



# **FINAL 2014 PROGRESS REPORT**

**for the Lake Harney, Lake Monroe, St. Johns River, and  
Smith Canal  
Basin Management Action Plan**

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

in cooperation with the  
**Lakes Harney and Monroe and Middle St. Johns River Basin  
Technical Stakeholders**

October 2014

## ACKNOWLEDGMENTS

This 2014 Lakes Harney and Monroe and Middle St. Johns River 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 Lakes Harney and Monroe and Middle St. Johns River Basin stakeholders.



For additional information on the watershed management approach in the Lakes Harney and Monroe and Middle St. Johns River Basin, contact:

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

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|            |                                                         |
|------------|---------------------------------------------------------|
| BMAP       | Basin Management Action Plan                            |
| BMP        | Best Management Practice                                |
| Department | Florida Department of Environmental Protection          |
| DO         | Dissolved Oxygen                                        |
| ERP        | Environmental Resource Permit                           |
| FDACS      | Florida Department of Agriculture and Consumer Services |
| FDOT       | Florida Department of Transportation                    |
| FYN        | Florida Yards and Neighborhood (Program)                |
| GI         | Green Industries                                        |
| HSPF       | Hydrologic Simulation Program – FORTRAN (model)         |
| lbs/yr     | Pounds Per Year                                         |
| LVI        | Lake Vegetation Index                                   |
| MS4        | Municipal Separate Storm Sewer System                   |
| MSJR       | Middle St. Johns River                                  |
| NOI        | Notice of Intent                                        |
| NPDES      | National Pollutant Discharge Elimination System         |
| O&M        | Operations and Maintenance                              |
| PSA        | Public Service Announcement                             |
| RSF        | Regional Stormwater Facility                            |
| SAV        | Submerged Aquatic Vegetation                            |
| SERV       | Seminole Education, Restoration and Volunteer Program   |
| SJRWMD     | St. Johns River Water Management District               |
| SR         | State Road                                              |
| STORET     | STOrage and RETrieval (Database)                        |
| TMDL       | Total Maximum Daily Load                                |
| TN         | Total Nitrogen                                          |
| TP         | Total Phosphorus                                        |
| WBID       | Waterbody Identification                                |

## **SUMMARY**

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### **TOTAL MAXIMUM DAILY LOADS**

The Lakes Harney and Monroe and Middle St. Johns River (MSJR) Basin includes the main stem segments of the MSJR located between the inlet of Lake Harney and the confluence of the St. Johns River with the Wekiva River. These river segments receive discharges from the Upper St. Johns River and from several major tributaries, including the Econlockhatchee River, Deep Creek, and Lake Jesup. The Smith Canal watershed is located in the southern portion of the Lakes Harney and Monroe and MSJR Basin and drains an area of about 10 square miles.

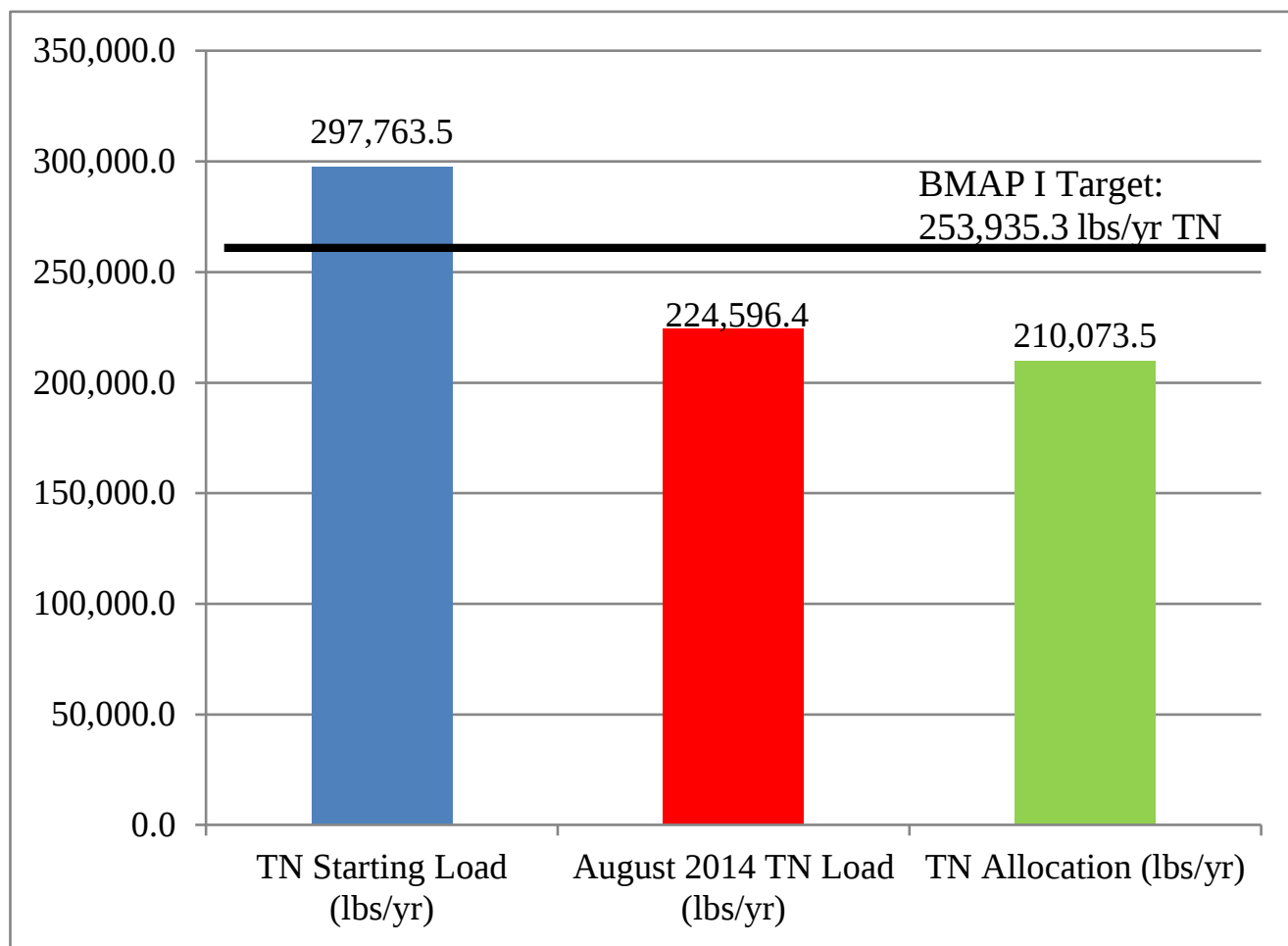
The Florida Department of Environmental Protection identified Lakes Harney and Monroe and the MSJR Basin as impaired by nutrients and low dissolved oxygen (DO), and, in December 2009, adopted Total Maximum Daily Loads for total phosphorus (TP) and total nitrogen (TN) for the lakes and river segments. The Smith Canal TMDL was adopted by the Department in September 2009 for TP. An important consideration for the restoration of the Lakes Harney and Monroe and MSJR Basin is that the majority of the loading to the impaired waterbodies comes from sources outside the watershed. Therefore, reductions from these upstream sources must occur before water quality standards can be met in the impaired waterbodies.

The Lakes Harney and Monroe and MSJR Basin Management Action Plan was adopted in August 2012 to implement the TP and TN TMDLs in the watershed. This 2014 Progress Report is the second annual progress report for the Lakes Harney and Monroe and MSJR BMAP, and it describes the activities that occurred during the reporting period from September 1, 2013, through August 31, 2014.

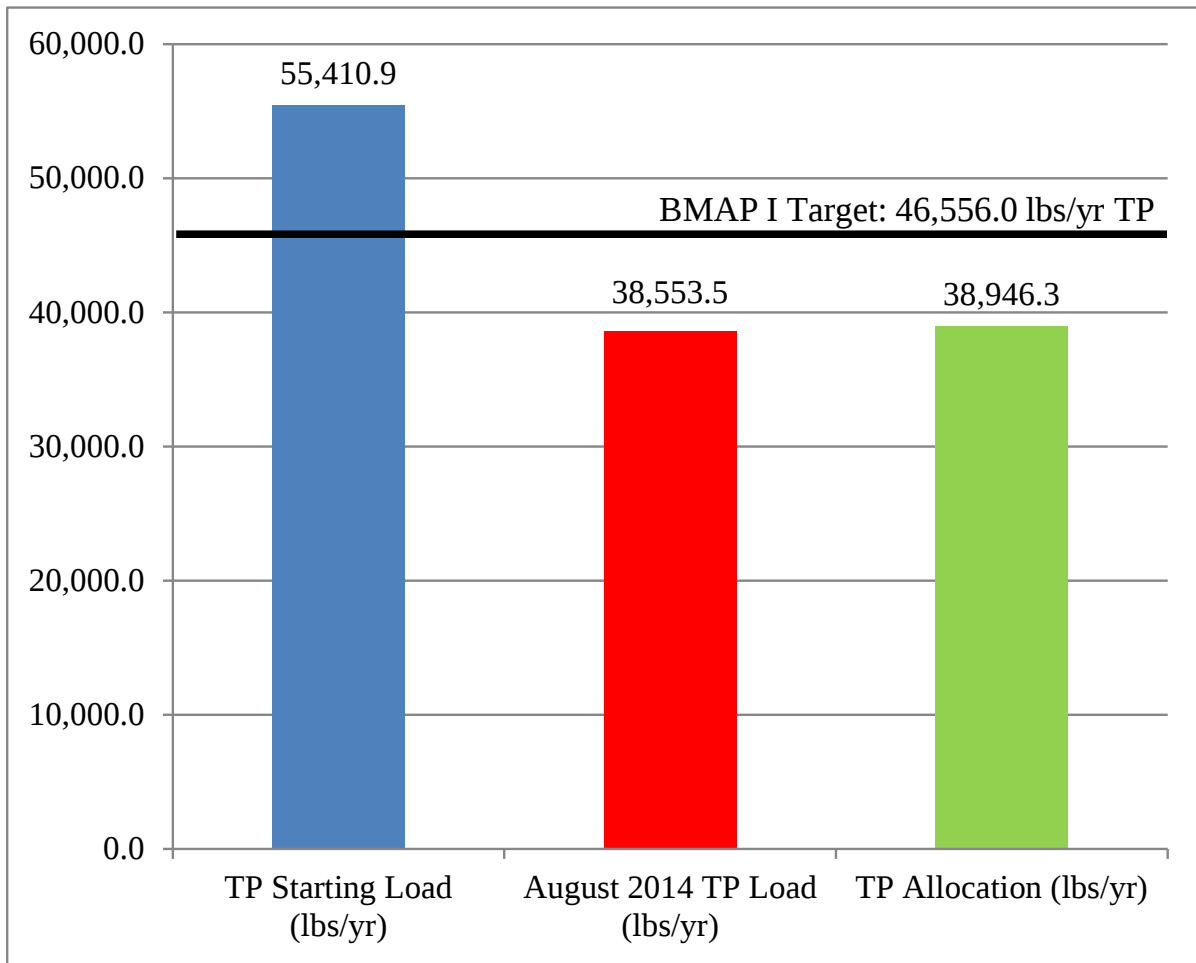
### **SUMMARY OF LOAD REDUCTIONS**

The reductions that occurred during the reporting period total 6,842.4 lbs/yr of TN and 1,813.1 lbs/yr of TP. These reductions are in addition to those projects given credit before BMAP adoption; therefore, the total project reductions to date are 73,176.1 lbs/yr of TN and 16,857.4 lbs/yr of TP. The first BMAP iteration addresses 50% of the allocated reductions, and the required reductions for this iteration are 43,828.2 lbs/yr of TN and 8,854.9 lbs/yr of TP. Therefore, the reductions that have occurred to date are greater than the reductions required for the first BMAP iteration. These reductions are 83.4% of the TN required TMDL reductions and exceed the required TP reductions (102.4%) to meet the TMDL.

These notably high percentages result from several stakeholders implementing projects that resulted in more reductions than were required of them, and therefore more than 100% of the required TP reductions have been achieved. However, there are still stakeholders in the basin that need to implement further projects in order to achieve their required reductions and meet their allocations. **Figure ES-1** and **Figure ES-2** show the progress towards the total TMDL load reductions for TN and TP, respectively.



**FIGURE ES-1: PROGRESS TOWARDS THE LAKES HARNEY AND MONROE AND MSJR TN TMDL THROUGH AUGUST 31, 2014**



**FIGURE ES-2: PROGRESS TOWARDS THE LAKES HARNEY AND MONROE AND MSJR TP TMDL  
THROUGH AUGUST 31, 2014**

**WATER QUALITY AND BIOLOGICAL MONITORING**

The city of Deltona continued monthly water quality monitoring at three stations in the basin. Seminole County continued biological and ambient water quality monitoring as identified in the BMAP, with the exception of Smith Canal. Biological monitoring was not conducted on Smith Canal due to low water elevations. Volusia County continued monthly sampling at six of the stations included in the BMAP. The St. Johns River Water Management District (SJRWMD) continued to sample the 10 ambient water quality stations that are part of the BMAP monitoring plan. The SJRWMD also continued phytoplankton sampling at three stations in the basin. A detailed water quality evaluation will be conducted no later than after four years of BMAP implementation to determine water quality improvements in the basin from actions included in the first BMAP iteration.

## **Section 1: INTRODUCTION**

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### **1.1 PURPOSE OF THE REPORT**

This is the second annual progress report for the Lakes Harney and Monroe and Middle St. Johns River (MSJR) Basin Management Action Plan. **Section 2** describes the activities that occurred during the period from September 1, 2013, through August 31, 2014. **Section 3** describes the water quality and biological monitoring that occurred during the reporting period.

### **1.2 TOTAL MAXIMUM DAILY LOADS FOR THE LAKES HARNEY AND MONROE AND MSJR BASIN**

The Lakes Harney and Monroe and MSJR Basin includes the impaired main stem segments of the MSJR located between the inlet of Lake Harney and the confluence of the St. Johns River with the Wekiva River. These river segments receive discharges from the Upper St. Johns River and from several major tributaries, including the Econlockhatchee River, Deep Creek, and Lake Jesup. Two major lakes, Lake Monroe and Lake Harney, are also impaired segments of the MSJR main stem. The basin encompasses portions of Seminole County and Volusia County and areas in the cities of DeBary, DeLand, Deltona, Lake Helen, Lake Mary, Orange City, and Sanford.

Smith Canal, located in northwest Seminole County, drains an area of about 10 square miles. The canal is approximately six miles in length and flows northwest until it enters the St. Johns River approximately 1.4 miles upstream of the outlet to Lake Monroe. The Smith Canal watershed includes portions of Seminole County, Lake Mary, and Sanford. **Figure 1** shows the Lakes Harney and Monroe and MSJR Basin and the local governments in this area.

The TMDLs for the Lakes Harney and Monroe and MSJR Basin were adopted by the Florida Department of Environmental Protection in December 2009, and the TMDL for Smith Canal was adopted in September 2009. For assessment purposes, the Department divided the Lakes Harney and Monroe and MSJR Basin into water assessment polygons with unique waterbody identification (WBID) numbers for each watershed or segment.

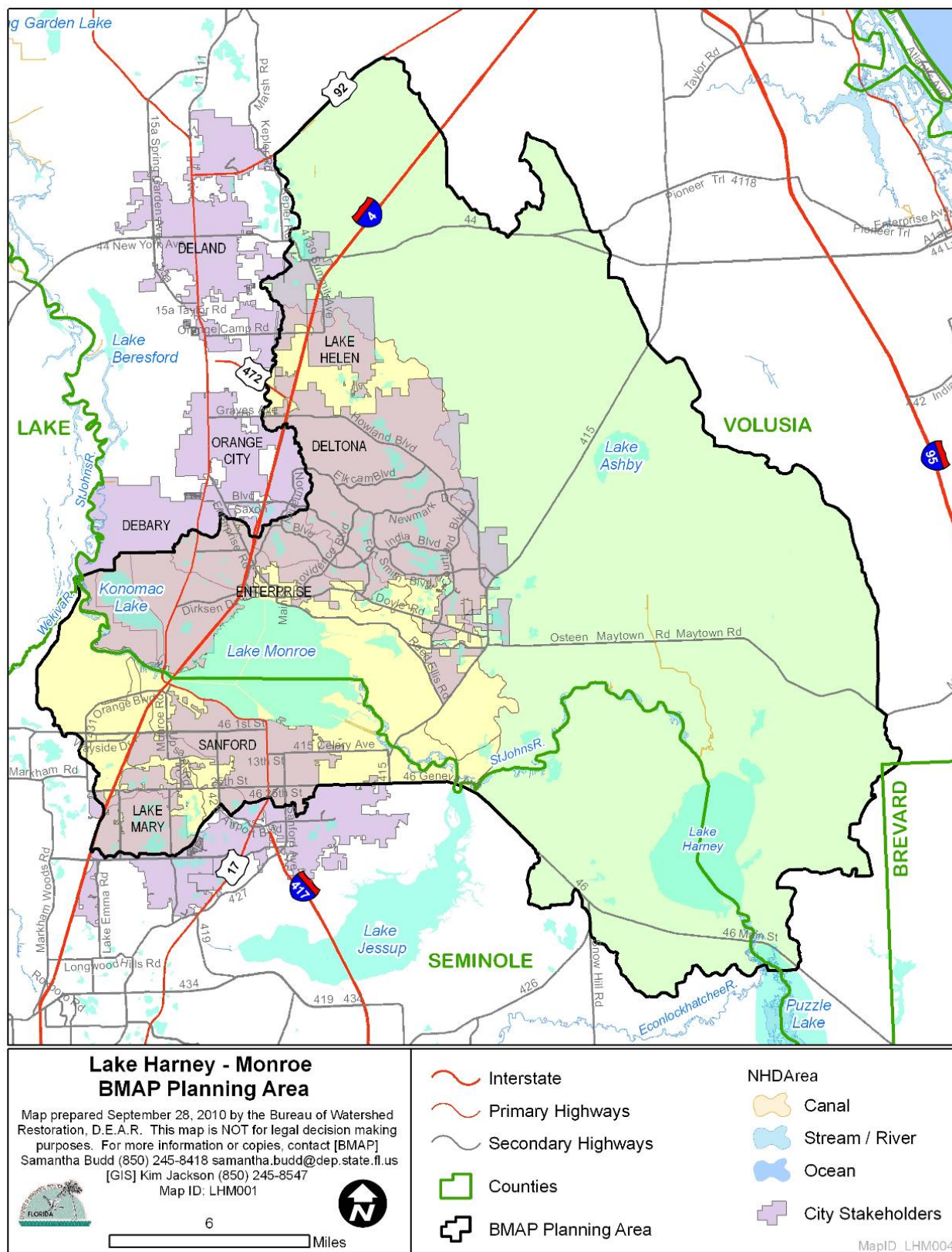
An important consideration for the restoration of the Lakes Harney and Monroe and MSJR Basin is that the majority of the loading to the impaired waterbodies comes from sources outside the watershed. Approximately 96.4% of the total nitrogen (TN) loading and 95% of the total phosphorus (TP) loading enters the impaired waterbodies from the Upper St. Johns River, Econlockhatchee River, and Lake Jesup

Basins. Therefore, implementing projects in the watershed alone will not achieve the TMDLs; reductions from the upstream sources must occur before water quality standards can be met in the impaired WBIDs.

**Table 1** lists the TMDLs and pollutant load allocations in pounds per year (lbs/yr) or percent reduction adopted by rule for each of the impaired WBIDs in the Lakes Harney and Monroe and MSJR Basin.

**TABLE 1: TMDLS IN THE LAKES HARNEY AND MONROE AND MSJR BASIN**

| <b>WBID<br/>NUMBER</b> | <b>WBID NAME</b>                                                                         | <b>PARAMETER</b> | <b>TMDL<br/>(LBS/YR)</b> | <b>WASTELOAD ALLOCATION<br/>FOR NATIONAL<br/>POLLUTANT DISCHARGE<br/>ELIMINATION SYSTEM<br/>(NPDES) WASTEWATER<br/>(LBS/YR)</b> | <b>WASTELOAD<br/>ALLOCATION<br/>FOR NPDES<br/>STORMWATER<br/>(% REDUCTION)</b> | <b>LOAD<br/>ALLOCATION<br/>(LBS/YR)</b> |
|------------------------|------------------------------------------------------------------------------------------|------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------|
| 2964A                  | Lake Harney                                                                              | TN               | 3,355,570                | 0                                                                                                                               | 39%                                                                            | 3,355,570                               |
| 2964A                  | Lake Harney                                                                              | TP               | 241,026                  | 0                                                                                                                               | 33%                                                                            | 241,026                                 |
| 2964 +<br>2893F        | St. Johns River<br>Downstream of Lake<br>Harney + St. Johns<br>River Above Lake<br>Jesup | TN               | 3,741,990                | 0                                                                                                                               | 37%                                                                            | 3,741,990                               |
| 2964 +<br>2893F        | St. Johns River<br>Downstream of Lake<br>Harney + St. Johns<br>River Above Lake<br>Jesup | TP               | 276,141                  | 0                                                                                                                               | 32%                                                                            | 276,141                                 |
| 2893D +<br>2893E       | Lake Monroe + St.<br>Johns River Above<br>Lake Monroe                                    | TN               | 4,171,255                | 0                                                                                                                               | 38%                                                                            | 4,171,255                               |
| 2893D +<br>2893E       | Lake Monroe + St.<br>Johns River Above<br>Lake Monroe                                    | TP               | 315,512                  | 0                                                                                                                               | 31%                                                                            | 315,512                                 |
| 2893C                  | St. Johns River<br>Above Wekiva River                                                    | TN               | 4,202,340                | 19,342                                                                                                                          | 37%                                                                            | 4,182,998                               |
| 2893C                  | St. Johns River<br>Above Wekiva River                                                    | TP               | 318,236                  | 2,345                                                                                                                           | 31%                                                                            | 315,891                                 |
| 2962                   | Smith Canal                                                                              | TP               | 4,300                    | 0                                                                                                                               | 26%                                                                            | 26%                                     |



**FIGURE 1: LAKES HARNEY AND MONROE AND MSJR BASIN**

### **1.3 RESPONSIBLE PARTIES AND KEY STAKEHOLDERS**

The Lakes Harney and Monroe and MSJR BMAP identified municipal separate storm sewer system (MS4), urban nonpoint, and agricultural sources of TN and TP in the basin. The following entities are responsible for achieving the load reductions:

- *Agriculture.*
- *City of DeBary.*
- *City of DeLand.*
- *City of Deltona.*
- *City of Lake Helen.*
- *City of Lake Mary.*
- *City of Orange City.*
- *City of Sanford.*
- *Florida Department of Transportation (FDOT) District 5.*
- *Florida Turnpike Authority.*
- *Seminole County.*
- *Volusia County.*

In addition to the these entities, the Florida Department of Agriculture and Consumer Services (FDACS), the Department, and St. Johns River Water Management District (SJRWMD) are essential to the implementation of the BMAP activities.

### **1.4 BMAP ALLOCATIONS**

The stakeholders determined that assigning detailed allocations was the best approach for achieving the TMDL reductions. The acreage and loading information for each stakeholder was calculated using output from the Hydrologic Simulation Program – FORTRAN (HSPF) Model. Each entity's baseline loadings for TN and TP were calculated using information from the HSPF Model. Based on these starting loads, the cities of DeLand, Lake Helen, and Orange City and the Florida Turnpike Authority were determined to be *de minimus* and were not assigned allocations in the first BMAP iteration. Each of these *de minimus*

stakeholders contributed less than 0.5% of the total load for both TN and TP, and combined they contribute approximately 1% of the total load.

For the stakeholders receiving allocations, the allowable loadings were calculated using a target load per acre for TN and TP. These target loads per acre were multiplied by each entity's acreage in the basin to determine the allowable loading. The difference between the baseline loading and the allowable loading resulted in each entity's required reductions.

Since Smith Canal is located mostly in the Lakes Harney and Monroe and MSJR Basin, reductions made to achieve the Lakes Harney and Monroe and MSJR TMDLs should also address the Smith Canal TMDL; however, no specific allocations have been assigned for this area. The Smith Canal watershed was included as part of this BMAP, and initial reductions to achieve the Smith Canal TMDL are based on the reductions needed for the overall Lakes Harney and Monroe and MSJR Basin.

The BMAP provides for phased implementation, which allows for the implementation of projects designed to achieve incremental reductions, while simultaneously monitoring and conducting studies to better understand the water quality dynamics in the watershed. The first BMAP iteration addresses 50% of the allocated reductions over a five-year period. **Table 2** lists the required reductions for the first MAP iteration.

**TABLE 2: TN AND TP REQUIRED REDUCTIONS FOR THE FIRST BMAP ITERATION**

| ENTITY          | BMAP 1<br>TN REQUIRED<br>REDUCTION<br>(LBS/YR) | BMAP 1<br>TP REQUIRED<br>REDUCTION<br>(LBS/YR) |
|-----------------|------------------------------------------------|------------------------------------------------|
| Agriculture     | 21,141.0                                       | 6,885.1                                        |
| DeBary          | 1,880.2                                        | 86.4                                           |
| Deltona         | 3,608.7                                        | 388.3                                          |
| FDOT            | 1,231.8                                        | 0.0                                            |
| Lake Mary       | 0.0                                            | 0.0                                            |
| Sanford         | 10,360.0                                       | 1,339.6                                        |
| Seminole County | 3,973.6                                        | 155.5                                          |
| Volusia County  | 1,632.9                                        | 0.0                                            |
| <b>TOTAL</b>    | <b>43,828.2</b>                                | <b>8,854.9</b>                                 |

## Section 2: ACTIVITIES DURING THE REPORTING YEAR

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The accomplishments over the past year are described in **Section 2.1** through **Section 2.2**, and the individual project tables are included in **Appendix A**.

### 2.1 ACTIVITIES BY ENTITY

#### 2.1.1 CITY OF DELAND

The city of DeLand maintained and distributed educational materials about the impacts of stormwater discharges and the steps the public can take to reduce pollutants (Project DL-1). The city maintained electronic versions of the main brochures (*A Citizen's Guide to Stormwater Ponds and Stormwater Facts*) on the [city website](#). The city samples and monitors NPDES outfalls on a regular basis.

#### 2.1.2 CITY OF DELTONA

The city adopted new fertilizer and stormwater discharge ordinances. Both are available on [Municode](#). The city continued its public education efforts (Project DEL-5) (**Figure 2** and **Figure 3**). The city's Enviroscope model has been instrumental in public education and raising awareness about stormwater runoff and ground water infiltration of pollutants and nutrients (**Figure 4**).



**FIGURE 2: CITY OF DELTONA BLUE SPRINGS FESTIVAL DISPLAY (ENVIROSCOPE AND HANDOUTS)**



**FIGURE 3: CITY OF DELTONA ANNUAL LAKE CLEANUP (MAYOR MASIARCZYK SHOWN)**



**FIGURE 4: CITY OF DELTONA ENVIROSCAPE MODEL DEMONSTRATION DURING CAREER WEEK**

The Green Industries (GI)-Best Management Practices (BMP) training offered by the city of Deltona, in conjunction with the Department and University of Florida, has been an effective certification program (Figure 5). This training helps ensure that commercial applicators, municipal employees, and anyone taking the course is aware of the proper application of fertilizers, herbicides, and some pesticides, as well as the nine principles of Florida-friendly landscaping. The last class was held on September 11, 2014, at the Deltona Regional Library.

The city has also continued catch basin cleanouts throughout the city (Project DEL-6). The amount of debris removed is relatively consistent throughout the year. Debris removed is tracked and reported in the city's MS4-stormwater management program annual report.

| ABOUT THE CERTIFICATION & CLASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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| <h3>What is GI-BMP Training?</h3> <ul style="list-style-type: none"> <li>• Offers a science-based educational program</li> <li>• Provides landscape management recommendations to the Green Industries</li> <li>• Designed to conserve and protect Florida's water resources and environment</li> </ul> <p>This workshop is designed to provide training in Green Industries Best Management Practices (GI-BMPs) for anyone working in the lawn, landscape, pest control, or municipal grounds areas.</p> <p>At the end of this training, you will be given a post-test to determine knowledge learned. If the post-test is successfully completed, you will be mailed a Green Industries BMP certificate of completion. Pesticide Applicator CEUs given at the end of class.</p> <h3>Who Should Attend?</h3> <ul style="list-style-type: none"> <li>• Supervisors and employees in Lawn Care, Pest Control or Landscape Industry</li> <li>• Municipal Parks and Recreation Facility Supervisors and Employees</li> <li>• Irrigation Industry Workers</li> <li>• Retail Facility employees who sell fertilizers</li> <li>• City and County Planning Staff, Environmental departments, or water quality</li> <li>• Builders, Developers, Landscape Designers and Architects</li> </ul>  | <h3>Why Certify?</h3> <p>Certification offered by UF/ IFAS is voluntary; although mandatory by some cities and counties. Beginning January 1, 2014, any person applying commercial fertilizer for hire to an urban landscape must be certified through this program and incur a fee.</p> <p><b>BMP Certification confers value as:</b></p> <ul style="list-style-type: none"> <li>• A client marketing tool</li> <li>• Credential of Professionalism</li> <li>• Furtherance of education &amp; work opportunities</li> <li>• CEU fulfillment</li> </ul> <p><b>Attendees Receive:</b></p> <ul style="list-style-type: none"> <li>• Up to 4 FDACS Pesticide Applicator CEU's</li> <li>• A Certificate of Completion for the Florida-Friendly BMP Training (Note: <b>MUST</b> pass the post test)</li> <li>• A wallet sized certification card</li> </ul> <h3>Speakers</h3> <ul style="list-style-type: none"> <li>• <b>Claudia McLeroy</b> MACS GI-BMP Regional Coordinator Florida Department of Environmental Protection</li> <li>• <b>Karen Stauderman</b> University of Florida/ IFAS Extension, Volusia County</li> <li>• <b>Matthew C. Lollar</b> University of Florida/ IFAS Extension, Seminole County</li> <li>• <b>James Whitaker</b> District Manager, Heron Lawn &amp; Pest Control Inc.</li> <li>• <b>Dan O'Hanlon</b>, City of Deltona</li> </ul> | <h3>Training Agenda</h3> <p>8:00 a.m. Check in for class</p> <p>8:15 Introduction and Pre-test</p> <p>8:45-9:35 Overview</p> <p>9:35-9:45 Break</p> <p>9:45-11:05 Lawn and Landscape Cultural and Fertilization BMPs</p> <p>11:05-11:15 Break</p> <p>11:15-12:05 Irrigation BMPs</p> <p>12:05-12:40 p.m. Lunch<br/><small>Meals are not provided</small></p> <p>12:40-1:30 Fertilizer BMPs</p> <p>1:30-1:40 Break</p> <p>1:40-2:30 Pesticide BMPs</p> <p>2:30-2:45 Review</p> <p>2:45-3:15 Post-Test and CEUs</p> <p>Above schedule is subject to change at any time.</p> |

FIGURE 5: CITY OF DELTONA GI-BMP TRAINING INFORMATION

### **2.1.3 CITY OF LAKE HELEN**

The city of Lake Helen continued to enforce the adopted irrigation ordinance and pet waste ordinance, and continued to provide informational pamphlets to the public (Project LH-1). A *Stormwater Pollution Prevention Factsheet for Commercial Properties* is posted to the city's website. The city's illicit discharge program consists of the routine monitoring of inlets/catch basins/retention ponds by public works department personnel, construction site inspection by city inspection staff, and enforcement of the illicit discharge provisions of the stormwater pollution prevention ordinance.

### **2.1.4 CITY OF LAKE MARY**

The city of Lake Mary continued street sweeping on public roads (Project LM-2) and its education and outreach efforts (Project LM-1) in the basin. Catch basin cleaning during the reporting period was performed as needed.

### **2.1.5 CITY OF ORANGE CITY**

The city of Orange City continues to post information regarding NPDES activities, Environmental Resource Permits (ERPs), and nonpoint source pollution on its webpage. Also included are links to other websites with stormwater information and information for children. Handouts are provided for new customers at the utility's customer service counter (Project OC-1).

### **2.1.6 CITY OF SANFORD**

The city of Sanford continued street sweeping (Project S-1), public education (Project S-3), and catch basin cleanout projects in the basin. A new baffle box was installed on Sanford Avenue as a project for the city's Utility Department (**Figure 6**).



**FIGURE 6: CITY OF SANFORD'S NEW BAFFLE BOX INSTALLED ON SANFORD AVENUE**

### **2.1.7 FDOT DISTRICT 5**

FDOT continued to implement educational programs (Project FDOT-32) in the basin. Construction activities for State Road (SR) 415 (**Figure 7**) and SR 44 are ongoing. These projects will provide treatment for the expanded roadway, as well as the existing roadway where no treatment previously existed.



**FIGURE 7: FDOT SR 415 – POND H**

Sweeping activities in Volusia County occurred as scheduled and totals are reported in **Table A-21** (Project FDOT-33). Due to revisions in FDOT's contract specifications for the street sweeping contracts in Seminole County, nutrient removal credits cannot be calculated and are to be reported as zero, as they were in the 2013 Progress Report. However, FDOT recently revised the contract requirements for new street sweeping contracts in Seminole County. The new contracts, which began July 2014, will provide specific sweeping frequencies and estimates of material collected. FDOT's reporting of nutrient removal credits from street sweeping activities has resumed, and will be included in future progress reports.

### **2.1.8 SEMINOLE COUNTY**

Seminole County continued educational efforts (Project SC-6) through the Florida Yards and Neighborhoods (FYN) and Seminole Education, Restoration and Volunteer (SERV) Program classes, events and outreach, as well as the continued airing of proper use of fertilizer public service

announcements (PSAs) on the local CBS affiliate and Seminole Government TV. In addition, street sweeping continued throughout the county (Project SC-5).

During the reporting period, shoreline restoration efforts continued along Wayside Park, located along the southwestern shore of Lake Monroe (**Figure 8**), and lake vegetative assessments continued on both Lake Monroe and Lake Harney (**Figure 9** and **Figure 10**). **Table 3** and **Table 4** present the results. Copies of the Lake Assessment Report for both lakes are available to the public from Seminole County or the Department.

#### **2.1.9 TURNPIKE AUTHORITY**

The Turnpike Authority continued street sweeping in the basin (Project T-1).

#### **2.1.10 VOLUSIA COUNTY**

Volusia County continued public education and outreach efforts (Project VC-1) and street sweeping (Project VC-2) in the basin.



**FIGURE 8: SEMINOLE COUNTY WAYSIDE PARK RESTORATION**



**FIGURE 9: SEMINOLE COUNTY STAFF CONDUCTING VEGETATIVE ASSESSMENTS ON LAKE MONROE**



**FIGURE 10: SEMINOLE COUNTY *LUDWIGIA PEPLOIDES* (IDENTIFIED BY JOHN TOBE) FOUND ALONG THE SOUTHERN SHORELINE OF LAKE HARNEY**

**TABLE 3: LVI SCORES FOR LAKE MONROE**

**Note:** LVI range: 78-100 = Exceptional, 43-77 = Healthy, and 0-42 = Impaired.

| DATE      | SCORE | STATUS   |
|-----------|-------|----------|
| 8/12/2008 | 35    | Impaired |
| 7/9/2009  | 36    | Impaired |
| 6/9/2010  | 30    | Impaired |
| 6/7/2011  | 42    | Impaired |
| 5/9/2012  | 39    | Impaired |
| 7/23/2013 | 44    | Healthy  |
| 8/5/2014  | 23    | Impaired |

**TABLE 4: LVI SCORES FOR LAKE HARNEY**

**Note:** LVI range: 78-100 = Exceptional, 43-77 = Healthy, and 0-42 = Impaired.

| DATE      | SCORE | STATUS  |
|-----------|-------|---------|
| 7/24/2007 | 60    | Healthy |
| 7/23/2008 | 63    | Healthy |
| 8/11/2009 | 48    | Healthy |
| 6/9/2010  | 46    | Healthy |
| 6/8/2011  | 80    | Healthy |
| 5/11/2012 | 65    | Healthy |
| 7/24/2013 | 56    | Healthy |
| 8/5/2014  | 47    | Healthy |

#### **2.1.11 AGRICULTURE**

FDACS has enrolled a total of 6,915.6 acres of agriculture in BMPs in the basin (see **Table 5**). This enrollment has an estimated reduction of 3,747.1 lbs/yr of TN and 684.9 lbs/yr of TP for the reporting period, and 7,793.9 lbs/yr of TN and 1,485.1 lbs/yr of TP to date. Twenty-six producers in the Lakes Harney and Monroe and MSJR Basin have now submitted Notices of Intent (NOIs) to implement FDACS-adopted BMPs.

It is also important to note that there are more acres enrolled in FDACS agricultural BMPs than reported in this document. This is because a significant number of enrolled acres are not classified as agricultural land use, even though they are part of an agricultural operation (*e.g.*, lands classified as wetlands that are part of a ranch). Only enrolled lands that fall within the mapped agricultural land uses are included in the BMAP figures.

**TABLE 5: AGRICULTURAL ACREAGE, BMP ENROLLMENT, AND FUTURE ENROLLMENT GOALS FOR THE LAKES HARNEY AND MONROE AND MSJR BASIN**

N/A = Not applicable

<sup>1</sup> FDACS staff-adjusted acreage for purposes of enrollment is based on a review of more recent aerial imagery in the basin and local staff observations.

<sup>2</sup> Most of these horse farms likely are not commercial agriculture and will be addressed through Department-developed BMPs.

<sup>3</sup> FDACS staff have observed no active poultry operations in the BMAP area but will be confirming this.

<sup>4</sup> Actual acreage enrolled will be less than targeted because some agricultural lands will not be in production.

<sup>5</sup> Acreage enrolled in the cow/calf program includes rangeland and wetland land uses that are not included in the total agricultural land use.

| 2004 SJRWMD LAND USE         | 2004 ACRES      | FDACS-ADJUSTED ACRES <sup>1</sup> | RELATED FDACS BMP PROGRAMS                 | ACREAGE ENROLLED AS OF JUNE 30, 2014 | RELATED NOIs |
|------------------------------|-----------------|-----------------------------------|--------------------------------------------|--------------------------------------|--------------|
| Pasture <sup>5</sup>         | 15,901.1        | 15,901.1                          | Cow/Calf, Sod, Future (Hay), Statewide Sod | 5,575.1                              | 10           |
| Row/Field/Mixed Crops        | 2,862.8         | 825.6                             | Vegetable/Agronomic Crops                  | 1,188.6                              | 1            |
| Fallow Cropland              | 1.7             | 1.7                               | No Enrollment Needed                       | N/A                                  | N/A          |
| Horse Farm <sup>2</sup>      | 174.1           | 174.1                             | Equine                                     | 0.0                                  | N/A          |
| Citrus                       | 450.1           | 450.1                             | Citrus                                     | 89.5                                 | 5            |
| Abandoned Citrus             | 633.9           | 0.0                               | No Enrollment Needed                       | N/A                                  | N/A          |
| Tree Crops                   | 13.3            | 13.3                              | Specialty Fruit and Nut                    | 0.0                                  | N/A          |
| Tree Nurseries               | 76.5            | 76.5                              | Future Nursery; Specialty Fruit/Nut        | 0.0                                  | N/A          |
| Ornamentals                  | 243.0           | 243.0                             | Container Nursery                          | 49.6                                 | 10           |
| Shade Ferns                  | 0.6             | 0.6                               | Future Nursery                             | N/A                                  | N/A          |
| Hammock Ferns                | 2.4             | 2.4                               | Future Nursery                             | N/A                                  | N/A          |
| Specialty Farms              | 2.2             | 2.2                               | Conservation Plan Rule                     | 0.0                                  | N/A          |
| Cattle Feeding               | 11.3            | 11.3                              | Conservation Plan Rule                     | 0.0                                  | N/A          |
| Poultry Feeding <sup>3</sup> | 80.9            | 80.9                              | Conservation Plan Rule                     | 12.8                                 | N/A          |
| Other Open Lands – Rural     | 0.1             | 0.0                               | No Enrollment Needed                       | N/A                                  | N/A          |
| <b>Total</b>                 | <b>20,454.0</b> | <b>17,782.8</b>                   | <b>N/A</b>                                 | <b>6,915.6</b>                       | <b>26</b>    |

**5-Year Enrollment Goal (90%)<sup>4</sup>**      **16,004.5**

**Acreage Enrolled**      **6,915.6**

**Remaining Acres To Enroll<sup>4</sup>**      **9,088.9**

### **2.1.12 SJRWMD**

SJRWMD initiated the sampling of storm event flow and nutrient loads in the network of canals draining into Lake Ashby and draining the northeastern sub-basins of the Deep Creek Planning Unit. These results will be combined with other studies and data completed in the area to begin a feasibility assessment of regional treatment projects to reduce nutrient loads to the St. Johns River via Deep Creek and the Deep Creek Diversion. The preliminary plans will be available in 2015.

## **2.2 SUMMARY OF ACCOMPLISHMENTS**

**Table 6** summarizes the projects completed during the second annual BMAP reporting period. These projects resulted in an estimated reduction of 6,842.4 lbs/yr of TN and 1,813.1 lbs/yr of TP. These reductions are in addition to those projects given credit before BMAP adoption. Therefore, the total project reductions to date are 73,167.1 lbs/yr of TN and 16,857.4 lbs/yr of TP, which are greater than the required reductions in the first BMAP iteration of 43,828.2 lbs/yr of TN and 8,854.9 lbs/yr of TP. Therefore, the reductions that have occurred to date are greater than the reductions required for the first BMAP iteration. These reductions are 83.4% of the TN required TMDL reductions and exceed the required TP reductions (102.4%) to meet the TMDL.

These notably high percentages resulted from several stakeholders implementing projects that achieved greater reductions than were required of them, and therefore more than 100% of the required TP reductions have been achieved. However, there are still stakeholders in the basin that need to implement further projects to achieve their required reductions and meet their allocations.

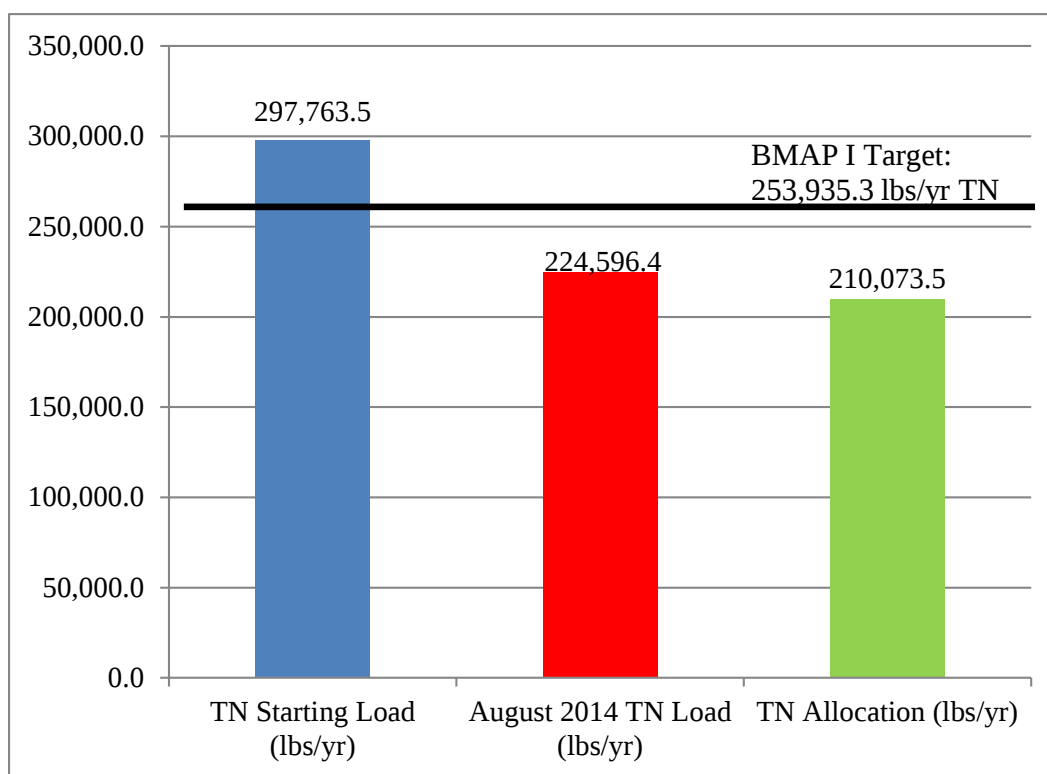
**Figure 11** and **Figure 12** show the progress towards the total TMDL load reductions for TN and TP, respectively. The first bar in these figures shows the starting load for urban and agricultural stormwater runoff. The second bar shows the current estimated loading with the implementation of projects and the removal of noncontributing areas. The third bar shows the total allocation for stormwater runoff to meet the TMDLs. The line shows the target for the first BMAP iteration.

**TABLE 6: SUMMARY OF PROJECTS COMPLETED IN THE REPORTING PERIOD (SEPTEMBER 1, 2013–AUGUST 31, 2014)**

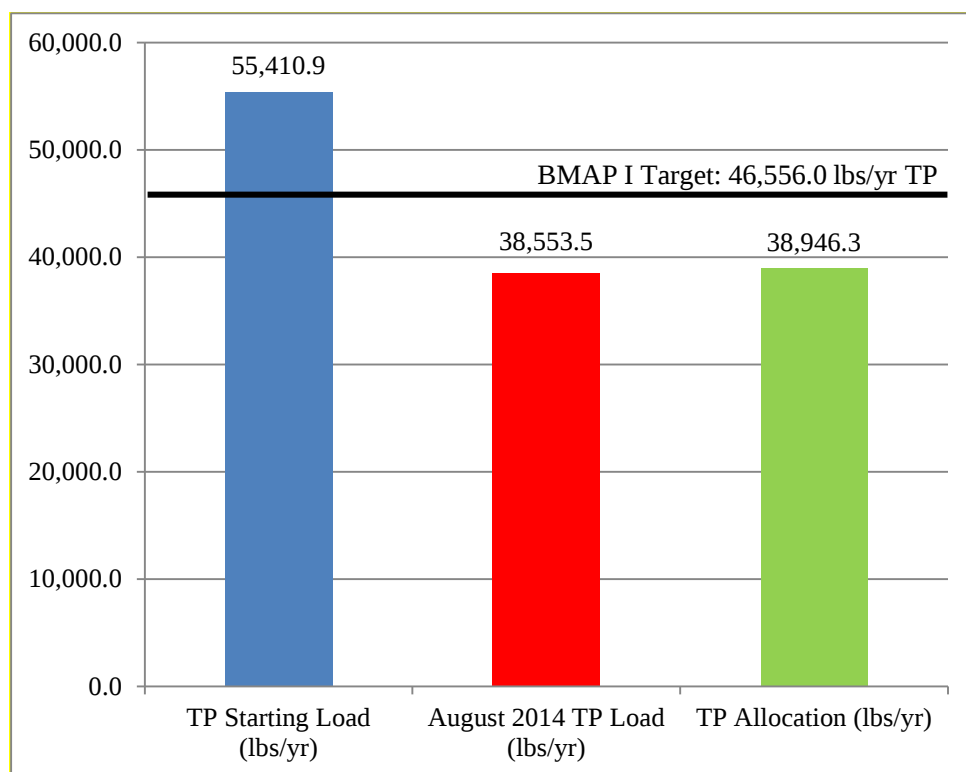
N/A = Not applicable

<sup>1</sup> These projects were completed before the reporting period; however, the information to quantify the reductions for these projects was just obtained by the Department, and thus the reductions are included in this reporting period.

| ENTITY                       | PROJECT NUMBER | PROJECT NAME                                   | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|------------------------------|----------------|------------------------------------------------|-----------------------|-----------------------|
| City of Sanford              | S-5            | Baffle Box on Sanford Avenue                   | 5.5                   | 0.7                   |
| City of Sanford <sup>1</sup> | S-6            | Mill Creek Stormwater Credit Pond              | 1,465.6               | 433.8                 |
| City of Sanford <sup>1</sup> | S-7            | Baffle boxes (missing from model)              | 9.0                   | 6.7                   |
| Volusia County               | VC-1           | Fertilizer Ordinance                           | 132.5                 | 19.1                  |
| Volusia County               | VC-2           | Street Sweeping – Increase                     | 1,482.7               | 667.8                 |
| Agriculture                  | N/A            | Agricultural BMP Enrollment – Reporting Period | 3,747.1               | 684.9                 |
| <b>TOTAL</b>                 | <b>N/A</b>     | <b>TOTAL REDUCTIONS IN REPORTING PERIOD</b>    | <b>6,842.4</b>        | <b>1,813.1</b>        |



**FIGURE 11: PROGRESS TOWARDS THE LAKES HARNEY AND MONROE AND MSJR TN TMDL THROUGH AUGUST 31, 2014**



**FIGURE 12: PROGRESS TOWARDS THE LAKES HARNEY AND MONROE AND MSJR TP TMDL THROUGH AUGUST 31, 2014**

## 2.3 STREET SWEEPING

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 two years of BMAP implementation were reported based on the old methodology. However, as of 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.

### **Section 3: WATER QUALITY AND BIOLOGICAL MONITORING**

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The Lakes Harney and Monroe and MSJR BMAP monitoring plan was designed to enhance the understanding of basin loads, identify areas with high nutrient concentrations, and track water quality trends. The information gathered through the monitoring plan will measure progress toward achieving the TMDLs and provide a better understanding of the watershed loading. The BMAP monitoring plan consists of ambient water quality sampling and biological and vegetation monitoring.

A detailed water quality evaluation will be conducted no later than after four years of BMAP implementation to determine water quality improvements in the basin from actions included in the first BMAP iteration. All responsible stakeholders participated in the monitoring plan in the first year of BMAP implementation. A few highlights of the monitoring efforts are described below.

The city of Deltona continued monthly monitoring at three stations in the basin and has been uploading the data to the STORage and RETrieval (STORET) database.

Seminole County continued biological and ambient water quality monitoring as identified in the BMAP, with the exception of Smith Canal. Biological monitoring was not conducted on Smith Canal due to low water levels. All water chemistry data are uploaded to STORET via the Seminole Watershed Atlas. Although some upload issues have occurred over the past year, the county thinks the atlas issues have been resolved. Biological and vegetative monitoring data have also been included.

Volusia County continued monthly sampling at six of the stations included in the BMAP.

The SJRWMD continued to sample the 10 ambient water quality stations that are part of the monitoring plan. Of these stations, eight are sampled monthly and two are sampled every other month. All water quality station data are uploaded to STORET. The SJRWMD also continued its phytoplankton sampling at Stations SRN, OW-SJR-1, and SJR-415, which are located progressively downstream in the St. Johns River. Station SRN, located farthest upstream, represents river water coming from the Upper St. Johns River Basin. Station OW-SJR-1 is located downstream of Lake Harney and the outflow from Lake Ashby. Station SJR-415 is downstream of Lake Jesup and upstream of Lake Monroe.

## **APPENDIX A: BMAP PROJECTS**

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The tables below show the implementation status of the BMAP projects as of August 31, 2014. The tables provide information on the nutrient reduction attributed to each individual project, shown in lbs/yr. These projects were submitted to provide reasonable assurance to the Department that each entity has a plan on how it will meet its allocation; however, the list of projects is meant to be flexible enough to allow for changes that may occur over time, provided that the reduction is still met within the specified time frame.

**TABLE A-1: CITY OF DeBARY PROJECTS**

N/A = Not applicable

\*Noncontributing basins are defined in **Section 1.4** (Assumptions and Considerations Regarding TMDL Implementation) in the Lakes Harney and Monroe and MSJR BMAP.

| ENTITY | PROJECT NUMBER | PROJECT NAME           | PROJECT DETAIL                                    | STATUS | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|--------|----------------|------------------------|---------------------------------------------------|--------|-----------------------|-----------------------|
| DeBary | DB-1           | Noncontributing Basin* | Noncontributing basin; not included in TMDL model | N/A    | 6,522.5               | 1,036.8               |
| DeBary | DB-2           | Noncontributing Basin* | Noncontributing basin; not included in TMDL model | N/A    | 7,039.2               | 1,170.2               |

**TABLE A-2: CITY OF DeBARY SUMMARY OF REDUCTIONS**

| CATEGORY                        | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|---------------------------------|-----------------------|-----------------------|
| Total Projects Reduction        | 13,561.7              | 2,207.0               |
| Total BMAP 1 Required Reduction | 1,880.2               | 86.4                  |
| Credit for Future BMAPs         | 11,681.5              | 2,120.6               |

**TABLE A-3: CITY OF DELAND PROJECTS**

| ENTITY | PROJECT NUMBER | PROJECT NAME      | PROJECT DETAIL                                                                                         | STATUS  | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|--------|----------------|-------------------|--------------------------------------------------------------------------------------------------------|---------|-----------------------|-----------------------|
| DeLand | DL-1           | Education Efforts | FYN Program, irrigation ordinance, fertilizer ordinance, pamphlets, website, illicit discharge program | Ongoing | 9.1                   | 0.7                   |

**TABLE A-4: CITY OF DELAND SUMMARY OF REDUCTIONS**

| CATEGORY                        | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|---------------------------------|-----------------------|-----------------------|
| Total Projects Reduction        | 9.1                   | 0.7                   |
| Total BMAP 1 Required Reduction | 0.0                   | 0.0                   |
| Credit for Future BMAPs         | 9.1                   | 0.7                   |

**TABLE A-5: CITY OF DELTONA PROJECTS**

N/A = Not applicable

O&M = Operations and maintenance

| ENTITY  | PROJECT NUMBER | PROJECT NAME                                  | PROJECT TYPE         | PROJECT DETAIL                                                                                              | TREATMENT ACRES | PROJECT COST | ANNUAL O&M | END DATE | STATUS    | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|---------|----------------|-----------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------|-----------------|--------------|------------|----------|-----------|-----------------------|-----------------------|
| Deltona | DEL-1          | McGarity Kirkhill Regional Treatment Facility | Wet detention pond   | Retrofit project to treat surface water runoff from residential area in city                                | 277.2           | \$1,500,000  | \$50,000   | 09/2011  | Completed | 344.6                 | 91.8                  |
| Deltona | DEL-2          | DRA GC-5                                      | Retention BMPs       | Water quality treatment for residential area                                                                | 10.5            | \$120,000    | \$6,000    | 08/2009  | Completed | 25.5                  | 4.3                   |
| Deltona | DEL-3          | Swales                                        | Swales               | Swales throughout city                                                                                      | 2,368.7         | \$2,000,000  | \$100,000  | Varies   | Completed | 4,820.2               | 728.6                 |
| Deltona | DEL-4          | Lake Gleason Control Structure                | Wet detention pond   | Proposed control structure to increase storage in Lake Gleason                                              | 581.6           | \$150,000    | \$3,000    | Unknown  | Completed | 672.0                 | 188.4                 |
| Deltona | DEL-5          | Education Efforts                             | Education            | FYN Program, irrigation ordinance, pet waste ordinance, PSAs, pamphlets, website, illicit discharge program | N/A             | Unknown      | Unknown    | Ongoing  | Ongoing   | 1,270.0               | 206.4                 |
| Deltona | DEL-6          | Catch Basin Maintenance                       | Catch basin cleanout | Catch basin cleanout throughout city                                                                        | N/A             | Unknown      | Unknown    | Ongoing  | Ongoing   | 19.1                  | 10.4                  |

**TABLE A-6: CITY OF DELTONA SUMMARY OF REDUCTIONS**

| CATEGORY                        | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|---------------------------------|-----------------------|-----------------------|
| Total Projects Reduction        | 7,151.3               | 1,229.9               |
| Total BMAP 1 Required Reduction | 3,608.7               | 388.3                 |
| Credit for Future BMAPs         | 3,542.6               | 814.6                 |

**TABLE A-7: CITY OF LAKE HELEN PROJECTS**

| ENTITY     | PROJECT NUMBER | PROJECT NAME      | PROJECT DETAIL                                                                                        | STATUS  | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|------------|----------------|-------------------|-------------------------------------------------------------------------------------------------------|---------|-----------------------|-----------------------|
| Lake Helen | LH-1           | Education Efforts | Irrigation ordinance, pet waste ordinance, pamphlets, website, stormwater pollution prevent factsheet | Ongoing | 30.8                  | 4.5                   |

**TABLE A-8: CITY OF LAKE HELEN SUMMARY OF REDUCTIONS**

| CATEGORY                        | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|---------------------------------|-----------------------|-----------------------|
| Total Projects Reduction        | 30.8                  | 4.5                   |
| Total BMAP 1 Required Reduction | 0.0                   | 0.0                   |
| Credit for Future BMAPs         | 30.8                  | 4.5                   |

**TABLE A-9: CITY OF LAKE MARY PROJECTS**

| ENTITY    | PROJECT NUMBER | PROJECT NAME      | PROJECT DETAIL                                                                                                                   | STATUS  | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|-----------|----------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------|---------|-----------------------|-----------------------|
| Lake Mary | LM-1           | Education Efforts | FYN Program, landscape ordinance, irrigation ordinance, pet waste ordinance, PSAs, pamphlets, website, illicit discharge program | Ongoing | 361.5                 | 52.2                  |
| Lake Mary | LM-2           | Street Sweeping   | Sweeping of 53.58 curb miles per year                                                                                            | Ongoing | 9.6                   | 6.4                   |

**TABLE A-10: CITY OF LAKE MARY SUMMARY OF REDUCTIONS**

| CATEGORY                        | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|---------------------------------|-----------------------|-----------------------|
| Total Projects Reduction        | 371.1                 | 58.6                  |
| Total BMAP 1 Required Reduction | 0.0                   | 0.0                   |
| Credit for Future BMAPs         | 371.1                 | 58.6                  |

**TABLE A-11: CITY OF ORANGE CITY PROJECTS**

| ENTITY      | PROJECT NUMBER | PROJECT NAME      | PROJECT DETAIL                                                      | STATUS  | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|-------------|----------------|-------------------|---------------------------------------------------------------------|---------|-----------------------|-----------------------|
| Orange City | OC-1           | Education Efforts | Irrigation ordinance, pamphlets, website, illicit discharge program | Ongoing | 1.3                   | 0.2                   |

**TABLE A-12: CITY OF ORANGE CITY SUMMARY OF REDUCTIONS**

| CATEGORY                        | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|---------------------------------|-----------------------|-----------------------|
| Total Projects Reduction        | 1.3                   | 0.2                   |
| Total BMAP 1 Required Reduction | 0.0                   | 0.0                   |
| Credit for Future BMAPs         | 1.3                   | 0.2                   |

**TABLE A-13: CITY OF SANFORD PROJECTS**

N/A = Not applicable

| ENTITY  | PROJECT NUMBER | PROJECT NAME                         | PROJECT TYPE       | PROJECT DETAIL                                                                                                | TREATMENT ACRES | PROJECT COST | END DATE | STATUS    | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|---------|----------------|--------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------|-----------------|--------------|----------|-----------|-----------------------|-----------------------|
| Sanford | S-1            | Cloud Branch Phase I                 | Wet detention pond | Drainage/water quality improvements                                                                           | 187.0           | \$3,491,375  | 05/2007  | Completed | 647.3                 | 173.9                 |
| Sanford | S-2            | Cloud Branch Phase II                | Wet detention pond | Drainage/water quality improvements                                                                           | 379.7           | \$3,072,693  | 05/2007  | Completed | 1,390.1               | 405.6                 |
| Sanford | S-3            | Street Sweeping                      | Street sweeping    | Street sweeping throughout city                                                                               | N/A             | Unknown      | Ongoing  | Ongoing   | 8,866.5               | 3,993.3               |
| Sanford | S-4            | Education Efforts                    | Education          | FYN Program, landscaping ordinance, irrigation ordinance, PSAs, pamphlets, website, illicit discharge program | N/A             | Unknown      | Ongoing  | Ongoing   | 2,069.9               | 324.5                 |
| Sanford | S-5            | Sanford Avenue                       | Baffle box         | Baffle box on Sanford Avenue                                                                                  | Unknown         | Unknown      | 2014     | Completed | 5.5                   | 0.7                   |
| Sanford | S-6            | Mill Creek                           | Wet detention pond | Drainage/water quality improvements                                                                           | 412.1           | Unknown      | 2004     | Completed | 1,465.6               | 433.8                 |
| Sanford | S-7            | Baffle Boxes (not included in model) | Baffle box         | Baffle box on 2 <sup>nd</sup> Street                                                                          | 200.1           | Unknown      | 1997     | Completed | 9.0                   | 6.7                   |

**TABLE A-14: CITY OF SANFORD SUMMARY OF REDUCTIONS**

| CATEGORY                        | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|---------------------------------|-----------------------|-----------------------|
| Total Projects Reduction        | 14,453.9              | 5,338.5               |
| Total BMAP 1 Required Reduction | 10,360.0              | 1,339.6               |
| Credit for Future BMAPs         | 4,093.9               | 3,998.9               |

**TABLE A-15 FDOT PROJECTS**

N/A = Not applicable

\* Noncontributing areas are defined in **Section 1.4** (Assumptions and Considerations Regarding TMDL Implementation) in the Lakes Harney and Monroe and MSJR BMAP.

| ENTITY | PROJECT NUMBER | PROJECT NAME                            | PROJECT TYPE       | TREATMENT ACRES | START DATE | END DATE | STATUS    | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|--------|----------------|-----------------------------------------|--------------------|-----------------|------------|----------|-----------|-----------------------|-----------------------|
| FDOT   | FDOT-1         | 79070-3547-02 (Pond 2)                  | Wet detention pond | 21.6            | N/A        | 6/2007   | Completed | 19.7                  | 2.2                   |
| FDOT   | FDOT-2         | 79070-3547-03 (Pond 3)                  | Wet detention pond | 24.9            | N/A        | 6/2007   | Completed | 11.7                  | 0.6                   |
| FDOT   | FDOT-3         | 79070-3547-04 (Pond 4)                  | Wet detention pond | 35.2            | N/A        | 6/2007   | Completed | 15.8                  | 0.8                   |
| FDOT   | FDOT-4         | 79070-3547-06 (Pond 6)                  | Wet detention pond | 18.8            | N/A        | 6/2007   | Completed | 13.6                  | 0.7                   |
| FDOT   | FDOT-5         | 79070-3546-03 (Pond 9)                  | Wet detention pond | 13.4            | N/A        | 6/2007   | Completed | 13.3                  | 8.6                   |
| FDOT   | FDOT-6         | 79070-3546-02 (Pond 8)                  | Wet detention pond | 44.3            | N/A        | 6/2007   | Completed | 25.4                  | 6.2                   |
| FDOT   | FDOT-7         | 79070-3547-05 (Pond 5)                  | Wet detention pond | 33.1            | N/A        | 6/2007   | Completed | 25.2                  | 2.7                   |
| FDOT   | FDOT-8         | 79070-3546-01 (Pond 7)                  | Wet detention pond | 26.9            | N/A        | 6/2007   | Completed | 19.9                  | 1.4                   |
| FDOT   | FDOT-9         | 79070-3546-04 (Pond 10)                 | Wet detention pond | 3.6             | N/A        | 6/2007   | Completed | 3.8                   | 2.7                   |
| FDOT   | FDOT-10        | 79110-xxx3-08 (Pond 4)                  | Wet detention pond | 8.4             | N/A        | 10/2008  | Completed | 8.2                   | 1.6                   |
| FDOT   | FDOT-11        | 79110-xxx3-09 (Pond 5)                  | Wet detention pond | 22.6            | N/A        | 10/2008  | Completed | 27.2                  | 6.2                   |
| FDOT   | FDOT-12        | 79110-xxx3-10 (Pond 6)                  | Wet detention pond | 10.7            | N/A        | 10/2008  | Completed | 13.6                  | 2.8                   |
| FDOT   | FDOT-13        | 79110-xxx3-11 (Pond 7)                  | Wet detention pond | 30.0            | N/A        | 10/2008  | Completed | 38.3                  | 7.7                   |
| FDOT   | FDOT-14        | 79110-xxx4-01 & 02<br>(Pond 1 & 1A)     | Wet detention pond | 35.6            | N/A        | Unknown  | Completed | 54.4                  | 11.0                  |
| FDOT   | FDOT-15        | 79110-xxx4-03 & 04<br>(Pond 2 & 2A)     | Wet detention pond | 38.7            | N/A        | Unknown  | Completed | 65.3                  | 13.3                  |
| FDOT   | FDOT-16        | 79110-xxx4-05 (Pond 14)                 | Wet detention pond | 24.5            | N/A        | Unknown  | Completed | 43.8                  | 8.0                   |
| FDOT   | FDOT-17        | SR 415 - missing from model             | Swales             | 133.9           | N/A        | Unknown  | Completed | 90.1                  | 28.3                  |
| FDOT   | FDOT-18        | SR 44 - missing from model              | Swales             | 43.5            | N/A        | Unknown  | Completed | 34.1                  | 10.5                  |
| FDOT   | FDOT-19        | SR 46 - missing from model              | Swales             | 48.2            | N/A        | Unknown  | Completed | 32.8                  | 7.4                   |
| FDOT   | FDOT-20        | 77160-3404-02 (Pond 1-NW)               | Retention BMPs     | 25.5            | N/A        | 05/2004  | Completed | 94.2                  | 13.4                  |
| FDOT   | FDOT-21        | 77160-3404-06 (Pond 4-11)               | Wet detention pond | 38.5            | N/A        | 05/2004  | Completed | 102.5                 | 24.4                  |
| FDOT   | FDOT-22        | 77160-3404-05 (Pond 4-1)                | Wet detention pond | 32.4            | N/A        | 05/2004  | Completed | 44.9                  | 12.4                  |
| FDOT   | FDOT-23        | 77160-3404-07 (Pond 5)                  | Wet detention pond | 30.5            | N/A        | 05/2004  | Completed | 47.4                  | 8.6                   |
| FDOT   | FDOT-24        | 77160-3436                              | Swales             | 56.5            | N/A        | Unknown  | Completed | 147.5                 | 19.8                  |
| FDOT   | FDOT-25        | 77160-3439-01 (Pond 1)                  | Wet detention pond | 20.3            | N/A        | 00/2006  | Completed | 7.4                   | 0.7                   |
| FDOT   | FDOT-26        | 79110-3404-04 & 05<br>(Pond QQ3 & QQ-5) | Wet detention pond | 47.6            | N/A        | 10/2004  | Completed | 56.4                  | 11.7                  |

| ENTITY | PROJECT NUMBER | PROJECT NAME                           | PROJECT TYPE          | TREATMENT ACRES | START DATE | END DATE | STATUS                                       | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|--------|----------------|----------------------------------------|-----------------------|-----------------|------------|----------|----------------------------------------------|-----------------------|-----------------------|
| FDOT   | FDOT-27        | 79110-3404-06 (RR-3)                   | Wet detention pond    | 53.1            | N/A        | 10/2004  | Completed                                    | 68.1                  | 16.9                  |
| FDOT   | FDOT-28        | 79110-3404-07 (Pond SS-2)              | Wet detention pond    | 87.5            | N/A        | 02/2006  | Completed                                    | 91.9                  | 26.3                  |
| FDOT   | FDOT-29        | Roadside Swale                         | Swales                | 35.0            | N/A        | 10/2004  | Completed                                    | 93.8                  | 13.5                  |
| FDOT   | FDOT-30        | Roadside swale                         | Swales                | 13.3            | N/A        | 02/2006  | Completed                                    | 39.5                  | 5.7                   |
| FDOT   | FDOT-31        | SR 415 - missing from model            | Swales                | 65.1            | N/A        | Unknown  | Completed                                    | 39.1                  | 8.5                   |
| FDOT   | FDOT-32        | Education Efforts                      | Education             | N/A             | N/A        | Ongoing  | Ongoing                                      | 101.1                 | 13.3                  |
| FDOT   | FDOT-33        | Street Sweeping                        | Street sweeping       | N/A             | N/A        | Ongoing  | Ongoing                                      | 43.5                  | 27.8                  |
| FDOT   | FDOT-34        | Noncontributing Area in DeBary         | Noncontributing area* | 39.2            | N/A        | N/A      | N/A                                          | 194.9                 | 27.9                  |
| FDOT   | FDOT-35        | Noncontributing Area in Volusia County | Noncontributing area* | 22.7            | N/A        | N/A      | N/A                                          | 117.6                 | 19.0                  |
| FDOT   | FDOT-36        | SR 415 – Pond A                        | Wet detention pond    | 4.3             | 2012       | 2015     | Construction                                 | 6.8                   | 1.5                   |
| FDOT   | FDOT-37        | SR 415 – Pond B                        | Wet detention pond    | 8.5             | 2012       | 2015     | Construction                                 | 7.9                   | 0.8                   |
| FDOT   | FDOT-38        | SR 415 – Exfiltration Trench           | Retention BMPs        | 22.0            | 2012       | 2015     | Construction                                 | 11.6                  | 0.4                   |
| FDOT   | FDOT-39        | SR 415 – Pond H                        | Wet detention pond    | 9.9             | 2012       | 2015     | Construction                                 | 10.2                  | 2.4                   |
| FDOT   | FDOT-40        | SR 46 – Pond 1                         | Wet detention pond    | 18.0            | 2012       | Unknown  | Design complete; not funded for construction | 25.8                  | 6.3                   |
| FDOT   | FDOT-41        | SR 46 – Pond 2                         | Wet detention pond    | 11.6            | 2012       | Unknown  | Design complete; not funded for construction | 18.8                  | 5.4                   |

**TABLE A-16: FDOT SUMMARY OF REDUCTIONS**

| CATEGORY                        | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|---------------------------------|-----------------------|-----------------------|
| Total Projects Reduction        | 1,927.1               | 389.4                 |
| Total BMAP 1 Required Reduction | 1,231.8               | 0.0                   |
| Credit for Future BMAPs         | 695.3                 | 389.4                 |

**TABLE A-17: SEMINOLE COUNTY PROJECTS**

N/A = Not applicable

| ENTITY          | PROJECT NUMBER | PROJECT NAME                               | PROJECT TYPE       | PROJECT DETAIL                                                                                                                     | TREATMENT ACRES | PROJECT COST | ANNUAL O&M | END DATE | STATUS    | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|-----------------|----------------|--------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------|------------|----------|-----------|-----------------------|-----------------------|
| Seminole County | SC-1           | Club II Regional Stormwater Facility (RSF) | Wet detention pond | RSF to collect and treat stormwater runoff                                                                                         | 422.7           | \$2,334,682  | \$20,095   | 02/2007  | Completed | 1,333.3               | 395.6                 |
| Seminole County | SC-2           | Midway RSF                                 | Wet detention pond | RSF to collect and treat stormwater runoff                                                                                         | 121.8           | \$2,163,151  | \$26,662   | 01/2009  | Completed | 408.4                 | 118.4                 |
| Seminole County | SC-3           | Elder Creek RSF                            | Wet detention pond | RSF to collect and treat stormwater runoff                                                                                         | 229.7           | \$3,884,496  | \$19,251   | 11/2007  | Completed | 519.2                 | 134.4                 |
| Seminole County | SC-4           | Lockhart-Smith RSF                         | Wet detention pond | RSF to collect and treat stormwater runoff                                                                                         | 2,757.0         | \$3,504,755  | Unknown    | 01/2007  | Completed | 3,201.1               | 840.1                 |
| Seminole County | SC-5           | Street Sweeping                            | Street sweeping    | Street sweeping throughout the county                                                                                              | N/A             | Unknown      | Unknown    | Ongoing  | Ongoing   | 300.0                 | 135.1                 |
| Seminole County | SC-6           | Education Efforts                          | Education          | FYN Program, landscaping ordinance, irrigation ordinance, pet waste ordinance, PSAs, pamphlets, website, illicit discharge program | N/A             | Unknown      | Unknown    | Ongoing  | Ongoing   | 1,875.8               | 282.3                 |

**TABLE A-18: SEMINOLE COUNTY SUMMARY OF REDUCTIONS**

| CATEGORY                        | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|---------------------------------|-----------------------|-----------------------|
| Total Projects Reduction        | 7,637.8               | 1,905.9               |
| Total BMAP 1 Required Reduction | 3,973.6               | 155.5                 |
| Credit for Future BMAPs         | 3,664.2               | 1,750.4               |

**TABLE A-19: TURNPIKE AUTHORITY PROJECTS**

| ENTITY             | PROJECT NUMBER | PROJECT NAME    | PROJECT DETAIL                | STATUS  | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|--------------------|----------------|-----------------|-------------------------------|---------|-----------------------|-----------------------|
| Turnpike Authority | T-1            | Street Sweeping | Sweep 120 lane miles per year | Ongoing | 21.6                  | 14.4                  |

**TABLE A-20: TURNPIKE AUTHORITY SUMMARY OF REDUCTIONS**

| CATEGORY                        | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|---------------------------------|-----------------------|-----------------------|
| Total Projects Reduction        | 21.6                  | 14.4                  |
| Total BMAP 1 Required Reduction | 0.0                   | 0.0                   |
| Credit for Future BMAPs         | 21.6                  | 14.4                  |

**TABLE A-21: VOLUSIA COUNTY PROJECTS**

N/A = Not applicable

\* Noncontributing basins are defined in **Section 1.4** (Assumptions and Considerations Regarding TMDL Implementation) in the Lakes Harney and Monroe and MSJR BMAP.

| ENTITY         | PROJECT NUMBER | PROJECT NAME                            | PROJECT TYPE                                                                                           | TREATMENT ACRES | PROJECT COST | END DATE | STATUS    | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|----------------|----------------|-----------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------|--------------|----------|-----------|-----------------------|-----------------------|
| Volusia County | VC-1           | Education and Outreach                  | FYN Program, irrigation ordinance, fertilizer ordinance, pamphlets, website, illicit discharge program | N/A             | Unknown      | Ongoing  | Ongoing   | 1,524.4               | 220.2                 |
| Volusia County | VC-2           | Street Sweeping                         | Street sweeping                                                                                        | N/A             | Unknown      | Ongoing  | Ongoing   | 1,482.7               | 667.8                 |
| Volusia County | VC-3           | Lemon Bluff Road                        | Swales                                                                                                 | 1.8             | \$145,000    | 2011     | Completed | 6.6                   | 1.1                   |
| Volusia County | VC-4           | Lemon Bluff Boat Ramp                   | Swales                                                                                                 | 0.2             | \$55,550     | 02/2011  | Completed | 0.7                   | 0.1                   |
| Volusia County | VC-5           | DeBary Avenue – Doyle Road Expansion    | Wet detention pond                                                                                     | 123.3           | Unknown      | Unknown  | Completed | 41.0                  | 10.3                  |
| Volusia County | VC-6           | Lake Winnemissett Noncontributing Basin | Noncontributing basin*                                                                                 | 1003.3          | N/A          | N/A      | N/A       | 657.9                 | 93.8                  |

**TABLE A-22: VOLUSIA COUNTY SUMMARY OF REDUCTIONS**

| CATEGORY                        | TN REDUCTION (LBS/YR) | TP REDUCTION (LBS/YR) |
|---------------------------------|-----------------------|-----------------------|
| Total Projects Reduction        | 3,713.3               | 993.2                 |
| Total BMAP 1 Required Reduction | 1,632.9               | 0.0                   |
| Credit for Future BMAPs         | 2,080.4               | 993.2                 |