Chapter 8A: Northern Everglades and Estuaries Protection Program – Annual Progress Report[1]

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SUMMARY

Overall, the Northern Everglades and Estuaries Protection Program (NEEPP; Section 373.4595, Florida Statutes [F.S.]) legislative intent is to protect and restore surface water resources and achieve and maintain compliance with water quality standards in in the Northern Everglades region—comprised of the Lake Okeechobee Watershed (LOW), St. Lucie River Watershed (SLRW), and Caloosahatchee River Watershed (CRW) (**Figure 8A-1**)—and downstream receiving waters. In 2016, the Florida legislature amended NEEPP to further clarify the roles and responsibilities, coordination, implementation, and reporting efforts among the three coordinating agencies: Florida Department of Environmental Protection (FDEP), Florida Department of Agriculture and Consumer Services (FDACS), and South Florida Water Management District (SFWMD or District) (**Figure 8A-2**). NEEPP was also amended to indicate that basin management action plans (BMAPs) shall be the component of the watershed protection programs that address pollutant loading or total maximum daily loads (TMDLs) established in accordance with Section 403.067, F.S. BMAPs utilize a phased implementation of comprehensive and innovative management strategies that promote timely, cost-effective actions and integration with other programs. Ultimately, BMAPs build upon ongoing restoration in the LOW, SLRW, and CRW by identifying and implementing programs and projects necessary to achieve water quality and quantity objectives for the watersheds.

[1] The chapter authors gratefully acknowledge the management review teams of the coordinating agencies—South Florida Water Management District (SFWMD), Florida Department of Environmental Protection (FDEP), and Florida Department of Agricultural and Consumer Services (FDACs)—for providing valuable review and comments to this document.

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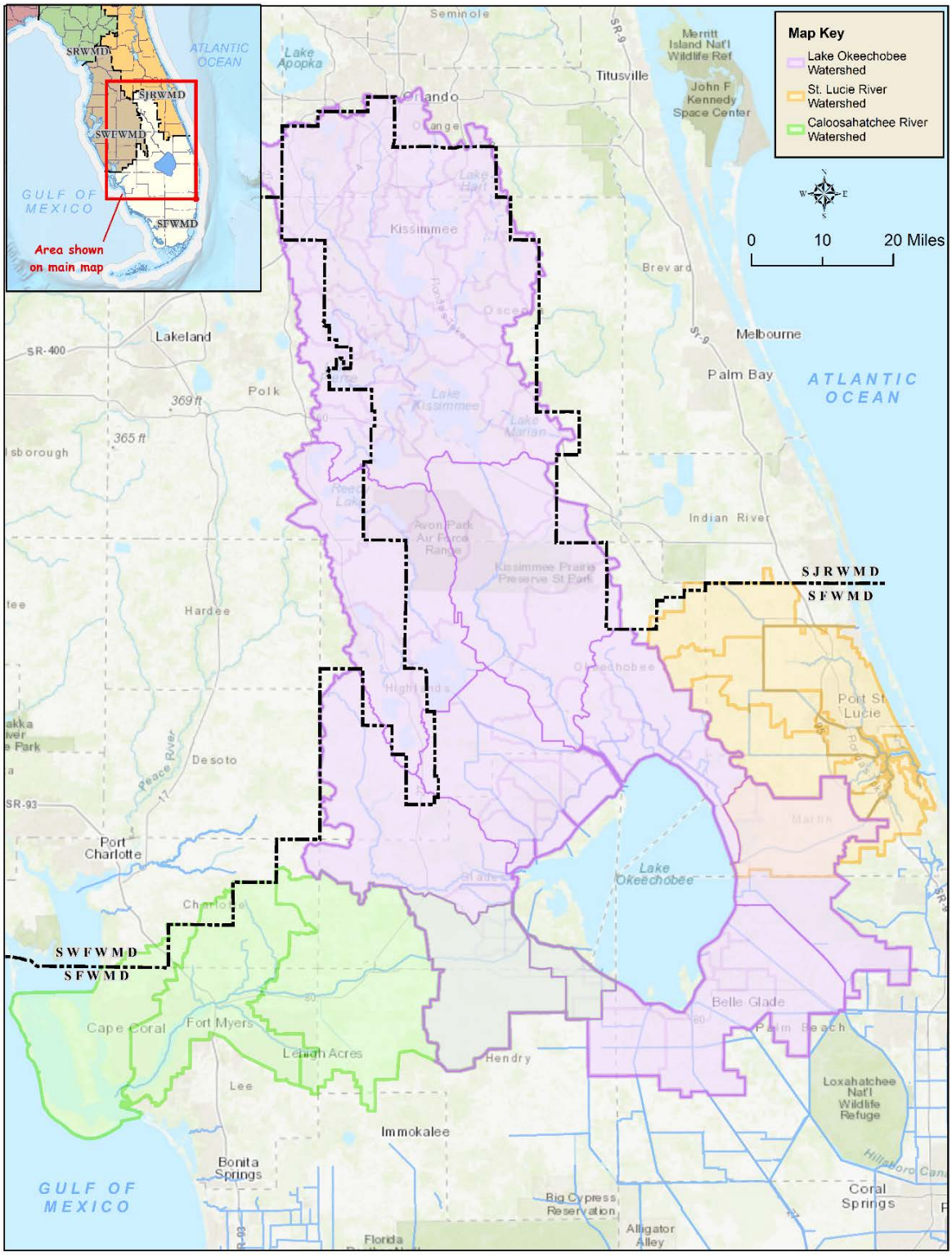

Figure 8A-1. The Northern Everglades watersheds: Lake Okeechobee Watershed (LOW), St. Lucie River Watershed (SLRW), and Caloosahatchee River Watershed (CRW). (Note: The total area within NEEPP boundary, including Lake Okeechobee, is 5,161,501 acres.)

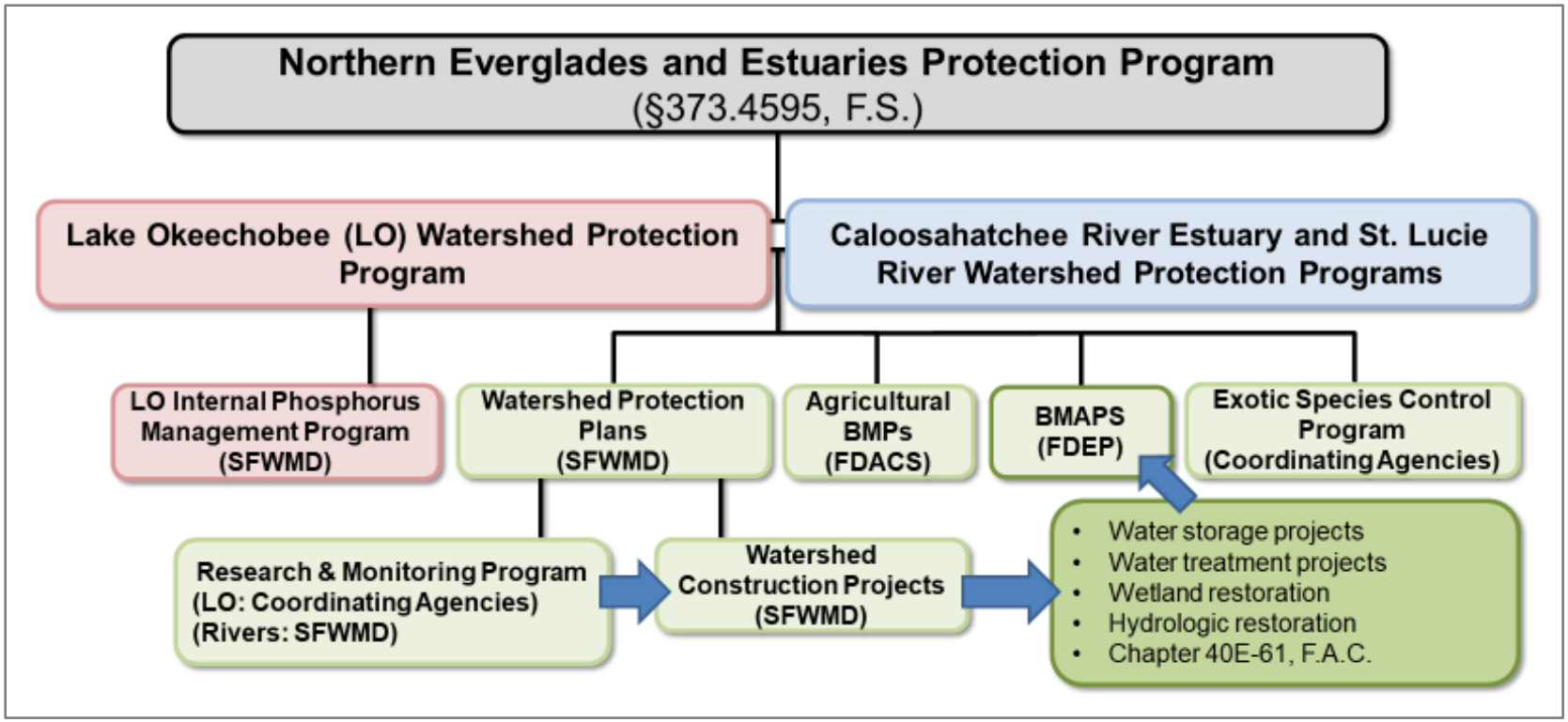

Figure 8A-2. Overview of NEEPP (Section 373.4595, F.S.), including key program components and primary responsibilities of the coordinating agencies—FDEP, FDACS, and SFWMD. (Note: BMPs – best management practices and F.A.C. – Florida Administrative Code.)

This chapter of the *2021 South Florida Environmental Report (SFER) – Volume I*, in conjunction with Chapters 8B, 8C, and 8D of this volume, comprise the NEEPP Annual Progress Report, which has been prepared by SFWMD in cooperation with FDEP and FDACS in accordance with Subsection 373.4595(6), F.S. Overall, key highlights of the NEEPP program-level status update for this reporting year are summarized below, while further coverage on the LOW, SLRW, and CRW status updates including annual progress reporting on the watershed protection plans (WPPs) for each of these watersheds are presented in Chapters 8B, 8C, and 8D, respectively.

FDEP PROGRAM HIGHLIGHTS

- **FDEP BMAP Update**. Over the past year, progress continued on FDEP BMAPs designed to implement nutrient reductions established by the TMDLs for the Northern Everglades watersheds. The *2019 Statewide Annual Report on Total Maximum Daily Loads, Basin Management Action Plans, Minimum Flows or Minimum Water Levels, and Recovery or Prevention Strategies* (2019 STAR; FDEP 2020a) details the progress made through December 31, 2019, on implementation of the NEEPP BMAPs. In accordance with Executive Order 19-12, Section 1-C, requiring each of the NEEPP BMAPs to be updated within one year, BMAP updates for Lake Okeechobee (FDEP 2020c), Caloosahatchee River and Estuary (FDEP 2020b), and St. Lucie River and Estuary (FDEP 2020d) were adopted by secretarial orders in February 2020. The loads, allocations, and reductions are estimated based on the models used during the development of the updated Lake Okeechobee, St. Lucie River and Estuary, and Caloosahatchee River and Estuary BMAPs. Further details on these updates and the status of the BMAPs can be found at https://floridadep.gov/bmaps, and the 2019 STAR is available at https://floridadep.gov/star.

SFWMD PROGRAM HIGHLIGHTS

- **SFWMD Watershed Construction Projects Update.** As part of the WPPs, in Water Year 2020 (WY2020; May 1, 2019–April 30, 2020), SFWMD continued implementing various watershed construction projects with both water storage and water quality benefits to improve conditions across the Northern Everglades watersheds. Highlights of notable accomplishments over this past year are presented herein, while further details on the WPP annual reviews can also be found in Chapters 8B, 8C, and 8D, and on SFWMD's website at www.sfwmd.gov/wpps. This includes achievements under the SFWMD Dispersed Water Management (DWM) Program, which had an estimated water quantity benefit provided by the 18 operational active and passive projects during WY2020 of approximately 52,760 acre-feet (ac-ft or 65.1 million cubic meters [m^3]) in the Northern Everglades watersheds.

  Notably, many priority projects advanced in WY2020 under the state's initiative for *Achieving More Now for Florida's Environment*. In the LOW, the Brighton Valley Northern Everglades Public-Private Partnership (NE-PPP) priority project started operations in April 2020. Facility operations continued for the Lakeside Ranch Stormwater Treatment Area (STA; Phase I – Northern STA and Phase II – Southern STA), while construction is under way for the S-191 pump station under Phase III, which is scheduled for completion by April 2021. Construction activities also progressed for the Kissimmee River Restoration Project (KRRP), in partnership with the United States Army Corps of Engineers (USACE), with remaining work to be completed in spring 2021. Operations also continued for the Nubbin Slough STA, while SFWMD plans were made to repair the Cell 2 levee in WY2021. In the SLRW, construction advanced on the Comprehensive Everglades Restoration Plan (CERP) Indian River Lagoon (IRL) South projects, including the C-44

STA and reservoir, in partnership with USACE; design also began on C-23 and C-24 reservoir and STAs, and the C-24/C-44 interconnect. The design and permitting phases for the Scott Water Farm and Bluefield Grove Water Farm NE-PPP projects were completed in June 2020 and July 2020, respectively. Operations also continued for the Caulkins NE-PPP project, which has the largest estimated annual benefit of any single operational DWM project in the Northern Everglades watersheds. In the CRW, construction progressed on the CERP Caloosahatchee River (C-43) West Basin Storage Reservoir (C-43 WBSR), in partnership with USACE. As part of the C-43 WBSR Water Quality Component Project, priority work on the feasibility study continued this past year, with its completion planned by December 2020. Construction was fully completed on Phase I of the Lake Hicpochee Hydrologic Enhancement Project in November 2019, followed by the start of operations, while the conceptual design of the Lake Hicpochee Expansion under Phase II began in March 2020.

FDACS PROGRAM HIGHLIGHTS

- **FDACS Agricultural Non-Point BMP Update.** To date, FDACS has adopted BMP manuals for cow/calf, sod, equine operations, specialty fruit and nut crops, citrus, nurseries, dairy operations, vegetable and agronomic crops, and poultry operations (FDACS 2008a, b, 2011a, b, 2012, 2014, 2015a, b, 2016). As of April 30, 2020, FDACS enrolled 1,524,428 agricultural acres (ac; 616,914 hectares [ha]) in the LOW, 292,242 agricultural ac (118,270 ha) in the SLRW, and 353,865 agricultural ac (143,209 ha) in the CRW. Details on BMP implementation for each watershed can be found in the FDACS report *Status of Implementation of Agricultural Nonpoint Source Best Management Practices* (FDACS 2020) and is available on the FDACS Office of Agricultural Water Policy's (OAWP's) web page at www.freshfromflorida.com/Divisions-Offices/Agricultural-Water-Policy.

INTRODUCTION

In 2007, the Florida legislature amended the Lake Okeechobee Protection Act to the Northern Everglades and Estuaries Protection Program (NEEPP; Section 373.4595, F.S.) to expand the program to cover the entire Northern Everglades watersheds, including the LOW and the SLRW and CRW and associated estuaries (**Figure 8A-1**). In 2016, NEEPP was amended to emphasize FDEP BMAPs for the Northern Everglades and to further define roles and responsibilities, coordination, implementation, and reporting efforts among the three coordinating agencies—FDEP, FDACS, and SFWMD. Together, the coordinating agencies are jointly responsible for implementing NEEPP, each with specific areas of responsibility. In agreement with the NEEPP legislation, FDEP is the lead on water quality protection measures through BMAPs adopted pursuant to Section 403.067, F.S.; SFWMD is the lead on hydrologic improvements pursuant to the WPPs; and FDACS is the lead on agricultural interim measures, BMPs, and other measures adopted pursuant to Section 403.067, F.S. SFWMD, in cooperation with FDEP and FDACS, is the lead agency for this NEEPP annual progress report, while each coordinating agency is responsible for implementing its respective programs.

NEEPP 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 TMDLs established in accordance with Section 403.067, F.S. (FDEP 2012, 2013, 2014). 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 BMPs, refinement of existing regulations, and structural and nonstructural projects, including public works. The programs are driven by the BMAPs adopted by

FDEP and supported, in part, by watershed-specific WPPs developed by SFWMD and integrated with FDEP and FDACS programs to control nutrient sources at the local, subregional, and regional levels. The latest BMAP updates for Lake Okeechobee (FDEP 2020c), St. Lucie River and Estuary (FDEP 2020d), and Caloosahatchee River and Estuary (FDEP 2020b) were adopted by secretarial orders in February 2020.

Under NEEPP, the WPPs are unique to the watershed and receiving water body and yet coordinated in recognition of the connectivity of the LOW, SLRW, and CRW. They are science-driven plans that include two components: (1) a research and water quality monitoring program (RWQMP) and (2) a watershed construction project (WCP) (see **Figure 8A-3**). The RWQMPs are used by the coordinating agencies to build upon existing research and monitoring to ensure data and science-based information exist to track progress and inform decisions for carrying out future efforts, including identifying modifications and adjustments to the WPPs and BMAPs. The purpose of the WCP is to provide a comprehensive strategy consisting of constructed facilities and programs implemented for improving water quality, quantity, timing, and distribution of water in the Northern Everglades ecosystem to assist in achieving TMDL targets. Collectively, these WPP elements inform FDEP's BMAP updates and, when combined with information from other agencies, support development of future restoration activities to meet the TMDLs in the Northern Everglades watersheds. Further information on the WPPs for the Northern Everglades watersheds is available on SFWMD's website at www.sfwmd.gov/wpps.

Importantly, Governor Ron DeSantis signed Executive Order 19-12: *Achieving More Now for Florida's Environment*, in January 2019. The executive order focused on accelerating key water quality and Everglades restoration projects, with several directives focused on NEEPP implementation including FDEP's recent annual (2020) updates to all the Northern Everglades' BMAPs and SFWMD-led projects realizing benefits sooner by advancing many key restoration projects. This includes expediting the CERP C-44 Reservoir and STA, expediting the CERP C-43 WBSR, and working with FDEP to seek opportunities to provide additional treatment and improve the quality of water leaving the C-43 WBSR. More about SFWMD's work to advance key priority projects can be found on SFWMD's web page at www.sfwmd.gov/our-work/AchieveMoreNow.

This chapter of the 2021 SFER – Volume I, in conjunction with Chapters 8B, 8C, and 8D of this volume, comprise the NEEPP Annual Progress Report, which has been prepared by SFWMD in cooperation with FDEP and FDACS in accordance with Subsection 373.4595(6), F.S. The SFWMD's statutory requirement for NEEPP annual progress reporting includes a summary of the conditions of the hydrology, water quality, and aquatic habitat in the Northern Everglades based on the results and status of the Lake Okeechobee Watershed Protection Plan (LOWPP), the St. Lucie River Watershed Protection Plan (SLRWPP) and the Caloosahatchee River Watershed Protection Plan (CRWPP), during WY2020. In accordance with NEEPP (Section 373.4595, F.S.), the five-year LOWPP Update was published in the 2020 SFER – Volume I, Appendix 8A-1 (Betts et al. 2020) to ensure that it is consistent with the state's adopted Lake Okeechobee BMAP. In this year's SFER to aid in further integration with the state's BMAP updates, annual progress reports for the LOWPP, SLRWPP, and CRWPP are provided in Chapters 8B, 8C, and 8D of this volume, respectively. In accordance with NEEPP, this report also includes the SFWMD's annual accounting of the expenditure of Save Our Everglades Trust Fund (SOETF) funds during SFWMD's Fiscal Year 2020 (FY2020; October 1, 2019–September 30, 2020) per Subsection 373.4595(6), F.S., and the Northern Everglades Annual Work Plan – FY2021 per Paragraph 373.026(8)(b), F.S. Additionally, in cooperation with the coordinating agencies, this annual progress report documents the status of FDEP's Lake Okeechobee, Caloosahatchee River and Estuary, and St. Lucie River and Estuary BMAPs and the status of FDACS' implementation of the agricultural nonpoint source BMPs in the Northern Everglades watersheds.

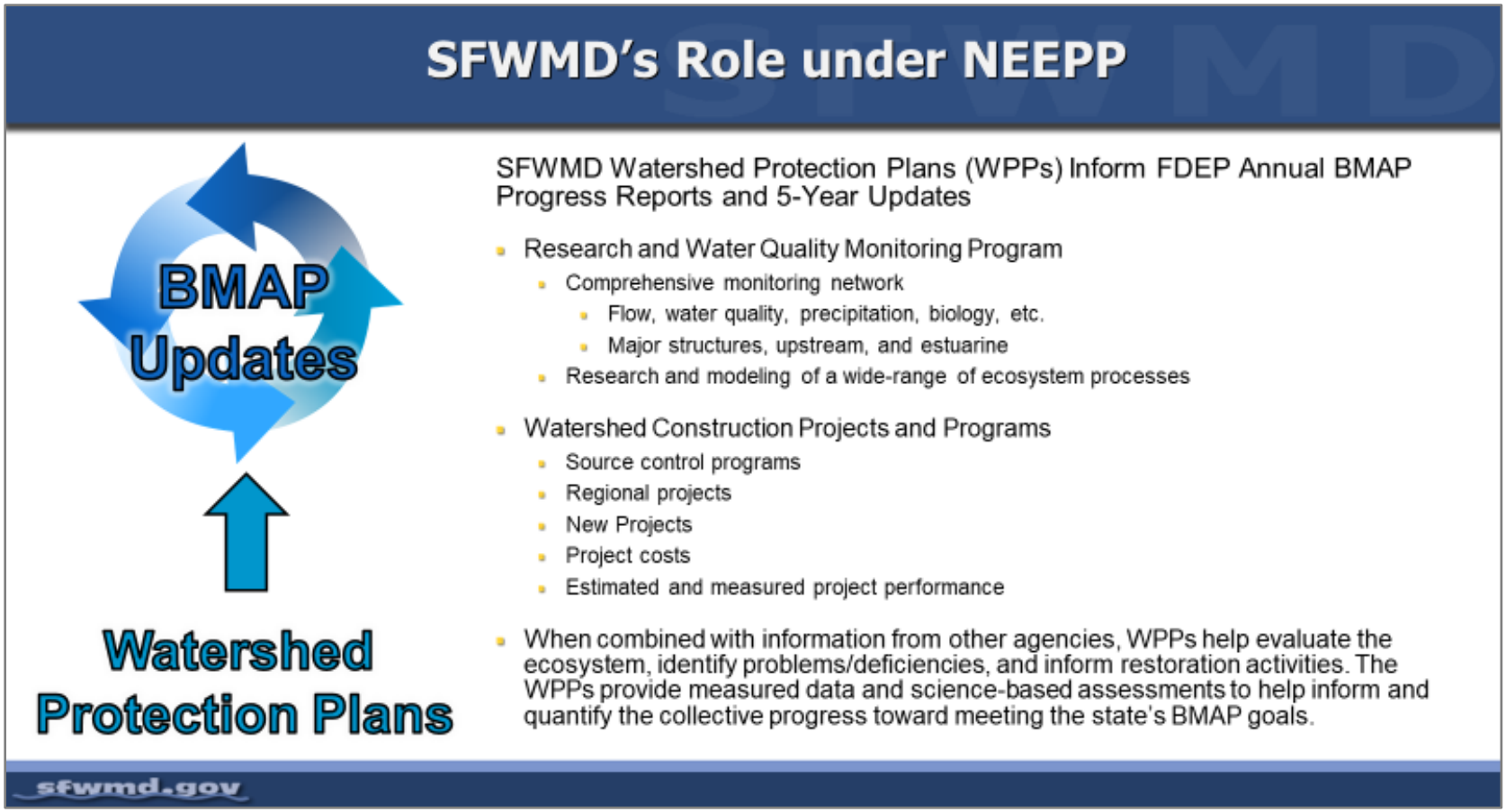

Figure 8A-3. Primary roles of the coordinating agencies associated with WPP and BMAP updates.

COORDINATING AGENCY PROGRESS UPDATES

FDEP BASIN MANAGEMENT ACTION PLANS[2]

A BMAP is a framework for water quality restoration that contains state and local commitments to reduce pollutant loading through current and future project strategies. BMAPs contain a comprehensive set of solutions, such as permit limits on wastewater facilities, urban and agricultural BMPs, and conservation programs designed to implement pollutant reductions established by a TMDL. These broad-based plans are developed with local stakeholders and rely on local input and commitment for development and successful implementation. BMAPs are adopted by FDEP Secretarial Order and are legally enforceable. TMDL documents can be accessed through the FDEP's TMDL web page at https://floridadep.gov/dear/water-quality-evaluation-tmdl/content/total-maximum-daily-loads-tmdl-program, and adopted BMAPs are available on the FDEP's BMAP web page at https://floridadep.gov/bmaps.

BMAP status updates are provided through the comprehensive annual report from FDEP titled the *2019 Florida Statewide Annual Report on Total Maximum Daily Loads, Basin Management Action Plans, Minimum Flows or Minimum Water Levels, and Recovery or Prevention Strategies* (2019 STAR; (FDEP 2020a). The 2019 STAR details the progress made on BMAP implementation statewide through December 31, 2019, and is available on the FDEP's web page at https://floridadep.gov/star.

Section 373.4595, F.S., requires the NEEPP BMAPs to include milestones for implementation and water quality improvement, and associated water quality monitoring components sufficient to evaluate whether reasonable progress is being achieved over time. These statutory requirements and any additional recommendations are included in the 5-Year Reviews for the BMAPs (completed at 5-year increments determined by the month and year of initial BMAP adoption) and have been adopted into the updated BMAPs. The *5-Year Review of the Caloosahatchee Estuary Basin Management Action Plan* (FDEP 2017) was completed in November 2017. The *5-Year Review of the St. Lucie River and Estuary Basin Management Action Plan* (FDEP 2018) was completed in June 2018. The *5-Year Review for the Lake Okeechobee Basin Management Action Plan* was completed in December 2019. Each of these 5-Year Reviews were incorporated into their respective BMAP updates in 2020 in accordance with Executive Order 19-12, Section 1-C, which required an update for each of the NEEPP BMAPs within one year of the executed order. Highlights of these latest reports are provided below. Further details on the status of the BMAPs, 5-Year Reviews, updated BMAPs, and STAR are available through the above-listed BMAP web page.

Lake Okeechobee Basin

Background

Lake Okeechobee is the largest lake in the southeastern United States. It is a shallow, eutrophic lake with an average depth of nine feet. The LOW covers more than 3,450,475 ac and consists of nine subwatersheds (**Figure 8A-4**). In Calendar Year (CY)2001, FDEP adopted a total phosphorus (TP) TMDL for Lake Okeechobee after nine lake segments (water body identification [WBID] numbers within the lake: 3212A, 3212B, 3212C, 3212D, 3212E, 3212F, 3212G, 3212H, and 3212I) were identified as impaired for TP (FDEP 2001). The TMDL is the TP load to Lake Okeechobee of 308,647 pounds per year (lb/yr) (140 metric tons per year or t/yr), of which 77,162 lb/yr (35 t/yr) fall directly on the lake through atmospheric deposition. The remaining 231,485 lb/yr (105 t/yr) of TP are allocated to the entire LOW. The Lake Okeechobee BMAP was first adopted in December 2014 to implement the TP TMDL, and an updated BMAP was adopted in February 2020 (FDEP 2020c).

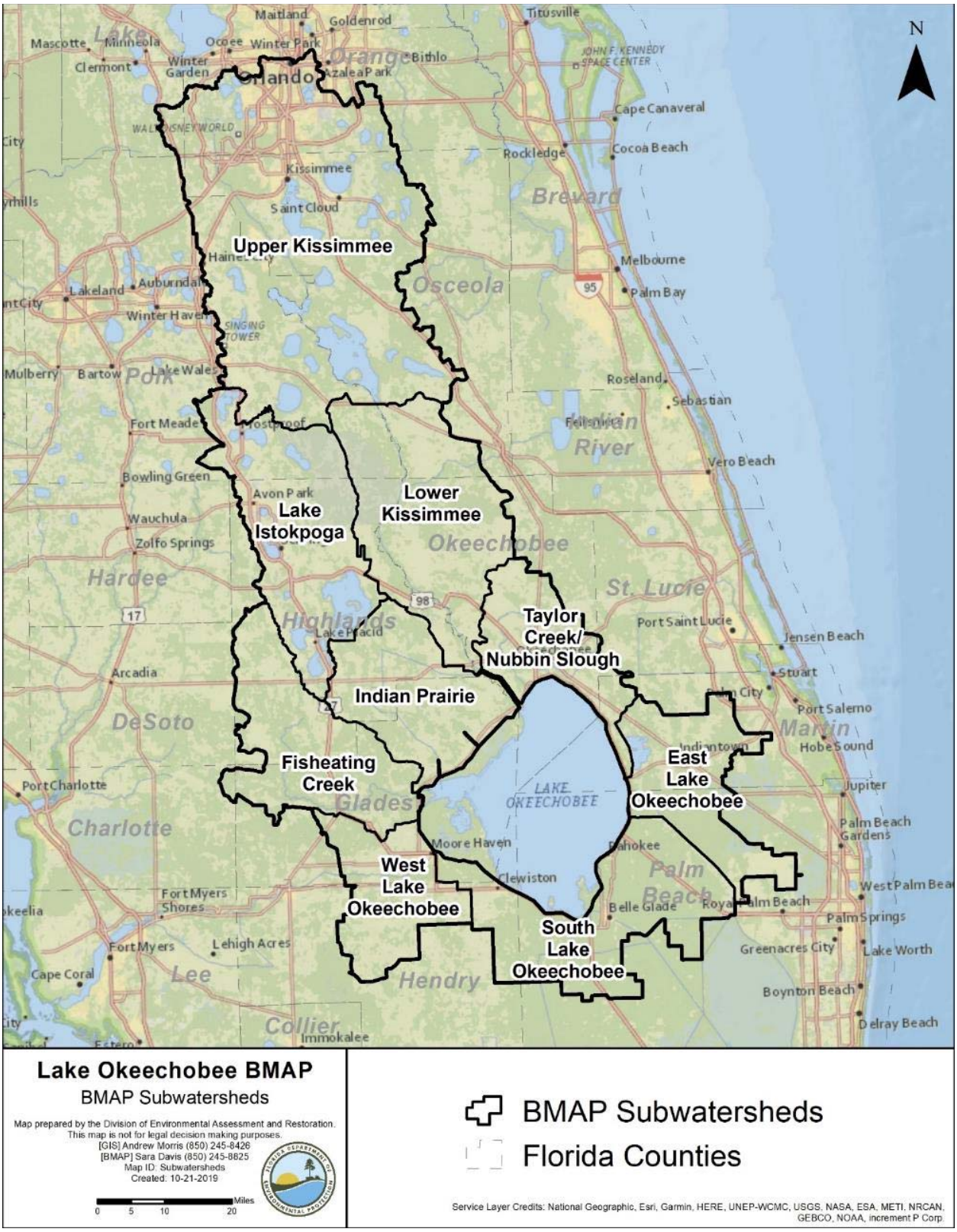

Figure 8A-4. Lake Okeechobee BMAP area and subwatersheds (reprint of Figure ES-1 from FDEP 2020c, with permission).

BMAP Update

The Lake Okeechobee BMAP is governed by Paragraph 373.4595(3)(b), F.S., as part of NEEPP. The primary goal of this program is to restore and protect the state's surface water resources by addressing the quality, quantity, timing, and distribution of water to the natural system. In accordance with the requirements of the 2016 NEEPP, the first 5-Year Review for the Lake Okeechobee BMAP was completed in December 2019. Subsequently, this review was incorporated into the latest BMAP revision in February 2020 (FDEP 2020b). For more information regarding the 5-Year Review, the full report can be downloaded from the BMAP web page. The February 2020 update for the Lake Okeechobee BMAP provides comprehensive information on the current status of the BMAP and an updated implementation approach.

Status of Projects

For the first phase of the BMAP, which was adopted in 2014, load reductions were considered only for projects located in the six northern subwatersheds as the model was not initially developed to estimate the load reductions from the southern watersheds. In 2017, revisions to the Watershed Assessment Model (WAM) were completed, and the East, South, and West Lake Okeechobee subwatersheds were incorporated into the tool used to estimate project load reductions. As part of the 2020 BMAP, projects and loading are considered in all nine subwatersheds of the LOW.

TP loads were estimated using the WAM during development of the updated BMAP. Through December 31, 2019, 233 BMAP projects were completed in the LOW. Completed projects are estimated to achieve total reductions of 210,636 lb/yr (95.5 t/yr) of TP, or 19.4% of the reductions needed to meet the TP TMDL. The TP load reductions are based on model-estimated project benefits in the nine subwatersheds. An additional 54 projects that are under way or planned are identified in the BMAP.

The coordinating agencies are working together with local stakeholders on additional BMAP projects that will achieve further nutrient reductions. Many of these projects are dependent on annual legislative funding. SFWMD manages the construction and operations of water quality treatment and storage facilities, including the DWM Program in the Northern Everglades region. FDACS projects include lands enrolled in the BMP Program, cost-share practices, hybrid wetland treatment technology (HWTT), and floating aquatic vegetation treatment (FAVT) projects funded through the agency. In addition to the BMAP projects listed in the STAR, coordinating agencies' initiatives are also under way to further aid in regional restoration efforts and gather additional data. New projects will continue to be developed and identified in conjunction with local stakeholders.

St. Lucie River and Estuary Basin

Background

The St. Lucie River and Estuary Watershed is located in southeastern Florida in Martin, St. Lucie, and Okeechobee counties and consists of 11 basins (**Figure 8A-5**). The 2013 St. Lucie River and Estuary BMAP area covered 13 basins; however, some of these basins were merged to align with monitoring and other priorities. The St. Lucie Estuary is a major tributary to the Southern Indian River Lagoon.

Water quality in the St. Lucie River and Estuary Watershed is affected by freshwater runoff from agricultural and urban sources in the watershed and discharges from Lake Okeechobee. FDEP identified the St. Lucie River and Estuary as impaired because of excessive amounts of TP, total nitrogen (TN), and biochemical oxygen demand (BOD). In March 2009, FDEP adopted the nutrient and dissolved oxygen (DO) TMDL for the St. Lucie Basin (FDEP 2008). The St. Lucie River and Estuary BMAP (FDEP 2013) was adopted in June 2013 to implement the TN and TP TMDLs, and an updated BMAP was adopted in February 2020 (FDEP 2020d).

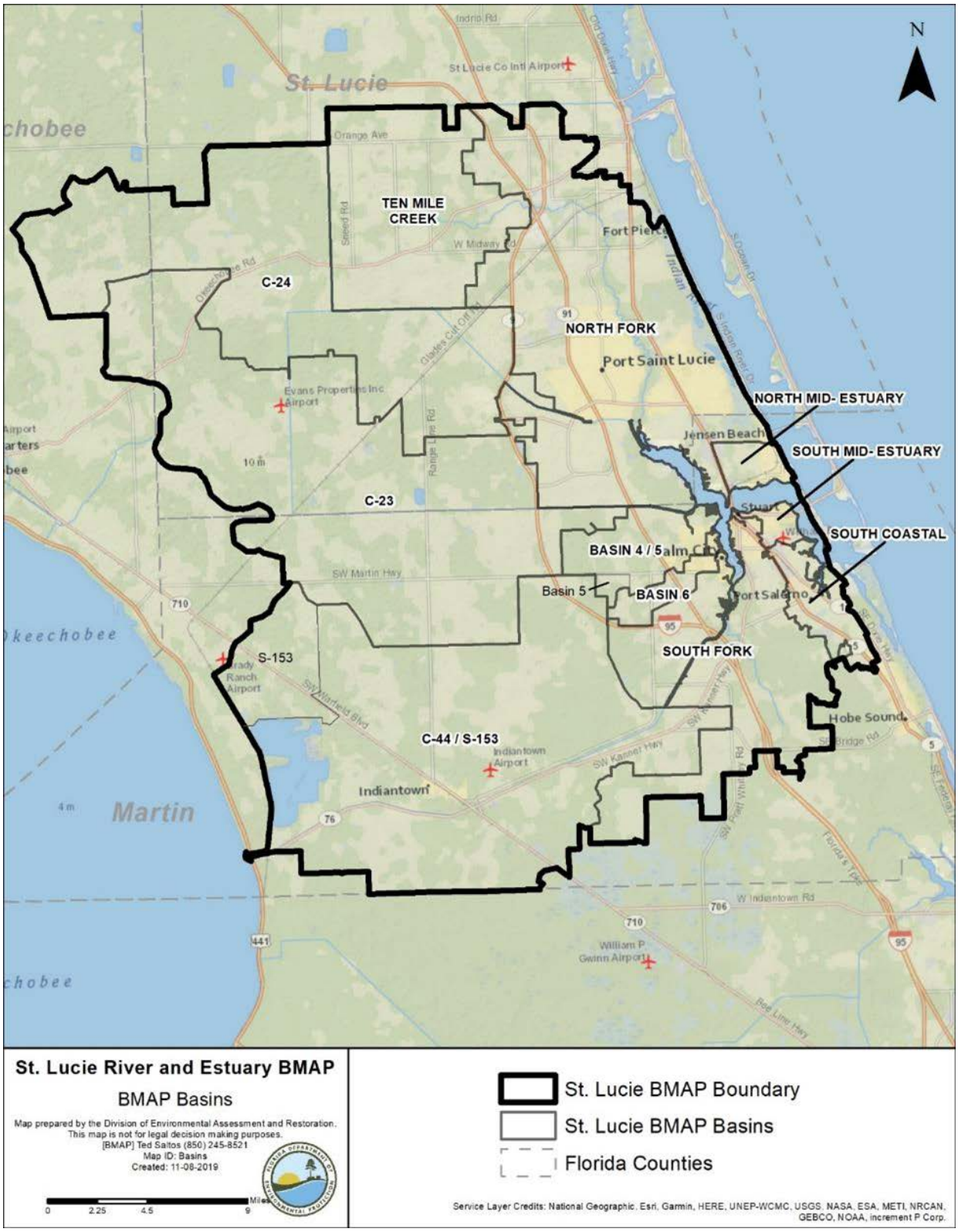

Figure 8A-5. St. Lucie River and Estuary BMAP area and basins (reprint of Figure ES-1 from FDEP 2020d, with permission).

BMAP Update

The St. Lucie BMAP is governed by Paragraph 373.4595(4)(c)(2)d, F.S., as a part of NEEPP. The primary goal of this program is to restore and protect the state's surface water resources by addressing the quality, quantity, timing, and distribution of water to the natural system. In accordance with the requirements of the 2016 NEEPP, the 5-Year Review for the St. Lucie BMAP was completed in June 2018 (FDEP 2018), and these findings were incorporated into the latest BMAP revision in February 2020 (FDEP 2020d). For more information regarding the 5-Year Review, the full report can be downloaded from the BMAP web page. The February 2020 update for the St. Lucie BMAP provides comprehensive information on the current status of the BMAP and an updated implementation approach.

Status of Projects

The St. Lucie Estuary Watershed Water Quality Simulation (WaSh) model was updated as part of the first BMAP phase. TN and TP loads and allocations were estimated from the WaSh model during development of the 2020 BMAP. The St. Lucie River and Estuary BMAP boundary was also updated. Through December 31, 2019, 229 BMAP projects were completed. Completed projects are estimated to achieve total reductions of 811,389 lb/yr (368,040 kilogram per year [kg/yr]) of TN, or 65% of the reductions needed to meet the TN TMDL and 190,377 lb/yr (86,354 kg/yr) of TP, or 47% of the reductions needed to meet the TP TMDL. The TN and TP load reductions are based on model-estimated project benefits in the watershed. An additional 35 projects that are under way or planned are identified in the BMAP.

Caloosahatchee River and Estuary Basin

Background

The Caloosahatchee River and Estuary Watershed is located in southwestern Florida in Charlotte, Collier, Glades, Hendry, and Lee Counties (see **Figure 8A-6**). The Caloosahatchee River runs from Lake Okeechobee through a series of locks to San Carlos Bay. It has both fresh and marine segments: the freshwater segment is from Lake Okeechobee to the Franklin Lock (S-79). The marine segment extends from the Franklin Lock to Shell Point, adjacent to San Carlos Bay, with Pine Island Sound to the northwest and Estero Bay to the southeast.

Water quality in the Caloosahatchee River and Estuary Watershed is affected by freshwater runoff from agricultural and urban sources in the watershed and discharges from Lake Okeechobee, and FDEP identified the Caloosahatchee Estuary as impaired for DO and chlorophyll *a*. In August 2009, FDEP adopted the Caloosahatchee Estuary TMDL (FDEP 2009), which established a reduction target for TN in the Caloosahatchee Estuary (downstream of the S-79) to restore chlorophyll *a* levels. The Caloosahatchee Estuary BMAP was adopted in November 2012 to implement the TN TMDL in the tidal portion of the Caloosahatchee system, excluding the upstream subwatersheds that contribute flows to the estuary at S-79 (**Figure 8A-7**).

Additionally, FDEP identified the following five tributaries to the Caloosahatchee River as impaired for DO: S-4 Basin, C-19 Canal, Lake Hicpochee, Long Hammock Creek, and Townsend Canal (**Figure 8A-7**). In late 2019, FDEP adopted TMDLs for these tributaries, which established reduction targets for TN, TP, and BOD (FDEP 2019). The Caloosahatchee River Tributary TMDLs were incorporated into the updated Caloosahatchee River and Estuary BMAP in February 2020 (FDEP 2020b).

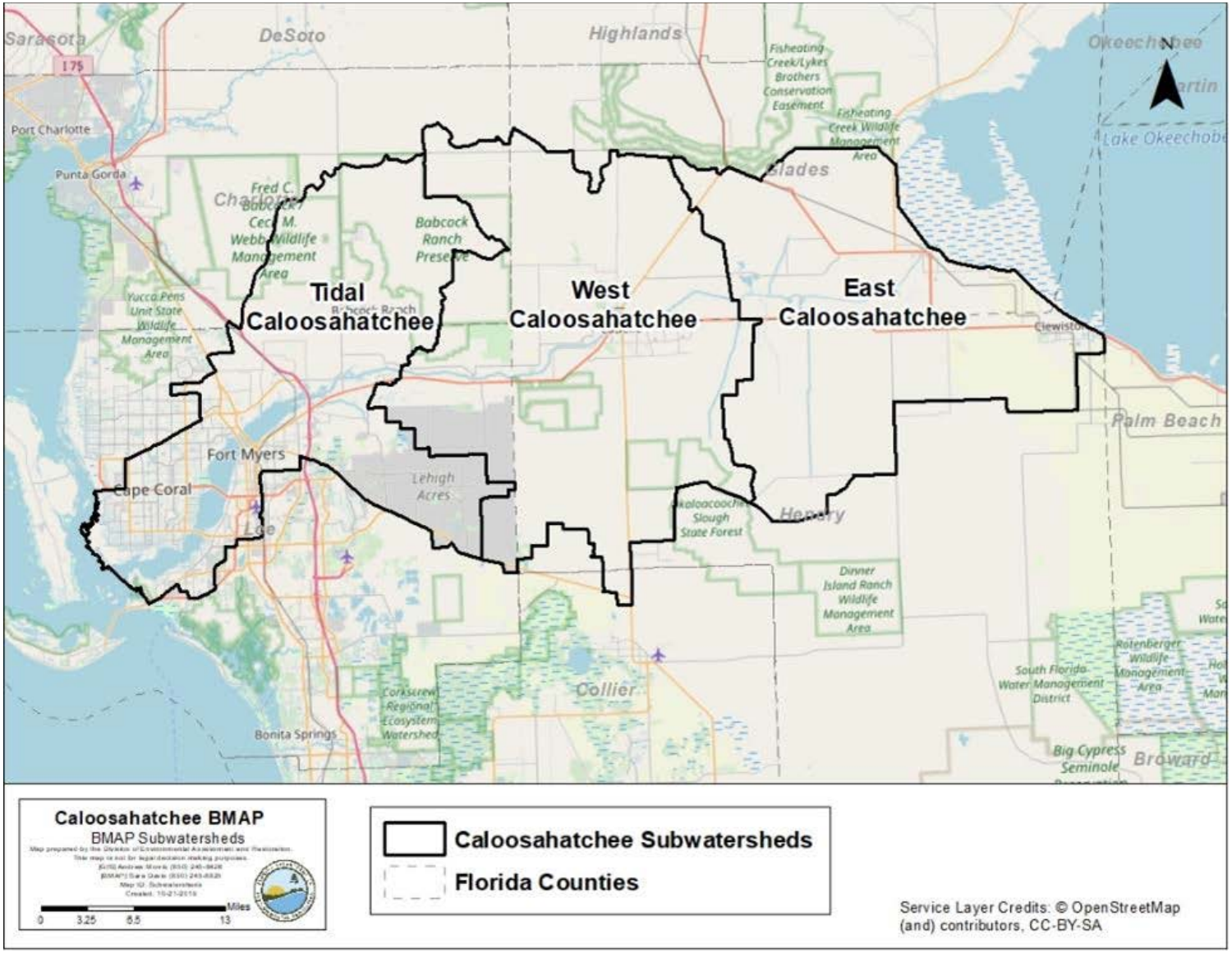

Figure 8A-6. Caloosahatchee River and Estuary BMAP area and subwatersheds (reprint of Figure ES-1 from FDEP 2020b, with permission).

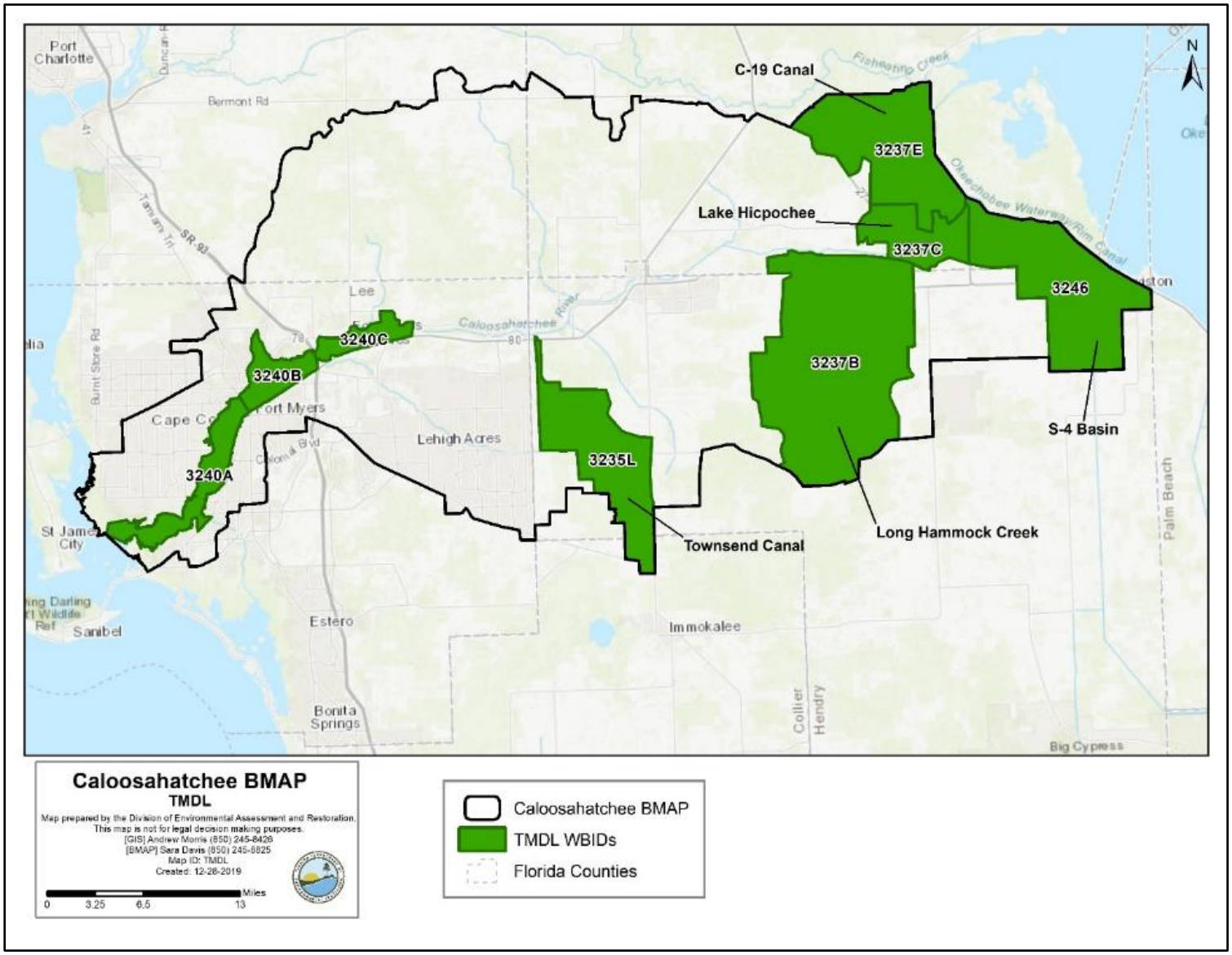

Figure 8A-7. Caloosahatchee River and Estuary TMDL WBIDs (reprint of Figure 1 from FDEP 2020b, with permission).

BMAP Update

The Caloosahatchee River and Estuary BMAP is governed by Paragraph 373.4595(4)(a)(2)b, F.S., as part of NEEPP. In accordance with the requirements of the 2016 NEEPP, the 5-Year Review for the Caloosahatchee Estuary BMAP was completed in November 2017 (FDEP 2017), and these findings were incorporated into the latest BMAP revision in February 2020 (FDEP 2020b). For more information regarding the 5-Year Review, the full report can be downloaded from the BMAP web page. The February 2020 update for the Caloosahatchee River and Estuary BMAP provides comprehensive information on the current status of the BMAP and an updated implementation approach.

Status of Projects

The Hydrological Simulation Program-Fortran (HSPF) and Environmental Fluid Dynamics Code (EFDC) models were updated as part of the first BMAP phase to reflect additional data and input provided by stakeholders. TN and TP loads and allocations were estimated using the HSPF model during development of the updated BMAP. The Caloosahatchee River and Estuary BMAP boundary and monitoring plan were also updated as part of the latest revision to the BMAP in February 2020.

Through December 31, 2019, 125 BMAP projects were completed. Completed projects are estimated to achieve total reductions of 563,630 lb/yr (255,658 kg/yr) of TN, or 62% of the reductions needed to meet the TN TMDL for the Caloosahatchee Estuary. The TN load reductions are based on model-estimated project benefits in the BMAP area. An additional 83 projects that are underway or planned are identified in the BMAP. Since the tributary TMDLs were adopted only a few months prior to the 2020 BMAP update, future reports will include progress towards the tributary TMDLs.

SFWMD WATERSHED CONSTRUCTION PROJECTS

Addressing the complex and varying problems in the Northern Everglades watersheds necessitates a multifaceted restoration approach including reducing nutrient loading and excess freshwater inflows and discharges to Lake Okeechobee as well as the St. Lucie and Caloosahatchee rivers and estuaries. The focus on water quality and storage is intended to improve hydrology, water quality, and aquatic habitats in both the watersheds and receiving waters. Pursuant to Section 373.4595, F.S., WPPs have been developed to protect and restore surface water resources of the Northern Everglades including Lake Okeechobee, the Caloosahatchee and St. Lucie estuaries, and their watersheds. In support of the BMAPs adopted by FDEP and as directed by NEEPP, SFWMD, in cooperation with FDEP and FDACS, developed WPPs for each of the watersheds. These plans contain an integrated management strategy that is based on implementation of nutrient source control programs, including BMPs at the parcel level, projects at the subbasin and regional levels, and other management measures necessary to improve water quality in the watersheds.

As outlined in NEEPP, each WPP includes an RWQMP and a WCP. The LOWPP was updated in 2020 and builds upon a review and analysis of the performance of projects constructed during Phase I and Phase II of the Lake Okeechobee Watershed Construction Project (LOWCP), and relevant information resulting from the Lake Okeechobee BMAP, Lake Okeechobee Watershed RWQMP, Lake Okeechobee Exotic Species Control Program, and Lake Okeechobee Internal Phosphorus Management Program (Betts et al. 2020). Pursuant to Paragraph 373.4595(3)(a), F.S., SFWMD also identified modifications and recommendations to the LOWCP that were incorporated into the Lake Okeechobee BMAP update (FDEP 2020c) to assist the coordinating agencies in prioritizing resources and projects to meet NEEPP goals. In this year's NEEPP reporting, annual progress reporting of the WPPs for each of the Northern Everglades watersheds are presented in Chapters 8B, 8C, and 8D of this volume, respectively, with some key highlights presented herein. The following section provides a high-level overview on existing NEEPP construction project activities accomplished during the WY2020 reporting period. An overview of the watershed construction projects is shown on **Figure 8A-8** and **Table 8A-1**. During this reporting period, 4 SFWMD projects were in planning/design, 1 SFWMD project was under construction, and 19 SFWMD projects were

in operations in the LOW (see Chapter 8B); 6 SFWMD projects were in planning/design, 3 SFWMD projects were under construction, and 5 SFWMD projects were in operations in the SLRW (see Chapter 8C); and 6 SFWMD projects were in planning/design, 1 project was under construction and 3 SFWMD projects were in operations in the CRW (see Chapter 8D). All FDACS' HWTT projects (5 in the LOW and 3 in the SLRW) and FAVT projects (1 in the LOW and 1 in the CRW) also continued their operations.

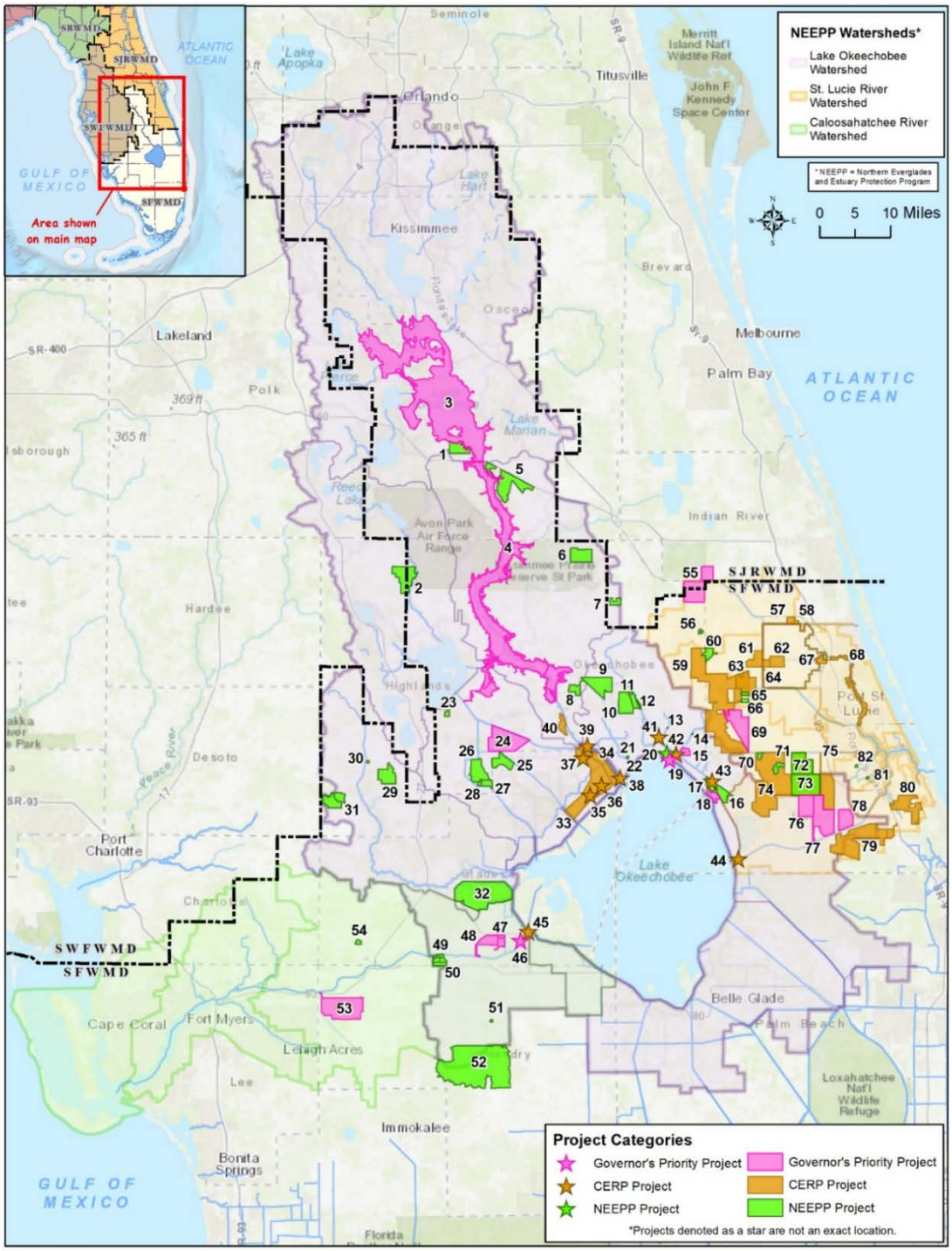

Figure 8A-8. Overview of watershed construction projects in the Northern Everglades watersheds (see **Table 8A-1** for the key to project list).

Table 8A-1. Crosswalk for watershed construction projects in the Northern Everglades watersheds shown on **Figure 8A-8**.

Map ID No.	Project Title
Lake Okeechobee Watershed	
1	Lost Oak Ranch
2	Rafter T Ranch WMA
3	Kissimmee River Headwaters Revitalization
4	Kissimmee River Restoration
5	El Maximo Ranch (NE-PPP)
6	Triple A Ranch
7	Willaway Cattle and Sod
8	Dixie West
9	Dixie Ranch
10	Grassy Island FEB and ASR
11	Grassy Island HWTT (FDACS)
12	Taylor Creek STA
13	Mosquito Creek HWTT (FDACS)
14	Nubbin Slough HWTT (FDACS)
15	Nubbin Slough STA
16	Brady Ranch FEB and ASR
17	Lakeside Ranch STA -Phase I
18	Lakeside Ranch STA -Phase II
19	Lakeside Ranch STA -Phase III
20	S-191 Basin Surface Runoff Phosphorus Removal
21	Lemkin Creek HWTT (FDACS)
22	Wolff Ditch HWTT (FDACS)
23	Istokpoga Marsh Improvement District Water Quality Project - Phase I
24	Brighton Valley (NE-PPP)
25	Lykes West Waterhole
26	Buck Island Ranch (NE PES-1)
27	Buck Island Ranch WMA Component 1 (NE-PES-2)
28	Buck Island Ranch WMA Component 2 (NE-PES-2)
29	XL Ranch
30	Fisheating Creek FAVT (FDACS)
31	La Hamaca
32	Nicodemus Slough
33	Wetland Attenuation Feature (WAF)
34	Wetand Restoration
35, 36, 37	WAF ASR Well Cluster
38	ASR Well Cluster C-38S
39	ASR Well Cluster C-38N
40	Kissimmee River Center Wetland
41	ASR Well Cluster L-63N
42	ASR Well Cluster C-59 (S-191)
43	ASR Well Cluster L-63S

Map ID No.	Project Title
Caloosahatchee River Watershed	
45	LOWRP ASR Well Cluster C-43
46	C-43 Water Quality Treatment and Testing Project - Phase II, Test Cells
47	Lake Hicpochee Hydrologic Enhancement - Phase I
48	Lake Hicpochee Expansion - Phase II
49	Boma Interim Storage Project
50	Boma FEB
51	East Caloosahatchee FAVT (FDACS)
52	Alico Dispersed Water Storage (NE-PPP)
53	C-43 West Basin Storage Reservoir
54	Mudge Ranch
St. Lucie River Watershed	
44	LOWRP ASR Well Cluster C-44
55	Scott Water Farm (NE-PPP)
56	Alderman-Deloney Ranch
57	C-25 Reservoir
58	C-25 STA
59	IRL-South: Natural Storage and Treatment Area Cypress Creek Complex
60	Adams-Russakis Ranch WMA
61	IRL-South: C-23/C-24 North Reservoir
62	IRL-South: C-23/C-24 STA
63	IRL-South: C-23/C-24 South Reservoir
64	Ideal Grove HWTT (FDACS)
65	C-23/C-24 Interim Storage -Section C Water Farm
66	C-23/C-24 Interim Storage -Section B
67	Ten Mile Creek WPA
68	North Fork Flood Plain Restoration
69	Bluefield Grove Water Farm (NE-PPP)
70	Spur Land and Cattle Water Farm
71	Bull Hammock Ranch WMA
72	Allapattah Flats -Parcel A NRCS WRP
73	Allapattah Flats -Parcel B NRCS WRP
74	IRL-South: Natural Storage and Treatment Area Allapattah Complex
75	IRL-South: C-23 to C-44 Interconnect
76	IRL-South: C-44 Reservoir
77	IRL-South: C-44 STA
78	Caulkins Water Farm Expansion (NE-PPP)
79	IRL-South: Natural Storage and Treatment Area Palmar Complex
80	IRL-South: Natural Storage and Treatment Area Southfork Complex
81	Danforth Creek HWTT (FDACS)
82	Bessey Creek HWTT (FDACS)

Another item to be considered in the WPP is legacy phosphorus in the watershed, which is dependent upon many variables pertaining to a specific site, including soils and historic land uses. The definition of legacy phosphorus and methods for estimation may differ from study to study and, therefore, the amount of legacy phosphorus noted for an area may also vary across studies. There are various methods to account for legacy phosphorus for an impacted area that has experienced modern anthropogenic activities. A critical goal in watershed restoration is to reduce nutrient inputs to the system and transport downstream from the source so that legacy phosphorus does not increase throughout the watershed. A prominent study was conducted by Reddy et al. (2011) on legacy phosphorus in the greater Everglades, which includes the Southern as well as the Northern Everglades. Legacy phosphorus was considered by FDEP in all three Northern Everglades models: WAM, WaSh, and HSPF. The coordinating agencies are considering the key issues surrounding legacy phosphorus so it may ultimately be addressed in the Northern Everglades. SFWMD will continue to monitor and collect data when needed to assist with this effort.

Watershed-Specific Construction Project Update

This update on the status of existing NEEPP construction projects focuses on the coordinating agencies' regional and subregional projects critical to achieving the water quality, water storage, and restoration goals of the LOWPP, SLRWPP, and CRWPP. During WY2020, SFWMD, in conjunction with the other coordinating agencies, continued implementing various projects to improve conditions across the Northern Everglades watersheds, as highlighted below. Reporting on the WY2020 status of the WPPs for the Lake Okeechobee, Caloosahatchee River, and St. Lucie River watersheds are presented in Chapters 8B, 8C and 8D of this volume, respectively, with key highlights of construction projects' progress shown below. Notably, many of these advancements are priorities under Executive Order 19-12: *Achieving More Now for Florida's Environment* (see **Figure 8A-8** for priority projects shown in pink).

Lake Okeechobee Watershed

- In the LOW, planning was completed and design commenced for the S-191 Basin Surface Runoff Phosphorus Removal, a new project that plans to remove TP from surface water upstream of the S-191 structure using an innovative ferrate treatment technology.
- Feasibility studies were launched for the Grassy Island Flow Equalization Basin (FEB) and Aquifer Storage and Recovery (ASR) and Brady Ranch FEB and ASR projects to optimize both planned project areas and their associated features.
- Construction is under way for the S-191 pump station under Phase III of the Lakeside Ranch STA, and this priority work is planned to be completed by April 2021. Construction activities also progressed for the KRRP, in partnership with USACE, with remaining work to be completed in spring 2021. Construction of the Istokpoga Marsh Watershed Improvement District (IMWID) – Phase I project, in partnership with IMWID, was completed in March 2020; this initial phase is in operations.
- Facility operations continued for the Lakeside Ranch STA (Phase I – Northern STA and Phase II – Southern STA), Taylor Creek STA, Nubbin Slough STA, and Rolling Meadows – Phase I projects. Also of note for the Nubbin Slough STA, SFWMD planning was executed to repair the Cell 2 levee as a priority effort in WY2021; this will allow this STA to treat local stormwater runoff from the Nubbin Slough basin and improve the quality of water flowing into Lake Okeechobee.
- During WY2020, the DWM Program in the LOW had an estimated water quantity benefit provided by the 12 operational active and passive projects of approximately 26,300 ac-ft (32.4 million m^3).[6] Notably, as a priority project in the LOW, the Brighton Valley NE-PPP started operations in April 2020.
- FDACS' operations of the five HWTT facilities (Lemkin Creek, Wolff Ditch, Grassy Island, Nubbin Slough, and Mosquito Creek) continued over the past year; a total of 3,089 million gallons (13.6 million m^3) was treated, removing 4.6 metric tons (t) TP and 14.5 t TN. Optimization of the Fisheating Creek FAVT along with extensive renovations

[6] The DWM project benefits were less than the overall projected goal for various reasons. Construction activities at Boma Interim Storage Basin 2 and 3 Aboveground Impoundments, Culvert 5, S-72, and S-75 as well as deviations from the 2008 Lake Okeechobee Regulation Schedule (LORS2008) by USACE limited operation of some of the projects. It is important to note that the permitted operations criteria for some of the projects were developed based on average LORS2008 operational conditions. If deviations continue, then the project permitted operational criteria may need to be reassessed to realize project anticipated benefits. Another consideration may be the lower-than-average rainfall in the LOW during this water year (see Chapter 8B of this volume for further details).

occurred this past year; during reduced operations, a total of 1,922 million gallons (8.5 million m^3) was treated, removing 1.5 t TP and 5.0 t TN.

St. Lucie River Watershed

- In the SLRW, construction advanced on the CERP IRL – South projects, in partnership with USACE. As priority efforts, the C-44 STA and reservoir are planned to be completed in late 2020 and early 2021, respectively; once construction is complete, operational testing and monitoring is planned in FY2021 and full operation is expected to begin in FY2022. Design began in FY2020 for the C-23 and C-24 reservoir and STAs, and the C-24/C-44 interconnect.
- Facility operations continued for the Ten Mile Creek Water Preserve Area. In support of project improvements, the North St. Lucie River Water Control District has requested a permit to repair the C-96 discharge canal; the permit is expected in September 2020 and canal repair is expected to take place during WY2021.
- During WY2020, the DWM Program in the SLRW had an estimated water quantity benefit provided by five operational active and passive projects of approximately 26,200 ac-ft (32.3 million m^3).[6] Notably, as priority projects in the SLRW, the design and permitting phase for the Scott Water Farm and Bluefield Grove Water Farm NE-PPP projects was completed in June 2020 and July 2020, respectively. Operations also continued for the Caulkins NE-PPP project, which currently has the largest estimated annual benefit (~60,000 acre-feet per year (ac-ft/yr) or 74.0 million cubic meters per year [m^3/yr]) of any single operational DWM project in the Northern Everglades watersheds.
- FDACS' operations of the three HWTT facilities (Ideal 2 Grove, Bessey Creek, and Danforth Creek) continued over the past year; a total of 1,514 million gallons (6.7 million m^3) was treated, removing 1.44 t TP and 4.0 t TN.

Caloosahatchee River Watershed

- In the CRW, planning continued for the Alico Dispersed Water Storage NE-PPP and the ASR well cluster—a part of the broader Lake Okeechobee Watershed Restoration Project (LOWRP), which also covers select areas across the LOW.
- In January 2020, project planning efforts commenced for the C-43 Water Quality Treatment and Testing Facility – Phase II (Test Cells), and conceptual design was launched for the Boma FEB on SFWMD-owned lands.
- Construction was fully completed on Phase I of the Lake Hicpochee Hydrologic Enhancement Project in November 2019, followed by initiation of operations, while the conceptual design of the Lake Hicpochee Expansion under Phase II began in March 2020 as part of priority efforts.
- Construction also progressed on the CERP C-43 WBSR, in partnership with USACE; the reservoir is planned to be completed by the end of 2023.
- As part of the C-43 WBSR Water Quality Component Project, priority work on the feasibility study continued this past year, with its completion planned by the end of 2020.
- During WY2020, the DWM Program in the CRW had an estimated water quantity benefit provided by one operational passive project, Mudge Ranch, of approximately 260 ac-ft (320,705 m^3).[6]

- FDACS' operations of the East Caloosahatchee FAVT continued over the past year; with unusually extended periods of no or low flow, a total of 6,384 million gallons (28.1 million m^3) was treated, removing 2.3 t TP and 5.0 t TN.

FDACS IMPLEMENTATION OF AGRICULTURAL NON-POINT SOURCE BEST MANAGEMENT PRACTICES[3]

FDACS BMP Program

To date, the Florida Department of Agriculture and Consumer Services (FDACS) has BMP manuals for cow/calf, sod, equine operations, specialty fruit and nut crops, citrus, nurseries, dairy operations, vegetable and agronomic crops, and poultry operations (FDACS 2008a, b, 2011a, b 2012, 2014, 2015a, b, and 2016, respectively). The FDACS BMP manuals can be found at https://www.fdacs.gov/Agriculture-Industry/Water/Agricultural-Best-Management-Practices.

FDACS Office of Agricultural Water Policy (OAWP) solicits enrollment to all types of agricultural operations but is more intensive in BMAP areas because of the relationship of BMPs to the presumption of compliance with water quality standards in a BMAP area. FDACS field staff work with producers to enroll in the FDACS BMP program by signing a Notice of Intent (NOI) to Implement BMPs, and enrollment is based on the expectation that producers recognize and address the water quality and conservation issues associated with their operations. Upon completion of all information in the BMP checklist, an NOI must be signed by the landowner or the landowner's authorized agent (who may be the producer if the producer is not the landowner). Further information on the FDACS BMP Program and enrollment in the program can be found at https://www.fdacs.gov/Agriculture-Industry/Water/Agricultural-Best-Management-Practices.

The Florida Statewide Agricultural Irrigation Demand 7 (FSAID 7) data set was used to identify the agricultural lands within the watersheds. As of April 30, 2020, FDACS enrolled 1,524,428 agricultural ac (616,914 ha) in the LOW, 292,242 agricultural ac (118,270 ha) in the SLRW, and 353,865 agricultural ac (143,209 ha) in the CRW. The boundaries of the LOW overlap with those of the CRW and SLRW as shown in **Figure 8A-1**; therefore, the enrollment acreages provided for the different watersheds may include the same NOIs where these NOIs and associated acreages are in more than one watershed.

The enrollment acreages provided here are different than the enrollment information provided in the St. Lucie River and Estuary BMAP and the Caloosahatchee River and Estuary BMAP. The boundaries of the SLRW and CRW are larger than the BMAP boundaries, which results in enrollment acreages that are different from those reported in the BMAPs. The St. Lucie River and Estuary BMAP includes approximately 82% of the SLRW, and the Caloosahatchee River and Estuary BMAP includes approximately 85% of the CRW.

Furthermore, the BMAPs use the 2004 land use data and coverage for the St. Lucie River and Estuary and tidal Caloosahatchee Estuary and the 2008 land use data and coverage for the LOW. In many instances, the agricultural land use contained in those data sets is outdated and not representative of present day conditions. **Figure 8A-9** shows FDACS BMP Program enrollment in the three watersheds as of April 30, 2020.

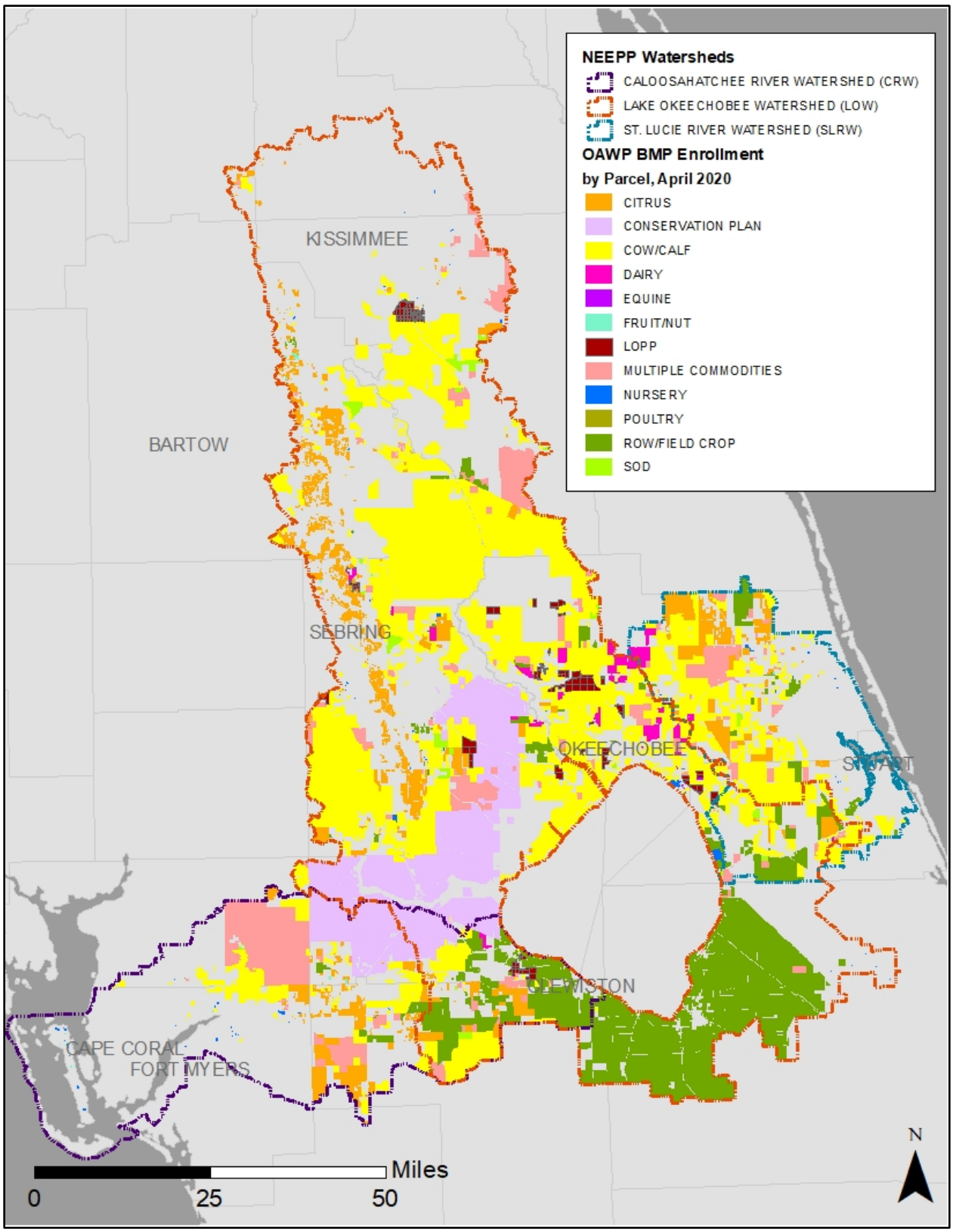

Figure 8A-9. FDACS BMP Program enrollment as of April 30, 2020.

FDACS Implementation Assurance Program

OAWP established an Implementation Assurance (IA) Program in 2005 in the Suwannee River Basin as part of the multiagency-local stakeholder Suwannee River Partnership. In early 2014, OAWP began to streamline the IA Program to ensure consistency statewide and across commodities and BMP manuals. The IA Program was based on interactions with producers during site visits by OAWP staff and technicians as workload allowed. For the visits, field staff and technicians used a standard form (not BMP-specific) developed in 2014, that focused on nutrient management, irrigation management, and water resource protection BMPs common to all the BMPs that were adopted by rule. Once completed, these paper forms were submitted to OAWP staff and compiled into a spreadsheet, and the data were reported annually.

On November 1, 2017, the OAWP's Implementation Verification Rule (Chapter 5M-1, F.A.C.) became effective. The Implementation Verification (IV) Program provides the basis for assessing the status of BMP implementation and for identifying enrolled producers who require assistance with BMP implementation. The components of the IV Program are (1) site visits, (2) implementation status reporting on common practices that apply across all BMP manuals, (3) technical assistance, and (4) external reporting. Implementation verification is confirmed by field staff through site visits and by producers through annual common practices status reports.

Site visits to agricultural operations by OAWP field staff and contract technicians are the most effective means to determine the status of BMP implementation. These visits also provide an opportunity to identify needs for assistance with implementation and explore potential improvements. Resource limitations prevent site visits from occurring on all enrolled operations every year, and for that reason, site visits are prioritized.

Until August 2019, the two methods for verifying implementation of BMPs included IV site visits and producer self-surveys. OAWP conducted site visits on enrolled parcels and worked with the producers to evaluate nutrient management, irrigation management, and water resource protection BMPs. Site visits have historically been prioritized based on criteria including the date the NOI was signed, date of the last site visit, whether a status report has been completed or not, whether the operation has received cost-share funding, or whether other BMP-related concerns exist for the NOI. Since August 2019, OAWP has focused on IV site visits that evaluate proper BMP implementation using the completed checklists in the BMP manuals which a landowner is enrolled. Procedures used to verify the proper implementation of agricultural BMPs are outlined in Rules 5M-1.008 and 5M-1.009, F.A.C. Site visits provide an opportunity to address areas of concern on an operation and for an FDACS representative to discuss with producers topics related to water quality, water conservation, BMAPs and BMP requirements, changes in BMPs, and other opportunities to improve water quality. Site visits additionally allow for the identification of cost-share opportunities for BMPs, and other practices and projects. Producers not implementing BMPs according to the process outlined in Chapter 5M-1, F.A.C., are referred to FDEP for enforcement action after attempts at remedial action are exhausted.

Beginning July 1, 2020, OAWP will perform IV visits on each NOI in BMAPs every two years, retain fertilizer application records for phosphorus and nitrogen applied over a NOI, and provide the aggregated data to FDEP for each BMAP. FDACS is required to submit annual reports on the status of BMP implementation and verification of BMP implementation to the Florida legislature and governor. Because of the diversity of agricultural production and water resources across the state, OAWP is working to ensure that the reporting is based on an accurate and consistent statewide dataset. This includes efforts to standardize a set of core practices across all manuals to make evaluation and analyses of BMPs more relevant. During 2019, FDACS conducted IV visits and/or received self-reporting surveys for 1,885 NOIs to implement BMPs in the Lake Okeechobee BMAP area, 29 NOIs in the Caloosahatchee Estuary BMAP area, and 280 NOIs in the St. Lucie River and Estuary BMAP area. Details on BMP implementation for each BMAP area can be found in the FDACS report, *Status of Implementation of Agricultural Nonpoint Source Best Management Practices* (FDACS 2020), on the FDACS OAWP's web page at www.freshfromflorida.com/Divisions-Offices/Agricultural-Water-Policy.

SAVE OUR EVERGLADES TRUST FUND EXPENDITURES

While the authority to use Save Our Everglades Trust Fund (SOETF) funds is provided in Section 373.470, F.S., NEEPP also requires annual reporting on NEEPP expenditures from SOETF (Subsection 373.4595(6), F.S.). Specifically, NEEPP requires that the annual progress report contain detailed annual accounting of the expenditure of SOETF funds, including information concerning the amount and use of funds from federal, state, or local government sources, and the funds being requested to be applied to meet match requirements. **Table 8A-2** provides an accounting of NEEPP expenditures during FY2020. This report was prepared in cooperation with the other coordinating agencies and affected local governments.

CONSTRUCTION PROJECTS

NEEPP construction projects and activities that comprised the FY2020 expenditures include the following: Lakeside Ranch STA, C-43 Water Quality Treatment and Testing Project, DWM projects, in-lake phosphorus control projects, ecological and physical monitoring, KRRP land acquisition, activities associated with the Lake Okeechobee regulation schedule, and WPP implementation. CERP components of the NEEPP construction project are reported in the *Comprehensive Everglades Restoration Plan Annual Report – 470 Report* (Appendix 1-2 of the final version of this volume) and not included here to avoid duplicative reporting and tracking.

POLLUTANT CONTROL PROGRAMS

The Pollutant Control Program is a multi-faceted approach for improving the management of pollution sources within the Northern Everglades watersheds. It includes source control programs, such as BMPs, on-site treatment technologies, stormwater and wastewater infrastructure upgrades and master planning, and regulatory programs focused on water quality and quantity.

RESEARCH AND WATER QUALITY MONITORING PROGRAM

This program primarily assesses ecological health and progress toward achieving the water quality and storage targets and the plans, programs, and other responsibilities in the WPPs. The activities comprising FY2020 expenditures include ecological and water quality monitoring, applied research, model application and development, and exotic species control.

Table 8A-2. Accounting of NEEPP expenditures for FY2020 (October 1, 2019–September 30, 2020). [*Note: Information to be included in the final report only.*]

NORTHERN EVERGLADES ANNUAL WORK PLAN FOR FISCAL YEAR 2021

This Northern Everglades Annual Work Plan was prepared pursuant to the requirements of Paragraph 373.026(8)(b), F.S., which states that prior to the release of state funds for the implementation of the Lake Okeechobee or river WPPs, SFWMD must prepare an annual work plan, as part of the annual consolidated report, that is consistent with the goals and objectives of Section 373.4595, F.S. Upon a determination by the FDEP Secretary of the annual work plan's consistency with the goals and objectives of Section 373.4595, F.S., the Secretary may approve the release of state funds.

The coordinating agencies have requested to spend SOETF dollars for implementation of the projects identified in the Lake Okeechobee, St. Lucie River, and Caloosahatchee River WPPs. The projects collectively identified by the coordinating agencies that will be implemented in FY2021 using SOETF funding are listed below with an asterisk (*) and are an integral part of the respective WPP. To provide a more comprehensive picture, projects that will be implemented in FY2021 to further the goals and objectives of NEEPP but will be funded by other sources are also included in the list. A key to the lead or local sponsor of the projects is provided below the list. It should be noted that this work plan is subject to change throughout the fiscal year as deemed appropriate by the coordinating agencies.

[*Note: Information below in this subsection to be included in the final report only.*]

LAKE OKEECHOBEE WATERSHED

I. Construction Project and Other Related Activities

II. Pollutant Control Program

III. Research and Water Quality Monitoring Program

ST. LUCIE RIVER WATERSHED

I. Construction Project and Other Related Activities

II. Pollutant Control Program

III. RESEARCH AND WATER QUALITY MONITORING PROGRAM

CALOOSAHATCHEE RIVER WATERSHED

I. Construction Project and Other Related Activities

II. Pollutant Control Program

III. Research and Water Quality Monitoring Program

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