

FINAL

2015 PROGRESS REPORT

for the Central Indian River Lagoon Basin Management Action Plan

prepared by the
Division of Environmental Assessment and Restoration
Water Quality Restoration Program
Florida Department of Environmental Protection
Tallahassee, FL 32399

in cooperation with the
**Central Indian River Lagoon Basin
Technical Stakeholders**

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This 2015 Central Indian River Lagoon BMAP Progress Report 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 in cooperation with the Central and Southern Indian River Lagoon stakeholders.



Fellsmere Water Control District

Fort Pierce Farms Water Control District

Indian River Farms Water Control District

Sebastian River Improvement District

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LIST OF ACRONYMS AND ABBREVIATIONS

BMAP	Basin Management Action Plan
BMP	Best Management Practice
BRL	Banana River Lagoon
cfs	Cubic Feet Per Second
CR	County Road
Department	Florida Department of Environmental Protection
DO	Dissolved Oxygen
FDACS	Florida Department of Agriculture and Consumer Services
FDOT	Florida Department of Transportation
FIT	Florida Institute of Technology
FPUA	Fort Pierce Utility Authority
FY	Fiscal Year
FYN	Florida Yards and Neighborhood (Program)
GIS	Geographic Information System
IRL	Indian River Lagoon
lbs/yr	Pounds Per Year
LID	Low-Impact Development
MAPS	Managed Aquatic Plant Systems
MGD	Million Gallons Per Day
MOA	Memorandum of Agreement
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
OAWP	Office of Agricultural Water Policy (FDACS)
OSTDS	On-Site Treatment and Disposal System
PAR	Photosynthetically Active Radiation
POTW	Publicly Owned Treatment Works
RFQ	Request for Qualifications
RO	Reverse Osmosis
PSA	Public Service Announcement
SFWMD	South Florida Water Management District
SJRWMD	St. Johns River Water Management District
SR	State Road
STEP	Septic Tank Effluent Pump
STORET	Storage and Retrieval (database)
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TOC	Total Organic Carbon
TP	Total Phosphorus
TSS	Total Suspended Solids
UCF	University of Central Florida
UF–IFAS	University of Florida Institute of Food and Agricultural Sciences
US	United States

USACOE	United States Army Corps of Engineers
USJR	Upper St. Johns River
WBID	Waterbody Identification
WCD	Water Control District

SUMMARY

TOTAL MAXIMUM DAILY LOADS

The Central Indian River Lagoon (IRL) Basin Management Action Plan was adopted in February 2013 to implement the nutrient TMDLs in the watershed. The BMAP includes management strategies or projects that will be implemented by the responsible stakeholders during the first phase of implementation. This 2015 Progress Report is the second annual progress report for the Central IRL BMAP; it describes the implementation activities that occurred during the reporting period from March 1, 2014, through February 28, 2015.

The total nitrogen (TN) and total phosphorus (TP) TMDLs for the main stem of the IRL Basin were adopted by the Florida Department of Environmental Protection in March 2009. The TMDLs focus on the water quality conditions necessary for seagrass regrowth in areas where seagrass historically grew in the basin. The median depth limits of seagrass coverage in the IRL Basin have decreased over the years due to changes in water quality conditions resulting from human (anthropogenic) influences.

ACTIVITIES DURING THE REPORTING PERIOD

During the reporting period in the Central IRL, Indian River County, the city of Palm Bay, and the city of West Melbourne increased street sweeping activities in the basin. Also, the Florida Department of Transportation (FDOT) District 5 reimplemented a street sweeping program. The projects that could be quantified resulted in an estimated reduction of 122 pounds per year (lbs/yr) of TN and 159 pounds per year (lbs/yr) of TP in the Central IRL. These reductions are in addition to those projects given credit at BMAP adoption. Therefore, the total reductions to date, for those projects that could be quantified, are 44,325 lbs/yr of TN and 10,934 lbs/yr of TP.

In the Southern IRL, during the reporting period, St. Lucie County completed the Taylor Creek dredging project, and the city of Fort Pierce substantially increased its street sweeping efforts. For the projects that could be quantified, the reductions from these projects resulted in an estimated load reduction of 3,767 lbs/yr TN and 2,887 lbs/yr TP.

SEAGRASS TARGET EVALUATION

The intent of the IRL Basin TMDLs is to recover the deeper water seagrass habitats, with the biological response of the seagrass being the most important factor in evaluating success in achieving TMDL targets. To assess the progress of the IRL Basin towards the median seagrass depth limit target, a two-

step process was used. Step 1 is a seagrass frequency distribution analysis, and Step 2 is a median seagrass depth evaluation. If seagrass in a project zone passes both evaluation steps, no further nutrient reductions are required by the stakeholders in that project zone. The department recently conducted this two-step evaluation using seagrass data from 2007, 2009, 2011, and 2013, which were the latest datasets available at the time of the analysis. Based on the results from this period, the Central A, Central SEB, and Central B project zones were Step 1 compliant but not Step 2 compliant. Therefore, BMAP stakeholders will continue to work towards achieving the seagrass depth limit targets.

In 2011, an algal superbloom occurred in the North IRL and Banana River Lagoon, and another bloom occurred in the Central IRL. In addition, a brown algal bloom affected much of the IRL during 2012. As a result of these algal blooms and concern for the health of the IRL, the stakeholders in the Central IRL identified and implemented projects during this first phase of the BMAP. The full impact to seagrass from these blooms will not be known for a number of years, but there are documented losses of seagrass in the Central IRL linked to the blooms.

The St. Johns River Water Management District began the IRL Initiative in spring 2013 with a series of research investigations into the potential causes of the blooms. The understanding gained through the IRL Initiative is expected to aid in defining the future actions of the BMAP, and additional information from the initiative may be included in future annual reports.

Section 1: INTRODUCTION

1.1 PURPOSE OF THE REPORT

This is the second progress report for the Central Indian River Lagoon (IRL) Basin Management Action Plan. **Section 2** describes the accomplishments during the period from March 1, 2014, through February 28, 2015. **Section 3** summarizes the evaluation of progress towards the seagrass depth limit targets. A summary of efforts for the upcoming year and management strategies for the second BMAP iteration are included in **Section 4**. **Section 5** describes the activities that occurred in the southern IRL during the reporting period.

Prior to the adoption of the Central IRL BMAP in 2013, extended duration algal superblooms were occurring in the IRL. The blooms resulted in large losses of seagrass acreage that are reflected in the 2011 seagrass mapping data. The St. Johns River Water Management District (SJRWMD) began the IRL Initiative in spring 2013 in response to the blooms with a series of research and data collection investigations into their potential causes. The understanding gained through the initiative is expected to aid in defining the future direction of the BMAP.

1.2 TOTAL MAXIMUM DAILY LOADS FOR THE CENTRAL IRL BASIN

Due to the large geographic extent of the IRL Basin and the diversity of hydrologic characteristics throughout the basin, the Florida Department of Environmental Protection divided the watershed into three subbasins: (1) Central IRL, (2) North IRL, and (3) Banana River Lagoon (BRL). Separate BMAPs were developed for each subbasin; this document focuses solely on the Central IRL subbasin. The main stem of the Central IRL subbasin extends from the Melbourne Causeway in Brevard County to the boundary between Indian River County and St. Lucie County. For assessment purposes, the department divided the Central IRL subbasin into water assessment polygons with a unique waterbody identification (WBID) number for each watershed or segment.

In addition to dividing the overall IRL Basin into subbasins, the department further divided the Central IRL into “project zones” whose boundaries are based on the distinct hydrology in different areas of the basin and their corresponding annual residence times. These zones are important because the flushing times vary greatly among locations and consequently affect how nutrient reductions will impact these distinct areas of the basin. The project zones identify large areas where projects should be implemented

to ensure that the load reductions achieve the desired response for each subbasin. The Central IRL subbasin was split into three project zones, as follows:

- **Central A** – Melbourne Causeway (United States [US] Highway 192) to the north tip of Grant Farm Island.
- **Central SEB** – Grant Farm Island to Wabasso Causeway (County Road [CR] 510).
- **Central B** – Wabasso Causeway to the boundary between Indian River County and St. Lucie County.

Figure 1 through **Figure 3** show the stakeholders in each of these project zones. This BMAP includes a portion of the southern IRL extending to the Fort Pierce Inlet as well as the drainage areas for the Fort Pierce Farms Canal and C-25 Canal. **Section 5** contains additional information about this area.

In March 2009, the department adopted the total nitrogen (TN) and total phosphorus (TP) TMDLs for the IRL Basin. The TMDLs focus on the water quality conditions necessary for seagrass regrowth at the depth limits where seagrass historically grew in the basin, based on a multiyear composite of seagrass coverage. **Table 1** and **Table 2** list the TN and TP TMDLs and pollutant load allocations, respectively, adopted by rule for the Central IRL subbasin.

TABLE 1: TN TMDLS IN THE CENTRAL IRL SUBBASIN

WBID NUMBER	WBID NAME	PARAMETER	TMDL (POUNDS PER YEAR [LBS/YR])	WASTEWATER FACILITIES ALLOCATION (LBS/YR)	STORMWATER ALLOCATION (LBS/YR)	ATMOSPHERIC DEPOSITION ALLOCATION (LBS/YR)
5003D+ 2963A	South Indian River + Indian River Above Sebastian Inlet	TN	684,715	831	577,184	106,700
5003B+ 5003C	South Indian River	TN	278,273	25,391	217,876	35,006
TN TOTAL	CENTRAL IRL TN TOTAL	TN	962,988	26,222	795,060	141,706

TABLE 2: TP TMDLS IN THE CENTRAL IRL SUBBASIN

WBID NUMBER	WBID NAME	PARAMETER	TMDL (LBS/YR)	WASTEWATER FACILITIES ALLOCATION (LBS/YR)	STORMWATER ALLOCATION (LBS/YR)	ATMOSPHERIC DEPOSITION ALLOCATION (LBS/YR)
5003D+ 2963A	South Indian River + Indian River Above Sebastian Inlet	TP	111,594	122	110,187	1,285
5003B+ 5003C	South Indian River	TP	53,599	1,949	50,857	793
TP TOTAL	CENTRAL IRL TP TOTAL	TP	165,193	2,071	161,044	2,078

1.3 RESPONSIBLE PARTIES AND KEY STAKEHOLDERS

The Central IRL BMAP identified municipal separate storm sewer systems (MS4s), urban nonpoint, and agricultural sources of TN and TP in the basin, as follows:

- Agriculture.
- Brevard County.
- Indian River County.
- City of Fellsmere.
- City of Melbourne.
- City of Palm Bay.
- City of Sebastian.
- City of Vero Beach.
- City of West Melbourne.
- Town of Grant-Valkaria.
- Town of Indialantic.
- Town of Indian River Shores.

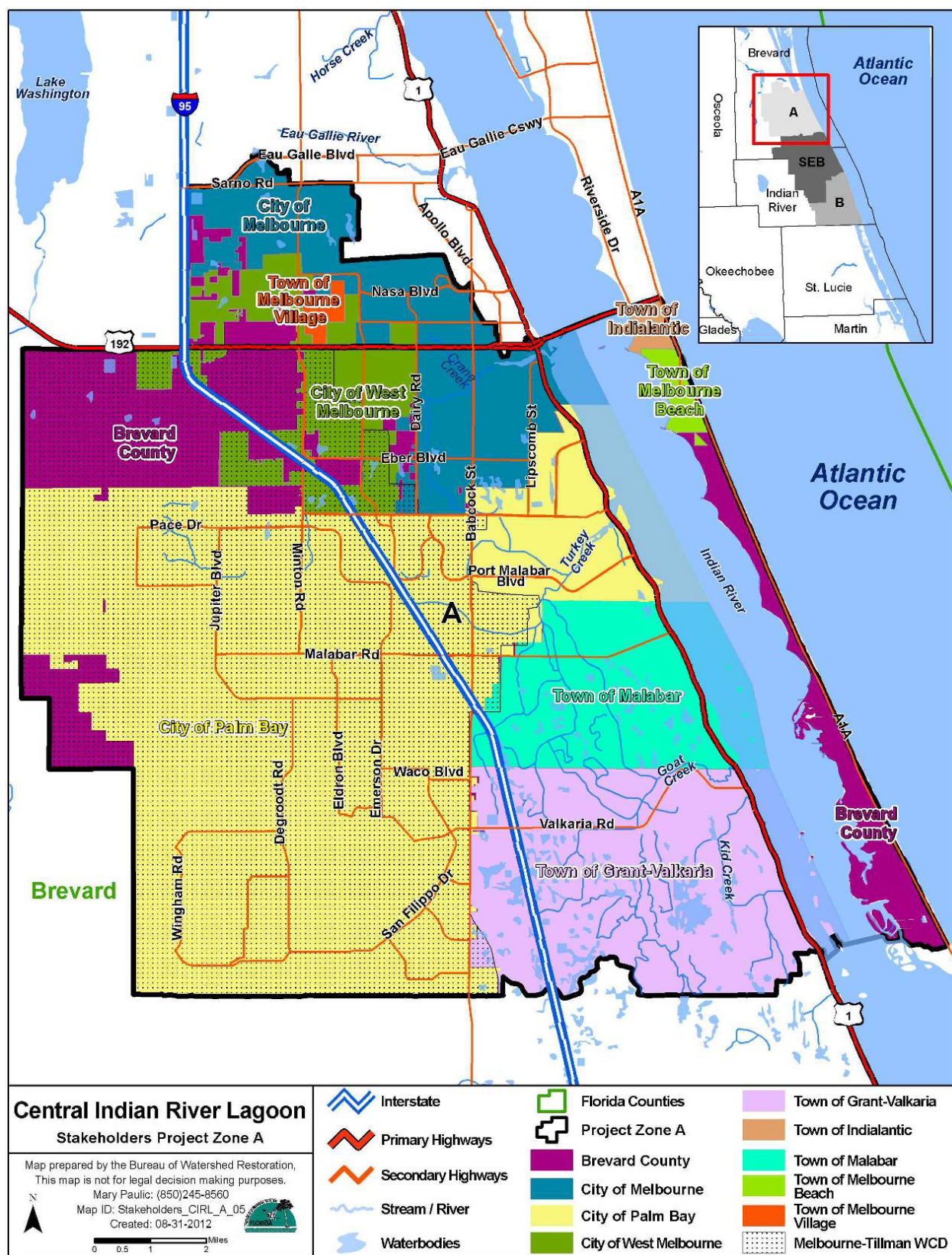


FIGURE 1: STAKEHOLDERS IN THE CENTRAL A PROJECT ZONE

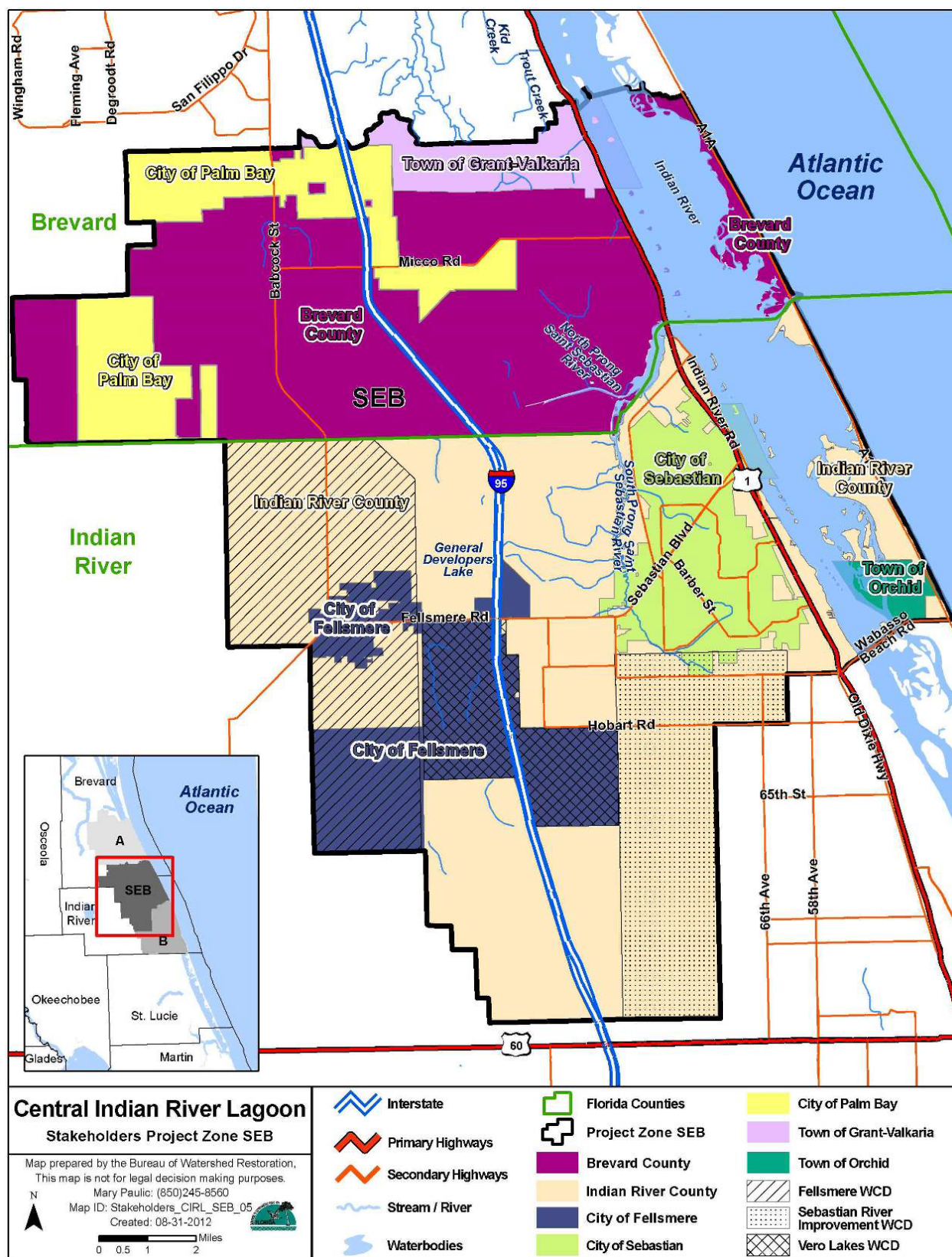


FIGURE 2: STAKEHOLDERS IN THE CENTRAL SEB PROJECT ZONE

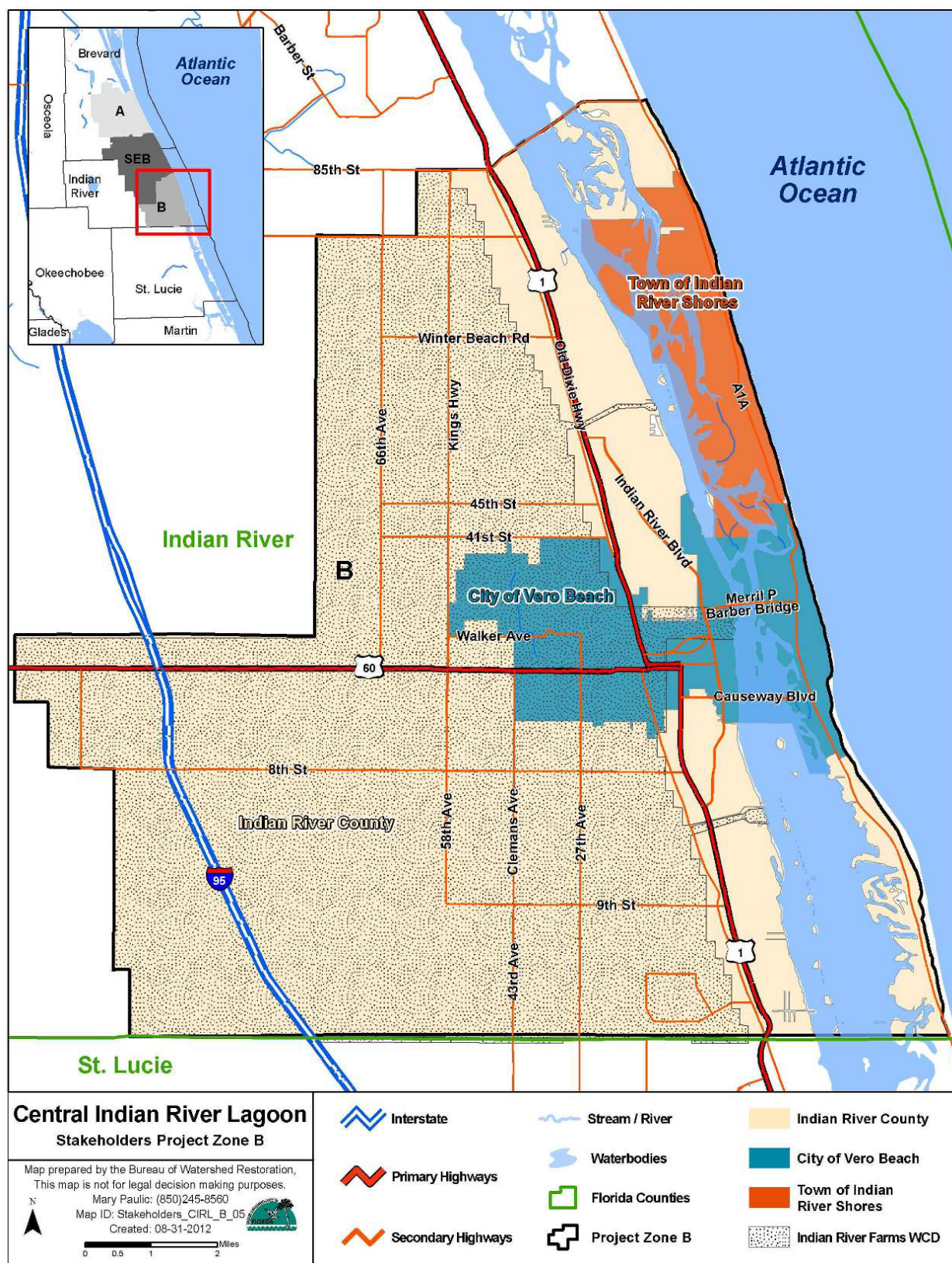


FIGURE 3: STAKEHOLDERS IN THE CENTRAL B PROJECT ZONE

- Town of Malabar.
- Town of Melbourne Beach.
- Town of Melbourne Village.
- Town of Orchid.
- Florida Department of Transportation (FDOT) District 4.
- FDOT District 5.
- Turnpike Enterprise.
- Fellsmere Water Control District (WCD).
- Indian River Farms WCD.
- Melbourne-Tillman WCD.
- Sebastian River Improvement District.
- Vero Lakes WCD.

In addition to these stakeholders, the Florida Department of Agriculture and Consumer Services (FDACS), the department, the SJRWMD, and the South Florida Water Management District (SFWMD) are essential to the implementation of the BMAP activities.

1.4 BMAP ALLOCATIONS

During BMAP development, the department conducted a two-step seagrass target evaluation process (see **Section 3**) using the 2003, 2005, 2006, 2007, and 2009 mapping years, which were the latest datasets available at the time. In the Central IRL, all three project zones were determined to be both Step 1 and Step 2 compliant. Therefore, additional reductions were not necessary, and stakeholders were not assigned allocations for the first phase of BMAP development; however, stakeholders committed to structural and nonstructural projects to reduce nonpoint source loading from stormwater. They also provided future projects that will help to further reduce nonpoint source loads and protect the lagoon.

Section 2: ACCOMPLISHMENTS DURING THE REPORTING PERIOD

During the reporting period, Indian River County, the city of Palm Bay, and the city of West Melbourne increased street sweeping in the basin. Also, FDOT District 5 reintroduced its street sweeping program. Projects for which load reductions could be quantified resulted in an estimated reduction of 122 lbs/yr of TN and 159 lbs/yr of TP in the Central IRL. These reductions are in addition to those projects given credit at BMAP adoption. Therefore, the total reductions to date, for those projects that could be quantified, are 44,325 lbs/yr of TN and 10,934 lbs/yr of TP. **Section 5** describes the activities completed in the Southern IRL. **Section 2.1** through **Section 2.7** describe the accomplishments over the past year, and **Appendix A** includes the individual project tables.

2.1 ACTIVITIES BY STAKEHOLDER

2.1.1 BREVARD COUNTY

Brevard County completed the water quality monitoring of the Grant-Valkaria Lakes wet detention pond (BC-7). This regional stormwater pond system treats runoff from approximately 524 acres of single-family residential lots and reduces property flooding. The monitoring data collected allow for the evaluation of the project's effectiveness and the ground water interaction with the ponds. The data obtained will be useful to the department and local governments in designing and evaluating future projects to reduce nutrient loadings.

Brevard County started the construction of the Micco I water quality improvements (BC-9) exfiltration-denitrification wall and initiated the Wheeler Fleming Grant Road wet detention pond (BC-13). The county also increased the frequency of street sweeping and baffle box/sediment trap cleaning.

Brevard County continued educational efforts (BC-5) during the reporting period. Stormwater outreach activities are part of the county's efforts to engage the community in activities that prevent and reduce pollution through source control as well as restoration. Outreach is conducted by the county's in-house stormwater outreach specialist and through a partnership of nine municipalities in the county, the Brevard Zoo, and Good Education Solutions (a contracted public outreach firm) known as the "BLUE LIFE" partnership. Outreach conducted countywide during 2014 through the "BLUE LIFE" partnership included the following:

- **Outreach to Children:** 58 presentations to 2,081 children.

— **Outreach to Adults:** 37 presentations to 1,790 people.

— **Outreach at Special Events:** 21 events, 6,381 people.

In 2014, the county strengthened its partnership with the extension service through the creation of the “My Brevard Yard” Program, an expansion to the existing Florida Yards and Neighborhoods (FYN) Program. “My Brevard Yard” includes hands-on workshops tailored to educate participants about maintaining a healthy lawn while complying with local fertilizer ordinances and providing information about best management practices (BMPs) for fertilizer and irrigation. Participants learn how to calibrate and use a fertilizer spreader, calculate the correct amount of fertilizer, set irrigation timers, and calibrate an irrigation system. The program also includes follow-up site visits for participants, upon request. During visits, a University of Florida Institute of Food and Agricultural Sciences (UF–IFAS) agent collects soils test for lab analysis, tests the salt content of on-site wells used for irrigation, checks the irrigation system, and trains the homeowner in setting the irrigation timer. Based on the results of the soils tests, the UF–IFAS agent makes site-specific recommendations for fertilizer use, irrigation, and Florida-friendly landscaping.

Pre- and post-program tests were administered to 101 “My Brevard Yard” workshop participants, who were asked about their knowledge of fertilizer application, irrigation systems, and nonpoint source pollution. After the workshop, test scores were 37% higher than the preprogram tests, indicating that participants knew more about the topics than before attending the workshop. Twenty-three participants in the home site visits completed a follow-up survey. Results show that 39% now irrigate at the recommended time of day; 30% now apply the recommended amount of fertilizer; 17% no longer leave grass clippings on hardscapes or allow them to go into waterways; and 13% use soil test results to determine the correct fertilizer type and amount to apply. The results from working with one commercial applicator in two residential communities resulted in reductions to the rate of fertilizer application, refined analysis procedures based on BMPs and soil test results, and modified application timing leading to more efficient and/or reduced fertilizer applications.

In 2014, Brevard County received appropriations from the state Legislature of \$410,000 to restore and evaluate oyster reefs in the IRL. During the year, Brevard County, in partnership with the Brevard Zoo, established a citizen science oyster-gardening program in which residents with access to the lagoon shoreline volunteered to build oyster gardens (assemble metal enclosures), hang the gardens under their private docks, care for their gardens weekly to propagate and raise juvenile oysters, and collect weekly

data. Based on the 2014 Memorandum of Agreement (MOA) for the IRL oyster restoration project, the Brevard Zoo will engage the Brevard County community in a citizen-based oyster propagation program to raise additional juvenile oysters to expand oyster reefs at the three pilot sites in the IRL and the BRL. The Desert Research Institute will measure denitrification, and the University of Central Florida (UCF) will measure oyster growth, survival, and recruitment. The three pilot oyster reefs in the lagoon are anticipated to help remove nutrient levels, while the data collection efforts are designed to guide future shellfish restoration efforts in the IRL.

Brevard County also received in 2014 an appropriation of \$10 million from the Florida Legislature to remove legacy muck deposits from the lagoon. The county contracted with a team of consultants to identify, design, and permit five high-priority muck removal areas. It contracted with a team of researchers at Florida Institute of Technology (FIT), per legislative intent, to document and analyze ecological responses of the national estuary to muck removal. Five priority muck removal locations were selected: the Mims Boat Ramp, Sykes Creek, Cocoa Beach, Grand Canal, and Turkey Creek. Of these, Turkey Creek is located in the Central IRL.

Street sweeping operations continued throughout the county (BC-6). In 2014, 174 miles of road were swept countywide with an estimated 60 lbs/yr of TN and 26.9 lbs/yr of TP removed. Brevard County continued to implement maintenance cleanout operations, and an estimated 1 lb of TN and 1 lb of TP were removed.

2.1.2 INDIAN RIVER COUNTY

Indian River County continues the construction of Osprey Marsh (IRC-6); as of June 1, 2015, it was 98% complete and operational. According to the county, a recently constructed holding basin at Egret Marsh Stormwater Park (IRC-5) will increase suspended solids removal and collection efficiency. The replacement of the existing harvest rake should also increase harvesting efficiency and algal removal. In 2014, the Egret Marsh Stormwater Park facility removed almost 19,000 lbs of TN and over 3,800 lbs of TP. The PC Main Screening System (IRC-4) continues to remove trash, debris, and nutrients from the Main Relief Canal. In 2014, this facility removed 515.8 tons of debris, plants, and trash; 435.3 tons of sediment; 0.6 tons of dead animals; over 1,900 dry lbs of TN; and over 500 dry lbs of TP. The reductions achieved by IRC-4 and IRC-6 were adjusted (decreased) from the previous estimates, based on the measured data from each project site. Indian River County also increased street sweeping efforts (IRC-9).

In addition, the county continued its educational and outreach activities (IRC-8). A stormwater educator and fertilizer enforcement officer, hired in February 2014, continues to educate the public and commercial stakeholders on the new fertilizer ordinance and on stormwater issues.

2.1.3 CITY OF FELLSMERE

The city of Fellsmere continues to make progress on the Orange Street project (F-3), also known as the North Regional Lake project. This seven-acre wet detention pond system will address untreated stormwater from the historical commercial lots along North Broadway, the city's commercial core. The city hopes to commence design and permitting in 2015 and to begin construction soon after the completion of design and permitting.

2.1.4 CITY OF PALM BAY

The city of Palm Bay increased street sweeping (PB-16) in the basin and also continued its educational efforts (PB-27).

2.1.5 CITY OF SEBASTIAN

The city of Sebastian continued educational and outreach efforts in the basin (SEB-10) and started the Presidential Street Improvement Project (SEB-12), which includes the installation of next-generation nutrient-separating baffle boxes at three outfalls to reduce stormwater pollutants entering the IRL. The project is partially funded with department TMDL grant funds, completing construction, and will start the monitoring and water quality testing.

Another project started by the city is the Tulip Drive drainage improvement. This project is on hold waiting for funds for drainage improvements and the creation of a wet retention basin for the project area. Design plans are pending completion.

2.1.6 CITY OF VERO BEACH

The city of Vero Beach continued to implement its fertilizer ordinance (VB-4).

The city has also constructed four pilot projects featuring Flexi®-Pave permeable pavement media by K.B. Industries, Inc. for stormwater inlet treatment (Figure 4 and **Figure 5**). Preliminary removal efficiencies being achieved in the retrofit projects are 80%. The media comprises recycled tire crumb, rock, and binder, and allows runoff to drain through it. The inlet retrofits consist of lowering or modifying existing inlet tops and placing Flexi®-Pave over the top and along the curblin near the existing inlets. Runoff drains through the Flexi®-Pave, and pollutants such as leaves, grass clippings,

garbage, and sediment stay on top of the Flexi®-Pave. The material left on top of the Flexi®-Pave is then swept up by a city street sweeper. The city has acquired departmental TMDL and 319(h) grants to build more inlet retrofit projects that will test the inlets in the field and provide even more reliable information about the cost and efficiency of permeable pavement inlet retrofits.

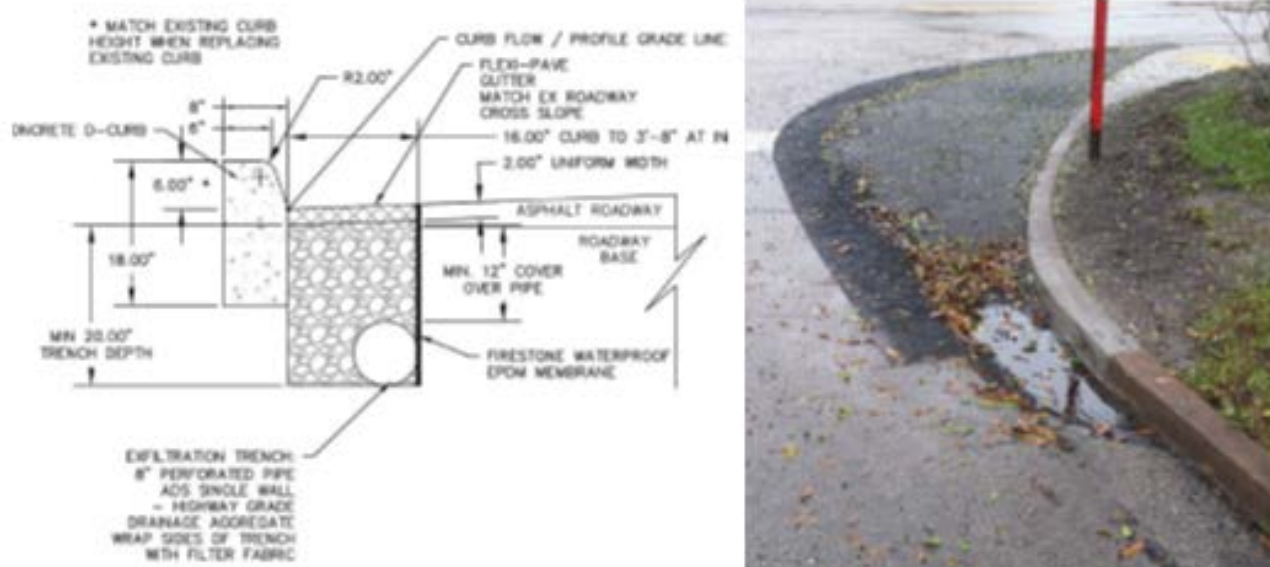


FIGURE 4: CITY OF VERO BEACH PROPOSED PERMEABLE PAVEMENT INLET AND COMPLETED RETROFIT

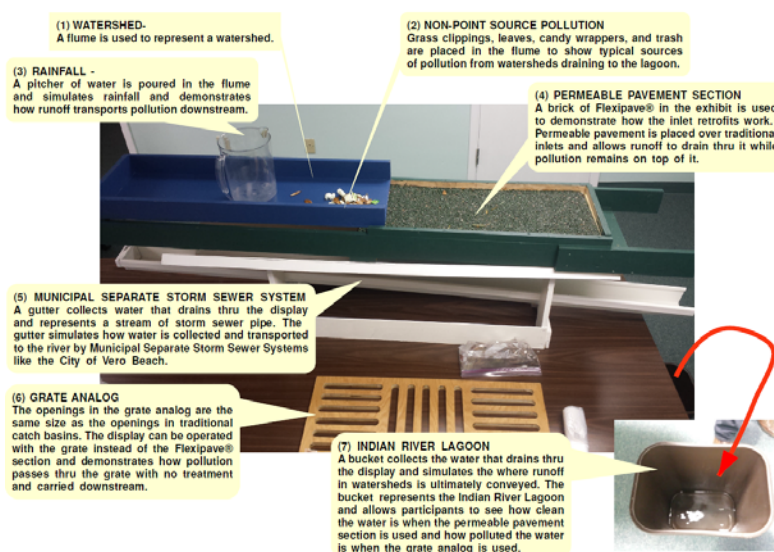


FIGURE 5: CITY OF VERO BEACH DEPARTMENT OF PUBLIC WORKS PILOT PROJECTS FOR PERMEABLE PAVEMENT RETROFITS

The city of Vero Beach has also begun the implementation of the Septic Tank Effluent Pump (STEP) System Program (VB-5), which involves the conversion of a 1,550 existing single-family on-site sewage disposal system. This is designed to allow for conversion to a centralized wastewater collection system, thus limiting septic tank effluent leaching into ground and surface waters. Some of the advantages to the STEP system include a lower initial construction cost (approximately half the cost of standard gravity sewer installation). The system also allows for the use of the existing septic tank and drainfield system in the event of a localized or systemwide power failure.

2.1.7 CITY OF WEST MELBOURNE

The city of West Melbourne continued street sweeping (WM-21) in the basin, collecting 318 tons of material, and also continued inlet cleaning (WM-22) in the basin, collecting 730 lbs of material.

2.1.8 TOWN OF INDIALANTIC

The town of Indialantic revised the stormwater management ordinance to further address the development, redevelopment, water quality, retention, and detention of surface water runoff, and to specify performance standards. Public education outreach, including pamphlets and websites, is still ongoing (TI-1). The town has also continued swale construction for water quality retention (TI-2) and added approximately 210 linear feet to the design. The town continued to clean about 20 drainage inlets (TI-3) and sweep all curbed streets quarterly (TI-4).

2.1.9 TOWN OF ORCHID

The town of Orchid continued educational and outreach efforts (TO-1).

2.1.10 FDOT DISTRICT 4

FDOT District 4 continued street sweeping (FDOT4-4) and educational efforts (FDOT4-9) in the basin during the reporting period. In June 2014, FDOT started the statewide implementation of mandatory illicit discharge detection and elimination (IDDE) training for all staff and contractors working in its rights-of-way.

2.1.11 FDOT DISTRICT 5

FDOT District 5 continued to implement its illicit discharge and stormwater educational programs (FDOT5-14) during the reporting period. In addition, District 5 reimplemented a street sweeping program in Brevard County (FDOT5-16). Under the new street sweeping contract, District 5 removed 18 lbs of TN and 12 lbs of TP in the Central IRL. In June 2014, FDOT started the statewide implementation of mandatory IDDE training for all staff and contractors working in its rights-of-way.

2.1.12 TURNPIKE AUTHORITY

Florida's Turnpike has continued with the mechanical sweeping program (T-1).

2.1.13 FELLSMERE WCD

The Fellsmere WCD has implemented a stormwater utility. This funding source will improve efforts to obtain cost-share grants for projects in which the WCD is a partner with the city of Fellsmere. The WCD continued its mechanical canal maintenance (FWCD-6) during the reporting period.

2.1.14 INDIAN RIVER FARMS WCD

The Indian River Farms WCD continued the mechanical removal of floating vegetation from its canals (IRF-2). From August through November 2014, the WCD removed 10,085 cubic yards of water lettuce. The material is placed on the bank to biodegrade, and the berms are sloped away from the top of the bank.

2.1.15 SEBASTIAN RIVER IMPROVEMENT DISTRICT

The Sebastian River Improvement District continued to implement its two-inch discharge rule, which is applied to any planned projects within the jurisdiction of the district (SRID-1) as well as its educational project (SRID-4). The district has also continued its annual vegetation, sediment, and muck removal from the main and sublateral canals (SRID-3).

2.1.16 AGRICULTURE

FDACS currently has two field staff and two contracted staff in the SJRWMD. During the reporting period, one notice of intent (NOI) totaling 741 acres was enrolled under the statewide citrus manual. **Table 3** also shows a loss of enrolled citrus acreage from what was included in the BMAP due to the removal of out-of-production groves. FDACS will continue to enroll producers in the Central IRL subbasin to meet the five-year enrollment goal (**Table 4**).

TABLE 3: AGRICULTURAL ACREAGE AND BMP ENROLLMENT

N/A = Not applicable

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 poultry operations in the BMAP area but will confirm this.

2000 SJRWMD LAND USE	2000 ACRES	FDACS ADJUSTED ACRES FOR ENROLLMENT ¹	RELATED FDACS BMP PROGRAMS	ACREAGE ENROLLED	RELATED NOIS
Pasture	27,410.2	24,691.9	Cow/Calf; Future (hay)	698.4	3
Row/Field/Mixed Crops	724.7	515.5	Vegetable/Agronomic Crops	62.6	1
Fallow Cropland	2,429.4	N/A	No enrollment needed	N/A	N/A
Horse Farm ²	62.7	57.9	Equine	0.0	N/A
Citrus	43,747.7	17,910.3	Ridge Citrus; Flatwoods Citrus	8,401.6	89
Abandoned Citrus	1,153.0	N/A	No enrollment needed	N/A	N/A
Tree Crops	5.3	0.0	Specialty Fruit & Nut	1.0	1
Nurseries and Vineyards	2.9	2.9	Future Nursery	N/A	N/A
Ornamentals	238.8	200.9	Container Nursery	216.1	13
Specialty Farms	93.4	81.0	Conservation Plan Rule	0.0	N/A
Cattle Feeding	4.5	4.5	Conservation Plan Rule	0.0	N/A
Other Open Lands – Rural	94.2	N/A	No enrollment needed	N/A	N/A
TOTAL	75,967	43,465	N/A	9,380	107

TABLE 4: FDACS BMP ENROLLMENT SUMMARY FOR THE CENTRAL IRL

CATEGORY	ACRES
Five-Year Enrollment Goal (50%)	21,732.5
Acreage Enrolled as of March 31, 2015	9,379.7
REMAINING ACRES TO ENROLL	12,353

2.2 REGIONAL PROJECTS

2.2.1 C-1 REDIVERSION PROJECT

The Central IRL is largely affected by the C-1 Canal, which is part of the Melbourne-Tillman WCD. The purpose of this canal is to provide flood protection to approximately 80,000 people in a 98-square-mile area, encompassing a large portion of Palm Bay and West Melbourne. However, discharges from the C-1 are responsible for up to 80% of Turkey Creek’s annual loading of nutrients to the Central IRL. This loading affects the lagoon’s water quality, adds to the muck deposition in both the lagoon and Turkey Creek, and limits seagrass coverage along a 10- to 20-mile portion of the lagoon. Large discharges from C-1 have also caused dramatic declines in salinity, affecting the lagoon ecosystem. To address these issues, the SJRWMD and Melbourne-Tillman WCD are implementing the C-1 redirection project.

The first phase of the project, completed in 2011, rediverts runoff from the Melbourne-Tillman WCD that currently drains to the IRL back into the Upper St. Johns River Basin, which is how the water historically drained. Phase 1 of the project consisted of replacing the MS-1 structure gates on the C-1, creating the C-1 Retention Area to store stormwater runoff, and creating the Sawgrass Lake Water Management Area to receive pumped discharge from the Melbourne-Tillman WCD canals so that the water can be treated before it is released to the Upper St. Johns River Basin. The first phase of the project is estimated to reduce the annual discharge volume by 28%. The expected reductions from the first phase of the project are 92,860 lbs/yr of TN and 10,847 lbs/yr of TP.

In addition, the partners in the project are developing a plan to improve bank stabilization along the canal and manage the sediment that no longer reaches the lagoon due to the operation of Phase 1. By early summer 2015, upgraded pumps at the Sawgrass Lakes Water Management Area will increase pumping capacity by up to 100 cubic feet per second (cfs), supporting the westward diversion of more water.

A second phase of the project, currently being designed, includes the creation of the C-10 Retention Area. The C-10 Retention Area will receive pumped discharge from the Melbourne-Tillman WCD canals for treatment before the water is released to the Three Forks Marsh Conservation Area. The construction of the C-10 Retention Area is scheduled to begin in spring 2016 and is anticipated to take approximately two years.

With both phases of the C-1 rediversion project in place, the average annual discharge volume would be reduced from about 41% to 46%. This equates to a 54% to 59% reduction in the current annual loading. The current C-1 basin loads, based on 2000 land uses, are estimated to be 331,644 lbs/yr of TN and 38,739 lbs/yr of TP. Therefore, the expected reductions from both phases of the rediversion project are 179,088 to 195,670 lbs/yr of TN and 20,919 to 22,856 lbs/yr of TP. The pump upgrades at the Sawgrass Lake Water Management Area are anticipated to increase rediversion totals to approximately 50% of the average annual discharge volume of the drainage basin.

2.2.2 UPPER ST. JOHNS RIVER PROJECT AND C-54

In the 1950s, the United States Army Corps of Engineers (USACOE) began planning a flood control project in the Upper St. Johns River Basin. The original project involved a series of flood storage reservoirs and a network of canals to divert excess floodwaters from the Upper St. Johns to the IRL. Portions of this project, including C-54, were built by 1973, when construction was stopped by President

Richard Nixon because of an Environmental Impact Statement, which found that the project had unacceptable impacts on the environment. One of these environmental impacts was the harm that freshwater diversion caused to the IRL.

C-54 is located along the Brevard County and Indian River County line and was originally designed to divert up to 6,000 cfs of water from the St. Johns River to the IRL through the Sebastian River. Environmental studies found that this diversion of fresh water would significantly reduce the population of shellfish in the IRL and would cause swings in the salinity of the lagoon, impacting other fish and wildlife resources. In 1977, the SJRWMD took over the project area and designed a plan with the USACOE to revitalize the St. Johns River's flow by reclaiming drained marshlands, plugging canals, and building reservoirs. As part of this project, C-54 is no longer directly connected to the St. Johns River.

The components of the Upper St. Johns project that reduced discharges through the C-54 to the IRL were completed by 1996. The C-54 now only serves as an emergency overflow for the St. Johns Water Management Area to ensure that extreme flood events do not overtop the flood protection levees. However, discussions on the C-54 operations are ongoing, and flows through the canal could be changed in the future. Since 1996, discharges through C-54 have only occurred during three major storm events: an unidentified storm in 1999, hurricanes in 2004, and Tropical Storm Fay in 2008. The SJRWMD is currently working on the Fellsmere Water Management Area, adjacent to the Upper St. Johns River Basin project that will reconnect large areas of the floodplain in this area.

One of the anticipated benefits of the project is that the frequency of discharges through the C-54 to the IRL will decrease to less than a 1-in-100-year storm event. The IRL seagrass beds should benefit from decreases in the interbasin discharge of agricultural stormwater runoff from the farming areas in the Upper St. Johns River into the adjacent coastal lagoon system. The Fellsmere Water Management Area should be completed in 2015, and this work is approximately 95% complete and on schedule.

2.3 SUMMARY OF ACCOMPLISHMENTS

Table 5 summarizes the projects completed during the second annual BMAP reporting period. For the projects that could be quantified, these projects resulted in an estimated reduction of 122 lbs/yr of TN and 159 lbs/yr of TP. These reductions are in addition to those projects given credit at BMAP adoption.

TABLE 5: SUMMARY OF PROJECTS COMPLETED IN THE REPORTING PERIOD (MARCH 1, 2014–FEBRUARY 28, 2015) IN THE CENTRAL IRL

N/A = Not applicable

STAKEHOLDERS	PROJECT ZONE	PROJECT NUMBER	PROJECT NAME	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
FDOT 5	A	FDOTD5-16	Street Sweeping	18	12
Indian River County	B & SEB	IRC-9	Street Sweeping - additional reduction from increased miles swept	70	88
Palm Bay	A	PB-16	Street Sweeping - additional reduction from increased material collected	34	25
West Melbourne	A	WM-21	Street Sweeping - additional reduction from increased material collected	0	34
TOTAL	N/A	N/A	TOTAL REDUCTIONS IN REPORTING PERIOD	122	159

2.4 STREET SWEEPING

Since the adoption of the BMAP, the methodology for calculating nutrient load reductions using the Florida Stormwater Association’s assessment tool has been modified. Most of the street sweeping reductions in the first years of BMAP implementation were reported based on the old methodology. However, for this reporting period most street sweeping calculations were done using the newest methodology, which is available on the department’s [National Pollutant Discharge Elimination System \(NPDES\) Stormwater Program website](#). For the next reporting period, all stakeholders with a street sweeping program will be required to calculate street sweeping reductions based on the updated methodology, which is consistent with the requirements included in the MS4 permits.

2.5 FUNDING

2.5.1 BREVARD COUNTY

Brevard County received countywide appropriations from the 2014 Legislature of \$10 million to remove legacy muck deposits and \$410,000 for the restoration and evaluation of oyster reefs in the IRL. Appropriations were also awarded to the county of \$800,000 from the department (Grant S066) for the purchase of an aquatic vegetation harvester and harvesting activities, salary for an equipment operator, toxicity mapping by citizen scientists, and professional consulting and laboratory testing services to measure nutrient reduction. Brevard County received \$380,593 in departmental 319(h) grants for the Wheeler Fleming Grant Road wet detention pond (BC-13). The county also received departmental 319(h) grants for Micco/Little Hollywood exfiltration and second-generation baffle box in the amount of

\$340,375. Additional departmental 319(h) grants of \$117,000 were provided for the retrofit of four Type I baffle boxes, which are part of the countywide project to upgrade multiple baffle boxes. The county provided funds for the fabrication and installation of two 50 cfs pumps to increase redirection volume from the Melbourne Tillman WCD into the Sawgrass Lakes Water Management Area as part of the C-1 Rediversion Project.

2.5.2 INDIAN RIVER COUNTY

Indian River County received \$175,000 from the department (Grant S0733) for the replacement of the existing harvest screen at Egret Marsh Stormwater Park.

2.5.3 CITY OF VERO BEACH

The city of Vero Beach was awarded two departmental 319(h) grants of \$128,000 and \$96,000 for stormwater treatment improvements at Original Town and McAnsh Park, respectively. The improvements involved retrofitting existing inlets with Flexi®-Pave permeable pavement. The city also received a departmental TMDL grant of \$250,000 for the Lateral E Inlet Retrofit project. The city of Vero Beach was also awarded \$297,000 from the SJRWMD for the implementation of the STEP System Program (VB-5).

2.6 FERTILIZER ORDINANCES

Local governments located in the watershed of a waterbody or segment listed as impaired for nutrients are required to adopt, at a minimum, the department's model ordinance for Florida-friendly fertilizer use on urban landscapes (Section 403.067, F.S.). **Table 6** summarizes the status of ordinance development over the past year.

TABLE 6: SUMMARY OF FERTILIZER ORDINANCE DEVELOPMENT DURING THE REPORTING PERIOD IN THE CENTRAL IRL

STAKEHOLDERS	FERTILIZER ORDINANCE STATUS
Brevard County	Adopted
Indian River County	Adopted
City of Fellsmere	Adopted
City of Ft. Pierce	Adopted
City of Palm Bay	Adopted
City of Sebastian	Adopted
City of Vero Beach	Adopted
City of West Melbourne	Adopted
Town of Indialantic	Adopted
Town of Indian River Shores	Adopted
Town of Grant-Valkaria	Adopted
Town of Malabar	Adopted
Town of Melbourne Beach	Adopted
Town of Melbourne Village	Adopted
Town of Orchid	Adopted
St. Lucie County	Adopted

2.7 WATER QUALITY AND SEAGRASS MONITORING

The Indian River Farms WCD continued to monitor three quarterly water quality stations in the basin. The Sebastian River Improvement District continued quarterly sampling of one water quality station in the basin. The SJRWMD continued monthly sampling of 21 water quality stations in the Central IRL. The district also continued seagrass transect monitoring in the Central IRL for seagrass, phytoplankton, epiphyte coverage, and water quality. In addition, the department and SJRWMD are working with Dewberry, a consulting firm, to take the aerial photographs for the seagrass imagery analysis in April and/or May 2015. The mapped seagrass deep edge from the aerial imagery should be available in 2016 and will be used to update the seagrass deep edge evaluation.

Section 3: SEAGRASS DEPTH LIMIT TARGET EVALUATION

The goal of the TMDLs is to recover the deeper seagrass habitats, with the biological response of the seagrass being the most important factor in evaluating the success of achieving the TMDL targets. To assess progress in the IRL Basin towards the median seagrass depth limit target, a two-step process is used.

Step 1 in this process is a cumulative frequency distribution analysis. The four most recent mapped seagrass datasets from the SJRWMD are used to create a union coverage of the assessment years with Geographic Information System (GIS) software. Using this union coverage, a 15.8-meter buffer zone is applied to the perimeter of the coverage to establish the deep edge of the seagrass beds. This buffer coverage shows the deepest edge where seagrass grew at any time in the data period, and is used to create a cumulative frequency distribution curve of the depth at which seagrass are present in each project zone in the IRL Basin. This curve is then compared with the union coverage TMDL depth limit target curve. Compliance in Step 1 is achieved when at least 50% or more of the assessment years' frequency distribution curve (including the 50th percentile value) lies on or to the right of the TMDL depth limit target curve.

Step 2 is conducted by calculating the median seagrass depth for each year of the four most recent datasets. Each assessment year median is then compared with the TMDL median depth limit target. Three of the four assessment years' medians must meet or exceed the median TMDL to be Step 2 compliant. If the project zone is both Step 1 and Step 2 compliant, it is considered to be meeting the TMDL seagrass depth limit target. If the basin fails to meet either Step 1 or Step 2, it is not considered to be meeting the TMDL seagrass depth limit target for that set of assessment years.

The department conducted this two-step evaluation process using the 2007, 2009, 2011, and 2013 mapping years, which were the latest datasets available at the time of this analysis. For the Central IRL project zones, all three project zones were determined to be Step 1 (**Figure 6** through **Figure 8**) but not Step 2 compliant (**Table 7**). Therefore, BMAP stakeholders will continue to work towards achieving the seagrass depth limit targets.

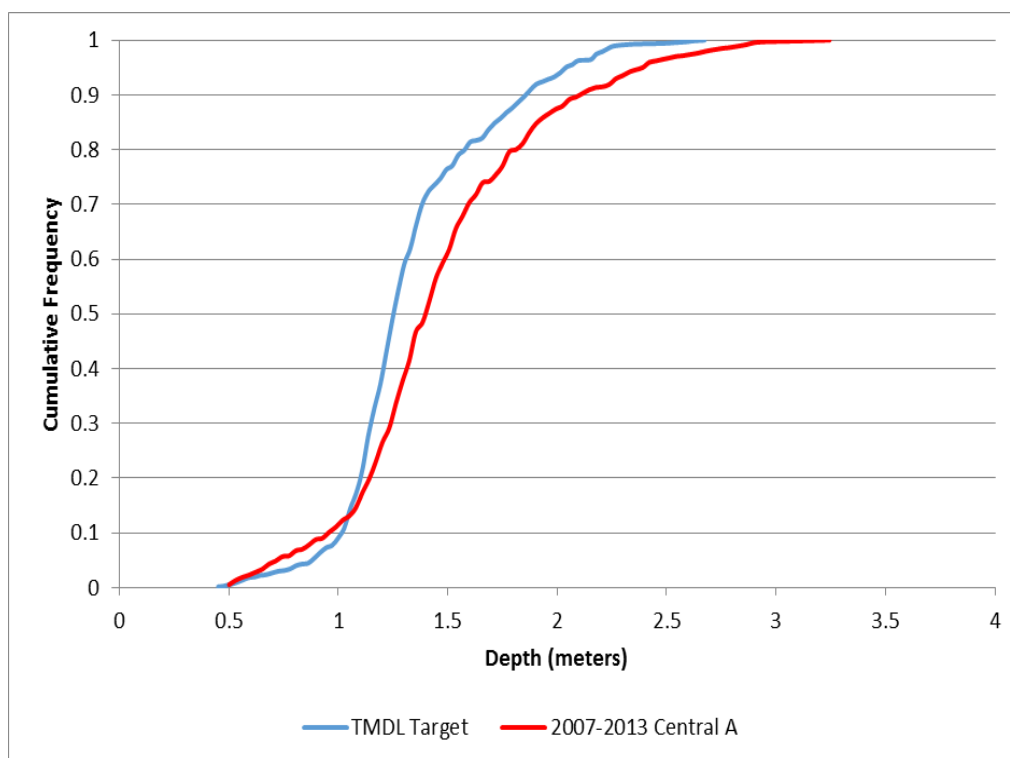


FIGURE 6: STEP 1 COMPLIANCE EVALUATION FOR THE CENTRAL A PROJECT ZONE FOR 2007–13

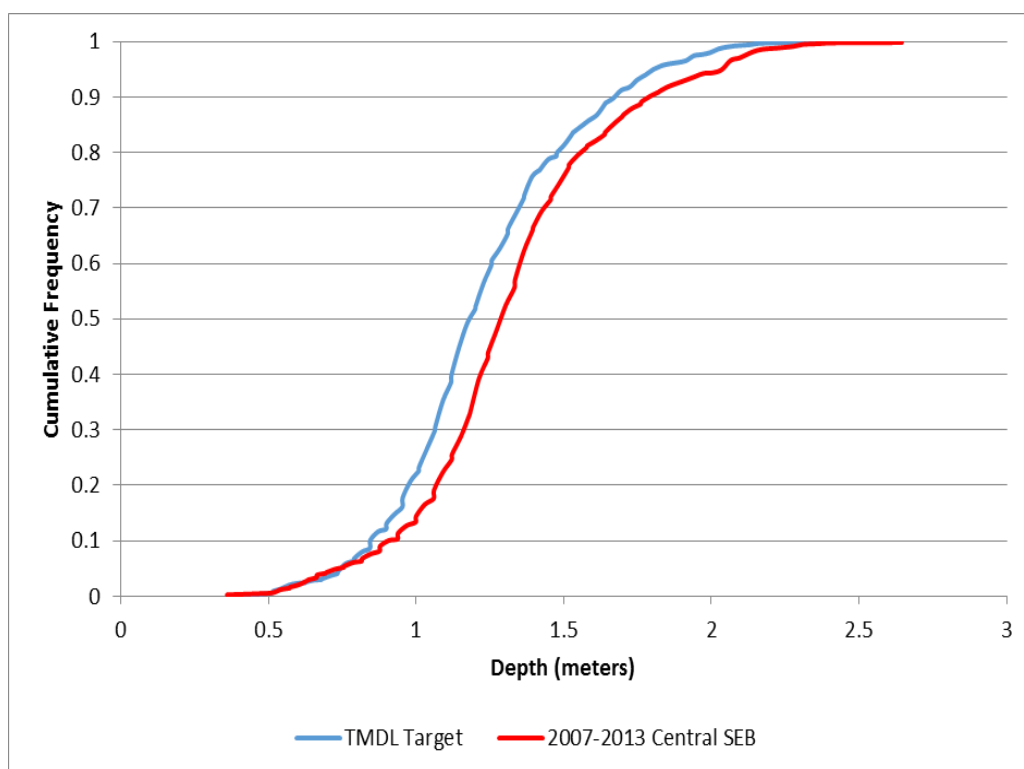


FIGURE 7: STEP 1 COMPLIANCE EVALUATION FOR THE CENTRAL SEB PROJECT ZONE FOR 2007–13

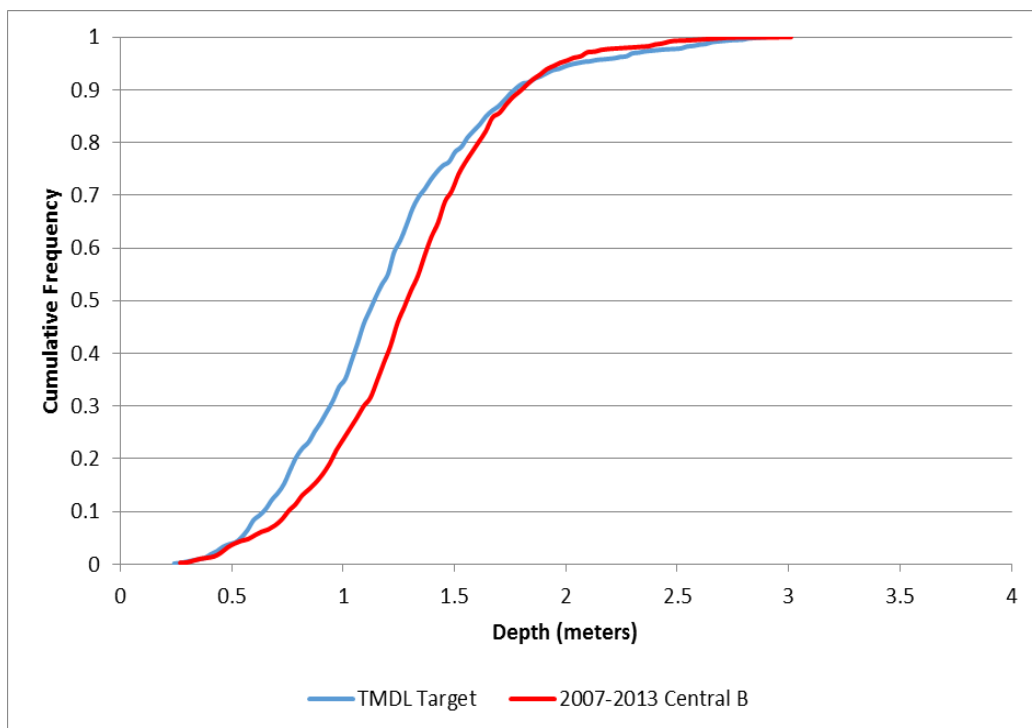


FIGURE 8: STEP 1 COMPLIANCE EVALUATION FOR THE CENTRAL B PROJECT ZONE FOR 2007–13

TABLE 7: STEP 2 COMPLIANCE EVALUATION FOR THE CENTRAL IRL SUBBASIN

Note: Boldface type and highlighting indicate years when the TMDL median depth limit target was achieved in the project zone.

YEAR	CENTRAL A MEDIAN DEPTH (METERS)	CENTRAL SEB MEDIAN DEPTH (METERS)	CENTRAL B MEDIAN DEPTH (METERS)
TMDL Median	1.27	1.20	1.15
2007	1.39	1.27	1.27
2009	1.32	1.27	1.24
2011	0.96	0.89	0.97
2013	1.14	.99	1.09
Step 2 Compliant?	No	No	No

Section 4: UPCOMING ACTIVITIES

4.1 ACTIVITIES IN THE UPCOMING REPORTING PERIOD

The third annual progress report will encompass the period from March 1, 2015, through February 29, 2016. **Section 4.1.1** through **Section 4.1.9** summarize the activities that will occur during this time.

4.1.1 BREVARD COUNTY

In 2015, the Brevard County muck dredging project will remove up to 350,000 cubic yards of muck soils from sites in the IRL, the BRL, and associated tributaries. Major components of the project include hydroacoustic surveying and subsurface mapping of muck; dredging design and permitting; sediment management design and permitting; dredging; sediment management operations; and site cleanup, restoration, and project closeout. Major project components will be carried out as necessary for each site location selected. Site-specific construction plans will be established to maximize the use of existing data and any previously issued authorizations. Project component costs will vary by location and will depend on muck volume, general local characteristics, and proximity to dewatering sites. State permits for removing major muck deposits from the Cocoa Beach site have been approved, and federal permits are pending with active dialogue on appropriate permit conditions. State and federal permits have been issued for the Turkey Creek site in Palm Bay. Bid document preparation is under way, with the project award anticipated in June 2015 at Turkey Creek. Cocoa Beach is also anticipated to go to bid with environmental dredging to begin in the late summer. The existing oyster gardening and reef building project will continue into 2015 and beyond. A grant from the SJRWMD will provide material costs to incorporate oysters gardened in 2016 and 2017 into living shoreline pilot projects.

The prioritization of the county's outfalls and the association of each outfall to its drainage basin will help focus the location of future water quality treatment projects in areas that will result in the highest pollutant removal potential. The county is developing a low-impact development (LID) manual illustrating typical retrofit ideas for commercial and industrial sites in the IRL's BMAP watersheds. The manual will be printed and distributed to local businesses, posted on the county's website, and presented at workshops aimed at a business audience to encourage the reduction of stormwater pollutants at the source. Street sweeping and BMP cleanout operations were contracted to vendors in early 2015 to maximize debris removal from county streets and drainage infrastructure. Managed aquatic plant systems (MAPS)—specifically, floating islands—will be installed in 10 ponds to enhance the load reductions of the existing treatment trains.

The construction of the 7.6-acre Wheeler Fleming Grant Road wet detention pond is under way and will be completed in 2015. Additionally, a layer of denitrification bioreactor media is being added to the perimeter slopes of the wet detention pond to increase treatment efficiency. The construction of the Micco I project, plus an amendment that adds a second-generation baffle box with denitrification bioreactor, is under way and will be completed in 2015. The C-1 redirection project will also be completed in 2015.

4.1.2 INDIAN RIVER COUNTY

The County Attorney's Office is working on the county's illicit discharge ordinance. No new regional stormwater treatment projects have been officially identified at this time.

4.1.3 CITY OF SEBASTIAN

The city of Sebastian's Tulip Drive drainage improvement is waiting to receive departmental 319(h) grants funds for drainage improvements and the creation of a wet retention basin for the project area. The project is pending the completion of design plans per the grant funds.

The IRL treatment trains drainage improvement will install treatment train with a nutrient-separating baffle box at the working waterfront drainage discharge into the IRL. The project is reducing pollutants from the existing discharge pipe. The project is currently in preliminary engineering and design.

4.1.4 FELLSMERE WCD

The South Regional Stormwater Lake project is in its final design and permitting phase (FWCD-8).

4.1.5 FDOT DISTRICT 4

In 2015, FDOT District 4 is scheduled to complete a 100% on-site retention pond and wet detention pond project (FDOT4-21 and FDOT4-29). District 4 is also scheduled to complete a swale project in 2016 (FDOT4-23).

4.1.6 SEBASTIAN RIVER IMPROVEMENT DISTRICT

The Indian River County Utility Department is working on an alternative water supply plan for meeting future water demands. It has identified potential reservoir sites in the Sebastian River Improvement District in the preliminary report.

4.1.7 TOWN OF INDIALANTIC

The town of Indialantic is working towards the completion of the Indialantic South Riverside Drive and 2nd Avenue/North Riverside Drive retention areas and adding an additional 284 linear feet of swale.

4.1.8 AGRICULTURE

FDACS will work to enroll additional producers in the BMP Program.

4.1.9 WATER QUALITY AND SEAGRASS MONITORING

The Indian River Farms WCD will continue to monitor three water quality stations, and the Sebastian River Improvement District will continue to sample one water quality station in the basin. The SJRWMD will continue to monitor 21 water quality stations and will continue seagrass transect monitoring in the basin. The department and SJRWMD will continue to work with the aerial photography contractor Dewberry on the 2015 seagrass aerial imagery, so that the seagrass target evaluation can be updated with the latest data.

4.2 MANAGEMENT STRATEGIES FOR THE SECOND BMAP ITERATION

The Central IRL BMAP stakeholders have begun planning management strategies to achieve additional TN and TP reductions for the second BMAP iteration. **Section 4.2.1** through **Section 4.2.11** summarize the strategies identified to date. It is important to note that the activities listed below are not BMAP requirements at this time but are provided to show that plans are under way to achieve additional nutrient reductions to benefit the Central IRL.

Cost-share funds for projects that reduce nutrient loading are available from the department through the 319(h) and TMDL Restoration Grant Programs. The department announces the availability of these funds to stakeholders and encourages local governments to use these programs to fund BMAP projects.

4.2.1 BREVARD COUNTY

Brevard County will continue to prioritize the treatment of the county's most polluting outfalls and all other ongoing activities, as described in **Section 4.1.1**. The county will work with the department to identify potential nontraditional and cost-effective BMPs and strategies to reduce loading to the lagoon.

4.2.2 INDIAN RIVER COUNTY

Indian River County is considering cleaning out the old sediment trap at the mouth of the Main Relief Canal that is full of sediment.

4.2.3 CITY OF FELLSMERE

The city of Fellsmere continues to plan for the implementation of the South Regional Lake project, which is a 40-acre wetland system to address untreated stormwater from the southeast residential areas of the city, and to develop treatment credits for other untreated areas. Another project being considered

in the Stormwater Greenway project, which would be a linear wetland system in place of existing conveyance ditches to provide treatment and storage credits for untreated areas.

4.2.4 CITY OF PALM BAY

The city of Palm Bay will update the department when more information becomes available.

4.2.5 CITY OF SEBASTIAN

The city of Sebastian will update the department when more information becomes available.

4.2.6 CITY OF VERO BEACH

The city of Vero Beach is exploring the option of adopting a Stormwater Utility. A Request for Qualifications (RFQ) has been sent out and will allow consultants who have experience in creating stormwater utilities to offer their services to the city.

4.2.7 CITY OF WEST MELBOURNE

The city of West Melbourne will update the department when more information becomes available.

4.2.8 TOWN OF INDIALANTIC

The town of Indialantic will update the department when more information becomes available

4.2.9 FDOT DISTRICT 4

FDOT District 4 will update the department when more information becomes available.

4.2.10 FDOT DISTRICT 5

FDOT District 5 will update the department when more information becomes available.

4.2.11 TURNPIKE AUTHORITY

The Turnpike Authority will update the department when more information becomes available.

4.2.12 FELLSMERE WCD

The Fellsmere WCD will update the department when more information becomes available.

4.2.13 INDIAN RIVER FARMS WCD

The Indian River Farms WCD will update the department when more information becomes available.

4.2.14 SEBASTIAN RIVER IMPROVEMENT DISTRICT

The Sebastian River Improvement District will update the department when more information becomes available.

Section 5: SOUTHERN IRL

5.1 BACKGROUND

While developing the Central IRL BMAP, the department identified a potential connection with the portion of the IRL located immediately to the south of the Central IRL subbasin, identified as WBID 3190. Drainage from the C-25 west and east segments (WBIDs 3160 and 3163B, respectively) and Fort Pierce Farm Canal (WBID 3163) drain to this segment of the IRL (see **Figure 19**). It appears that there is a hydrologic connection between WBID 3190 and WBID 5003B, which is the southernmost WBID in the Central IRL subbasin. Based on this connection, the department and the stakeholders in the southern IRL area agreed to include projects in the BMAP, as projects implemented in the southern IRL subbasin will benefit the Central IRL subbasin.

5.2 ACTIVITIES DURING THE REPORTING PERIOD

Section 5.2.1 and **Section 5.2.6** describe the accomplishments over the past year, and **Appendix A** includes the individual project tables. Projects include the city of Fort Pierce's increased street sweeping frequency and St. Lucie County's completion of the Taylor Creek restoration dredging project. For the projects that could be quantified, these projects resulted in an estimated reduction of 3,767 lbs/yr of TN and 2,887 lbs/yr of TP in the Southern IRL. The reductions are in addition to those projects given credit at BMAP adoption. The activities completed in the Central IRL are described separately in **Section 2**.

5.2.1 CITY OF FORT PIERCE

The city of Fort Pierce enhanced its street sweeping program (FP-5), increasing TN reductions by 4,331 lbs/yr and TP reductions by 2,887 lbs/yr. The city also continued its ongoing educational and outreach efforts (FP-7). The city has completed Phase I of the Veterans Park stormwater improvements (FP-8), with a bid to be placed for the completion of Phase II in 2015 (see **Figure 9**). The city has almost completed the construction of the Heathcote Botanical Gardens (Indian Hills Recreation Area) Stormwater Improvements (FP-1) (see **Figure 10** and **Figure 11**).



FIGURE 9: CITY OF FORT PIERCE VETERANS PARK PHASE I BIOSWALE



FIGURE 10: INDIAN HILLS RECREATION AREA LAKE EXPANSION—LITTORAL ZONE PLANTINGS AND OUTFALL STRUCTURE—PEDESTRIAN BRIDGE



FIGURE 11: INDIAN HILLS RECREATION AREA FLOATING ISLANDS AND INFLOW CANAL—PEDESTRIAN BRIDGE

5.2.2 FDOT DISTRICT 4

FDOT District 4 completed two swale projects (FDOT4-25 and FDOT4-26) in the southern IRL. In addition, District 4 provided information on two wet detention ponds (FDOT4-27 and FDOT4-28), which were previously completed but missing from the BMAP.

5.2.3 FORT PIERCE FARMS WCD

The Fort Pierce Farms WCD continued to implement the discharge criteria permit manual (FPF-3).

5.2.4 NORTH ST. LUCIE RIVER WCD

The North St. Lucie River WCD continued maintenance and canal cleaning efforts (NSLR-3) during the reporting period.

5.2.5 ST. LUCIE COUNTY

St. Lucie County completed the Taylor Creek restoration dredging project (SLC-5) (see **Figure 12**). This three-phase project was made possible by collaboration between St. Lucie County, the Florida Inland Navigation District, the SFWMD, the SJRWMD, and the Florida Seaport Transportation and Economic Development Council. The first phase of the plan included Taylor Creek–upstream reach, the pipeline route (**Figure 13**), and the St. Lucie County spoil site (**Figure 14**). Phase I was completed in May 2014. The second phase involved setting up the barge, creating a muck disposal plan and haul route, and creating the North County debris collection site for final disposal (**Figure 15** through **Figure 17**). Phase 2 was completed in December 2014. The third phase involved inlet maintenance dredging by the USACOE. A recent survey estimated that 400,000 cubic yards of sediment were removed. The inlet maintenance dredging was implemented in two phases. In Phase 1, completed in June 2014, beach-compatible sand was placed at the Jetty Park renourishment site. Phase 2, which involved placing sediment at an offshore disposal site, was completed in November 2014.



FIGURE 12: TAYLOR CREEK—PHASED PLANNING



FIGURE 13: PIPELINE ROUTE



FIGURE 14: ST. LUCIE COUNTY SPOIL SITE



FIGURE 15: TAYLOR CREEK—SETTING UP THE BARGE



FIGURE 16: MUCK DISPOSAL PLAN AND HAUL ROUTE AND FINAL DISPOSAL AT NORTH COUNTY DEBRIS COLLECTION SITE



FIGURE 17: INLET CHANNEL DREDGING AND JETTY PARK BEACH RENOURISHMENT

St. Lucie County continued to work on the 2nd Street improvements and reconstruction (**Figure 18**). The project includes the total reconstruction of the existing roadway, including new pavement and curbing, stormwater collection and treatment, water mains and sewer mains, natural gas mains, new electrical and streetlights, sidewalks and landscaping, and the construction of three stormwater ponds. Design plans are 100% complete and permits have been obtained. The interlocal agreement among St. Lucie County, Fort Pierce Utility Authority (FPUA), and city of Fort Pierce has been approved. The estimated cost of construction is \$6.5 million. The bid advertisement was completed in August 2014.



FIGURE 18: NORTH 2ND STREET PROJECT SITE LOCATION, FINAL DESIGN, AND PROPOSED DETENTION PONDS

St. Lucie County, based on its San Lucie Plaza Master Drainage Plan (SLC-7), is pursuing the grant funding and land acquisitions needed. The project will provide stormwater management, water quality treatment, and paved roads to a 175-acre single-family residential neighborhood draining to the IRL via SFWMD Canal C-25. The county also continued public educational and outreach efforts (SLC-1) as well as its oyster reef program.

5.2.6 WATER QUALITY AND BIOLOGICAL MONITORING

The Fort Pierce Farms WCD continued to monitor five quarterly water quality stations, and the North St. Lucie River WCD continued to monitor one quarterly water quality station in the basin. The SFWMD continued monitoring four water quality stations. Monitoring of the two flow stations in the basin has been discontinued. In addition, the SFWMD continued seagrass transect monitoring in the southern IRL to collect data about the seagrass, phytoplankton, epiphyte coverage, and water quality along each transect. **Table 8** summarizes the parameters being monitored by the SFWMD.

TABLE 8: SFWMD WATER QUALITY MONITORING

PARAMETER STATUS	NAME
Current	Ammonia Color Conductivity Dissolved Oxygen (DO) Nitrate + Nitrite Nitrite Orthophosphate pH Salinity Temperature TP Total Suspended Solids (TSS) Turbidity Volatile Suspended Solids
Removed	Total Kjeldahl Nitrogen (TKN) Nitrate
New	Chlorophyll Photosynthetically Active Radiation (PAR) Secchi Depth TN Silica Total Organic Carbon (TOC)

5.2.7 AGRICULTURE

FDACS currently has two field staff and two contracted staff in the SJRWMD, working in more than a dozen basins with adopted BMAPs. In the Southern IRL, FDACS enrolled 1,561 acres of a dairy under the Conservation Plan Rule. Increases in enrolled acreage in cow/calf and citrus were observed, and the acreage enrolled in the container nursery manual decreased. These shifts are likely due to changes in parcel information. **Table 9** summarizes BMP enrollment for the Southern IRL based on 2008 land use data, and **Table 10** provides a 2015 summary.

TABLE 9: AGRICULTURAL ACREAGE AND BMP ENROLLMENT FOR THE SOUTHERN IRL

N/A = Not applicable

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 The land use acres for dairies represent only the high-intensity areas, while the NOIs also typically include all associated grazed pastureland. However, since it is impossible for FDACS' Office of Agricultural Water Policy (OAWP) staff to accurately break down the high-intensity acreage and pasture acreage in every dairy conservation plan, the enrolled dairy acres are all shown here.

2008 SFWMD LAND USE	2008 ACRES	FDACS-ADJUSTED ACRES FOR ENROLLMENT ¹	RELATED FDACS' BMP PROGRAMS	ACREAGE ENROLLED	RELATED NOIs
Pasture	32,469.4	32,469.4	Cow/Calf; Future (hay)	19,543.7	11
Row/Field/Mixed Crops	3,758.8	3,758.8	Vegetable/Agronomic Crops	0.0	N/A
Horse Farm	86.7	86.7	Equine	0.0	N/A
Citrus	63,383.8	33,936.0	Ridge Citrus; Flatwoods Citrus	39,001.5	114
Abandoned Citrus	4,003.6	N/A	No enrollment needed	N/A	N/A
Tree Crops	223.7	223.7	Specialty Fruit and Nut	255.1	1
Ornamentals	299.6	299.6	Container Nursery	380.4	7
Specialty Farms	14.8	14.8	Conservation Plan Rule	0.0	N/A
Dairies ²	751.7	751.7	Lake Okeechobee Protection Plan/Conservation Plan Rule	7,249.2	4
TOTAL	104,992	71,541	N/A	66,430	137

TABLE 10: BMP ENROLLMENT SUMMARY FOR THE SOUTHERN IRL

CATEGORY	ACRES
FDACS' Five-Year Enrollment Goal (50%)	64,386.6
Acreage Enrolled as of March 1, 2015	66,429.9
REMAINING ACRES TO ENROLL TO REACH GOAL	0.0

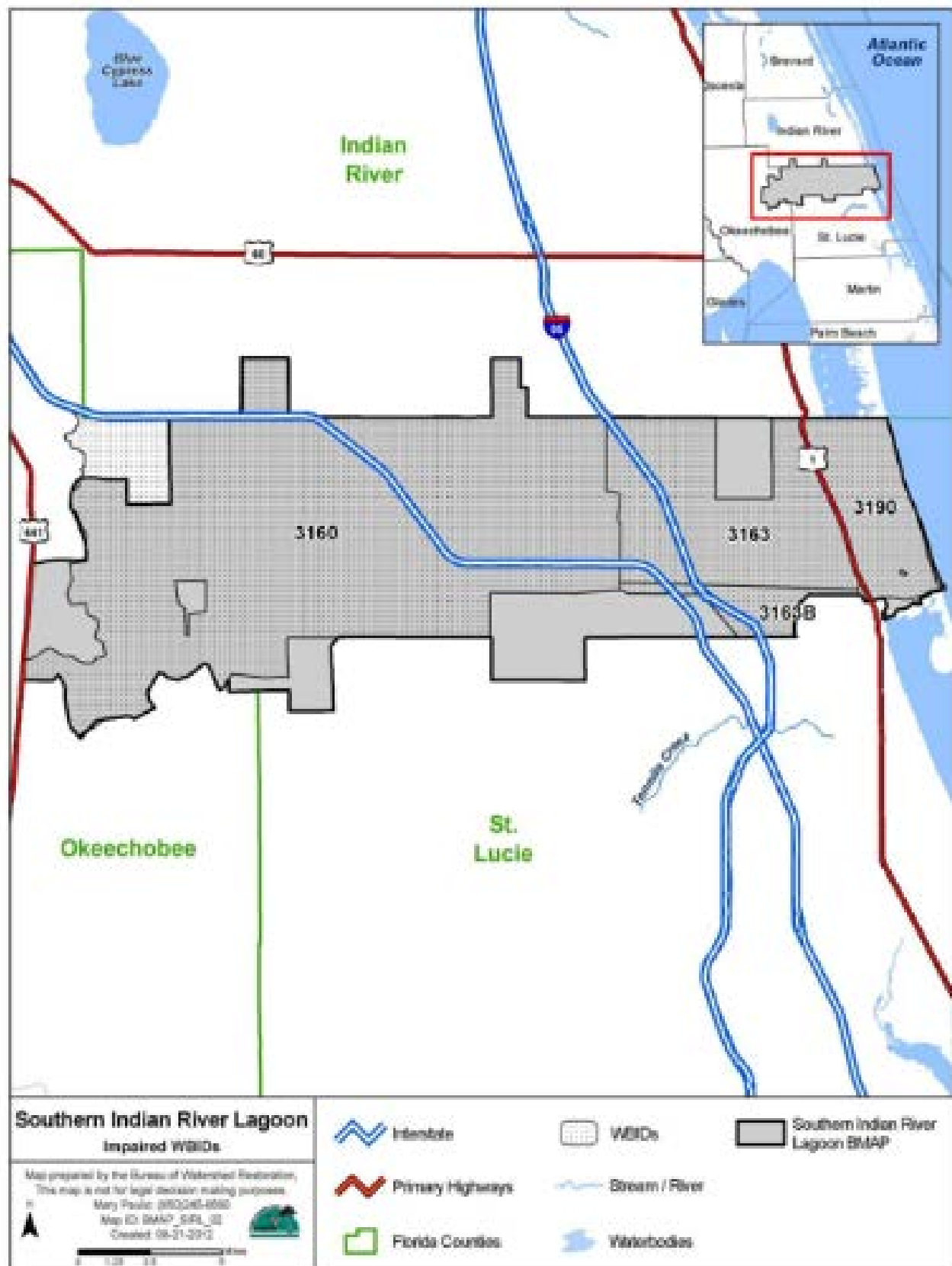


FIGURE 19: SOUTHERN IRL BASIN

5.3 ACTIVITIES IN THE UPCOMING REPORTING PERIOD FOR THE SOUTHERN IRL

5.3.1 CITY OF FORT PIERCE

The city of Fort Pierce has secured funding for the construction of an outfall control structure for the Georgia Avenue drainage basin. The project involves retrofitting an uncontrolled 60-inch discharge pipe from a 217-acre urbanized drainage basin that discharges directly to the Indian River. The project will entail the construction of a control structure to control the discharge rate, the construction of two nutrient-separating baffle boxes on the two major inlets to the existing lake, and the installation of natural rip-rap stone for erosion protection at the outfall canal.

5.3.2 ST. LUCIE COUNTY

Paradise Park Stormwater Improvement (SLC-3) Phase IV is scheduled to begin in fall of 2015. This project will provide stormwater management, water quality treatment, and paved roads to 55 acres of this 171-acre single-family, residential neighborhood draining to the IRL via Canal C-25.

5.3.3 WATER QUALITY AND BIOLOGICAL MONITORING

The Fort Pierce Farms WCD will continue to monitor five quarterly water quality stations, the North St. Lucie River WCD will continue to monitor one quarterly water quality station, and the SFWMD will continue to monitor four water quality stations and two flow stations. The SFWMD will also continue seagrass transect monitoring in the southern IRL.

5.3.4 ACCOMPLISHMENTS IN THE SOUTHERN IRL

Table 11 summarizes the projects completed during the second annual BMAP reporting period. The projects that could be quantified resulted in an estimated reduction of 3,767 lbs/yr of TN and 2,887 lbs/yr of TP. These reductions are in addition to those projects estimated for credit at BMAP adoption.

TABLE 11: SUMMARY OF PROJECTS COMPLETED IN THE REPORTING PERIOD (MARCH 1, 2014–FEBRUARY 28, 2015) IN THE SOUTHERN IRL

N/A = Not applicable

STAKEHOLDER	PROJECT NUMBER	PROJECT NAME	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
St. Lucie County	SLC-5	Taylor Creek Restoration Dredging Project	Not quantified	Not quantified
City of Fort Pierce	FP-5	Street Sweeping - additional reduction from increased material collected	4,331	2,887
TOTAL	N/A	TOTAL REDUCTIONS IN REPORTING PERIOD	4,331	2,887

5.4 MANAGEMENT STRATEGIES FOR THE SECOND BMAP ITERATION IN THE SOUTHERN IRL

5.4.1 FORT PIERCE FARMS WCD

The Fort Pierce Farms WCD will update the department when more information becomes available.

5.4.2 NORTH ST. LUCIE RIVER WCD

The North St. Lucie River WCD will update the department when more information becomes available.

5.4.3 ST. LUCIE COUNTY

St. Lucie County is working towards the implementation of the North Hutchinson Island Septic Removal Project, which would address 578 remaining on-site treatment and disposal systems (OSTDS) in four neighborhoods. These OSTDS would be connected to publicly owned treatment works (POTW). The county is also seeking to integrate future reverse osmosis (RO) plant effluent into existing and future mosquito impoundment functions at the North County Regional Treatment Wetland.

APPENDIX A: BMAP PROJECTS

The BMAP project tables below show the implementation status of the BMAP projects as of February 28, 2015. The tables provide information on the nutrient reduction attributed to each individual project, listed in lbs/yr. These projects were submitted to provide reasonable assurance to the department that each stakeholder has a plan on how it will meet its allocation; however, this 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 time frame.

Since the adoption of the BMAP, the methodology for calculating nutrient load reductions using the Florida Stormwater Association assessment tool has been modified. Street sweeping reductions in the first year of BMAP implementation were reported based on the old methodology. This reporting period, most street sweeping calculation were calculated based on the new reporting method.

TABLE A-1: BREVARD COUNTY PROJECTS IN THE CENTRAL IRL

N/A = Not applicable; TBD = To be determined

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	TREATMENT ACRES	PROJECT COST	ANNUAL OPERATIONS AND MAINTENANCE (O&M)	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
BC-1	Tadlock and Goat Creek Baffle Box	Baffle box	Central A	22.1	\$43,811	N/A	2000	Completed	1	0.4
BC-2	Oak Street Drainage Improvements	Swale, baffle box	Central A	0.3	\$660,285	N/A	2003	Completed	1	0.2
BC-3	Melbourne Shores Ponds	Pond	Central A	135.9	\$939,543	N/A	2004	Completed	156	48.4
BC-4	Church Street Pond Cleanout	BMP cleanout	Central SEB	172.1	Unknown	N/A	2012	Completed	137	25.5
BC-5	Educational Efforts	FYN, fertilizer and pet waste ordinances, public service announcements (PSAs), pamphlets, website, illicit discharge program	County-wide	N/A	Unknown	N/A	Ongoing	Ongoing	Not quantified	Not quantified
BC-6	Street Sweeping	Street sweeping	Central A	N/A	Unknown	N/A	Ongoing	Ongoing	60	26.9
BC-7	Valkaria Lakes	Wet detention pond	Central A	457.7	\$261,000	N/A	2014	Completed	700	166.1
BC-8	Wheeler Properties	Wet detention pond	Central SEB	16,403.5	\$3,500,000	\$2,000	2018	Planned, partially funded	28,760	9,259.6
BC-9	Micco I	Exfiltration	Central SEB	7.6	\$175,599	\$1,000	2015	Started	92	10.0
BC-10	Micco B	Dry detention pond	Central SEB	44.7	\$846,176	\$1,000	N/A	Planned, funded	23	4.2
BC-11	Mockingbird Pond	MAPS	Central SEB	26.7	\$12,401	\$5,565	2015	Funded	27	3.3
BC-12	Church Street Pond MAPS	MAPS	Central SEB	172.1	\$4,212	\$2,106	2010	Completed	217	37.1
BC-13	Wheeler Flemming Grant	Wet detention pond	Central SEB	134.4	\$645,073	\$2,000	2015	Started	745	316.5
BC-14	Fountainhead	Vegetation harvesting	Central A	7.7	\$39,274	TBD	October 2013	Completed	489	79.1

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	TREATMENT ACRES	PROJECT COST	ANNUAL OPERATIONS AND MAINTENANCE (O&M)	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
BC-15	Corey Road at Hall	Type 1 baffle box retrofit	Central A	51.8	\$12,507	TBD	2015	Started	36	2.8
BC-16	430 Riverview	Type 1 baffle box retrofit	Central A	7.5	\$30,508	TBD	2015	Started	7	0.7
BC-17	C-1 Rediversion	Canal rediversion	Central A	53,777	\$531,051	Funded by SJRWMD	2015	Started	TBD	TBD
BC-18	Baffle Box/Sediment Trap Cleaning increasing to quarterly	BMP cleanout	Central A	N/A	N/A	N/A	2015	Started	1	1

TOTAL PROJECT REDUCTIONS: 31,452 LBS/YR TN AND 9,982 LBS/YR TP

TABLE A-2: CITY OF FELLSMERE PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	TREATMENT ACRES	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
F-1	State Street Improvements and Stormwater Lake Project	Wet detention pond	Central SEB	Swale and wet retention pond	49.6	Unknown	Completed	71.5	19.9
F-2	Senior League Field Park Improvements	Wet detention pond	Central SEB	Swale and wet retention pond	11.5	2008	Completed	1	0.1
F-3	City Hall/Orange Street Project	Wet detention pond	Central SEB	Swale and wet retention pond	7.6	Unknown	Envisioned, not funded	8	2.6
F-4	Sunrise Apartments Phase 1 & 2	Wet detention pond	Central SEB	Swale and wet retention ponds	36.2	2009	Completed	18	7.4
F-5	Grace Meadows Subdivision	Wet detention pond	Central SEB	Wet pond	18.3	2009	Completed	4.5	1.5
F-7	Solid Waste Transfer Station	Wet detention pond	Central SEB	Wet pond	5.1	2008	Completed	1	0.3
F-8	Fertilizer Ordinance	Educational efforts	Central SEB	Fertilizer ordinance	N/A	2013	Completed	Not quantified	Not quantified

TOTAL PROJECT REDUCTIONS: 104 LBS/YR TN AND 32 LBS/YR TP

TABLE A-3: CITY OF MELBOURNE PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
MEL-1	Fee & Apollo Drainage Improvements	Wet detention pond	Central A	Retrofit wet detention pond. No treatment is provided in existing development.	77.0	\$525,161	2011	Completed	37	92.4

TOTAL PROJECT REDUCTIONS: 37 LBS/YR TN AND 92 LBS/YR TP

TABLE A-4: CITY OF PALM BAY PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
PB-1	Basin 11	Dredging	Central A	Dredge 8,100 feet of canal and retention pond, replace culverts (7)	N/A	\$1,866,695	2009	Completed	Not quantified	Not quantified
PB-2	Chace Lane Pond Modifications	Dry detention pond	Central A	Work includes repair of existing outfall structures and washout, installation of large concrete weir	91.2	\$20,290	2001	Completed	62	8.3
PB-3	Glenham Drive Sidewalks Improvements	Dry detention pond	Central A	Replace sidewalk and addition of dry pond	12.2	Unknown	Unknown	Completed	9	1.4
PB-4	Basin 7 Stormwater Improvements Phase II	Wet detention pond	Central A	Construct pond on eight-acre site	146.5	\$79,109	2009	Completed	387	124
PB-5	Boundary Canal Trail Phase 3	Baffle box	Central A	Add baffle box	365.9	Unknown	Unknown	Completed	609	73.4
PB-6	Boundary Canal Phase II, stormwater improvement	Retention BMP	Central A	Install berm and pipe in canal for additional treatment	632.7	Unknown	Unknown	Completed	1,633	176.1
PB-7	Boundary Canal Phase I Baffle Box Installation	Baffle box	Central A	Install three-chambered baffle box prior to discharge to Turkey Creek	632.7	Unknown	Unknown	Completed	395	31.2
PB-8	Norwood Street Baffle Box Installation	Baffle box	Central A	Install baffle boxes to minimize sediment introduction to C-1 Canal	17.4	Unknown	Unknown	Completed	1,001	148.7
PB-9	Basin 1 Drainage Improvements (East of US 1)	Wet detention pond	Central A	Construct pond on 1.5 acres of site	136.5	\$22,247	2007	Completed	33	5.9

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
PB-10	Basin 13 Stormwater Improvements	Wet detention pond	Central A	Construct wet detention pond off of Hardin Lane, west of Sandy Lane	42.4	\$200,419	2006	Completed	65	12.2
PB-11	Powell's Subdivision Paving & Drainage Improvements	Wet detention pond	Central A	Create pond to manage stormwater	123.6	\$147,478	2000	Completed	124	53.9
PB -12	Port Malabar Unit 40 Drainage Improvements	Wet detention pond	Central A	Construct three retention ponds	224.3	\$23,778	2007	Completed	468	109.6
PB-13	Mandarin Ditch (South)	Swales	Central A	Remove deleterious material from existing swale, replace with clean fill stabilized with turf reinforcement mat and sod	73.0	\$308,797	2006	Completed	285	39.6
PB-14	Basin 3 Main Street Parking Lot	Pervious pavement	Central A	Install parking lot in Main Street right-of-way utilizing porous concrete pavement	358.6	\$4,845	2008	Completed	984	128.6
PB-15	Basin 3 Main Street Improvements Channel Alignment	Other structural BMPs	Central A	Install weirs for treatment and attenuation, with slopes being stabilized with turf reinforcement mat.	358.6	\$403,561	2010	Completed	1,475	192.8
PB-16	Street Sweeping	Street sweeping	Central A	Street sweeping	N/A	\$8,900 per year	Ongoing	Ongoing	57	36
PB-17	Turkey Creek Maintenance Dredging	Dredging	Central A	Dredging	N/A	\$255,241	2007	Completed	Not quantified	Not quantified
PB-18	Turkey Creek Maintenance Dredging - Sump	Dredging	Central A	Dredging	N/A	Unknown	Unknown	Completed	Not quantified	Not quantified
PB-19	Anglers Drive	Baffle box	Central A	Baffle box	19.1	\$85,000	2008	Completed	19	2.1
PB-20	Worth Court	Inlet inserts	Central A	Inlet inserts	N/A	Part of PB-19	Unknown	Completed	1	0

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
PB-21	Basin 9 (Harris Pond)	Wet detention pond	Central A	Wet pond	73.0	\$294,519	2011	Completed	4	0.6
PB-22	Wild Rose BMP	Baffle box	Central A	Baffle box	4.6	Unknown	Unknown	Completed	5	0.5
PB-23	C-1 Canal Rediversion	Rediversion	Central A	Canal rediversion	N/A	Unknown	Unknown	Completed	Not quantified	Not quantified
PB-24	Port Malabar Inlet Inserts	Inlet inserts	Central A	Inlet inserts	N/A	\$19,518	2010	Completed	2	1
PB-25	Kent Street Baffle Box	Baffle box	Central A	Baffle box	20.8	\$50,000	2009	Completed	31	3.4
PB-26	Florin Pond	Dry detention pond	Central A	Dry pond	25.9	\$150,000	2000	Completed	26	5.9
PB-27	Education	Educational Efforts	Central A	FYN, ordinances, pamphlets, PSAs, website, illicit discharge program	N/A	\$1,866,695	Ongoing	Ongoing	Not quantified	Not quantified

TOTAL PROJECT REDUCTIONS: 7,675 LBS/YR TN AND 1,155 LBS/YR TP

TABLE A-5: CITY OF SEBASTIAN PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	TREATMENT ACRES	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
SEB-1	Main Street/Indian River Drive Improvements	Dry retention pond	Central SEB	4.19	2009	Completed	66	17.3
SEB-3	T-Hangar Development/Access Roads	Dry detention pond	Central SEB	11.56	2004	Completed	1	0.1
SEB-4	Louisiana Avenue Improvements Projects	Dry retention pond	Central SEB	3.08	2004	Completed	0	0.1
SEB-5	Twin Ditches Stormwater Retrofit	Wet detention pond	Central SEB	39	2007	Completed	209	105.5
SEB-6	Indian River Drive & Davis Street Baffle Box	Baffle box	Central SEB	96	2009	Completed	38	5.7
SEB-7	Periwinkle Drive Stormwater-City of Sebastian	Wet detention pond	Central SEB	67.6	2008	Completed	4	0.7
SEB-8	Collier Canal Stormwater Retrofit	Wet detention pond	Central SEB	531.6	2010	Completed	1,529	387.8
SEB-9	Schumann Park Improvements	Dry detention pond	Central SEB	3.8	2009	Completed	1	0.1
SEB-10	Fertilizer Ordinance	Educational efforts	Central SEB	N/A	Ongoing	Ongoing	Not quantified	Not quantified
SEB-11	Airport Drive	Baffle box	Central SEB	5	Unknown	Cancelled	Not quantified	Not quantified
SEB-12	Presidential Streets	Baffle box	Central SEB	15	February 2015	Started	Not quantified	Not quantified
SEB-13	Powerline Road	Baffle box	Central SEB	2	December 2013	Completed	Not quantified	Not quantified
SEB-14	Step Septic System	Septic tank improvement	Central SEB	N/A	Unknown	Cancelled	Not quantified	Not quantified

TOTAL PROJECT REDUCTIONS: 1,848 LBS/YR TN AND 517 LBS/YR TP

TABLE A-6: CITY OF VERO BEACH PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	TREATMENT ACRES	PROJECT COST	ANNUAL O&M	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
VB-1	Date Palm Baffle Box	Baffle box	Central B	6.7	\$186,396	\$1,000	2010	Completed	9	1.0
VB-2	10 th and 12 th Avenue Baffle Boxes	Baffle box	Central B	69.9	\$97,800	\$2,000	2011	Completed	127	17.5
VB-3	Greytwig Baffle Box	Baffle box	Central B	9.8	\$75,000	\$1,000	2011	Completed	21	2.4
VB-4	Fertilizer Ordinance	Educational Efforts	Central B	N/A	Unknown	Unknown	Ongoing	Ongoing	Not quantified	Not quantified
VB-5	Step Septic System	Septic tank improvement	Central B	N/A	\$500,000	N/A	N/A	Started	Not quantified	Not quantified

TOTAL PROJECT REDUCTIONS: 157 LBS/YR TN AND 21 LBS/YR TP

TABLE A-7: CITY OF WEST MELBOURNE PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	TREATMENT ACRES	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
WM-1	Westbrooke	Wet detention pond	Central A	169.0	2004	Completed	41	4.3
WM-2	Saddlebrook	Wet detention pond	Central A	40.2	2004	Completed	1	0.2
WM-3	Stratford Point	Wet detention pond	Central A	83.7	2004	Completed	25	3.1
WM-4	Oak Grove	Wet detention pond	Central A	91.4	2010	Completed	22	2.2
WM-5	Manchester Lakes	Wet detention pond	Central A	133.3	2007	Completed	16	1.1
WM-6	Havens at Riviera	Wet detention pond	Central A	22.9	2009	Completed	6	0.6
WM-7	Cypress/Creek Imagine Schools	Wet de tention pond	Central A	72.0	2009	Completed	15	1.7
WM-8	Lynnwood	Wet detention pond	Central A	28.3	2006	Completed	2	0.6
WM-9	Coastal Commerce	Wet detention pond	Central A	59.9	2009	Completed	18	2.7
WM-10	Hammock Landing	Wet detention pond	Central A	76.1	2009	Completed	11	0.8
WM-11	Crystal Lakes	Wet detention pond	Central A	91.0	2009	Completed	17	6.4
WM-12	Orange View Drive	2 nd generation baffle box	Central A	49.1	Unknown	Completed	69	8
WM-13	Stephenson Drive	2 nd generation baffle box	Central A	14.1	Unknown	Completed	21	2.6
WM-14	Parker Road	2 nd generation baffle box	Central A	13.1	Unknown	Completed	17	1.9
WM-15	Laila Drive	2 nd generation baffle box	Central A	21.9	Unknown	Completed	31	3.5
WM-16	Doherty Drive	2 nd generation baffle box	Central A	66.0	Unknown	Completed	107	16.5
WM-17	Trend Road	2 nd generation baffle box	Central A	8.8	Unknown	Completed	12	1.4
WM-18	San Paolo	2 nd generation baffle box	Central A	2.7	Unknown	Completed	8	1.5
WM-19	San Paolo West	2 nd generation baffle box	Central A	7.7	Unknown	Completed	24	4.8
WM-20	John Carrol	2 nd generation baffle box	Central A	74.9	Unknown	Completed	109	12.3
WM-21	Street Sweeping (318 tons)	Street sweeping	Central A	N/A	Ongoing	Ongoing	337	116
WM-22	Inlet Cleaning (730 lbs)	Inlet cleaning	Central A	N/A	Ongoing	Ongoing	0	0

TOTAL PROJECT REDUCTIONS: 909 LBS/YR TN AND 192 LBS/YR TP

TABLE A-8: FDOT DISTRICT 4 PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

Notes: FDOT4-18: Revised treatment acres because area originally provided consisted of predevelopment characteristics; revised acreage consists of the proposed roadway area.

FDOT4-19: Treatment acreage was revised because it does not match permit information. The revised treatment acres include the total acreage of Basins 1 to 9.

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	TREATMENT ACRES	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
FDOT4-1	FM# 228595-1 (Basin 4B)	Wet detention pond	Central SEB	57.6	2007	Completed	83	30.3
FDOT4-2	FM# 228620-1	100% on-site retention	Central SEB	2.2	2005	Completed	24	3.4
FDOT4-3	FM# 228615-1	2 nd generation baffle box	Central B	59.8	2007	Completed	117	33.2
FDOT4-4	FDOT4 Street Sweeping	Street sweeping	Central SEB and B	N/A	Ongoing	Ongoing	237	151.8
FDOT4-5	FM# 228583-5 (Pond 1)	Wet detention pond	Central B	22.4	2010	Completed	65	41.6
FDOT4-6	FM# 228583-5 (Pond 2)	Wet detention pond	Central B	11.9	2010	Completed	25	15.8
FDOT4-7	FM# 228627-1 (Pond 1)	Wet detention pond	Central B	28.9	2010	Completed	83	51.7
FDOT4-8	FM# 228627-1 (Pond 2)	Wet detention pond	Central B	21.6	2010	Completed	61	38.6
FDOT4-9	Pamphlets and illicit discharge program	Educational efforts	Central SEB and B	N/A	Ongoing	Ongoing	Not quantified	Not quantified
FDOT4-10	Fertilizer Cessation	Fertilizer cessation	Central SEB and B	N/A	Unknown	Completed	Not quantified	Not quantified
FDOT4-18	FM# 228583-3 (State Road [SR] 5/ US-1)	Wet detention pond	Central B	11.6	March 2007	Completed	Not quantified	Not quantified
FDOT4-19	FM#: 230873-1 (27 th Avenue Reconstruction)	100% on-site retention	Central B	72.80	September 2002	Completed	Not quantified	Not quantified
FDOT4-20	FM#: 229966-1 (SR A1A at the Moorings)	Swales	Central B	1.29	April 2006	Completed	Not quantified	Not quantified
FDOT4-21	FM#: 413048-1 (Interstate 95 from St. Lucie/Indian River County Line to North of SR 60)	100% on-site retention	Central B	70.02	July 2015	Started	Not quantified	Not quantified

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	TREATMENT ACRES	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
FDOT4-22	FM# 411476-1 (Sebastian River Bridge Replacement Project)	Swales	Central SEB	.48	August 2009	Completed	Not quantified	Not quantified
FDOT4-23	FM# 413049-2	Swales	Central SEB	77.26	2016	Started	Not quantified	Not quantified
FDOT4-29	FM# 228583-2 US 1 Widening (Pond 3)	Wet detention pond	Central SEB	39.78	July 2015 expected	Started	Not quantified	Not quantified

TOTAL PROJECT REDUCTIONS: 695 LBS/YR TN AND 366 LBS/YR TP

TABLE A-9: FDOT DISTRICT 5 PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	TREATMENT ACRES	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
FDOTD5-1	D5_70010-3528-01	Wet detention pond	Central A	Add lanes/reconstruct SR 5 from Conlan Boulevard to University Boulevard	15.6	2002	Completed	44.4	22.85
FDOTD5-2	D5_70010-3528-02	Wet detention pond	Central A	Add lanes/reconstruct SR 5 from Conlan Boulevard to University Boulevard	8.4	2002	Completed	14.4	6.7
FDOTD5-3	D5_70012-3503-01 (Missing from model)	Wet detention pond	Central A	Add lanes/reconstruction of SR 507 (Babcock Street) from south of SR 514 to Port Malabar Boulevard	21.7	1989	Completed	56.7	25.75
FDOTD5-4	D5_70012-3503-02 (Missing from model)	Wet detention pond	Central A	Add lanes/reconstruction of SR 507 (Babcock Street) from south of SR 514 to Port Malabar Boulevard	9.1	1989	Completed	22.5	12.45
FDOTD5-5	D5_70012-3503-03 (Missing from model)	Dry detention pond	Central A	Add lanes/reconstruction of SR 507 (Babcock Street) from south of SR 514 to Port Malabar Boulevard	7.3	1989	Completed	14.1	7.85
FDOTD5-6	D5_70050-3544-03	Wet detention pond	Central A	Add lanes and reconstruct from 3.8 miles east of Osceola centerline to Interstate 95	5.1	2004	Completed	11.7	3.8
FDOTD5-7	D5_70100-3517-01 (Missing from model)	100% on-site retention	Central A	French drain system along SR 5 from University Boulevard to Aurora Road	3.4	1996	Completed	12	6.7
FDOTD5-8	D5_70220-3433-01	Wet detention pond	Central A	Interchange work at SR 514 and Interstate 95	9.3	2000	Completed	33.3	13.65
FDOTD5-9	D5_70220-3429-01 (Missing from model)	Wet detention pond	Central A	Interstate 95 and Palm Bay Road interchange	20.0	1995	Completed	49.2	32.35
FDOTD5-10	D5_70220-3429-02 (Missing from model)	Wet detention pond	Central A	Interstate 95 and Palm Bay Road interchange	25.6	1995	Completed	62.4	39.3
FDOTD5-11	D5_70220-3429-03 (Missing from model)	Wet detention pond	Central A	Interstate 95 and Palm Bay Road interchange	26.1	1995	Completed	60.6	37

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	TREATMENT ACRES	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
FDOTD5-12	D5_70220-3429-04 (Missing from model)	Wet detention pond	Central A	Interstate 95 and Palm Bay Road interchange	21.7	1995	Completed	51.3	30.55
FDOTD5-13	D5_409034-01	100% on-site retention	Central A	Drainage improvements at SR A1A; French drain located on southwest corner of US 192 and Miramar Avenue (A1A)	0.4	2005	Completed	1.2	0.85
FDOTD5-14	Education	Educational efforts	Central A	Illicit discharge program, pamphlets, flyers	N/A	Ongoing	Ongoing	Not quantified	Not quantified
FDOTD5-15	Fertilizer Cessation	Fertilizer cessation	Central A	Elimination of fertilizer use on rights-of-way	N/A	2005	Completed	1,586	0.0
FDOTD5-16	FDOT5 Street Sweeping	Street sweeping	Central A	Street sweeping	N/A	Ongoing	Ongoing	18	12

TOTAL PROJECT REDUCTIONS: 2,037 LBS/YR TN AND 252 LBS/YR TP

TABLE A-10: FELLSMERE WCD PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	TREATMENT ACRES	ANNUAL O&M COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
FWCD-1	Sonrise Villas	Wet detention pond	Central SEB	13.6	Unknown	2003	Completed	11	4.5
FWCD-2	St. Johns Land Purchase	Change in land use	Central SEB	2,390.6	Unknown	Ongoing	Ongoing	Not quantified	Not quantified
FWCD-3	Fellsmere Stormwater Lake and State Street Improvements	Wet detention pond	Central SEB	48.1	Unknown	2003	Completed	69	19.2
FWCD-4	Grace Meadows	Wet detention pond	Central SEB	7.7	Unknown	2009	Completed	2.5	1.1
FWCD-5	Two-Inch Limitation Discharges	Retention BMP	Central SEB	N/A	Unknown	Ongoing	Ongoing	Not quantified	Not quantified
FWCD-6	Fellsmere WCD Mechanical Canal Maintenance	Retention BMP	Central SEB	N/A	\$54,872	Ongoing	Planned, funded	Not quantified	Not quantified
FWCD-7	Historic Fellsmere Master Drainage Plan (partner with city of Fellsmere)	Regional stormwater treatment lake	Central SEB	1,666	Unknown	Ongoing	Planned, pending grant application	Not quantified	Not quantified
FWCD-8	South Regional Lake Project (partner with city of Fellsmere)	Regional stormwater treatment lake	Central SEB	N/A	Unknown	Ongoing	Pursuing grant funding	Not quantified	Not quantified

TOTAL PROJECT REDUCTIONS: 83 LBS/YR TN AND 25 LBS/YR TP

TABLE A-11: INDIAN RIVER COUNTY PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	ANNUAL O&M	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
IRC-1	Vero Lake Estates Stormwater Improvements - Phase 1	Wet detention pond	Central SEB	Subregional stormwater treatment facility for old subdivision constructed with no stormwater treatment	2,441.5	\$1,572,829	Unknown	2002	Completed	4,936	1,022.5
IRC-2	East Roseland Stormwater Improvement	Wet detention pond	Central SEB	Stormwater detention lake and associated stormwater conveyance systems to provide flood control and stormwater quality treatment for watershed in Roseland with no treatment	73.7	\$433,134	\$2,176	2005	Completed	168	38.3
IRC-3	East Gifford Stormwater Improvements	Wet detention pond	Central B	Stormwater detention lake and associated swale and piped stormwater conveyance systems to provide stormwater quality treatment for residential community with no treatment	44.1	\$686,136	\$2,471	2004	Completed	169	7 1.1

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	ANNUAL O&M	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
IRC-4	PC Main (formerly Main Relief Canal Pollution Control Facility) - nutrient removal from measured data	Other structural BMPs	Central B	Mechanical pollution control system using self-cleaning screens in series to remove solids from Main Relief Canal	21,941.1	\$5,240,931	\$100,000	2009	Completed	1,900	500
IRC-5	Egret Marsh Stormwater Park - nutrient removal from measured data	Other structural BMPs	Central B	Algal turf scrubber system; initial, intermediate, and final polishing ponds; and wood stork habitat area; treats 10 million gallons per day (MGD)	8,949.3	\$5,580,000	\$338,000	2010	Completed	19,000	3,800
IRC-6	PC South (Osprey Marsh) Algal Nutrient Removal Facility - estimated nutrient removal	Other structural BMPs	Central B	Algae-based nutrient removal system treating approximately 10 MGD of water from Indian River Farms WCD South Relief Canal, and up to 1.5 MGD of brine concentration from county South Reverse Osmosis Water Treatment Plant	17,163	\$10,000,000	\$1,364,000 (estimated)	2015	Started	9,830	2,447

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	ANNUAL O&M	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
IRC-7	PC North Aquatic Plant Based Nutrient Removal System (Proposed) - estimated nutrient removal	Other structural BMPs	Central SEB and B	Aquatic plant-based nutrient removal system treating approximately 10 MGD from Indian River Farms WCD North Relief Canal	12,651.6	\$6,000,000	\$1,364,000 (estimated)	2017	Envisioned, not funded	18,000	11,000.0
IRC-8	Fertilizer Ordinance, PSAs, Website, Pamphlets, Illicit Discharge Program	Educational efforts	Central SEB and B	Prepare and distribute educational information related to stormwater runoff, provide education on fertilizer ordinance, enforce fertilizer ordinance, collect information on illicit discharges, and investigate reports	N/A	N/A	\$52,000	Ongoing	Ongoing	Not quantified	Not quantified
IRC-9	Street Sweeping	Street sweeping	Central SEB and B	Swept approximately 1,152 curb miles	N/A	N/A	\$22,050	Ongoing	Ongoing	296	190
IRC-10	Storm Drain Cleaning with Vacuum Trucks	Other structural BMPs	Central SEB and B	Cleaned 0 storm drains	N/A	N/A	\$19,067	Ongoing	Temporarily on hold	Not quantified	Not quantified
IRC-11	Floating Aquatic Plant Islands in County Stormwater Ponds and Lakes	Floating islands	Central SEB and B	Floating aquatic plant islands will be installed in county golf course and stormwater ponds	N/A	Unknown	Unknown	Unknown	Envisioned, not funded	Not quantified	Not quantified

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	ANNUAL O&M	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
IRC-12	Spoonbill Marsh Project	Other structural BMPs	Central B	Removes nutrients by drawing water from IRL and mixing with RO concentrate disposal, then distributing it through 67-acre man-made saltwater marsh system before returning to IRL	N/A	Unknown	Unknown	2010	Completed	1,686	1,997.0

TOTAL PROJECT REDUCTIONS: 55,985 LBS/YR TN AND 21,066 LBS/YR TP

TABLE A-12: INDIAN RIVER FARMS WCD PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
IRF-1	Tilting Weir Gates	Other structural BMPs	Central SEB and B	Installed four tilting weir gates to reduce velocity and timing of discharges; results in “cleaner” water spills off top of gates and leaves organic sediments on bottom of canal system; sediments are mechanically cleaned annually	Completed	Not quantified	Not quantified
IRF-2	Mechanical Removal of Floating Vegetation	Other nonstructural BMPs	Central SEB and B	Removed 40,000 cubic yards of water lettuce in 2009; 25,000 cubic yards through October 2010; 3,846.6 tons in 2011; 3,343 tons in 2012; 3,656 tons in 2013; material is placed on bank to biodegrade; berms are sloped away from top of bank so nutrients do not reenter canal. Removed 10,085 cubic yards of water lettuce August through November 2014	Ongoing	Not quantified	Not quantified
IRF-3	Establishment of Two-Inch Discharge Rule	Other nonstructural BMPs	Central SEB and B	Two-inch discharge rule in WCD	Ongoing	Not quantified	Not quantified

TOTAL PROJECT REDUCTIONS: NOT QUANTIFIED FOR TN OR TP

TABLE A-13: MELBOURNE-TILLMAN WCD PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
MT-1	C-1 Rediversion Project	Canal rediversion	Central A	Redirect flows to Upper St. Johns River from IRL during certain storm conditions; replace control gates in WCD structure at east end of C-1	2011	Completed	Not quantified	Not quantified

TOTAL PROJECT REDUCTIONS: NOT QUANTIFIED FOR TN OR TP

TABLE A-14: SEBASTIAN RIVER IMPROVEMENT DISTRICT PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	STATUS	TN REDUCTION	TP REDUCTION
SRID-1	Establishment of Two-Inch Discharge Rule	Other nonstructural BMPs	Central SEB and B	Ongoing	Not quantified	Not quantified
SRID-2	Radial Arm Control Gates	Other structural BMPs	Central SEB and B	Envisioned, not funded	Not quantified	Not quantified
SRID-3	Vegetation and Sediment/Muck Removal from Canals	Other nonstructural BMPs	Central SEB and B	Ongoing	Not quantified	Not quantified
SRID-4	Education	Educational efforts	Central SEB and B	Ongoing	Not quantified	Not quantified
SRID-5	Large Regional Water Conservation/Storage Areas	Other nonstructural BMPs	Central SEB and B	Envisioned, not funded	Not quantified	Not quantified
SRID-6	Dispersed Water Storage/ Water Farming	Other nonstructural BMPs	Central SEB and B	Envisioned, not funded	Not quantified	Not quantified
SRID-7	Lateral D System Stormwater Management	Other nonstructural BMPs	Central SEB and B	Ongoing	Not quantified	Not quantified

TOTAL PROJECT REDUCTIONS: NOT QUANTIFIED FOR TN OR TP

TABLE A-15: TOWN OF INDIALANTIC PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
TI-1	Education and outreach	Educational efforts	Central A	Pamphlets, website, fertilizer ordinance	Ongoing	Not quantified	Not quantified
TI-2	Swale Construction	Swales	Central A	Swale construction for water quality treatment	Started	Not quantified	Not quantified
TI-3	Drainage Inlet Cleaning	BMP cleanout	Central A	20 inlets cleaned per year	Ongoing	25	10.0
TI-4	Street Sweeping	Street sweeping	Central A	Quarterly street sweeping	Ongoing	28	18.2

TOTAL PROJECT REDUCTIONS: 53 LBS/YR TN AND 28 LBS/YR TP

TABLE A-16: TOWN OF MELBOURNE BEACH PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
MB-1	Basin 9 - Oak Street Pedway	Exfiltration	Central A	580 linear feet of exfiltration pipe	13.1	\$146,000	2007	Completed	127	21.0
MB-2	Basin 9 - Oak Street Pedway -Improvement Project	2 nd generation baffle box	Central A	Baffle box at end of 6 th Avenue in Basin 9	85.7	\$146,000	2007	Completed	42	4.6
MB-3	Basin 8, 9 & 11 Oak Street Pedway - Improvement Project	Swales	Central A	780 linear feet of swales along Oak Street from First to Driftwood	45.1	\$146,000	2007	Completed	403	68.9
MB-4	Basin 1 - HMGP Flood Water Improvements Project	2 nd generation baffle box	Central A	Baffle box at end of Harland Ave on Riverside Drive in Basin 9	83.7	\$500,000	2010	Completed	146	16.9
MB-5	Basin 1 - HMGP Flood Water Improvements Project	Swales	Central A	180 linear feet of swale along Harland Avenue from Jasmine to Shannon	0.9	\$500,000	2010	Completed	8	1.1
MB-6	Basin 9 - HMGP Flood Water Improvements Project	Swales	Central A	150 linear feet of swales along Oak Street from 5 th to 6 th Avenue	1.0	\$500,000	2010	Completed	9	1.3
MB-7	Anchor Key Drainage Improvements - Basin 16	Baffle box	Central A	Baffle box and 81 linear feet of exfiltration trench	3.3	Unknown	2002	Completed	0	0.1
MB-8	Pelican Key Drainage Improvements - Basin 14	Baffle box	Central A	Baffle box and 48 linear feet of exfiltration trench	1.8	Unknown	2002	Completed	0	0.0
MB-9	Basin 5 - Ocean Ave Baffle Box	Baffle box	Central A	Baffle box at Ocean Avenue outfall	58.3	Unknown	2000	Completed	3	2.9
MB-10	Basin 10 - Cherry Drive Baffle Box	Baffle box	Central A	Baffle box at Cherry Drive outfall	87.4	Unknown	2000	Completed	3	2.6
MB-11	Basin 15 - Neptune Drive Baffle Box	Baffle box	Central A	Baffle box at Neptune Drive outfall	5.8	Unknown	2000	Completed	0	0.1
MB-12	Basin 17 - Riverview Lane Baffle Box	Baffle box	Central A	Baffle box at Riverview Lane outfall	1.1	Unknown	2000	Completed	0	0.0
MB-13	Basin 18 - Riverview Lane Baffle Box	Baffle box	Central A	Baffle box at Riverview Lane outfall	5.9	Unknown	2000	Completed	0	0.1
MB-14	Curb Inlet Baskets - Basins 4, 6, 10, & 15	Curb inlet baskets	Central A	26 curb inlet baskets installed in Basins 4, 6, 10, and 15	118.1	Unknown	2000	Completed	5	3.5

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
MB-15	Melbourne Beach Chevron	100% on-site retention	Central A	Redevelop entire existing site formerly paved with no treatment; construct stormwater retention	0.6	Unknown	2010	Completed	11	2.9
MB-16	Melbourne Beach Library	Dry detention pond	Central A	Demolish existing five structures and paved parking and construct new library with parking and stormwater management system	1.5	Unknown	2001	Completed	3	0.6
MB-17	Melbourne Beach Town Hall	100% on-site retention	Central A	Demolish existing buildings and parking and construct new buildings with retention area that provides for treatment and attenuation	1.8	Unknown	2005	Completed	32	8.4

TOTAL PROJECT REDUCTIONS: 792 LBS/YR TN AND 135 LBS/YR TP

TABLE A-17: TOWN OF MELBOURNE VILLAGE PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	TREATMENT ACRES	PROJECT COST	ANNUAL O&M	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
MV-1	Platt Circle	Baffle box	Central A	31.1	\$124,000	\$2,500	2005	Completed	1	0.8

TOTAL PROJECT REDUCTIONS: 1 LB/YR TN AND 0.8 LB/YR TP

TABLE A-18: TOWN OF ORCHID PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
TO-1	Education	Educational efforts	Central SEB	Landscaping, fertilizer, and irrigation ordinances	Ongoing	Not quantified	Not quantified

TOTAL PROJECT REDUCTIONS: NOT QUANTIFIED FOR TN OR TP

TABLE A-19: TURNPIKE AUTHORITY PROJECTS IN THE CENTRAL IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT ZONE	PROJECT DETAIL	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
T-1	Street Sweeping	Street sweeping	Central B	144 miles swept per year	Ongoing	26	17.3

TOTAL PROJECT REDUCTIONS: TN 26 LBS/YR TN AND 17 LBS/YR TP

SOUTHERN IRL

TABLE A-20: CITY OF FORT PIERCE PROJECTS IN THE SOUTHERN IRL

N/A – Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
FP-1	Heathcote Botanical Gardens (Indian Hills Recreation Area) Stormwater Improvements	Treatment train	Treatment train in Virginia Avenue Canal drainage basin, which outfalls to IRL	1,242	\$2,787,588 (Phase I)	June 2015 (Phase I)	Started	7,140 (estimated)	1,382 (estimated)
FP-2	Moore's Creek Retrofit Phases 3 & 4	Wet detention pond	Increased detention and littoral shelves	2,382	\$825,000	2008	Completed	Not quantified	Not quantified
FP-3	South Beach Baffle Boxes	Baffle box	Trap sediment in baffle boxes and increase volume of runoff treated in grassed swales	128	\$573,121	2006	Completed	Not quantified	Not quantified
FP-4	Moore's Creek Retrofit Phase 2	Baffle box	Increased detention and trap sediment in baffle boxes	1,680	\$1,480,437	2003	Completed	Not quantified	Not quantified
FP-5	Street Sweeping (3,798 CY)	Street sweeping	Street sweeping	N/A	Unknown	Ongoing	Ongoing	4,902	3,144
FP-6	Inlet Cleaning (165 CY)	Inlet cleaning	Inlet cleaning	N/A	Unknown	Ongoing	Ongoing	340	138
FP-7	Education and Outreach	Educational efforts	Fertilizer ordinance; illicit discharge ordinance; stormwater educational shows; pamphlets, posters, mailings; industry/business educational pamphlets; storm drain inlet stencil program; and stormwater pollution hotline	N/A	Unknown	Ongoing	Ongoing	Not quantified	Not quantified
FP-8	Veterans Park Stormwater Improvements	Treatment train	Basin currently discharges to IRL with no treatment; project entails wet detention, bioswales, pervious pavers, aeration fountains, and outfall structure	44.1	\$1,470,900	2015	Started	131 (estimated)	25.8 (estimated)

TOTAL PROJECT REDUCTIONS: 12,513 LBS/YR TN AND 4,690 LBS/YR TP

TABLE A-21: FDOT DISTRICT 4 PROJECTS IN THE SOUTHERN IRL

N/A = Not applicable

Notes: FDOT4-24: This project extends outside the BMAP boundaries. Therefore, the treatment acres were revised based on the GIS acreage for the area inside the IRL only.

FDOT4-25: This project extends outside the BMAP boundaries. The revised treatment acres equal the summation of all the basins inside the IRL based on the drainage report.

FDOT4-26: Originally, the treatment acres included the total area for each basin. This number was revised to include the impervious and pavement acreage (no pervious) only.

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	TREATMENT ACRES	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
FDOT4-11	FM# 230132-1 (System 1)	Dry detention pond	Unknown	2001	Completed	Not quantified	Not quantified
FDOT4-12	FM# 230132-1 (System 2)	Dry detention pond	Unknown	2001	Completed	Not quantified	Not quantified
FDOT4-13	FM# 230132-1 (System 3)	Dry detention pond	Unknown	2001	Completed	Not quantified	Not quantified
FDOT4-14	FM# 230132-1 (System 4)	Dry detention pond	Unknown	2001	Completed	Not quantified	Not quantified
FDOT4-15	FM# 230132-1 (System 5)	Wet detention pond	Unknown	2001	Completed	Not quantified	Not quantified
FDOT4-16	FM# 230132-1 (System 6)	Wet detention pond	Unknown	2001	Completed	Not quantified	Not quantified
FDOT4-17	FM# 230132-1 (System 7)	100% on-site retention	Unknown	2001	Completed	Not quantified	Not quantified
FDOT4-24	FM# 230279-1 (Kings Highway)	Dry detention pond	24.6	October 2003	Completed	Not quantified	Not quantified
FDOT4-25	FM# 413046-1	Swales	186.8	June 2014	Completed	Not quantified	Not quantified
FDOT4-26	FM# 413047-1	Swales	126.5	2014	Completed	Not quantified	Not quantified
FDOT4-27	FM# 230108-1 (Pond 1)	Wet detention pond	7.29	February 27, 2002	Completed	Not quantified	Not quantified
FDOT4-28	FM# 230108-1 (Pond 2)	Wet detention pond	2.62	February 27, 2002	Completed	Not quantified	Not quantified

TOTAL PROJECT REDUCTIONS: NOT QUANTIFIED FOR TN OR TP

TABLE A-22: FORT PIERCE FARMS WCD PROJECTS IN THE SOUTHERN IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
FPF-1	Canal 1 Top of Bank Swale	Swales	Collect stormwater runoff and provide some water quality benefit	0.19	\$13,040	2007	Completed	Not quantified	Not quantified
FPF-2	Canal 1 Top of Bank Dry Detention	Dry detention pond	Address stormwater runoff issues and canal bank erosion immediately upstream of IRL	2.58	\$37,770	2009	Completed	Not quantified	Not quantified
FPF-3	Discharge Criteria	Ordinance/ rule change	More stringent than standard pre-versus postproject; allows for approximately 11% more volume per development to be detained by stormwater system	1 to 460	N/A	Ongoing	Ongoing	Not quantified	Not quantified

TOTAL PROJECT REDUCTIONS: NOT QUANTIFIED FOR TN OR TP

TABLE A-23: NORTH ST. LUCIE RIVER WCD PROJECTS IN THE SOUTHERN IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	PROJECT COST	ANNUAL O&M COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
NSLR-1	C-25 Diversion Structure	Control structure	Replace previous pump structure with gravity flow control structure	\$179,150	N/A	2003	Completed	Not quantified	Not quantified
NSLR-2	Invasive Vegetation Removal at Canals 33 and 42	Vegetation harvesting	Mechanical removal of invasive vegetation in canals and surrounding banks	\$16,315	\$4,088	2010	Completed	Not quantified	Not quantified
NSLR-3	Canal Maintenance Program	Vegetation harvesting	Ongoing maintenance primarily by mechanical means to keep canals free of exotic and decaying vegetation	N/A	\$9,40	Ongoing	Ongoing	Not quantified	Not quantified

TOTAL PROJECT REDUCTIONS: NOT QUANTIFIED FOR TN OR TP

TABLE A-24: ST. LUCIE COUNTY PROJECTS IN THE SOUTHERN IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	TREATMENT ACRES	PROJECT COST	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
SLC-1	Education	Educational efforts	FYN; landscaping, irrigation, fertilizer, and pet waste ordinances; PSAs, pamphlets, website, and illicit discharge program	N/A	Unknown	Ongoing	Ongoing	Not quantified	Not quantified
SLC-2	Street Sweeping	Street sweeping	392 cubic yards collected	N/A	Unknown	Ongoing	Ongoing	506	324
SLC-3	Paradise Park Stormwater Improvement	Retention BMPs	Construction of drainage system providing 75% treatment of first inch of runoff (excluding storage via swales) and detention capacity at 10-year/24-hour event	168.1	\$1,500,000	2018	Started	Not quantified	Not quantified
SLC-4	Harmony Heights Stormwater Improvement	Retention BMPs	Construction of drainage system providing 75% treatment of first inch of runoff (excluding storage via swales) and detention capacity at 10-year/24-hour event	300	\$3,000,000	2019	Started	Not quantified	Not quantified
SLC-5	Taylor Creek Dredging	Dredging	Three-phase sediment/muck removal project totaling approximately 200,000 cubic yards	41	\$7,500,000	December 2014	Completed	Not quantified	Not quantified
SLC-6	Stan Blum Memorial Park	Wet detention pond	Wet detention pond	4	Unknown	Unknown	Completed	Not quantified	Not quantified
SLC-7	San Lucie Plaza Stormwater Master Plan	Retention BMPs	Construction of drainage system providing 75% treatment of first inch of runoff (excluding storage via swales) and detention capacity at 10-year/24-hour event	175	Unknown	Unknown	Pursuing grant funding and land acquisitions needed	Not quantified	Not quantified

TOTAL PROJECT REDUCTIONS: 506 LBS/YR TN AND 324 LBS/YR TP

TABLE A-25: ST. LUCIE VILLAGE PROJECTS IN THE SOUTHERN IRL

N/A = Not applicable

PROJECT NUMBER	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	END DATE	STATUS	TN REDUCTION (LBS/YR)	TP REDUCTION (LBS/YR)
SLV-1	Peninsula Drive	Detention	0.75-inch detention storage for western half of Peninsula Drive where there was no previous treatment	2011	Completed	Not quantified	Not quantified

TOTAL PROJECT REDUCTIONS: NOT QUANTIFIED FOR TN OR TP