



Webinar Housekeeping

Attendee Participation

Open your control panel

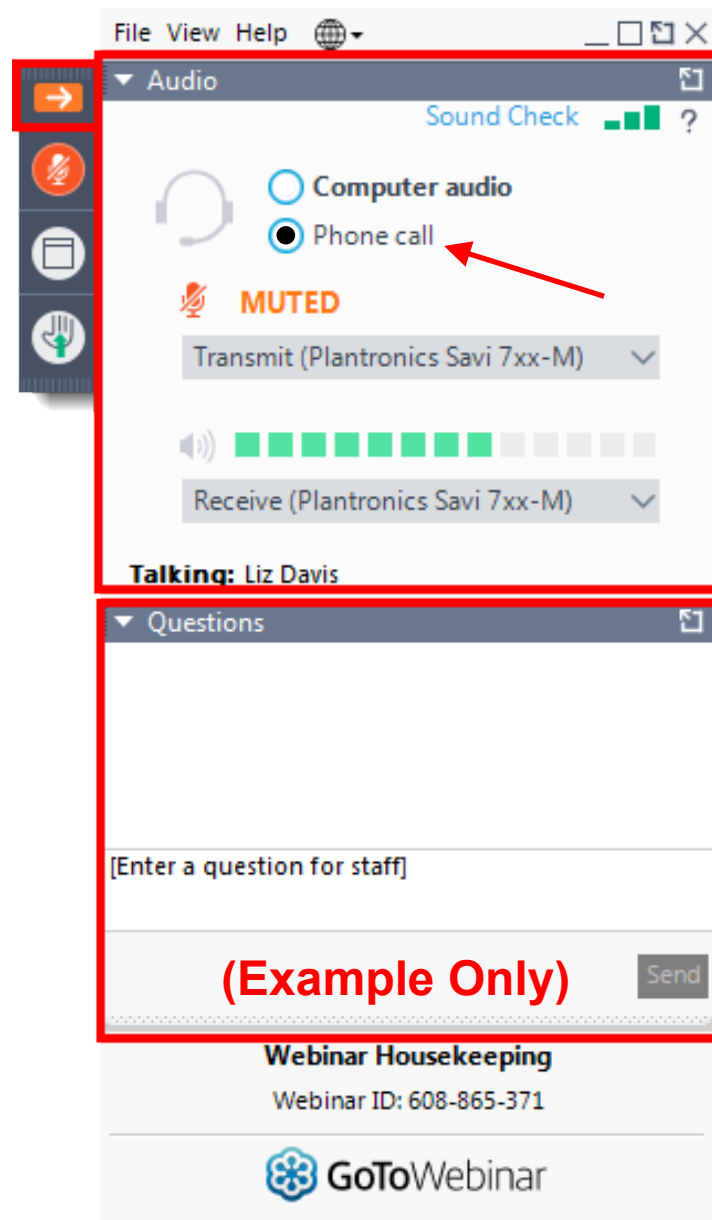
Join audio:

- Choose **Phone Call** and dial using the information provided
- Or choose **Computer Audio** to use your computer's speakers for audio
- Attendee audio will be muted

Submit questions and comments via the Questions panel

If viewing this webinar as a group, please provide a list of attendees via the Questions panel

Note: Today's presentation is being recorded and will be provided on the ftp after the webinar.





Lake Okeechobee Basin Management Action Plan (BMAP) Annual Meeting

February 9, 2021



Agenda

- *Background*
- *Florida Department of Agriculture and Consumer Services (FDACS) Updates*
- *South Florida Water Management District (SFWMD) Updates*
- *Annual Progress*
- *Statewide Annual Report*



Background

Lake Okeechobee Total Maximum Daily Load (TMDL)

Lake Okeechobee BMAP



Background Information

Lake Okeechobee TMDL

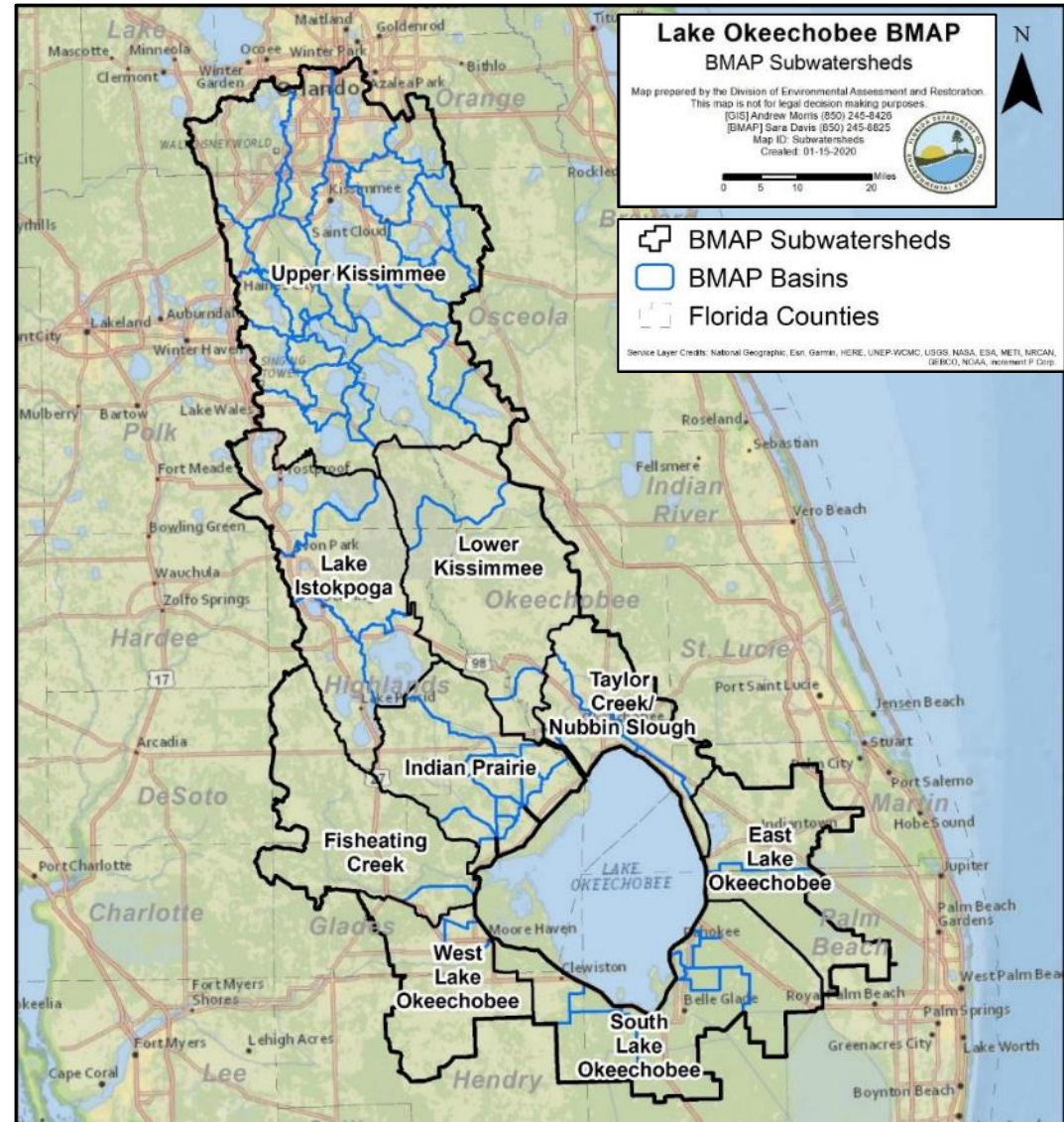
- TMDL for total phosphorus (TP) adopted in 2001
- TMDL is a TP load of 140 metric tons per year (mt/yr):
 - 35 mt/yr fall directly on the lake through atmospheric deposition
 - Remaining 105 mt/yr allocated to the entire Lake Okeechobee Watershed (LOW)
- TMDL attainment calculated using a 5-year rolling average of the monthly loads calculated from measured flow and concentration values



Background Information

Lake Okeechobee BMAP

- BMAP initially adopted in December 2014
- 5-Year Review December 2019
- Updated BMAP adopted in February 2020





Stakeholders/Participants

Lake Okeechobee BMAP

Type of Entity	Participant		
Counties	•Glades •Hendry •Highlands	•Martin •Okeechobee •Orange	•Osceola •Palm Beach •Polk
Municipalities	•City of Avon Park •City of Edgewood •City of Kissimmee	•City of Okeechobee •City of Orlando	•City of Sebring •Town of Windermere
Government entities and special districts	•Avon Park Air Force Range •Okeechobee Utility Authority •Istokpoga Marsh Watershed Improvement District	•Reedy Creek Improvement District •Spring Lake Improvement District	•South Florida Conservancy District •Valencia Water Control District
Agencies	•Florida Department of Agriculture and Consumer Services (FDACS)	•South Florida Water Management District (SFWMD)	•Florida Department of Transportation (FDOT) District 1 •FDOT District 4 •FDOT District 5



FDACS Updates

Yesenia Escribano

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(OAWP)*

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SFWMD Updates

Elizabeth Caneja

Lead Project Manager

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Annual Progress

Monitoring Network Revisions

Targeted Restoration Area (TRA) Evaluation Update

Subwatershed Goals

Status of Projects

Other Restoration Efforts



Monitoring Network Revisions

- Objectives, Parameters, and Frequency
 - Primary Objective: track trends in TP loads and concentrations by subwatershed and basin
 - Secondary Objectives: track total nitrogen (TN), better focus management efforts, measure the effectiveness of individual or collective projects

- Monitoring Network

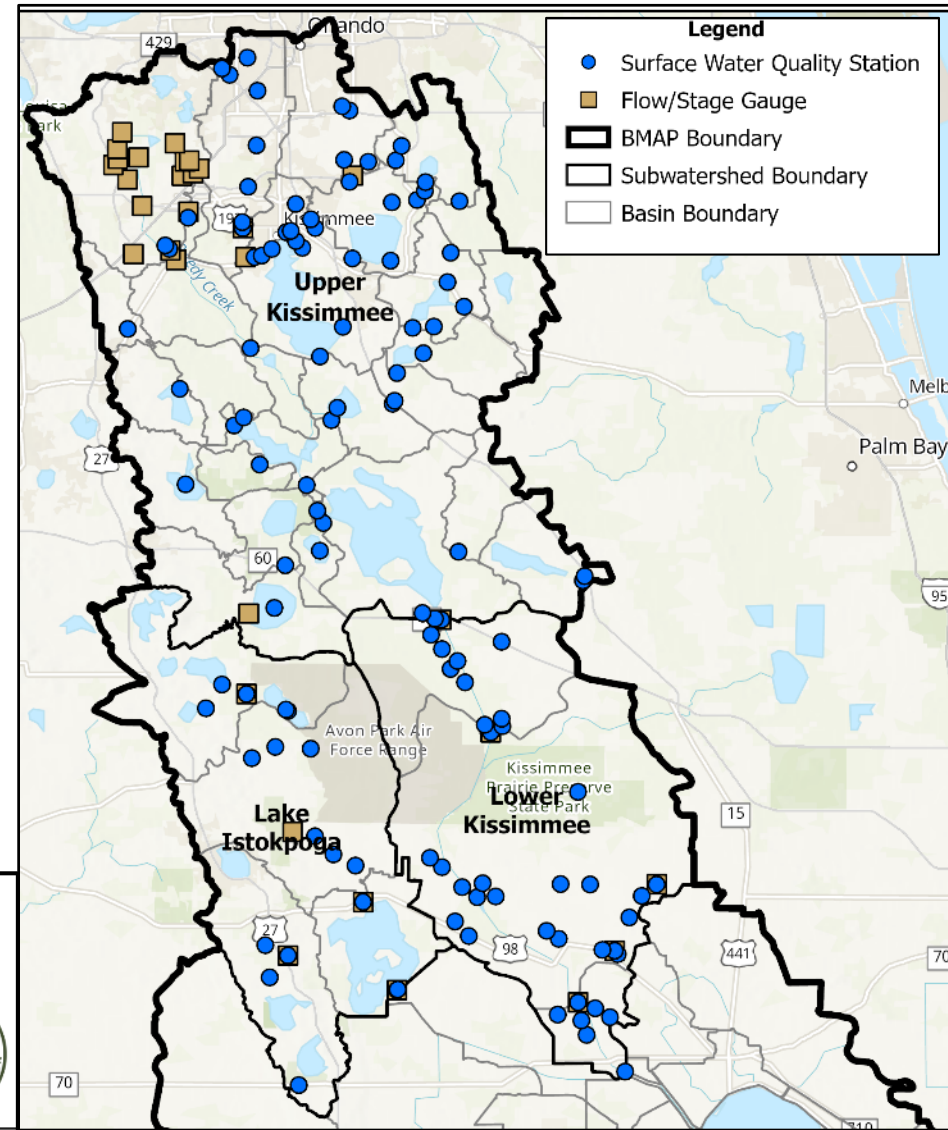
- 309 stations, including representative of basins
 - Tiered network, 3 tiers
 - Monitored by: local entities, DEP, SFWMD, USGS

Map	Subwatershed	Water Quality		Flow
		Representative	Other	
North	Upper Kissimmee	25	44	22
	Lake Istokpoga	5	15	5
	Lower Kissimmee	3	33	5
Central	Fisheating Creek	2	16	4
	Indian Prairie	11	28	5
	Taylor Creek/Nubbin Slough	5	34	9
South	West Lake Okeechobee	3	6	1
	South Lake Okeechobee	9	4	4
	East Lake Okeechobee	2	7	2
Total		65	187	57



Monitoring Network Revisions

- Upper Kissimmee
 - 25 representative
 - 2 more needed
 - 44 other water quality
 - 22 flow
- Lake Istokpoga
 - 5 representative
 - 15 other water quality
 - 5 flow
- Lower Kissimmee
 - 3 representative
 - 33 other water quality
 - 5 flow



Lake Okeechobee - North BMAP Monitoring

Summary

Map prepared by Division of Environmental Assessment and Restoration,
This map is not for legal decision making purposes.
[DDO] Evan Martin (850)245-7544
Map ID: Monitoring_SB712
Created: 02-08-2021



0 5 10 20 Miles



2/9/2021



Monitoring Network Revisions

- **Fisheating Creek**
 - 2 representative

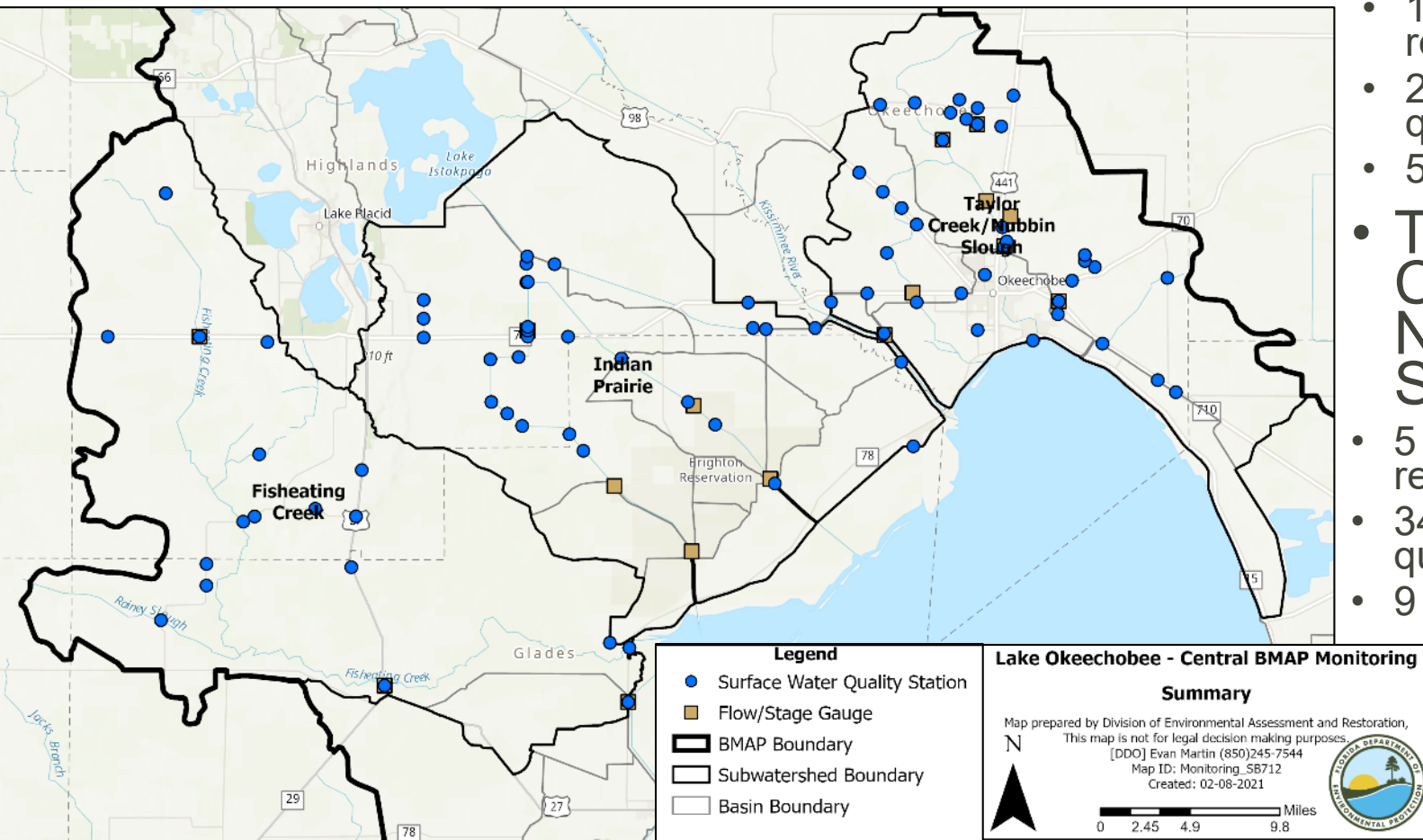
- 16 other water quality
- 4 flow

- **Indian Prairie**

- 11 representative
- 28 other water quality
- 5 flow

- **Taylor Creek/Nubbin Slough**

- 5 representative
- 34 other water quality
- 9 flow





Monitoring Network Revisions

- West Lake Okeechobee
 - 3 representative

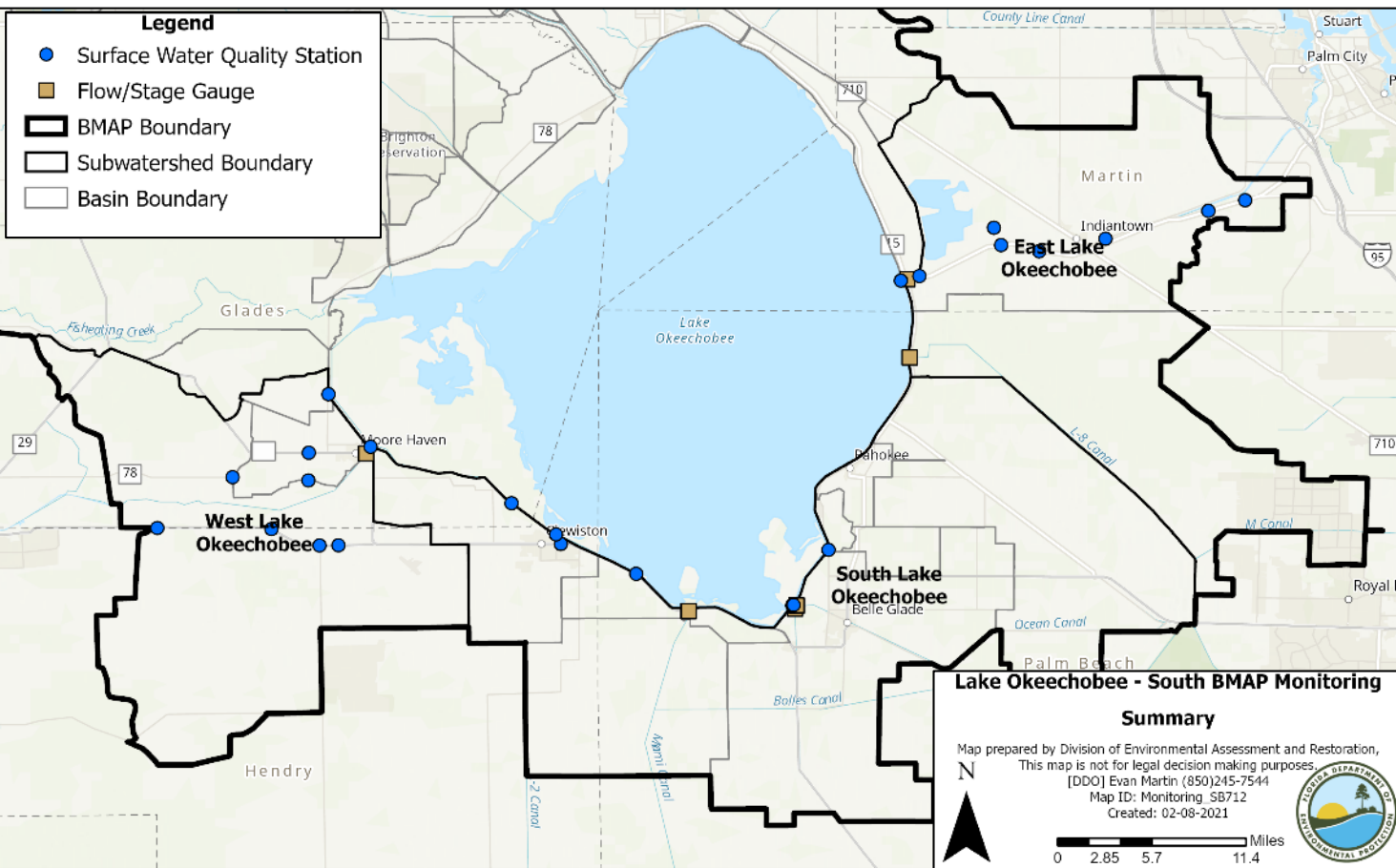
- 6 other water quality
- 1 flow

- South Lake Okeechobee

- 9 representative
- 4 other water quality
- 4 flow

- East Lake Okeechobee

- 2 representative
- 7 other water quality
- 2 flow





TRA Evaluation Update

Approach

- Overview

- Used measured data to evaluate TP and TN concentrations, as well as flow
- Compared with benchmarks to identify highest priority basins
 - Benchmarks not intended to measure progress towards restoration; only to prioritize resources

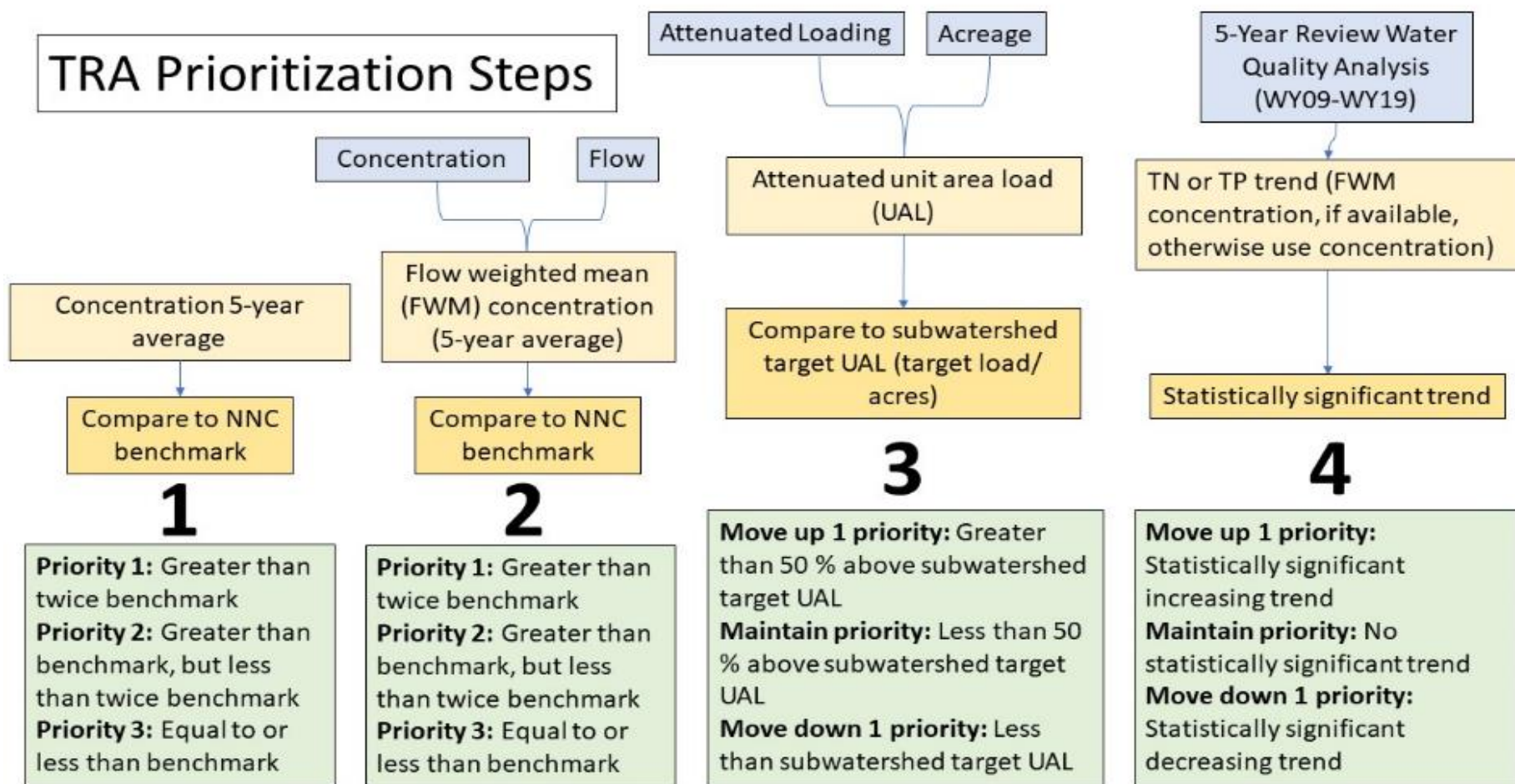
- Evaluation

- Assessed and prioritized systematically



TRA Evaluation Update

Approach





TRA Evaluation Update

Process

- Obtained data from:
 - Watershed Information Network (WIN)
 - Draft 2021 South Florida Environmental Report (SFER)
 - SFWMD
- Calculated total nitrogen (TN), where needed
 - Used measured data for nitrate + nitrite and total Kjeldahl nitrogen (TKN)



TRA Evaluation Update

Process Updates

- Updated evaluation period Water Year (WY) 2016-2020
 - Dropped WY2014-2015 and added WY2019-2020
- Results noted as “insufficient data” indicate that no data were collected from that station in at least one of the five WYs



TRA Evaluation Results

Subwatershed	Basin	WY14-WY18 TN	WY16-WY20 TN	WY14-WY18 TP	WY16-WY20 TP
East Lake Okeechobee	C-44/Basin 8/S-153	1	1	1	1
East Lake Okeechobee	L-8	1	1	1	1
Fisheating Creek	Fisheating Creek/L-61	1	2	1	1
Fisheating Creek	Nicodemus Slough North	1	3	3	2
Indian Prairie	C-40	1	1	1	1
Indian Prairie	C-41	1	1	1	1
Indian Prairie	C-41A	1	1	1	1
Indian Prairie	L-48	2	2	1	1
Indian Prairie	L-49	3	2	3	3
Indian Prairie	L-59E	1	1	2	1
Indian Prairie	L-59W	2	2	2	2
Indian Prairie	L-60E	2	2	1	1
Indian Prairie	L-60W	1	1	1	2
Indian Prairie	L-61E	1	2	1	1
Indian Prairie	S-131	3	3	2	2
Lake Istokpoga	Arbuckle Creek	3	Insufficient Data	3	Insufficient Data
Lake Istokpoga	Josephine Creek	Insufficient Data	Insufficient Data	3	Insufficient Data
Lake Istokpoga	Lake Arbuckle	3	Insufficient Data	3	Insufficient Data
Lake Istokpoga	Lake Istokpoga	1	1	2	1
Lower Kissimmee	Kissimmee River	Insufficient Data	Insufficient Data	3	Insufficient Data
Lower Kissimmee	S-65A	3	Insufficient Data	3	3
Lower Kissimmee	S-65E	3	3	1	1
South Lake Okeechobee	715 Farms (Culv 12A)	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data
South Lake Okeechobee	East Beach DD (Culv 10)	1	1	2	1
South Lake Okeechobee	East Shore DD (Culv 12)	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data
South Lake Okeechobee	S2	1	1	2	1
South Lake Okeechobee	S-3	1	1	3	1
South Lake Okeechobee	S-4	1	1	1	1
South Lake Okeechobee	S-5A Basin (S-352-WPB Canal)	2	1	2	2
South Lake Okeechobee	South FL Conservancy DD (S-236)	1	1	3	3
South Lake Okeechobee	South Shore/ So. Bay DD (Culv 4A)	2	1	2	2



Results, continued

Subwatershed	Basin	WY14-WY18 TN	WY16-WY20 TN	WY14-WY18 TP	WY16-WY20 TP
Taylor Creek/Nubbin Slough	S-133	1	1	1	1
Taylor Creek/Nubbin Slough	S-135	1	1	1	1
Taylor Creek/Nubbin Slough	S-154	1	1	1	1
Taylor Creek/Nubbin Slough	S-154C	1	1	1	1
Taylor Creek/Nubbin Slough	S191	1	1	1	1
Upper Kissimmee	Alligator Lake	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data
Upper Kissimmee	Boggy Creek	3	Insufficient Data	2	3
Upper Kissimmee	Catfish Creek	3	Insufficient Data	3	Insufficient Data
Upper Kissimmee	East Lake Tohopekaliga	3	Insufficient Data	3	3
Upper Kissimmee	Horse Creek (closed basin)	3	3	3	Insufficient Data
Upper Kissimmee	Lake Conlin (closed basin)	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data
Upper Kissimmee	Lake Cypress	3	Insufficient Data	3	Insufficient Data
Upper Kissimmee	Lake Gentry	Insufficient Data	Insufficient Data	3	3
Upper Kissimmee	Lake Hart	Insufficient Data	Insufficient Data	3	3
Upper Kissimmee	Lake Hatchineha	Insufficient Data	Insufficient Data	3	3
Upper Kissimmee	Lake Jackson	Insufficient Data	Insufficient Data	3	3
Upper Kissimmee	Lake Kissimmee	2	2	1	1
Upper Kissimmee	Lake Marian	Insufficient Data	Insufficient Data	2	Insufficient Data
Upper Kissimmee	Lake Marion	Insufficient Data	Insufficient Data	3	Insufficient Data
Upper Kissimmee	Lake Myrtle	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data
Upper Kissimmee	Lake Pierce	3	2	3	Insufficient Data
Upper Kissimmee	Lake Rosalie	Insufficient Data	Insufficient Data	3	3
Upper Kissimmee	Lake Tohopekaliga	Insufficient Data	Insufficient Data	3	3
Upper Kissimmee	Lake Weohyakapka	3	3	3	Insufficient Data
Upper Kissimmee	Lower Reedy Creek	3	Insufficient Data	3	3
Upper Kissimmee	Marion Creek	Insufficient Data	Insufficient Data	3	3
Upper Kissimmee	S63A	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data
Upper Kissimmee	Shingle Creek	3	Insufficient Data	3	Insufficient Data
Upper Kissimmee	Tiger Lake	3	3	3	Insufficient Data
Upper Kissimmee	Upper Reedy Creek	Insufficient Data	Insufficient Data	3	Insufficient Data
West Lake Okeechobee	East Caloosahatchee	3	1	3	3
West Lake Okeechobee	Hicpochee North	Insufficient Data	Insufficient Data	3	Insufficient Data
West Lake Okeechobee	Nicodemus Slough South	1	Insufficient Data	2	Insufficient Data



Results Summary

- Decreased priority (improved water quality):
 - 3 basins for TN
 - 2 basins for TP
- Increased priority (water quality declined):
 - 5 basins for TN
 - 6 basins for TP
- Insufficient data (missing at least one WY):
 - 29 basins for TN
 - 22 basins for TP
 - Most of these are in Upper Kissimmee or south of the lake



Questions & Comments





Subwatershed Goals

Revised March 1, 2020

Subwatershed	WY2014– WY2018 TP Load (mt/yr)	% Contribution of Load	TP Load Required Reduction (mt/yr)	TP Target (mt/yr)	WY2015– WY2019 TP Load (mt/yr)	% Contribution of Load	TP Load Required Reduction (mt/yr)	TP Target (mt/yr)
Fisheating Creek	72.4	12	59.7	12.7	63.65	11	51.8	11.8
Indian Prairie	102.5	17	84.5	18.0	87.27	15	71.0	16.2
Lake Istokpoga	47.7	8	39.3	8.4	47.69	8	38.8	8.9
Lower Kissimmee	125.9	21	103.8	22.1	124.72	22	101.5	23.2
Taylor Creek/Nubbin Slough	113.6	19	93.7	19.9	104.72	19	85.3	19.5
Upper Kissimmee	90.5	15	74.6	15.9	93.36	17	76.0	17.4
East Lake Okeechobee	16.8	3	13.9	2.9	16.73	3	13.6	3.1
South Lake Okeechobee	29	5	23.9	5.1	26.75	5	21.8	5.0
West Lake Okeechobee	0	0	0	0.0	0.01	0	0.0	0.0
Total	598.4	100	493.4	105	564.9	100.00	459.9	105

- Based on data from SFER (March 1, 2020)
- 5-Year Average TP load decreased
- Next update March 1, 2021



Subwatershed Goals

Revised March 1, 2020

Subwatershed	TP Load Required Reduction (mt/yr)	*TP Reduction Through June 30, 2019 (mt/yr)	TP Reductions Achieved Through June 30, 2019 (%)
Fisheating Creek	51.8	14.4	28
Indian Prairie	71.0	20.5	29
Lake Istokpoga	38.8	2.5	6
Lower Kissimmee	101.5	5.6	6
Taylor Creek/Nubbin Slough	85.3	23.3	27
Upper Kissimmee	76.0	16.4	22
East Lake Okeechobee	13.6	4	29
South Lake Okeechobee	21.8	8.3	38
West Lake Okeechobee	0.0	0.5	N/A
Total	459.9	95.5	21

- Progress chart (BMAP Table 76) partially updated
 - *Reductions will be updated when STAR submittals verified



Status of Projects

*Through December 31, 2020**

Lead Entity	Completed									Ongoing Total	Planned Total	Underway Total	Canceled Total	Grand Total
	Prior to 2014	2014	2015	2016	2017	2018	2019	2020	Total					
Avon Park Air Force Range						1			1					1
City of Avon Park	1								1				2	3
City of Clewiston	2								2	3		1		6
City of Edgewood										3				3
City of Kissimmee			3		1		1		5	2	2			9
City of Moore Haven								1	1		1			2
City of Okeechobee						1			1	1	2			4
City of Orlando	5		1						6	10		1	1	18
City of Sebring	1								1	1				2
Coordinating Agency	7				1		1		9		5	7	1	22
FDACS	5	1		1					7	18				25
FDOT	11	5			2	6	2		26	13		11		50
Glades County							2		2	2		3		7
Hendry County												1		1
Highlands County	1					2			3	4				7
Istokpoga Marsh Watershed Improvement District												2		2
Martin County												1		1
Okeechobee County	3	1		2	1				7		1			8
Orange County	19	3	6	2	5	2	9	5	51	7	6	15	3	82
Osceola County	28								28	3		2		33
Polk County	1								1	3				4
Reedy Creek Improvement District										3				3
SFWMD	13	1	4		2				20		2	1		23
Spring Lake Improvement District				1					1				1	2
Town of Windermere						1			1					1
Valencia WCD								1	1	1				2
Grand Total	97	11	14	6	12	13	15	7	175	74	19	45	8	321

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* To be reported in the July 1, 2021 STAR



Status of Projects

*Through December 31, 2020**

Lead Entity	Completed									Ongoing Total	Planned Total	Underway Total	Canceled Total	Grand Total
	Prior to 2014	2014	2015	2016	2017	2018	2019	2020	Total					
Municipalities	9		4		1	2	1	1	18	20	5	2	3	48
Counties	52	4	6	4	6	4	11	5	92	19	7	22	3	143
Other Entities				1		1		1	3	4		2	1	10
State Agencies	36	7	4	1	5	6	3		62	31	7	19	1	120
Grand Total	97	11	14	6	12	13	15	7	175	74	19	45	8	321

- 7 projects completed in 2020
- 26 new projects added



Status of Projects

Story Map (Revised July 1, 2020)

Lake Okeechobee Basin Management Action Plan



Introduction

Overview

Location

Projects

Progress

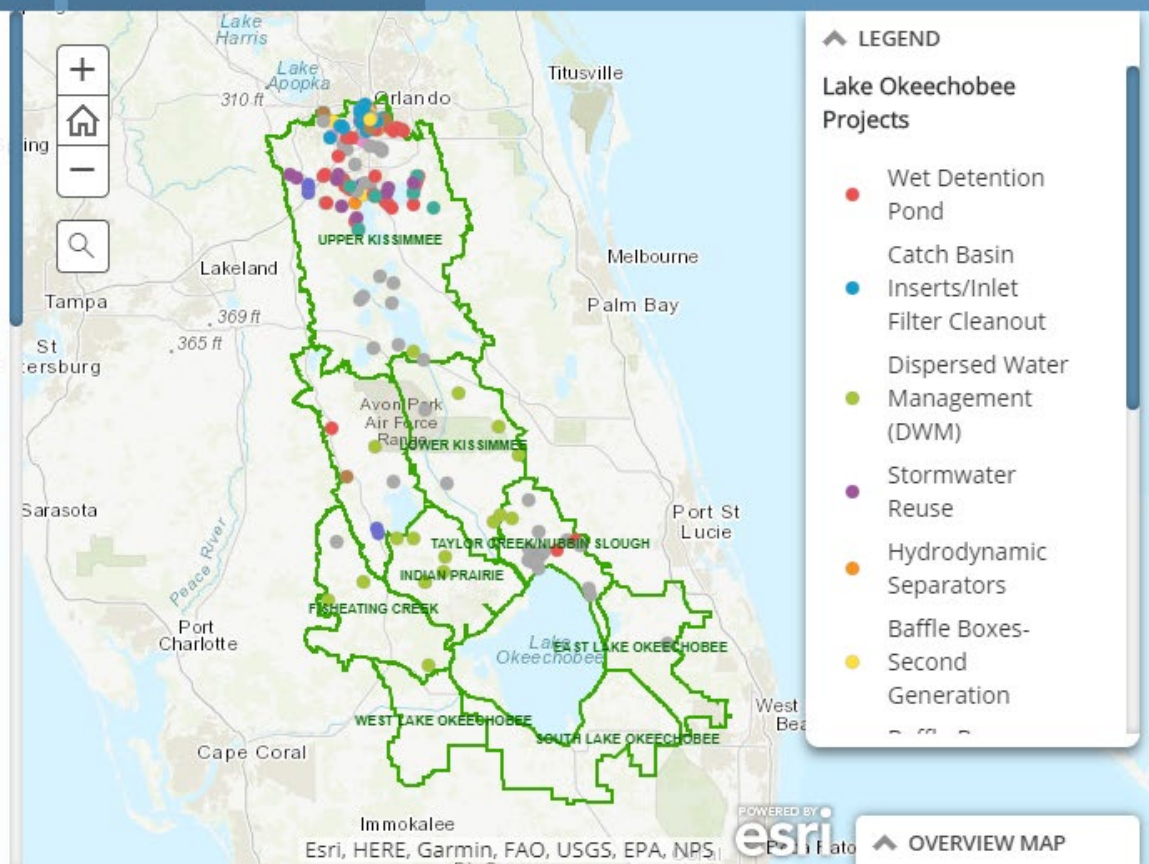
Contacts & More Information



Photo: Wayne Jones [CC BY-NC-ND 2.0.jpg](#)

Actions to Achieve Nutrient Load Reductions

The Lake Okeechobee BMAP is designed to be implemented in a phased approach to allow for adaptive management. The phased BMAP approach allows for the implementation of projects designed to achieve incremental reductions, while simultaneously monitoring and conducting studies to better understand the water quality dynamics (sources and response



2/9/2021

<https://fddep.maps.arcgis.com/apps/MapSeries/index.html?appid=ac355a2b17224f7baae353bfa234cbac>

27



Other Restoration Efforts

Year	Waterbody	Plan type	Status
2019	Reedy Lake	TMDL	EPA Approved
2019	Lake Clinch	TMDL	EPA Approved
2019	Lake Adelaide	TMDL	EPA Approved
2019	Lake Ida	TMDL	EPA Approved
2019	Hickory Lake	TMDL	EPA Approved
2020	Lake Marion	TMDL	Rulemaking
2020	Lake Pierce	TMDL	Rulemaking
2020	Lake Wales	TMDL	Rulemaking
2020	Lake Arnold	4e	EPA Accepted
2021	Lake Istokpoga	TMDL	Modeling

TMDL website: <https://floridadep.gov/dear/water-quality-evaluation-tmdl/content/total-maximum-daily-loads-tmdl-program>



Statewide Annual Report (STAR)

STAR Background and Webpage

STAR 2020 Progress and Timeline



STAR Background

- Requirement under **Section 403.0675 Florida Statutes (F.S.)** to provide an annual update to the Governor and Legislature
- Summarizes accomplishments in the BMAPs statewide
- Reports on restoration projects and management strategies
- All BMAP reporting periods align with calendar year
- Submitted to the Governor and the Legislature by July 1 of each year
- Annual meetings → opportunity to highlight stakeholder activities



STAR Webpage

Florida Statewide Annual Report

Published June 30, 2020



[Introduction](#) [Total Maximum Daily Loads](#) [Basin Management Action Plans](#) [Minimum Flows and Minimum Water Levels](#) [Recovery and Prevention Strategies](#) [Contacts and Data](#)

Troubleshooting



Introduction

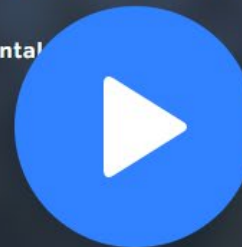
Florida has wide-ranging efforts in place to protect and restore the water quality and the minimum flows and levels of the state's waters. As required by Section 403.0675, Florida Statutes (F.S.), this report updates the status of protection and restoration actions through total maximum daily loads (TMDLs), basin management action plans (BMAPs), minimum flows or minimum water levels (MFLs), and recovery or prevention strategies.

The Florida Department of Environmental Protection

2019 Statewide Annual Report

DE

By Department of Environmental
Nov. 13, 2020



Present

- Third STAR submitted to Governor and Legislature June 28, 2020
- Viewable as interactive story map at <https://floridadep.gov/STAR>

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STAR Timeline

November
2020



**Request for
review -
project
updates
through Dec.
31, 2020**

January
15, 2021



**Deadline for
project
information to
be submitted
to DEP**

February
through
June 2021

**Draft Report
Compiled**

July 1,
2021

**Report
submitted to
Governor and
Legislature
and
web posted**



Contact Information

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Questions & Comments



