Draft

Caloosahatchee River and Estuary Basin Management Action Plan

Division of Environmental Assessment and Restoration
Water Quality Restoration Program
Florida Department of Environmental Protection

with participation from the
Caloosahatchee River and Estuary Stakeholders

April 2025

2600 Blair Stone Road
Tallahassee, FL 32399-2400
https://floridadep.gov/

Acknowledgments

This *2025 Caloosahatchee River and Estuary Basin Management Action Plan* was prepared as part of a statewide watershed management approach to restore and protect Florida's water quality. It was prepared by the Florida Department of Environmental Protection with participation from the Caloosahatchee River and Estuary stakeholders identified below.

Florida Department of Environmental Protection
Alexis A. Lambert, Secretary

Table ES-1. Caloosahatchee River and Estuary stakeholders

Type of Organization/Entity	Name
Responsible Entities	Agriculture Charlotte County Collier County Glades County Hendry County Lee County City of Cape Coral City of Clewiston City of Fort Myers City of LaBelle City of Moore Haven Lucaya Community Development District (CDD) Moody River Estates CDD Port LaBelle CDD Portico CDD River Hall CDD Sail Harbour CDD Verandah East CDD Verandah West CDD Barron Water Control District Clewiston Water Control District Collins Slough Water Control District County Line Drainage District Cow Slough Water Control District Devil's Garden Water Control District Disston Island Conservancy District Flaghole Drainage District Gerber Groves Water Control District Hendry-Hilliard Water Control District Lehigh Acres Municipal Services District Sugarland Drainage District
Responsible Agencies	County Health Departments Florida Department of Agriculture and Consumer Services Florida Department of Environmental Protection Florida Department of Transportation District 1 South Florida Water Management District

See **Appendix A** for links to resources referenced in this document. For additional information, contact:

Florida Department of Environmental Protection
Water Quality Restoration Program
2600 Blair Stone Road, Mail Station 3565
Tallahassee, FL 32399-2400
Email: BMAPProgram@FloridaDEP.gov

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List of Acronyms and Abbreviations

ac-ft	Acre-feet
ALG	Agricultural Lands
AWT	Advanced Wastewater Treatment
BMAP	Basin Management Action Plan
BMP	Best Management Practice
CAFO	Concentrated Animal Feeding Operation
CDD	Community Development District
DEP	Florida Department of Environmental Protection
DO	Dissolved Oxygen
F.A.C.	Florida Administrative Code
FAVT	Floating Aquatic Vegetation Treatment
FDACS	Florida Department of Agriculture and Consumer Services
FDOT	Florida Department of Transportation
FFS	Florida Forest Service
F.S.	Florida Statutes
FSAID	Florida Statewide Agricultural Irrigation Demand (geodatabase)
FWM	Flow Weighted Mean Concentration
FYN	Florida Yards and Neighborhoods
GIS	Geographic Information Systems
HSPF	Hydrological Simulation Program – FORTRAN
IV	Implementation Verification
LA-MSID	Lehigh Acres Municipal Services Improvement District
lbs/ac	Pounds Per Acre
lbs/yr	Pounds Per Year
LET	Load Estimation Tool
L.O.F.	Laws of Florida
mgd	Million Gallons Per Day
mg/L	Milligrams Per Liter
MS4	Municipal Separate Storm Sewer System
NA	Not Applicable
NMP	Nutrient Management Plan
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OAWP	Office of Agricultural Water Policy
OSTDS	Onsite Sewage Treatment and Disposal System
RAP	Reasonable Assurance Plan
ROC	Regional Operations Center
SFWMD	South Florida Water Management District
SR	State Road
STA	Stormwater Treatment Area
SWMP	Stormwater Management Program

TBD	To Be Determined
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TRA	Targeted Restoration Area
UAL	Unit Area Load
UF-IFAS	University of Florida Institute of Food and Agricultural Sciences Research
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
WBID	Waterbody Identification (number)
WCD	Water Control District
WIN	Watershed Information Network (Database)
WMD	Water Management District
WWTF	Wastewater Treatment Facility
WRF	Water Reclamation Facility
WY	Water Year

Executive Summary

Background

The Caloosahatchee River and Estuary Watershed is located in southwest Florida in Charlotte, Collier, Glades, Hendry, and Lee Counties (see **Figure ES-1**). The Caloosahatchee River runs from Lake Okeechobee through a series of locks to San Carlos Bay. It has both fresh and marine segments with the freshwater segment extending from Lake Okeechobee to the Franklin Lock (S-79), and the marine segment extending 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. The Caloosahatchee River and Estuary Watershed is comprised of three subwatersheds and 27 basins.

The Caloosahatchee River and Estuary and its associated watershed have been subjected to hydrologic, land use, and other anthropogenic modifications during the past century that have degraded water quality in the estuary and several tributaries to the Caloosahatchee River. To help address the nutrient impairment, the Florida Department of Environmental Protection (DEP) adopted total maximum daily loads (TMDLs) for total nitrogen (TN) and total phosphorus (TP) for waterbodies in the watershed. This basin management action plan (BMAP) represents the joint efforts of multiple stakeholders to identify where nutrients, both nitrogen and phosphorus, can be reduced through regulatory and non-regulatory programs, incentive-based programs, and implementation of projects that will ultimately achieve the TN and TP TMDLs in the waterbodies.

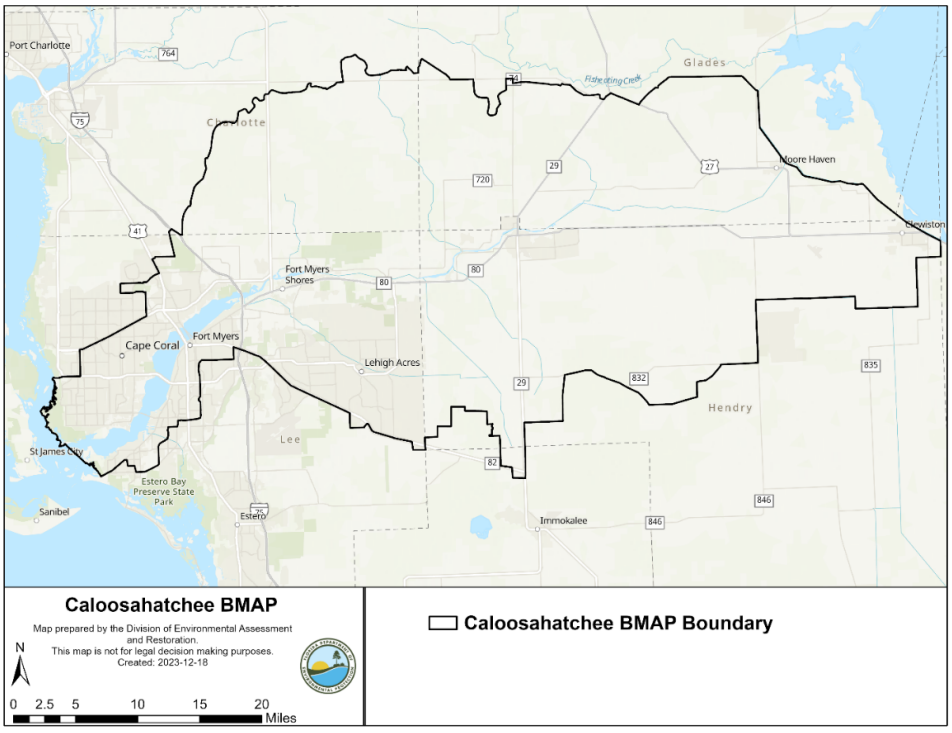

Figure ES-1. Caloosahatchee River and Estuary BMAP area

TMDLs

TMDLs are water quality targets designed to address verified impairments for specific pollutants, such as TN and TP. DEP identified the Caloosahatchee Estuary as impaired for chlorophyll *a* caused by excessive nutrients in 2005. In December 2009, DEP adopted a TMDL for TN in the Caloosahatchee Estuary downstream of the Franklin Lock and Dam.

In 2005, 2010, and 2016, DEP identified several tributaries to the Caloosahatchee River as impaired for dissolved oxygen (DO). In late 2019, DEP adopted TN, TP, and biochemical oxygen demand TMDLs for these tributaries.

Caloosahatchee River and Estuary BMAP

DEP first adopted the Caloosahatchee Estuary BMAP in November 2012 to implement the TN TMDL in the Caloosahatchee Estuary downstream of the Franklin Lock and Dam. BMAPs are designed to be implemented in a phased approach and, at the end of each 5-year phase, a review is completed and submitted to the Legislature and Governor. The first 5-Year Review was completed in November 2017, and the BMAP was subsequently updated in 2020 following Executive Order 19-12 (Item C). This BMAP update included expanding the focus to include the entire Caloosahatchee River and Estuary Watershed to capture the full area draining to the estuary and address the tributaries TMDLs. In December 2022, DEP and the local stakeholders completed the second 5-Year Review to evaluate implementation at the end of the second phase and make recommendations for future phases of the BMAP. The information gathered as part of the 2022 5-Year Review was used to develop this updated 2025 BMAP for the Caloosahatchee River and Estuary Watershed.

This 2025 BMAP provides information on changes since the 2020 BMAP was adopted, including updated allocations of load reductions to the responsible stakeholders, specific 5-year milestones assigned to the responsible stakeholders, and updated management actions to achieve nutrient reductions. This update sets a goal for achieving load reductions no later than 2032 for the responsible stakeholders in the tidal portion of the BMAP, which is 20 years after the initial BMAP adoption and the original timeline from the 2012 BMAP. The responsible stakeholders in the East and West Caloosahatchee subwatersheds have a goal of achieving load reductions no later than 2040, which is 20 years after the expansion of the initial BMAP to include the East and West Caloosahatchee subwatersheds with the 2020 update.

Summary of Load Reductions

DEP asked the stakeholders to provide information on management actions, including projects, programs, and activities, that would reduce nutrient loads from the Caloosahatchee River and Estuary Watershed. Management actions are required to address nutrient loads to the estuary and had to meet several criteria to be considered eligible for credit. Benefits to the estuary and impaired tributaries, where applicable, were estimated using the load estimation shapefile developed from the Hydrological Simulation Program – FORTRAN (HSPF) model.

Since the data period used for the 2020 BMAP update, the measured TN load in the East and West Caloosahatchee subwatersheds has substantially increased. Data collected by the South Florida Water Management District (SFWMD) were used to calculate a TN average for the period of 2013 to 2022. This analysis found that there was an increase of 31.78% in the East Caloosahatchee subwatershed and 40.38% in the West Caloosahatchee subwatershed compared to the 2017 modeled values. This information was used as an adjustment factor in this 2025 BMAP update to modify entity allocations and project reductions. DEP has started a model update with more current land uses and data to reflect the changes in the watershed TN loading. Upon model completion, DEP will reevaluate and, if necessary, adopt another iteration of the BMAP, most likely before 2030. The next iteration may include updated required reductions, timelines, and 5-year milestones.

Through November 15, 2024, 183 projects were considered completed and ongoing and an additional 81 projects are underway or planned. The completed and ongoing projects in the Tidal Caloosahatchee subwatershed were estimated to achieve total reductions of 294,137 pounds per year (lbs/yr) of TN, or 79% of the reductions needed to meet the estuary TMDL for the Tidal Caloosahatchee subwatershed. This 79% reduction achieves the 10-year milestone established for the Tidal Caloosahatchee subwatershed in the BMAP update. The completed and ongoing projects in the East and West Caloosahatchee subwatersheds were estimated to achieve total reductions of 677,080 lbs/yr of TN, or 46% of the reductions needed to meet the estuary TMDL for the East and West Caloosahatchee subwatersheds. This 46% reduction achieves the 5-year milestone established for the East and West Caloosahatchee subwatersheds.

Estimated reductions for completed and ongoing projects in the impaired tributaries are:

- C-19 Canal TMDL — 33,937 lbs/yr of TN and 1,031 lbs/yr of TP reductions.
- Lake Hicpochee TMDL — 13,330 lbs/yr of TN and 364 lbs/yr of TP reductions.
- Long Hammock Creek TMDL — 121,079 lbs/yr of TN and 3,758 lbs/yr of TP reductions
- S-4 Basin TMDL — 22,279 lbs/yr of TN and 877 lbs/yr of TP reductions.
- Townsend Canal TMDL – 80,053 lbs/yr of TN and 6,065 lbs/yr of TP reductions.

Figure ES-2 and **Figure ES-3** shows progress towards the estuary TN TMDL load reductions for the Tidal Caloosahatchee subwatershed and East and West Caloosahatchee subwatersheds, respectively. **Figure ES-4** shows the progress towards the tributaries TN and TP TMDL load reductions. These figures show reductions from projects reported through November 15, 2024. This date was chosen to allow adequate time to review project documentation and calculate reductions based on accepted methodologies and best management practice (BMP) efficiencies. Updated project information will be provided each year in the Statewide Annual Report and at an annual meeting.

To achieve the TMDLs within the required 20 year timelines, stakeholders must identify and submit additional local projects and the Coordinating Agencies (DEP, Florida Department of Agriculture and Consumer Services [FDACS], SFWMD) must identify additional regional projects as well as determine the significant funding that will be necessary. Enhancements to programs addressing basinwide sources will also be required. In addition, the legacy phosphorus contribution in the watershed must be addressed through further studies and projects targeted at this source. Once this additional information is provided, the Coordinating Agencies will address these constraints.

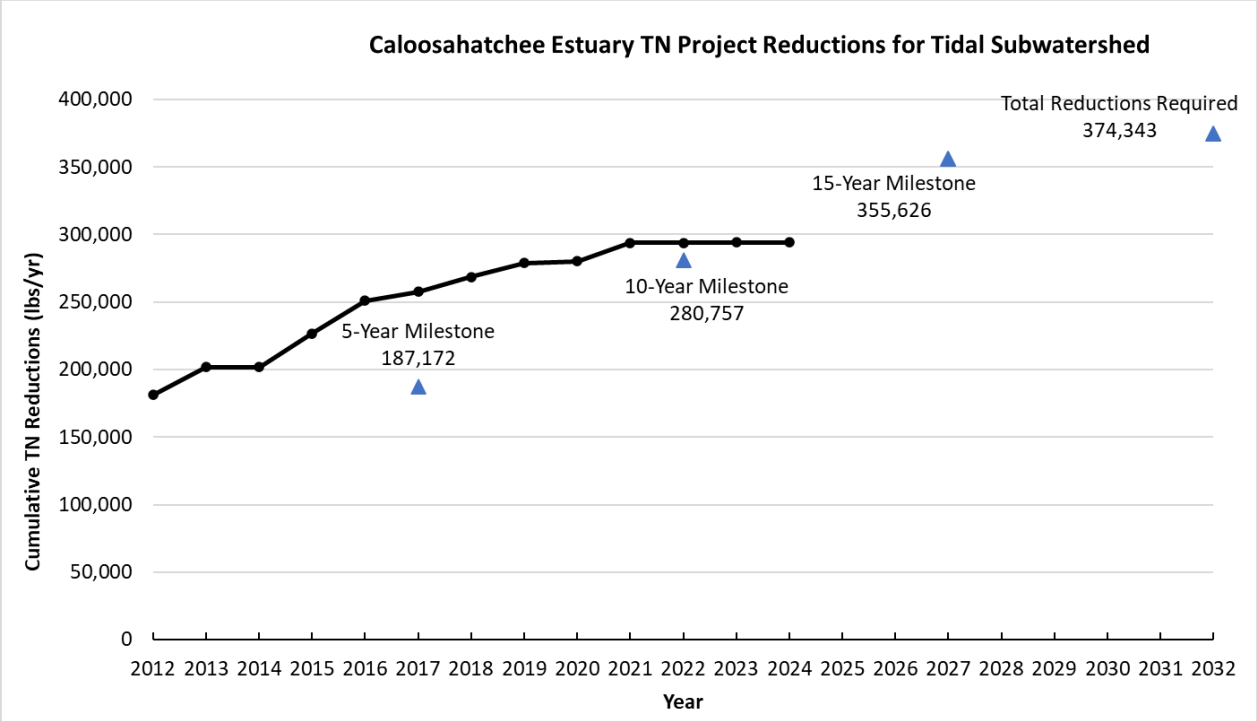

Figure ES-2. Estimated progress towards meeting the Caloosahatchee Estuary TN TMDL in the Tidal Caloosahatchee subwatershed with projects completed through November 15, 2024

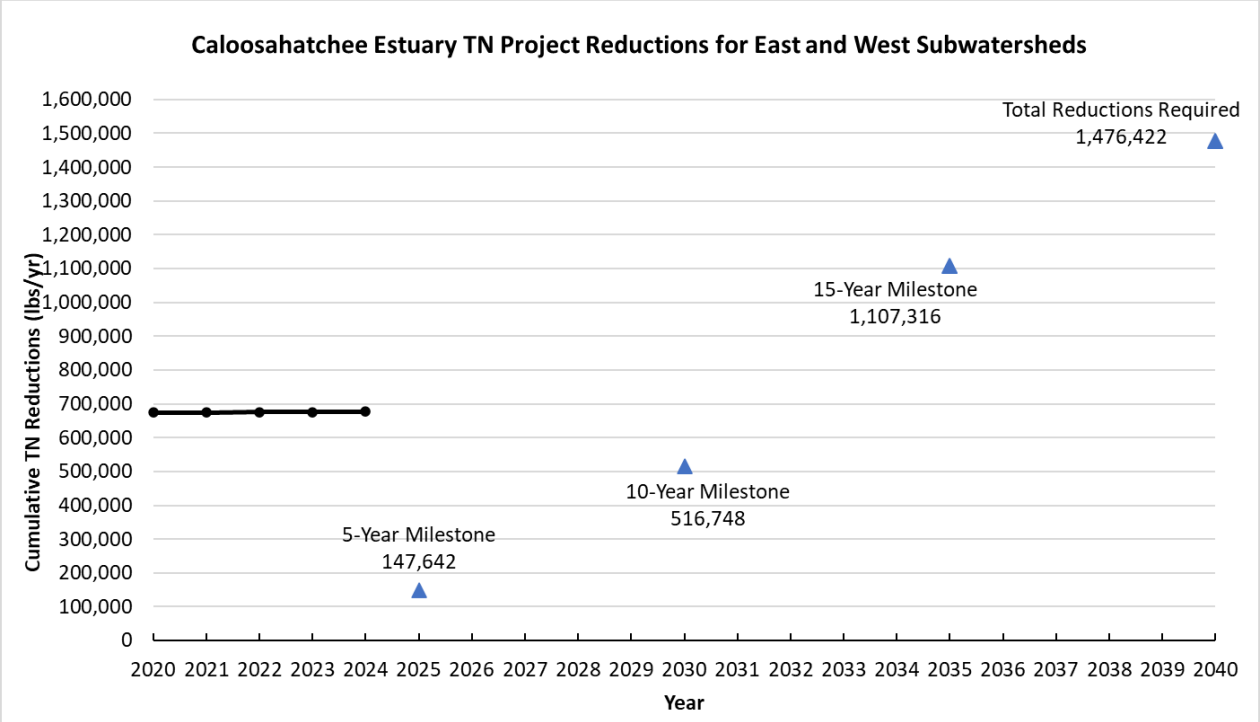

Figure ES-3. Estimated progress towards meeting the Caloosahatchee Estuary TN TMDL in the East and West Caloosahatchee subwatersheds with projects completed through November 15, 2024

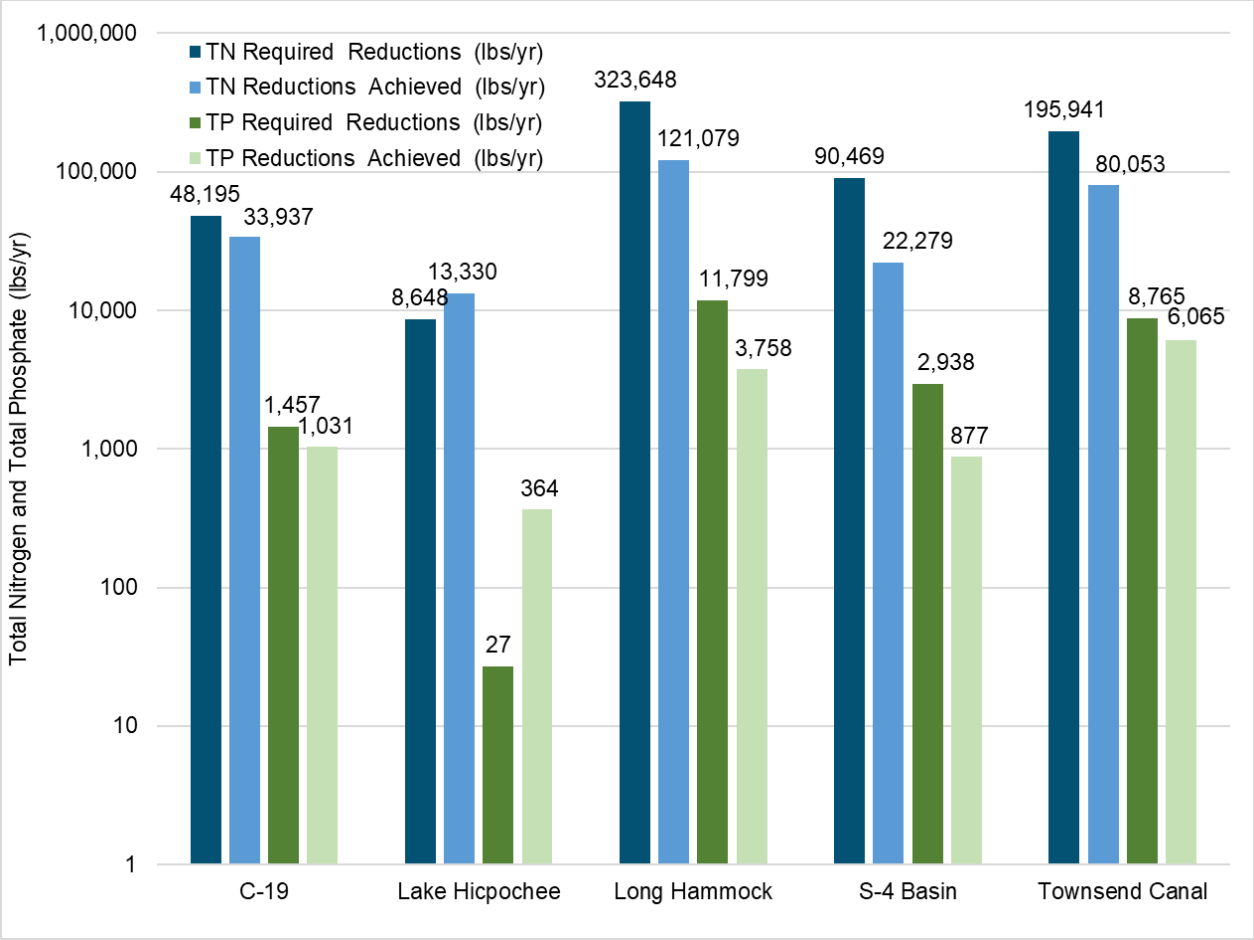

Figure ES-4. Estimated progress towards meeting the Caloosahatchee Tributaries TN and TP TMDLs with projects completed through November 15, 2024

Source Requirements

Subparagraph 403.067(7)(a)9., Florida Statutes (F.S.), specifies that local governments (county governments and municipalities) within a BMAP must develop a wastewater treatment plan and/or an onsite sewage treatment and disposal system (OSTDS) remediation plan containing information if DEP "identifies domestic wastewater treatment facilities or onsite sewage treatment and disposal systems as contributors of at least 20% of point source or nonpoint source nutrient pollution or if the Department determines remediation is necessary to achieve the [TMDL]."

DEP determined that the domestic wastewater treatment facilities and/or OSTDS sources within the Caloosahatchee River and Estuary BMAP met the 20% contribution and/or remediation of these sources is necessary to achieve the TMDL. A final order (23-0114) was issued to prescribe timelines for local governments to submit these plans on June 12, 2023. Draft wastewater treatment and OSTDS remediation plans were submitted by February 1, 2024, and final plans

were submitted by August 1, 2024. Projects outlined in the plans addressing domestic wastewater sources are incorporated into this BMAP update.

Additionally, DEP has determined facilities that land apply reclaimed water identified in **Appendix E** are subject to the nitrogen and phosphorus limits set forth in section 403.086, F.S. The facilities listed in **Appendix E** have 10 years from BMAP adoption to meet the applicable advanced wastewater treatment (AWT) standards. More information can be found in Section 2.3.3.

Agricultural nonpoint sources are the predominant contributor of TN and TP loading to the Caloosahatchee River and Estuary. Attainment of the TMDLs is largely contingent upon addressing the agricultural loading to the river and tributaries. The Caloosahatchee River and Estuary BMAP was originally adopted in November 2012, and many agricultural producers have been enrolled and are implementing BMPs. FDACS has focused efforts to improve enrollment efforts, resulting in 93% of the agricultural lands in the BMAP being enrolled in the BMP program as of April 30, 2024. FDACS will continue to carry out its statutory authority and fulfill its statutory obligations by actively engaging agricultural nonpoint sources to enroll in BMPs and by adequately verifying BMP implementation.

FDACS is responsible for verifying that all eligible agricultural producers are enrolled in appropriate BMP programs. FDACS will perform onsite inspections of all agricultural operations enrolled in BMPs to ensure that these practices are being properly implemented every two years. FDACS will continue to collect nitrogen and phosphorus fertilization records during implementation verification visits from each agricultural producer enrolled in BMPs and is required to provide DEP the nutrient application records in accordance with subsection 403.067(7)(c)5., F.S.

Further reductions beyond the implementation of required agricultural owner–implemented BMPs will be necessary to achieve the TMDL. As such, pursuant to subsection 373.4595(3), F.S., where water quality problems are demonstrated, despite the appropriate implementation of adopted BMPs, a reevaluation of the BMPs shall be conducted pursuant to subsection 403.067(7), F.S. If a reevaluation of the BMPs is needed, FDACS will also include DEP, the appropriate WMD, and other partners in the reevaluation and BMP update processes.

Further reductions can be achieved through the implementation of additional agricultural projects or activities. The Coordinating Agencies (DEP, FDACS, and SFWMD) will work together to identify cost-share practices and other projects that can be undertaken to achieve these nutrient reductions and identify and implement additional projects and activities in priority targeted restoration areas (TRAs). These additional projects and activities are to be implemented in conjunction with the BMP Program, which needs to achieve full enrollment with verification to ensure that the BMAP goals are achieved.

Chapter 2023-169, Laws of Florida (L.O.F.), (403.067, F.S.) requires that BMAPs include milestones for implementation of total maximum daily loads. Any responsible entity within the

BMAP that has an assigned pollutant load reduction requirement must identify projects or strategies that such entity will undertake to meet their upcoming 5-year milestone. Each project must include a planning-level cost estimate and an estimated date of completion in the Statewide Annual Report.

Within five years of the adoption of this BMAP, DEP will evaluate any entity located in the BMAP area that serves a minimum resident population of at least 1,000 individuals who are not currently covered by a municipal separate storm sewer system (MS4) permit and designate eligible entities as regulated MS4s, in accordance with Chapter 62-624, Florida Administrative Code (F.A.C.).

Water Quality Monitoring

The original BMAP monitoring network included 112 stations within the Tidal Caloosahatchee subwatershed. As part of the 2020 BMAP update, the monitoring network was expanded to the entire subwatershed and includes 194 stations sampled by local entities, DEP, SFWMD, and U.S. Geological Survey (USGS). DEP and SFWMD are coordinating on adding five stations to the monitoring network to further improve monitoring in basins throughout the watershed.

The monitoring network is organized into tiers as follows: (1) Tier 1 stations are the primary/priority stations used in periodic water quality analysis to track BMAP progress and water quality trends over the long-term. If at any point it is necessary to reduce efforts in the basin, these stations should be the last stations impacted. (2) Tier 2 stations provide secondary information that can be used to help focus and adaptively manage implementation efforts. (3) Tier 3 stations are the gauges where flow and/or stage are monitored, generally by USGS. The monitoring stations are not specifically BMAP stations—i.e., they are designed for other purposes—but some of the data collected at these sites are used to monitor the effectiveness of BMAP implementation.

BMAP Cost

The project costs provided for the BMAP may include capital costs as well as those associated with construction and routine operations and maintenance and monitoring. Many BMAP projects were built to achieve multiple objectives and not just nutrient reductions. Funds for some projects have already been spent, others have been obligated to ongoing projects, and the remainder are yet to be appropriated.

The funding sources for the projects range from local public and private contributions to state and federal legislative appropriations. DEP will continue to work with stakeholders to explore new opportunities for funding assistance to ensure that the activities listed in this BMAP can be maintained at the necessary level of effort and that additional projects can be constructed.

Chapter 2023-169, L.O.F., expanded grant opportunities for local governments and eligible entities working to address a TMDL. Previously, grant funding was available for specific project types, including septic-to-sewer, advanced wastewater treatment expansion or upgrades, and

OSTDS upgrades. Now, through the Water Quality Improvement Grant program, eligible entities can also apply for grant funding for stormwater, regional agricultural projects, and a broader suite of wastewater projects including collection systems and domestic wastewater reuse. Projects are prioritized that have the maximum nutrient load per project, demonstrate project readiness, are cost-effective, have a cost-share by the applicant (except for Rural Areas of Opportunity), have previous state commitment and are in areas where reductions are most needed.

Chapter 2024-180, L.O.F., created a program to expeditiously review new and innovative enhanced nutrient-reducing OSTDS to reduce the nutrients entering Florida's waterways.

Chapter 1. Context, Purpose, and Scope of the Plan

1.1. Water Quality Standards and Total Maximum Daily Loads (TMDLs)

Florida's water quality standards are designed to ensure that surface waters fully support their designated uses, such as drinking water, aquatic life, recreation, and agriculture. Currently, most surface waters in Florida, including most of those in the Caloosahatchee River and Estuary Watershed, are categorized as Class III waters, meaning they must be suitable for recreation and must support fish consumption and the propagation and maintenance of a healthy, well-balanced population of fish and wildlife. **Table 1** lists all designated use classifications for Florida surface waters.

Table 1. Designated use attainment categories for Florida surface waters

[1] Class I and II waters additionally include all Class III uses.

Classification	Description
Class I[1]	Potable water supplies
Class II[1]	**Shellfish propagation or harvesting**
Class III	**Fish consumption; recreation, propagation and maintenance of a healthy, well-balanced population of fish and wildlife**
Class III-Limited	Fish consumption, recreation or limited recreation, and/or propagation and maintenance of a limited population of fish and wildlife
Class IV	Agricultural water supplies
Class V	Navigation, utility, and industrial use (*no current Class V designations*)

Section 303(d) of the federal Clean Water Act requires that every two years each state must identify its "impaired" waters, including estuaries, lakes, rivers, and streams, that do not meet their designated uses. Florida Department of Environmental Protection (DEP) staff in the Division of Environmental Assessment and Restoration are responsible for assessing Florida's waters for inclusion on the Verified List of Impaired Waters (when a causative pollutant for the impairment has been identified) and Study List (when a causative pollutant for the impairment has not been identified and additional study is needed). These lists are then provided to the U.S. Environmental Protection Agency as an annual update to the state "303(d) list."

In 2005, DEP identified the Caloosahatchee Estuary as impaired for chlorophyll *a* caused by excessive nutrients. In 2005, 2010, and 2016 DEP identified various tributaries to the Caloosahatchee River, including the S-4 Basin (waterbody identification [WBID] number 3246), C-19 Canal (WBID 3237E), Lake Hicpochee (WBID 3237C), Long Hammock Creek (WBID 3237B), and Townsend Canal (WBID 3235L) as impaired for dissolved oxygen (DO).

1.1.1. Caloosahatchee River and Estuary TMDLs

A TMDL is the maximum amount of a specific pollutant that a waterbody can assimilate while maintaining its designated uses. The Caloosahatchee Estuary TMDL was adopted in 2009 for total nitrogen (TN). The TMDL included three segments with WBID numbers 3240A, 3240B,

and 3240C. In July 2019, DEP adopted DO TMDLS for TN, total phosphorus (TP), and biochemical oxygen demand for five tributaries in the upper Caloosahatchee River Basin (effective August 13, 2019). These tributaries are the S-4 Basin, C-19 Canal, Lake Hicpochee, Long Hammock Creek, and Townsend Canal. Information about TMDL compliance can be found in **Section 4.3** of this document. **Figure 1** shows the locations of the estuary and tributary WBIDs with nutrient TMDLs.

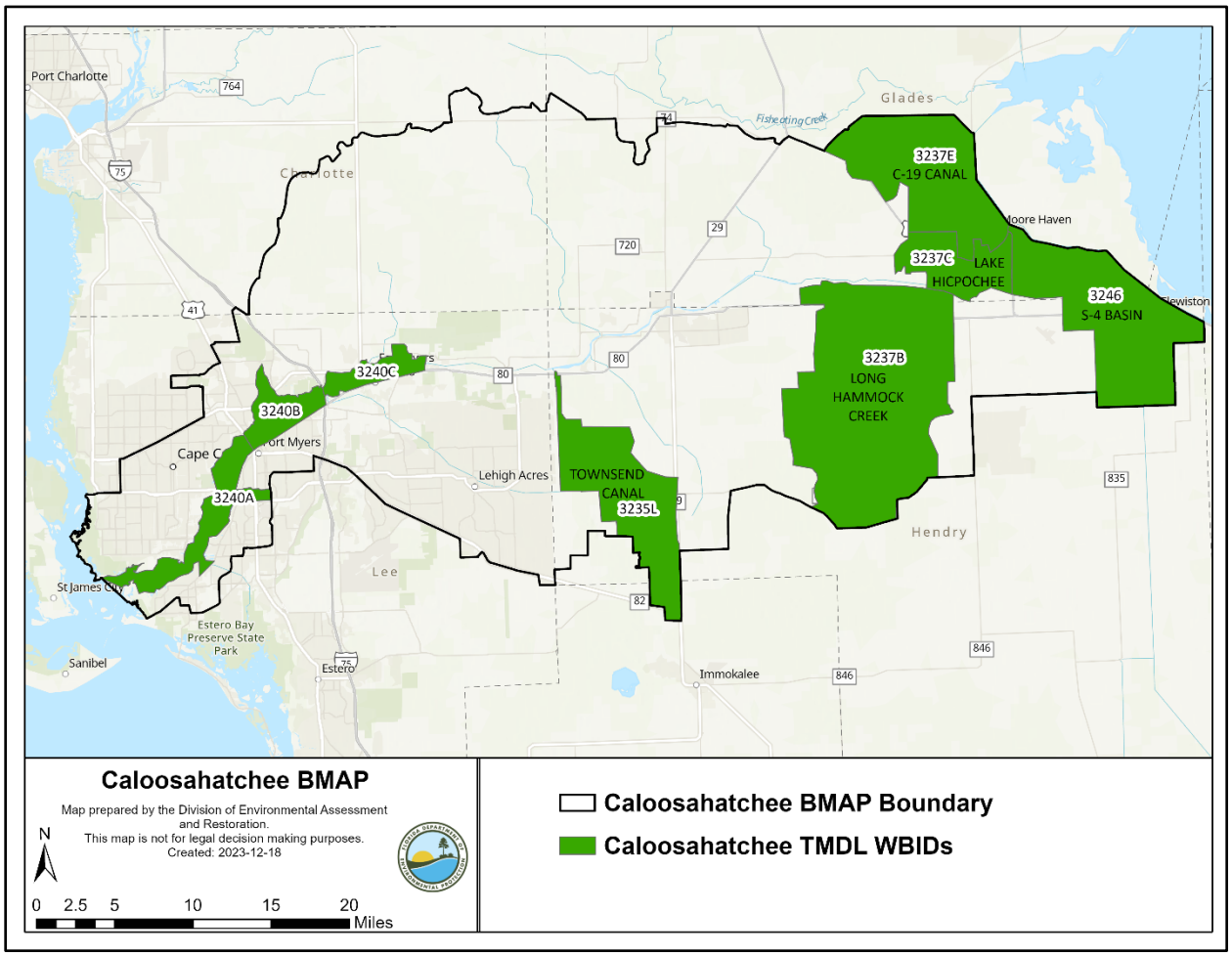

Figure 1. Caloosahatchee River and Estuary TMDL WBIDs

1.2. Caloosahatchee River and Estuary Basin Management Action Plan (BMAP)

DEP implements TMDLs through permits and BMAPs; the latter contain strategies to reduce and prevent pollutant discharges through various cost-effective means. During the watershed restoration process, DEP and the interested stakeholders jointly develop BMAPs or other implementation approaches. Stakeholder involvement is critical to the success of the watershed restoration program and varies with each phase of implementation to achieve different purposes. The BMAP development process is structured to achieve cooperation and consensus among a

broad range of interested parties, including the South Florida Water Management District (SFWMD), Florida Department of Agriculture and Consumer Services (FDACS), and stakeholders representing other agencies, governments, and interested parties.

In the context of the BMAP, there are different organizations named in the plan.

- Responsible entities are those organizations who are assigned load reductions and must comply with the BMAP provisions; these organizations are sometimes referred to as "Lead Entities."

- Responsible agencies may be accountable for reducing loads from their own activities or have an important public sector role in BMAP implementation such as regulatory oversight, monitoring, research, or other related duties.

- Interested stakeholders are those organizations that have engaged with BMAP development and implementation with the intention to influence the implementation process and outcomes.

- Stakeholders is a more general term often used in the BMAP context to include all three of the previously mentioned organizations—responsible entities, responsible agencies, and interested stakeholders.

The Florida Watershed Restoration Act, subparagraph 403.067(7)(a)1., Florida Statutes (F.S.), establishes an adaptive management process for BMAPs that continues until the TMDLs are achieved and maintained. This approach allows for incrementally reducing nutrient loads through the implementation of projects and programs, while simultaneously monitoring and conducting studies to better understand water quality dynamics (sources and response variables) in each impaired waterbody. The original Caloosahatchee River and Estuary BMAP was adopted in November 2012, and the first 5-Year Review was completed in November 2017 (Section 373.4595, F.S., calls for a review of the BMAP to be completed and submitted to the Legislature and Governor every five years).

In January 2019, Executive Order 19-12 (Item C) included a requirement to update and secure all restoration plans, within one year, for waterbodies impacting south Florida communities, including the Caloosahatchee River and Estuary BMAP. The BMAP was subsequently updated in January 2020, and the second 5-Year Review was completed in December 2022.

The Clean Waterways Act passed in 2020 required local governments to develop and submit wastewater and onsite sewage treatment and disposal system (OSTDS) (also known as septic system) remediation plans to be incorporated into the BMAPs by July 1, 2025. This document serves as the update to the 2020 BMAP based on recommendations from the second 5-Year Review published in December 2022 and to incorporate the Clean Waterways Act requirements. **Figure 2** shows the Caloosahatchee River and Estuary BMAP area with the subwatershed divisions. The 2012 BMAP was developed for the Tidal Caloosahatchee subwatershed, and the

2020 BMAP update expanded the boundary to include all three subwatersheds. **Figure 3** shows the basins within the BMAP area.

Figure 4 and **Figure 5** show the estimated progress toward meeting the Caloosahatchee Estuary TMDL with projects completed through November 15, 2024, for the Tidal Caloosahatchee subwatershed and East and West Caloosahatchee subwatersheds, respectively. **Figure 6** shows the estimated progress towards the tributary TMDLs with projects completed through November 15, 2024. This date was chosen to allow adequate time to review project documentation and calculate reductions based on accepted methodologies and BMP efficiencies. Updated project information will be provided each year in the Statewide Annual Report and at an annual meeting.

Subsection 373.4595(4)(d), F.S., requires DEP to set an implementation schedule for achieving the BMAP load reductions. To meet this requirement, DEP establishes a set of 5-year milestones by which a certain percentage of the load reductions must be met. Additionally, Section 403.067, F.S., requires any responsible entity within the BMAP that has an assigned pollutant load reduction requirement to identify projects or strategies to meet the upcoming 5-year milestone, even if the identified project or strategy will not be completed by the milestone. Stakeholders must provide DEP with reasonable assurance that they have enough project credits to achieve their required reductions within the period established by the BMAP. This BMAP update establishes a set of entity-specific milestones for the Tidal Caloosahatchee subwatershed based on the previously adopted milestones, with a goal of achieving the full load reductions in 2032, which is 20 years after the initial BMAP adoption. A set of entity-specific milestones is also established for the East and West Caloosahatchee subwatersheds, with a goal of achieving the full load reductions in 2040, which is 20 years after the East and West Caloosahatchee subwatersheds were added to the BMAP. See Section 2.2.3 for details on the established milestones by entity.

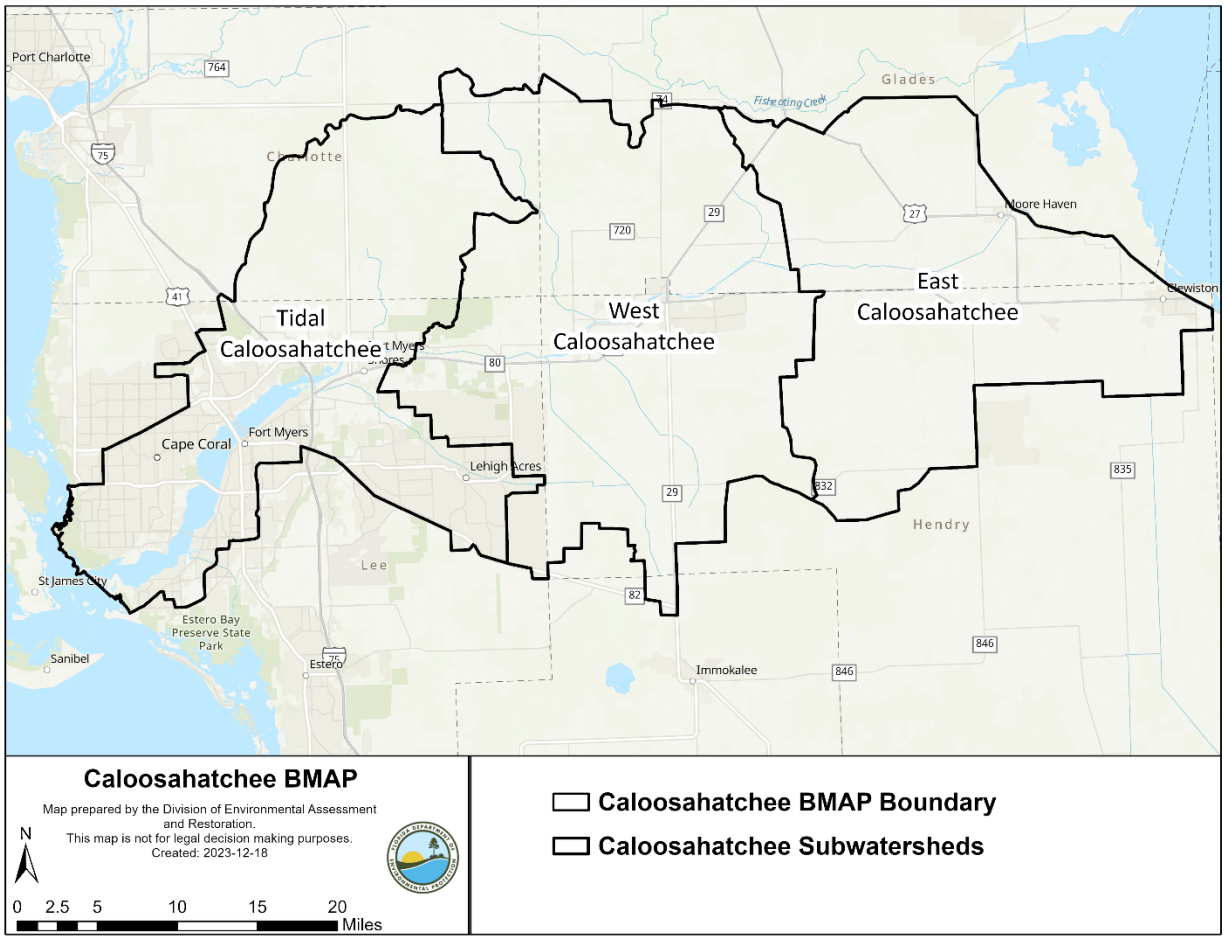

Figure 2. Caloosahatchee River and Estuary BMAP subwatersheds

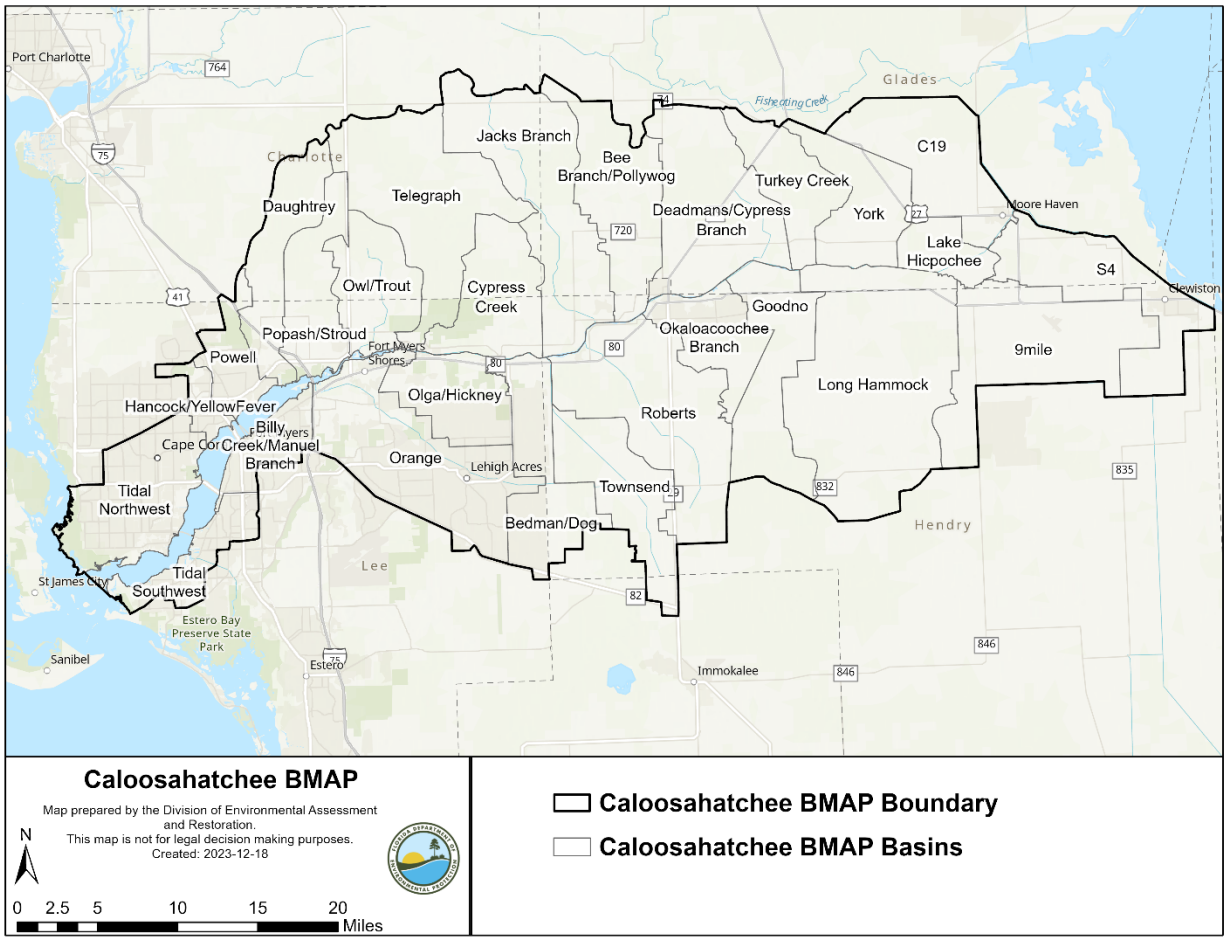

Figure 3. Caloosahatchee River and Estuary BMAP basins

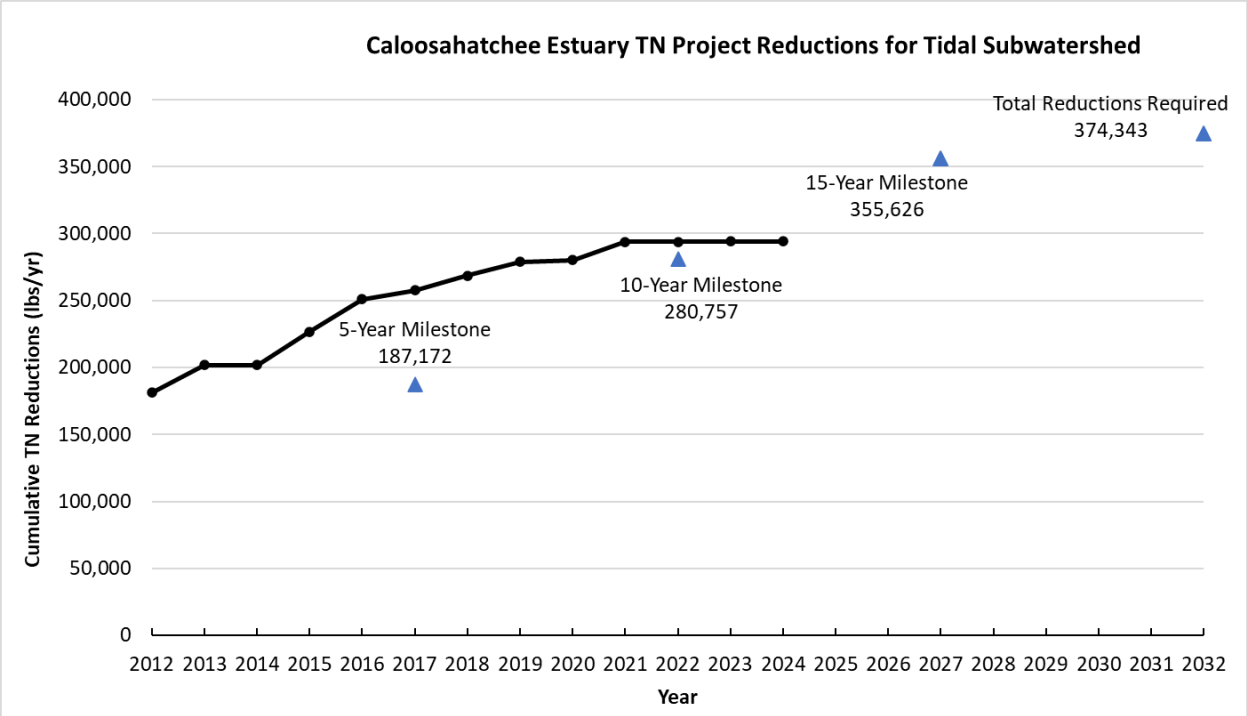

Figure 4. Estimated progress towards meeting the Caloosahatchee Estuary TMDL in the Tidal Caloosahatchee subwatershed with projects completed through November 15, 2024

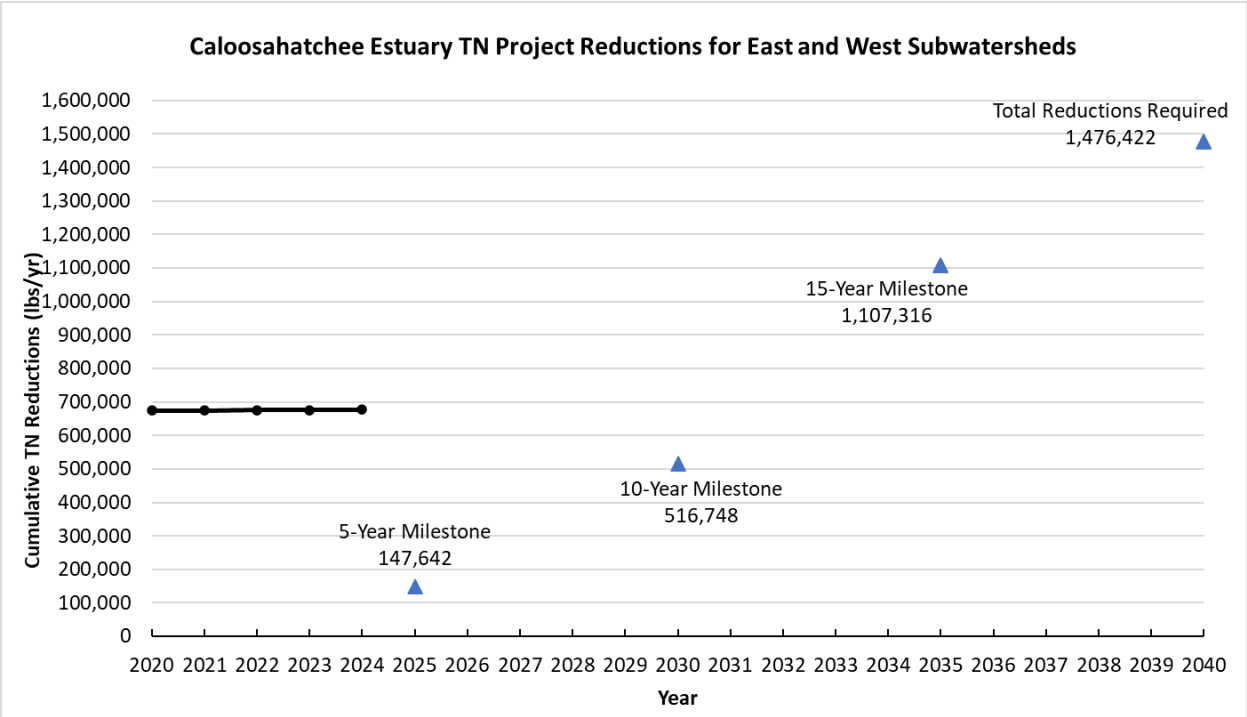

Figure 5. Estimated progress towards meeting the Caloosahatchee Estuary TMDL in the East and West Caloosahatchee subwatersheds with projects completed through November 15, 2024

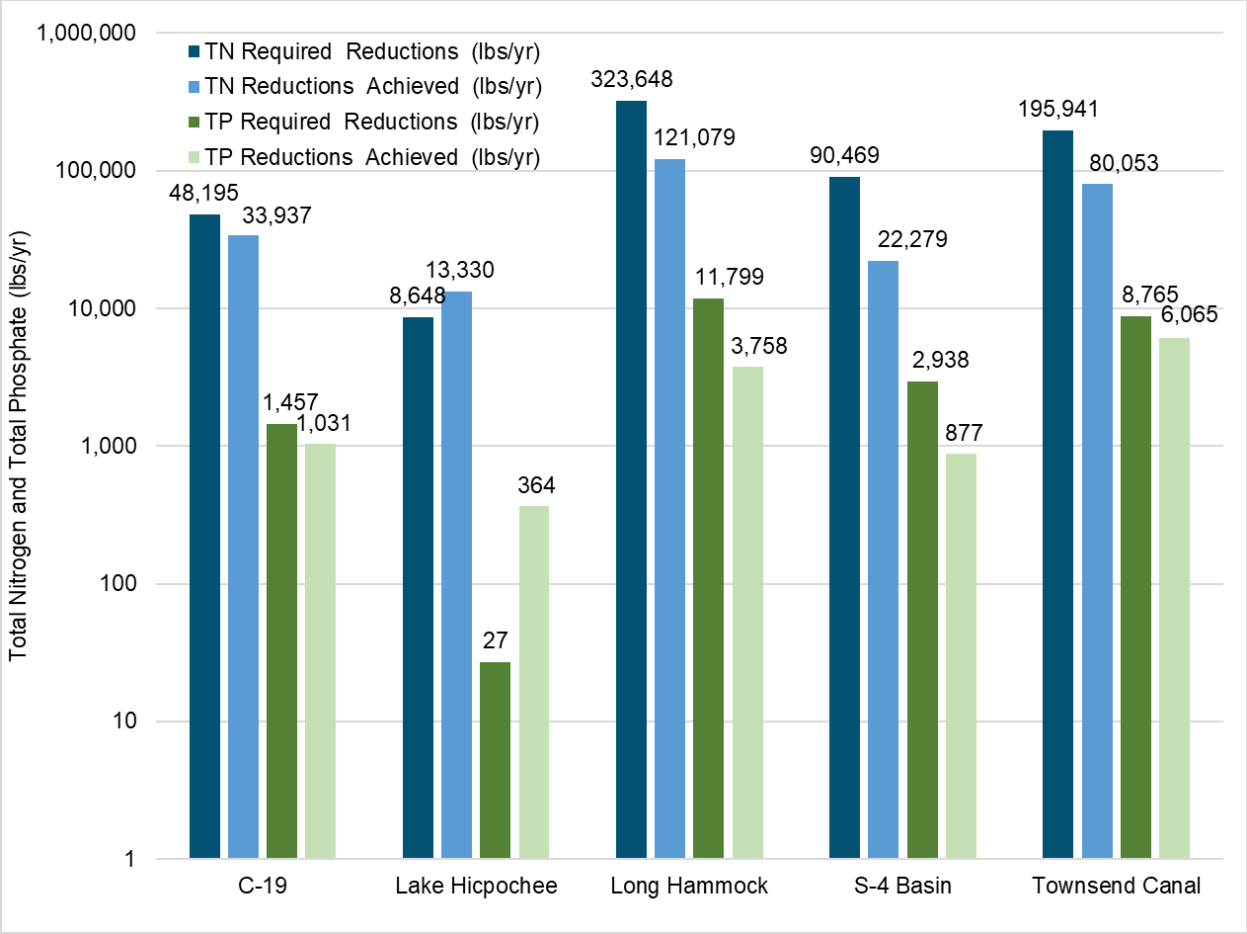

Figure 6. Estimated progress towards meeting the Caloosahatchee tributaries TMDLs with projects completed through November 15, 2024

1.2.1 5-Year Review

The second 5-Year Review, completed in December 2022, provided recommendations for improving the health of the Caloosahatchee River and Estuary Watershed, and these recommendations are included throughout this updated BMAP. The 5-Year Review also included a water quality trend analysis to track trends in TN and TP concentrations in the Caloosahatchee watershed. The results of this trend analysis are used in the targeted restoration area (TRA) approach described in **Section 2.4**.

Based on the allocations established at the time and the current and future project information provided by stakeholders during the second 5-Year Review, DEP anticipated that it was not practicable to achieve reductions sufficient to meet the more recent tributary TMDLs within the same 20-year time frame as the estuary TMDL. Thus, new milestones for the East and West Caloosahatchee subwatersheds were established as described above in **Section 2.2.3**.

The 5-Year Review also recommended changes to the monitoring network, including adding stations and increasing efforts at several existing stations. DEP is working with SFWMD to add additional stations to the monitoring network in a future BMAP update.

1.2.2 Pollutant Sources

There are various sources of pollution in the Caloosahatchee River and Estuary Watershed. Nonpoint (i.e., diffuse) sources in the watershed contribute the majority of the TN and TP loads to the Caloosahatchee River and Estuary and include urban and agricultural stormwater runoff. Lake Okeechobee loading is being addressed through the Lake Okeechobee BMAP. Several reports, such as SFWMD's South Florida Environmental Report and periodic Caloosahatchee River Watershed Protection Plan updates, document more detailed information regarding TN and TP inputs from the Caloosahatchee River and Estuary Watershed.

Table 2 summarizes the percent contribution of TN and TP loads to the Caloosahatchee Estuary from each land use category in each subwatershed, as determined by the Hydrological Simulation Program – FORTRAN (HSPF) model and load estimation shapefile discussed in **Section 2.1**. The subsections below discuss the sources included in this BMAP in more detail.

Table 2. Summary of TP and TN loads by land use category by subwatershed

Subwatershed	Land Use Category*	TN Load to Estuary (% Subwatershed Total)	TP Load to Estuary (% Subwatershed Total)
East Caloosahatchee	Urban	5	16
East Caloosahatchee	Agriculture	90	80
East Caloosahatchee	Natural	5	4
Tidal Caloosahatchee	Urban	43	83
Tidal Caloosahatchee	Agriculture	44	12
Tidal Caloosahatchee	Natural	13	5
West Caloosahatchee	Urban	21	20
West Caloosahatchee	Agriculture	71	73
West Caloosahatchee	Natural	8	7

* Urban is HSPF model land use codes 1-7; natural lands are HSPF model land use codes 13, 14, 15, and 16; and agriculture is HSPF model land use codes 8, 9, 10, 11, and 12. Details on the land use types included in these land use codes can be found in the 2017 HSPF model report (Tetra Tech, 2017)

1.2.2.1 Agricultural Nonpoint Sources

For this 2025 BMAP update, FDACS used the parcel-level polygon agricultural lands (ALG) data that are part of the Florida Statewide Agricultural Irrigation Demand (FSAID) geodatabase to estimate agricultural acreages statewide. FSAID was not used in the HSPF model to estimate agricultural acreages and associated nutrient loads. The percentage of agricultural land use within the Caloosahatchee River and Estuary BMAP was then determined by comparing the FSAID 11 ALG and total acreage of the BMAP boundary. The total agricultural land in the BMAP is 551,891 acres. To estimate the agricultural acres enrolled in the best management practice (BMP) program, FDACS Office of Agricultural Water Policy (OAWP) overlayed the FSAID ALG and BMP enrollment data to calculate the acres of agricultural land in an enrolled

parcel. **Table 3** summarizes agricultural lands within the Caloosahatchee River and Estuary BMAP based on the FSAID 11 and the results of the FDACS unenrolled agricultural lands characterization.

FDACS will seek the further enrollment of producers in the BMAP area. As of April 30, 2024, there are 513,999 agricultural acres enrolled in the BMP program. **Table 4** summarizes the acres enrolled in the BMP Program by commodity. Currently, no producers are conducting water quality monitoring in lieu of implementing BMPs.

Appendix B provides more information on agricultural activities in the Caloosahatchee River and Estuary Watershed.

Table 3. Summary of agricultural land use acreage in the Caloosahatchee River and Estuary BMAP for enrollment through April 30, 2024

Crediting Location	Agricultural Acres	Unenrolled - Unlikely Enrollable Acres	Agricultural Acres - Adjusted	Agricultural Acres Enrolled
East Caloosahatchee	194,582	10,090	184,492	175,636
Tidal Caloosahatchee	57,182	6,413	50,769	46,126
West Caloosahatchee	180,758	12,093	168,665	153,026
C-19	24,540	302	24,238	24,116
Lake Hicpochee	5,189	378	4,811	4,675
Long Hammock	68,802	7,172	61,630	56,045
S-4	29,284	570	28,714	27,547
Townsend Canal	28,868	296	28,572	26,828
Total	**589,205**	**37,314**	**551,891**	**513,999**

Table 4. Agricultural lands enrolled in the in the Caloosahatchee River and Estuary BMAP by BMP Program commodity

Commodity	Agricultural Acres Enrolled
Citrus	54,647
Conservation Plan	59,284
Cow/Calf	120,366
Equine	43
Fruit/Nut	532
Multiple Commodities	130,155
Nursery	1,382
Poultry	113
Row/Field Crop	142,554
Sod	2,495
Temporarily Inactive	2,427
Total	**513,999**
Percent of Agricultural Lands Enrolled in BMPs	**93%**

1.2.2.2 Municipal Separate Storm Sewer Systems (MS4s)

Many of the municipalities in the watershed are regulated by the Florida National Pollutant Discharge Elimination System (NPDES) Stormwater Program. An MS4 is a conveyance or

system of conveyances, such as roads with stormwater systems, municipal streets, catch basins, curbs, gutters, ditches, constructed channels, or storm drains. If an MS4 permittee is identified as a contributor in the BMAP, the permitted MS4 must undertake projects specified in the BMAP. The BMAP projects required to be undertaken by MS4s are detailed for each basin in **Chapter 3**.

Regulated MS4s are required to implement stormwater management programs (SWMP) to reduce pollutants to the maximum extent practicable and address applicable TMDL allocations. Both Phase I and Phase II MS4 permits include provisions for the modification of SWMP activities. Phase I medium and large MS4s are regulated under an individual permit, with multiple permittees having coverage under the same permit as "co-permittees." Phase II small MS4s are regulated under a generic permit. Under the "NPDES Two-Step Generic Permit for Discharge of Stormwater from Phase II MS4s" (Paragraph 62-621.300(7)(a), Florida Administrative Code [F.A.C.]), regulated Phase II MS4s must develop a SWMP that includes BMPs with measurable goals and a schedule for implementation to meet six minimum control measures.

Additionally, in accordance with Section 403.067, F.S., if an MS4 permittee is identified in an area with an adopted BMAP, the permittee must comply with the adopted provisions of the BMAP that specify activities to be undertaken by the permittee. If the permittee discharges stormwater to a waterbody with an adopted TMDL pursuant to Chapter 62-304, F.A.C., then the permittee must revise its SWMP to address the assigned wasteload in the TMDL.

DEP can designate an entity as a regulated MS4 if its discharges meet the requirements of the rule and are determined to be a significant contributor of pollutants to surface waters of the state in accordance with Rule 62-624.800, F.A.C. A Phase II MS4 can be designated for regulation when a TMDL has been adopted for a waterbody or segment into which the MS4 discharges the pollutant(s) of concern.

Table 5 lists the Phase I and Phase II MS4s in the Caloosahatchee River and Estuary Watershed.

Table 5. Entities in the Caloosahatchee River and Estuary Watershed designated as MS4s

Permittee	Permit Number	Phase
Lee County	**FLS000035**	**I**
City of Cape Coral	*FLS266949*	*I*
City of Fort Myers	*FLS266884*	*I*
Department of Transportation (FDOT) District 1	*FLS266965*	*I*
Lehigh Acres Municipal Service Improvement District (LA-MSID)	*FLS266990*	*I*
Lucaya Community Development District (CDD)	*FLS743585*	*I*
River Hall CDD	*FLS743607*	*I*
City of Clewiston	**FLR04E134**	II
Charlotte County	**FLR04E043**	II
Collier County	**FLR04E037**	II
Glades County	**FLR04E137**	II
Hendry County	**FLR04E138**	II

1.2.2.3 *Urban Nonpoint Sources*

Subsubparagraph 403.067(7)(b)2.f., F.S., prescribes the pollutant reduction actions required for nonagricultural pollutant sources that are not subject to NPDES permitting. ″Non-MS4 sources‟ must also implement the pollutant reduction requirements detailed in a BMAP and are subject to enforcement action by DEP or a WMD if they fail to implement their responsibilities under the BMAP. **Table 6** lists the nonpoint sources in the Caloosahatchee River and Estuary Watershed.

Table 6. Urban nonpoint sources in the Caloosahatchee River and Estuary Watershed

Type of Entity	Participant
Government Entities and Special Districts	City of LaBelle City of Moore Haven Moody River Estates CDD Port LaBelle CDD Portico CDD Sail Harbour CDD Verandah East CDD Verandah West CDD Barron Water Control District (WCD) Clewiston WCD Collins Slough WCD County Line Drainage District Cow Slough WCD Devil's Garden WCD Disston Island Conservancy District Flaghole Drainage District Gerber Groves WCD Hendry-Hilliard WCD Sugarland Drainage District

1.2.2.4 Wastewater Treatment Facilities (WWTFs)

The Caloosahatchee Estuary TMDL identified 6 permitted NPDES WWTFs in the Tidal Caloosahatchee subwatershed, and the tributary TMDLs identified 2 permitted NPDES WWTFs, one in the S-4 Basin, and one in the C-19 Canal watershed. All these facilities met advanced wastewater treatment standards (Section 403.086, F.S.) for nitrogen and provided more stringent phosphorus removal. All offered secondary treatment with additional nutrient removal, and some had high-level disinfection and or dichlorination for public access reuse, which is used for urban irrigation. As of January 2025, there were 70 individually permitted industrial and domestic WWTFs in the Caloosahatchee River and Estuary Watershed. Of these, 7 hold NPDES permits and therefore are authorized, within the limitations of their permits, to discharge directly to surface waters within the Caloosahatchee River and Estuary Watershed. The remaining 63 do not have authorization to discharge directly to surface waters.

1.2.2.5 OSTDS

Based on the latest data from the Florida Department of Health from July and November 2024, there are 51,756 known or likely OSTDS located throughout the Caloosahatchee River and Estuary Watershed (**Figure 7**). **Table 7** summarizes the number of OSTDS by subwatershed.

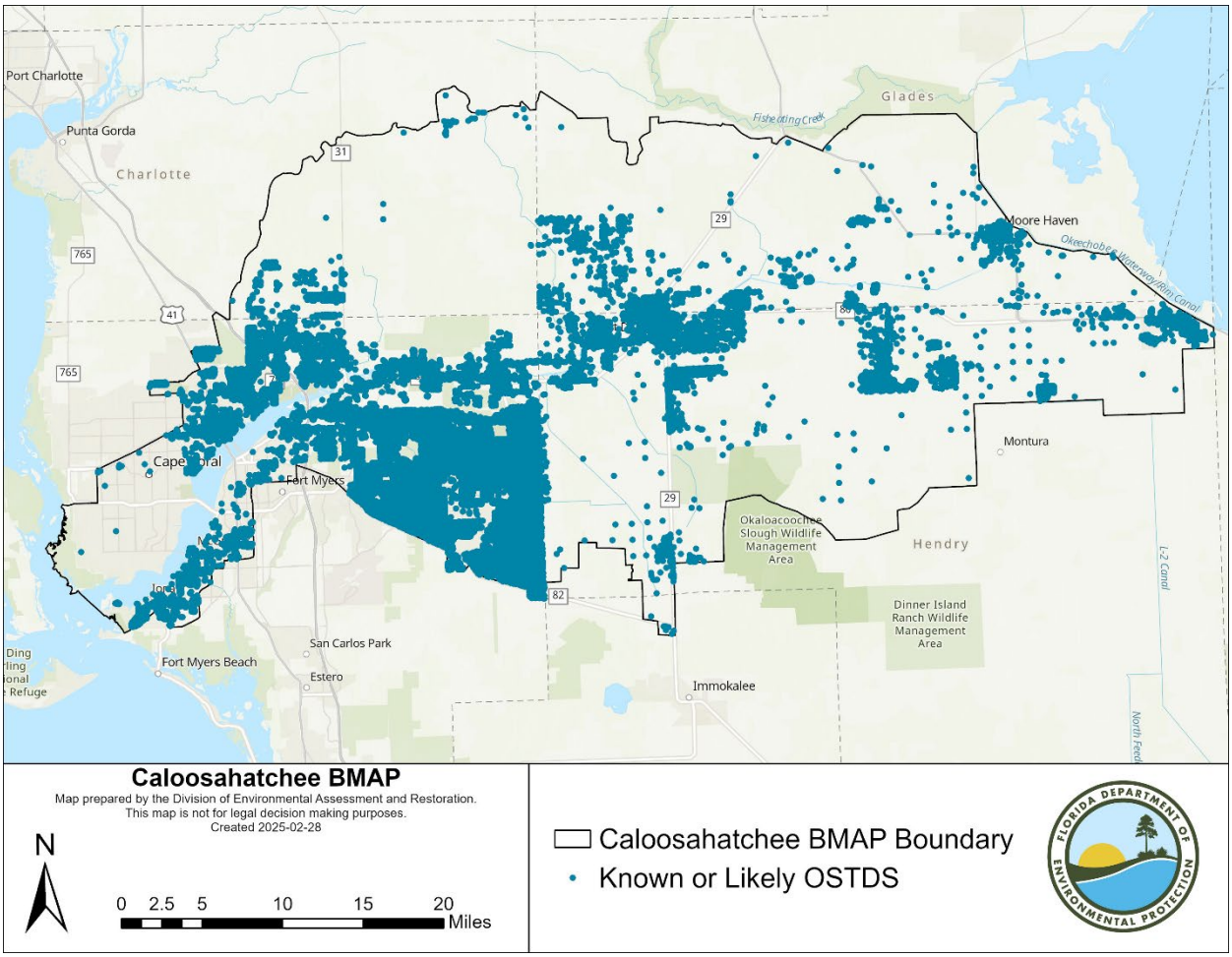

Figure 7. Locations of OSTDS in the Caloosahatchee River and Estuary Watershed

Table 7. OSTDS counts by subwatershed

Basin	Number of OSTDS
East Caloosahatchee	3,220
Tidal Caloosahatchee	32,405
West Caloosahatchee	16,131
Total	**51,756**

1.2.2.6 Biosolids

Paragraph 62-640.400(12), F.A.C., prohibits the land application of biosolids in the Caloosahatchee River and Estuary Watershed unless the applicant for a site permit affirmatively demonstrates that the nitrogen and phosphorus in the biosolids will not add to nitrogen and phosphorus loadings in the watershed. This demonstration must be included in the site nutrient management plan. This prohibition does not apply to Class AA biosolids that are marketed and distributed as fertilizer products in accordance with Rule 62-640.850, F.A.C.

Subparagraph 373.4595(4)(b)6., F.S. requires all entities disposing of septage within the Caloosahatchee River and Estuary Watershed to develop and submit to an agricultural use plan that limits applications based on phosphorus loading consistent with the Caloosahatchee River and Estuary BMAP.

1.2.3 Assumptions

The water quality impacts of BMAP implementation are based on several fundamental assumptions about the pollutants targeted by the TMDLs, modeling approaches, waterbody response, and natural processes. The following assumptions were used during the BMAP process:

- Certain BMPs were assigned provisional nutrient reduction benefits for load reductions in this BMAP iteration while additional monitoring and research are conducted to quantify their effectiveness. These estimated reductions may change in future BMAP iterations as additional information becomes available.

- Nutrient reduction benefits of the stakeholders' projects were calculated using the best available methodologies. Project-specific monitoring, where available, will be used to verify calculations, and reduction benefits may be adjusted as necessary.

- Reductions in TN and TP loading to the Caloosahatchee tributaries and estuary will increase DO concentrations and reduce chlorophyll *a* concentrations to improve the water quality conditions in these waterbodies.

- The allocations do not include required load reductions from areas identified as natural land use areas in the HSPF model land use coverage. These loads are considered uncontrollable, background sources, and the stakeholders are not required to make reductions on natural lands. The focus of the BMAP allocations is on urban and agricultural stormwater, OSTDS, and wastewater sources in the watershed.

- Achieving the Caloosahatchee Estuary TMDL is contingent on reductions from the Lake Okeechobee watershed, and in the Caloosahatchee River and Estuary allocations, it was assumed that the Lake Okeechobee TMDL had been met. A separate BMAP is adopted for the Lake Okeechobee Watershed.

1.2.4 Considerations

This BMAP requires stakeholders to implement their projects to achieve reductions within the specified 5-year milestone period. However, the full implementation of this BMAP will be a long-term, adaptively managed process. While some of the BMAP projects and activities were recently completed or are currently ongoing, several projects require more time to design, secure

funding, and construct. Regular follow-up and continued coordination and communication by the stakeholders will be essential to ensure the implementation of management strategies and assessment of incremental effects. Additionally, land use, water quality or project data in this document may not match information published by partner agencies, as each agency reports on different metrics and schedules, and data is evaluated for separate purposes.

During the BMAP process, a number of items were identified that should be addressed in future watershed management cycles to ensure that future BMAPs use the most accurate information:

- **Land Uses** – The loading estimates in the BMAP are based on land uses at a point in time, allowing the model to be validated and calibrated. The loading estimates for this BMAP iteration were based on 2008–09 SFWMD land use data as well as Southwest Florida WMD land use data that were used in the 2017 HSPF model. Agricultural land use data are updated annually in the FSAID. The land use data used for modeling loads in this BMAP may not match information published by FDACS.

- **Increased TN Loads** – Measured TN loading in the East and West Caloosahatchee subwatersheds has increased substantially from 2017 HSPF modeled values. This BMAP update uses factors to adjust the 2017 HSPF model loading to match the measured loading in the East and West Caloosahatchee subwatersheds. The HSPF model is currently being updated and the refined loading from that model will be used in future BMAP updates.

- **Basin Boundaries** – The BMAP area is based on the 2017 HSPF model boundary. Basins were delineated according to a combination of model basins and other stakeholder input. Basin boundaries are being updated as part of the current HSPF model revision, and those revised basins will be reflected in the next BMAP update. Basin boundaries for this iteration of the BMAP may not match information published by the SFWMD in the latest South Florida Environmental Report.

- **Jurisdictional Boundaries** – Entities may experience shifts in their jurisdictional boundaries over time that require allocation adjustments. Changes to the boundaries and/or allocations for these stakeholders may be made as necessary and reflected in future BMAP iterations.

- **CDD Responsibilities** – CDDs were assigned allocations only if three criteria were met: (1) there is development—i.e., roads and infrastructure—on the CDD; (2) the CDD discharges to a city or county MS4; and (3) the CDD is responsible for managing stormwater. As further details are provided (e.g., discharge locations from these CDDs), revisions to the allocations and boundaries will be made in future BMAP iterations. Furthermore, some of the CDDs that did not receive an allocation in this BMAP iteration may receive allocations in future BMAP iterations.

- **Chapter 40E-61, F.A.C.** – SFWMD has completed rulemaking in 2021 to revise Chapter 40E-61, F.A.C., to ensure its objectives are consistent with Sections 373.4595 and 403.067, F.S.

- **Water Control Districts (WCDs)** – This BMAP only assigns the canals and rights-of-way to the WCDs as the districts have control over these portions of their jurisdictions. The districts are required to implement specific canal and right-of-way BMPs to be compliant with the BMAP.

- **Complexity of Problem** – DEP acknowledges the complexity of the dynamics that affect the water quality of the Caloosahatchee River and Estuary Watershed; therefore, this BMAP is designed to encompass a variety of projects that will cumulatively act to significantly reduce nutrient loads.

- **Legacy Phosphorus** – DEP recognizes that legacy phosphorus may be present in the Caloosahatchee River and Estuary and in the watershed as a result of past anthropogenic activities, and this watershed load has the potential to be transported to the Caloosahatchee Estuary and tributaries. The Coordinating Agencies (DEP, FDACS, and SFWMD) and stakeholders will continue to identify projects and management strategies that will address the legacy load.

- **Previous Restoration Efforts** – DEP recognizes that stakeholders throughout the watershed have implemented stormwater management projects prior to the implementation of the TMDL and that these efforts have benefited water quality. Projects completed in 2000 or later are considered for credits and inclusion in the BMAP.

- **Lake Okeechobee BMAP Overlap** – Portions of the Lake Okeechobee Watershed overlap with the Caloosahatchee River and Estuary Watershed. The projects in these overlap areas are included in both this BMAP and the Lake Okeechobee BMAP. The benefits of these projects will vary by BMAP as the reductions are calculated for the waterbody that is the focus of the BMAP.

Chapter 2. Modeling, Load Estimates, and Restoration Approach

2.1. Watershed Model

During development of the 2020 BMAP, an update to the HSPF watershed model and Environmental Fluid Dynamics Code estuary model was undertaken. The model updates were completed in 2017 so that DEP had the necessary tools to update the BMAP and develop TMDLs for the impaired tributaries in the watershed. For both models, the simulation period was extended through 2014, so the model simulation period used was January 1, 1996, through December 31, 2014. Additional land use classifications were added to better represent the land uses in the watershed, including adding new additional agricultural classifications to meet requests from FDACS. A separate FDOT right-of-way classification was also added.

Since the data period in the 2017 model, the measured TN load in the East and West Caloosahatchee subwatersheds has substantially increased. DEP has begun an effort to update the HSPF model with more current land uses and data to reflect the changes in the watershed TN loading. Future BMAP updates will use this revised model information. To adapt this BMAP to better manage nutrient loading to the estuary while the model is being updated, allocations and project reductions were modified based on the differences between modeled and measured loads.

2.2. BMAP Loads

2.2.1 Evaluation of Measured Data

Data collected by SFWMD from expanded watershed monitoring allowed for a deeper analysis of the TN loading in the East and West Caloosahatchee subwatersheds based on flow-weighted mean concentrations. A ten-year average was calculated from 2013–2022 data to match the ten-year period pulled from the 2017 HSPF model to calculate loads in the 2020 BMAP update. This analysis found that 1,329,467 pounds per year (lbs/yr) of TN came from the East Caloosahatchee subwatershed, and 2,457,362 lbs/yr came from the West Caloosahatchee subwatershed, a 31.78% and 40.38% increase in TN loading compared to modeled values, respectively. This information was used as an adjustment factor for each subwatershed to modify entity allocations and project reductions.

2.2.2 Modification of Allocations and Project Estimates

For the 2020 BMAP update, a load estimation tool (LET) was created using a ten-year data period from the HSPF model. The LET was used to determine load reductions needed to achieve the TMDL, assign allocations to each responsible stakeholder in the watershed, and estimate project nutrient reductions. The loads associated with WCD canals and natural lands were not assigned to any stakeholder. The TMDL focuses on loads from anthropogenic (urban and agricultural) sources and does not require reductions from natural lands. In addition, the WCDs and other special districts were not assigned a numeric allocation and instead committed to implementing specific BMPs.

For this 2025 BMAP update, the LET was modified using the adjustment factors for the East and West Caloosahatchee subwatersheds. The East Caloosahatchee subwatershed adjustment factor is 1.32 and the West Caloosahatchee subwatershed adjustment factor is 1.40. The TN allocations to the stakeholders in these subwatersheds were updated based on these factors, as well as the estimated project TN credits. The calculated existing TN loads from the 2020 BMAP update for each entity in the East and West Caloosahatchee subwatersheds were revised by applying the adjustment factors. The existing TN load for entities in the Tidal Caloosahatchee subwatershed remained the same. The TP existing loads also were unchanged from the 2020 BMAP update.

Each entity's allowable TN load from the 2020 BMAP update were calculated by subtracting the 2020 BMAP required reduction from the starting load for each entity. The new required reductions were calculated by subtracting the previous BMAP allowable load from the updated existing load, which includes the adjustment factors. For stakeholders entirely within the Tidal Caloosahatchee subwatershed, the TN required reduction did not change. The stakeholders located partially or fully in the East and/or West Caloosahatchee subwatersheds have an increase in TN load reductions.

Table 8 presents the updated TN reductions by entity and **Table 9** presents the TP load reductions for the tributaries, which remain unchanged from the 2020 BMAP update.

Table 8. TN load required reductions by entity (lbs/yr)

Entity	TN Existing Load	TN BMAP Allowable Load	TN Required Reduction
Agriculture	3,674,409	2,107,338	1,567,071
Lee County	240,846	176,362	64,485
LA-MSID	187,867	121,461	66,406
City of Cape Coral	154,987	116,022	38,965
City of Fort Myers	77,536	58,043	19,493
Hendry County/Port LaBelle CDD	88,484	48,034	40,451
FDOT District 1	29,364	18,933	10,431
Glades County	38,727	21,288	17,439
Charlotte County	23,807	17,317	6,490
City of LaBelle	16,426	8,783	7,643
River Hall CDD	9,334	4,991	4,343
City of Clewiston	8,557	4,853	3,704
Verandah West CDD	3,279	2,455	824
Verandah East CDD	2,119	1,586	533
City of Moore Haven	2,371	1,344	1,026
Moody River Estates CDD	1,687	1,263	424
Portico CDD	1,686	902	785
Sail Harbour CDD	505	378	127
Lucaya CDD	350	262	88
Collier County	82	44	38
Total	**4,562,423**	**2,711,659**	**1,850,766**

Table 9. TP load required reductions by entity (lbs/yr)

NA = Not applicable

Entity	C-19 Canal	Lake Hicpochee	Long Hammock	S-4 Basin	Townsend Canal	Total
Agriculture	1,276	25	11,106	1,782	8,623	22,811
FDOT District 1	48	0	57	45	82	232
City of Clewiston	NA	NA	NA	316	NA	316
Glades County	133	2	51	199	NA	386
Hendry County/Port LaBelle CDD	NA	NA	585	596	54	1,235
Collier County	NA	NA	NA	NA	6	6
Total	**1,457**	**27**	**11,799**	**2,938**	**8,765**	**24,986**

2.2.3 Milestones

Section 403.067, F.S., requires that BMAPs include 5-year milestones for the implementation of TMDLs. Any responsible entity within the BMAP that has an assigned pollutant load reduction requirement must identify projects or strategies to meet their upcoming 5-year milestone, even if the identified project or strategy will not be completed by the milestone. Each project must include a planning-level cost estimate and an estimated date of completion that is included in the BMAP and statewide annual reporting process.

As part of the 2017 5-Year Review, milestones with percent reduction goals were established based on achieving the Caloosahatchee Estuary TMDL within 20 years of BMAP adoption, which is 2032. When the BMAP was updated in 2020, the East and West Caloosahatchee subwatersheds were added. To provide sufficient time for stakeholders in those subwatersheds to achieve the reductions needed to meet the estuary and tributary TMDLs, this 2025 BMAP update establishes separate targets for these subwatersheds. The East and West Caloosahatchee subwatersheds must achieve the required reductions by 2040, which is 20 years from when these areas were added to the BMAP. The following summarizes the milestone timelines and percent reductions required by subwatershed:

- Tidal Caloosahatchee subwatershed:
    - 5-year milestone (2017): 50%.
    - 10-year milestone (2022): 75%.
    - 15-year milestone (2027): 95%.
    - 20-year milestone (2032): 100%.
- East and West Caloosahatchee subwatersheds:
    - 5-year milestone (2025): 10%.
    - 10-year milestone (2030): 35%.
    - 15-year milestone (2035): 75%.

- 20-year milestone (2040): 100%.

Table 10 summarizes the TN required reduction milestones for each entity in the Tidal Caloosahatchee subwatershed. **Table 11** and **Table 12** summarize the TN and TP required reduction milestones, respectively, by entity in the East and West Caloosahatchee subwatersheds. The HSPF model revision may be used in a future BMAP update to revise required reductions, including potentially adding entity specific required reductions. DEP providing revised starting loads and allocations is an expected part of the iterative BMAP process where loading estimates are reassessed as land uses and other loading sources change over time as. Responsible entities and agencies should expect periodic adjustments to the subwatershed reduction assignments during the BMAP process.

Table 10. Entity-specific TN reduction milestones for the Tidal Caloosahatchee subwatershed

Entity	5-year (2017) TN Reduction Milestone (lbs/yr)	10-year (2022) TN Reduction Milestone (lbs/yr)	15-year (2027) TN Reduction Milestone (lbs/yr)	20-year (2032) TN Reduction Milestone (lbs/yr)
Agriculture	104,334.6	156,501.8	198,235.6	208,669.1
Charlotte County	2,923.3	4,384.9	5,554.2	5,846.5
City of Cape Coral	19,482.3	29,223.5	37,016.4	38,964.6
City of Fort Myers	9,746.6	14,619.8	18,518.4	19,493.1
FDOT District 1	2,549.2	3,823.7	4,843.4	5,098.3
LA-MSID	17,358.2	26,037.2	32,980.5	34,716.3
Lee County	29,779.7	44,669.6	56,581.4	59,559.4
Lucaya CDD	44.0	66.0	83.6	88.0
Moody River Estates CDD	212.0	318.0	402.8	424.0
Sail Harbour CDD	63.5	95.2	120.6	126.9
Verandah East CDD	266.4	399.5	506.1	532.7
Verandah West CDD	412.2	618.3	783.2	824.4
Total	**187,172.0**	**280,757.5**	**355,626.2**	**374,343.3**

Table 11. Entity-specific TN reduction milestones for the East and West Caloosahatchee subwatersheds

Entity	5-year (2025) TN Reduction Milestone (lbs/yr)	10-year (2030) TN Reduction Milestone (lbs/yr)	15-year (2035) TN Reduction Milestone (lbs/yr)	20-year (2040) TN Reduction Milestone (lbs/yr)
Agriculture	135,840.1	475,440.5	1,018,801.0	1,358,401.3
Charlotte County	64.4	225.3	482.9	643.8
City of Clewiston	370.4	1,296.4	2,778.0	3,704.0
City of LaBelle	764.3	2,675.0	5,732.1	7,642.9
City of Moore Haven	102.6	359.2	769.6	1,026.2
Collier County	3.8	13.3	28.5	38.0
FDOT District 1	533.3	1,866.6	3,999.8	5,333.1

Entity	5-year (2025) TN Reduction Milestone (lbs/yr)	10-year (2030) TN Reduction Milestone (lbs/yr)	15-year (2035) TN Reduction Milestone (lbs/yr)	20-year (2040) TN Reduction Milestone (lbs/yr)
Glades County	1,743.9	6,103.7	13,079.3	17,439.1
Hendry County/ Port LaBelle CDD	4,045.1	14,157.7	30,337.9	40,450.6
LA-MSID	3,169.0	11,091.5	23,767.4	31,689.9
Lee County	492.5	1,723.8	3,693.8	4,925.0
Portico CDD	78.5	274.6	588.4	784.6
River Hall CDD	434.3	1,520.1	3,257.4	4,343.2
Total	**147,642.2**	**516,747.7**	**1,107,316.1**	**1,476,421.6**

Table 12. Entity-specific TP reduction milestones for the East and West Caloosahatchee subwatersheds

Entity	5-year (2025) TP Reduction Milestone (lbs/yr)	10-year (2030) TP Reduction Milestone (lbs/yr)	15-year (2035) TP Reduction Milestone (lbs/yr)	20-year (2040) TP Reduction Milestone (lbs/yr)
Agriculture	2,281.1	7,983.9	17,108.3	22,811.0
FDOT District 1	23.2	81.2	174.0	232.0
City of Clewiston	31.6	110.6	237.0	316.0
Glades County	38.6	135.1	289.5	386.0
Hendry County/Port LaBelle CDD	123.5	432.3	926.3	1,235.0
Collier County	0.6	2.1	4.5	6.0
Total	**2,498.6**	**8,745.2**	**18,739.6**	**24,986.0**

Responsible entities must submit a sufficient list of additional projects and management strategies to DEP no later than January 14, 2026, to be compliant with the upcoming BMAP milestone or be subject to further department enforcement.

If any lead entity is unable to submit a sufficient list of eligible management strategies to meet their next 5-year milestone reductions, specific project identification efforts are required to be submitted by January 14, 2026. Any such project identification efforts must define the purpose of and a timeline to identify sufficient projects to meet the upcoming milestone. The project description and estimated completion date for any such project identification effort must be provided and reflect the urgency of defining, funding, and implementing projects to meet the upcoming and future BMAP milestones. These planning efforts are ineligible for BMAP credit themselves but are necessary to demonstrate that additional eligible management actions will be forthcoming and BMAP compliance will be achieved. Examples of project identification efforts are included in **Appendix C**. Only those entities that provide sufficient project identification efforts will be deemed as possessing a defined compliance schedule. Those entities without an adequate project list nor a defined compliance schedule to meet their upcoming 5-year milestone may be subject to enforcement actions.

After the Caloosahatchee River and Estuary model update is complete, DEP will reevaluate and, if necessary, adopt another iteration of the BMAP, most likely before 2030. The next iteration may include updated required reductions, timelines, and 5-year milestones.

2.2.4 Project Progress

Figure 8 and **Figure 9** summarize the progress towards the next milestone for the Tidal Caloosahatchee subwatershed and East and West Caloosahatchee subwatersheds, respectively, for each entity. Total project reductions for each entity were compared to their respective 2027 milestones and are displayed as percentages in the bar graphs. Agricultural reductions include reductions from projects completed by the coordinating agencies. **Chapter 3** includes the project details. As part of the annual reporting process, stakeholders will be required to provide a detailed and quantified description of their ordinance enforcement and environmental education activities to receive credits for these activities. Based on progress towards meeting the TMDL and water quality monitoring results, reductions from ordinances and education efforts may be reevaluated in future BMAP updates, particularly with respect to enforcement of ordinances.

DEP continues to work with the appropriate agencies and other stakeholders to identify and prioritize needed projects and management strategies required to meet the reduction milestones.

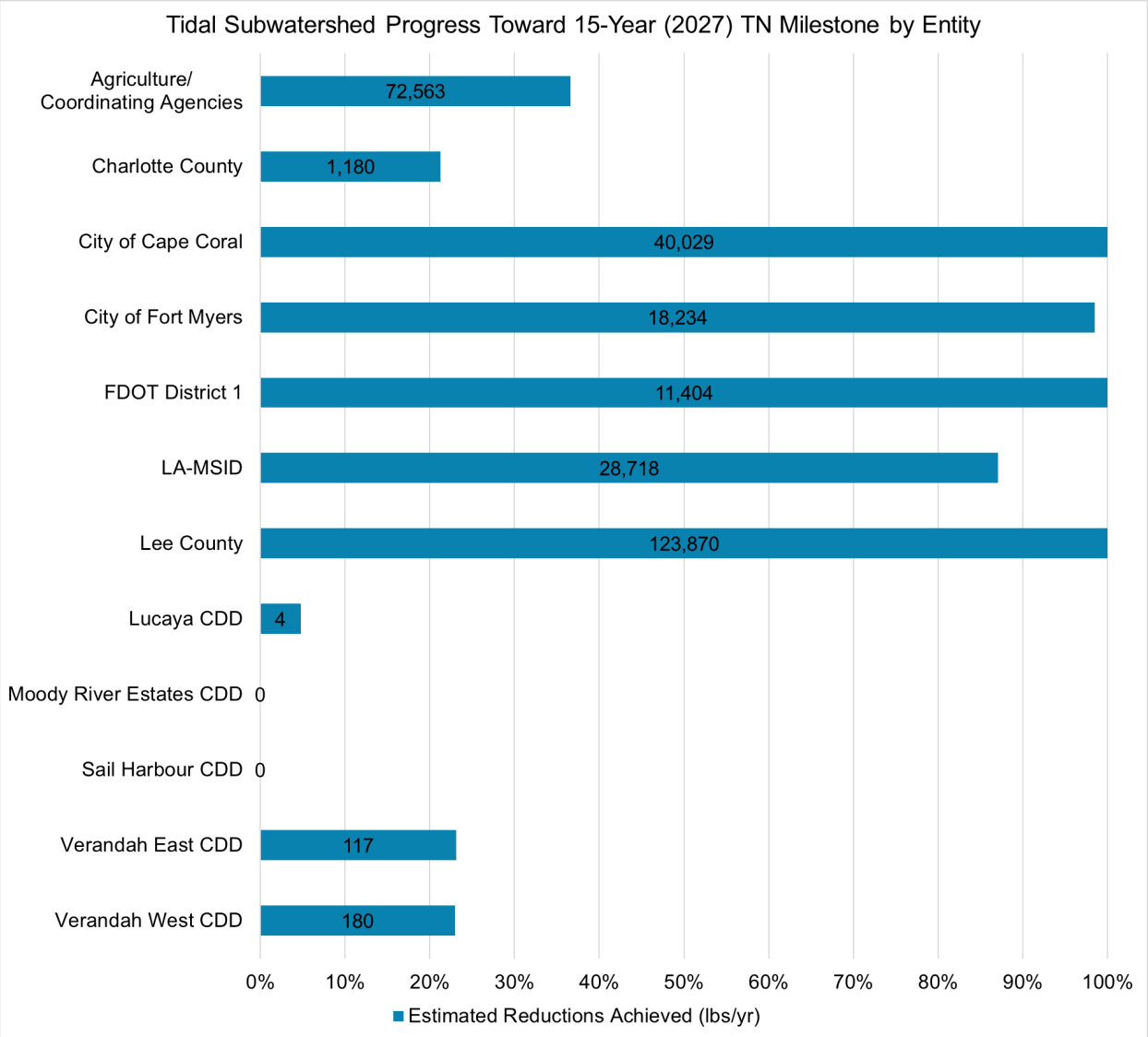

Figure 8. Milestone progress by entity in the Tidal Caloosahatchee subwatershed

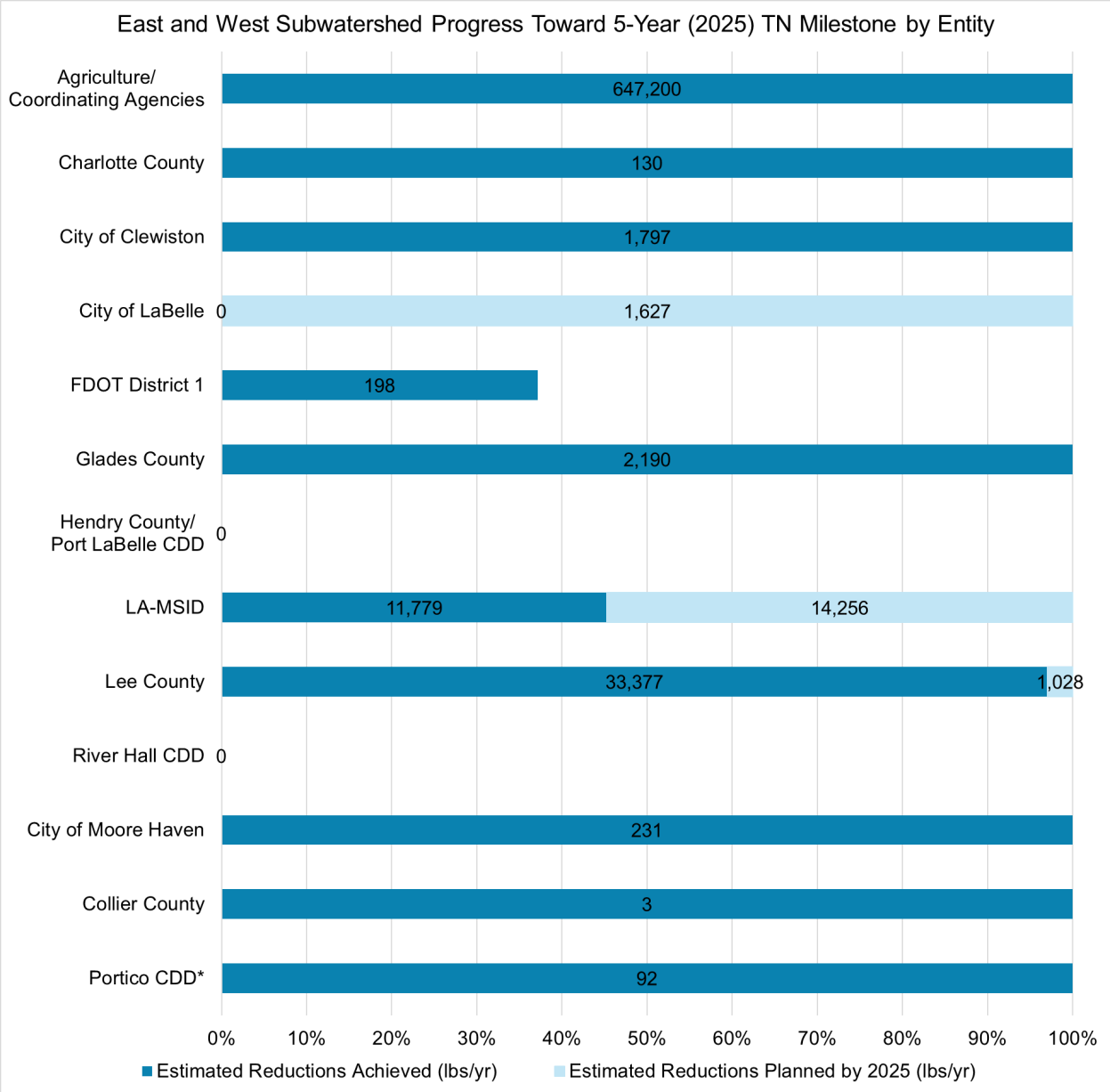

Figure 9. Milestone progress by entity in the East and West Caloosahatchee subwatersheds

2.3. Basinwide Sources Approach

2.3.1 Agriculture

2.3.1.1 Agricultural BMPs

To address nutrient loading from agricultural operations effectively, a balanced approach is necessary—one that supports agricultural productivity while safeguarding water resources. This entails promoting farming practices that optimize nutrient and water use efficiency, minimize runoff, and enhance soil health. Section 403.067, F.S., requires agricultural producers in adopted

BMAPs to either enroll and properly implement the applicable FDACS BMPs for their operation or to conduct water quality monitoring activities as required by Chapter 62-307, F.A.C. Agricultural BMPs include practices such as nutrient management, irrigation management and water resource protection, and can mitigate nutrient loading while promoting environmental stewardship among Florida's agricultural producers. In many BMAPs, however, the implementation of BMPs alone will not be sufficient to meet water quality restoration goals. BMP manuals adopted by FDACS are available at https://www.fdacs.gov/Agriculture-Industry/Water/Agricultural-Best-Management-Practices. Agricultural landowners that do not enroll in BMPs are referred to DEP for water quality monitoring or enforcement under sections 403.121, 403.141 and 403.161, F.S.

Every two years FDACS is required to perform onsite inspections of each agricultural producer that enrolls in BMPs to ensure that the practices are being properly implemented. The verification includes review and collection of nutrient application records that producers must maintain to demonstrate compliance with the BMP Program; verification that all other applicable BMPs are being properly implemented; verification that any cost shared practices are being properly implemented; and identification of potential cost share practices, projects or other applicable BMPs not identified during enrollment. Rule 5M-1.008, F.A.C., outlines the procedures used to verify the implementation of agricultural BMPs. Producers not implementing BMPs according to the process outlined in Chapter 5M-1, F.A.C., are referred to DEP for enforcement action after attempts at remedial action by FDACS are exhausted. Failure to implement BMPs or conduct water quality monitoring that demonstrates compliance with pollutant reductions may result in enforcement action by DEP (paragraph 403.067(7)(b), F.S.).

Pursuant to paragraph 403.067(7)(c), F.S., where water quality problems are demonstrated despite the appropriate implementation, operation and maintenance of adopted BMPs, DEP, a WMD or FDACS, in consultation with DEP, must conduct a reevaluation of the BMPs. If a reevaluation of the BMPs is needed, FDACS will also include DEP, the appropriate WMD, and other partners in the reevaluation and BMP update processes.

Although it is anticipated that additional enrollment in agricultural BMPs along with more frequent implementation verification site visits by FDACS will increase nutrient reductions from agricultural nonpoint sources, it is also recognized that further reductions, beyond the implementation of required owner-implemented BMPs, will be necessary to achieve the TMDLs. In 2024 FDACS updated its existing BMP manuals to incorporate updated BMPs based on the latest scientific and technical research.

Further nutrient reductions can be achieved through implementation of additional agricultural projects or activities. The Coordinating Agencies will continue to collaborate to identify cost-share practices and other projects that can be undertaken to achieve these nutrient reductions and identify and implement additional projects and activities in priority TRAs. Chapter 2023-169, Laws of Florida amended 403.067, F.S., to include regional water quality improvement projects that will be developed by DEP and FDACS, in cooperation with agricultural landowners, where these projects are necessary to achieve TMDLs.

SFWMD is implementing projects that encourage low-input agriculture and water quality improvement technologies. FDACS also provides funding to some agricultural operations to add other practices beyond owner-implemented BMPs. Examples include drainage improvements, fencing, water control structures, precision agriculture technology, and fertigation. The Coordinating Agencies will also investigate the possibility of implementing other incentive-based programs—such as providing incentives for producers to transition to less intensive crops, changing land use to fallow or native landscape, or changing the type of cropping system—that would reduce nutrient loading in the BMAP area.

Other reductions associated with the implementation and modification of BMPs may be realized through ongoing studies, data collection, and WMD initiatives. These additional projects and activities are to be implemented in conjunction with the BMP Program, which needs to achieve full enrollment with verification to ensure that the BMAP goals are achieved.

2.3.1.2 Dairies and Other Concentrated Animal Feeding Operations (CAFOs)

CAFO dairies permitted under Chapter 62-670, F.A.C., located within a BMAP, may not cause or contribute to a violation of water quality standards and must implement nutrient management practices identified in the permits. To minimize infiltration of liquid manure, waste storage ponds must be lined using a concrete or geosynthetic liner. If a clay liner exists, then the dairy will need to upgrade to a concrete or geosynthetic liner when funding is available, or it must demonstrate that the liner does not allow leaching that results in water quality exceedances.

Additionally, sampling for TN and TP of land applied effluent/wastewater must be included in the DEP-approved nutrient monitoring plan in the permit and implemented in accordance with the monitoring plan.

2.3.1.3 Livestock Operations Without CAFO Permits

Livestock operations may not cause or contribute to a violation of water quality standards. Not all livestock operations are large enough to require an NPDES CAFO permit under Chapter 62-670, F.A.C. For these operations, section 403.067, F.S., requires the operation to enroll in the FDACS BMP Program and implement applicable BMPs or to conduct a monitoring program according to Chapter 62-307, F.A.C., that is approved by DEP or the WMD.

2.3.1.4 Aquaculture

Under the federal Clean Water Act, aquaculture activities are defined as a point source. In 1999, the Florida Legislature amended Chapter 597, F.S., Florida Aquaculture Policy Act, to create a program within FDACS that requires those who sell aquatic species to annually acquire an Aquaculture Certificate of Registration and implement Chapter 5L-3, F.A.C., Aquaculture BMPs. Permit holders must be certified every year.

2.3.1.5 Silviculture

The Florida Forest Service (FFS) within FDACS is the lead agency responsible for assisting landowners, loggers and forestry professionals with silviculture BMP implementation as well as

conducting statewide silviculture BMP training and compliance monitoring. FFS implements Chapter 5I-6, F.A.C., and encourages both private and public forest landowners across the state to comply with BMPs and the rule. Compliance with the rule involves submitting a Notice of Intent to Implement BMPs (NOI) to FFS and thereby committing to follow BMPs during all current and future forestry operations.

2.3.1.6 Agricultural Cooperative Regional Elements

Section 403.067, F.S., requires FDACS, DEP and agricultural producers to work together to establish Agricultural Cooperative Regional Water Quality Elements (ACE) in BMAPs where agricultural nonpoint sources contribute at least 20% of nonpoint source nutrient discharges to impaired waterbodies, or where DEP determines this element is necessary to achieve the TMDLs. FDACS is responsible for providing DEP a list of projects which, in combination with BMPs, state-sponsored regional projects and other management strategies, will achieve the needed pollutant load reductions established for agricultural nonpoint sources. The list of projects included in the ACE must include a planning-level cost estimate of each project along with the estimated amount of nutrient reduction that such project will achieve. Partner agencies and key stakeholders referred to in this process include FDACS, DEP and agricultural producers.

Addressing nutrient loading from agricultural sources in Florida's waterways requires collective action and partnership among key stakeholders, and in consultation with the WMDs. By fostering cooperation and engagement, the ACE framework facilitates the exchange of knowledge, resources and expertise, leading to innovative solutions and effective strategies for tackling water quality challenges. Engaging producers in the decision-making process ensures that projects are practical, feasible, and tailored to the needs and realities of agricultural operations. Partner agencies provide technical support, regulatory guidance, and funding opportunities that will enhance the implementation and success of regional water quality improvement initiatives. This cooperative effort is essential for implementing targeted actions that balance the economic and social benefits of agriculture with the obligation to address agricultural nonpoint source loading beyond statutorily required BMP implementation and cost share.

The ACE framework leverages resources and technical expertise to efficiently identify regional projects and other strategies tailored to the diverse agriculture production methods, landscapes, and watersheds that will need to be implemented to achieve the TMDLs. Regional project types will vary among the different BMAPs, and can include, but are not limited to, a combination of traditional projects that focus on water treatment, land acquisition in fee or conservation easements on the lands of willing sellers, site-specific water quality improvement projects, dispersed water management projects, innovative technologies, and regional projects funded through existing or enhanced cost share programs administered by FDACS or the WMDs.

While FDACS is assigned the lead role on project solicitation, development, selection and implementation, FDACS will work closely with all the key stakeholders, including DEP as a partner agency, to define and identify regional projects that will be included in the BMAP and to

leverage existing programs and resources. FDACS will lead engagement with producers and industry groups through annual workshops to identify potential regional projects. Identified regional projects will be implemented through various mechanisms, such as existing agency cost share or grant programs or through a legislative budget request and eventual appropriation. Upon identification of a project, FDACS will update DEP on project development and implementation, including the funding strategy.

FDACS and DEP will work together to track progress on agricultural water quality projects under the ACE framework through the development of performance metrics and collection of water quality monitoring data in the basin or, if necessary, at the project level. The default performance measures will be the expected range of pollutant removal efficiencies associated with a project or strategy. Tools may be needed to determine the effectiveness of projects, such as modeling and, where feasible, onsite water quality monitoring.

FDACS will report on projects annually through DEP's Statewide Annual Report process and during BMAP update and/or development. Projects and other management strategies implemented through the ACE will be evaluated cooperatively by partner agencies using the predetermined performance metrics. The ACE process provides for adaptive management, allowing flexibility to adapt and improve based on regional project or management strategy results.

Agricultural nonpoint sources contribute 78% of the TN and 91% of the TP nutrient sources in the Caloosahatchee River and Estuary BMAP. Pursuant to subparagraph 403.067(7)(e)1., F.S., an ACE is required in this BMAP.

Most agricultural lands are engaged in row crop production. **Table 13** shows the three dominant crop types within the Caloosahatchee River and Estuary BMAP.

Table 13. Three dominant crop types within the Caloosahatchee River and Estuary BMAP

Crop Type	Acres
Row Crops	286,805
Grazing Land	151,106
Citrus	63,584

Targeting future funding toward precision agriculture, manure management, innovative technologies or soil health practices, including combining practices where applicable, to address nutrient impacts from row crop production on a regional scale could provide additional reductions.

In the Caloosahatchee River and Estuary BMAP, further progress is being achieved through regional water treatment projects funded by FDACS or in partnership with the Coordinating Agencies (section 373.4595, F.S.) and landowners. The project tables in **Chapter 3** provide additional details regarding these regional projects, including the resulting TN and TP reductions.

FDACS will continue to work with key stakeholders in the Caloosahatchee River and Estuary BMAP to identify additional options for addressing agricultural nonpoint source nutrient loading. For more information on the FDACS Regional Projects Program, please see the links in **Appendix B**.

2.3.1.7 Description of BMPs Adopted by Rule

Appendix B provides detailed information on BMPs and agricultural practices in the BMAP area. **Table 14** identifies the adopted BMPs and BMP manuals relevant to this BMAP.

Table 14. BMPs and BMP manuals adopted by rule as of July 2025

Agency	F.A.C. Chapter	Chapter Title
FDACS OAWP	5M-1	Office of Agricultural Water Policy
FDACS OAWP	5M-06	Florida Nursery Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-08	Florida Vegetable and Agronomic Crop Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-09	Florida Sod Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-11	Florida Cattle Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-12	Conservation Plans for Specified Agricultural Operations
FDACS OAWP	5M-13	Florida Specialty Fruit and Nut Crop Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-14	Florida Equine Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-16	Florida Citrus Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-17	Florida Dairy Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-18	Florida Agriculture Wildlife Best Management Practices
FDACS OAWP	5M-19	Florida Poultry Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-21	Florida Small Farms and Specialty Livestock Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS Division of Agriculture Environmental Services	5E-1	Fertilizer
FDACS Division of Aquaculture	5L-3	Aquaculture Best Management Practices
FFS	5I-6	Best Management Practices for Silviculture
DEP	62-330	Environmental Resource Permitting

2.3.2 Stormwater

Urban stormwater is a considerable source of nutrient loading to the Caloosahatchee River and Estuary, and many urban areas are already regulated under the MS4 NPDES Stormwater Program. An MS4 is a conveyance or system of conveyances, such as roads with stormwater

systems, municipal streets, catch basins, curbs, gutters, ditches, constructed channels, or storm drains. If an MS4 permittee is identified as a contributor in the BMAP, the permitted MS4 must undertake projects specified in the BMAP.

Regulated MS4s are required to implement SWMP to reduce pollutants to the maximum extent practicable and address applicable TMDL allocations. Both Phase I and Phase II MS4 permits include provisions for the modification of SWMP activities. Phase I medium and large MS4s are regulated under an individual permit, with multiple permittees having coverage under the same permit as "co-permittees." Phase II small MS4s are regulated under a generic permit. Under the "NPDES Two-Step Generic Permit for Discharge of Stormwater from Phase II MS4s" (paragraph 62-621.300(7)(a), F.A.C.), regulated Phase II MS4s must develop a SWMP that includes BMPs with measurable goals and a schedule for implementation to meet six minimum control measures.

DEP can designate an entity as a regulated MS4 if its discharges meet the requirements of the rule and are determined to be a significant contributor of pollutants to surface waters of the state in accordance with Rule 62-624.800, F.A.C. A Phase II MS4 can be designated for regulation when a TMDL has been adopted for a waterbody or segment into which the MS4 discharges the pollutant(s) of concern. Because urban areas located in the BMAP that are not currently covered by an MS4 permit also significantly contribute to nutrient loading, individually or in aggregate, the NPDES Stormwater Program will, within five years of BMAP adoption, evaluate any entity located in the BMAP area that serves a minimum resident population of at least 1,000 individuals that is not currently covered by an MS4 permit and designate eligible entities as regulated MS4s, in accordance with Chapter 62-624, F.A.C.

On June 28, 2024, Governor Ron DeSantis signed Senate Bill 7040 into law, which updates Florida's stormwater rules and design criteria, including Chapter 62-330, F.A.C., to protect the state's waterways. The new regulations aim to manage runoff from developments, ensuring that future stormwater systems are better maintained. Operation and maintenance entities will be required to have estimates for the expected routine maintenance costs and to certify that they have the financial capability to maintain the stormwater system over time. The rule will also provide for more consistent oversight through a required periodic inspection routine and reporting on the inspection results to the permitting agency.

Additionally, under Chapter 62-330, F.A.C., the new rule establishes requirements for applicants to demonstrate, through calculations or modeling, that the future stormwater management systems would provide additional treatment to meet new Environmental Resource Permits stormwater treatment performance standards for an 80% reduction for TP and 55% reduction for TN, along with additional requirements that would apply where a project discharges to Outstanding Florida Waters or impaired waters. Additional permitting requirements to protect ground water can be found within the Applicant Handbook Volume I, Section 8.5.2.

2.3.2.1 Urban BMPs and Eligibility

Management actions must reduce TN and/or TP loads and meet certain criteria to be considered eligible for credit in the BMAP. Urban structural projects completed since January 1, 2000, and planned in the future were eligible for BMAP credit. Urban structural projects only received credit for the portion of the load reduction that was over and above any permit requirements. This criterion was needed because permit conditions are established to prevent impacts from the new development and do not contribute to water quality improvement.

Public education and outreach efforts and nonstructural projects were eligible for BMAP credit regardless of when they were implemented because these efforts were excluded in the Caloosahatchee River and Estuary model. Estimates of TN and TP reductions from street sweeping and BMP clean out were made using a tool developed by the Florida Stormwater Association in 2012, based on data collected by Sansalone et al. (2011) that uses the volume or weight of material removed to estimate the pounds of TN and TP removed.

2.3.2.2 Sports Turfgrass and Golf Courses

Sports turfgrass sources include golf courses and other sporting facilities. Sporting facilities are required to follow the 2025 Sports Turf BMP Manual to protect water resources.

Superintendents of all publicly owned golf courses within the BMAP must obtain a certification for golf course BMPs under section 403.9339, F.S. and all golf courses must implement the BMPs described in DEP's golf course BMP manual, *Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses* (DEP, 2021). All publicly owned golf courses located within a BMAP are required to submit a nutrient management plan (NMP) to DEP that is designed to sustain even plant growth while minimizing excessive growth and nutrient losses. Required information for the NMP is available in **Appendix D**. A draft NMP must be submitted to DEP within one year of BMAP adoption and a final document is due two years after adoption. All soil, water, and tissue sampling must include appropriate nitrogen and phosphorous analyses.

If a facility (either golf course or other sporting facility) uses fertilizer rates greater than those in the BMP manuals, the facility is required to conduct water quality monitoring prescribed by DEP or a WMD that demonstrates compliance with water quality standards.

2.3.3 WWTFs

2.3.3.1 Facility Improvements and Effluent Limits

DEP issues permits for facilities and activities to discharge wastewater to surface waters and groundwaters of the state. DEP is authorized by the U.S. Environmental Protection Agency to issue permits for discharges to surface waters under the NPDES Program. Permits for discharges to groundwaters are issued by DEP based on Florida law and rules. Wastewater discharge permits establish specific limitations and requirements based on the location and type of facility or activity releasing industrial or domestic wastewater from a point source. In areas with an

adopted, nutrient-related BMAP prior to July 1, 2023, section 403.086, F.S., requires any facility discharging to a waterbody to upgrade to advanced waste treatment (AWT) by January 1, 2033. Further, waterbodies determined not to be attaining nutrient or nutrient-related standards after July 1, 2023, or subject to a BMAP or reasonable assurance plan (RAP) after July 1, 2023, have 10 years to provide AWT after such determination or adoption.

The nitrogen and phosphorus effluent limits set forth in **Table 15** and **Table 16** will be applied as an annual average, taken at end of pipe before any land disposal (or other authorized compliance point), to all new and existing WWTFs with a DEP-permitted discharge or disposal area within this BMAP. DEP will evaluate the need for more stringent nutrient effluent limits as appropriate.

Short-term or intermittent discharges are not significant sources of TN or TP in the Caloosahatchee River and Estuary watershed, and are not subject to the limits in **Table 15** and **Table 16**. Intermittent, rainfall-driven, diffuse overflow releases of wastewater from ponds or basins designed to *hold precipitation* from a *25-year***,** *24-hour rainfall event* or less frequent rainfall event and that infrequently reaches surface waters are considered insignificant sources of TN and TP. The owners or operators of cooling pond reservoirs must operate each spillway gate either during regular operation or on a test basis to protect the structural integrity of the reservoir. Because of the short duration and low volume of wastewater released during spillway gate testing, releases either on an annual or semi-annual basis are considered insignificant sources of TN and TP.

Table 15. Nitrogen effluent limits for WWTFs

mgd = Million gallons per day
mg/L = milligrams per liter

Facility Capacity (mgd)	Surface Water Discharges (mg/L)	WWTFs Listed in Appendix E (mg/L)	WWTFs Not Listed in Appendix E – Rapid Rate Land Application Effluent Disposal System (mg/L)	WWTFs Not Listed in Appendix E – All Other Disposal Methods, Including Reuse (mg/L)
Greater than or equal to 0.5	3	3	3	10
Less than 0.5 and greater than or equal to 0.01	3	3	6	10
Less than 0.01	3	Not applicable (NA)	10	10

Table 16. Phosphorus effluent limits for WWTFs

mgd = Million gallons per day
mg/L = milligrams per liter

Facility Capacity (mgd)	Surface Water Discharges (mg/L)	WWTFs Listed in Appendix E (mg/L)	WWTFs Not Listed in Appendix E – Rapid Rate Land Application Effluent Disposal System (mg/L)	WWTFs Not Listed in Appendix E – All Other Disposal Methods, Including Reuse (mg/L)
Greater than or equal to 0.5	1	1	1	6
Less than 0.5 and greater than or equal to 0.01	1	1	3	6

Facility Capacity (mgd)	Surface Water Discharges (mg/L)	WWTFs Listed in Appendix E (mg/L)	WWTFs Not Listed in Appendix E – Rapid Rate Land Application Effluent Disposal System (mg/L)	WWTFs Not Listed in Appendix E – All Other Disposal Methods, Including Reuse (mg/L)
Less than 0.01	1	NA	6	6

Where the law does not provide for a compliance timeframe, new effluent standards will take effect at the time of permit renewal or no later than five years after BMAP adoption, whichever is sooner.

Additionally, new and existing wastewater permits in the BMAP area must require at least quarterly sampling of the effluent discharge for TN and TP and report these sampling results in the discharge monitoring reports submitted to DEP.

In 2021, subsection 403.064(16), F.S., was amended where domestic wastewater utilities that dispose of effluent, reclaimed water, or reuse water by surface water discharge were required to submit for DEP review and approval, a plan for eliminating non-beneficial surface water discharge by January 1, 2032. A utility must fully implement the approved plan by January 1, 2032. If a plan was not timely submitted or approved by DEP, the utility's domestic WWTFs may not dispose of effluent, reclaimed water, or reuse water by surface water discharge after January 1, 2028. Violations are subject to administrative and civil penalties pursuant to sections 403.121, 403.131 and 403.141, F.S.

2.3.3.2 Reclaimed Water Effluent Limits

In accordance with section 403.086. F.S., by July 1, 2034, any WWTF providing reclaimed water that will be used for commercial or residential irrigation or be otherwise land applied within a nutrient BMAP or RAP area is required to meet AWT standards for TN and TP such that the reclaimed water product contains not more, on a permitted annual average basis, of 3 mg/L of TN and 1 mg/L of TP. DEP has determined that the use of reclaimed water is causing or contributing to the nutrient impairments being addressed in this BMAP area. These requirements do not apply to reclaimed water that is land applied as part of a water quality restoration project or water resource development project approved by DEP to meet a TMDL or minimum flow or level and where the TN and TP will be at or below AWT standards prior to entering groundwater or surface water.

DEP has determined that certain WWTFs providing reclaimed water for the purpose of commercial or residential irrigation or that is otherwise being land applied within this BMAP area are causing or contributing to the nutrient impairments being addressed in this BMAP. Based on DEP's determination, these facilities are identified in **Appendix E** are subject to the nitrogen and phosphorus limits set forth in section 403.086, F.S. The facilities listed in **Appendix E** have 10 years from BMAP adoption to meet the applicable AWT standards. This requirement does not prevent the department from requiring an alternative treatment standard, if the department determines the alternative standard is necessary to achieve the TMDL(s) or

applicable water quality criteria. For facilities that did not have adequate information to complete an evaluation or where a change occurs to the facility's application of reclaimed water after the initial evaluation (e.g. increase in facility capacity or change in location of reclaimed water application), the department will evaluate the land application of reclaimed water as more information becomes available pursuant to section 403.086, F.S.

All new permitted facilities providing reclaimed water that will be used for commercial or residential irrigation or be otherwise land applied in the BMAP, are required to meet AWT standards for TN and TP in accordance with section 403.086, F.S.

2.3.3.3 WWTF Plans

Subparagraph 403.067(7)(a)9., F.S., requires local governments within a BMAP to develop WWTF plans to be adopted as part of nutrient BMAPs no later than July 1, 2025, if DEP identifies domestic wastewater as contributors of at least 20% of point source or nonpoint source nutrient pollution or if DEP determines remediation is necessary to achieve the TMDL. The WWTF plans must be developed by each local government in cooperation with DEP, WMDs, and public and private domestic WWTFs within the jurisdiction of the local government. Each local government's wastewater treatment plan for this BMAP must contain the information outlined in Final Order 23-0114 for each existing or proposed domestic wastewater facility in the local government's jurisdiction.

Subparagraph 403.067(7)(a)9., F.S., was amended in 2024 to clarify that private domestic wastewater facilities must provide this information to local governments effective July 1, 2024. Information related to private facilities will need to be included in future local government WWTF plans if not captured in the initial plans.

2.3.3.4 Connection to Sewer

The installation of new OSTDS within a BMAP area is prohibited where connection to sewer lines is available. For existing OSTDS, the owner must connect to sewer within 365 days of written notification by the utility that connection to its sewer line is available. A utility is statutorily required (section 381.00655, F.S.) to provide written notice to existing OSTDS owners regarding the availability of sewer lines for connection. Additionally, existing OSTDS needing repair or modification must connect to available sewer lines within 90 days of notification by DEP.

To facilitate an inventory of noncompliant properties, by February 2, 2026, and every two years thereafter, each utility with sewer lines in the BMAP shall provide DEP a list of properties with existing OSTDS where sewer is available but has not connected. For each identified property, include the date(s) which the utility provided written notice to the owners of the availability of sewer.

2.3.4 OSTDS

Beginning July 1, 2023, section 403.067, F.S., prohibits any new conventional OSTDS serving a lot of one acre or less where central sewer is available. Within all BMAP areas, if central sewer is unavailable, then the owner must install a DEP-approved enhanced nutrient-reducing OSTDS that achieves 65% nitrogen reduction, or other wastewater system that achieves 65% reduction.
BMAP OSTDS Remediation Plan

This BMAP contains a remediation plan for OSTDS consisting of management actions, including those described in **Chapter 3** and updated annually through the statewide reporting process, that reduce loads from existing OSTDS through either sewer connection, adding enhancement nitrogen treatment to OSTDS, or installing another type of wastewater system on the property, as applicable.

Subparagraph 403.067(7)(a)9.b., F.S., also requires local governments within a BMAP to develop an OSTDS remediation plan to be adopted as part of the BMAP no later than July 1, 2025, if DEP identifies OSTDS as contributors of at least 20% of point source or nonpoint source nutrient pollution or if DEP determines remediation is necessary to achieve the TMDL. When applicable, the OSTDS remediation plans must be developed by each local government in cooperation with DEP, WMDs, and public and private domestic wastewater facilities. Each OSTDS remediation plan for this BMAP must contain the information outlined in DEP Final Order 23-0114. Stakeholders submit projects describing how OSTDS loads are addressed as part of BMAP reporting and estimate the load reductions associated with each project. The estimated reductions to the basin from addressing these OSTDS will be based on several factors, including location, how they are addressed, and the amount of attenuation that occurs.

2.3.4.1 Local Government Ordinances

Local governments may have existing ordinances or could adopt new ordinances that add additional requirements for enhancement of OSTDS. To expedite remediation of wastewater sources and to facilitate achievement of assigned milestones in this BMAP, DEP encourages local governments to adopt such ordinances.

2.4. TRA Approach

To better prioritize and focus resources to most efficiently achieve restoration in the Caloosahatchee River and Estuary Watershed, DEP developed the TRA approach. This approach uses measured data collected throughout the watershed to evaluate TN and TP concentrations in each of the Caloosahatchee River and Estuary Watershed subwatersheds and associated basins. Flow data exist at three structure stations and several tributary stations within the watershed; however, the TRA approach does not currently include an assessment of water quantity since a flow evaluation has not yet been completed. Once a complete flow evaluation is available, it will be reviewed for inclusion in future BMAP annual updates. The measured nutrient concentrations were compared with selected benchmarks to identify those basins that should be the highest priority for restoration. This advisory process is not intended to be a management strategy under

Chapter 403.067, F.S. The benchmarks are not intended to measure progress towards restoration; they were only used to prioritize resources.

Chapter 3 summarizes the results of the TRA evaluation process for the basins in the Caloosahatchee River and Estuary Watershed. For each basin, a priority was assigned based on the TN concentration, TP concentration, and flows (where available). These priorities were set to help focus resources and projects in the basins most in need of improvement. Stations were selected for each basin that best represent the nutrient concentration from that basin. In some basins where there are multiple branches of a tributary, multiple representative stations were selected and the data from those stations were averaged for the TRA evaluation. Each representative station must have at least one data point from each of the five years used in the TRA assessment to be considered sufficient for use. Basins were assessed and prioritized as follows (**Figure 10**):

1. **Assess the 5-year average concentration at representative stations and compare with the benchmark:**
    a. Priority 1: Concentration is two times greater than the benchmark.
    b. Priority 2: Concentration is greater than the benchmark but less than two times the benchmark.
    c. Priority 3: Concentration is less than or equal to the benchmark.
2. **Assess the 5-year average flow weighted mean (FWM) concentration and compare to the benchmark. This step is weighted above Step 1; therefore, the results for the FWM concentrations would supersede the priorities from Step 1.**
    a. Priority 1: FWM concentration is greater than twice benchmark.
    b. Priority 2: FWM concentration is greater than benchmark, but less than twice benchmark.
    c. Priority 3: FWM concentration is equal to or less than benchmark.
3. **Assess the attenuated unit area load (UAL), which is the average load per acre in each basin from the HSPF model. Compare with the subwatershed UAL target calculated by summing all stakeholder allowable loads in each subwatershed and dividing the sum by the total acres in the subwatershed.**
    a. Priority increases: UAL is greater than 50% above the basin target UAL.
    b. Priority decreases: UAL is less than the basin target UAL.
    c. Priority remains unchanged: UAL is above the basin target UAL, but less than 50%.
4. **Assess the water quality trends from the 5-Year Review water quality analysis for statistical significance (as described in the 5-Year Review).**

This step is weighted above Step 3 where data are available; therefore, results would increase or decrease the priority accordingly:

a. Priority increases: Trend is significantly increasing.

b. Priority decreases: Trend is significantly decreasing.

c. Priority remains unchanged: No significant trend detected.

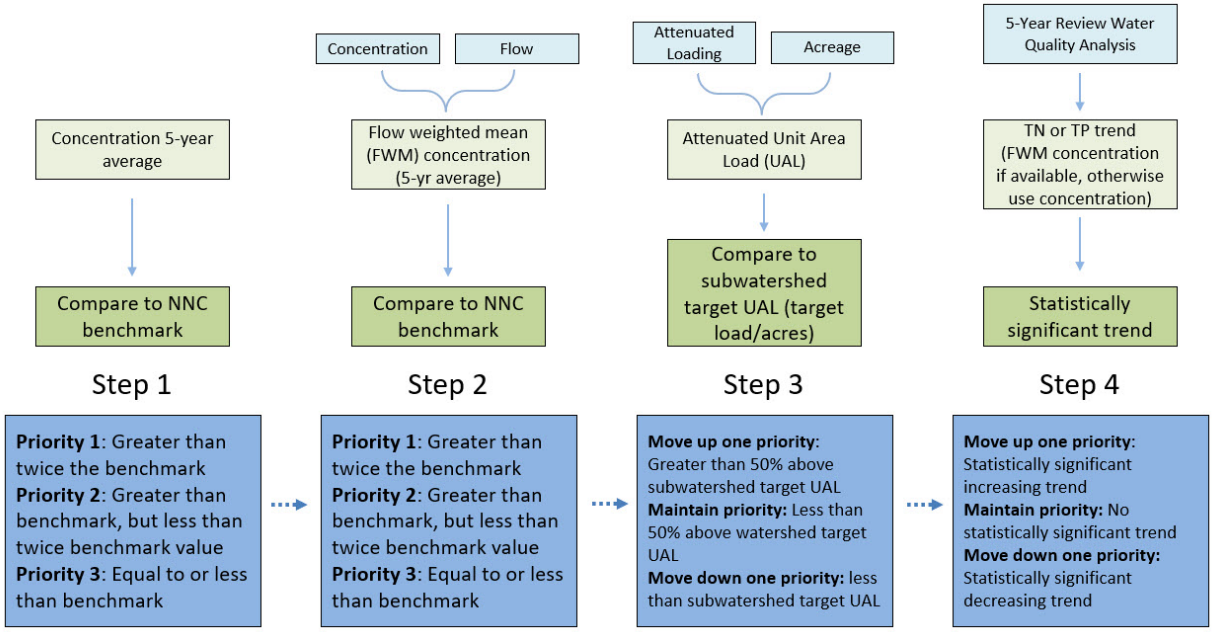

Figure 10. Summary of the TRA prioritization process

2.5. Hot Spot Analysis

To better prioritize and focus resources to most efficiently achieve restoration in the Caloosahatchee River and Estuary BMAP, DEP developed the hot spot analysis approach. This approach uses measured data collected throughout the watershed to evaluate TN and TP concentrations. This process is not intended to be a management strategy under Chapter 403.067, F.S. The benchmarks are not intended to measure progress towards restoration or compliance; they will only be used to prioritize resources.

The measured nutrient concentrations were compared with selected benchmarks to identify areas that should be the highest priority for restoration. Four statistics are calculated for the whole BMAP and are used to compare against each station average: TN or TP concentration average, TN or TP 90th percentile, TN or TP standard deviation, and TN or TP percent frequency of samples over the BMAP threshold. Stations are assigned a rank of 0, 1, or 2 for each category, as shown in **Figure 11**. The scores for each category are summed by station to determine an overall rank. **Chapter 3** summarizes the results of the hot spot analysis for the basins in each Caloosahatchee River and Estuary subwatershed.

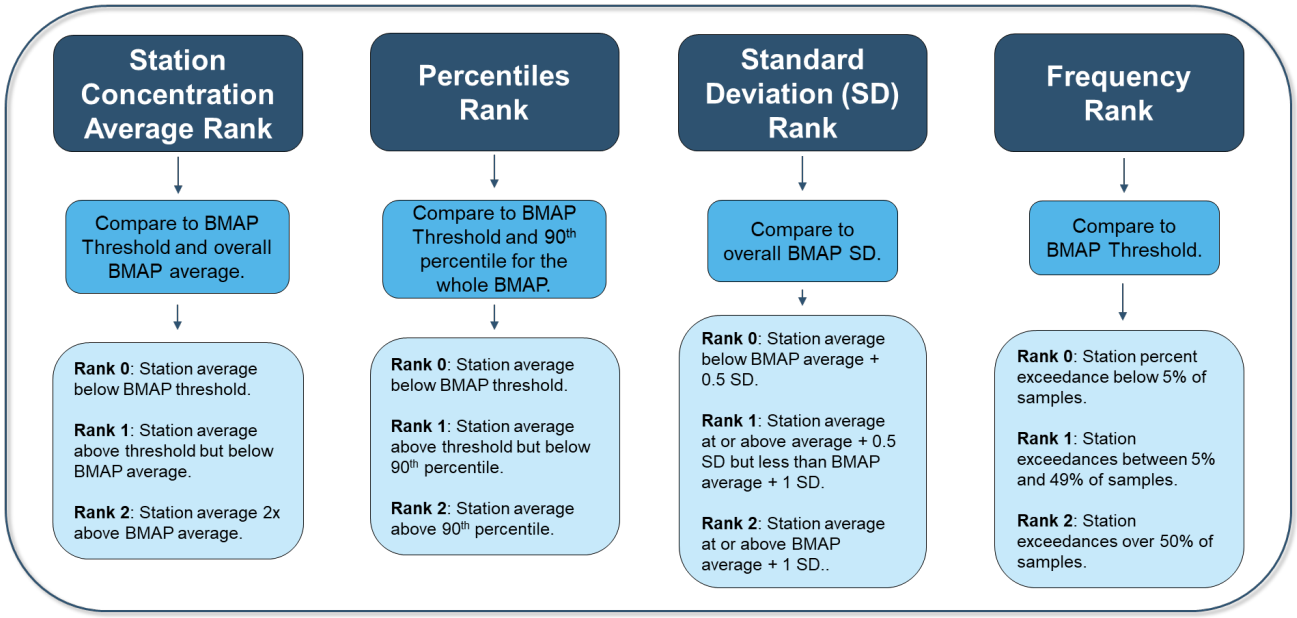

Figure 11. Summary of hot spot analysis approach

2.6. Water Quality Monitoring Plan

The BMAP monitoring network provides information to help track BMAP progress and better focus management efforts.

2.6.1 Objectives and Parameters

The Caloosahatchee River and Estuary BMAP monitoring plan was designed to enhance the understanding of basin loads, identify areas with high nutrient concentrations, and track water quality trends. The information gathered through the monitoring plan measures progress toward achieving the TMDLs and provides a better understanding of watershed loading. The BMAP monitoring plan consists of ambient water quality sampling, sampling at discharge structures, and flow monitoring. In addition, information on water quality throughout the watershed and within the estuary can be found in the latest South Florida Environmental Report, published annually by SFWMD.

Focused objectives are critical for a monitoring strategy to provide the information needed to evaluate implementation success. The primary objective of the monitoring strategy for the Caloosahatchee River and Estuary Watershed, described below, is to evaluate the success of the BMAP and provide information for potential future refinements.

Primary Objective

- To track trends in TN and TP loads and concentrations by subwatershed and basin.

Secondary Objective

- To better focus management efforts, measure the effectiveness of individual or collective projects.

To achieve these objectives, the monitoring strategy focuses on the following parameters:

- Alkalinity.
- Ammonia (N).
- Biochemical Oxygen Demand.
- Carbon – Organic.
- Carbon – Total.
- Chlorophyll *a.*
- Color.
- DO.
- DO Saturation.
- Flow.
- Nitrate-Nitrite (N).
- Nitrogen – Total Kjeldahl.
- Nitrogen – Total.
- Orthophosphate (P)
- pH.
- Phosphorus – Total.
- Specific Conductance/Salinity.
- Temperature, Water.
- Total Suspended Solids.
- Turbidity.

2.6.2 Monitoring Network

The monitoring network comprises a tiered system for the sampling stations, as follows:

- **Tier 1** stations are the primary/priority stations used in periodic water quality analyses to track BMAP progress and water quality trends over the long term in the watershed. If at any point it is necessary to reduce efforts in the basin, these stations should be the last stations impacted.

- **Tier 2** stations can be used for regional analyses or other secondary analyses.

- **Tier 3** stations are monitored by the U.S. Geological Survey (USGS). Data from these stations are not expected to be uploaded into Watershed Information Network (WIN) and can be used for other purposes as designated by DEP.

Figure 12 shows the stations included in each of these tiers. **Chapter 3** includes additional information about the BMAP monitoring network and stations used in the TRA process.

2.6.3 Data Management and Quality Assurance/Quality Control

BMAP data providers have agreed to upload ambient water quality data at least once every six months on the completion of the appropriate quality assurance and quality control checks. Data must be collected following DEP standard operating procedures, and the results must be analyzed by a National Environmental Laboratory Accreditation Program–certified laboratory.

In addition to ambient water quality data, flow data are used to track loading trends for the BMAP. Data collected by the USGS are available through its website, and some flow data are also available through the SFWMD corporate environmental database, DBHYDRO.

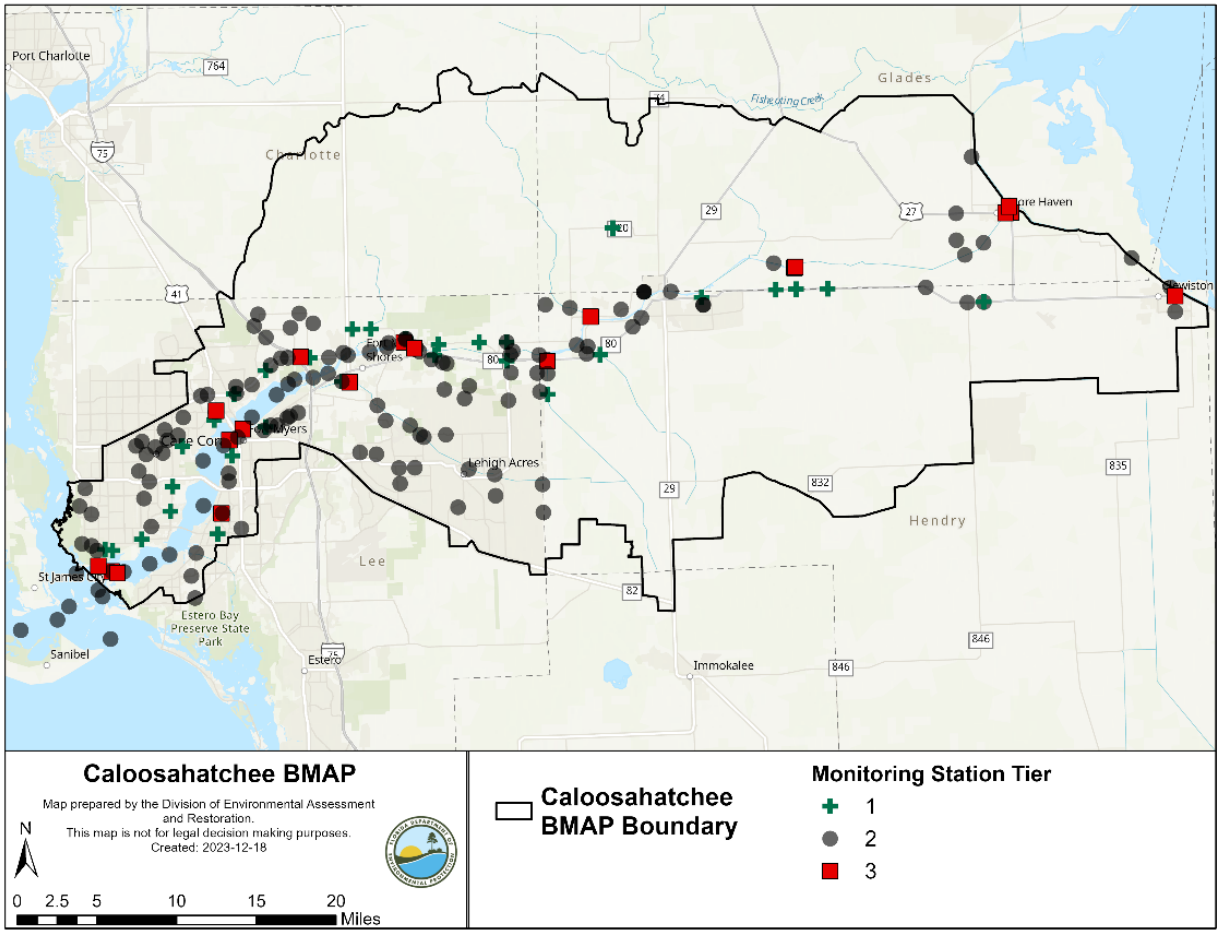

Figure 12. Caloosahatchee River and Estuary BMAP monitoring stations

Chapter 3. Subwatersheds

Section 3.1 through **Section 3.3** provide specific information on the three subwatersheds in the Caloosahatchee River and Estuary Watershed (**Figure 2**). The land use summaries are based the HSPF model land use (2008–2009 coverage), and **Appendix B** provides additional details on agricultural land uses. Monitoring network stations in the subwatershed are provided, along with designations for the basin where the station is located, monitoring entity, BMAP monitoring network tier, whether the station is a representative site for the TRA approach discussed in **Section 2.4**, and whether additional data are needed for the TRA approach in that basin or at that station. The TN, TP, and flow priority results of the TRA evaluation are provided for basins with each subwatershed.

Finally, all projects identified as part of this BMAP are provided by subwatershed. The table of existing and planned projects lists those projects submitted by stakeholders to help meet their obligations under the BMAP. Stakeholders have identified future projects to help meet the remaining reductions needed; however, many of these projects are conceptual or in early design stages or have not been fully funded. Information in the tables was provided by the lead entity and is subject to change as the project develops and more information becomes available.

3.1. East Caloosahatchee Subwatershed

The East Caloosahatchee subwatershed covers 249,201 acres of the Caloosahatchee River and Estuary Watershed. As shown in **Table 17**, the most common land uses in this subwatershed are sugar cane and pasture. Stakeholders in the subwatershed include the City of Clewiston, City of Moore Haven, Glades County, Hendry County, Barron WCD, Clewiston Drainage District, Collins Slough WCD, Disston Island Conservancy District, Flaghole Drainage District, Hendry-Hilliard WCD, and Sugarland Drainage District.

Table 17. Summary of land uses in the East Caloosahatchee Watershed

HSPF Land Use Code	Land Use Description	Acres	% Total
1	Low Density Residential	4,273	1.7
2	Developed Open Space/Disturbed	5,301	2.1
3	Medium Density Residential	1,976	0.8
4	High Density Residential	109	0.0
5	Commercial/Institutional/Transportation	1,267	0.5
6	Industrial/Extractive	3,477	1.4
7	FDOT Right-of-Way	1,342	0.5
8	Sugar Cane	89,333	35.8
9	Row and Field Crops	2,190	0.9
10	Nurseries/Ornamentals/Vineyards	1,259	0.5
11	Citrus Groves/Other Groves	24,713	9.9
12	Improved Pasture	38,487	15.4
13	Rangeland/Unimproved Pasture/Shrub	19,770	7.9
14	Upland Forest	21,273	8.5
15	Wetland	31,454	12.6
16	Water	2,974	1.2
NA	**Total**	**249,201**	**100.0**

3.1.1 Water Quality Monitoring

Table 18 summarizes the water quality monitoring stations in the East Caloosahatchee subwatershed, and **Figure 13** shows the station locations. Monitoring stations are located in all but the Turkey Creek basin, and also include monitoring within the river in this subwatershed.

Table 18. Water quality monitoring stations in the East Caloosahatchee subwatershed

Basin	Representative Site?	Entity	Station ID	Tier	Data Needs
C-19	No	SFWMD	5158	2	NA
C-19	No	DEP Watershed Monitoring Section	52963	2	NA
C-19	No	DEP South Regional Operations Center (ROC)	G3SD0087	2	NA
C-19	No	SFWMD	S47D	2	NA
Lake Hicpochee	No	DEP South ROC	G3SD0102	2	NA
Long Hammock	Yes	SFWMD	CRFW05	1	NA
Long Hammock	No	SFWMD	CRFW03	2	NA
Nine Mile	No	SFWMD	CRFW01	2	NA
Nine Mile	No	SFWMD	CRFW02	2	NA
Nine Mile	Yes	DEP South ROC	G3SD0088	1	NA
S-4	No	SFWMD	9690	2	NA
S-4	No	SFWMD	17370	2	NA
S-4	No	SFWMD	17948	2	NA
S-4	No	USGS	2292000	3	NA
S-4	No	USGS	264514081000000	3	NA
S-4	Yes	SFWMD	S235	1	NA
York	Yes	SFWMD	CRFW30	1	NA
In River	No	USGS	2292010 (S-77)	3	NA
In River	No	USGS (SFWMD)	2292490	3	NA
In River	No	U.S. Army Corps of Engineers (USACE)	S77_COE	3	NA
In River	No	USACE	S78_COE	3	NA

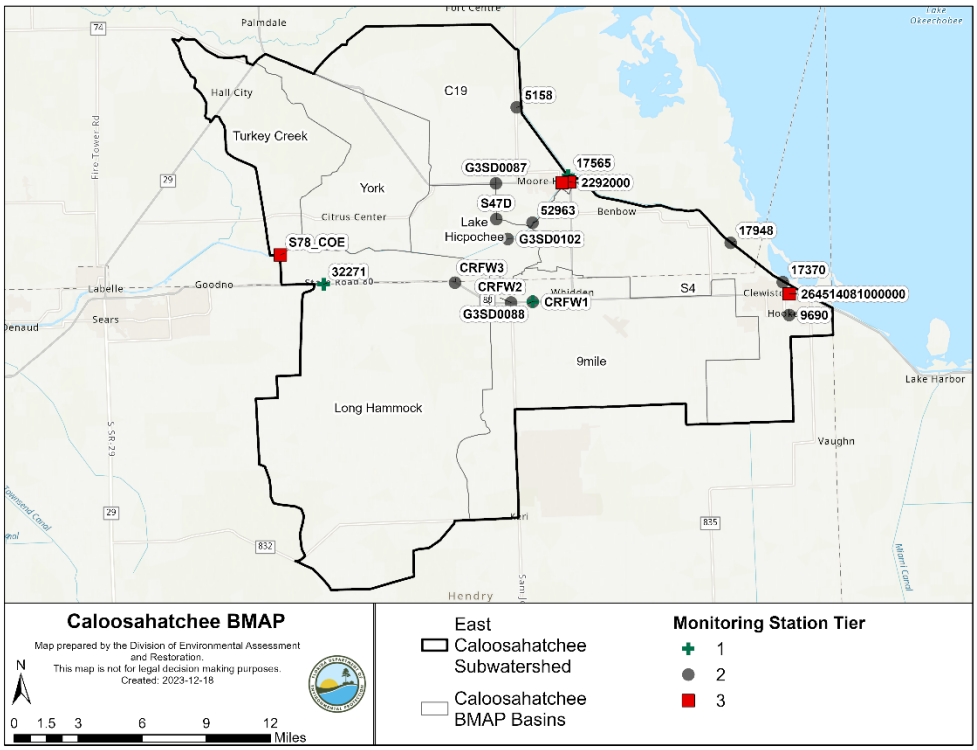

Figure 13. East Caloosahatchee subwatershed monitoring stations

3.1.2 Basin Evaluation Results

3.1.2.1 Targeted Restoration Area

Table 19 summarizes the basin evaluation results based on data from water year (WY) 2020–WY2024 for the East Caloosahatchee subwatershed. Most of the basins had insufficient data to compare with the TN benchmark of 1.54 mg/L. The TN concentration of the Nine Mile Basin was 1.64 mg/L, which is above the benchmark, and the TN concentration for the Long Hammock Basin was 1.29, which was below the benchmark. Most of the basins also had insufficient data to compare with the TP benchmark of 0.12 mg/L. The Nine Mile Basin TP concentration was 0.12, which is equal to the benchmark, and the Long Hammock Basin TP concentration was 0.14, which is above the benchmark. The TRA prioritization results for the East Caloosahatchee subwatershed are shown in **Table 20**, with 1 the highest priority, 2 the next highest priority, and 3 a priority as resources allow.

3.1.2.2 Hot Spot Analysis

Table 21 summarizes the hot spot analysis results using WY2019 – WY2023 data. To be included in the analysis, each station must have at least four samples per year and at least two years of data. This analysis will be as needed, and the results will be shared at annual meetings.

Table 19. Basin evaluation results for the East Caloosahatchee subwatershed

TRA ID	Basin Name	TN (mg/L) (Benchmark –1.54)	TN 5-year Average FWM Concentration (mg/L)	TN UAL, pounds per acre (lbs/ac)	TN Trend Analysis	TP (mg/L) (Benchmark – 0.12)	TP 5-year Average FWM Concentration (mg/L)	TP UAL (lbs/ac)	TP Trend Analysis
21	C-19	Insufficient Data	Insufficient Data	2.90	Insufficient Data	Insufficient Data	Insufficient Data	0.35	Insufficient Data
22	Lake Hicpochee	Insufficient Data	Insufficient Data	2.58	Insufficient Data	Insufficient Data	Insufficient Data	0.27	Insufficient Data
23	Long Hammock	1.29	Insufficient Data	3.99	Insufficient Data	Insufficient Data	0.14	0.40	Insufficient Data
24	Nine Mile	1.64	Insufficient Data	3.63	No Significant Trend	0.11	0.12	0.51	No Significant Trend
25	S-4	Insufficient Data	Insufficient Data	3.17	No Significant Trend	Insufficient Data	Insufficient Data	0.52	Significant Increasing Trend
26	Turkey Creek	Insufficient Data	Insufficient Data	4.00	Insufficient Data	Insufficient Data	Insufficient Data	0.33	Insufficient Data
27	York	Insufficient Data	Insufficient Data	3.80	Insufficient Data	Insufficient Data	Insufficient Data	0.30	Insufficient Data

Table 20. TRA evaluation results for the East Caloosahatchee subwatershed

Basin	Station	TN Priority	TP Priority
C-19	C19	Insufficient Data	Insufficient Data
Lake Hicpochee	NA	Insufficient Data	Insufficient Data
Long Hammock	NA	3	1
Nine Mile	G3SD0088	2	3
S-4	S235	Insufficient	Insufficient Data
Turkey Creek	NA	Insufficient Data	Insufficient Data
York	NA	Insufficient Data	Insufficient Data

Table 21. Hot spot analysis results for the East Caloosahatchee subwatershed

Basin	Monitoring Location	TN Average Concentration Rank	TN Percentile Rank	TN Standard Deviation Rank	TN Frequency Rank	TN Total Rank	TP Average Concentration Rank	TP Percentile Rank	TP Standard Deviation Rank	TP Frequency Rank	TP Total Rank
C-19	17545	1	2	1	2	6	1	1	0	2	4
C-19	5157	1	1	1	2	5	0	0	0	1	1
C-19	5158	1	2	2	2	7	0	0	0	1	1
C-19	CLEW01	1	2	2	2	7	1	1	0	1	3
C-19	G3SD0087	2	2	2	2	8	1	2	2	2	7
C-19	G3SD0162	1	2	2	2	7	1	1	0	1	3
Lake Hicpochee	17971	1	2	2	2	7	2	2	2	2	8
Lake Hicpochee	G3SD0102	1	2	2	2	7	1	1	0	1	3
Long Hammock	32269	1	1	1	2	5	2	2	2	2	8
Long Hammock	32271	0	0	0	1	1	1	1	0	2	4
Nine Mile	32267	1	2	2	2	7	1	1	0	2	4
Nine Mile	32268	0	0	1	1	2	1	1	1	2	5
Nine Mile	G3SD0088	1	1	1	1	4	1	1	0	1	3
S-4	17370	1	1	1	1	4	1	1	0	2	4
S-4	17948	1	2	2	2	7	2	2	2	2	8
S-4	9690	1	1	1	1	4	1	1	0	2	4
York	32296	1	1	1	2	5	1	1	0	2	4

3.1.3 Projects

Table 22 summarizes the existing and planned projects for the East Caloosahatchee subwatershed that were provided for the BMAP. The existing and planned projects are a BMAP requirement.

Table 22. Existing and planned projects in the East Caloosahatchee subwatershed

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
5160	Barron WCD	BD-01	Public Education and Outreach	Updates on BMAP and requirements during annual landowner meetings.	Education Efforts	Planned	TBD	NA	NA	TBD
5161	Barron WCD	BD-02	FDACS BMP Assistance	Provide assistance to FDACS, as needed, to encourage landowners to enroll in BMPs.	Agricultural BMPs	Planned	TBD	NA	NA	TBD
5162	Barron WCD	BD-03	Nutrient Controls	No application of fertilizer in district's rights-of-way.	Fertilizer Cessation	Completed	2020	NA	NA	TBD
5163	Barron WCD	BD-04	Canal/Ditch Bank Berms	Minimize sediment transport by constructing berms on top of canal/ditch banks and promoting vegetation cover.	Shoreline Stabilization	Planned	TBD	NA	NA	TBD
5164	Barron WCD	BD-05	Control Structures	Annual maintenance of water control structures.	Control Structure	Underway	TBD	NA	NA	TBD
4841	City of Clewiston	CW-01	Clewiston Public Education	Landscaping, irrigation, fertilizer, and stormwater ordinances; PSAs; pamphlets; website; illicit discharge program.	Education Efforts	Ongoing	NA	256	29	$10,000.00
4842	City of Clewiston	CW-02	Clewiston Street Sweeping	529 miles swept. 86.93 tons swept.	Street Sweeping	Ongoing	NA	98	45	NA
4843	City of Clewiston	CW-03	Clewiston Inlet Maintenance	43 inlets cleaned. 6.7 tones cleaned.	Catch Basin Inserts/Inlet Filter Cleanout	Ongoing	NA	13	7	NA

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
5734	City of Clewiston	CW-04	Reverse Osmosis Water Treatment Plant Dry Pond	Dry detention pond (volume required = 0.23 acre-feet [ac-ft], volume provided = 1.12 ac-ft).	Dry Detention Pond	Completed	Prior to 2012	25	1	NA
5735	City of Clewiston	CW-05	Sweet Lake Villas Community Association, Inc.	Wet detention pond (volume required = 0.71 ac-ft, volume provided = 1.88 ac-ft).	Wet Detention Pond	Completed	Prior to 2012	1	1	NA
5736	City of Clewiston	CW-06	East Ventura Water Quality	Constructed wetlands to treat runoff.	Stormwater Treatment Areas (STAs)	Completed	2023	50	6	$461,000.00
7215	City of Clewiston	CW-07	Septic Removal	Removal of septic systems within the City Limits which were included in the BMAP model.	OSTDS Phase Out	Completed	2024	1,354	0	NA
5218	City of Moore Haven	MH-01	Glades County Caloosahatchee River and Estuary Area Wastewater Grant	Elimination of aging and/or failing existing septic systems in City of Moore Haven. Project also provides for additional conveyance capacity for additional homes and businesses.	OSTDS Phase Out	Planned	2021	1,654	0	$994,420.00
5751	City of Moore Haven	MH-02	Sanitary Sewer Hook-Up Project	Hook-up 14 residential housing units on Railroad Ave, Avenue F and 7th street currently on septic systems to central sewer.	OSTDS Phase Out	Completed	2020	231	0	$694,400.00
5172	Clewiston Drainage District	CD-01	Public Education and Outreach	Updates on BMAP and requirements during annual landowner meetings.	Education Efforts	Planned	NA	NA	NA	$500.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
5173	Clewiston Drainage District	CD-02	FDACS BMP Assistance	Provide assistance to FDACS, as needed, to encourage landowners to enroll in BMPs.	Agricultural BMPs	Planned	NA	NA	NA	$1,000.00
5174	Clewiston Drainage District	CD-03	Nutrient Controls	No application of fertilizer in district's rights-of-way.	Fertilizer Cessation	Completed	2020	NA	NA	$0.00
5175	Clewiston Drainage District	CD-04	Control Structures	Annual maintenance of water control structures.	Control Structure	Ongoing	NA	NA	NA	$22,500.00
5176	Clewiston Drainage District	CD-05	Aquatic Vegetation Control	Mechanical removal of vegetation.	Aquatic Vegetation Harvesting	Planned	NA	NA	NA	$2,000.00
5182	Collins Slough WCD	CS-01	Public Education and Outreach	Updates on BMAP and requirements during annual landowner meetings.	Education Efforts	Planned	NA	NA	NA	$500.00
5183	Collins Slough WCD	CS-02	FDACS BMP Assistance	Provide assistance to FDACS, as needed, to encourage landowners to enroll in BMPs.	Agricultural BMPs	Planned	NA	NA	NA	$1,000.00
5184	Collins Slough WCD	CS-03	Nutrient Controls	No application of fertilizer in district's rights-of-way.	Fertilizer Cessation	Completed	2020	NA	NA	$0.00
5185	Collins Slough WCD	CS-04	Canal Cleaning Program	Review and field evaluation of sediment accumulation and scheduling of removal, when necessary.	Muck Removal/ Restoration Dredging	Planned	NA	NA	NA	$75,000.00
5186	Collins Slough WCD	CS-05	Control Structures	Annual maintenance of water control structures.	Control Structure	Ongoing	NA	NA	NA	$20,000.00
5197	Disston Island Conservancy District	DI-01	Public Education and Outreach	Updates on BMAP and requirements during annual landowner meetings.	Education Efforts	Planned	NA	NA	NA	$500.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
5198	Disston Island Conservancy District	DI-02	FDACS BMP Assistance	Provide assistance to FDACS, as needed, to encourage landowners to enroll in BMPs.	Agricultural BMPs	Planned	NA	NA	NA	$1,000.00
5199	Disston Island Conservancy District	DI-03	Nutrient Controls	No application of fertilizer in district's rights-of-way.	Fertilizer Cessation	Completed	2020	NA	NA	$0.00
5200	Disston Island Conservancy District	DI-04	Slow Velocity in the Main Canal	Minimize sediment transport by slowing velocity in main canal near main discharge structure.	Control Structure	Planned	TBD	NA	NA	TBD
5201	Disston Island Conservancy District	DI-05	Control Structures	Annual maintenance of water control structures.	Control Structure	Ongoing	NA	NA	NA	TBD
4845	FDACS	FDACS-03	BMP Implementation and Verification	Enrollment and verification of BMPs by agricultural producers. Attenuated reductions based on FDACS OAWP December 2022 Enrollment and HSPF model. Acres treated based on FDACS OAWP December 2023 Enrollment and FSAID X.	Agricultural BMPs	Ongoing	NA	154,502	5,211	NA
4848	FDACS	FDACS-06	Cost-Share BMP Projects	Cost-share projects paid for by FDACS. Acres treated based on FDACS OAWP June 2019 Enrollment. Reductions estimated by DEP using 2019 BMAP LET.	Agricultural BMPs	Ongoing	NA	90,633	2,247	NA

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
5203	Flaghole Drainage District	FH-01	Public Education and Outreach	Updates on BMAP and requirements during annual landowner meetings.	Education Efforts	Planned	NA	NA	NA	$500.00
5204	Flaghole Drainage District	FH-02	FDACS BMP Assistance	Provide assistance to FDACS, as needed, to encourage landowners to enroll in BMPs.	Agricultural BMPs	Planned	NA	NA	NA	$1,000.00
5205	Flaghole Drainage District	FH-03	Nutrient Controls	No application of fertilizer in district's rights-of-way.	Fertilizer Cessation	Completed	2020	NA	NA	$0.00
5206	Flaghole Drainage District	FH-04	Slow Velocity in the Main Canal	Minimize sediment transport by slowing the velocity in main canal near main discharge structure.	Control Structure	Planned	TBD	NA	NA	$15,000.00
5207	Flaghole Drainage District	FH-05	Control Structures	Annual maintenance of water control structures.	Control Structure	Ongoing	NA	NA	NA	$20,000.00
4853	Glades County	GC-02	Glades County Caloosahatchee River & Estuary Area Wastewater Grant	Elimination of aging and/or failing existing septic systems in the City of Moore Haven. The Project also provides for additional conveyance capacity for additional homes and businesses.	OSTDS Phase Out	Underway	2024	1,654	0	$891,848.00
4854	Glades County	GC-03	Glades County Business Park Wetlands	Wetland maintenance and planting agreement.	Constructed Wetland Treatment	Completed	2021	TBD	TBD	$42,395.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
6320	Glades County	GC-04	U.S. 27 Corridor Utility Infrastructure	Install wastewater infrastructure across the Caloosahatchee River to connect to existing force main at 8th St and U.S. 27 and to Sportsman Village RV package plant.	OSTDS Phase Out	Underway	2024	TBD	TBD	$2,700,000.00
5739	Hendry County	HC-03	Phase 1 of a Force Main Extension from Airglades Airport to the City of Clewiston	Hendry County will construct a force main to extend from the Airglades Airport to City of Clewiston. The work consists of constructing a wastewater transmission system to convey raw wastewater from the Airglades Airport WWTF to City of Clewiston.	WWTF Upgrade	Underway	2024	NA	NA	$1,874,925.00
5213	Hendry-Hilliard WCD	HH-01	Public Education and Outreach	Updates on BMAP and requirements during annual landowner meetings.	Education Efforts	Planned	NA	NA	NA	$500.00
5214	Hendry-Hilliard WCD	HH-02	FDACS BMP Assistance	Provide assistance to FDACS, as needed, to encourage landowners to enroll in BMPs.	Agricultural BMPs	Planned	NA	NA	NA	$1,000.00
5215	Hendry-Hilliard WCD	HH-03	Nutrient Controls	No application of fertilizer in district's rights-of-way.	Fertilizer Cessation	Completed	2020	NA	NA	$0.00
5216	Hendry-Hilliard WCD	HH-04	Slow Velocity in the Main Canal	Minimize sediment transport by slowing velocity in main canal near main discharge structure.	Control Structure	Planned	TBD	NA	NA	$3,500.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
5217	Hendry-Hilliard WCD	HH-05	Control Structures	Annual maintenance of water control structures.	Control Structure	Ongoing	NA	NA	NA	$2,000.00
5752	Port LaBelle CDD	PL-01	Public Education and Outreach	Updates on BMAP and requirements during annual meeting.	Education Efforts	Planned	TBD	81	14	TBD
5166	SFWMD - Coordinating Agency	CA-02	Lake Hicpochee Hydrologic Enhancement, Phase I	Provide shallow water storage, rehydrate a portion of lake bed to promote habitat restoration storage, and increase capacity for ancillary water quality benefit. Project will deliver excess stormwater runoff from C-19 canal to north end of lake as needed.	Hydrologic Restoration	Completed	2019	NA	NA	$12,799,788.00
5167	SFWMD - Coordinating Agency	CA-03	Lake Hicpochee Expansion, Phase II	Building on Phase I efforts, project will expand regional storage in the Caloosahatchee River Watershed and reduce flows lost to tide on over 2,600 acres of District lands.	Hydrologic Restoration	Planned	2026	NA	TBD	$129,078,250.00
5168	SFWMD - Coordinating Agency	CA-04	BOMA Flow Equalization Basin	Expand regional storage in the Caloosahatchee River Watershed and reduce flows to the estuary on approximately 1,800 acres of SFWMD lands.	Hydrologic Restoration	Planned	2026	NA	NA	$128,201,471.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
5169	SFWMD - Coordinating Agency	CA-05	C-43 Water Quality Treatment and Testing Facility, Phase II - Test Cells	Located within the Boma Flow Equalization Basin, the purpose of the project is to evaluate the effectiveness of wetland treatment systems in reducing nitrogen at a test-scale.	Study	Underway	2024	NA	NA	$32,768,562.00
5223	Sugarland Drainage District	SD-01	Public Education and Outreach	Updates on BMAP and requirements during annual landowner meetings.	Education Efforts	Planned	NA	NA	NA	$500.00
5224	Sugarland Drainage District	SD-02	FDACS BMP Assistance	Provide assistance to FDACS, as needed, to encourage landowners to enroll in BMPs.	Agricultural BMPs	Planned	NA	NA	NA	$1,000.00
5225	Sugarland Drainage District	SD-03	Nutrient Controls	No application of fertilizer in district's rights-of-way.	Fertilizer Cessation	Completed	2020	NA	NA	$0.00
5226	Sugarland Drainage District	SD-04	Slow Velocity in the Main Canal	Minimize sediment transport by slowing velocity in main canal near main discharge structure.	Control Structure	Planned	TBD	NA	NA	$4,500.00
5227	Sugarland Drainage District	SD-05	Control Structures	Annual maintenance of water control structures.	Control Structure	Ongoing	NA	NA	NA	$2,500.00

3.2. Tidal Caloosahatchee Subwatershed

The Tidal Caloosahatchee subwatershed covers 259,761 acres of the Caloosahatchee River and Estuary Watershed. As shown in **Table 23**, the predominant land use in this subwatershed is upland forest and wetland followed by low density residential and developed open space/disturbed land. Stakeholders in the subwatershed include Charlotte County, Lee County, City of Cape Coral, City of Fort Myers, FDOT District 1, LA-MSID, Lucaya CDD, Moody River Estates CDD, Sail Harbour CDD, Verandah East CDD, and Verandah West CDD.

Table 23. Summary of land uses in the Tidal Caloosahatchee subwatershed

HSPF Land Use Code	Land Use Description	Acres	% Total
1	Low Density Residential	37,405	14.4
2	Developed Open Space/Disturbed	8,761	3.4
3	Medium Density Residential	36,418	14.0
4	High Density Residential	9,546	3.7
5	Commercial/Institutional/Transportation	11,279	4.3
6	Industrial/Extractive	4,027	1.6
7	FDOT Right-of-Way	2,183	0.8
8	Sugar Cane	0	0.0
9	Row and Field Crops	1,745	0.7
10	Nurseries/Ornamentals/Vineyards	1,513	0.6
11	Citrus Groves/Other Groves	470	0.2
12	Improved Pasture	24,563	9.5
13	Rangeland/Unimproved Pasture/Shrub	30,263	11.7
14	Upland Forest	41,873	16.1
15	Wetland	41,581	16.0
16	Water	8,132	3.1
NA	**Total**	**259,761**	**100.0**

3.2.1 Water Quality Monitoring

Table 24 summarizes the water quality monitoring stations in the Tidal Caloosahatchee subwatershed, and **Figure 14** shows the station locations. There are existing monitoring stations for all the basins within the subwatershed, as well as in the river in the portion of the watershed.

Table 24. Water quality monitoring stations in the Tidal Caloosahatchee subwatershed

Basin	Representative Site?	Entity	Station ID	Tier	Data Needs
Billy Creek/Manuel Branch	No	City of Ft. Myers	BCP1-10	2	NA
Billy Creek/Manuel Branch	No	City of Ft. Myers	BCP4-10	2	NA
Billy Creek/Manuel Branch	No	Lee County	BILLGR20	2	NA
Billy Creek/Manuel Branch	No	Lee County	BILLGR60	2	NA
Billy Creek/Manuel Branch	No	City of Ft. Myers	CFMBILLY3	2	NA

Basin	Representative Site?	Entity	Station ID	Tier	Data Needs
Billy Creek/Manuel Branch	No	City of Ft. Myers	CFMBILLY6	2	NA
Billy Creek/Manuel Branch	No	City of Ft. Myers	CFMCARRELL	2	NA
Billy Creek/Manuel Branch	Yes	City of Ft. Myers	CFMFSP	1	Representative through averaging multiple stations
Billy Creek/Manuel Branch	Yes	City of Ft. Myers	CFMMANUEL	1	Representative through averaging multiple stations
Billy Creek/Manuel Branch	No	City of Ft. Myers	CFMWINKLER	2	NA
Daughtrey	No	Lee County	20-29GR	2	NA
Daughtrey	Yes	Lee County	20-9GR	1	NA
Daughtrey	No	Lee County	20A-11GR	2	NA
Daughtrey	No	Lee County	20A-19GR	2	NA
Daughtrey	No	Lee County	21-7GR	2	NA
Daughtrey	No	Lee County	GATOR91	2	NA
Hancock/Yellow Fever	No	USGS	2.64006E+14	3	NA
Hancock/Yellow Fever	No	Lee County	16-18GR	2	NA
Hancock/Yellow Fever	No	DEP South ROC	CALUSA0025FTM	2	NA
Hancock/Yellow Fever	No	Lee County	YFC-CI	2	NA
Hancock/Yellow Fever	Yes	Lee County	16-3GR	1	NA
Orange	No	USGS (Lee County Contract)	2293055	3	NA
Orange	No	Lee County	40-18GR	2	NA
Orange	No	Lee County	40-32GR	2	NA
Orange	No	DEP South ROC	CALUSA0054FTM	2	NA
Orange	Yes	DEP South ROC	G3SD0128	1	NA
Orange	No	LA-MSID	WQ SITE 19	2	NA
Orange	No	LA-MSID	WQ SITE 20	2	NA
Orange	No	LA-MSID	WQ SITE 21	2	NA
Orange	No	LA-MSID	WQ SITE 22	2	NA
Orange	No	LA-MSID	WQ SITE 24	2	NA
Orange	No	LA-MSID	WQ SITE 27	2	NA
Orange	No	LA-MSID	WQ SITE 38	2	NA
Orange	No	LA-MSID	WQ SITE 39	2	NA
Orange	No	LA-MSID	WQ SITE 40	2	NA
Orange	No	LA-MSID	WQ SITE 6	2	NA
Orange	No	LA-MSID	WQ SITE 7	2	NA
Orange	No	LA-MSID	WQ SITE 8	2	NA
Owl/Trout	No	Lee County	28-5GR	2	NA
Owl/Trout	Yes	Lee County	27-6GR	1	Representative through averaging multiple stations
Owl/Trout	Yes	Lee County	27O-GR20	1	Representative through averaging multiple stations

Basin	Representative Site?	Entity	Station ID	Tier	Data Needs
Popash/Stroud	No	USGS (Lee County Contract)	2293090	3	NA
Popash/Stroud	No	Lee County	22-18GR	2	NA
Popash/Stroud	No	Lee County	22-7GR	2	NA
Popash/Stroud	No	Lee County	23-27GR	2	NA
Popash/Stroud	Yes	Lee County	23-5GR	1	Representative through averaging multiple stations
Popash/Stroud	No	Lee County	24-19GR	2	NA
Popash/Stroud	Yes	Lee County	24-7GR	1	Representative through averaging multiple stations
Popash/Stroud	No	Lee County	25-GR20	2	NA
Popash/Stroud	No	Lee County	26-GR20	2	NA
Powell	No	Lee County	18-6GR	2	NA
Powell	Yes	Lee County	POWLGR20	1	NA
Powell	No	Lee County	POWLGR51	2	NA
Powell	No	Lee County	POWLGR81	2	NA
Telegraph	No	USGS (Lee County Contract)	22929176	3	NA
Telegraph	No	Lee County	29-8GR	2	NA
Telegraph	No	DEP South ROC	CALUSA0024FTM	2	NA
Telegraph	Yes	DEP South ROC	G3SD0129	1	NA
Tidal Northwest	No	City of Cape Coral	210	2	NA
Tidal Northwest	No	City of Cape Coral	243	2	NA
Tidal Northwest	No	City of Cape Coral	262	2	NA
Tidal Northwest	No	City of Cape Coral	275	2	NA
Tidal Northwest	No	City of Cape Coral	280	2	NA
Tidal Northwest	No	City of Cape Coral	290	2	NA
Tidal Northwest	No	City of Cape Coral	295	2	NA
Tidal Northwest	Yes	City of Cape Coral	300	1	Representative through averaging multiple stations
Tidal Northwest	No	City of Cape Coral	310	2	NA
Tidal Northwest	No	City of Cape Coral	315	2	NA
Tidal Northwest	No	City of Cape Coral	355	2	NA
Tidal Northwest	No	City of Cape Coral	390	2	NA
Tidal Northwest	Yes	City of Cape Coral	400	1	Representative through averaging multiple stations
Tidal Northwest	No	City of Cape Coral	430	2	NA
Tidal Northwest	No	City of Cape Coral	445	2	NA
Tidal Northwest	No	City of Cape Coral	450	2	NA
Tidal Northwest	No	City of Cape Coral	455	2	NA
Tidal Northwest	Yes	City of Cape Coral	470	1	Representative through averaging multiple stations

Basin	Representative Site?	Entity	Station ID	Tier	Data Needs
Tidal Northwest	No	City of Cape Coral	510	2	NA
Tidal Northwest	Yes	City of Cape Coral	540	1	Representative through averaging multiple stations
Tidal Northwest	No	City of Cape Coral	550	2	NA
Tidal Northwest	No	City of Cape Coral	570	2	NA
Tidal Northwest	No	City of Cape Coral	580	2	NA
Tidal Northwest	Yes	City of Cape Coral	590	1	Representative through averaging multiple stations
Tidal Northwest	Yes	City of Cape Coral	600	1	Representative through averaging multiple stations
Tidal Southwest	No	USGS	2293230	3	NA
Tidal Southwest	No	USGS	2.6312E+14	3	NA
Tidal Southwest	No	DEP South ROC	CALUSA0013FTM	2	NA
Tidal Southwest	No	Lee County	DEEPGR10	2	NA
Tidal Southwest	No	Lee County	DEEPGR50	2	NA
Tidal Southwest	No	Lee County	DEEPGR90	2	NA
Tidal Southwest	No	Lee County	WHISGR10	2	NA
Tidal Southwest	Yes	Lee County	WHISGR18	1	NA
Tidal Southwest	No	Lee County	WHISGR50	2	NA
In River	No	City of Cape Coral	242	2	NA
In River	No	City of Cape Coral	350	2	NA
In River	No	USGS	2293202	3	NA
In River	No	USGS	2293205	3	NA
In River	No	USGS	2293210	3	NA
In River	No	DEP South ROC	28020110	2	NA
In River	No	DEP South ROC	28020111	2	NA
In River	No	USGS	263144082000000	3	NA
In River	No	DEP South ROC	CALUSA0005FTM	2	NA
In River	No	DEP South ROC	CALUSA0006FTM	2	NA
In River	No	DEP South ROC	CALUSA0007FTM	2	NA
In River	No	DEP South ROC	CALUSA0008FTM	2	NA
In River	No	DEP South ROC	CALUSA0010FTM	2	NA
In River	No	DEP South ROC	CALUSA0012FTM	2	NA
In River	No	DEP South ROC	CALUSA0014FTM	2	NA
In River	No	SFWMD	CES03	2	NA
In River	No	SFWMD	CES04	2	NA
In River	No	SFWMD	CES05	2	NA
In River	No	SFWMD	CES06	2	NA
In River	No	SFWMD	CES07	2	NA
In River	No	SFWMD	CES08	2	NA
In River	No	SFWMD	CES09	2	NA
In River	No	SFWMD	CES11	2	NA
In River	No	Lee County	PI-01	2	NA
In River	No	Lee County	PI-02	2	NA
In River	No	Lee County	PI-13	2	NA
In River	No	Lee County	PI-14	2	NA

Basin	Representative Site?	Entity	Station ID	Tier	Data Needs
In River	No	SFWMD	ROOK471	2	NA

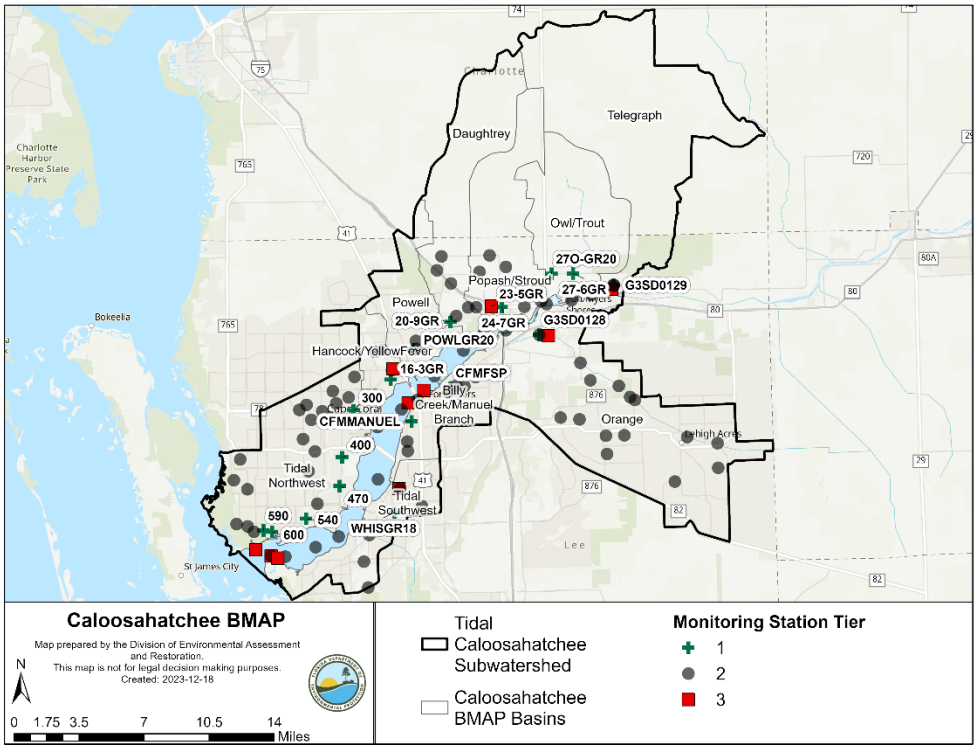

Figure 14. Tidal Caloosahatchee subwatershed monitoring stations

3.2.2 Basin Evaluation Results

3.2.2.1 TRA

Table 25 summarizes the basin evaluation results based on data from WY2020–WY2024 for the Tidal Caloosahatchee subwatershed. The TN concentrations for each of the basins are below the benchmark of 1.54 mg/L. The TP concentrations for five of the basins are above the benchmark of 0.12 mg/L. The TRA prioritization results for the Tidal Caloosahatchee subwatershed are shown in **Table 26**, with 1 the highest priority, 2 the next highest priority, and 3 a priority as resources allow.

3.2.2.2 Hot Spot Analysis

Table 27 summarizes the hot spot analysis results using WY2019–WY2023 data. To be included in the analysis, each station must have at least four samples per year and at least two years of data. This analysis will be as needed, and the results will be shared at annual meetings.

Table 25. Basin evaluation results for the Tidal Caloosahatchee subwatershed

TRA ID	Basin Name	TN (mg/L) (Benchmark –1.54)	TN 5-year Average FWM Concentration (mg/L)	TN UAL (lbs/ac)	TN Trend Analysis	TP (mg/L) (Benchmark – 0.12)	TP 5-year Average FWM Concentration (mg/L)	TP UAL (lbs/ac)	TP Trend Analysis
2	Billy Creek/Manuel Branch	0.88	Insufficient Data	9.89	No Significant Trend	0.19	Insufficient Data	0.80	Significant Decreasing Trend
1	Daughtrey	0.83	Insufficient Data	9.89	No Significant Trend	0.11	Insufficient Data	0.80	Significant Decreasing Trend
3	Hancock/Yellow Fever	1.01	Insufficient Data	6.90	No Significant Trend	0.17	Insufficient Data	2.40	Significant Increasing Trend
4	Orange	0.86	Insufficient Data	5.72	No Significant Trend	0.05	Insufficient Data	0.74	No Significant Trend
5	Owl/Trout	0.82	Insufficient Data	6.35	No Significant Trend	0.06	Insufficient Data	0.70	No Significant Trend
6	Popash/Stroud	1.05	Insufficient Data	6.59	No Significant Trend	0.15	Insufficient Data	0.86	Significant Decreasing Trend
7	Powell	0.83	Insufficient Data	6.29	No Significant Trend	0.18	Insufficient Data	1.24	Significant Decreasing Trend
8	Telegraph	1.26	Insufficient Data	5.63	No Significant Trend	0.07	Insufficient Data	0.45	No Significant Trend
9	Tidal Northwest	0.63	Insufficient Data	6.93	Significant Decreasing Trend	0.10	Insufficient Data	2.58	No Significant Trend
10	Tidal Southwest	1.24	Insufficient Data	8.56	No Significant Trend	0.13	Insufficient Data	7.39	No Significant Trend

Table 26. TRA evaluation results for the Tidal Caloosahatchee subwatershed

Basin	Station	TN Priority	TP Priority
Billy Creek/Manuel Branch	CFMFSP/ CFMMANUEL	2	3
Daughtrey	20-9GR	2	3
Hancock/Yellow Fever	16-3GR	2	1
Orange	G3SD0128	2	3

Basin	Station	TN Priority	TP Priority
Owl/Trout	27-6GR/27O-GR20	2	3
Popash/Stroud	23-5GR/24-7GR	2	3
Powell	POWLGR20	2	3
Telegraph	G3SD0129	2	3
Tidal Northwest	300/400/470/540/590/600	3	3
Tidal Southwest	WHISGR18	2	2

Table 27. Hot spot analysis results for the Tidal Caloosahatchee subwatershed

Basin	Monitoring Location	TN Average Concentration Rank	TN Percentile Rank	TN Standard Deviation Rank	TN Frequency Rank	TN Total Rank	TP Average Concentration Rank	TP Percentile Rank	TP Standard Deviation Rank	TP Frequency Rank	TP Total Rank
Billy Creek/Manuel Branch	BCP1-10	0	0	0	1	1	1	2	1	2	6
Billy Creek/Manuel Branch	BCP4-10	0	0	0	1	1	2	2	2	2	8
Billy Creek/Manuel Branch	BILLGR20	0	0	0	0	0	1	1	1	2	5
Billy Creek/Manuel Branch	BILLGR60	0	0	0	1	1	2	2	2	2	8
Billy Creek/Manuel Branch	CFMBILLY3	0	0	0	1	1	0	0	0	1	1
Billy Creek/Manuel Branch	CFMCARRELL	0	0	0	1	1	0	0	0	1	1
Billy Creek/Manuel Branch	CFMCEMETERY	0	0	0	0	0	1	1	0	2	4
Billy Creek/Manuel Branch	CFMFSP	0	0	0	1	1	1	1	0	2	4
Billy Creek/Manuel Branch	CFMMANUEL	0	0	0	0	0	1	1	0	2	4
Billy Creek/Manuel Branch	CFMWINKLER	0	0	0	1	1	0	0	0	1	1
Daughtrey	20-29GR	0	0	0	1	1	0	0	0	0	0
Daughtrey	20-9GR	0	0	0	0	0	0	0	0	1	1
Daughtrey	20A-11GR	0	0	0	0	0	1	1	0	2	4
Daughtrey	20A-19GR	0	0	0	1	1	0	0	0	1	1

Basin	Monitoring Location	TN Average Concentration Rank	TN Percentile Rank	TN Standard Deviation Rank	TN Frequency Rank	TN Total Rank	TP Average Concentration Rank	TP Percentile Rank	TP Standard Deviation Rank	TP Frequency Rank	TP Total Rank
Daughtrey	21-7GR	0	0	0	0	0	0	0	0	1	1
Daughtrey	GATRGR91	0	0	0	0	0	0	0	0	0	0
Hancock/Yellow Fever	16-18GR	0	0	0	0	0	1	1	1	2	5
Hancock/Yellow Fever	16-30GR	0	0	0	1	1	1	1	0	1	3
Hancock/Yellow Fever	16-3GR	0	0	0	0	0	1	1	0	2	4
Hancock/Yellow Fever	YFC-CI	0	0	0	0	0	1	1	0	2	4
Orange	40-18GR	0	0	0	0	0	0	0	0	0	0
Orange	40-32GR	0	0	0	0	0	0	0	0	0	0
Orange	G3SD0128	0	0	0	0	0	0	0	0	0	0
Orange	SIXMILE1A	1	1	1	1	4	1	1	0	1	3
Orange	WQ SITE 19	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	1	1
Orange	WQ SITE 20	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Orange	WQ SITE 21	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Orange	WQ SITE 24	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Orange	WQ SITE 27	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Orange	WQ SITE 39	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Orange	WQ SITE 40	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Orange	WQ SITE 6	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Orange	WQ SITE 7	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Orange	WQ SITE 8	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Owl/Trout	27-6GR	0	0	0	0	0	0	0	0	0	0

Basin	Monitoring Location	TN Average Concentration Rank	TN Percentile Rank	TN Standard Deviation Rank	TN Frequency Rank	TN Total Rank	TP Average Concentration Rank	TP Percentile Rank	TP Standard Deviation Rank	TP Frequency Rank	TP Total Rank
Owl/Trout	27O-GR20	0	0	0	0	0	0	0	0	1	1
Owl/Trout	28-5GR	0	0	0	0	0	1	1	0	1	3
Popash/Stroud	22-18GR	0	0	0	0	0	0	0	0	0	0
Popash/Stroud	22-7GR	0	0	0	1	1	1	1	0	1	3
Popash/Stroud	23-27GR	0	0	0	0	0	0	0	0	0	0
Popash/Stroud	23-5GR	0	0	0	0	0	1	1	0	2	4
Popash/Stroud	24-19GR	0	0	0	0	0	0	0	0	0	0
Popash/Stroud	24-7GR	0	0	0	0	0	0	0	0	1	1
Popash/Stroud	25-GR20	0	0	0	1	1	1	1	0	1	3
Popash/Stroud	26-GR20	0	0	0	1	1	1	1	0	2	4
Popash/Stroud	26-GR40	0	0	0	1	1	1	1	1	2	5
Powell	18-6GR	0	0	0	0	0	1	1	1	2	5
Powell	POWLGR20	0	0	0	0	0	1	1	1	2	5
Powell	POWLGR51	0	0	0	0	0	1	1	0	2	4
Powell	POWLGR81	0	0	0	0	0	0	0	0	1	1
Telegraph	29-8GR	0	0	0	1	1	0	0	0	1	1
Telegraph	G3SD0129	0	0	0	1	1	0	0	0	1	1
Tidal Northwest	210	0	0	0	0	0	0	0	0	1	1
Tidal Northwest	243	0	0	0	0	0	0	0	0	0	0
Tidal Northwest	262	0	0	0	0	0	0	0	0	0	0
Tidal Northwest	275	0	0	0	0	0	0	0	0	0	0
Tidal Northwest	280	0	0	0	0	0	0	0	0	0	0
Tidal Northwest	290	0	0	0	0	0	0	0	0	0	0
Tidal Northwest	295	0	0	0	0	0	0	0	0	0	0
Tidal Northwest	300	0	0	0	0	0	0	0	0	0	0
Tidal Northwest	310	0	0	0	0	0	0	0	0	0	0
Tidal Northwest	315	0	0	0	0	0	0	0	0	1	1
Tidal Northwest	355	0	0	0	1	1	0	0	0	0	0
Tidal Northwest	390	0	0	0	0	0	0	0	0	0	0
Tidal Northwest	400	0	0	0	0	0	0	0	0	1	1
Tidal Northwest	430	0	0	0	0	0	0	0	0	1	1
Tidal Northwest	435	0	0	0	0	0	0	0	0	0	0
Tidal Northwest	442	0	0	0	0	0	0	0	0	1	1
Tidal Northwest	470	0	0	0	0	0	0	0	0	1	1
Tidal Northwest	510	0	0	0	0	0	0	0	0	1	1

Basin	Monitoring Location	TN Average Concentration Rank	TN Percentile Rank	TN Standard Deviation Rank	TN Frequency Rank	TN Total Rank	TP Average Concentration Rank	TP Percentile Rank	TP Standard Deviation Rank	TP Frequency Rank	TP Total Rank
Tidal Northwest	511	0	0	0	0	0	0	0	0	1	1
Tidal Northwest	540	0	0	0	0	0	0	0	0	1	1
Tidal Northwest	550	0	0	0	0	0	0	0	0	1	1
Tidal Northwest	590	0	0	0	0	0	0	0	0	1	1
Tidal Northwest	600	0	0	0	0	0	0	0	0	1	1
Tidal Southwest	DEEPGR10	0	0	0	0	0	0	0	0	1	1
Tidal Southwest	DEEPGR50	0	0	0	1	1	1	1	0	1	3
Tidal Southwest	WHISGR10	0	0	0	0	0	0	0	0	0	0
Tidal Southwest	WHISGR18	0	0	0	1	1	1	1	0	1	3
Tidal Southwest	WHISGR50	0	0	0	0	0	0	0	0	1	1

3.2.3 Projects

Table 28 summarizes the existing and planned projects for the Tidal Caloosahatchee subwatershed that were provided for the BMAP. The existing and planned projects are a BMAP requirement.

Table 28. Existing and planned projects in the Tidal Caloosahatchee subwatershed

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
2331	Charlotte County	CH-01	Education Efforts	Education efforts include: Florida Yards and Neighborhoods (FYN) Program, landscape, irrigation, fertilizer ordinances, pamphlets, public service announcements, website, and inspection/illicit discharge program.	Education Efforts	Ongoing	NA	1,180	191	TBD
2318	City of Cape Coral	CC-01	Education Efforts	FYN; landscape, irrigation, pet waste, and fertilizer ordinances; pamphlets, PSAs, website, and Illicit Discharge Program.	Education Efforts	Ongoing	NA	9,299	3,448	TBD
2329	City of Cape Coral	CC-02	SE - 1 Swale/ Inlet Replacement	Installed raised inlets to provide additional water quality in roadside swales.	Grass swales with swale blocks or raised culverts	Completed	Prior to 2012	0	0	TBD
2327	City of Cape Coral	CC-03	SW - 1 Swale/ Inlet Replacement	Installed raised inlets to provide additional water quality in roadside swales.	Grass swales with swale blocks or raised culverts	Completed	Prior to 2012	0	0	TBD
2339	City of Cape Coral	CC-04	SW - 2 Swale/ Inlet Replacement	Installed raised inlets to provide additional water quality in roadside swales.	Grass swales with swale blocks or raised culverts	Completed	Prior to 2012	0	0	TBD

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
2304	City of Cape Coral	CC-05	SW - 3 Swale/ Inlet Replacement	Installed raised inlets to provide additional water quality in roadside swales.	Grass swales with swale blocks or raised culverts	Completed	Prior to 2012	0	0	TBD
2328	City of Cape Coral	CC-06	SW - 4 Swale/ Inlet Replacement	Installed raised inlets to provide additional water quality in roadside swales.	Grass swales with swale blocks or raised culverts	Completed	Prior to 2012	0	0	TBD
2296	City of Cape Coral	CC-07	SW - 5 Swale/ Inlet Replacement	Installed raised inlets to provide additional water quality in roadside swales.	Grass swales with swale blocks or raised culverts	Completed	Prior to 2012	0	0	TBD
2297	City of Cape Coral	CC-08	SE Pipe Replacement	SE pipe replacement.	Stormwater System Rehabilitation	Completed	Prior to 2012	NA	NA	TBD
2298	City of Cape Coral	CC-09	Unit 23 - SE 8th Street Drainage	Unit 23-SE 8th Street drainage.	Stormwater System Rehabilitation	Completed	Prior to 2012	NA	NA	TBD
2361	City of Cape Coral	CC-10	Freshwater Canal Detention	Regulation of freshwater canals through existing control structures.	Control Structure	Completed	Prior to 2012	4,416	3,412	TBD
2299	City of Cape Coral	CC-11	Freshwater Canal Irrigation	Pump stormwater stored in canals into irrigation supply network.	Stormwater Reuse	Completed	Prior to 2012	796	141	TBD
2330	City of Cape Coral	CC-12	Weir #6 Elevation/ Basin 12	Installed riser on weir in freshwater canal system to provide additional retention volume in canals.	Control Structure	Completed	Prior to 2012	NA	NA	TBD
2300	City of Cape Coral	CC-13	Weir #1 Elevation/ Basin 15	Installed riser on weir in freshwater canal system to provide additional retention volume in canals.	Control Structure	Completed	Prior to 2012	NA	NA	TBD

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
2301	City of Cape Coral	CC-14	Street Sweeping	Street sweeping of downtown area, alleys, bicycle lanes and commercial roads.	Street Sweeping	Ongoing	NA	791	453	TBD
2302	City of Cape Coral	CC-15	Septic to Sewer Phase Out Project	Phase out septic tanks in Southwest 6/7 area.	OSTDS Phase Out	Completed	2015	24,454	0	TBD
2332	City of Cape Coral	CC-16	Catch Basin Cleanout	Catch basin cleanouts from Caloosahatchee Watershed areas.	Catch Basin Inserts/Inlet Filter Cleanout	Ongoing	NA	273	138	TBD
4365	City of Cape Coral	CC-17	Unit 8 - SE 47th Terrace Streetscape Improvements Club Square	Suntree Technologies Skimboss and Bold and Gold Media - Club Square.	Baffle Boxes-Second Generation with Media	Completed	2018	TBD	TBD	TBD
4366	City of Cape Coral	CC-18	Ft Myers Cape Coral Wastewater Pipeline	Elimination of wastewater treatment plant effluent discharges to the river from Ft Myers by conveying wastewater to Cape Coral for reuse in Cape Coral water reclamation system.	WWTF Diversion to Reuse	Planned	TBD	TBD	TBD	TBD
4840	City of Cape Coral	CC-19	Yellow Fever Creek Hydrologic Restoration	Transfer water from Gator Slough to a new reservoir in Yellow Fever Creek and slowly releasing the flow into the headwaters of Yellow Fever Creek, extending wetland hydroperiods.	Hydrologic Restoration	Underway	TBD	14	19	TBD
2367	City of Fort Myers	FM-01	Country Club Neighborhood Exfiltration Trenches	Exfiltration trenches.	Exfiltration Trench	Completed	2012	214	27	TBD

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
2368	City of Fort Myers	FM-02	Education Efforts	FYN, fertilizer ordinance, pamphlets, PSAs, website, illicit discharge program.	Education Efforts	Ongoing	NA	4,652	1,630	TBD
2369	City of Fort Myers	FM-03	Winkler Avenue Utility and Streetscape Improvements	Installation of Stormceptors™.	Hydrodynamic Separators	Completed	2001	TBD	TBD	TBD
2370	City of Fort Myers	FM-04	Manuel's Branch Siltation Structures	Installation of siltation structure designed to receive incoming flow, reduce its velocity and allow for settling of suspended particles. Called sediment trap (near control structure).	Control Structure	Completed	2011	486	78	TBD
2371	City of Fort Myers	FM-05	Manuel's Branch Control Structures	Series of two weirs constructed along Manuel's Branch between Royal Palm Avenue and Grand Avenue that act as detention structures for purpose of increasing storage and attenuation in canal.	Control Structure	Completed	2012	981	311	TBD
2372	City of Fort Myers	FM-06	Billy's Creek Wetland	Filter marsh park.	Constructed Wetland Treatment	Completed	2010	1,421	1,211	TBD
2373	City of Fort Myers	FM-07	Brookhill Drive Utility Drainage Improvement	Installation of 2 Nutrient Baffle Boxes in parallel along Brookhill Dr.	Baffle Boxes-Second Generation with Media	Completed	2013	36	4	TBD

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
2374	City of Fort Myers	FM-08	Street Sweeping	All city roads with curb and gutter divided into four zones and swept at varying frequencies based on pollutant accumulation.	Street Sweeping	Ongoing	NA	1,851	1,174	TBD
2375	City of Fort Myers	FM-09	Ford Street Preserve	Constructed wetland treatment system that removes pollutants from Ford Street Canal, which serves 811 acres of highly urbanized watershed.	Constructed Wetland Treatment	Completed	2016	7,916	1,412	TBD
2376	City of Fort Myers	FM-10	Riverfront Development Phase 1	Retention pond.	On-line Retention BMPs	Completed	2013	37	10	TBD
2388	City of Fort Myers	FM-11	Carrell Canal Water Quality Retrofit	Two detention areas, five filter marshes, and golf course renovation.	BMP Treatment Train	Completed	2015	640	218	TBD
2378	City of Fort Myers	FM-12	Aquashores Neighborhood	Installation of two Stormceptors™.	Hydrodynamic Separators	Completed	2015	0	1	TBD
2366	City of Fort Myers	FM-13	Billy & High Street Drainage Improvement	Neighborhood improvement project.	BMP Treatment Train	Completed	2023	TBD	TBD	TBD
2379	City of Fort Myers	FM-14	Ridgewood Park Neighborhood Improvements	Neighborhood improvement projects to be done in phases. Design is completed.	BMP Treatment Train	Planned	2030	TBD	TBD	TBD
2380	City of Fort Myers	FM-15	Midtown Redevelopment	Area improvements including water quality improvements.	BMP Treatment Train	Planned	2028	TBD	TBD	TBD

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
2381	City of Fort Myers	FM-16	Edgewood Neighborhood Improvements	Neighborhood improvement projects to be done in phases. Stormwater design completed.	BMP Treatment Train	Planned	2030	TBD	TBD	TBD
6936	City of Fort Myers	FM-17	Water Treatment Plan Reverse Osmosis Treatment Improvement	Construct diversion force main between Central and South WWTF. Upgrade South Plant to meet reuse quality. Provide reuse water to Cape Coral.	WWTF Diversion to Reuse	Underway	2025	TBD	TBD	TBD
2345	FDACS	FDACS-01	BMP Implementation and Verification	Enrollment and verification of BMPs by agricultural producers. Attenuated reductions based on FDACS OAWP December 2022 Enrollment and HSPF model. Acres treated based on FDACS OAWP December 2023 Enrollment and FSAID X.	Agricultural BMPs	Ongoing	NA	54,817	1,954	NA
4846	FDACS	FDACS-04	Cost-Share BMP Projects	Cost-share projects paid for by FDACS. Acres treated based on FDACS OAWP June 2019 Enrollment. Reductions estimated by DEP using 2019 BMAP LET.	Agricultural BMPs	Ongoing	NA	17,746	1,081	TBD
2386	FDOT District 1	FDOT-01	Existing Stormwater Dry Ponds	Dry detention pond; Facility ID = 12010-3505-01.	Dry Detention Pond	Completed	Prior to 2012	31	0	TBD

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
2384	FDOT District 1	FDOT-02	Existing Stormwater Dry Ponds	Dry detention pond; Facility ID = 12060-3530-01.	Dry Detention Pond	Completed	Prior to 2012	4	0	TBD
2343	FDOT District 1	FDOT-03	Existing Stormwater Dry Ponds	Dry detention pond; Facility ID = 12060-3530-02.	Dry Detention Pond	Completed	Prior to 2012	4	0	TBD
2364	FDOT District 1	FDOT-04	Discontinue Fertilization	No longer fertilizing rights-of-way in watershed.	Fertilizer Cessation	Completed	2005	1,811	454	TBD
2362	FDOT District 1	FDOT-05	Education Efforts	Pamphlets, PSAs, illicit discharge program.	Education Efforts	Ongoing	NA	253	54	TBD
2360	FDOT District 1	FDOT-06	Street Sweeping	Street sweeping.	Street Sweeping	Ongoing	NA	473	346	TBD
2358	FDOT District 1	FDOT-07	Ditch Blocked Swales	Swales with ditch blocks. Facility ID = 12020-3538-02.	Grass swales with swale blocks or raised culverts	Completed	Prior to 2012	273	0	TBD
2280	FDOT District 1	FDOT-08	Ditch Blocked Swales	Swales with ditch blocks. Facility ID = 12020-3541-01.	Grass swales with swale blocks or raised culverts	Completed	Prior to 2012	179	0	TBD
2281	FDOT District 1	FDOT-09	Ditch Blocked Swales	Swales with ditch blocks.	Grass swales with swale blocks or raised culverts	Completed	Prior to 2012	318	0	TBD
2303	FDOT District 1	FDOT-10	Swales without Ditch Blocks	Swales without blocks.	Grass swales without swale blocks or raised culverts	Completed	Prior to 2012	4,617	0	TBD
2317	FDOT District 1	FDOT-11	Existing Stormwater Wet Ponds	F12001-3516-01.	Wet Detention Pond	Completed	Prior to 2012	225	0	TBD

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
2305	FDOT District 1	FDOT-12	Existing Stormwater Wet Ponds	F12001-3516-02.	Wet Detention Pond	Completed	Prior to 2012	225	0	TBD
2294	FDOT District 1	FDOT-13	Existing Stormwater Wet Ponds	F12040-3514-01.	Wet Detention Pond	Completed	Prior to 2012	225	0	TBD
2307	FDOT District 1	FDOT-14	Existing Stormwater Wet Ponds	F12040-3515-01.	Wet Detention Pond	Completed	Prior to 2012	225	0	TBD
2308	FDOT District 1	FDOT-15	Existing Stormwater Wet Ponds	F12040-3515-02.	Wet Detention Pond	Completed	Prior to 2012	225	0	TBD
2309	FDOT District 1	FDOT-16	Existing Stormwater Wet Ponds	F12040-3515-03.	Wet Detention Pond	Completed	Prior to 2012	225	0	TBD
2310	FDOT District 1	FDOT-17	Existing Stormwater Wet Ponds	F12040-3515-04.	Wet Detention Pond	Completed	Prior to 2012	225	0	TBD
2311	FDOT District 1	FDOT-18	Existing Stormwater Wet Ponds	F12060-3530-03.	Wet Detention Pond	Completed	Prior to 2012	225	0	TBD
2312	FDOT District 1	FDOT-19	Existing Stormwater Wet Ponds	F12060-3533-01.	Wet Detention Pond	Completed	Prior to 2012	225	0	TBD
2313	FDOT District 1	FDOT-20	Existing Stormwater Wet Ponds	F12060-3533-02.	Wet Detention Pond	Completed	Prior to 2012	225	0	TBD
2314	FDOT District 1	FDOT-21	Existing Stormwater Wet Ponds	F12060-3533-03.	Wet Detention Pond	Completed	Prior to 2012	225	0	TBD
2315	FDOT District 1	FDOT-22	State Road (SR) 78 Project	Wet detention pond. FM195705-1, Pond SMF 1A.	Wet Detention Pond	Completed	Prior to 2012	36	10	TBD
2316	FDOT District 1	FDOT-23	SR 78 Project	Wet detention pond. FM195705-1, Pond SMF 1D.	Wet Detention Pond	Completed	Prior to 2012	44	12	TBD
2295	FDOT District 1	FDOT-24	SR 78 Project	Wet detention pond. FM195705-1, Pond SMF 2B.	Wet Detention Pond	Completed	Prior to 2012	67	18	TBD
2359	FDOT District 1	FDOT-25	SR 78 Project	Wet detention pond. FM195705-1, Pond SMF 4C.	Wet Detention Pond	Completed	Prior to 2012	101	27	TBD

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
4367	FDOT District 1	FDOT-26	SR 82 from Lee Blvd to Shawnee Road	Funding Partnership with LA-MSID for SW Weirs Project.	Control Structure	Completed	2017	NA	NA	TBD
4368	FDOT District 1	FDOT-27	SR 82 from Lee Blvd to Shawnee Road	Funding Partnership with LA-MSID for West Marsh Preserve.	STAs	Completed	2020	NA	NA	TBD
4849	FDOT District 1	FDOT-28	SR 82 from Shawnee Rd to Alabama Road	Funding Partnership with LA-MSID for Moving Water South PH II, Hendry Canal Widening.	Regional Stormwater Treatment	Completed	2020	NA	NA	TBD
5202	FDOT District 1	FDOT-31	Six Mile Cypress Preserve North Hydrologic Restoration project	Hydrologic restoration project.	Hydrologic Restoration	Completed	2005	718	134	NA
7373	FDOT District 1	FDOT-32	421116-1 US 41 Business from Littleton Rd to US 41	Modifying stormwater treatment system that provides treatment for highway. Pond D has hydraulic detention time greater than minimum required for obtaining ERP.	Wet Detention Pond	Completed	2015	TBD	TBD	$0.00
7398	FDOT District 1	FDOT-33	429823-1/435341-1 SR 80: Shoreland Dr to County Road 80 (Buckingham Rd)	Adding surplus treatment to swales in 2018 modification and 429823-1/435341-1 projects	Grass swales with swale blocks or raised culverts	Completed	2023	TBD	TBD	NA
2382	LA-MSID	LA-01	Education/Pollution Prevention/Fertilizer	Pollution prevention and fertilizer education.	Education Efforts	Ongoing	NA	982	144	TBD
2383	LA-MSID	LA-02	Freshwater Canal Detention	Regulation of freshwater canals through existing control structures.	Control Structure	Completed	Prior to 2012	5,624	943	TBD

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
2385	LA-MSID	LA-03	Weir Elevation Improvements	Replacement of weir structures at increased control elevations to provide additional attenuation.	Control Structure	Completed	Prior to 2012	5,343	896	TBD
2387	LA-MSID	LA-04	Harn's Marsh Phases I and II	Replacement of weir structures and redirection of flows into filter marsh.	Control Structure	Completed	Prior to 2012	TBD	TBD	TBD
2354	LA-MSID	LA-05	Jim Flemming Eco-Park	Wetland rehydration and treatment.	Hydrologic Restoration	Completed	Prior to 2012	7,942	1,716	TBD
2352	LA-MSID	LA-06	Mirror Lake Phase I	Detention pond.	Wet Detention Pond	Completed	2013	819	127	TBD
2377	LA-MSID	LA-07	Aquifer Benefit and Storage for Orange River Basin (Southwest Lehigh Weirs)	Increase canal control elevations and local groundwater levels by constructing 25 new weirs.	Control Structure	Completed	2017	5,551	935	NA
2344	LA-MSID	LA-08	S-AW-2 Weir Elevation Improvements	Replacement of weir structures at increase control elevations to provide additional attenuation.	Control Structure	Completed	2017	416	61	NA
2363	LA-MSID	LA-09	Mirror Lake Phase 2	Detention pond.	Wet Detention Pond	Completed	2018	739	109	NA
2348	LA-MSID	LA-10	West Marsh Preserve	Wetland rehydration and treatment.	Hydrologic Restoration	Completed	2020	1,302	217	$15,563,076.00
5755	LA-MSID	LA-17	S-CP-1	Replacement of weir structures at increase control elevations to provide additional attenuation.	Control Structure	Completed	2022	TBD	TBD	$400,000.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
5756	LA-MSID	LA-18	S-R-1	Replacement of weir structures at increase control elevations to provide additional attenuation.	Control Structure	Completed	2020	TBD	TBD	$136,681.00
2282	Lee County	LC-01	Yellow Fever Creek Preserve	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2012	66	31	$3,323,506.00
2293	Lee County	LC-02	Billy's Creek Preserve	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2012	47	2	$2,500,000.00
2284	Lee County	LC-03	Six Mile Cypress Preserve	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2012	1,626	59	$71,475,196.00
2275	Lee County	LC-04	Bob Jane's Preserve	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2012	882	45	
2286	Lee County	LC-05	Buckingham Trails Preserve	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2012	1,815	68	$12,584,000.00
2287	Lee County	LC-06	Caloosahatchee Creeks Preserve	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2012	89	11	$8,175,706.00
2264	Lee County	LC-07	Deep Lagoon Preserve	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2012	144	10	$4,475,664.23
2288	Lee County	LC-08	Hickory Swamp Preserve	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2012	226	9	$467,000.00
2252	Lee County	LC-09	Orange River Preserve	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2012	7	1	$1,755,000.00
2290	Lee County	LC-10	Prairie Pines Preserve	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2012	0	0	$11,790,529.95

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
2291	Lee County	LC-11	Telegraph Creek Preserve	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2012	4,676	140	$23,900,000.00
2283	Lee County	LC-12	West Marsh Preserve	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2012	148	41	$4,631,625.00
2258	Lee County	LC-13	Yellow Fever Creek Preserve	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2012	34	48	$3,323,506.74
2268	Lee County	LC-15	Education Efforts	FYN; landscape, irrigation, and fertilizer ordinances; pamphlets, PSAs, website, illicit discharge program; WETPLAN.	Education Efforts	Ongoing	NA	12,957	4,994	$392,441.00
2272	Lee County	LC-16	Street Sweeping	Materials from roadway and gutter sweeping.	Street Sweeping	Ongoing	NA	572	374	$694,176.00
2273	Lee County	LC-17	North Fort Myers Surface Water Restoration: Powell Creek Extension and Lost Lane Levee	Conveyance improvements to increase residence time, rehydrate offsite wetlands on adjacent properties, and accommodate offsite flows.	Hydrologic Restoration	Completed	2013	13,638	3,536	$3,485,817.00
2289	Lee County	LC-18	Whiskey Creek Weir Reconstruction	Retention lake weir repairs to restore originally intended design and operation.	Control Structure	Completed	Prior to 2012	27,712	9,113	NA
2271	Lee County	LC-19	Caloosahatchee Creeks East	Hydrologic restoration.	Hydrologic Restoration	Completed	Prior to 2012	248	20	$326,955.00
2270	Lee County	LC-20	Powell Creek Filter Marsh	Created wetland areas, boardwalks, and trails and a stabilized crossing of Powell Creek.	Constructed Wetland Treatment	Completed	2013	5,245	2,053	$1,440,000.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
2269	Lee County	LC-21	Nalle Grade Stormwater Park	Dry retention and wet detention ponds.	STAs	Completed	2021	12,084	1,027	$3,500,000.00
2259	Lee County	LC-22	Deep Lagoon Hydrologic Restoration	Hydrologic restoration and enhancement, water conservation, wildlife habitat enhancement, and flood protection for surrounding area.	Hydrologic Restoration	Completed	Prior to 2012	144	26	$210,959.00
2260	Lee County	LC-23	Popash Creek Restoration	Hydrologic restoration to more natural flow regime by increasing water storage on property and improving both onsite and off-site flows.	Hydrologic Restoration	Completed	Prior to 2012	272	44	$1,726,625.00
2261	Lee County	LC-24	Billy's Creek Wetland	Billy Creek Filter Marsh Park.	Constructed Wetland Treatment	Completed	Prior to 2012	948	807	$2,500,000.00
2262	Lee County	LC-25	Caloosahatchee Creeks Preserve-West Restoration	Hydrologic restoration.	Hydrologic Restoration	Completed	2016	16,185	1,368	$250,000.00
2263	Lee County	LC-26	Yellow Fever Creek - Gator Slough Transfer Facility	Return historical flow from Gator Slough Canal system to Yellow Fever Creek. There are 114 acres in the BMAP being treated by this project, there are additional areas being treated outside of the BMAP boundary.	Hydrologic Restoration	Completed	2022	102	118	$1,716,712.93
2274	Lee County	LC-27	Prairie Pines Preserve Restoration	Restoration of historical flows and enhancement and restoration of wetlands.	Hydrologic Restoration	Completed	2018	10,356	837	$600,000.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
2265	Lee County	LC-28	BMAP Plan Development - Basin Study	Basin study to identify pollutant sources and identify further actions to reach reduction goals.	Study	Completed	2017	NA	NA	$195,831.00
2257	Lee County	LC-29	Caloosahatchee River-North Fort Myers Nutrient and Bacteria Source Identification Study	Watershed study to investigate interactions between onsite sewage treatment and disposal systems (OSTDS), groundwater, and surface water in Caloosahatchee Estuary.	Study	Completed	2020	NA	NA	$181,352.00
2267	Lee County	LC-30	Waterway Estates WWTF Closure	Closure of facility with direct discharge to Caloosahatchee.	WWTF Diversion to Reuse	Completed	2012	295	0	$61,565.00
2357	Lee County	LC-31	Six Mile Cypress Preserve North Hydrologic Restoration	Wetland creation, addition of control structures, berms, berm breaches to connect natural and created wetlands, and restoration of historical hydrologic conditions to reduce discharge into Caloosahatchee River.	Hydrologic Restoration	Completed	2013	725	194	$2,060,768.00
2356	Lee County	LC-32	Bob Jane's Preserve Environmental Restoration	Hydrologic improvements in portion of preserve via berms, beaches, and ditch blocks.	Hydrologic Restoration	Completed	2017	207	20	$200,000.00
2239	Lee County	LC-33	Telegraph Creek Preserve	Ditch blocks and native plantings in conveyances.	Hydrologic Restoration	Completed	2017	421	44	$107,337.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
2238	Lee County	LC-34	West Harnes Marsh	Creation and enhancement of wetland marsh ecosystem, including hydraulic connection for water quality improvement and stormwater attenuation.	Constructed Wetland Treatment	Completed	2021	558	93	$0.00
2243	Lee County	LC-35	C-43 Water Quality Treatment and Testing Facility Project (*study/land acquisition)	Project to demonstrate and implement cost-effective, wetland-based strategies for reduction of dissolved organic nitrogen.	Study	Underway	TBD	NA	NA	$10,000,000.00
2285	Lee County	LC-38	Deep Lagoon Pollutant Load Reduction Phase 2-Watershed Analysis Report	Basin study to identify pollutant sources and identify further actions to reach reduction goals.	Study	Completed	2018	NA	NA	$70,000.00
2276	Lee County	LC-39	North Fort Myers Florida Power and Light Feasibility Study	Study to identify areas of high nutrient loads and potential BMPs to improve water quality and reduce flooding.	Study	Completed	2019	NA	NA	$200,000.00
2340	Lee County	LC-40	Sunniland/Nine Mile Run Drainage Improvements	Replacement of failing water control structures and reconnection of flow-ways to Hickory Swamp and Buckingham Trails Preserve.	Hydrologic Restoration	Planned	2024	TBD	TBD	$2,000,000.00
2277	Lee County	LC-41	Caloosahatchee Tributary Canal Rehabilitation: L-3	Reshaping canal banks, littoral planting, and possible addition of control structure(s).	Regional Stormwater Treatment	Completed	2021	985	190	$500,000.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
4369	Lee County	LC-42	Bob Janes Preserve Restoration Feasibility Study	Study to identify areas of high nutrient loads and potential BMPs to improve water quality, and restore historic hydrologic conditions.	Study	Completed	2020	NA	NA	$228,285.00
4370	Lee County	LC-43	GS-10	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2019	10,136	6,840	$3,870,000.00
4855	Lee County	LC-44	Powell Creek / Old Bridge Park Restoration	Filter marsh creation and BMPs.	Constructed Wetland Treatment	Completed	2023	294	56	$1,356,173.45
4856	Lee County	LC-45	Deep Lagoon Preserve Water Quality Improvement Project	Retention ponds, channel/ditch modifications, ditch blocks and pumped solutions.	BMP Treatment Train	Canceled	NA	NA	NA	NA
4857	Lee County	LC-46	Olga Shores Preserve Hydrological Restoration	Filter marsh creation. BMPs.	Hydrologic Restoration	Canceled	NA	NA	NA	NA
5230	Lee County	LC-47	Microbial Source Tracking in Lee County Waterways	Watershed study to investigate interactions between OSTDS and surface water in the Caloosahatchee Estuary.	Study	Completed	2022	NA	NA	$422,628.18
5745	Lee County	LC-48	Olga Shores Preserve	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2017	2	0	$2,659,059.00
5746	Lee County	LC-49	Four Mile Cove	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2020	24	6	$6,050,000.00
5748	Lee County	LC-51	Master Wastewater Treatment Feasibility Analysis	Study to support the development of a County-wide Septic Conversion Master Plan.	Study	Completed	2023	NA	NA	TBD

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
6162	Lee County	LC-54	Palm Creek Lower Filter Marsh	Development of a cellular pond and wetland network to assist in treatment of surface water for nutrient removal and related water quality improvement.	BMP Treatment Train	Planned	2025	TBD	TBD	$1,500,000.00
7267	Lee County	LC-55	Billy Creek and Orange River Septic to Sewer Conversion (Group 1)	Billy Creek and Orange River septic to sewer conversion.	OSTDS Conversion to Distributed Wastewater System	Planned	2028	1,156	0	$6,000,000.00
7347	Lee County	LC-56	Septic to Sewer Conversion (Group 7)	Septic to sewer conversions (Group 7): Southside Trailer Village & Page Park.	OSTDS Conversion to Distributed Wastewater System	Planned	2030	TBD	TBD	TBD
7348	Lee County	LC-57	Septic to Sewer Conversion (Group 2)	Septic to sewer conversion (Group 2): Mobile Manor, Daughtreys Creek, Yacht Club Colony.	OSTDS Conversion to Distributed Wastewater System	Planned	2037	TBD	TBD	TBD
7350	Lee County	LC-58	Septic to Sewer Conversion (Group 8A)	Septic to sewer conversions (Group 8A): Edgewater Gardens, Aqua Cove, Wards Landing, Blue Waters Shore, Hancock Estates, Cabana City.	OSTDS Conversion to Distributed Wastewater System	Planned	2040	TBD	TBD	TBD

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
7356	Lee County	LC-59	Fort Myers Beach Capacity Restoration and Enhancement Project	Replacement and rehabilitation. Restoration of plant treatment capacity to 6 MGD. Enhancement to advanced treatment and climate resiliency measures. Main switchgear and belt press replacement.	WWTF Upgrade	Planned	2029	TBD	TBD	$245,000,000.00
7359	Lee County	LC-60	Septic to Sewer Conversion (Group 8B)	Septic to sewer conversion (Group 8B): Gulf Acres & Over River Shores.	OSTDS Conversion to Distributed Wastewater System	Planned	2037	TBD	TBD	TBD
7361	Lee County	LC-61	Septic to Sewer Conversion (Group 3)	Septic to sewer conversions (Group 3): North Town River, Lake McGregor, Deep Lagoon States, McGregor Vista, Summerwood.	OSTDS Conversion to Distributed Wastewater System	Planned	2040	TBD	TBD	TBD
7363	Lee County	LC-62	Septic to Sewer Conversion (Group 9)	Septic to sewer conversion (Group 9): Laurelin Court & Bay Pointe.	OSTDS Conversion to Distributed Wastewater System	Planned	2040	TBD	TBD	TBD
7364	Lee County	LC-63	Septic to Sewer Conversion (Group 10, 22C)	Septic to sewer conversions (Group 10, 22C): Fort Myers Shores.	OSTDS Conversion to Distributed Wastewater System	Planned	2040	TBD	TBD	TBD
2278	Lucaya CDD	LU-01	Education/ Fertilizer	Education.	Education Efforts	Ongoing	NA	2	0	TBD
2279	Lucaya CDD	LU-02	Education/ Pet Waste	Education.	Education Efforts	Ongoing	NA	2	0	TBD

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
5749	Mirada CDD	M-01	Education/Fertilizer	Public education, training, codes and ordinances provided by Lee County.	Education Efforts	Ongoing	NA	TBD	TBD	NA
5750	Mirada CDD	M-02	Education/Pet Waste	Public education and training provided by Lee County.	Education Efforts	Ongoing	NA	TBD	TBD	NA
5228	Veranda h East CDD	VE-01	Education/Fertilizer	FYN; landscape, irrigation, and fertilizer ordinances; pamphlets, PSAs, website, illicit discharge program; WETPLAN.	Education Efforts	Ongoing	NA	117	15	TBD
5229	Veranda h West CDD	VW-01	Education/Fertilizer	FYN; landscape, irrigation, and fertilizer ordinances; pamphlets, PSAs, website, illicit discharge program; WETPLAN.	Education Efforts	Ongoing	NA	180	29	TBD

3.3. West Caloosahatchee Subwatershed

The West Caloosahatchee subwatershed covers more than 339,764 acres of the Caloosahatchee River and Estuary Watershed. As shown in **Table 29**, improved pasture is the primary land use, comprising 17.2% of the subwatershed followed by citrus and other groves, which account for 16.2% of the land use in the subwatershed. Stakeholders in the basin include Charlotte County, City of LaBelle, Collier County, FDOT District 1, Glades County, Hendry County, LA-MSID, Lee County, Port LaBelle CDD, Portico CDD, River Hall CDD, Barron WCD, County Line Drainage District, Cow Slough WCD, Devil's Garden WCD, and Gerber Groves WCD.

Table 29. Summary of land uses in the West Caloosahatchee subwatershed

HSPF Land Use Code	Land Use Description	Acres	% Total
1	Low Density Residential	36,140	10.6
2	Developed Open Space/Disturbed	7,888	2.3
3	Medium Density Residential	2,752	0.8
4	High Density Residential	235	0.1
5	Commercial/Institutional/Transportation	1,334	0.4
6	Industrial/Extractive	1,066	0.3
7	FDOT Right-of-Way	1,569	0.5
8	Sugar Cane	2,290	0.7
9	Row and Field Crops	9,822	2.9
10	Nurseries/Ornamentals/Vineyards	931	0.3
11	Citrus Groves/Other Groves	54,891	16.2
12	Improved Pasture	58,592	17.2
13	Rangeland/Unimproved Pasture/Shrub	46,977	13.8
14	Upland Forest	55,589	16.4
15	Wetland	56,212	16.5
16	Water	3,476	1.0
NA	**Total**	**339,764**	**100.0**

3.3.1 Water Quality Monitoring

Table 30 summarizes the water quality monitoring stations in the West Caloosahatchee subwatershed, and **Figure 15** shows the station locations. Monitoring stations are proposed in the Goodno, Jacks Branch, Okaloacoochee Branch, Roberts, and Townsend Basins to ensure that monitoring occurs throughout the subwatershed.

Table 30. Water quality monitoring stations in the West Caloosahatchee subwatershed

Basin	Representative Site?	Entity	Station ID	Tier	Data Needs
Bedman/Dog	No	DEP Watershed Monitoring Section	53176	2	NA
Bedman/Dog	No	Lee County	37-15GR	2	NA
Bedman/Dog	Yes	Lee County	37-4GR	1	NA
Bedman/Dog	No	LA-MSID	WQ SITE 13	2	NA
Bedman/Dog	No	LA-MSID	WQ SITE 14	2	NA
Bedman/Dog	No	LA-MSID	WQ SITE 16	2	NA
Bedman/Dog	No	LA-MSID	WQ SITE 31	2	NA

Basin	Representative Site?	Entity	Station ID	Tier	Data Needs
Bedman/Dog	No	LA-MSID	WQ SITE 32	2	NA
Bedman/Dog	No	LA-MSID	WQ SITE 41	2	NA
Bee Branch/Pollywog	No	DEP South ROC	28020268FTM	2	NA
Bee Branch/Pollywog	No	SFWMD	CRFW24	2	NA
Bee Branch/Pollywog	No	SFWMD	CRFW25A	2	NA
Bee Branch/Pollywog	Yes	DEP South ROC	G3SD0085	1	NA
Bee Branch/Pollywog	No	DEP South ROC	G3SD0098	2	NA
Cypress Creek	No	SFWMD	18245	2	NA
Cypress Creek	No	DEP Watershed Monitoring Section	53939	2	NA
Cypress Creek	No	DEP Watershed Monitoring Section	53948	2	NA
Cypress Creek	Yes	DEP South ROC	CYPRESSGR	1	Representative through averaging multiple stations
Cypress Creek	Yes	Lee County	FICHTERSGR	1	Representative through averaging multiple stations
Cypress Creek	Yes	Lee County	SPANISHGR	1	Representative through averaging multiple stations
Deadmans/Cypress Branch	No	DEP Watershed Monitoring Section	53174	2	NA
Deadmans/Cypress Branch	No	DEP Watershed Monitoring Section	53183	2	NA
Goodno	Yes	SFWMD	CRFW06	1	NA
Goodno	Yes	SFWMD	CRFW07	1	NA
Jacks Branch	No	DEP Watershed Monitoring Section	51904	2	NA
Jacks Branch	No	DEP Watershed Monitoring Section	53185	2	NA
Jacks Branch	No	USGS (SFWMD)	2292740	3	NA
Jacks Branch	No	DEP South ROC	28020238	2	NA
Jacks Branch	Yes	SFWMD	CRFW23	1	NA
Okaloacoochee Branch	No	DEP South ROC	CALUSA0051FTM	2	NA
Okaloacoochee Branch	Yes	SFWMD	CRFW09	1	NA
Okaloacoochee Branch	No	DEP South ROC	G3SD0099	2	NA
Olga/Hickey	No	DEP Watershed Monitoring Section	3568	2	NA
Olga/Hickey	No	DEP Watershed Monitoring Section	53943	2	NA
Olga/Hickey	Yes	Lee County	38-3GR	1	NA
Olga/Hickey	No	Lee County	39-GR20	2	NA
Olga/Hickey	No	Lee County	CES01SUR	2	NA
Olga/Hickey	No	LA-MSID	WQ SITE 11	2	NA
Olga/Hickey	No	LA-MSID	WQ SITE 2	2	NA
Olga/Hickey	No	LA-MSID	WQ SITE 23	2	NA
Olga/Hickey	No	LA-MSID	WQ SITE 3	2	NA
Olga/Hickey	No	LA-MSID	WQ SITE 36	2	NA

Basin	Representative Site?	Entity	Station ID	Tier	Data Needs
Olga/Hickey	No	LA-MSID	WQ SITE 37	2	NA
Olga/Hickey	No	LA-MSID	WQ SITE 4	2	NA
Roberts	No	DEP South ROC	28020241	2	NA
Roberts	No	DEP South ROC	28020251FTM	2	NA
Roberts	No	SFWMD	CRFW11	2	NA
Roberts	No	SFWMD	CRFW12	2	NA
Roberts	Yes	DEP South ROC	G3SD0146	1	NA
Townsend	No	USGS (SFWMD)	2292780	3	NA
Townsend	No	SFWMD	CRFW15	2	NA
Townsend	Yes	LA-MSID	WQ SITE 15	1	NA
In River	No	SFWMD	S79	2	NA
In River	No	USGS	2292900 (S-79)	3	NA

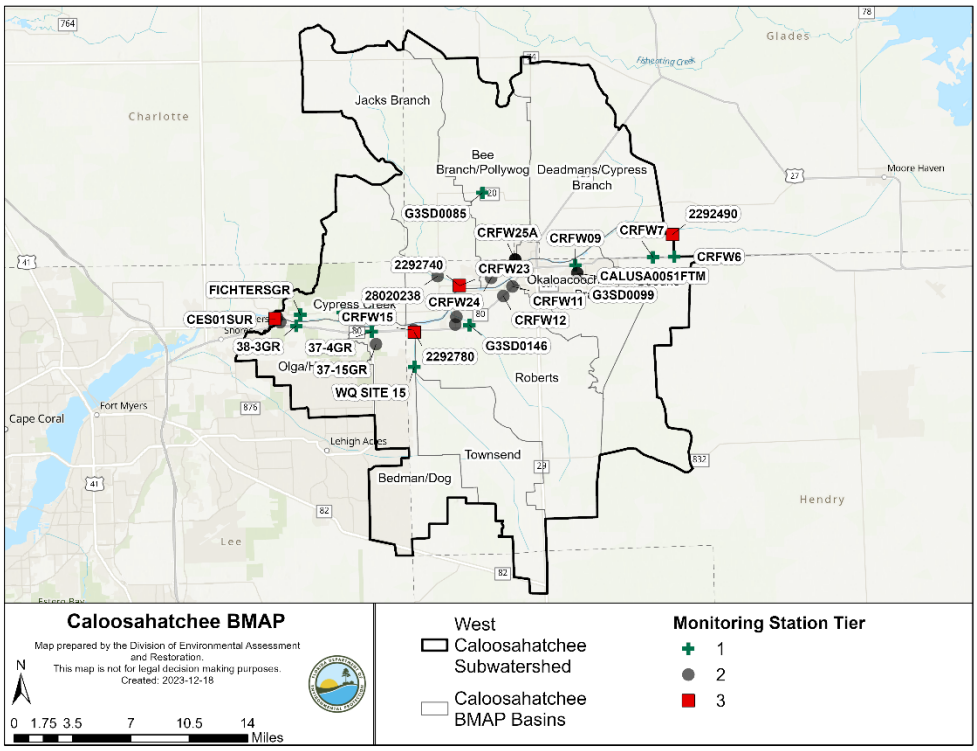

Figure 15. West Caloosahatchee subwatershed monitoring stations

3.3.2 Basin Evaluation Results

3.3.2.1 TRA

Table 31 summarizes the basin evaluation results based on data from WY2020–WY2024 for the West Caloosahatchee subwatershed. Three basins had insufficient data to compare with the TN and TP benchmarks. Cypress Creek had a TN concentration of 1.79 mg/L, which was above the 1.54 mg/L benchmark. Bee Branch/Pollywog has a TP concentration of 0.14 mg/L, which was above the TP benchmark of 0.12 mg/L. The TRA prioritization results for the West

Caloosahatchee subwatershed are shown in **Table 32**, with 1 the highest priority, 2 the next highest priority, and 3 a priority as resources allow.

3.3.2.2 Hot Spot Analysis

Table 33 summarizes the hot spot analysis results using WY2019 – WY2023 data. To be included in the analysis, each station must have at least four samples per year and at least two years of data. This analysis will be as needed, and the results will be shared at annual meetings.

Table 31. Basin evaluation results for the West Caloosahatchee subwatershed

TRA ID	Basin Name	TN (mg/L) (Benchmark – 1.54)	TN 5-year Average FWM Concentration (mg/L)	TN UAL (lbs/ac)	TN Trend Analysis	TP (mg/L) (Benchmark – 0.12)	TP 5-year Average FWM Concentration (mg/L)	TP UAL (lbs/ac)	TP Trend Analysis
11	Bedman/Dog	0.78	Insufficient Data	5.38	No Significant Trend	0.03	Insufficient Data	0.65	Significant Increasing Trend
12	Bee Branch/ Pollywog	1.38	Insufficient Data	4.68	No Significant Trend	0.14	Insufficient Data	0.51	No Significant Trend
13	Cypress Creek	1.79	Insufficient Data	6.35	No Significant Trend	0.05	Insufficient Data	0.58	No Significant Trend
14	Deadmans/ Cypress Branch	Insufficient Data	Insufficient Data	4.20	Insufficient Data	Insufficient Data	Insufficient Data	0.40	Insufficient Data
15	Goodno	1.29	Insufficient Data	4.69	No Significant Trend	0.12	Insufficient Data	0.37	No Significant Trend
16	Jacks Branch	Insufficient Data	Insufficient Data	5.09	Insufficient Data	Insufficient Data	Insufficient Data	0.52	Insufficient Data
17	Okaloacoochee Branch	1.09	Insufficient Data	5.59	Significant Decreasing Trend	0.08	Insufficient Data	0.87	No Significant Trend
18	Olga/Hickey	0.69	Insufficient Data	6.69	No Significant Trend	0.05	Insufficient Data	0.79	No Significant Trend
19	Roberts	Insufficient Data	Insufficient Data	5.76	No Significant Trend	Insufficient Data	Insufficient Data	0.76	No Significant Trend
20	Townsend	0.66	Insufficient Data	6.37	Insufficient Data	0.06	Insufficient Data	0.87	Insufficient Data

Table 32. TRA evaluation results for the West Caloosahatchee subwatershed

Basin	Station	TN Priority	TP Priority
Bedman/Dog	37-4GR	3	2
Bee Branch/Pollywog	G3SD0085	3	2

Basin	Station	TN Priority	TP Priority
Cypress Creek	CYPRESSGR/ FICHTERSGR/ SPANISHGR	1	3
Deadmans/Cypress Branch	NA	Insufficient Data	Insufficient Data
Goodno	NA	3	3
Jacks Branch	NA	Insufficient Data	Insufficient Data
Okalocoochee Branch	NA	3	3
Olga/Hickey	38-3GR	2	3
Roberts	G3SD0146	Insufficient Data	Insufficient Data
Townsend	WQ SITE 15	2	3

Table 33. Hot spot analysis results for the West Caloosahatchee subwatershed

Basin	Monitoring Location	TN Average Concentration Rank	TN Percentile Rank	TN Standard Deviation Rank	TN Frequency Rank	TN Total Rank	TP Average Concentration Rank	TP Percentile Rank	TP Standard Deviation Rank	TP Frequency Rank	TP Total Rank
Bedman/Dog	32281	0	0	0	1	1	1	1	1	2	5
Bedman/Dog	37-15GR	0	0	0	0	0	0	0	0	0	0
Bedman/Dog	37-4GR	0	0	0	0	0	0	0	0	0	0
Bedman/Dog	CLEW04	1	2	2	2	7	1	1	0	2	4
Bedman/Dog	WQ SITE 13	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Bedman/Dog	WQ SITE 14	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Bedman/Dog	WQ SITE 16	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Bedman/Dog	WQ SITE 31	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Bedman/Dog	WQ SITE 32	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	1	1
Bedman/Dog	WQ SITE 41	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Bee Branch/Pollywog	32290	0	0	0	1	1	1	1	0	2	4
Bee Branch/Pollywog	40097	0	0	0	1	1	2	2	2	2	8
Bee Branch/Pollywog	G3SD0085	0	0	0	1	1	1	1	0	2	4
Cypress Creek	18245	0	0	0	1	1	1	1	0	2	4
Cypress Creek	CYPRESSGR	2	2	2	2	8	0	0	0	0	0
Cypress Creek	FICHTERSGR	0	0	0	0	0	0	0	0	1	1

Basin	Monitoring Location	TN Average Concentration Rank	TN Percentile Rank	TN Standard Deviation Rank	TN Frequency Rank	TN Total Rank	TP Average Concentration Rank	TP Percentile Rank	TP Standard Deviation Rank	TP Frequency Rank	TP Total Rank
Cypress Creek	SPANISHGR	0	0	0	1	1	0	0	0	0	0
Deadmans/Cypress Branch	G3SD0224	2	2	2	2	8	2	2	2	2	8
Goodno	32272	0	0	0	1	1	0	0	0	1	1
Goodno	32273	0	0	0	1	1	1	1	0	1	3
Goodno	CLEW02	1	2	1	2	6	1	1	0	1	3
Jacks Branch	32289	0	0	0	1	1	1	1	0	2	4
Jacks Branch	CLEW03	1	2	2	2	7	1	1	0	1	3
Okaloacoochee Branch	32275	0	0	0	0	0	0	0	0	1	1
Olga/Hickney	3568	0	0	0	1	1	1	1	0	1	3
Olga/Hickney	38-3GR	0	0	0	0	0	0	0	0	0	0
Olga/Hickney	39-GR20	0	0	0	0	0	0	0	0	1	1
Olga/Hickney	CES01SUR	0	0	0	1	1	1	1	0	2	4
Olga/Hickney	CLEW05	1	2	2	2	7	1	1	0	1	3
Olga/Hickney	WQ SITE 11	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Olga/Hickney	WQ SITE 3	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Olga/Hickney	WQ SITE 37	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0
Roberts	32277	0	0	0	1	1	1	1	0	1	3
Roberts	32278	0	0	0	0	0	1	1	0	2	4
Roberts	G3SD0146	0	0	0	1	1	0	0	0	1	1
Roberts	G3SD0177	0	0	1	1	2	2	2	2	2	8
Townsend	G3SD0221	1	1	1	2	5	2	2	2	2	8
Townsend	WQ SITE 15	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	Insufficient Data	0	0	0	0	0

3.3.3 Projects

Table 34 summarizes the existing and planned projects for the West Caloosahatchee subwatershed that were provided for the BMAP. The existing and planned projects are a BMAP requirement.

Table 34. Existing and planned projects in the West Caloosahatchee subwatershed

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
6061	Barron WCD	LOH-BD-01	Public Education and Outreach	Updates on BMAP and requirements during annual landowner meetings.	Education Efforts	Planned	TBD	NA	NA	TBD
TBD	Charlotte County	CH-01	Education Efforts	Education efforts include: FYN Program, landscape, irrigation, fertilizer ordinances, pamphlets, public service announcements, website, and inspection/illicit discharge program.	Education Efforts	Ongoing	NA	130	21	TBD
5742	City of LaBelle	LB-01	City of LaBelle Zone J Septic Tank to Central Sewer	Septic tank conversion project that will consist of a pump station, force main and gravity sewer to provide an estimated 50 customers (area buildout) with sanitary sewer.	OSTDS Phase Out	Underway	2025	307	NA	TBD
5743	City of LaBelle	LB-02	City of LaBelle Zone A Septic Tank to Central Sewer	Septic tank conversion project that will consist of a pump station, force main and gravity sewer to provide an estimated 442 customers (area buildout) with sanitary sewer.	OSTDS Phase Out	Underway	2024	2771	NA	TBD

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
5744	City of LaBelle	LB-03	City of LaBelle Zone B Septic Tank to Central Sewer	Septic tank conversion project that will consist of a pump station, force main and gravity sewer to provide an estimated 315 customers (area buildout) with sanitary sewer.	OSTDS Phase Out	Underway	2025	1971	NA	TBD
6318	City of LaBelle	LB-04	City of LaBelle Zones C, D, and E WWTF System Improvements and Expansion Project	Septic tank conversion project that will consist of pump station additions and downstream improvements, force main and gravity sewer to provide an estimated 776 customers (area buildout) with sanitary sewer.	OSTDS Phase Out	Underway	2027	3462	NA	TBD
6319	City of LaBelle	LB-05	City of LaBelle Zones G, H, and I WWTF System Improvements and Expansion Project	Septic tank conversion project that will consist of pump station additions and downstream improvements, force main and gravity sewer to provide an estimated 262 customers (area buildout) with sanitary sewer.	OSTDS Phase Out	Underway	2027	1649	NA	TBD
5177	County Line Drainage District	CL-01	Public Education and Outreach	Updates on BMAP and requirements during annual landowner meetings.	Education Efforts	Ongoing	NA	NA	NA	$0.00
5178	County Line Drainage District	CL-02	FDACS BMP Assistance	Provide assistance to FDACS, as needed, to encourage landowners to enroll in BMPs.	Agricultural BMPs	Underway	TBD	NA	NA	$0.00
5179	County Line Drainage District	CL-03	Nutrient Controls	No application of fertilizer in district's rights-of-way.	Fertilizer Cessation	Completed	2020	NA	NA	$0.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
5180	County Line Drainage District	CL-04	Canal Cleaning Program	Review and field evaluation of sediment accumulation and scheduling of removal, when necessary.	Muck Removal/Restoration Dredging	Underway	TBD	NA	NA	$0.00
5181	County Line Drainage District	CL-05	Control Structures	Annual maintenance of water control structures.	Control Structure	Underway	TBD	NA	NA	$0.00
5187	Cow Slough WCD	CSW-01	Public Education and Outreach	Updates on BMAP and requirements during annual landowner meetings.	Education Efforts	Planned	NA	NA	NA	$500.00
5188	Cow Slough WCD	CSW-02	FDACS BMP Assistance	Provide assistance to FDACS, as needed, to encourage landowners to enroll in BMPs.	Agricultural BMPs	Planned	NA	NA	NA	$1,000.00
5189	Cow Slough WCD	CSW-03	Nutrient Controls	No application of fertilizer in district's rights-of-way.	Fertilizer Cessation	Completed	2020	NA	NA	$0.00
5190	Cow Slough WCD	CSW-04	Canal/Ditch Bank Berms	Minimize sediment transport by constructing berms on top of canal/ditch banks and promoting vegetation cover.	Shoreline Stabilization	Planned	NA	NA	NA	$13,000.00
5191	Cow Slough WCD	CSW-05	Control Structures	Annual maintenance of water control structures.	Control Structure	Ongoing	NA	NA	NA	$2,500.00
5192	Devil's Garden WCD	DG-01	Public Education and Outreach	Updates on BMAP and requirements during annual landowner meetings.	Education Efforts	Planned	NA	NA	NA	$500.00
5193	Devil's Garden WCD	DG-02	FDACS BMP Assistance	Provide assistance to FDACS, as needed, to encourage landowners to enroll in BMPs.	Agricultural BMPs	Planned	NA	NA	NA	$1,000.00
5194	Devil's Garden WCD	DG-03	Nutrient Controls	No application of fertilizer in district's rights-of-way.	Fertilizer Cessation	Completed	2020	NA	NA	$0.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
5195	Devil's Garden WCD	DG-04	Canal Cleaning Program	Review and field evaluation of sediment accumulation and scheduling of removal, when necessary.	Muck Removal/Restoration Dredging	Planned	NA	NA	NA	$75,000.00
5196	Devil's Garden WCD	DG-05	Control Structures	Annual maintenance of water control structures.	Control Structure	Ongoing	NA	NA	NA	$20,000.00
4844	FDACS	FDACS-02	BMP Implementation and Verification	Enrollment and verification of BMPs by agricultural producers. Attenuated reductions based on FDACS OAWP December 2022 Enrollment and HSPF model. Acres treated based on FDACS OAWP December 2023 Enrollment and FSAID X.	Agricultural BMPs	Ongoing	NA	270301	10762	NA
4847	FDACS	FDACS-05	Cost-Share BMP Projects	Cost-share projects paid for by FDACS. Acres treated based on FDACS OAWP June 2019 Enrollment. Reductions estimated by DEP using 2019 BMAP LET.	Agricultural BMPs	Ongoing	NA	131764	6830	TBD
4850	FDOT District 1	FDOT-29	SR 80 from Dalton Lane to County Road 833 (408286-5)	Widening project provided extra nutrient removal in treatment ponds.	Wet Detention Pond	Completed	2020	127	24	TBD
4851	FDOT District 1	FDOT-30	SR 82 from Gator Slough Lane to SR 29 (430849-1)	Widening project provided extra nutrient removal in treatment Pond 4.	Wet Detention Pond	Completed	2022	71	15	TBD
5208	Gerber Groves WCD	GG-01	Public Education and Outreach	Updates on BMAP and requirements during annual landowner meetings.	Education Efforts	Planned	NA	NA	NA	$500.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
5209	Gerber Groves WCD	GG-02	FDACS BMP Assistance	Provide assistance to FDACS, as needed, to encourage landowners to enroll in BMPs.	Agricultural BMPs	Planned	NA	NA	NA	$1,000.00
5210	Gerber Groves WCD	GG-03	Nutrient Controls	No application of fertilizer in district's rights-of-way.	Fertilizer Cessation	Completed	2020	NA	NA	$0.00
5211	Gerber Groves WCD	GG-04	Canal/Ditch Bank Berms	Minimize sediment transport by constructing berms on top of canal/ditch banks and promoting vegetation cover.	Shoreline Stabilization	Planned	TBD	NA	NA	$5,000.00
5212	Gerber Groves WCD	GG-05	Control Structures	Annual maintenance of water control structures.	Control Structure	Ongoing	NA	NA	NA	$5,000.00
4852	Glades County	GC-01	Education and Outreach	FYN; landscaping, irrigation, and fertilizer ordinances; PSAs, pamphlets, website, and illicit discharge program.	Education Efforts	Completed	2015	2190	299	TBD
5737	Hendry County	HC-01	Four Corners MSBU / County Line Ditch Widening	Residents near the project area experience frequent flooding due to the lack of drainage capacity. Improvements will allow the upstream watershed to pass through a system that will reduce nutrient loading prior to discharging to the river downstream.	Retention/ Detention BMP Retrofit with Nutrient Reducing Media	Underway	2025	NA	NA	$4,297,112.00
5738	Hendry County	HC-02	North LaBelle Water Quality	Provide water quality components to treat stormwater along Mohawk Avenue prior to discharging into the Roy Brown Canal and flowing into the Caloosahatchee River.	Retention/ Detention BMP Retrofit with Nutrient Reducing Media	Planned	2026	NA	NA	$200,000.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
6322	Hendry County	HC-04	Hendry County Port LaBelle Utility System Cast Iron Sewer Pipe Replacement	Repairing and/or replacing damaged or leaking pipe by installing a liner or replacement with new pipe. Mechanically cleaning a portion of the gravity sewer main that is cast iron pipe. The main will be inspected and clay and cast iron pipe will be lined.	Sanitary Sewer and WWTF Maintenance	Completed	2023	NA	NA	$800,000.00
6781	Hendry County	HC-05	Hendry County Port LaBelle Utility System Wastewater Collection System - Port LaBelle Unit 1	Design and permit and construction of a wastewater collection system and wastewater force main pumping system to serve the unsewered sections of Unit No. 1 of Port LaBelle.	OSTDS Phase Out	Underway	2027	NA	NA	$8,100,000.00
7113	Hendry County	HC-06	Hendry County Port LaBelle Utility System Gravity Sewer Line Rehabilitation - Port LaBelle Units 1, 4, & 5	The rehabilitation of the existing gravity sewer system serving Port LaBelle Units 1, 4 and 5. The purpose is to reduce infiltration and inflow in the aging gravity sewer collection system by lining the piping within the gravity sewer collection system.	Sanitary Sewer and WWTF Maintenance	Planned	2025	NA	NA	$1,750,000.00
7119	Hendry County	HC-07	Hendry County Port LaBelle Utility System Wastewater Collection System - Port LaBelle Units 2 & 3	Design and permit of a wastewater collection system and wastewater force main pumping system to serve the unsewered sections of Unit Nos. 2 and 3 of Port LaBelle. And construction of the said system for Unit No. 2.	OSTDS Phase Out	Planned	2028	TBD	TBD	$55,600,000.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
7120	Hendry County	HC-08	Hendry County Port LaBelle Utility System Wastewater Treatment Plant Expansion	The Port LaBelle Utility System Wastewater Treatment Plant is in need of expansion to provide additional plant capacity as rapid growth is expected to continue in the Port LaBelle area and the eventual increase in residential connections that will occur.	Wastewater Service Area Expansion	Planned	2028	NA	NA	$39,000,000.00
7666	Hendry County	HC-09	Pollywog Creek Water Quality	Implementation of erosion control and water quality components to prevent bank erosion and sediment buildup in Pollywog Creek and particularly at the mouth of the creek prior to discharging into the Caloosahatchee River.	Retention /Detention BMP Retrofit with Nutrient Reducing Media	Planned	2026	TBD	TBD	$1,000,000.00
TBD	LA-MSID	LA-01	Education/ Pollution Prevention/ Fertilizer	Pollution prevention and fertilizer education.	Education Efforts	Ongoing	NA	897	132	TBD
TBD	LA-MSID	LA-02	Freshwater Canal Detention	Regulation of freshwater canals through existing control structures.	Control Structure	Completed	Prior to 2012	5256	522	TBD
TBD	LA-MSID	LA-03	Weir Elevation Improvements	Replacement of weir structures at increased control elevations to provide additional attenuation.	Control Structure	Completed	Prior to 2012	4992	496	TBD
2347	LA-MSID	LA-11	S-H-2 Weir Replacement	Replace failed fabriform weir.	Control Structure	Completed	2019	106	8	$1,078,476.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
2346	LA-MSID	LA-12	Hendry Canal Widening	Widen three miles of Hendry Ext. Canal. Create additional stormwater storage within the canal system.	Hydrologic Restoration	Completed	2021	TBD	TBD	$5,000,000.00
5740	LA-MSID	LA-13	CREST	Purchased 100 acres agricultural land to construct STA.	Land Use Change	Completed	2018	528	70	$255,800.00
5741	LA-MSID	LA-14	CREST	Construct STA.	STAs	Underway	2025	19958	2732	$5,000,000.00
5753	LA-MSID	LA-15	GS-10	Construct STA.	STAs	Planned	2031	TBD	TBD	$12,000,000.00
5754	LA-MSID	LA-16	S-BH-2	Replacement of weir structures at increase control elevations to provide additional attenuation.	Control Structure	Completed	2021	TBD	TBD	$75,000.00
7165	LA-MSID	LA-19	ROBUST	Rehydration of Bedman (Creek) Utilizing Storage and Treatment (ROBUST) project, which seeks to implement water attenuation and storage areas in Bedman Creek drainage basin area.	STAs	Planned	2028	TBD	TBD	$3,100,000.00
TBD	Lee County	LC-04	Bob Jane's Preserve	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2012	19365	450	$41,538,620.00
TBD	Lee County	LC-32	Bob Jane's Preserve Environmental Restoration	Hydrologic improvements in portion of preserve via berms, beaches, and ditch blocks.	Hydrologic Restoration	Completed	2017	1413	99	$200,000.00
2255	Lee County	LC-36	Fichter's Creek Restoration Project	Restoration of hydroperiod and water quality in Fichter's Creek.	Hydrologic Restoration	Completed	2018	1705	114	$2,000,000.00
2292	Lee County	LC-37	Spanish Creek at Daniel's Preserve Restoration	Restoration of wetland hydroperiod and sheet flow attenuation.	Hydrologic Restoration	Completed	2014	1161	46	$400,000.00

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
TBD	Lee County	LC-43	GS-10	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2019	7059	3800	$3,870,000.00
5747	Lee County	LC-50	Alva Scrub Preserve	Land purchase and conversion to conservation land use.	Land Use Change	Completed	2019	2674	164	$16,847,808.50
6179	Lee County	LC-52	Bob Janes Restoration	Two hydrologic modification projects to provide attenuation of peak flows and nutrient reduction in water discharging from the Bob Janes Preserve.	Hydrologic Restoration	Planned	2025	1439	225	$2,500,000.00
6161	Lee County	LC-53	Oak Hammock Preserve	Land purchased and conversion to conservation land use.	Land Use Change	Planned	2025	NA	NA	$4,411,383.00
7366	Lee County	LC-64	Septic to Sewer Conversion (Group 10, 39D)	Septic to sewer conversion (Group 10,39D): Riverwind Cove.	OSTDS Conversion to Distributed Wastewater System	Planned	2042	TBD	TBD	TBD
5219	Portico CDD	PORT-01	Education/ Fertilizer	FYN; landscape, irrigation, and fertilizer ordinances; website, illicit discharge program; WETPLAN.	Education Efforts	Ongoing	NA	92	8	$0.00
5220	Portico CDD	PORT-02	Control Structures	CS-A1 is a Modified Type H Inlet, CS-A2 is a Modified Type E Inlet, CS-B1 is a Modified Type C Inlet.	Control Structure	Completed	2007	TBD	TBD	TBD
5221	Portico CDD	PORT-03	Conservation Lands	Conversion of agricultural lands to natural conservation lands.	Land Use Change	Completed	2006	TBD	TBD	$1,005,480.00
5222	Portico CDD	PORT-04	Stormwater Aeration System	Aeration systems on surface water management ponds A1, A2, A3, A4, A5, A9, A10, B1, and B2.	Stormwater Aeration System	Completed	2017	TBD	TBD	TBD

Project ID	Lead Entity	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Cost Estimate
5165	SFWMD - Coordinating Agency	CA-01	C-43 West Basin Storage Reservoir	Storage of 170,000 acre-feet of stormwater runoff and releases from Lake Okeechobee. It will reduce volume of lake discharges in wet season and provide freshwater flow to the estuary in dry season to aid in essential flows for more stable salinities.	Hydrologic Restoration	Underway	2025	NA	NA	$999,113,000.00
5170	SFWMD - Coordinating Agency	CA-06	C-43 West Basin Storage Reservoir Water Quality Component	Construct and operate a water quality treatment component at the C-43 West Basin Storage Reservoir to reduce discharge of nutrients which may contribute to blue-green algal blooms.	Constructed Wetland Treatment	Planned	2024	TBD	TBD	$9,312,183.00
5171	SFWMD - Coordinating Agency	CA-07	Mudge Ranch	A 304-acre project area; estimated annual ac-ft of storage is 362 ac-ft.	Dispersed Water Management	Completed	2014	NA	NA	$492,200.00
7091	SFWMD - Coordinating Agency	CA-08	Four Corners Rapid Infiltration	Project utilizes a minor above ground impoundment combined with rapid infiltration areas to provide storage of stormwater runoff captured from local contributory watersheds of the C-43 canal.	Dispersed Water Management	Completed	2023	TBD	TBD	$24,166,625.00

Chapter 4. Summary

4.1. Basin Evaluation Results

4.1.1 TRA

Table 35 summarizes the results of the TRA evaluation process presented by subwatershed in **Chapter 3** for the subwatersheds in the Caloosahatchee River and Estuary Watershed. For each basin, a priority was assigned based on the TN and TP concentrations. The TRA evaluation does not currently include an assessment of water quantity since a flow evaluation has not yet been completed. Once a complete flow evaluation is available, it will be reviewed for inclusion in future BMAP reporting. These priorities were set to help focus resources and projects in the basins that are in most need of improvement. Priorities were set with 1 the highest priority, 2 the next highest priority, and 3 a priority as resources allow.

Table 35. Summary of the TRA evaluation results

Subwatershed	Basin	Station	TN Priority	TP Priority
East Caloosahatchee	C-19	C19	Insufficient Data	Insufficient Data
East Caloosahatchee	Lake Hicpochee	NA	Insufficient Data	Insufficient Data
East Caloosahatchee	Long Hammock	NA	3	1
East Caloosahatchee	Nine Mile	G3SD0088	2	3
East Caloosahatchee	S-4	S235	Insufficient Data	Insufficient Data
East Caloosahatchee	Turkey Creek	NA	Insufficient Data	Insufficient Data
East Caloosahatchee	York	NA	Insufficient Data	Insufficient Data
Tidal Caloosahatchee	Billy Creek/Manuel Branch	CFMFSP/ CFMMANUEL	2	3
Tidal Caloosahatchee	Daughtrey	20-9GR	2	3
Tidal Caloosahatchee	Hancock/Yellow Fever	16-3GR	2	1
Tidal Caloosahatchee	Orange	G3SD0128	2	3
Tidal Caloosahatchee	Owl/Trout	27-6GR/27O-GR20	2	3
Tidal Caloosahatchee	Popash/Stroud	23-5GR/24-7GR	2	3
Tidal Caloosahatchee	Powell	POWLGR20	2	3
Tidal Caloosahatchee	Telegraph	G3SD0129	2	3
Tidal Caloosahatchee	Tidal Northwest	300/400/470/540/ 590/600	3	3
Tidal Caloosahatchee	Tidal Southwest	WHISGR18	2	2
West Caloosahatchee	Bedman/Dog	37-4GR	3	2
West Caloosahatchee	Bee Branch/Pollywog	G3SD0085	3	2
West Caloosahatchee	Cypress Creek	CYPRESSGR/ FICHTERSGR/ SPANISHGR	1	3
West Caloosahatchee	Deadmans/Cypress Branch	NA	Insufficient Data	Insufficient Data
West Caloosahatchee	Goodno	NA	3	3
West Caloosahatchee	Jacks Branch	NA	Insufficient Data	Insufficient Data
West Caloosahatchee	Okalocoochee Branch	NA	3	3
West Caloosahatchee	Olga/Hickey	38-3GR	2	3
West Caloosahatchee	Roberts	G3SD0146	Insufficient Data	Insufficient Data
West Caloosahatchee	Townsend	WQ SITE 15	2	3

4.1.2 Trend Analysis

Table 36 summarizes the trend analysis results by basin in each subwatershed. The trend analysis from the second 5-Year Review was updated to add data through WY2024. The latest analysis uses data from five water years before BMAP adoption and 12 years after adoption for a period of record extending from May 1, 2008 through April 30, 2024. The results of the trend analysis are used in the TRA evaluation presented in **Chapter 3**.

Table 36. Trend analysis results by subwatershed and basin

Subwatershed	Basin Name	TN Trend Analysis	TP Trend Analysis
East Caloosahatchee	C-19	Insufficient Data	Insufficient Data
East Caloosahatchee	Lake Hicpochee	Insufficient Data	Insufficient Data
East Caloosahatchee	Long Hammock	Insufficient Data	Insufficient Data
East Caloosahatchee	Nine Mile	No Significant Trend	No Significant Trend
East Caloosahatchee	S-4	No Significant Trend	Significant Increasing Trend
East Caloosahatchee	Turkey Creek	Insufficient Data	Insufficient Data
East Caloosahatchee	York	Insufficient Data	Insufficient Data
Tidal Caloosahatchee	Billy Creek/Manuel Branch	No Significant Trend	Significant Decreasing Trend
Tidal Caloosahatchee	Daughtrey	No Significant Trend	Significant Decreasing Trend
Tidal Caloosahatchee	Hancock/Yellow Fever	No Significant Trend	Significant Increasing Trend
Tidal Caloosahatchee	Orange	No Significant Trend	No Significant Trend
Tidal Caloosahatchee	Owl/Trout	No Significant Trend	No Significant Trend
Tidal Caloosahatchee	Popash/Stroud	No Significant Trend	Significant Decreasing Trend
Tidal Caloosahatchee	Powell	No Significant Trend	Significant Decreasing Trend
Tidal Caloosahatchee	Telegraph	No Significant Trend	No Significant Trend
Tidal Caloosahatchee	Tidal Northwest	Significant Decreasing Trend	No Significant Trend
Tidal Caloosahatchee	Tidal Southwest	No Significant Trend	No Significant Trend
West Caloosahatchee	Bedman/Dog	No Significant Trend	Significant Increasing Trend
West Caloosahatchee	Bee Branch/ Pollywog	No Significant Trend	No Significant Trend
West Caloosahatchee	Cypress Creek	No Significant Trend	No Significant Trend
West Caloosahatchee	Deadmans/ Cypress Branch	Insufficient Data	Insufficient Data
West Caloosahatchee	Goodno	No Significant Trend	No Significant Trend
West Caloosahatchee	Jacks Branch	Insufficient Data	Insufficient Data
West Caloosahatchee	Okaloacoochee Branch	Significant Decreasing Trend	No Significant Trend
West Caloosahatchee	Olga/Hickey	No Significant Trend	No Significant Trend
West Caloosahatchee	Roberts	No Significant Trend	No Significant Trend
West Caloosahatchee	Townsend	Insufficient Data	Insufficient Data

4.1.3 Hot Spot Analysis

Figure 16 and **Figure 17** summarize the TN and TP hot spot analysis results, respectively, that were presented by subwatershed in **Chapter 3** for the subwatersheds in the Caloosahatchee River and Estuary Watershed. For each basin, a rank was assigned to help focus resources and projects in the basins that are in most need of improvement. Ranks were set for high, medium, and low resource needs.

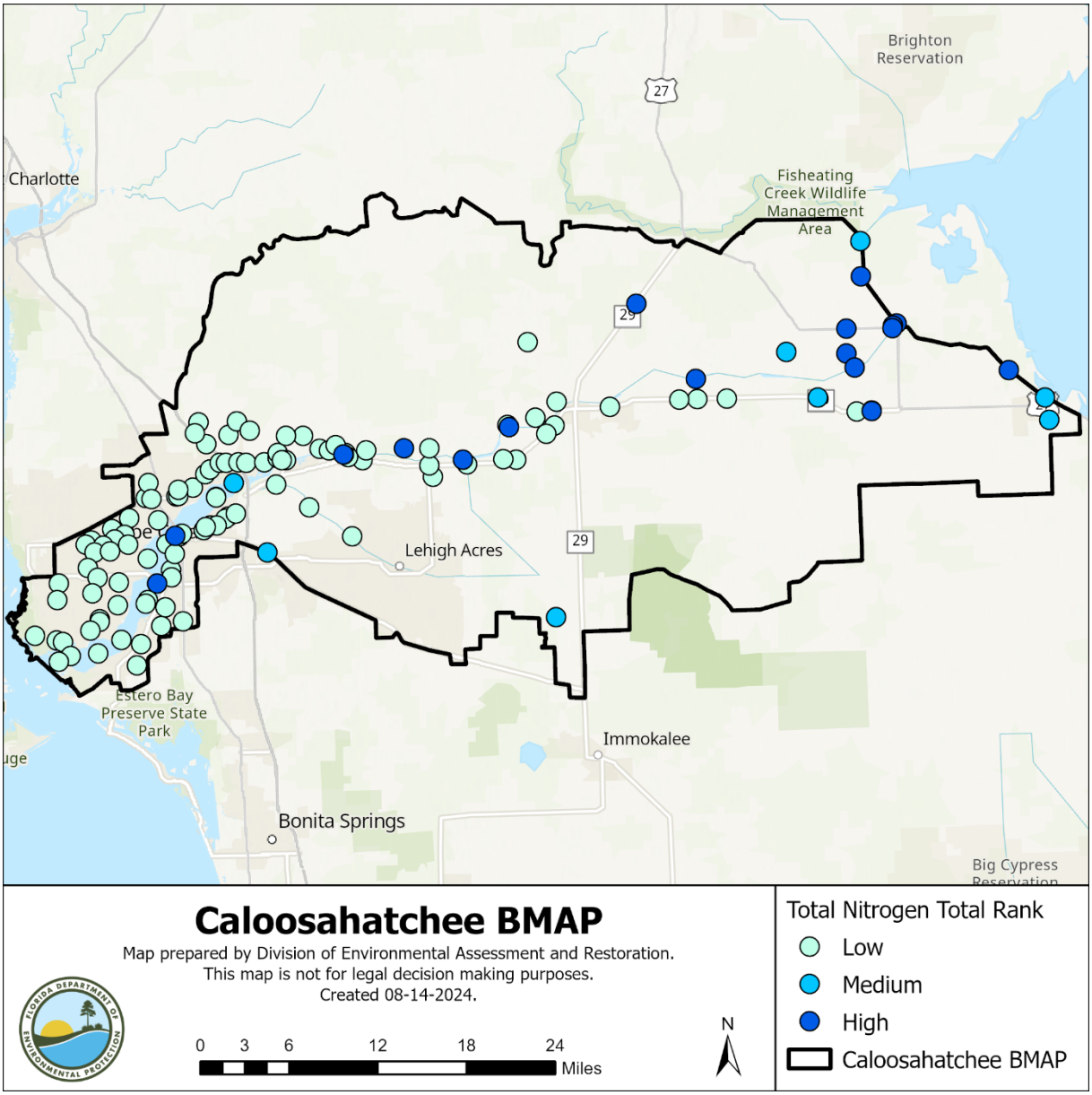

Figure 16. TN hot spot analysis results

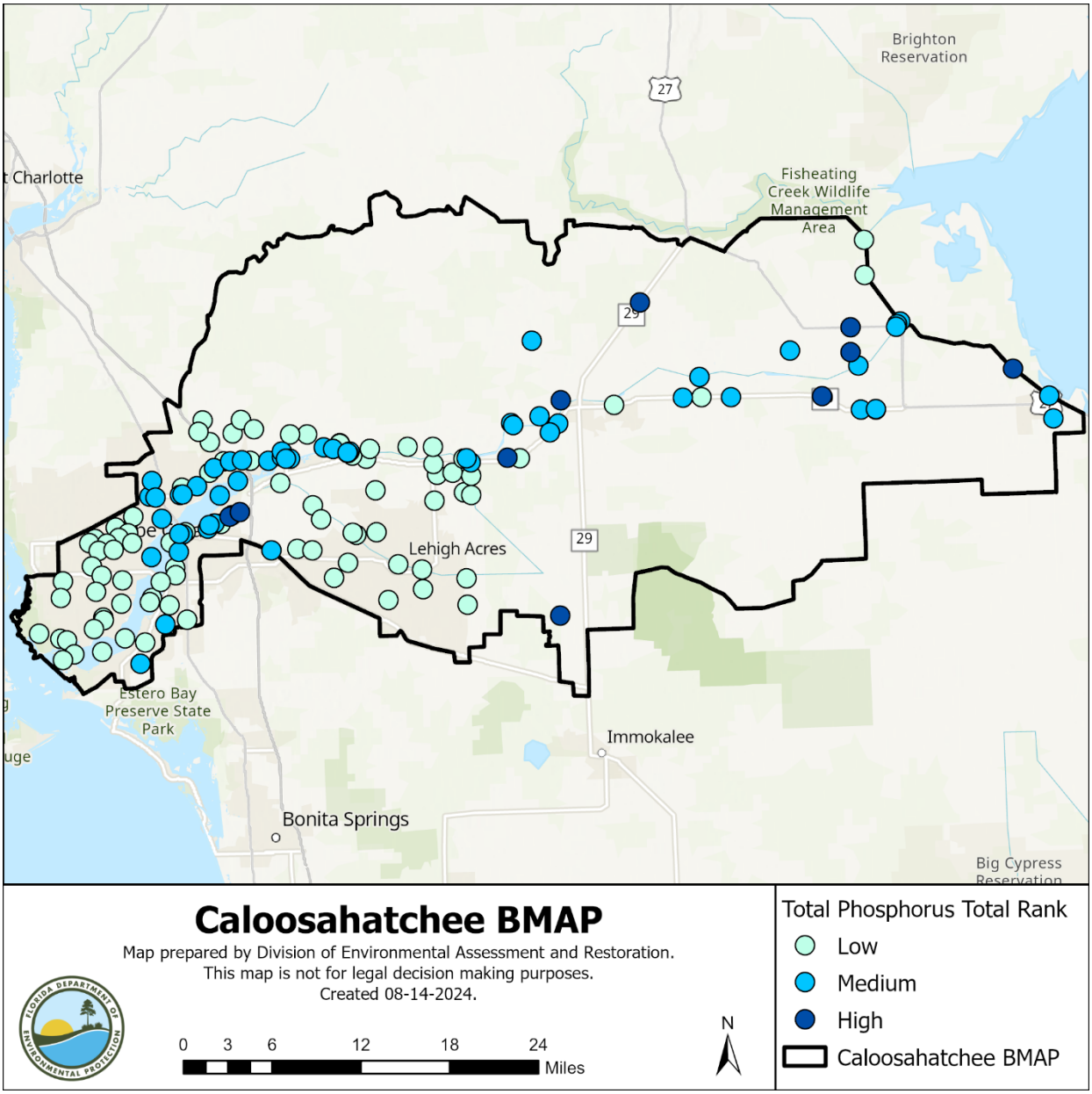

Figure 17. TP hot spot analysis results

4.2. Future Growth

Nutrient impacts from new development are addressed through a variety of mechanisms outlined in this BMAP, as well as provisions of Florida law. While most of the restoration projects and management strategies listed in this BMAP address current nutrient loading, there is a need to plan and implement sound management strategies to address loading associated with population growth. DEP has included in this BMAP specific elements to address current and future WWTF effluent, OSTDS and stormwater sources. Broader requirements—such as local land development regulations, comprehensive plans, ordinances, incentives, environmental resource

permit requirements, and consumptive use permit requirements—all provide additional mechanisms and avenues to protect water resources and reduce the impact of new development and other land use changes as they occur.

Further strengthening of comprehensive plans is required under section 163.3177 F.S., which required local governments to amend their comprehensive plans with the following considerations:

- Identify and prioritize projects to meet the TMDLs.
- Update the wastewater section to include plans for treatment updates, not just capacity, and AWT must be prioritized.
- In developments with more than 50 lots with more than one OSTDS per acre, the plan must consider the feasibility of providing sanitary sewer within a 10-year planning horizon and identify the facility that could receive the flows. The plan must review the capacity of the facility and any associated transmission facilities; projected wastewater flow at that facility for the next 20 years, including expected future new construction and connections of OSTDS to sanitary sewer; and timeline for the construction of the sanitary sewer system. The plan was required to be updated by July 1, 2024.
- Comprehensive plans must contain capital improvements element to consider the need for and the location of public facilities.
    - Construction, extension, or increase in capacity of public facilities as well as principals for correcting existing public facility deficiencies. Components must cover at least a 5-year period.
    - Costs, timeline, general location and projected revenue sources to fund the facilities.
    - Standards to meet acceptable level of service.
    - Schedule of capital improvements, which may include privately funded projects.
    - Must include a list of projects necessary to achieve the pollutant load reductions attributable to the local government, as established in a BMAP.
    - The plan must include a general sanitary sewer, solid waste, drainage, potable water, and natural groundwater aquifer recharge element correlated to principals and guidelines for future land use.
    - The element must address coordinating the extension of, increase in the capacity of, or upgrade in treatment of facilities to meet future needs; prioritizing AWT while maximizing the use of existing facilities and discouraging urban sprawl; conserving potable water resources; and protecting the functions of natural groundwater recharge areas and natural drainage features.

Through this array of laws and the requirements in this BMAP, new development must undertake nutrient-reduction measures before the development is complete. DEP recommends that all local governments revise their planning and land use ordinance(s) to adequately address future growth and the associated environmental impact. Maintaining land at lower intensity uses through land purchases or easements for conservation and recreational use is one strategy that can help reduce water quality impacts in the basin. Any additional nutrient loading from land use

intensification will be evaluated during future BMAP review efforts. If an increase in loading occurs an entity may receive additional reduction requirements that will require additional restoration actions by the responsible entity to remediate impact.

4.2.1 Future Growth Analysis

An analysis was done to consider the impacts of future land use changes on nutrient loading in the basin. First, a spatial analysis determined the proportion of developable land area attributed to each entity within the county. Areas where there are permanent waterbodies or which have been set aside for conservation are unlikely to see future development or increased population so the National Hydrography Database for lake and ponds and the Florida Natural Lands Inventory conservation lands were used to remove lands from the analysis. The remaining land ("developable land") attributed to each entity was used as a starting point for per acre loading calculations, which were used to estimate future loads from increased stormwater runoff as a result of development under different planning scenarios, described below. Loading projections were based on DEP's statewide event mean concentrations and runoff coefficients for low density residential, with a generalized rainfall for Central Florida from Harper 2007. Finally, a generalized attenuation rate of 70% for urban runoff was applied to loading calculations to derive the estimated future load to the basin.

> **Scenario 1** represents a conservative growth future where 2% of developable land is converted from natural or undeveloped land uses to low density residential.
>
> **Scenario 2** represents a moderate growth future where 10% of developable land is converted to low density residential.
>
> **Scenario 3** represents an extreme growth future where 17% of developable land is converted to low density residential.

Based on the methodology above, using nitrogen loads as an example, **Table 37** shows the estimated future nutrient loads from stormwater runoff that may be assigned to local governments if growth continues as projected under the three planning scenarios. DEP encourages local governments to consider these additional nutrient loads when authorizing new development or changes in land uses, and when developing local plans for wastewater infrastructure expansion and maintenance, to ensure that the TMDL target is achieved and maintained.

Table 37. Estimated TN load from development in the BMAP area

Entity	Developable Land (acres)	2040 Additional TN Loading under Scenario 1 (2%) (lbs/yr)	2040 Additional TN Loading under Scenario 2 (10%) (lbs/yr)	2040 Additional TN Loading under Scenario 3 (17%) (lbs/yr)
Charlotte County	41,460	44	218	371
Glades County	193,830	204	1,020	1,735
Moore Haven	682	1	4	6
Hendry County	207,056	218	1,090	1,853

Entity	Developable Land (acres)	2040 Additional TN Loading under Scenario 1 (2%) (lbs/yr)	2040 Additional TN Loading under Scenario 2 (10%) (lbs/yr)	2040 Additional TN Loading under Scenario 3 (17%) (lbs/yr)
Clewiston	2,887	3	15	26
LaBelle	8,719	9	46	78
Lee County	147,883	156	779	1,324
Cape Coral	30,756	32	162	275
Fort Myers	12,854	14	68	115
Basin Totals	**646,127**	**680**	**3,402**	**5,783**

This broad analysis is not being used to determine allocated reductions for responsible entities, but does help shed light on how loading in the basin might change in the coming decades without comprehensive local and regional planning. Future development will likely result in an increase in loading from stormwater and wastewater sources. These changes are difficult to model because much of it is dependent on the type and location of development, enforcement of local ordinances, future home values, and future social attitudes towards lawn maintenance and waste management. There are also complex dynamics associated with new urban development in which loading from human activities is compounded by potential removal or conversion of forest lands or green spaces, which had previously provided natural remediation of atmospheric and soil nutrients. This analysis did not capture all local considerations or complexities of mixed land use.

While it is unlikely that additional nutrient loading from future populations can be entirely avoided, the results of this analysis provide local governments information on how they can mitigate future nutrient loading by pursuing planning scenarios which prioritize preserving low intensity land uses. In addition to stormwater BMPs, strengthening and enforcing fertilizer ordinances, working with homeowners' associations or neighborhood groups to reduce fertilizer use on community landscaping, or incentivizing Florida Friendly development practices could reduce the overall impact of additional nutrients associated with urban stormwater runoff.

Other mechanisms discussed above in **Section 4.2** are available to local governments to further mitigate future nutrient loading from waste sources. For example, the expansion of centralized sewer services that meet or exceed AWT standards for wastewater effluent, the use of enhanced nutrient-reducing OSTDS certified with higher nitrogen treatment efficiencies, or other wastewater treatment systems with higher treatment levels.

DEP encourages local governments to incorporate water quality considerations when developing and implementing local ordinances, comprehensive plans, stormwater planning, and septic incentive programs in areas of urban expansion.

4.3. Compliance

Compliance for the Caloosahatchee Estuary portion of the BMAP will be based on a 5-year rolling average where TN loads at the compliance point of the S-79 lock do not exceed the allowable load of 3,048,783 lbs/yr.

Compliance for the impaired tributaries within the BMAP will also be based on a 5-year rolling average load for TN and TP not to exceed the following values:

- C-19 Canal — 31,327 lbs/yr of TN and 1,579 lbs/yr of TP.
- Lake Hicpochee — of 24,929 lbs/yr of TN and 1,348 lbs/yr of TP.
- Long Hammock — of 253,673 lbs/yr of TN and 16,295 lbs/yr of TP.
- S-4 — 111,935 lbs/yr of TN and 7,555 lbs/yr of TP.
- Townsend Canal — 160,314 lbs/yr of TN and 14,300 lbs/yr of TP.

DEP providing revised starting loads and allocations is an expected part of the iterative BMAP process where loading estimates are reassessed as land uses and other loading sources change over time as. Responsible entities and agencies should expect periodic adjustments to the subwatershed reduction assignments during the BMAP process. A seven-year rolling average for the impaired tributaries will also be monitored to ensure compliance with the TMDLs as expressed in the TMDL document.

Chapter 5. References

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South Florida Water Management District, Florida Department of Environmental Protection, and Florida Department of Agriculture and Consumer Services. 2009. *Caloosahatchee River Watershed Protection Plan*.

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Appendices

Appendix A. Important Links

The links below were correct at the time of document preparation. Over time, the locations may change and the links may no longer be accurate. None of these linked materials are adopted into this BMAP.

- DEP Website: http://www.floridadep.gov
- DEP Map Direct Webpage: https://ca.dep.state.fl.us/mapdirect/
- Florida Statutes: http://www.leg.state.fl.us/statutes:
    a. Florida Watershed Restoration Act (Section 403.067, F.S.)
- DEP Model Ordinances: http://fyn.ifas.ufl.edu/fert_ordinances.html
- DEP Standard Operating Procedures for Water Quality Samples: https://floridadep.gov/dear/quality-assurance/content/dep-sops
- FDACS BMPs: https://www.fdacs.gov/Agriculture-Industry/Best-Management-Practices-BMPs
- FDACS BMP and Field Staff Contacts: https://www.fdacs.gov/Divisions-Offices/Agricultural-Water-Policy
- Florida Administrative Code (Florida Rules): https://www.flrules.org/
- Florida Stormwater Rule: https://floridadep.gov/water/engineering-hydrology-geology/content/erp-stormwater-resource-center
- National Environmental Laboratories Accreditation Conference National Environmental Laboratory Accreditation Program: https://floridadep.gov/dear/florida-dep-laboratory/content/nelap-certified-laboratory-search
- South Florida Environmental Report: https://www.sfwmd.gov/science-data/scientific-publications-sfer
- University of Florida Institute of Food and Agricultural Sciences (UF-IFAS) Research: http://research.ifas.ufl.edu/

Appendix B. Agricultural Enrollment and Reductions

FDACS provides the information for this appendix for each BMAP. The information in this appendix does not represent DEP's position.

Agricultural Landowner Requirements

Section 403.067, F.S., requires agricultural producers and landowners located within BMAP areas to either enroll in the FDACS BMP Program and properly implement BMPs applicable to their property and operation or to conduct water quality monitoring activities as required by Rule Chapter 62-307, F.A.C. Producers or agricultural landowners who are enrolled in the FDACS BMP Program and are properly implementing the applicable BMPs identified on the BMP Checklist, or who are in compliance with the Equivalent Program requirements of Rule Chapter 5M-1, F.A.C., are entitled to a presumption of compliance with state water quality standards per section 403.067(7)(c)3., F.S.

FDACS OAWP BMP Program

BMPs Definition

For the purposes of the OAWP BMP Program, the term "best management practice" means a practice or combination of practices determined based on research, field-testing, and expert review, to be the most effective and practicable on-location means, including economic and technological considerations, for improving water quality in agricultural discharges. Section 403.067, F.S., requires that BMPs reflect a balance between water quality improvements and agricultural productivity. FDACS works closely with DEP, WMDs, industry experts, and academic institutions to understand the environmental and agronomic effects addressed by BMPs.

Section 403.067, F.S., authorizes and directs FDACS to develop and adopt by rule BMPs that will help Florida's agricultural industry achieve the pollution reductions allocated in BMAPs. To date, FDACS OAWP has adopted 11 commodity specific BMP manuals by rule, covering cattle, citrus, equine, dairy, nurseries, poultry, sod, small farms and specialty livestock, specialty fruit and nut, vegetable and agronomic crops, and wildlife operations. All OAWP BMP manuals are periodically revised, updated, and subsequently reviewed and preliminarily verified by DEP before re-adoption. BMPs serve as part of a multidisciplinary approach to water resource restoration and protection that includes public/private partnerships, landowner agreements and regional treatment technologies, which together form the comprehensive strategy needed to meet the goals established in BMAPs.

Enrolling in a FDACS BMP Program

To initially enroll in the FDACS BMP Program, agricultural landowners and producers must meet with a FDACS representative on site to determine the appropriate practices that are applicable to their operation(s) and to document the BMPs on the NOI and BMP Checklist. FDACS representatives consider site-specific factors when determining the applicability of

BMPs including commodity type, topography, geology, location of production, soil type, field size, and type and sensitivity of the ecological resources in the surrounding areas. Producers collaborate with the FDACS representative to complete an NOI to implement the BMPs and the BMP Checklist from the applicable BMP manual.

Once the NOI and Checklist are completed, signed, and submitted to OAWP, the producer is formally enrolled in the BMP Program. Because many agricultural operations are diverse and are engaged in the production of multiple commodities, a landowner may sign multiple NOIs for a single parcel. Producers must properly implement all applicable BMPs as soon as practicable, but no later than 18 months after completion and execution of the NOI and associated BMP Checklist.

Enrollment Prioritization

To address the greatest resource concerns, OAWP utilizes a phased approach based on commodity type, irrigation, and agricultural acreages, while ensuring that all entities identified as agriculture will be notified. Enrollment efforts have previously focused on enrolling parcels that are most impactful to water quality including parcels containing many agricultural acres, irrigated acres, or more intense agricultural land uses.

Implementation Verification

Section 403.067, F.S., requires FDACS to conduct an Implementation Verification (IV) site visit at least every two years to ensure that agricultural landowners and producers are properly implementing the applicable BMPs identified in the BMP Checklist. An IV site visit includes: review and collection of nutrient application records that producers must maintain to demonstrate compliance with the BMP Program; verification that all other applicable BMPs are being properly implemented; verification that any cost shared practices are being properly implemented; and identification of potential cost share practices, projects or other applicable BMPs not identified during enrollment. During the IV site visit, FDACS representatives also identify opportunities for achieving greater nutrient, irrigation, or water resource management efficiencies, including opportunities for water conservation. Procedures used to verify the implementation of agricultural BMPs are outlined in Rule 5M-1.008, F.A.C.

Nutrient Application Records

Enrolled landowners and producers are required to keep records on the total pounds of nitrogen and phosphorus fertilizer from all sources that are applied to their operations to comply with BMP program requirements, including AA biosolids. Nutrient records from Class A or B biosolids applied in accordance with Chapter 62-640, F.A.C. are collected through the DEP permitting process as described in 5M-1.008(5). FDACS will collect information pertaining to these records for a two-year period identified when an IV site visit is scheduled. OAWP adopted a Nutrient Application Record Form (FDACS-04005, rev. 06/24, incorporated in 5M-1.008(4), F.A.C.), to help simplify the record keeping requirement. The form is available under Program

Resources at https://www.fdacs.gov/Agriculture-Industry/Water/Agricultural-Best-Management-Practices. As these records relate to processes or methods of production, costs of production, profits, other financial information, fertilizer application information collected during an IV site visit is considered confidential and may be exempt from public records under Chapters 812 and 815, F.S., and section 403.067, F.S. In accordance with subsection 403.067(7)(c)5., F.S., FDACS is required to provide DEP the nutrient application records.

Compliance Enforcement

If multiple efforts to contact agricultural landowners and producers within BMAPs about enrollment in the BMP Program are unsuccessful or if the landowner or producer chooses not to enroll in the BMP Program FDACS refers them to DEP for enforcement action per section 403.067(7)(b), F.S.

If a producer is enrolled in the FDACS BMP program and the producer chooses not to properly implement the applicable BMPs, FDACS representatives provide the landowner or producer with a list of corrective measures and the timeframes within which they must be implemented. If a landowner or producer does not cooperate with FDACS to identify or implement corrective or remedial measures, or refuses an IV site visit, FDACS refers them to DEP for enforcement action after attempts at corrective and remedial action are exhausted. Chapter 5M-1, F.A.C. outlines the process to ensure compliance with the BMP Program requirements.

Equivalent Programs

Enrollees operating under one of the Equivalent Programs listed in Rule 5M-1.001(7), F.A.C., are required to complete an NOI and meet the other requirements for Equivalent Programs specified in Rule Chapter 5M-1, F.A.C. Compliance with BMPs on the area(s) of the NOI property subject to the Equivalent Program instrument is demonstrated by fulfilling the requirements of Rule 5M-1.008(8), F.A.C. An Enrollee under an Equivalent Program listed in Rule 5M-1.001(7)(a)-(b), F.A.C., that is not required to complete a BMP Checklist is not subject to IV site visits. For Enrollees under an Equivalent Program listed in Rule 5M-1.001(7)(a)-(b), F.A.C., implementation verification shall be undertaken by the agency that issued the permit pursuant to its statutory and/or rule authority.

Other FDACS BMP Programs

FDACS implements other regulatory programs that help minimize nonpoint source pollution from agricultural activities.

Aquaculture

The FDACS Division of Aquaculture develops and enforces regulations governing the commercial aquaculture industry in Florida. Chapter 597, F.S., Florida Aquaculture Policy Act, requires Floridians who engage in commercial aquaculture to annually acquire an Aquaculture Certificate of Registration and implement all applicable Aquaculture Best Management Practices

listed in Rule Chapter 5L-3.004, F.A.C. Facilities with certain production and discharge rates also require an NPDES permit from DEP. The Aquaculture BMPs were last updated by rule in November 2023.

FDACS Division of Aquaculture conducts annual site visits at certified facilities to confirm compliance with BMPs. These include management practices in areas of construction, containment, shrimp culture, sturgeon culture, shellfish culture, live rock culture, aquatic plants, including fertilizer application, and health management. For more information about FDACS Division of Aquaculture and Aquaculture BMPs go to https://www.fdacs.gov/Divisions-Offices/Aquaculture.

Within the Caloosahatchee River and Estuary BMAP, there are 24 aquaculture facilities under certification with the FDACS Division of Aquaculture as of November 2024. As with agricultural land use in Florida, aquaculture facilities are frequently in and out of production. The facilities being provided may no longer be in operation and/or there may be new companies in different parts of the basin by the next BMAP iteration.

Forestry

The FDACS FFS develops, implements (through education and training), and monitors Silviculture BMPs in Florida. Silviculture BMPs are applicable to bona-fide ongoing silviculture operations and are not intended for use during tree removal or land clearing operations that are associated with a land-use change to a non-forestry objective. The FFS Silviculture BMP Manual is adopted under Chapter 5I-6.002 F.A.C. and was last updated in 2008. FFS is currently in the process of updating the manual with guidance from the FDACS Silviculture BMP Technical Advisory Council. The current manual is composed of fourteen BMP categories covering many aspects of silviculture operations including timber harvesting, site preparation, forest roads, stream and wetland crossings, and forest fertilization. The primary objectives of Silviculture BMPs are to minimize the risks to Florida's water resources from silviculture-related sources of nonpoint source pollution and maintain overall ecosystem integrity. Section 403.067, F.S., provides silviculture practitioners implementing Silviculture BMPs a presumption of compliance with state water quality standards for the pollutants addressed by the BMPs.

The FFS Silviculture BMP implementation monitoring program was initiated in 1981 and follows the criteria which have been established for state forest agencies in the southeastern United States by the Southern Group of State Foresters. Monitoring surveys are conducted biennially on a random sample of recently conducted silviculture operations throughout Florida with the goal of determining the level of implementation and compliance with Silviculture BMPs. For the period of record (1981 to 2023), Florida's statewide Silviculture BMP compliance rates range from 84% (1985) to 99.7% (2019) and have shown an overall average compliance rate above 98% since 2005. For more information about Silviculture BMPs and to download a copy of the latest FFS Silviculture BMP Implementation Survey Report go to https://www.fdacs.gov/bmps.

Agricultural Land Use

Agricultural Land Use in BMAPs

Land use data are helpful as a starting point for estimating agricultural acreage, determining agricultural nonpoint source loads, and developing strategies to reduce those loads in a BMAP area, but there are inherent limitations in the available data. Agriculture acreages fluctuate when volatile economic markets for certain agricultural commodities provide incentive for crops to change at a fast pace, properties are sold, leases are terminated, production areas decrease, or production ceases, among other reasons. Florida's recent population growth has also resulted in accelerated land use changes statewide, some of which include transitioning agricultural or fallow agricultural lands to developed land uses. The dynamic nature of Florida's agricultural industry creates challenges with comparing agricultural acres from year to year.

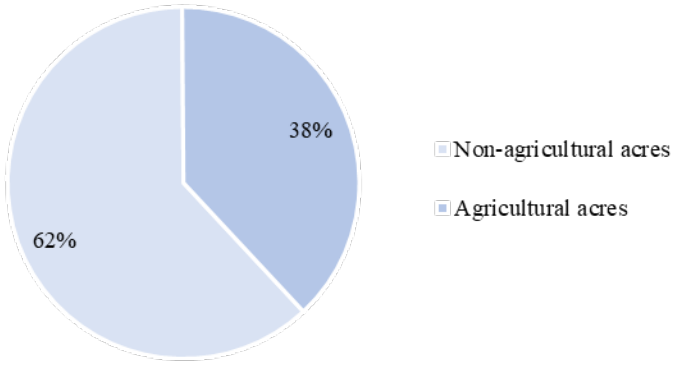
When developing a BMAP, agricultural nonpoint source loading is estimated using a broad methodology based on statewide land use data. Oftentimes, this results in properties being designated as agricultural nonpoint pollution sources and creates an obligation for these properties to enroll in the FDACS BMP Program when they may be better addressed under other programs more applicable to the practices occurring on those properties. Examples of these properties include: rural residential/homesteads, ranchettes, or single-family homes with accessory structures for livestock or groves that serve the needs of those living on the property. Continued identification of these properties as agricultural nonpoint sources limits the ability to reliably direct programmatic resources to meet water quality restoration goals.

FDACS uses the parcel-level polygon ALG data that are part of the FSAID Geodatabase to estimate agricultural acreages statewide. FSAID provides acreages and specific types of irrigated and non-irrigated agricultural lands statewide. FSAID is updated annually based on WMD land use data, county property appraiser data, OAWP BMP enrollment data, U.S. Department of Agriculture data for agriculture, such as the Cropland Data Layer and Census of Agriculture, FDACS Division of Plant Industry citrus data, as well as field verification performed by USGS, WMDs, and OAWP. As the FSAID is detailed and updated on an annual basis, it provides a reliable characterization of agricultural land uses that accounts for the fast-growing population and resultant land use changes taking place statewide. The FSAID also provides FDACS a clearer picture of agriculture's impact on the landscape and consistent method to better track, direct, and assess BMP implementation, cost share projects, and regional projects.

Table B-1 shows the percentage of agricultural land use within the Caloosahatchee River and Estuary BMAP, determined by comparing the FSAID 11 ALG and total acreage of the BMAP boundary. Understanding what proportion of a BMAP is comprised of agriculture provides insight as to the potential contribution of agricultural nonpoint sources.

Table B-1. Acres in the Caloosahatchee River and Estuary BMAP

Category	Acres
BMAP acres	893,937
Agricultural acres	551,891



FDACS BMP Program Metrics

Enrollment Delineation and BMAP Metrics

BMP enrollments are delineated in geographic information systems (GIS) using county property appraiser parcels. In terms of NOIs, enrolled acreage fluctuates when parcels are sold, when leases end or change hands, or when production areas downsize or production ceases, among other reasons. Nonproduction areas such as forest, roads, urban structures, and water features are often included within the parcel boundaries. Conversely, agricultural lands in the FSAID ALG only include areas identified as agriculture. To estimate the agricultural acres enrolled in the BMP program, OAWP overlays the FSAID ALG and BMP enrollment data within GIS to calculate the acres of agricultural land in an enrolled parcel.

Summary Tables

As of April 30, 2024, 93% of the agricultural acres in the Caloosahatchee River and Estuary BMAP area are enrolled in FDACS BMP program. **Table B-2** shows the acreages enrolled in the BMP Program by commodity. It is important to note that producers often undertake the production of multiple commodities on their operations, resulting in the requirement to implement the applicable BMPs from more than one BMP manual. When this occurs, the acres enrolled under more than one BMP manual are classified as "multiple commodity" and not included in the individual commodity totals to prevent duplication.

Table B-2. Agricultural lands enrolled in the Caloosahatchee River and Estuary BMAP area by BMP Program commodity

Commodity	Agricultural Acres Enrolled
Citrus	54,647
Conservation Plan	59,284
Cow/Calf	120,366
Equine	43
Fruit/Nut	532
Multiple Commodities	130,155
Nursery	1,382

Commodity	Agricultural Acres Enrolled
Poultry	113
Row/Field Crop	142,554
Sod	2,495
Temporarily Inactive	2,427
Total	513,999
Percent of Agricultural Lands Enrolled in BMPs	93%

Table B-3. Agricultural acres enrolled by commodity and crediting location

Commodity	C-19	East Caloosahatchee	Lake Hicpochee	Long Hammock	S-4	Tidal Caloosahatchee	Townsend Canal	West Caloosahatchee
Citrus	0	6,546	0	4,624	0	0	14,448	29,029
Conservation Plan	15,442	22,106	0	8	808	0	0	21,729
Cow/Calf	2	38,435	359	17,772	0	14,633	2,590	45,767
Equine	0	0	0	0	0	5	0	38
Fruit/Nut	0	105	0	105	0	0	0	322
Multiple Commodities	2,568	27,639	566	9,863	4,238	31,084	9,629	44,568
Nursery	0	318	0	0	318	404	0	342
Poultry	0	56	0	56	0	0	0	0
Row/Field Crop	6,104	79,489	3,750	22,874	21,983	0	161	8,194
Sod	0	942	0	743	200	0	0	610
Temporarily Inactive	0	0	0	0	0	0	0	2,427
Total	**24,116**	**175,636**	**4,675**	**56,045**	**27,547**	**46,126**	**26,828**	**153,026**
Percent of Agricultural Lands Enrolled in BMPs	**99%**	**95%**	**97%**	**91%**	**96%**	**91%**	**94%**	**91%**

Enrollment Map

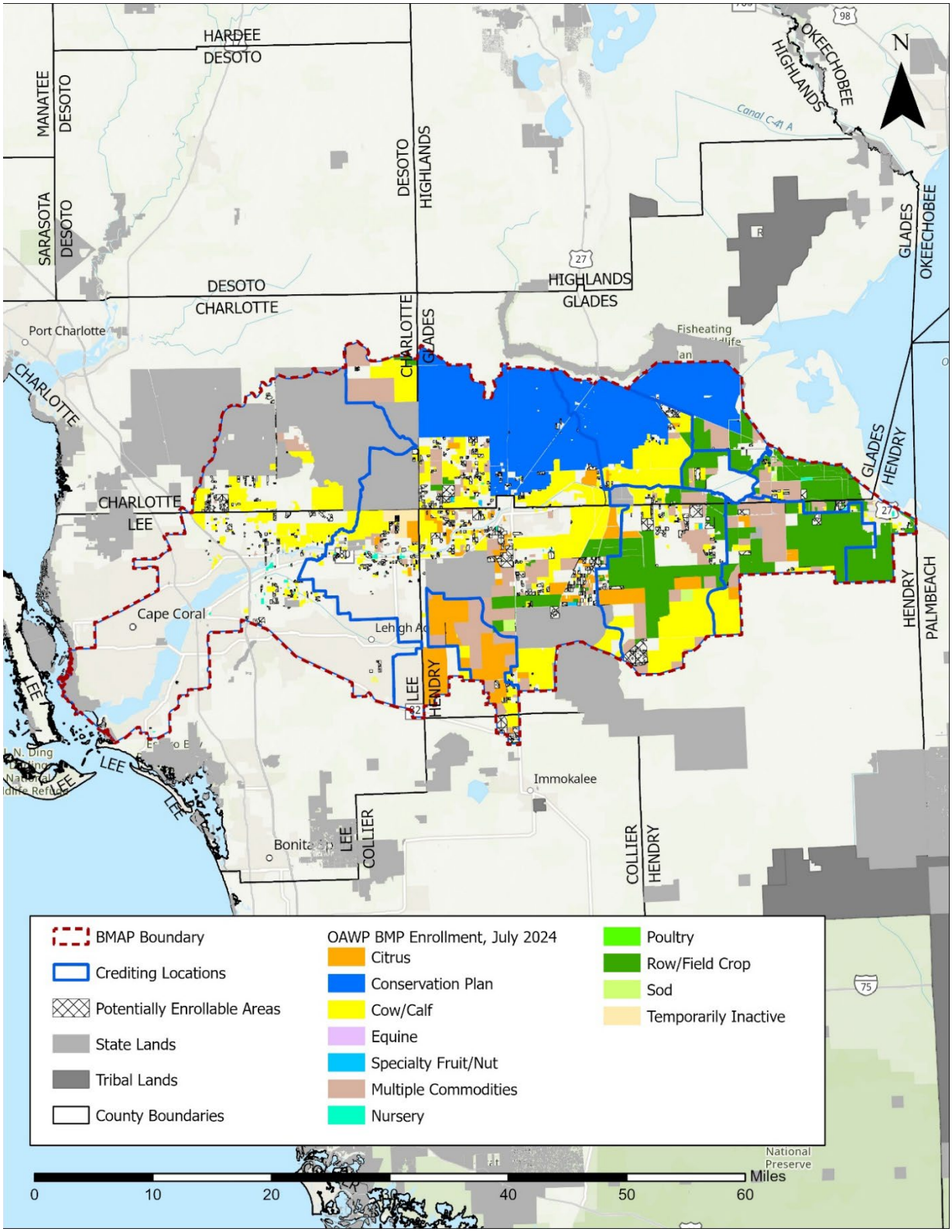


Figure B-1. Agricultural BMP enrollment in the Caloosahatchee River and Estuary BMAP

Unenrolled Agricultural Lands

Oftentimes, there are lands initially identified as agriculture which, upon closer evaluation, raise questions as to whether there is agricultural activity and whether it is enrollable within the purview of OAWP. FDACS characterizes lands classified as agriculture in the FSAID ALG, but not currently enrolled in the FDACS BMP Program using property appraiser data such as parcel owner information, agricultural tax valuation for exemption purposes, other parcel land use details to determine whether the remaining lands are potentially enrollable. More information about the "Unenrolled agricultural lands" characterization analyses is available in FDACS Annual Status of Implementation of BMPs Report.

The assessment of unenrolled agricultural lands at a more granular scale provides an indication of which areas are more likely (or unlikely) to have enrollable agricultural activities occurring on them. It also provides an estimate of the number of parcels and the associated agricultural acres deemed to be enrollable. The number of parcels is a useful proxy for the level of resource dedication needed to enroll the associated agricultural acres and where best to focus finite resources and staffing needs. It is often the case that much of the potentially enrollable acreage is encompassed within many smaller parcels which may require additional resources to enroll and require further evaluation, such as those that have agricultural activity intended solely for personal use ancillary to a residence, those that do not have an agricultural land use per the property appraiser, as well as parcels where there is no current activity to enroll.

Table B-4 shows the breakdown of agricultural lands within the Caloosahatchee River and Estuary BMAP by crediting location based on the FSAID 11 and the results of the FDACS unenrolled agricultural lands characterization.

Table B-4. Agricultural lands in the Caloosahatchee River and Estuary BMAP by crediting location

Crediting Location	Agricultural Acres	Unenrolled - Unlikely Enrollable Acres	Agricultural Acres - Adjusted	Agricultural Acres Enrolled*
East Caloosahatchee	194,582	10,090	184,492	175,636
Tidal Caloosahatchee	57,182	6,413	50,769	46,126
West Caloosahatchee	180,758	12,093	168,665	153,026
C-19	24,540	302	24,238	24,116
Lake Hicpochee	5,189	378	4,811	4,675
Long Hammock	68,802	7,172	61,630	56,045
S-4	29,284	570	28,714	27,547
Townsend Canal	28,868	296	28,572	26,828

* Enrollment information current as of April 30, 2024

Potentially Enrollable Lands

There are 37,918 acres of potentially enrollable lands within the Caloosahatchee River and Estuary BMAP based on the assessment of unenrolled agricultural lands performed by FDACS. **Table B-5** shows the potentially enrollable acreages by crop type. **Figure B-2** shows the count of potentially enrollable parcels based on size classifications used by FDACS.

Table B-5. Potentially enrollable acres by crop type

Crop Type	Acres
Citrus	4,190
Cropland and/or Pastureland	136
Crops	2,647
Fallow	9,520
Fruit (Non-citrus)	74
Grazing Land	17,596
Hay	32
Livestock	143
Nursery	348
Open Lands	156
Sod	45
Sugarcane	3,025
Total	**37,912**

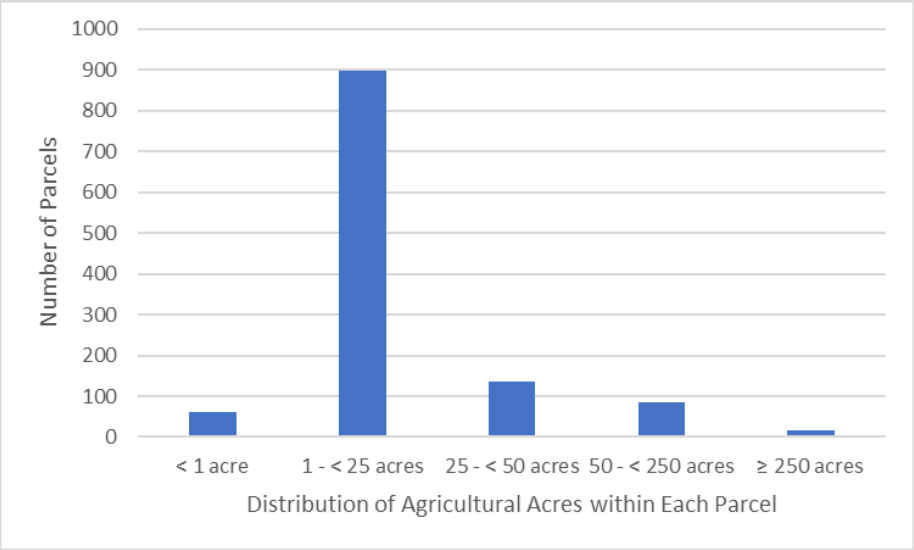


Figure B-2. Count of potentially enrollable parcels by size class

FDACS Cost Share

Enrollment in and proper implementation of BMPs makes a producer eligible for cost share for certain BMPs, other practices, and projects. The availability of cost share funds depends on annual appropriations by the Florida Legislature, and therefore, the amount available can vary each year. Cost share applications may be submitted once a producer has enrolled in the BMP Program and has been assigned an NOI number. Cost share practices are categorized as nutrient management, irrigation management, or water resource protection. BMPs, other practices, and projects eligible for cost share funding may include precision agriculture technologies, variable rate irrigation methods, water control structures, and tailwater recovery systems. OAWP seeks to leverage its cost share funding with other cost share programs offered by FDACS and other state and federal agencies. The United States Department of Agriculture NRCS offers funding through its Environmental Quality Incentives Program, and certain WMDs have agricultural cost share

programs. Applicants are encouraged to use OAWP cost share in conjunction with other available conservation programs although funding cannot be duplicative.

Table B-6 identifies the number of agricultural technologies that received cost-share assistance in the Caloosahatchee River and Estuary BMAP area and the associated nutrient reductions[1]. The nutrient reductions were used to develop a methodology to estimate nutrient reductions for NOIs that have received cost-share funding. The NOI boundary, based on property appraiser parcel data, was considered the area treated by the cost-shared agricultural technology or project. For parcels with more than one cost-share project, OAWP identified the order of treatment to determine the reductions for the multiple projects based on each cost-shared agricultural technology. Estimated nutrient reductions from FDACS cost share are shown in **Table B-7**.

Table B-6. Cost share project counts and estimated nutrient reduction efficiencies

Project Type	Total Reductions (TN)	Total Reductions (TP)	Project Count
Fence	10%	10%	47
Irrigation improvements, automation	20%	20%	27
Weather station	20%	5%	31
Chemigation/fertigation	20%	20%	16
Precision ag technology	30%	10%	32
Drainage improvements, mole drain, ditch cleaning	10%	15%	25
Well, pipeline, trough, pond, heavy use protection	50%	50%	21
Retention, detention, tailwater recovery, berms (Cow/Calf)	25%	18%	0
Retention, detention, tailwater recovery, berms (Vegetable and Agronomic Crops, Citrus)	64%	70%	1
Culvert	17%	29%	0
Structure for Water Control	17%	29%	122
Composting and/or Storage Project	---	---	1
Crop Implements	---	---	2
Dairy Work	50%	50%	20
Engineering, surveying, planning, modeling	---	---	26

Table B-7. Estimated nutrient reductions from FDACS cost share

Crediting Location	Total Reductions (TN)	Total Reductions (TP)
C-19	10,883	331
East Caloosahatchee	90,633	2,247
Lake Hicpochee	9,562	245
Long Hammock	57,913	1,163
S-4	3,036	100
Tidal Caloosahatchee	17,746	1,081
Townsend Canal	35,004	3,425
West Caloosahatchee	131,764	6,830
Total	**426,382**	**20,059**

[1] Soil and Water Engineering Technology, Inc. (2016). Estimation of Total Phosphorous & Nitrogen Loads Reductions. Soil and Water Engineering Technology, Inc.

Regional Projects

FDACS works cooperatively with stakeholders to reduce nutrient loading from agricultural lands in the Caloosahatchee River and Estuary BMAP through the operation of 1 regional water treatment projects. Regional projects may include hybrid wetland treatment technology, floating aquatic vegetation treatment (FAVT), and dispersed water management projects. **Table B-8** lists the project name, technology type, and reductions achieved by the regional projects within the Caloosahatchee River and Estuary BMAP.

Table B-8. Reductions achieved by regional projects

Project Name	Crediting Location	Total Reductions (TN)	Total Reductions (TP)
Caloosahatchee FAVT	East Caloosahatchee	37,699	5,952

Future Efforts

Outreach

To address resource concerns, FDACS continues enhancing coordination with producers, agencies, and stakeholders to increase enrollment in the BMP program. OAWP is sending correspondence to agricultural landowners within BMAPs that are not currently enrolled in the BMP program to increase enrollment rates and verify land uses where additional focus may be required to achieve resource protection. This effort is utilizing a phased approach and targeting priority land uses, and then evaluating the amount of agricultural acreage for the remaining unenrolled lands, while ensuring that all entities identified as agriculture will be notified. Additionally, OAWP continues to coordinate with industry groups and outreach partners to educate and inform agricultural producers about the BMP program.

Legacy Loads

Legacy loading can present an additional challenge to measuring progress in many areas of Florida with adopted BMAPs. Based on research, initial verification by DEP, and long-term trends in water quality in the BMAP area, it is expected that current efforts, such as BMP implementation, will continue to provide improvements in overall water quality despite the impacts from legacy loads.

While the implementation of BMPs will improve the water quality in the basin, it is not reasonable to assume that BMP implementation alone can overcome the issues of legacy loads, conversion to more urban environments, and the effects of intense weather events. BMP implementation is one of several complex and integrated components in managing the water resources of a watershed.

Collaboration between DEP, FDACS, WMDs, and other state agencies, as well as local governments, federal partners, and agricultural producers, is critical in identifying projects and programs, as well as locating funding opportunities to achieve allocations provided for under this BMAP. To improve water quality while retaining the benefits that agricultural production

provides to local communities, wildlife enhancement, and the preservation of natural areas requires a commitment from all stakeholders to implementing protective measures in a way that maintains the viability of agricultural operations.

Appendix C. Planning for Additional Management Strategies

Responsible entities must submit a sufficient list of additional projects and management strategies to DEP no later than January 14, 2026, to be compliant with the upcoming BMAP milestone or be subject to further department enforcement.

If any lead entity is unable to submit a sufficient list of eligible management strategies to meet their next 5-year milestone reductions, specific project identification efforts are required to be submitted by January 14, 2026. Any such project identification efforts must define the purpose of and a timeline to identify sufficient projects to meet the upcoming milestone. The project description and estimated completion date for any such project identification effort must be provided and reflect the urgency of defining, funding, and implementing projects to meet the upcoming and future BMAP milestones.

These planning efforts are ineligible for BMAP credit themselves but are necessary to demonstrate that additional eligible management actions will be forthcoming and BMAP compliance will be achieved. Only those entities that provide sufficient project identification efforts will be deemed as possessing a defined compliance schedule. Those entities without an adequate project list nor a defined compliance schedule to meet their upcoming 5-year milestone may be subject to enforcement actions. Examples of project identification efforts include the following:

- Planning and identifying water quality projects and related costs and schedules in specific plans:
    - Feasibility studies (e.g., stormwater feasibility studies or wastewater feasibility studies).
    - Flood mitigation plans with nutrient management components.
    - Basinwide water quality management plans.
    - Nutrient management plans.
- Applying for external project funding.
- Developing interagency/interdepartmental agreements or memorandum of understanding for collaboration on nutrient reduction projects that cross jurisdictional or administrative boundaries.
- Updating future growth considerations in local comprehensive plans, land development reviews, and audits of relevant codes and ordinances.
- Updating existing remediation plans.
- Monitoring water quality in support of project planning and implementation.
- Researching innovative technologies.

Appendix D. Golf Course NMPs

The fertilizers used to maintain golf courses can be significant sources of nutrients in certain watersheds that are impaired for nitrogen and/or phosphorous. To achieve the TMDL targets, all nutrient sources need to reduce their nutrient loading. Similar to other sources, golf courses are required to implement management strategies to mitigate their nutrient loading and be in compliance with the BMAP. Florida BMAPs are adopted by Secretarial Order and therefore legally enforceable by DEP. Requirements for golf courses located in BMAPs are below.

1. Golf Course BMP Certification, Implementation, and Reporting.

a. In areas with an adopted BMAP, all golf courses must implement the BMPs described in DEP's golf course BMP manual, *Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses* (DEP, 2021).

b. At minimum, the superintendent for each publicly owned golf course must obtain and maintain certification through the UF-IFAS Florida Golf Courses Best Management Practices Program. It is highly recommended that course managers and landscape maintenance staff also participate in the certification program to ensure proper BMP implementation and understanding of nutrient-related water quality issues and the role of golf courses in water quality restoration and protection. By no later than January 14, 2026, the golf course superintendents must confirm to DEP whether they have completed the certification. Certification must be completed by December 31, 2026. This certification must be renewed every four years.

c. Beginning in 2026 a nutrient application record (fertilizer, reuse, etc.) must be submitted each year during the BMAP statewide annual reporting process.

d. Fertilizer rates should be no greater than the UF-IFAS recommendations to help prevent leaching. This includes nutrients from reuse or any other source applied. If a facility uses fertilizer rates greater than those in the BMP manual they are required to conduct water quality monitoring prescribed by DEP or WMD that demonstrates compliance with water quality standards (**Table D-1**).

e. Example golf course BMPs applicable to protecting water quality are listed below.

- Use slow release fertilizer to prevent volatilization.
- Use of lined media in stormwater features.
- Use of denitrification walls.
- Use of rain gardens.
- Use of tree boxes.
- Use of bioswales.

Table D-1. Nutrient ranges for warm season turfgrass species

Note: For more information refer to the *Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses* (DEP, 2021).

Nutrient	Bermudagrass (%)	St. Augustinegrass (%)	Seashore Paspalum (%)	Centipedegrass (%)	Zoysia (%)
Nitrogen	1.95-4.63	1.53-2.41	2.80-3.50	1.5-2.9	2.04-2.36
Phosphorus	0.15-0.43	0.30-0.55	0.30-60	0.18-0.26	0.19-0.22
Potassium	0.43-1.28	1.1-2.25	2.00-4.00	1.12-2.50	1.05-1.27
Calcium	0.15-0.63	0.24-0.54	0.25-1.50	0.50-1.15	0.44-0.56
Magnesium	0.04-0.10	0.20-0.46	0.25-0.60	0.12-0.21	0.13-0.15
Sulfur	0.07-0.02	0.15-0.48	0.20-0.60	0.20-0.38	0.32-0.37
Sodium	0.05-0.17	0.00-0.17	-	-	-

2. All golf courses located within a BMAP are required to submit a NMP that is designed to, while maintaining even plant growth, prevent nutrient losses to the Floridan aquifer and surrounding surface waters. A draft NMP must be submitted to DEP within one year of BMAP adoption and a final document is due two years after adoption. The NMP must include the following:

a. ***A brief description of the goals of the NMP.***

(This should be a paragraph that describes the goals of your NMP. Talk about how you are managing for high quality turf and water quality. Remember your goal is to protect water quality while maintaining the golf course in premium condition.)

b. ***Identification of areas where nutrient applications will be made including greens, tees, fairways and roughs.***

(Discuss the areas of the course where you plan to use fertilizer, and why. Also discuss the areas that do not need or get any fertilizer applications. Include a GIS shapefile identifying all of these areas. Complete the table(s) detailing your nutrient application practices.)

Turf Details

Turf Type	Turf Species	Acreage
Tees		
Greens		
Fairways		
Roughs		
Total	-	

Fertilizer Application

Month	Turf Type	TN Application Rate (lbs/acre)	TP Application Rate (lbs/acre)	Number of Applications	Total TN Applied (lbs/acre)	Total TP Applied (lbs/acre)
January	Tees					
	Greens					
	Fairway					

Month	Turf Type	TN Application Rate (lbs/acre)	TP Application Rate (lbs/acre)	Number of Applications	Total TN Applied (lbs/acre)	Total TP Applied (lbs/acre)
	Roughs					
February	Tees					
	Greens					
	Fairway					
	Roughs					
March	Tees					
	Greens					
	Fairway					
	Roughs					
April	Tees					
	Greens					
	Fairway					
	Roughs					
May	Tees					
	Greens					
	Fairway					
	Roughs					
June	Tees					
	Greens					
	Fairway					
	Roughs					
July	Tees					
	Greens					
	Fairway					
	Roughs					
August	Tees					
	Greens					
	Fairway					
	Roughs					
September	Tees					
	Greens					
	Fairway					
	Roughs					
October	Tees					
	Greens					
	Fairway					
	Roughs					
November	Tees					
	Greens					
	Fairway					
	Roughs					
December	Tees					
	Greens					
	Fairway					
	Roughs					
Total						

Amount of Reuse/Effluent Applied*

Month	Quantity (gallons)	Monthly Average TN (mg/L)	Monthly Average TP (mg/L)	Quantity of TN Applied (lbs)	Running Total of TN Applied (lbs/acre)	Quantity of TP Applied (lbs)	Running Total of TP Applied (lbs/acre)
January							
February							
March							
April							
May							
June							
July							
August							
September							
October							
November							
December							
Total							

*If applicable.

Are any other sources of nutrients (i.e. manure, etc.) applied to the grounds? If so, please detail in a table similar to the reuse and fertilizer tables.

c. ***Soil sampling methods and results for each area receiving fertilizer applications. Areas receiving fertilizer applications shall be sampled once every three years. Soil samples shall be collected and analyzed according to UF-IFAS/DEP recommendations or standard industry practice. Soil samples shall be analyzed, at minimum, for:***

1. Nitrogen.
2. Phosphorus.

(Describe existing soil sampling here. Describe what your planned soil sampling schedule looks like. Have you been soil testing for years already? If you are just getting started with soil testing the course, you can discuss that. What parts of the course are priority? If soil samples from areas of similar soil, fertilizer use and management are combined, then describe that process and justify why you feel they are similar enough to combine into a "representative" sample. Keep all soil test results (or copies of them) in this file as part of your nutrient management plan. Please do not send them in to DEP individually. If you have been soil testing for years, remember to add copies of all those past results to your NMP file.)

d. ***Water quality sampling methods and results. Water quality sampling and analysis should be conducted in accordance with DEP's Standard Operating Procedures. Water quality samples shall be analyzed, at minimum, for:***

1. Nitrogen.
2. Phosphorus.

(If applicable, Describe existing water quality sampling here. Describe what your planned water quality sampling schedule looks like. Have you been sampling for years already? If you are just getting started with soil testing the course, you can discuss that. What parts of the course are priority? Keep all water quality test results (or copies of them) in this file as part of your nutrient management plan. Please do not send them in to DEP individually. If you have been testing for years, remember to add copies of all those past results to your NMP file.)

e. ***Tissue sampling methods and results. Tissue samples shall be collected and analyzed according to UF-IFAS/DEP recommendations or standard industry practice.*** (Describe existing tissue sampling plan here. Keep all test results (or copies of them) in this file as part of your nutrient management plan. Please do not send them in to DEP individually. If you have been testing for years, remember to add copies of all those past results to your NMP file.)

f. ***Soil, tissue and water quality sample results shall be maintained for a minimum of 5 years. Please provide records.***

g. ***When developing new (or expanding) golf courses, pre and post monitoring should be implemented in accordance with UF-IFAS/DEP recommendations.***

Appendix E. Wastewater Treatment Facilities

DEP has determined that certain WWTFs providing reclaimed water for the purpose of commercial or residential irrigation or that is otherwise being land applied within this BMAP area are causing or contributing to the nutrient impairments being addressed in this BMAP. Based on DEP's determination, the facilities listed below are subject to the nitrogen and phosphorus limits set forth in section 403.086, F.S.

These facilities have 10 years from BMAP adoption to meet the applicable AWT standards. This requirement does not prevent the department from requiring an alternative treatment standard, if the department determines the alternative standard is necessary to achieve the TMDL(s) or applicable water quality criteria.

For facilities that did not have adequate information to complete an evaluation or where a change occurs to the facility's application of reclaimed water after the initial evaluation (e.g., an increase in facility capacity or change in location of reclaimed water application), the department will evaluate the land application of reclaimed water as more information becomes available pursuant to section 403.086, F.S.

Table E-1. Wastewater facilities subject to the nitrogen and phosphorus limits set forth in section 403.086, F.S.

Facility Name	Permit Number
FL0021261	Fort Myers Central Advanced WWTF
FL0021270	South AWWTF
FL0030007	City of Cape Coral Everest Parkway Water Reclamation Facility (WRF)
FL0039829	Fiesta Village Advance Wastewater Treatment Plant
FL0040665	City of Clewiston WWTF
FLA014283	City of Labelle
FLA014548	Del Prado WWTF (formerly North Fort Myers Utility)
FLA014565	Lehigh Acres WWTF
FLA016891	Glades County Correctional
FLA144215	Fort Myers Beach WRF
FLA455458	City of Cape Coral - Southwest WRF
FLA665495	Town and Country Utility Water Reclamation Facility