Final

2016 Progress Report for the Caloosahatchee 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 Estuary Stakeholders

April 2017

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Acknowledgments

This *2016 Progress Report for the Caloosahatchee 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 Estuary stakeholders identified below.

For additional information on the watershed management approach in the Caloosahatchee Estuary Basin, contact:

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List of Acronyms and Abbreviations

ABSORB	Aquifer Benefit and Storage for the Orange River Basin
ArcNLET	ARC Nitrogen Loading Estimation Tool
BMAP	Basin Management Action Plan
BMP	Best Management Practice
BOCC	Board of County Commissioners
CDD	Community Development District
cfs	Cubic Feet Per Second
CRE	Caloosahatchee River Estuary
DEP	Florida Department of Environmental Protection
DON	Dissolved Organic Nitrogen
ECWCD	East County Water Control District
EPA	U.S. Environmental Protection Agency
FDACS	Florida Department of Agriculture and Consumer Services
FDOT	Florida Department of Transportation
FY	Fiscal Year
FYN	Florida Yards and Neighborhoods (Program)
LA-MSID	Lehigh Acres Municipal Services Improvement District
lbs/yr	Pounds Per Year
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OAWP	FDACS Office of Agricultural Water Policy
O&M	Operations and Maintenance
PSA	Public Service Announcement
SCCF	Sanibel-Captiva Conservation Foundation
SFER	South Florida Environmental Report
SFWMD	South Florida Water Management District
STORET	STOrage and RETrieval (Database)
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
USGS	U.S. Geological Survey
WOW	Wings Over Water (Festival)

Summary

Total Maximum Daily Load (TMDL)

The Florida Department of Environmental Protection (DEP) identified the Caloosahatchee Estuary as impaired by nutrients (chlorophyll *a*). In December 2009, DEP adopted the Caloosahatchee Estuary TMDL (the TMDL document appendices are found here) for total nitrogen (TN), which is linked to high chlorophyll *a* concentrations in the Caloosahatchee River and Estuary downstream of the Franklin Lock and Dam.

The Caloosahatchee Estuary Basin Management Action Plan (BMAP) was adopted in November 2012 to implement the TN TMDL in the watershed. This is the fourth annual Progress Report for the Caloosahatchee Estuary BMAP, and it describes the activities that occurred during the reporting period from December 1, 2015, through November 30, 2016.

Summary of Load Reductions

During the reporting period, in addition to the ongoing projects and programs, the City of Cape Coral completed a catch basin cleanout project that resulted in the reduction of 590 pounds per year (lbs/yr) of TN, and Lee County completed the Caloosahatchee Creeks Preserve Restoration Project, for which reductions are still being determined. The reductions described here are in addition to those projects given credit before BMAP adoption and in previous annual reports. Therefore, the total reductions to date are 181,680 lbs/yr of TN, or 47 % of the reductions needed to meet the portion of the TMDL allocated to the Caloosahatchee Estuary Basin. **Figure S-1** shows progress towards the TN TMDL load reductions.

Water Quality and Biological Monitoring

Local entities (Cape Coral, Fort Myers, and Lee County) continued water quality monitoring consistent with the BMAP. The South Florida Water Management District (SFWMD) continued monitoring 10 stations in the BMAP monitoring plan, and DEP continued monitoring at 15 stations. In addition, the SFWMD conducted biological sampling for oysters and seagrass, and DEP staff continued quarterly sampling for seagrass.

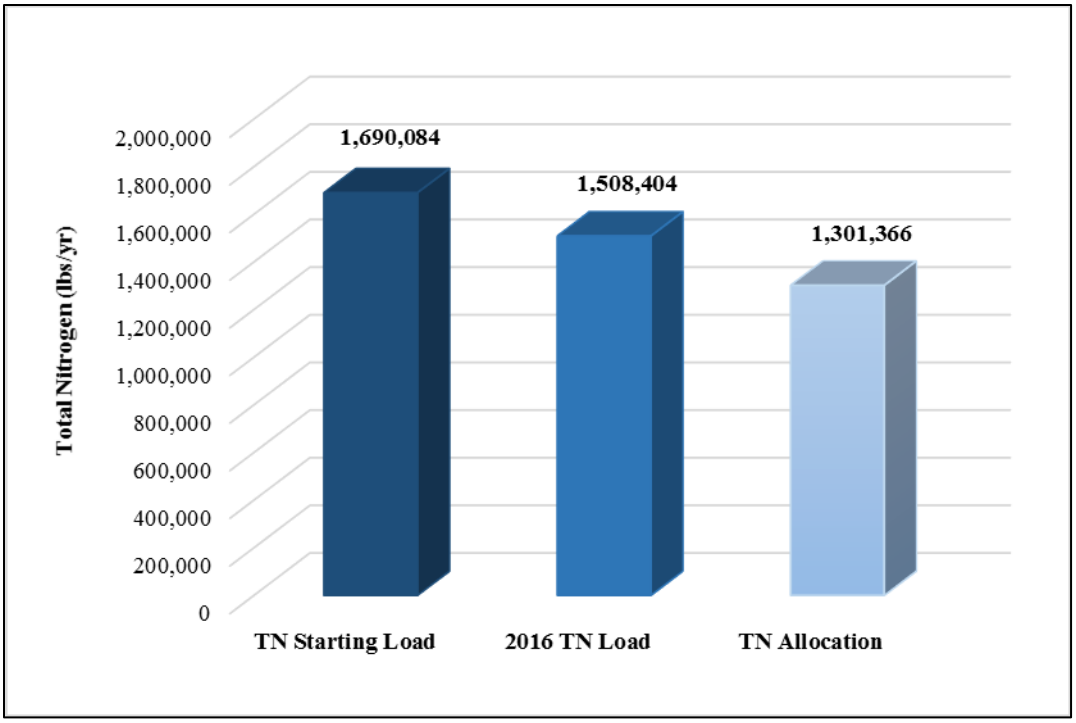

Figure S-1. Progress towards the Caloosahatchee TN TMDL through November 30, 2016

Section 1: Introduction

1.1 Purpose of the Report

This is the fourth annual Progress Report for the Caloosahatchee Estuary Basin Management Action Plan (BMAP). **Section 2** describes the activities that occurred during the period from December 1, 2015, through November 30, 2016. **Section 3** describes the water quality and biological monitoring that occurred during the reporting period. **Section 4** describes activities that have occurred or are occurring upstream of the estuary. **Section 5** reviews each entity's progress toward completing projects. Information in this report is current as of November 30, 2016. For the most up-to-date information on projects or activities, contact the lead agency.

1.2 TMDL for the Caloosahatchee Estuary Basin

The Florida Department of Environmental Protection (DEP) identified the Caloosahatchee Estuary (see **Figure 1**) as impaired by nutrients (chlorophyll *a*). In December 2009, DEP adopted the Caloosahatchee Estuary Total Maximum Daily Load (TMDL) (the appendices for the TMDL document can be found here) for total nitrogen (TN), which is linked to high chlorophyll *a* concentrations in the Caloosahatchee River and Estuary downstream of the Franklin Lock and Dam (S-79).

1.3 Responsible Parties and Key Stakeholders

The following organizations and entities are key stakeholders with assigned load reductions in the Caloosahatchee Estuary BMAP:

- Agriculture.
- Charlotte County.
- City of Cape Coral.
- City of Fort Myers.
- Lehigh Acres Municipal Services Improvement District (LA-MSID).
- Florida Department of Transportation (FDOT) District 1.
- Lee County.
- Lucaya Community Development District (CDD).

In addition to these entities, the Florida Department of Agriculture and Consumer Services (FDACS), DEP, and the South Florida Water Management District (SFWMD) are essential to the implementation of this BMAP.

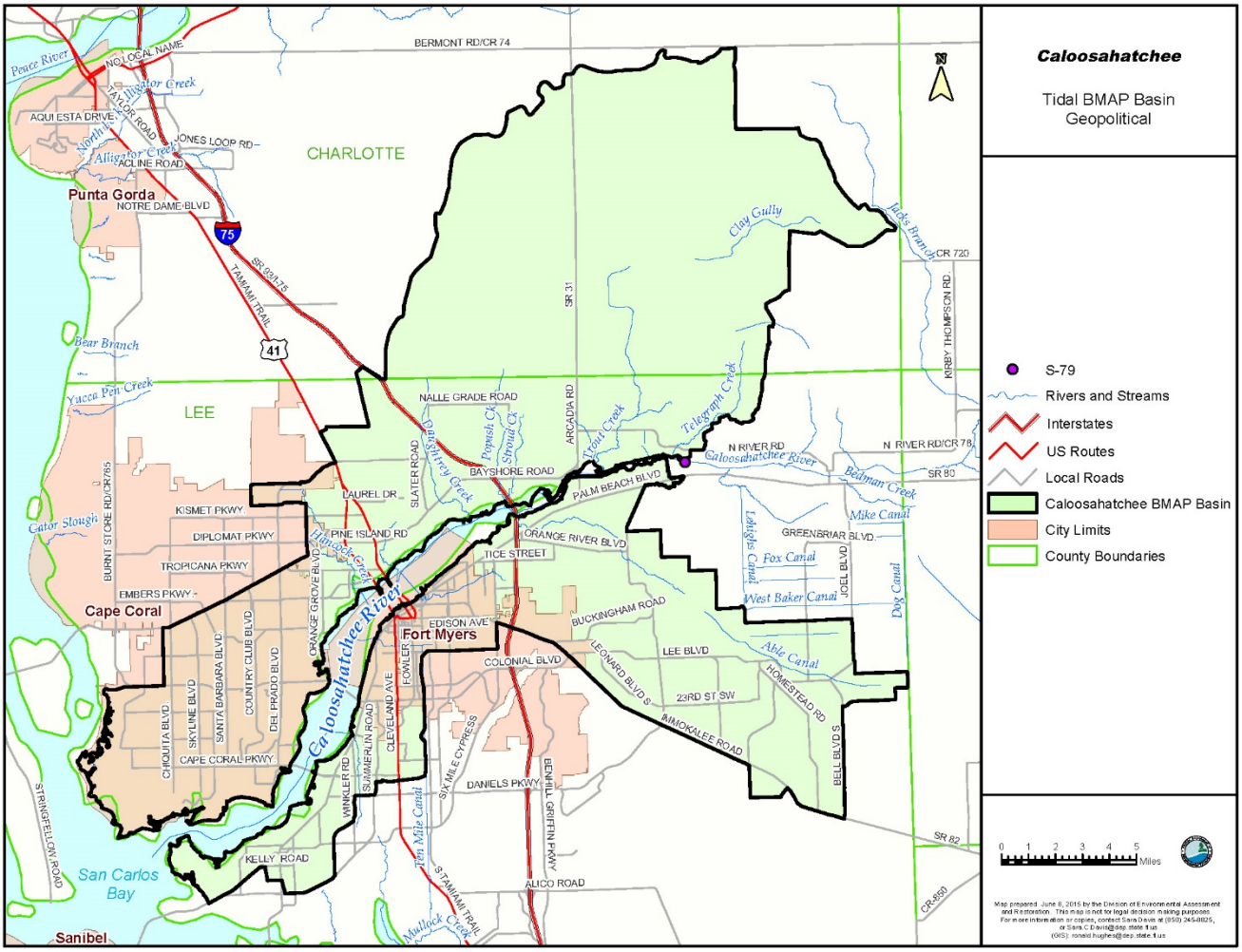

Figure 1. Caloosahatchee Estuary Basin

Section 2. Activities During the Reporting Year

Section 2.1 and **Section 2.2** describe the accomplishments during the reporting period (December 1, 2015, to November 30, 2016). New projects added to the individual project tables are described below, as are individual projects completed during the reporting period. Ongoing efforts such as street sweeping, ordinances, and public education efforts may not be specifically described below but must continue each year for the project credit to remain effective. **Appendix A** contains the individual project tables.

2.1 Activities by Entity

2.1.1 Cape Coral

During the reporting period, the City of Cape Coral completed catch basin cleanouts (CC-16) that removed 590 pounds of TN. The city completed a stormwater master plan, and project implementation from the plan will be undertaken as funding permits. The city also contracted with consultants to help finalize nitrogen removal estimates for septic-to-sewer conversion areas in the Caloosahatchee Basin using the ARC Nitrogen Loading Estimation Tool (ArcNLET) model.

2.1.2 Fort Myers

The City of Fort Myers continued to maintain its street sweeping program as well as stormceptor sediment boxes and nutrient boxes. Two additional stormceptors were placed online this year serving discharges into Billy Creek.

The city's website was revised with an improved educational component on the Stormwater Management pages. Several brochures are now available online. A citywide mailing on catch basin maintenance was sent with the utility bills this year prior to the rainy season. Four educational signs were installed at the Fort Myers Country Club.

The city is currently investigating other opportunities to improve water quality discharges. These include potential stormwater harvesting, additional sediment and nutrient containment systems, and improved water quality components in the existing stormwater management system. The investigation includes evaluating the required maintenance of each system to ensure that the proper maintenance of any new systems will be within the capabilities of the current maintenance staff and equipment.

2.1.3 LA-MSID

During the reporting period, LA-MSID broke ground on the Southwest Lehigh Weirs Project, otherwise known as the Aquifer Benefit and Storage for the Orange River Basin (ABSORB), (Project EC-7), with a groundbreaking ceremony on May 4, 2016, attended by dignitaries, elected officials, and community members. The ABSORB Project provides for the construction of 25 weirs in Lehigh Acres to improve water quality and aquifer recharge, increase storage for the Orange River Basin, and improve the health of the Caloosahatchee River and Estuary.

The Wings Over Water (WOW) Festival was held on January 28 and 29, 2016, with 60 attendees at the Friday presentation and 413 attendees on Saturday.

As part of LA-MSID's ongoing public outreach/education, an environmental education program was held on March 16, 2016. Veteran's Park Academy students learned about the water cycle and the benefits of native plants, and participated in a planting workshop.

2.1.4 Lee County

During the reporting period, Lee County completed the Caloosahatchee Creeks Preserve hydrologic restoration (LC-25). This project reestablishes the historical hydrology between the Caloosahatchee River and upstream creeks and flow-ways (Popash Creek and Stroud Creek) by removing earthen berms and filling existing adjacent borrow ditches. Canal and ditch blocks were also installed in the northern portion of the site. Estimates of TN reductions for this project are still being determined and will be included in future reports.

Additionally, Phase 2 design and permitting began for Lee County's Nalle Grade Stormwater Park (LC-21), based on conceptual design Concept #6 developed during Phase 1 of the project. In November 2016, the Lee County Board of County Commissioners (BOCC) accepted DEP Grant Agreement No. LP3602B for $300,000 for the Sunniland/Nine Mile Run Drainage Improvement project (F-1). The grant reimburses completed construction expenses, with funds anticipated in Fiscal Year (FY) 2019–20.

Lee County also added 3 new projects to the BMAP. The Prairie Pines Preserve project (LC-27) is a 2,334-acre project to restore historical flows and enhance and restore wetlands. The project aims to provide water quality benefits, while also alleviating flooding in adjacent residential areas. Construction is scheduled to start in summer 2017. In April 2016, the Lee County BOCC approved a $195,831 environmental consulting contract to conduct a basinwide study to identify the most cost-effective and feasible approaches toward achieving future BMAP load reduction allocations in the Caloosahatchee Estuary Basin. The plan, Project LC-28, is scheduled to be completed in summer 2017. Project LC-29 is a watershed study to investigate the interactions between onsite sewage treatment and disposal systems, groundwater, and surface waters in the Caloosahatchee Estuary. The extent and detail of this project depend on board approval.

Lee County's updated "Fertilize Smart" campaign, entitled "Don't Feed the Monster," includes an updated website, social media site, brochure materials, and public service announcement (PSA) video featuring "The Slime Monster." "Fertilize Smart" billboards were in place at the following four locations in the county during the reporting period:

- U.S. Highway 41, 0.07 miles north of Brantley Road.
- Gladiolus Drive, 0.1 mile west of U.S. Highway 41.
- U.S. Highway 41, 0.05 mile south of Big Pine Way WS/FS (I).
- Business 41 at the north side of Edison Bridge.

In November 2016, Lee County kicked off a new "call to action" by initiating a pet waste education campaign. Brochures, posters, and pet waste bags were distributed through veterinary clinics, pet stores, and public education events, and included in Lee County Domestic Animal Services adoption kits. A campaign website was also created.

During the reporting period, Lee County Natural Resources provided a $500 sponsorship to the Coccoloba Chapter of the Florida Native Plant Society for support of the Lee County fertilizer, irrigation, and Florida-friendly landscaping ordinances through education and outreach activities. The chapter developed two new classes, DIRTy Science and Landscaping Naturally, that were conducted in the Caloosahatchee Basin during the reporting period. The chapter also held a native plant sale with a display supporting the Lee County fertilizer ordinance at the Koreshan State Park Farmer's Market every Sunday beginning in May 2016.

2.1.5 SFWMD

While the SFWMD is not a lead agency on specific projects identified in this BMAP, a host of restoration work in the Caloosahatchee River Basin moved forward during the reporting period. **Section 4.1** contains agency highlights for advancements made in key SFWMD-involved projects in the Caloosahatchee River Basin during the reporting period. Additional information on the past year's progress is reported in the *2017 South Florida Environmental Report (SFER)* – Volume I, Chapters 8A and 8C, available on the SFWMD website.

2.1.6 Agriculture

In 2015, the FDACS Office of Agricultural Water Policy (OAWP) adopted a revised vegetable and agronomic crop manual that includes specific nutrient and irrigation management best management practices (BMPs) for plastic mulch, bare ground, sugar cane, hay/silage, and greenhouse production systems. In early 2016, FDACS adopted a dairy manual targeting dairies that do not have DEP-issued National Pollutant Discharge Elimination System (NPDES) permits. In June 2016, a poultry manual was adopted. To date, FDACS has developed BMP manuals for cow/calf, citrus, vegetable and agronomic crops, nurseries, equine, sod, dairy, poultry, and specialty fruit and nut operations. The FDACS BMP manuals can be found at this webpage.

FDACS field staff work with producers on BMP enrollment and implementation. Staff activities include initial enrollment, follow-up to provide technical assistance, BMP implementation assurance visits, the management of water quality– and water supply–related projects and contracts, and coordination with the SFWMD on agriculture-related permitting questions. **Table**

1 lists the 2004 acreage in the Caloosahatchee Estuary Basin for various agricultural land uses. FDACS updates its enrollment database quarterly. These quarters do not necessarily align with the reporting periods for the various BMAPs. For example, this annual Progress Report covers the reporting period from December 1, 2015, through November 30, 2016. However, the enrollment reflected is through September 30, 2016 (**Figure 2**). As of September 30, 2016, FDACS had enrolled 69,205 acres in BMPs (**Table 2**) based on the entire parcel acreage (**Figure 3**).

Not all of the acreage listed as agriculture in **Table 2** is included in enrollment calculations because the notices of intent (NOIs) document the estimated total number of acres on which applicable BMPs are implemented, not the land use acreage mapped as agriculture. Land use data can contain nonproduction acres (such as buildings, parking lots, and fallow acres) that are not used in BMAP reduction calculations. There also may be acreage that is not appropriate for enrollment in BMPs, such as lands not in commercial production. Applicable agricultural operations for BMP enrollment in the Caloosahatchee Estuary Basin include citrus, cropland, improved pasture, and tree crops. According to 2004 land use data used in the Caloosahatchee TMDL model, these comprise 30,049 acres within the BMAP boundary. To estimate the actual agricultural acreage in the Caloosahatchee Estuary Basin covered by the BMPs, FDACS compared the modeled agricultural land uses with the enrollment based on the entire parcel acreage. When looking at the portion of the enrolled acreage associated with the model agricultural land uses, a total of 18,937 acres was enrolled as of September 30, 2016. The BMPs implemented on this acreage are estimated to reduce TN by 31,169 lbs/yr (**Table 3**).

Table 3 summarizes the model land use acreage mapped as agriculture where a NOI is on file with FDACS, the estimated TN reductions associated with those enrolled acres, and both the Phase 1 and overall enrollment progress in the BMAP area.

2.2 Summary of Accomplishments

Table 4 summarizes the projects completed during the fourth annual BMAP reporting period. During the reporting period, the City of Cape Coral completed a catch basin cleanout project (CC-16) that reduced TN by 590 lbs/yr. Lee County completed the Caloosahatchee Creeks Preserve Restoration Project (LC-25); the reduction credit is still being determined. These reductions are in addition to those projects given credit before BMAP adoption and in previous annual reports. Therefore, the total reductions to date are 181,680 lbs/yr of TN, or 47 % of the reductions needed to meet the portion of the TMDL allocated to the Caloosahatchee Estuary Basin.

Figure 4 shows the progress towards the TN TMDL load reductions. The first bar shows the starting load for urban and agricultural stormwater runoff. The second bar shows the current estimated loading based on those projects shown as completed in the BMAP; those completed as part of the 2013, 2014, and 2015 Progress Reports; and those listed above. The third bar shows the total allocation for stormwater runoff to meet the TMDL.

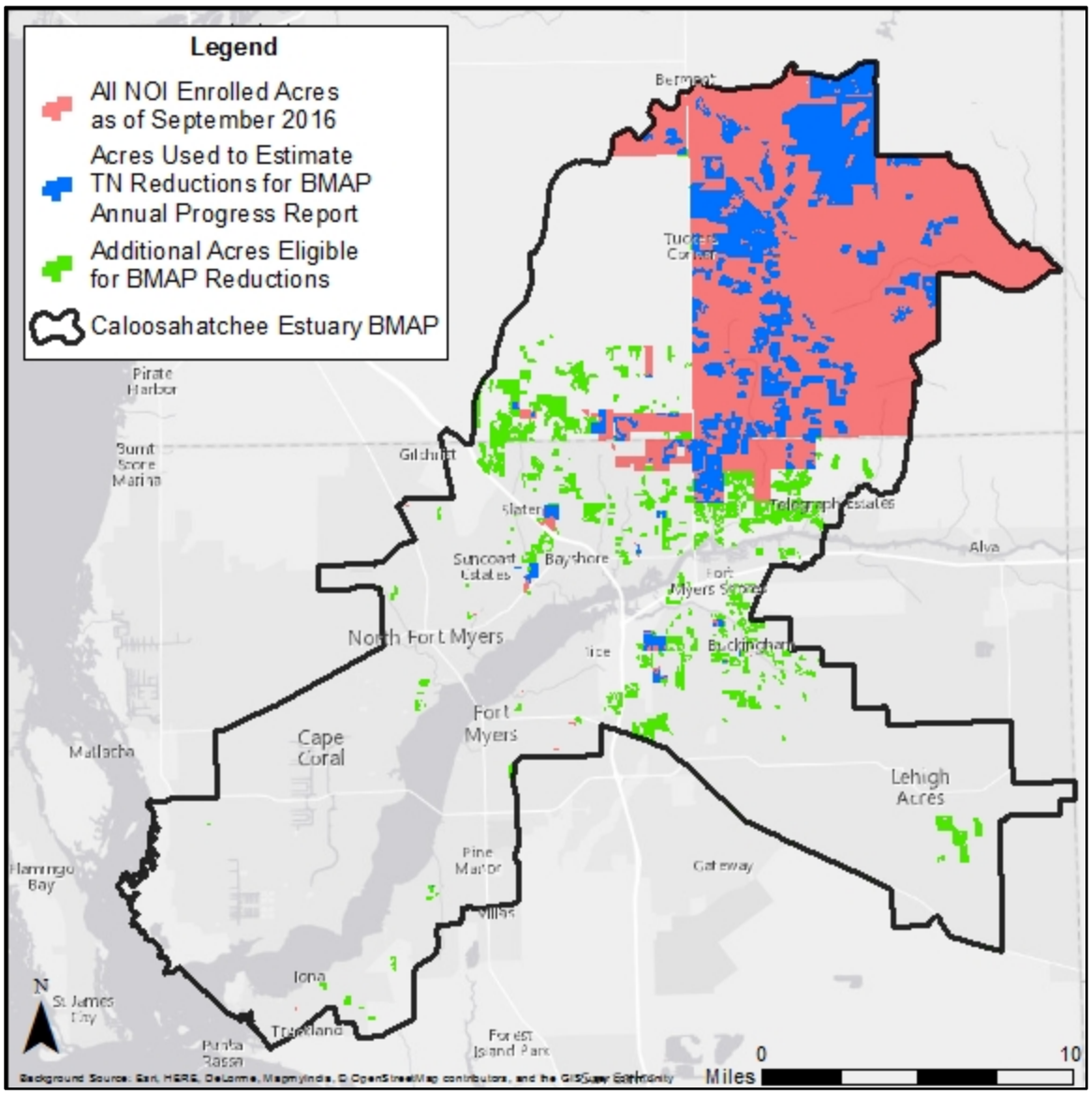

Figure 2. FDACS BMP Program enrollment progress as of September 30, 2016

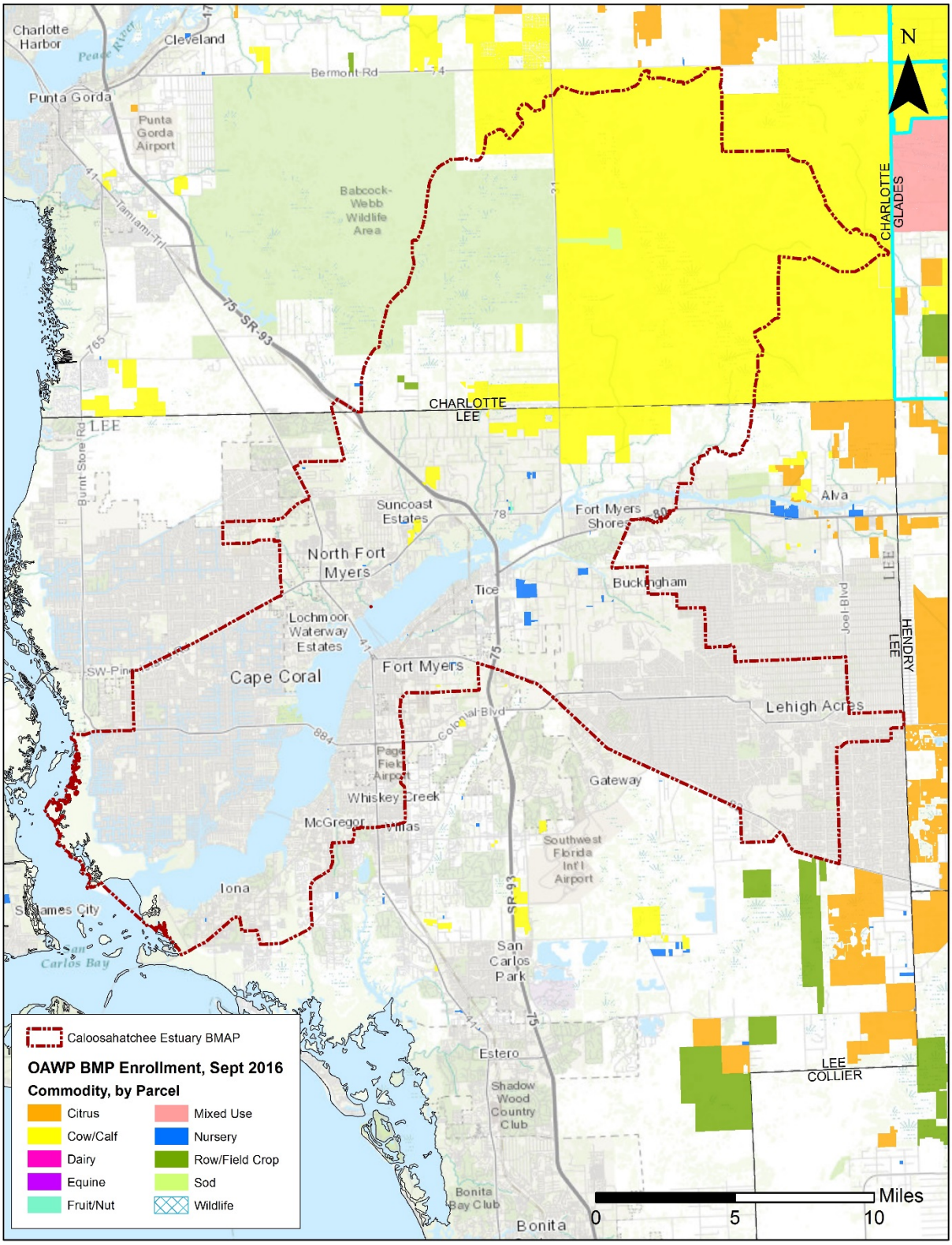

Figure 3. FDACS BMP Program enrollment by commodity as of September 2016

Table 1. Agricultural acreage in the Caloosahatchee Estuary Basin

[1] FDACS staff-adjusted acreage for the purposes of enrollment is based on a review of more recent aerial imagery in the basin and local staff observations.
[2] FDACS staff have observed no active dairy operations in the BMAP area, and this was confirmed by the FDACS Division of Animal Industry.
[3] Acreage enrolled as part of the Babcock Ranch cow/calf operation was not classified as agricultural land use in the 2004 land use coverage.
Note: Figures do not include forestry or aquaculture.
N/A = Not applicable.

2004 SFWMD Land Use	2004 Acres[3]	FDACS-Adjusted Acres[1]
Pasture (2100, 2110, 2120, 2130)	29,890.2	28,981.2
Row/Field/Mixed Crops	6,081.9	6,041.3
Sod	N/A	N/A
Fallow Cropland	1,499.3	N/A
Horse Farm	24.3	24.3
Citrus	817.7	359.1
Abandoned Groves	0.0	N/A
Fruit Orchards/Other Groves	154.1	154.1
Tree Nurseries	230.3	230.3
Ornamentals	285.1	285.1
Specialty Farms	67.2	67.2
Dairies[2]	37.9	37.9
Total	**39,088**	**36,181**

Table 2. Agricultural BMP enrollment for the Caloosahatchee Estuary Basin as of September 30, 2016

[1] Acreage enrolled as part of the Babcock Ranch cow/calf operation was not classified as agricultural land use in the HSPF land use coverage.

FDACS BMP Programs	Acreage Enrolled	Related NOIs	HSPF Land Use Acres with NOIs[1]
Cow/Calf Operations	68,045.7	11	18,014.8
Nurseries	537.9	24	399.5
Specialty Fruit and Nut, Citrus	48	2	40.5
Sod Operations	452.2	1	427.6
Vegetable and Agronomic Crops	121.2	1	54.8
	69,205	**39**	**18,937**

Table 3. Summary of agricultural enrollment

Category	Acres
Total Agricultural Acres in BMAP	30,049
Enrolled Acres Used for TN Reduction Estimates	18,937
Estimated TN Reduction (lbs/yr)	31,169
BMAP Phase I FDACS Enrollment Goal (50 % of FDACS-adjusted acres)	18,091
BMAP Phase I Remaining Acres To Enroll	0
Total Remaining Acres in BMAP Basin To Enroll	11,112

Table 4. Summary of projects completed in the reporting period (December 1, 2015–November 30, 2016)

TBD = To be determined

Entity	Project Number	Project Name	TN Reduction (lbs/yr)
Cape Coral	CC-16	Catch Basin Cleanout	590
Lee County	LC-25	Caloosahatchee Creeks Preserve Restoration	TBD
Total			**590**

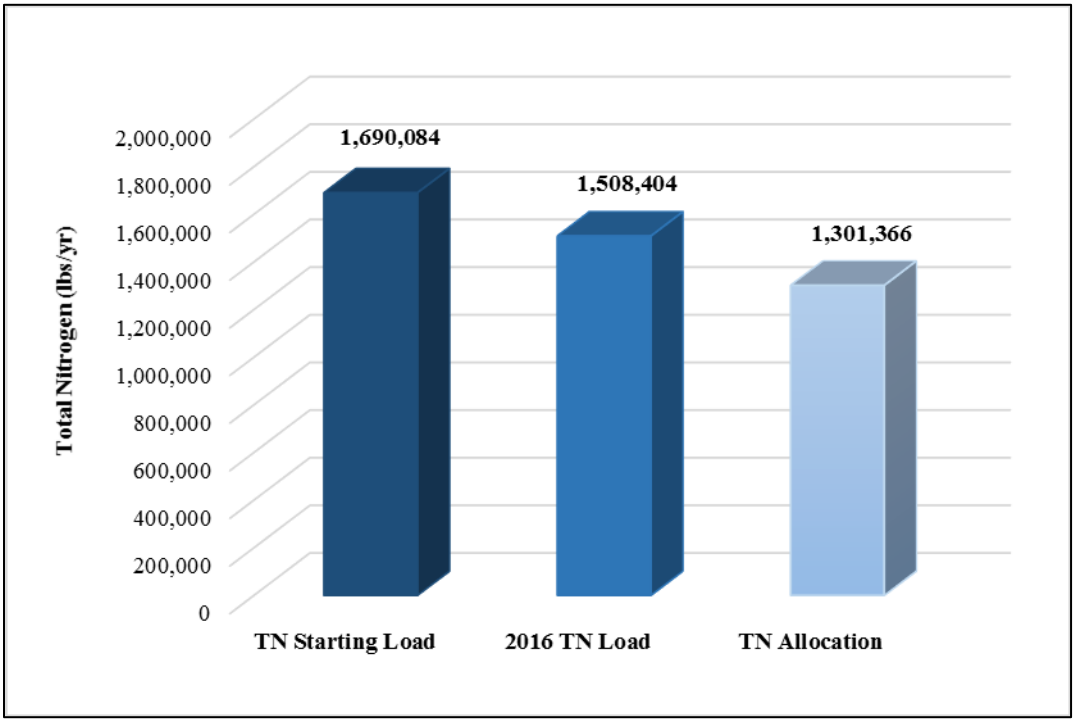

Figure 4. Progress towards the Caloosahatchee TN TMDL through November 30, 2016

Section 3: Water Quality and Biological Monitoring

The Caloosahatchee 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 TMDL and provides a better understanding of watershed loading. The BMAP monitoring plan consists of ambient water quality sampling and biological monitoring. A few highlights of the BMAP monitoring efforts are described below.

3.1 Water Quality Monitoring

Cape Coral continued water quality monitoring in the basin and uploaded the data to the Florida STOrage and RETrieval (STORET) Database. Fort Myers and Lee County also continued water quality monitoring in the basin, and the monitoring data for the reporting period were uploaded into STORET.

The SFWMD continued monitoring at 10 stations in the BMAP area, and the monitoring data for the reporting period were provided to DEP in December 2016 for uploading into STORET. Further information on this monitoring and associated data results are reported in the *2017 SFER* – Volume I, Chapter 8C, available on the SFWMD website. DEP has also continued water quality monitoring at 15 stations in the basin. **Appendix C** lists the stations in the BMAP monitoring network for easy reference.

In addition, Lee County, Fort Myers, Cape Coral, LA-MSID, Lucaya CDD, and FDOT District 1 are regulated under the NPDES Phase I MS4 Program. The Lee County Environmental Lab performs ambient water quality monitoring to support the Lee County Division of Natural Resources Surface Water Master Plan and for NPDES MS4 permit and BMAP compliance. These data are available for the Lee County NPDES co-permittees to use in their respective annual reports. Charlotte County is regulated under a Phase II MS4 permit.

3.2 Biological Monitoring

As summarized in **Table 5**, the SFWMD continued its biological sampling for oysters and seagrass over the past year. Seagrass monitoring was focused between March and September, and two sites were also monitored in December. Oyster density at all four sites was monitored monthly. Further information on this monitoring and associated data results is reported in the *2017 SFER* – Volume I, Chapter 8C. DEP continues to carry out seagrass monitoring in the basin at the stations listed in **Table 6**.

Table 5. SFWMD biological monitoring

[1] 20 randomly generated points in the upper CRE. Points are generated monthly depending on the previous month's results.
[2] 3-meter x 3-meter quadrant divided into 9 square-meter quadrants.

Project	Station Name	Sampling Frequency
Estuary Patch Scale Seagrass Monitoring	Upper CRE1	March, May, July, and September – 20 Quadzilla[1,2]
Estuary Patch Scale Seagrass Monitoring	CRE_2	March, April, May, June, July, August, September, and December – 30 Quads
Estuary Patch Scale Seagrass Monitoring	CRE_4	March, May, July, and September – 30 Quads
Estuary Patch Scale Seagrass Monitoring	CRE_5	March, May, July, and September – 30 Quads
Estuary Patch Scale Seagrass Monitoring	CRE_6B	March, May, July, and September – 30 Quads
Estuary Patch Scale Seagrass Monitoring	CRE_7	March, May, July, and September – 30 Quads
Estuary Patch Scale Seagrass Monitoring	CRE_8	March, April, May, June, July, August, September, and December – 30 Quads
Oyster Monitoring	Pepper Tree Pointe	**Monthly**: Recruitment, growth, predation, disease, reproductive condition
Oyster Monitoring	Iona Cove	**Monthly**: Recruitment, growth, predation, disease, reproductive condition. **Twice yearly**: Density, size
Oyster Monitoring	Bird Island	**Monthly**: Recruitment, growth, predation, disease, reproductive condition. **Twice yearly**: Density, size
Oyster Monitoring	Kitchel Key	**Monthly:** Recruitment, growth, predation, disease, reproductive condition. **Twice yearly**: Density, size

Table 6. DEP biological monitoring

Project	Station Name	Sampling Frequency
Seagrass Monitoring	CR02	Quarterly
Seagrass Monitoring	CR04	Quarterly
Seagrass Monitoring	CR05	Quarterly
Seagrass Monitoring	SC03	Quarterly
Seagrass Monitoring	MP04	Quarterly
Seagrass Monitoring	MP05	Quarterly

Section 4: Activities Upstream of the Estuary BMAP

An effort is under way to develop a watershed model for the entire Caloosahatchee Basin and Estuary. Model results are expected to be available in 2017, and may be used to refine existing TMDLs or develop new TMDLs. DEP is currently planning to expand the existing BMAP to encompass the Caloosahatchee Basin, and this section describes some efforts and activities located in the anticipated expanded BMAP area.

4.1 SFWMD

While the SFWMD is not a lead agency on any specific projects identified in this BMAP, it was involved in numerous restoration activities in the Caloosahatchee River Basin that moved forward during the reporting period. Regional projects with both water storage and water quality benefits also progressed. The sections below describe the highlights of advancements made in key SFWMD-involved projects in the basin during the reporting period.

4.1.1 Caloosahatchee River (C-43) West Basin Storage Reservoir Project

The purpose of this project is to aid in capturing regulatory releases from Lake Okeechobee and to collect and store runoff from the basin that is currently discharged to the river. Water will be released when needed during the dry season to the estuary to help provide essential flows that will result in a more stable salinity regime. In June 2016, the SFWMD issued the second of four construction packages, for the S-476 pump station construction, as part of this massive storage reservoir project.

4.1.2 C-43 Water Quality Treatment and Testing Facility Project

The SFWMD and Lee County are partners in the development and implementation of the project. The project goals are to demonstrate and implement cost-effective, wetland-based strategies for reducing pollutant loadings to the Caloosahatchee River and its downstream estuarine ecosystems, particularly the recalcitrant fraction of dissolved organic nitrogen (DON) that is more difficult to remove than other forms ordinarily found in fertilizers. Phase I, initiated in 2015, includes bioassays and mesocosms. Bioassays are being performed to determine the fraction of biologically available DON in the Caloosahatchee River. These results will inform the mesocosm design. Mesocosms are being used to assess potential surface water nitrogen removal rates using different plant communities and hydrologic loading rates. Phase I mesocosm construction was completed in June 2016, and mesocosm operations, maintenance, and monitoring are planned through December 2018.

4.1.3 Lake Hicpochee Hydrologic Enhancement – North Project (Phase 1)

The objective of the project is to provide shallow water storage, rehydrate a portion of the lake bed to promote habitat restoration, and increase capacity for ancillary water quality enhancements. The project includes a shallow storage feature and a spreader canal to deliver excess stormwater runoff from the C-19 Canal to the northern portion of Lake Hicpochee as

needed. The final regulatory authorizations for Phase I of this project were completed in January 2017 and, subsequently, construction is anticipated to begin in April 2017.

4.1.4 Tape Grass Restoration Pilot Study

Tape grass (*Vallisneria americana*) beds in the upper Caloosahatchee Estuary serve as a key indicator of estuarine health. The beds provide critical shallow water habitat for fish, shellfish, and other estuarine organisms and provide a number of water quality benefits. Research has demonstrated that herbivory (grazing by turtles and other organisms) prevents the grass beds from becoming re-established. As has been found in other rivers and estuaries, protecting tape grass from grazing using exclosure cages allows plants to grow. Currently in its second year, the three-year pilot study tests the efficacy of using exclosure cages to establish founder populations that can serve as a seed source for re-establishing tape grass beds and ultimately achieving sustainable populations.

4.2 Lee County

4.2.1 Fichter's Creek Restoration Project

The Lee County Division of Natural Resources and Community Engineering Services, Inc. are undertaking the Fichter's Creek Restoration Project. A goal of the project is to restore the appropriate hydroperiod and water quality in Fichter's Creek to maintain a functioning ecosystem. Additional benefits include alleviating the flooding risk for neighboring properties in the vicinity of Fichter's Creek. A 31-acre dry prairie is targeted to hold a 3.2-acre lake and 3 dry detention areas, for a total of 7 acres associated with the project.

Lee County staff are currently working to obtain an easement from an adjacent private landowner for the purpose of installing a box culvert to complete the project. Lee County has the permit for the project, and construction is anticipated to start in 2017 or 2018. According to Lee County, the Fichter's Creek restoration will reduce TN loading by 1,453 lbs/yr.

4.2.2 Spanish Creek at Daniels Preserve Restoration Project

Spanish Creek Restoration at Daniels Preserve is a 243-acre parcel purchased through the Conservation 20/20 Program in 2005. The project is expected to increase the wetland hydroperiod in Daniels Preserve, providing increased sheet flow attenuation. This will improve water quality by increasing the residence time of surface waters in wetlands, as well as improving groundwater recharge in the area. Lee County budgeted $300,000 in FY 2016–17 for design, the development of preliminary plans, and construction, and anticipates that the project will reduce TN by 112 lbs/yr.

Section 5: Compliance

DEP annually reviews each entity's progress towards completing projects in the BMAP and achieving the assigned allocations. **Table 7** outlines the number of projects that each entity has committed to in the BMAP and annual progress reports, along with the status of those projects. **Table 8** summarizes the allocations and reductions achieved by each entity in the BMAP.

Table 7. Projects to achieve the TMDL

Lead Entity	Projects	Completed	Under Way
Charlotte County	1	1	
City of Cape Coral	16	16	
City of Fort Myers	11	11	
FDACS	1	1	
FDOT	8	8	
LA-MSID	7	6	1
Lee County	25	23	2
Lucaya CCD	1	1	
Total	**70**	**67**	**3**

Table 8. Reductions towards the TMDL

* Reductions to date only include TN reductions associated with projects completed as of the end of the reporting period (November 30, 2016).

Lead Entity	TN Allocation (lbs/yr)	TN Reduction to Date* (lbs/yr)	% of Allocation Achieved
Charlotte County	943	52	6
City of Cape Coral	103,414	48,567	47
City of Fort Myers	40,924	21,533	53
FDACS	55,597	31,169	56
FDOT	9,119	11,490	126
LA-MSID	37,736	23,168	61
Lee County	140,853	45,792	33
Lucaya CCD	132	0	0
Total	**388,718**	**181,680**	**47**

Appendices

Appendix A: BMAP Projects

The BMAP project tables in this appendix show the implementation status of the BMAP projects as of November 30, 2016. The tables list the nutrient reduction (in lbs/yr) attributable to each individual project. These projects were submitted to provide reasonable assurance to DEP that each entity has a plan on how to meet its allocation. However, the list of projects is meant to be flexible enough to allow for changes that may occur over time, provided that the reduction is still met within the specified period.

Table A-1. Charlotte County projects

N/A = Not applicable

Project Number	Project Name	Description	Project Type	Project Status	Acres Treated	TN Reduction (lbs/yr)
CH-1	Education Efforts	Fertilizer ordinance, pamphlets	Education Efforts	Ongoing	N/A	52

Total Project Reduction = 52 lbs/yr

Total TN Reduction Required = 943 lbs/yr

Table A-2. City of Cape Coral projects

[1] Projects were listed but had unproven credit.
- = No data/project reduction unknown.
N/A = Not applicable

Project Number	Project Name	Description	Project Type	Project Status	Acres Treated	TN Reduction (lbs/yr)
CC-1	Education Efforts	FYN, landscaping ordinance, irrigation ordinance, fertilizer ordinance, pet waste ordinance, pamphlets, PSAs, website, illicit discharge program	Education Efforts	Ongoing	N/A	15,429
CC-2	SE-1 Swale/ Inlet Replacement	Installed raised inlets to provide additional water quality improvement in roadside swales	Dry Retention Swale	Completed	-	0[1]
CC-3	SW-1 Swale/ Inlet Replacement	Installed raised inlets to provide additional water quality improvement in roadside swales	Dry Retention Swale	Completed	-	0[1]
CC-4	SW-2 Swale/ Inlet Replacement	Installed raised inlets to provide additional water quality improvement in roadside swales	Dry Retention Swale	Completed	-	0[1]
CC-5	SW-3 Swale/ Inlet Replacement	Installed raised inlets to provide additional water quality improvement in roadside swales	Dry Retention Swale	Completed	-	0[1]
CC-6	SW-4 Swale/ Inlet Replacement	Installed raised inlets to provide additional water quality improvement in roadside swales	Dry Retention Swale	Completed	-	0[1]
CC-7	SW-5 Swale/ Inlet Replacement	Installed raised inlets to provide additional water quality improvement in roadside swales	Dry Retention Swale	Completed	-	0[1]

Project Number	Project Name	Description	Project Type	Project Status	Acres Treated	TN Reduction (lbs/yr)
CC-8	SE Pipe Replacement	SE pipe replacement		Completed	-	0[1]
CC-9	Unit 23–SE 8th Street Drainage	Unit 23–SE 8th Street drainage		Completed	-	0[1]
CC-10	Freshwater Canal Detention	Regulation of freshwater canals through existing control structures	Control Structure	Completed	-	4,769
CC-11	Freshwater Canal Irrigation	Pump stormwater stored in canals into irrigation supply network	Reclaimed Water	Completed	-	11,507
CC-12	Weir #6 Elevation/Basin 12	Installed riser on weir in freshwater canal system that provides additional retention volume in canals	Control Structure	Completed	932	7,597
CC-13	Weir #1 Elevation/Basin 15	Installed riser on weir in freshwater canal system that provides additional retention volume in canals	Control Structure	Completed	1,314	8,184
CC-14	Street Sweeping	Street sweeping of downtown area, alleys, and commercial roads	Street Sweeping	Ongoing	N/A	491
CC-15	Septic to Sewer Phase Out Project	Phase out septic tanks in Southwest 6/7 area	Wastewater System Upgrade	Completed	2,560	0[1]
CC-16	Catch Basin Cleanout	Catch basin cleanouts from Caloosahatchee Basin areas	Catch Basin Maintenance	Completed	-	590

Total Project Reduction = 48,567 lbs/yr

Total TN Reduction Required = 103,414 lbs/yr

Table A-3. City of Fort Myers projects

N/A = Not applicable
- = No data/project reduction unknown.

Project Number	Project Name	Description	Project Type	Project Status	Acres Treated	TN Reduction (lbs/yr)
FM-1	Manuels Branch Watershed Imp.	Exfiltration trenches	Exfiltration Trench	Completed	124.6	836
FM-2	Education Efforts	FYN, fertilizer ordinance, pamphlets, PSAs, website, illicit discharge program	Education Efforts	Ongoing	N/A	2,101
FM-3	Utility and Streetscape Improvements	Installation of Stormceptors™	Stormceptor™	Completed	117.9	40
FM-4	Manuels Branch Siltation Structures	Installation of siltation structure designed to receive incoming flow, reduce its velocity, and allow for settling of suspended particles	Control Structure	Completed	642.7	1,078
FM-5	Manuels Branch Control Structures	Series of two weirs constructed along Manuel's Branch between Royal Palm Avenue and Grand Avenue. These act as detention structures to increase storage and attenuation in canal	Control Structure	Completed	437.9	2,202
FM-6	Billy's Creek Wetland	Billy Creek Filter Marsh Park	Filter Marsh	Completed	1,631.6	4,025
FM-7	Brookhill Utility Drainage Improvement	Installation of Stormceptors™	Stormceptor™	Completed	-	11
FM-8	Street Sweeping	Four zones swept at varying frequencies based on pollutant accumulation	Street Sweeping	Ongoing	N/A	2,582
FM-9	Ford Street Preserve	Constructed wetland treatment system to remove pollutants from Ford Street Canal, which serves 811 acres of highly urbanized watershed	Wetland Treatment	Completed	811	7,293
FM-10	Riverfront Development Phase 1	Wet detention pond	Wet Detention Pond	Completed	-	90
FM-11	Carrell Canal Water Quality Retrofit	Two detention areas, five filter marshes, and golf course renovation	Treatment Train	Completed	-	1,275

Total Project Reduction = 21,533 lbs/yr

Total TN Reduction Required = 40,924 lbs/yr

Table A-4. LA-MSID projects

N/A = Not applicable
- = No data/project reduction unknown.
Note: On June 10, 2015, the East County Water Control District (ECWCD) became LA-MSID. Projects in the BMAP document beginning with "EC-" now apply to LA-MSID.

Project Number	Project Name	Description	Project Type	Project Status	Acres Treated	TN Reduction (lbs/yr)
EC-1	Education/Fertilizer	Education	Education Efforts	Ongoing	N/A	1,646
EC-2	Freshwater Canal Detention	Regulation of freshwater canals through existing control structures	Control Structure	Completed	32,982	7,940
EC-3	Weir Elevation Improvements	Replacement of weir structures at increased control elevations to provide additional attenuation	Control Structure	Completed	32,982	7,543
EC-4	Harn's Marsh Phases I and II	Replacement of weir structures and redirection of flows into filter marsh	Control Structure	Completed	462	4,682
EC-5	Jim Flemming Eco-Park	Wetland rehydration and treatment	Hydraulic Restoration	Completed	-	TBD
EC-6	Mirror Lake Phase I	Detention pond	Detention Pond	Completed	-	1,357
EC-7	ABSORB (SW Lehigh Weirs)	Increase canal control elevations and local groundwater levels by constructing 25 new weirs	Control Structure	Under way	35,573	TBD

Total Project Reduction = 23,168 lbs/yr

Total TN Reduction Required = 37,736 lbs/yr

Table A-5. FDOT projects

N/A = Not applicable
- = No data/project reduction unknown.

Project Number	Project Name	Description	Project Type	Project Status	Acres Treated	TN Reduction (lbs/yr)
FDOT-1	Existing Stormwater Dry Ponds	Dry detention pond	Dry Detention Pond	Completed	-	55
FDOT-2	Discontinuing Fertilization	No longer fertilizing rights-of-way in watershed	Fertilizer Cessation	Completed	465	1,941
FDOT-3	Education Efforts	Pamphlets, PSAs, illicit discharge program	Education Efforts	Ongoing	N/A	232
FDOT-4	Street Sweeping	2,992 pavement miles swept annually	Street Sweeping	Ongoing	N/A	577
FDOT-5	Ditch Blocked Swales	Swales with ditch blocks	Dry Retention Swale	Completed	-	826
FDOT-6	Swales w/o Ditch Blocks	Swales without ditch blocks	Dry Retention Swale	Completed	-	4,949
FDOT-7	Existing Stormwater Wet Ponds	Wet detention pond	Wet Detention Pond	Completed	-	2,646
FDOT-8	SR 78 Project	Wet detention pond	Wet Detention Pond	Completed	79.5	264

Total Project Reduction = 11,490 lbs/yr

Total TN Reduction Required = 9,119 lbs/yr

Table A-6. Lucaya CDD projects

N/A = Not applicable

Project Number	Project Name	Description	Project Type	Project Status	Acres Treated	TN Reduction (lbs/yr)
LU-1	Education/ Fertilizer	Education	Education Efforts	Ongoing	N/A	0

Total Project Reduction = 0 lbs/yr

Total TN Reduction Required = 132 lbs/yr

Table A-7. Lee County projects

N/A = Not applicable
TBD = To be determined
[1] Project was listed but had unproven credit.

Project Number	Project Name	Description	Project Type	Project Status	Acres Treated	TN Reduction (lbs/yr)
LC-1	Yellow Fever Creek Preserve	Purchase and conversion to conservation land use	Land Acquisition	Completed	215	32
LC-2	Billy's Creek Preserve	Purchase and conversion to conservation land use	Land Acquisition	Completed	50.7	17
LC-3	Six Mile Cypress Preserve	Purchase and conversion to conservation land use	Land Acquisition	Completed	1,219	13
LC-4	Bob Jane's Preserve	Purchase and conversion to conservation land use	Land Acquisition	Completed	1,978.9	0[1]
LC-5	Buckingham Trails Preserve	Purchase and conversion to conservation land use	Land Acquisition	Completed	575.5	13
LC-6	Caloosahatchee Creeks Preserve	Purchase and conversion to conservation land use	Land Acquisition	Completed	911.3	15
LC-7	Deep Lagoon Preserve	Purchase and conversion to conservation land use	Land Acquisition	Completed	117	3
LC-8	Hickory Swamp Preserve	Purchase and conversion to conservation land use	Land Acquisition	Completed	67.2	3
LC-9	Orange River Preserve	Purchase and conversion to conservation land use	Land Acquisition	Completed	59.1	3
LC-10	Prairie Pines Preserve	Purchase and conversion to conservation land use	Land Acquisition	Completed	330.9	3
LC-11	Telegraph Creek Preserve	Purchase and conversion to conservation land use	Land Acquisition	Completed	1,715	0[1]
LC-12	West Marsh Preserve	Purchase and conversion to conservation land use	Land Acquisition	Completed	218	3
LC-13	Yellow Fever Creek Preserve	Purchase and conversion to conservation land use	Land Acquisition	Completed	117.8	0[1]
LC-15	Education Efforts	FYN, landscaping ordinance, irrigation ordinance, fertilizer ordinance, pamphlets, PSAs, website, illicit discharge program	Education Efforts	Ongoing	N/A	20,445

Project Number	Project Name	Description	Project Type	Project Status	Acres Treated	TN Reduction (lbs/yr)
LC-16	Street Sweeping	Materials from roadway and gutter sweeping	Street Sweeping	Ongoing	N/A	490
LC-17	NFM Powell Creek Extension/ Lost Lane Levee	Conveyance improvements to increase residence time, rehydrate offsite wetlands on adjacent properties, and accommodate offsite flows	Hydraulic Restoration	Completed	397.1	2,976
LC-18	Whiskey Creek Weir Reconstruction	Retention lake weir repairs to restore originally intended design and operation	Control Structure	Completed	549.6	3,364
LC-19	Caloosahatchee Creeks	Hydrologic restoration	Hydraulic Restoration	Completed	6,567.4	4,251
LC-20	Powell Creek Filter Marsh	Created wetland areas, boardwalks, and trails and stabilized crossing of Powell Creek	Filter Marsh	Completed	1,169.6	1,693
LC-21	Nalle Grade Stormwater Park	Dry and wet retention ponds	Dry and Wet Retention Ponds	Underway	720.4	TBD
LC-22	Deep Lagoon Hydraulic Restoration	Hydrologic restoration and enhancement, water conservation, wildlife habitat enhancement, and flood protection for surrounding area	Hydraulic Restoration	Completed	1,022.1	3,097
LC-23	Popash Creek Restoration	Hydrologic restoration to more natural flow regime by increasing water storage on property and improving both onsite and offsite flows	Hydraulic Restoration	Completed	3,517	6,596
LC-24	Billy's Creek Wetland	Billy Creek Filter Marsh Park	Filter Marsh	Completed	1,631.6	2,684
LC-25	Caloosahatchee Creeks Preserve – West Restoration	Hydrologic restoration	Hydraulic Restoration	Completed	1,295	TBD
LC-26	Yellow Fever Creek – Gator Slough Transfer Facility	Return historical flow from Gator Slough canal system to Yellow Fever Creek	Hydraulic Restoration	Underway	TBD	TBD
LC-27	Prairie Pines Preserve Restoration	Restoration of historical flows, enhancement and restoration of wetlands, water quality improvement, and alleviation of flooding in adjacent residential areas	Hydraulic Restoration	Planned	2,334	TBD

Project Number	Project Name	Description	Project Type	Project Status	Acres Treated	TN Reduction (lbs/yr)
LC-28	BMAP Plan Development – Tidal Caloosahatchee Basin	Basin study to identify pollutant sources and identify further actions to reach reduction goals	Special Studies	Underway	N/A	0
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, groundwater, and surface waters in Caloosahatchee Estuary and calculate potential nutrient reduction from septic-to-sewer conversions; extent and detail of project depend on board approval	Sanitary Sewer Study	Planned	N/A	0

Total Project Reduction = 47,503 lbs/yr

Total TN Reduction Required = 140,853 lbs/yr

Table A-8. FDACS NOI enrollment reduction estimates as of September 2016

2004 SFWMD Land Use	Acreage	TN Load Delivered (lbs/yr)	TN Reduction Estimate	TN Reduction (lbs/yr)
Citrus	142	895	10%	89
Cropland/Improved Pasture/Tree Crops	18,795	124,320	25%	31,080
Total	**18,937**	**125,214**	**N/A**	**31,169**

Total TN Reduction Required = 55,597 lbs/yr

Appendix B: Future BMAP Projects

In accordance with Chapter 2016-1, Laws of Florida, every new and revised BMAP will be required to include more detailed project information than is currently included in BMAPs and annual updates. The new and revised BMAPs will include the following:

- A ranked list of projects with a planning-level cost estimate and estimated date of completion for each project.
- The source and amount of financial assistance to be made available by DEP, a water management district, or other entity for each project, if applicable.
- A planning-level estimate of each project's expected load reduction, if applicable.

Additionally, Paragraph 373.4595(4)(b), F.S., requires the Caloosahatchee BMAP to include milestones for implementation and water quality improvement, and an associated water quality monitoring component sufficient to determine progress. The milestones, which must be adopted into the BMAP upon the first 5-year review, must include 5-, 10-, and 15-year measurable increments and targets to achieve the TMDL no more than 20 years after BMAP adoption. The implementation schedule is characterized as "guidance for planning and funding purposes" and is exempt from Chapter 120, F.S. A specific reference to that effect will be included when the next revision of the BMAP is adopted. If restoration within 20 years is not "practicable," the schedule must explain why and include additional 5-year milestones leading to restoration.

As a first step towards compiling these project lists, DEP requested information from stakeholders on future projects that have potential for additional load reductions in the basin. Funding has not yet been identified for many of these future projects (listed in **Table B-1**), and the continual funding of projects is a key part of meeting reductions required to achieve the TMDL. This list will be updated as project collection and verification efforts are refined.

Table B-1. Future BMAP projects for planning and funding purposes

N/A = Not applicable
TBD = To be determined
O&M = Operations and maintenance
* Information submitted by lead entity has not been verified by DEP.

Lead Entity	Project Number	Project Name	Description	Project Type	Project Status	Acres Treated	TN Reduction (lbs/yr)*	Cost	Cost Annual O&M	Funding Source	Location
Lee County	F-1	Sunniland/Nine Mile Run Drainage Improvements	Replace failing water control structures; remove invasive vegetation; reconnect flow-ways from drainage ditch system to Hickory Swamp and Buckingham Trails Preserve.	Hydraulic Restoration	In process of acquiring necessary easement.	2,000	TBD	$600,000	TBD	DEP LP3602B	Tidal Caloosahatchee
Lee County	F-2	FPL Powerline Easement – Water Quality Improvement	Hydraulic reconnection of watershed for water quality improvement. Reconnect flow-ways in Popash Creek Preserve at north end of project to Caloosahatchee Creeks Preserve at south end, terminating at Caloosahatchee River.	Hydraulic Restoration	Consultant is working on hydrologic model development.	TBD	3,036	$300,000	TBD	DEP S0894	Tidal Caloosahatchee

Appendix C: BMAP Monitoring Network

The monitoring stations listed in this appendix are separated into a tiered sampling design, as follows:

- **Tier 1:** Stations listed in the BMAP monitoring plan as essential and mandatory for tracking water quality trends both in the Caloosahatchee River and documenting watershed pollutant reductions. Stations should be sampled monthly for all core parameters. Sampling stations, parameters, frequency, and other elements of this strategy may be modified as appropriate to match changing environmental conditions and funding resources. However, any modifications made must not affect the ability of the monitoring network to fulfill the objectives noted below.

- **Tier 2:** Stations that are currently sampled either in the BMAP area or in a tributary contributing to the overall load. These stations will help in understanding the total load in the watershed, and DEP supports the continued monitoring.

- **Tier 3:** Nonstakeholder sampling stations. Data from these stations are extremely useful, and DEP supports continued monitoring.

- **Tier 4:** Florida (DEP/SFWMD) sampling stations.

Table C-1. BMAP monitoring network

[1] NPDES outfall. Data from stations currently listed as NPDES outfall stations will not be included in any ambient monitoring analysis.
[2] Discontinued April 1, 2013.
[3] Formerly CALUSA0023FTM and 28020109.

Agency	Site Name	Tier	River or Watershed Station
City of Cape Coral	210	2	Watershed
City of Cape Coral	242	2	River
City of Cape Coral	243	2	Watershed
City of Cape Coral	262	2	Watershed
City of Cape Coral	275	2	Watershed
City of Cape Coral	280	2	Watershed
City of Cape Coral	290	2	Watershed
City of Cape Coral	295	2	Watershed
City of Cape Coral	300	1	Watershed
City of Cape Coral	310	2	Watershed
City of Cape Coral	315	2	Watershed
City of Cape Coral	350	1	River
City of Cape Coral	355	2	Watershed
City of Cape Coral	390	2	Watershed
City of Cape Coral	400	1	Watershed
City of Cape Coral	430	2	Watershed
City of Cape Coral	470	1	Watershed
City of Cape Coral	510	2	Watershed
City of Cape Coral	540	1	Watershed
City of Cape Coral	550	2	Watershed
City of Cape Coral	590	1	Watershed
City of Cape Coral	600	1	Watershed
City of Ft. Myers	BCP1-10	2	Watershed
City of Ft. Myers	BCP4-10	2	Watershed
City of Ft. Myers	CFMBILLY3	2	Watershed
City of Ft. Myers	CFMBILLY6	2	Watershed
City of Ft. Myers	CFMCARRELL	2	Watershed
City of Ft. Myers	CFMMANUEL	1	Watershed
City of Ft. Myers	CFMWINKLER	1	Watershed
DEP	28020110	4	River
DEP	28020111	4	River
DEP	CALUSA0005FTM	4	River
DEP	CALUSA0006FTM	4	River
DEP	CALUSA0007FTM	4	River
DEP	CALUSA0008FTM	4	River
DEP	CALUSA0009FTM	4	River
DEP	CALUSA0010FTM	4	River
DEP	CALUSA0011FTM	4	River

Agency	Site Name	Tier	River or Watershed Station
DEP	CALUSA0012FTM	4	River
DEP	CALUSA0013FTM	4	River
DEP	CALUSA0014FTM	4	River
DEP	CALUSA0054FTM[3]	4	Watershed
DEP	CALUSA0024FTM	4	Watershed
DEP	CALUSA0025FTM	4	Watershed
Lee County	16-18GR	2	Watershed
Lee County	16-3GR	1	Watershed
Lee County	18-6GR	1	Watershed
Lee County	20-29GR	2	Watershed
Lee County	20-9GR	1	Watershed
Lee County	20A-11GR	2	Watershed
Lee County	20A-19GR	2	Watershed
Lee County	21-7GR	2	Watershed
Lee County	22-18GR	2	Watershed
Lee County	22-7GR	2	Watershed
Lee County	23-27GR	2	Watershed
Lee County	23-5GR	1	Watershed
Lee County	24-19GR	2	Watershed
Lee County	24-7GR	1	Watershed
Lee County	25-GR20	2	Watershed
Lee County	26-GR20	2	Watershed
Lee County	27-6GR	1	Watershed
Lee County	27O-GR20	1	Watershed
Lee County	28-5GR	1	Watershed
Lee County	29-8GR	1	Watershed
Lee County	40-18GR	2	Watershed
Lee County	40-32GR	2	Watershed
Lee County	BILLGR20	2	Watershed
Lee County	BILLGR60[1]	2	Watershed
Lee County	DEEPGR10	1	Watershed
Lee County	DEEPGR50	1	Watershed
Lee County	DEEPGR90	2	Watershed
Lee County	GATOR91	2	Watershed
Lee County	PI-01	1	River
Lee County	PI-02	1	River
Lee County	PI-13	2	River
Lee County	PI-14	1	River
Lee County	POWLGR20	1	Watershed
Lee County	POWLGR51[1]	1	Watershed
Lee County	POWLGR81	2	Watershed

Agency	Site Name	Tier	River or Watershed Station
Lee County	WHISGR10[1]	1	Watershed
Lee County	WHISGR50[1]	2	Watershed
Lee County	YFC-CI[1]	2	Watershed
Sanibel-Captiva Conservation Foundation (SCCF)	RECON-Fort Myers	3	River
SCCF	RECON-Gulf of Mexico	3	River
SCCF	RECON-Shell Point	3	River
SCCF	RECON-Tarpon Bay	3	River
SFWMD	CES03	4	River
SFWMD	CES04	4	River
SFWMD	CES05	4	River
SFWMD	CES06	4	River
SFWMD	CES07	4	River
SFWMD	CES08	4	River
SFWMD	CES09	4	River
SFWMD	CES11	4	River
SFWMD	ROOK471 (former Point Ybel)	4	River
SFWMD	S79	4	River
U.S. Geological Survey (USGS)	Billy's Creek[2]	3	Watershed
USGS	Caloosahatchee River at Marker #52[2]	3	River
USGS	Caloosahatchee River at Punta Blanca[2]	3	River
USGS	Caloosahatchee River at Shell Point[2]	3	River
USGS	Hancock Creek[2]	3	Watershed
USGS	McIntyre Creek at Sanibel Island	3	River
USGS	Orange River[2]	3	Watershed
USGS	Popash Creek[2]	3	Watershed
USGS	Telegraph Creek[2]	3	Watershed
USGS	Whiskey Creek	3	Watershed

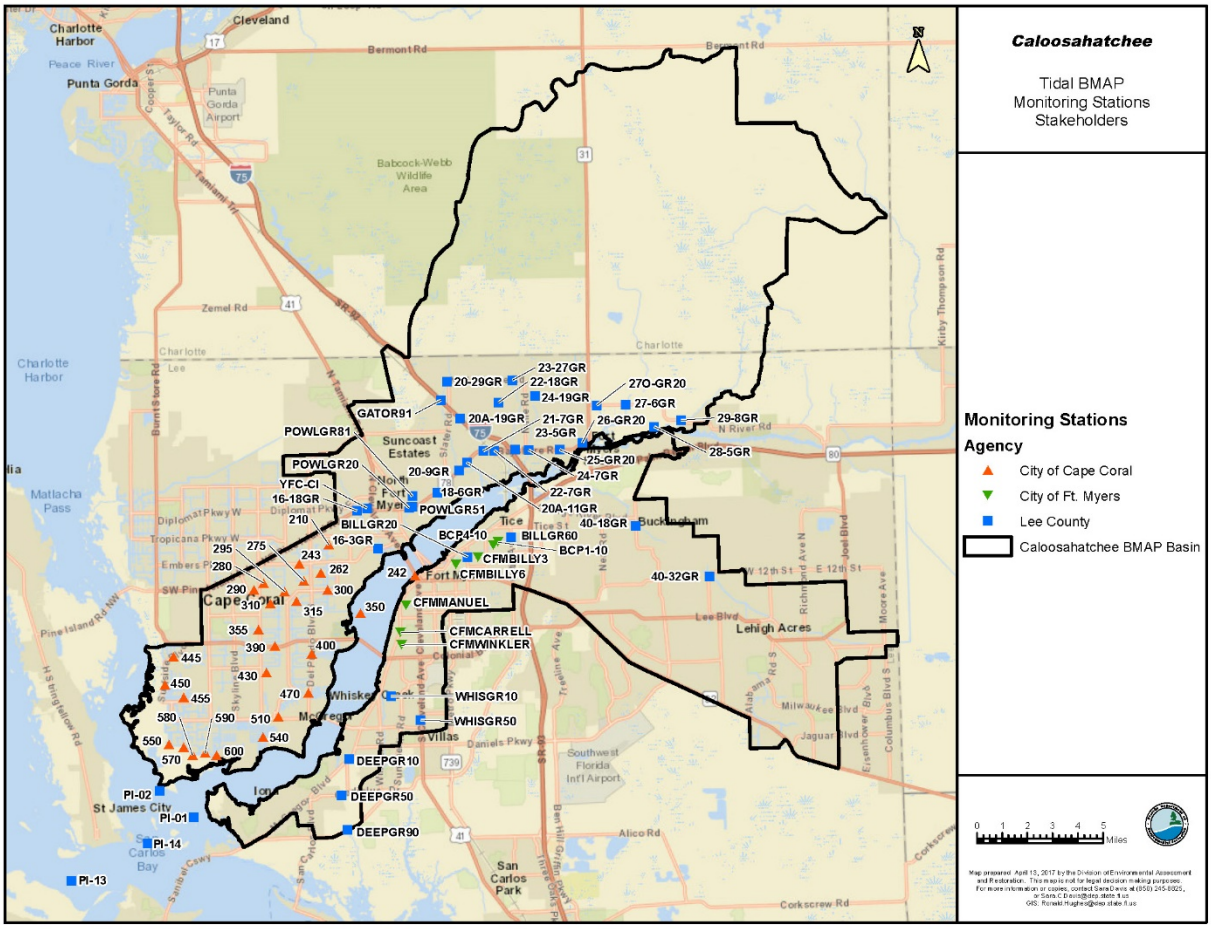

Figure C-1. Tidal Caloosahatchee BMAP stations monitored by Cape Coral, Fort Myers, and Lee County

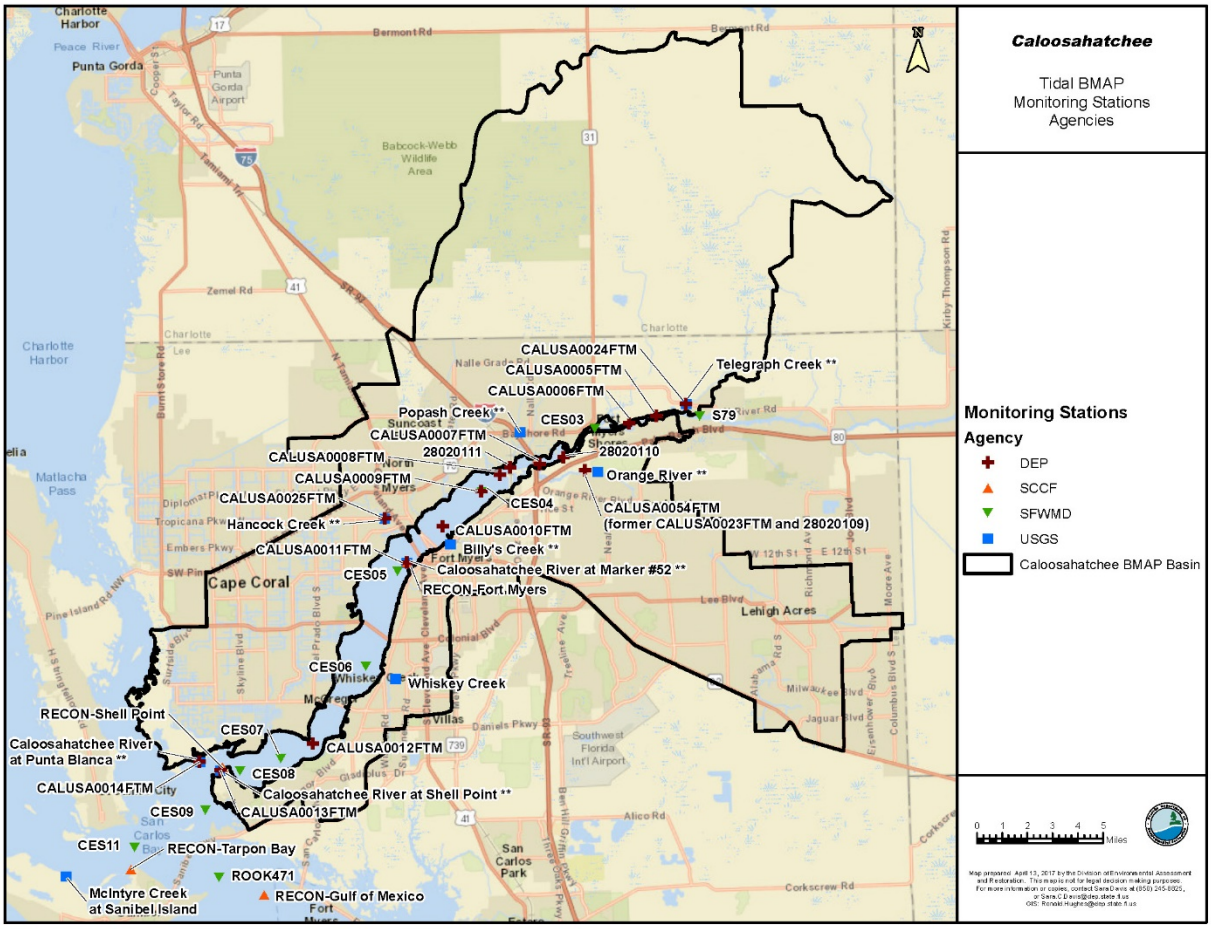

Figure C-2. Tidal Caloosahatchee BMAP stations monitored by DEP, SCCF, SFWMD, and USGS

Appendix D: Important Links

Cover page:
DEP website: http://www.dep.state.fl.us

Acknowledgments:
Sara Davis email: sara.c.davis@dep.state.fl.us

Summary:
Caloosahatchee Estuary TMDL report:
http://www.dep.state.fl.us/water/tmdl/docs/tmdls/final/gp3/tidal-caloosa-nutr-tmdl.pdf
Caloosahatchee Estuary TMDL report appendices:
http://www.dep.state.fl.us/water/tmdl/docs/tmdls/final/gp3/tidal-caloosa-nutrtmdl-appendices.pdf
Caloosahatchee Estuary BMAP:
http://www.dep.state.fl.us/water/watersheds/docs/bmap/caloosa-estuary-bmap-final-nov12.pdf

Section 1:
Caloosahatchee Estuary TMDL report:
http://www.dep.state.fl.us/water/tmdl/docs/tmdls/final/gp3/tidal-caloosa-nutr-tmdl.pdf
Caloosahatchee Estuary TMDL report appendices:
http://www.dep.state.fl.us/water/tmdl/docs/tmdls/final/gp3/tidal-caloosa-nutrtmdl-appendices.pdf

Section 2:
Lee County "Fertilize Smart" campaign: http://fertilizesmart.com/
Lee County "Slime Monster" Facebook page: https://www.facebook.com/pages/Slime-Monster/881207931905350
Lee County PSA video: https://www.youtube.com/watch?v=eMsgXHWeqIU
Lee County pet waste education campaign: http://fertilizesmart.com/pet-waste-info/
SFWMD SFER: https://www.sfwmd.gov/science-data/sfer
FDACS BMP manuals: http://www.freshfromflorida.com/Divisions-Offices/Agricultural-Water-Policy/Enroll-in-BMPs/BMP-Rules-Manuals-and-Other-Documents
Caloosahatchee Estuary BMAP 2013 Progress Report:
http://www.dep.state.fl.us/water/watersheds/docs/bmap/caloosa-estuary-bmap-apr2013.pdf
Caloosahatchee Estuary BMAP 2014 Progress Report:
http://www.dep.state.fl.us/water/watersheds/docs/bmap/caloosa-estuary-bmap-apr2014.pdf
Caloosahatchee Estuary BMAP 2015 Progress Report:
http://www.dep.state.fl.us/water/watersheds/docs/bmap/caloosa-estuary-bmap-apr2015.pdf

Section 3:
2017 SFWMD SFER – Volume I, Chapter 8C: https://www.sfwmd.gov/science-data/sfer

Appendix B:
Chapter 2016-1, Laws of Florida: Chapter 2016-1, Laws of Florida