. CIRL Project Zone A seagrass evaluation results for Compliance Step 1 and Step 2



Compliance and Adaptive Management (cont.)

- *Clarified that seagrass evaluation is for compliance with the TMDLs*
- *Added number of years seagrass passed in the compliance Step 2 tables*

Table 27. Seagrass compliance results, Step 1

Step 1	CIRL A	CIRL SEB	CIRL B
2007 - 2013	Pass	Pass	Pass
2009 - 2015	Pass	Pass	Pass
2011 - 2017	Fail	Fail	Fail
2013 - 2019	Fail	Fail	Fail

Table 28. Summary of seagrass compliance results, Step 2

Note: Parantheses indicate number of years passing of those assessed for the compliance period of record.

Step 2	CIRL A	CIRL SEB	CIRL B
2007 - 2013	Fail (2 of 4)	Fail (2 of 4)	Fail (2 of 4)
2009 - 2015	Fail (1 of 4)	Fail (1 of 4)	Fail (1 of 4)
2011 - 2017	Fail (0 of 4)	Fail (0 of 4)	Fail (1 of 4)
2013 - 2019	Fail (0 of 4)	Fail (0 of 4)	Fail (0 of 4)

- *Added Subsection 4.2.2 BMAP Compliance*
 - *Clarified that milestones apply to the total BMAP required reductions; entities must meet their assigned reductions by 2035*



Appendices

Appendix A. BMAP Projects Supporting Information

- Description of project statuses and usage of terms

Appendix B. Central IRL Allocation Calculations

- Description of allocation calculations, including detailed tables

Appendix C. Agricultural Enrollment and Reductions

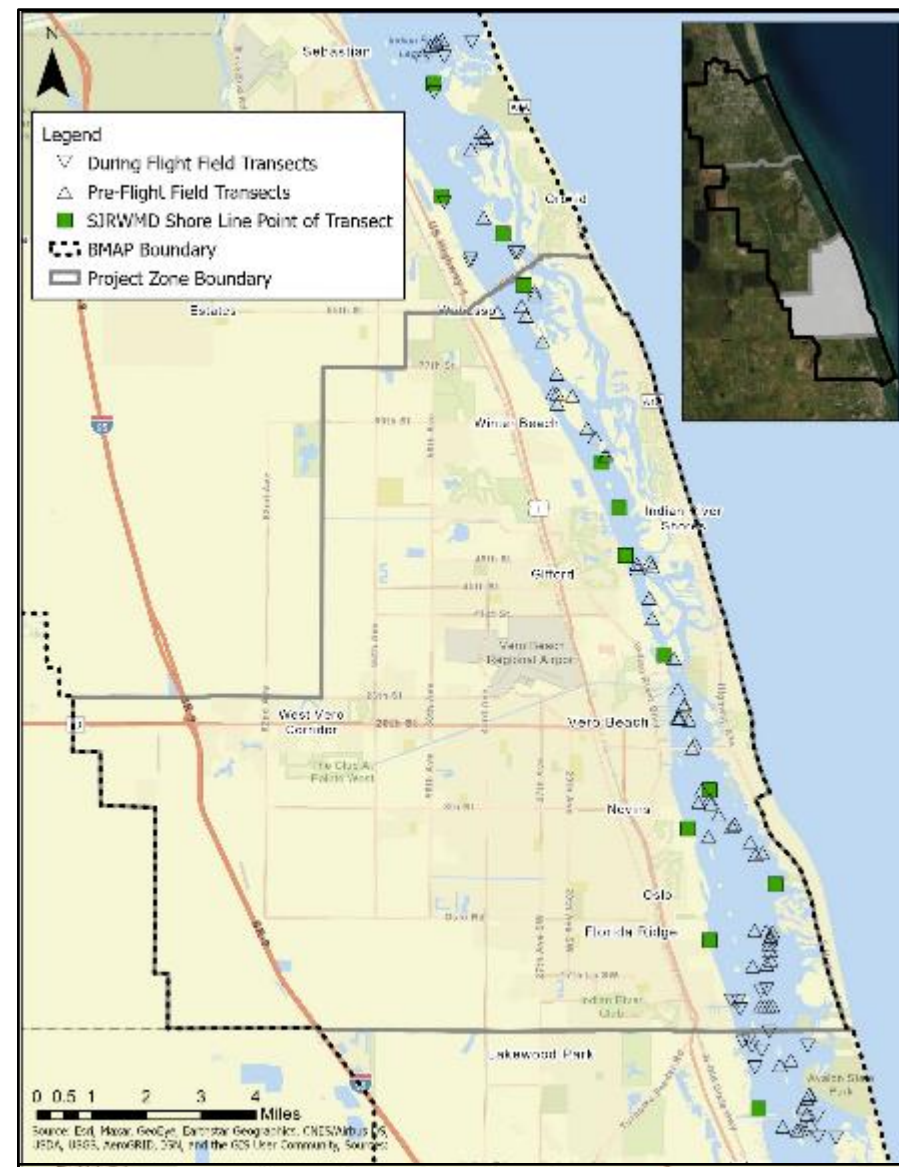
- Information provided by FDACS
- Unenrolled ag characterization and other summaries

Appendix D. Seagrass Analysis

- Description of background and process
- Maps of transect locations

Appendix E. WCDs and Other Special Districts (CIRL Only)

- Description and map of each special district
- List of BMAP commitments and annual reporting requirements





Appendix B

Central IRL Allocation Calculations

Table B-1. Central IRL starting loads from model

Project Zone	Area (Acres)	TN Starting Load (lbs/yr)	TP Starting load (lbs/yr)
A	106,926	616,171	85,081
SEB	131,576	762,595	96,865
B	77,252	567,009	78,837
SIRL	39,672	267,636	39,232



Table B-2. Central IRL BMAP TMDL Required Reduction Percentage

WBIDs	Project Zone	% TN Reduction	% TP Reduction
2936A	A	56	48
5003D	SEB	56	48
5003B & 5003C	B	56	48
3190, 3190A, 3163A, & 3163	SIRL	36	58

Table B-3. Central IRL load reductions – starting load * TMDL Required Reduction Percentage



Project Zone	TN Reduction (lbs/yr)	TN Allocation (lbs/yr)	TP Reduction (lbs/yr)	TP Allocation (lbs/yr)
A	345,056	271,115	40,839	44,242
SEB	427,053	335,542	46,495	50,370
B	317,525	249,484	37,842	40,995
SIRL	96,349	171,287	22,755	16,477



Appendix B

Central IRL Allocation Calculations

Table B-4. Central IRL allowable load per acre from natural loading

Project Zone	Natural	Area (Acres)	TN Natural Lands Load (lbs/yr)	TP Natural Lands Load (lbs/yr)	Natural TN Load Per Acre (lbs/ac/yr)	Natural TP Load Per Acre (lbs/ac/yr)
A	Natural Lands	39,344	129,927	14,198	3.30	0.36
SEB	Natural Lands	66,299	251,765	25,077	3.80	0.38
B	Natural Lands	19,726	69,618	7,981	3.53	0.40
SIRL	Natural Lands	14,444	54,669	6,083	3.78	0.42

Table B-5. Central IRL allowable load per acre from total allocation

Project Zone	Allowable TN Load Per Acre	Natural TN Load Per Acre (LPA)	Is Allowable TN LPA Less than Natural TN LPA?	Allowable TP LPA	Natural TP LPA	Is Allowable TP LPA Less than Natural TP LPA?	Result
A	2.54	3.30	TRUE	0.41	0.36	FALSE	Use adjustment for TN but no adjustment for TP
SEB	2.55	3.80	TRUE	0.38	0.38	FALSE	Use adjustment for TN but no adjustment for TP
B	3.23	3.53	TRUE	0.53	0.40	FALSE	Use adjustment for TN but no adjustment for TP
SIRL	4.32	3.78	FALSE	0.42	0.42	TRUE	No adjustment for TN but use adjustment for TP



Questions?



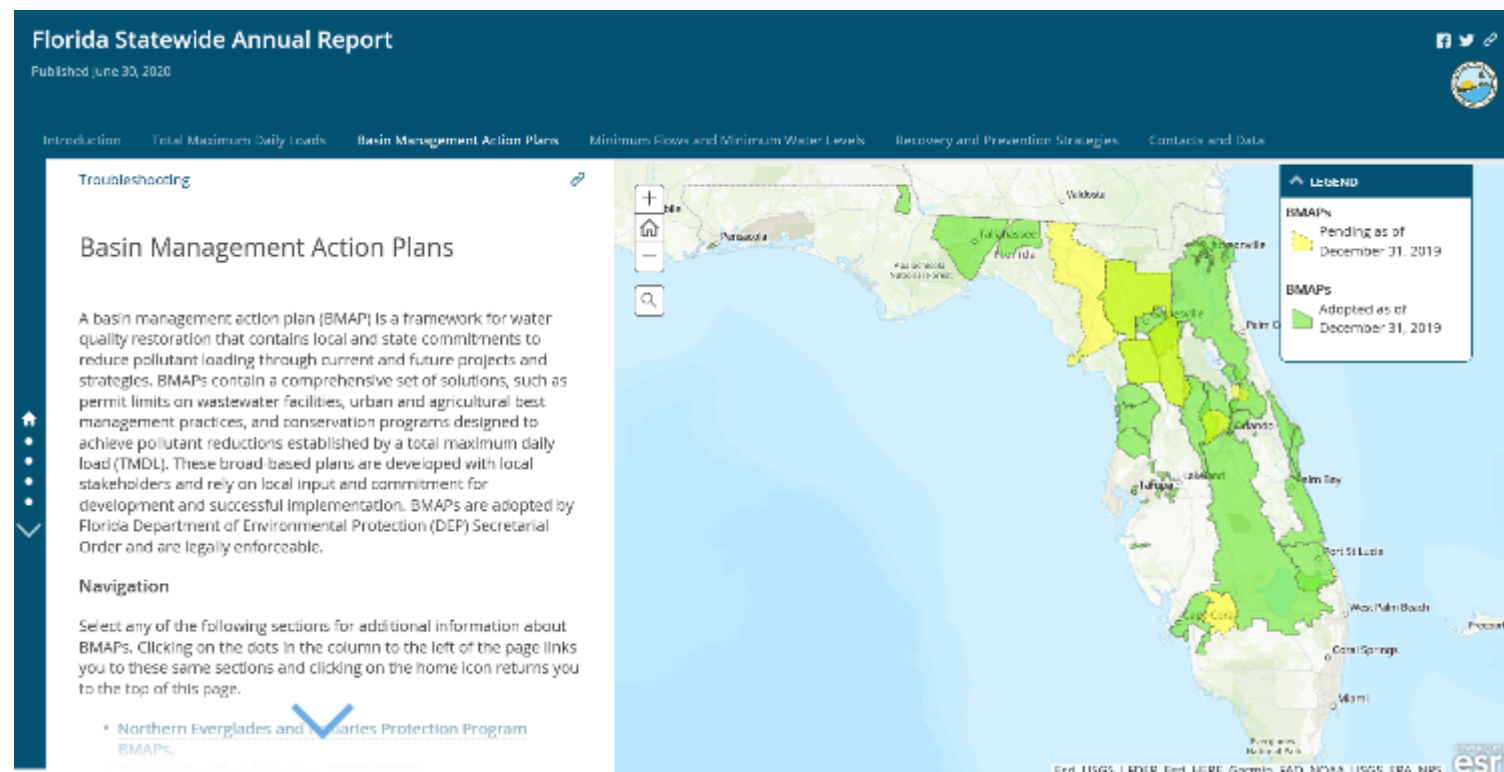
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Statewide Annual Report (STAR)

Reminder

- Monday, November 16th update requests were sent out
- Opportunity to include new/updated projects
- New instructional videos!
- Information due **Friday, January 15th**



<https://www.floridadep.gov/star>



SWIL Model Scope Updates

We want your feedback!

- What should be updated?
 - Model input layers
 - Watershed boundaries
 - Model period of record
 - Other considerations
- Review relevant SWIL Model information:
 - <http://publicfiles.dep.state.fl.us/DEAR/BMAP/IndianRiverLagoon/Models/SWIL/>
- Submit feedback by **February 12, 2021**



Next Steps

- Provide BMAP reports to DEP Secretary
 - BMAP reports also available on the FTP site
- STAR project updates due **January 15, 2021**
- Submit input on future SWIL revisions by **February 12, 2021**
- Schedule annual meeting in 2021

Contact Information



**North IRL (NIRL)
&
Banana River Lagoon (BRL)**

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