

# **2013 FIVE-YEAR ASSESSMENT REPORT**

## **for the Lower St. Johns River Main Stem Basin Management Action Plan**

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

in cooperation with the  
**Lower St. Johns River TMDL Executive Committee**

February 2014

## **ACKNOWLEDGMENTS**

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This 2013 Lower St. Johns River Main Stem 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 following Lower St. Johns River Main Stem stakeholders:

- *Agriculture.*
- *Anheuser Busch.*
- *Camp Blanding.*
- *City of Atlantic Beach.*
- *City of Green Cove Springs.*
- *City of Jacksonville.*
- *City of Jacksonville Beach.*
- *City of Neptune Beach.*
- *City of Palatka.*
- *Clay County.*
- *Clay County Utility Authority.*
- *Florida Department of Agriculture and Consumer Services.*
- *Florida Department of Transportation.*
- *Georgia-Pacific.*
- *JEA.*
- *Naval Air Station Jacksonville.*
- *Naval Station Mayport.*
- *Putnam County.*
- *Seminole Electric.*
- *Smurfit-Stone Container.*

- *St. Johns County.*
- *St. Johns River Water Management District.*
- *Town of Hastings.*
- *Town of Orange Park.*
- *Town of Welaka.*

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

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|            |                                                         |
|------------|---------------------------------------------------------|
| APRICOT    | A Prototype Realistic Innovative Community of Today     |
| ATAC       | Allocation Technical Advisory Committee                 |
| BMAP       | Basin Management Action Plan                            |
| BMP        | Best Management Practice                                |
| CCUA       | Clay County Utility Authority                           |
| CR         | County Road                                             |
| Department | Florida Department of Environmental Protection          |
| DO         | Dissolved Oxygen                                        |
| DOSAT      | Dissolved Oxygen Saturation                             |
| EPA        | U.S. Environmental Protection Agency                    |
| FDACS      | Florida Department of Agriculture and Consumer Services |
| FDOH       | Florida Department of Health                            |
| FDOT       | Florida Department of Transportation                    |
| I          | Interstate                                              |
| ICWW       | Intracoastal Waterway                                   |
| I/I        | Inflow/Infiltration                                     |
| kg/yr      | Kilograms per Year                                      |
| LOC        | Lateral-Only Connection                                 |
| LSJR       | Lower St. Johns River                                   |
| µg/L       | Micrograms per Liter                                    |
| mg/L       | Milligrams per Liter                                    |
| MERIS      | Medium Resolution Imaging Spectrometer                  |
| MS4        | Municipal Separate Storm Sewer System                   |
| MT         | Metric Ton                                              |
| NAS        | Naval Air Station                                       |
| NNC        | Numeric Nutrient Criteria                               |
| NRCS       | Natural Resources Conservation Service                  |
| NS         | Naval Station                                           |
| NOAA       | National Oceanic and Atmospheric Administration         |
| NPDES      | National Pollutant Discharge Elimination System         |
| O&M        | Operation and Maintenance                               |
| OAWP       | Office of Agricultural Water Policy                     |
| psu        | Practical Salinity Unit                                 |
| RO         | Reverse Osmosis                                         |
| RST        | Regional Stormwater Treatment                           |
| SCR        | Selective Catalytic Reduction                           |
| SJRWMD     | St. Johns River Water Management District               |
| SR         | State Road                                              |
| SSAC       | Site-Specific Alternative Criteria                      |
| STORET     | Storage and Retrieval (Database)                        |
| TCAA       | Tri-County Agricultural Area                            |
| TMDL       | Total Maximum Daily Load                                |
| TN         | Total Nitrogen                                          |
| TP         | Total Phosphorus                                        |



|         |                                                                   |
|---------|-------------------------------------------------------------------|
| UF–IFAS | University of Florida–Institute of Food and Agricultural Sciences |
| USDA    | U.S. Department of Agriculture                                    |
| USGS    | U.S. Geological Survey                                            |
| WBID    | Waterbody Identification                                          |
| WRF     | Water Reclamation Facility                                        |
| WWTP    | Wastewater Treatment Plant                                        |
| WWTF    | Wastewater Treatment Facility                                     |

## **SUMMARY**

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### **TOTAL MAXIMUM DAILY LOADS**

The TMDLs for the main stem of the Lower St. Johns River (LSJR) Basin were adopted by the Florida Department of Environmental Protection in June 2008. The TMDLs target total phosphorus (TP) and total nitrogen (TN) in the freshwater reach to achieve reductions in the chlorophyll-*a* levels in this portion of the river. In addition, a TN TMDL was established in the marine reach to meet dissolved oxygen (DO) levels that would be protective of aquatic life uses.

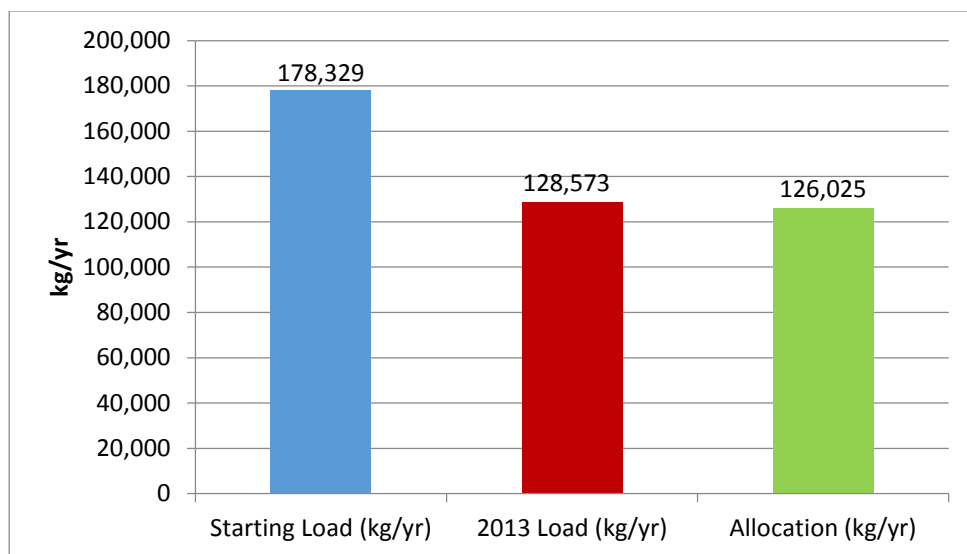
The LSJR Main Stem Basin Management Action Plan was adopted in October 2008 to implement these TMDLs. This 2013 Progress Report is the five-year assessment report for the LSJR Main Stem BMAP, and it describes the major accomplishments and issues identified during the reporting period from January 1, 2013, to December 31, 2013, as well as analyzes water quality trends over the last five years since BMAP implementation.

### **MAJOR ACCOMPLISHMENTS**

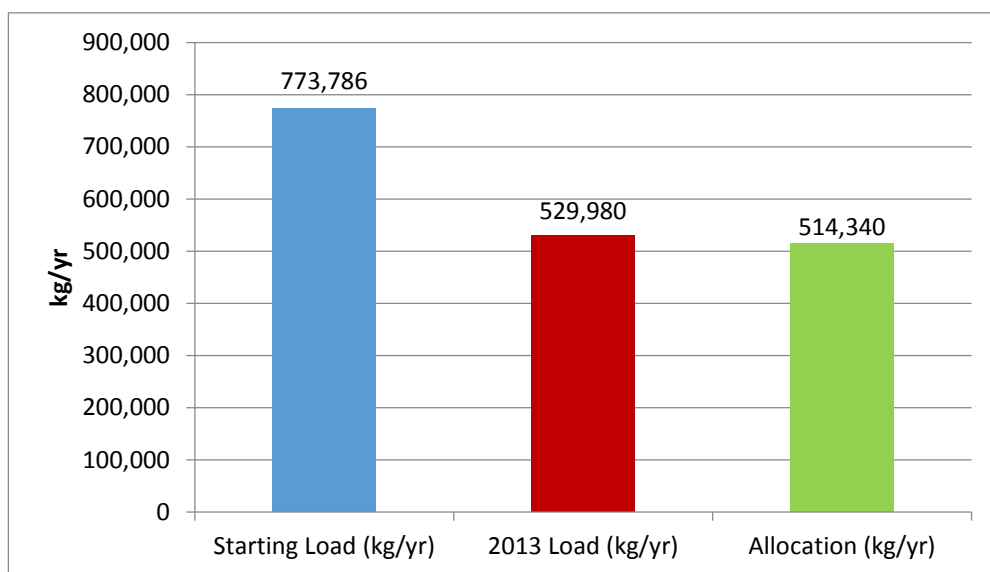
During the first five years of BMAP implementation, great progress has been made towards achieving the LSJR Main Stem TMDLs. In the freshwater reach of the river, the wastewater treatment facilities (WWTFs) and municipal separate storm sewer systems (MS4s) have exceeded their TN and TP required reductions. The non-MS4s have achieved 88% of the required TN reductions and 75% of the required TP reductions. In addition, agriculture has achieved 52% of the TN reductions and 33% of the TP reductions.

In the marine reach of the river, the WWTFs have also exceeded the TN required reductions. The MS4s have achieved 42% of the TN reductions, the non-MS4s achieved 29% of the TN reductions, and agriculture has not made reductions, although it has been determined that the majority of the agricultural lands identified during BMAP development are no longer in agriculture.

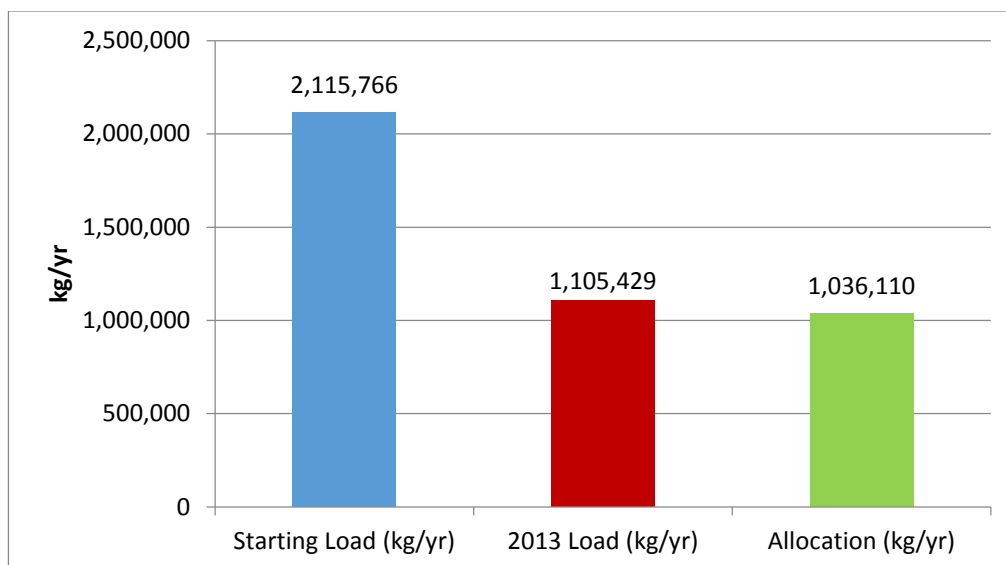
The progress made towards achieving each of the TMDLs during the first five years of BMAP implementation is shown in **Figure ES-1** through **Figure ES-3**.



**FIGURE ES-1: PROGRESS TOWARDS THE TP TMDL IN THE FRESHWATER REACH**



**FIGURE ES-2: PROGRESS TOWARDS THE TN TMDL IN THE FRESHWATER REACH**



**FIGURE ES-3: PROGRESS TOWARDS THE TN TMDL IN THE MARINE REACH**

During the reporting period, the city of Jacksonville Beach completed its WWTF upgrade, and JEA completed a WWTF upgrade and three facility phase-outs in the marine reach. Clay County completed a wet detention pond project and St. Johns County completed a baffle box project, both also located in the marine reach. In addition, the Florida Department of Agriculture and Consumer Services (FDACS) continued to enroll producers in best management practices (BMPs) in the freshwater reach.

## **MAJOR ISSUES**

The major issue in BMAP implementation this past year has been securing funding for projects, which caused some delays in the implementation of BMAP projects. In addition, the DO station at Fulton Point has been inactive since March 2012, and the DO station at Clapboard Creek has been inactive since February 2013.

## **ACTIVITIES FOR THE UPCOMING YEAR**

The sixth annual BMAP progress report will encompass the period from January 1, 2014, through December 31, 2014. During this time, Clay County will complete the wet detention pond associated with the County Road 209 widening, and the city of Palatka will complete the downtown first-flush treatment. The city of Jacksonville will continue with the septic tank phase-out projects and the implementation of the stormwater projects, and continue to pursue other projects and/or water quality credit trades. FDACS will focus on significantly increasing enrollment in all commodities, and on supporting and expanding the Tri-County Agricultural Area (TCAA) Water Management Partnership.

In addition, the freshwater ambient water quality sampling, DO stations sampling, and tributaries sampling will continue as described in the monitoring plan. The Department will reinstate the DO stations at Fulton Point and Clapboard Creek as soon as possible for the marine reach monitoring.

## **WATER QUALITY TRENDS**

In the freshwater reach from 1995 through 2013, TN at the Racy Point station has exhibited a significant downward trend. With the exception of the October–March medium flow condition, all combinations of season and discharge exhibit a significant downward trend at this location.

There is no significant trend in TP at the Racy Point station when all flow categories and seasonal data are combined, but there is a significant downward trend for data collected between April–September under low-flow conditions, and a nearly significant downward trend for October–March low flow. An unusual seasonal divergence in trends occurs under high-flow conditions, in which October–March data exhibit a significant downward trend, while April–September data exhibit a significant increasing trend. Additions of water volume during Rodman Reservoir drawdowns in 2007–08 and 2011–12 may have contributed to this anomalous high-flow downward trend. When the significance test is rerun with all of the reservoir drawdown years removed, there is no significant downward trend in the Racy Point TP high-flow, October–March condition.

Monitoring data for the freshwater reach Racy Point station in the segment with waterbody identification (WBID) number 2213K indicate that algal bloom density and duration have been declining over time.

In the marine reach, TN concentrations are declining under medium-flow conditions for October–March data, and are close to exhibiting a significant decline for medium-flow April–September data. For samples collected under high-flow conditions, the data exhibit a significant increasing trend (April–September), or exhibit no trend (October–March). TP concentrations appear to be trending upwards, although it appears that concentrations peaked in 2007–09, and have been declining since that time.

When comparing the DO data collected at the USGS station at the Dames Point Bridge with the site-specific alternative criterion (SSAC), the SSAC was attained in all years from 2008 through 2013.

## **SECTION 1: INTRODUCTION**

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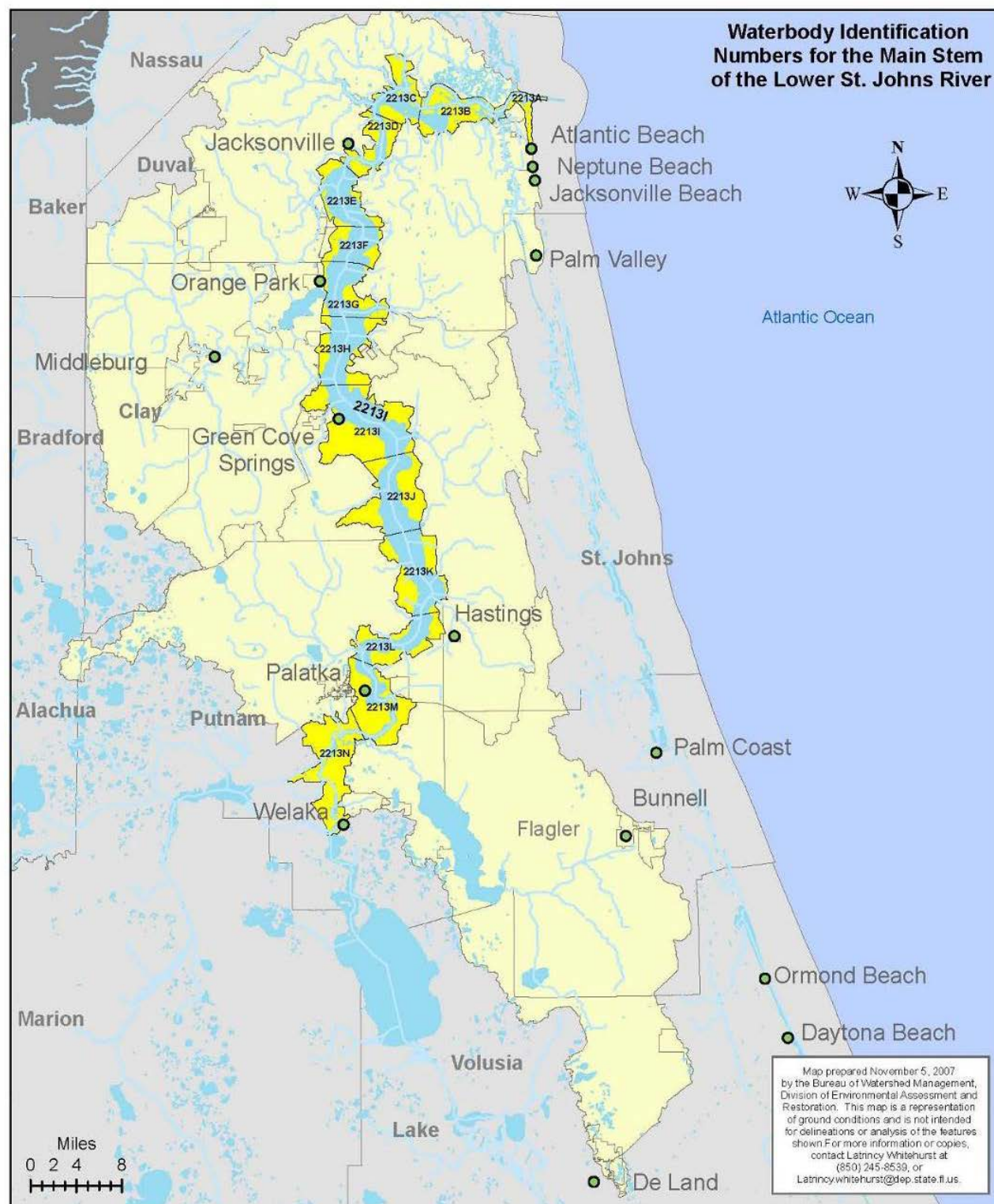
### **1.1 PURPOSE OF THE REPORT**

This is the five-year assessment report for the Lower St. Johns River (LSJR) Main Stem Basin Management Action Plan. **Section 2** and **Section 3** describe the major accomplishments and issues, respectively, during the period from January 1, 2013, through December 31, 2013. A summary of efforts for the upcoming year (January 1 through December 31, 2014) is included in **Section 4**. **Section 5** provides an overview of water quality trends during the first five years of BMAP implementation.

### **1.2 TOTAL MAXIMUM DAILY LOADS FOR THE LSJR BASIN**

The area addressed by the LSJR BMAP is that portion of the St. Johns River that flows between the mouth of the Ocklawaha River, its largest tributary, and the Atlantic Ocean, encompassing a 2,750-square-mile drainage area (see **Figure 1**). Within this reach, the St. Johns River is 101 miles long and has a water surface area of approximately 115 square miles. Major centers of population within the LSJR Basin include Palatka, a city of 10,700 at the southern entrance to the basin; Green Cove Springs, a city of 4,700 at the midpoint; and the Orange Park, Middleburg, and Jacksonville metropolitan area, with a population of over 1 million, in the northern portion of the basin. For assessment purposes, the Florida Department of Environmental Protection has divided the LSJR Basin into water assessment polygons with a unique waterbody identification (WBID) number for each watershed or stream reach. The main stem of the LSJR is divided into 15 WBID segments (see **Figure 1**). The LSJR is also divided into two reaches based on salinity: marine and freshwater (**Figure 2**).

The Total Maximum Daily Loads for the main stem of the LSJR Basin were adopted by the Department in June 2008. The TMDLs include total phosphorus (TP) and total nitrogen (TN) in the freshwater reach to achieve reductions in the chlorophyll-*a* levels in this portion of the river. A TN TMDL was also established in the marine reach to meet dissolved oxygen (DO) levels that would be protective of aquatic life uses. **Table 1** lists the TMDLs and pollutant load allocations adopted by rule for the LSJR.



**FIGURE 1: LOCATION OF THE LSJR BASIN**





FIGURE 2: MARINE AND FRESHWATER REACHES IN THE LSJR BASIN



**TABLE 1: TMDLS IN THE LSJR BASIN**

\* Includes a percent reduction from National Pollutant Discharge Elimination System (NPDES) stormwater sources.

| RIVER REACH | WBID(S)        | TMDL (KILOGRAMS/ YEAR [KG/YR]) | TMDL BASELINE LOAD (KG/YR) | WASTELOAD ALLOCATION* (KG/YR) | LOAD ALLOCATION (KG/YR) | OVERALL NEEDED REDUCTION (KG/YR) |
|-------------|----------------|--------------------------------|----------------------------|-------------------------------|-------------------------|----------------------------------|
| Freshwater  | 2213I to 2213N | 500,325 TP                     | 599,610                    | 46,357 TP                     | 453,968 TP              | 99,285                           |
| Freshwater  | 2213I to 2213N | 8,571,563 TN                   | 10,115,552                 | 236,695 TN                    | 8,334,868 TN            | 1,543,989                        |
| Marine      | 2213A to 2213H | 1,376,855 TN                   | 2,453,258                  | 1,027,590 TN                  | 349,265                 | 1,076,403                        |

### 1.3 RESPONSIBLE PARTIES AND KEY STAKEHOLDERS

The LSJR BMAP identified wastewater treatment facilities (WWTFs), municipal separate storm sewer systems (MS4s), urban areas outside of MS4s (non-MS4 areas), and agricultural sources of TN and TP in the basin. The following entities are responsible for achieving the load reductions in the freshwater reach:

- *City of Green Cove Springs WWTFs.*
- *City of Palatka WWTF.*
- *Georgia-Pacific WWTF.*
- *Seminole Electric WWTF.*
- *Clay County MS4.*
- *Green Cove Springs MS4.*
- *City of Palatka non-MS4.*
- *Clay County non-MS4.*
- *Putnam County non-MS4.*
- *St. Johns County non-MS4.*
- *Town of Hastings non-MS4.*
- *Town of Welaka non-MS4.*
- *Agriculture.*

The following entities are responsible for achieving the load reductions in the marine reach:

- *Anheuser Busch WWTF.*
- *City of Atlantic Beach WWTFs.*
- *City of Jacksonville Beach WWTF.*
- *City of Neptune Beach WWTF.*
- *Clay County Utility Authority (CCUA) WWTFs.*
- *JEA WWTFs.*
- *Naval Air Station (NAS) Jacksonville WWTF.*
- *Naval Station (NS) Mayport WWTF.*
- *Smurfit-Stone Container WWTF.*
- *Town of Orange Park WWTF.*
- *City of Atlantic Beach MS4.*
- *City of Jacksonville/ Florida Department of Transportation (FDOT) MS4.*
- *City of Jacksonville Beach MS4.*
- *City of Neptune Beach MS4.*
- *Clay County MS4.*
- *NAS Jacksonville MS4.*
- *NS Mayport MS4.*
- *St. Johns County MS4.*
- *Town of Orange Park MS4.*
- *Camp Blanding non-MS4.*
- *Clay County non-MS4.*
- *St. Johns County non-MS4.*
- *Agriculture.*

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 required reductions in the BMAP were developed through an extensive allocation process that built off of the three-step process recommended in the Allocation Technical Advisory Committee (ATAC) report to the Governor and Legislature (Department 2001). “Step 1” and “Step 2” reductions were only applied to nonpoint sources (urban and agriculture) to provide treatment approximately equivalent to the treatment required for domestic and industrial WWTFs. The Step 2 reductions were based on the reduction from nonpoint sources expected from the implementation of their respective best management practices (BMPs). Since Step 2 reductions did not result in meeting the assimilative capacity of the river, additional “Step 3” reductions were necessary that required the same overall percentage reduction from both point and nonpoint sources.

Once the initial allocations were determined, the stakeholders had the opportunity to trade allocations before the BMAP was adopted. These “pre-BMAP” trades mainly occurred between a WWTF and MS4 owned by the same stakeholder. The pre-BMAP trades resulted in a change in the allocations, in which the entity trading the credits had a lower allocation than the initial allocation, and the entity receiving the credits had a higher allocation than the initial allocation. The starting point loads and BMAP allocations after the pre-BMAP trades for each entity in the marine and freshwater reaches of the river are shown in **Table 2** through **Table 4**.

#### **1.5 NUMERIC NUTRIENT CRITERIA**

On November 30, 2012, the U.S. Environmental Protection Agency (EPA) approved the Department’s numeric nutrient criteria (NNC) for rivers, streams, lakes, and some estuaries. In January 2014, a federal judge granted EPA’s motion to discontinue federal rulemaking and allow the Department to implement its NNC. As part of the Department’s NNC, established restoration goals in the form of TMDLs continue to apply. Therefore, the LSJR TMDLs remain the applicable nutrient standards for the main stem of the river, and will remain in effect once all of Department’s nutrient standards are in effect because the standards establish nutrient TMDLs as site-specific interpretations of the narrative nutrient criteria.

**TABLE 2: TN STARTING POINT LOADS AND BMAP ALLOCATIONS IN THE FRESHWATER REACH**

| SOURCE                                                                                                       | SOURCE TYPE       | STARTING POINT<br>LOAD<br>(KG/YR) | ALLOCATION<br>(KG/YR) |
|--------------------------------------------------------------------------------------------------------------|-------------------|-----------------------------------|-----------------------|
| Georgia-Pacific                                                                                              | WWTF              | 258,155                           | 165,909               |
| Green Cove Springs WWTFs                                                                                     | WWTF              | 14,600                            | 7,752.5               |
| Palatka WWTF                                                                                                 | WWTF              | 60,889                            | 38,845                |
| Seminole Electric                                                                                            | WWTF              | 21,045                            | 14,732                |
| Future A Prototype Realistic Innovative<br>Community of Today (APRICOT)/ Reverse<br>Osmosis (RO) Dischargers | WWTF              | 9,961                             | 9,961                 |
| Clay County                                                                                                  | MS4               | 2,770                             | 2,418                 |
| Green Cove Springs                                                                                           | MS4               | 6,961                             | 6,266.5               |
| Alachua County Non-MS4                                                                                       | Non-MS4           | 636                               | 0.0                   |
| Clay County Non-MS4                                                                                          | Non-MS4           | 5,579                             | 4,659                 |
| Flagler County Non-MS4                                                                                       | Non-MS4           | 7                                 | 7                     |
| Hastings                                                                                                     | Non-MS4           | 624                               | 448                   |
| Palatka                                                                                                      | Non-MS4           | 9,683                             | 8,858                 |
| Pomona Park                                                                                                  | Non-MS4           | 108                               | 108                   |
| Putnam County                                                                                                | Non-MS4           | 43,616                            | 33,976                |
| St. Johns County Non-MS4                                                                                     | Non-MS4           | 27,277                            | 25,340                |
| Welaka                                                                                                       | Non-MS4           | 1,175                             | 838                   |
| Agriculture                                                                                                  | Nonpoint Source   | 310,700                           | 194,336               |
| Upstream Anthropogenic Load                                                                                  | Other Source      | 4,148,223                         | 2,693,852             |
| Atmospheric Deposition                                                                                       | Other Source      | 105,688                           | 105,688               |
| Natural Background                                                                                           | Other Source      | 5,087,856                         | 5,087,856             |
| <b>Total Freshwater TN Loads</b>                                                                             | <b>Total Load</b> | <b>10,115,552</b>                 | <b>8,401,850</b>      |

**TABLE 3: TP STARTING POINT LOADS AND BMAP ALLOCATIONS IN THE FRESHWATER REACH**

| SOURCE                           | SOURCE TYPE       | STARTING POINT<br>LOAD<br>(KG/YR) | ALLOCATION<br>(KG/YR) |
|----------------------------------|-------------------|-----------------------------------|-----------------------|
| Georgia-Pacific                  | WWTF              | 63,875                            | 33,182                |
| Green Cove Springs WWTFs         | WWTF              | 3,865                             | 1,929.2               |
| Palatka WWTF                     | WWTF              | 9,955                             | 5,954.7               |
| Future APRICOT/RO Dischargers    | WWTF              | 3,320                             | 3,320                 |
| Clay County                      | MS4               | 404.6                             | 212.6                 |
| Green Cove Springs               | MS4               | 1,095.7                           | 1,043.7               |
| Alachua County Non-MS4           | Non-MS4           | 83.8                              | 83.8                  |
| Clay County Non-MS4              | Non-MS4           | 767.3                             | 499.4                 |
| Flagler County Non-MS4           | Non-MS4           | 0.9                               | 0.9                   |
| Hastings                         | Non-MS4           | 92.9                              | 49.3                  |
| Palatka                          | Non-MS4           | 1,507.8                           | 1,507.8               |
| Pomona Park                      | Non-MS4           | 15.8                              | 15.8                  |
| Putnam County                    | Non-MS4           | 5,990.4                           | 3,964.9               |
| St. Johns County Non-MS4         | Non-MS4           | 3,727.4                           | 3,296.6               |
| Welaka                           | Non-MS4           | 172.0                             | 90.4                  |
| Agriculture                      | Nonpoint Source   | 83,455                            | 70,974                |
| Upstream Anthropogenic Load      | Other Source      | 137,157                           | 76,502                |
| Atmospheric Deposition           | Other Source      | 1,356                             | 1,356                 |
| Natural Background               | Other Source      | 282,768                           | 282,768               |
| <b>Total Freshwater TP Loads</b> | <b>Total Load</b> | <b>599,610</b>                    | <b>486,751</b>        |

**TABLE 4: TN STARTING POINT LOADS AND BMAP ALLOCATIONS IN THE MARINE REACH**

| SOURCE                           | SOURCE TYPE       | STARTING POINT<br>LOAD<br>(KG/YR) | ALLOCATION<br>(KG/YR) |
|----------------------------------|-------------------|-----------------------------------|-----------------------|
| Anheuser Busch – Main Street     | WWTF              | 24,399                            | 12,418                |
| Atlantic Beach Aggregate         | WWTF              | 49,275                            | 21,188                |
| CCUA Aggregate                   | WWTF              | 61,569                            | 63,963                |
| Jacksonville Beach WWTF          | WWTF              | 40,150                            | 21,015                |
| JEA Aggregate                    | WWTF              | 1,396,622                         | 654,672               |
| Neptune Beach WWTF               | WWTF              | 11,448                            | 6,162                 |
| Orange Park WWTF                 | WWTF              | 24,886                            | 7,940                 |
| Smurfit-Stone Container          | WWTF              | 145,989                           | 74,305                |
| U.S. Navy WWTF Aggregate         | WWTF              | 42,029                            | 11,684                |
| Future APRICOT/RO Dischargers    | WWTF              | 4,979                             | 4,979                 |
| Atlantic Beach                   | MS4               | 2,474                             | 1,651                 |
| Clay County Marine MS4           | MS4               | 25,249                            | 21,188                |
| Jacksonville/FDOT                | MS4               | 243,438                           | 96,016                |
| Jacksonville Beach               | MS4               | 4,974                             | 4,804                 |
| Neptune Beach                    | MS4               | 1,484                             | 1,437                 |
| Orange Park                      | MS4               | 3,451                             | 3,348                 |
| St. Johns County                 | MS4               | 3,057                             | 746                   |
| U.S. Navy MS4s                   | MS4               | 7,530                             | 7,232                 |
| Camp Blanding – State of Florida | Non-MS4           | 2,870                             | 1,220                 |
| Clay County Marine Non-MS4       | Non-MS4           | 12,051                            | 11,107                |
| St. Johns County Marine Non-MS4  | Non-MS4           | 9,846                             | 4,865                 |
| Agriculture                      | Nonpoint Source   | 12,800                            | 4,170                 |
| Atmospheric Deposition – Marine  | Other Source      | 95,028                            | 95,028                |
| Natural Background               | Other Source      | 242,300                           | 242,300               |
| <b>Total Marine TN Loads</b>     | <b>Total Load</b> | <b>2,453,094</b>                  | <b>1,373,438</b>      |

## **SECTION 2: MAJOR ACCOMPLISHMENTS**

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During the first five years of BMAP implementation, great progress has been made towards achieving the LSJR Main Stem TMDLs. In the freshwater reach of the river, the WWTFs and MS4s have exceeded their TN and TP required reductions. The non-MS4s have achieved 88% of the required TN reductions and 75% of the required TP reductions. In addition, agriculture has achieved 52% of the TN reductions and 33% of the TP reductions.

In the marine reach of the river, the WWTFs have also exceeded the TN required reductions. The MS4s have achieved 42% of the TN reductions, the non-MS4s achieved 29% of the TN reductions, and agriculture has not made reductions, although it has been determined that the majority of the agricultural lands identified during BMAP development are no longer in agriculture.

During the reporting period, the city of Jacksonville Beach completed its WWTF upgrade, and JEA completed a WWTF upgrade and three facility phase-outs in the marine reach. Clay County completed a wet detention pond project and St. Johns County completed a baffle box project, both also located in the marine reach. In addition, FDACS continued to enroll producers in BMPs in the freshwater reach. Details of the major accomplishments over the past year are described in **Section 2.1** through **Section 2.4**, and the individual project tables are provided in **Appendix A**.

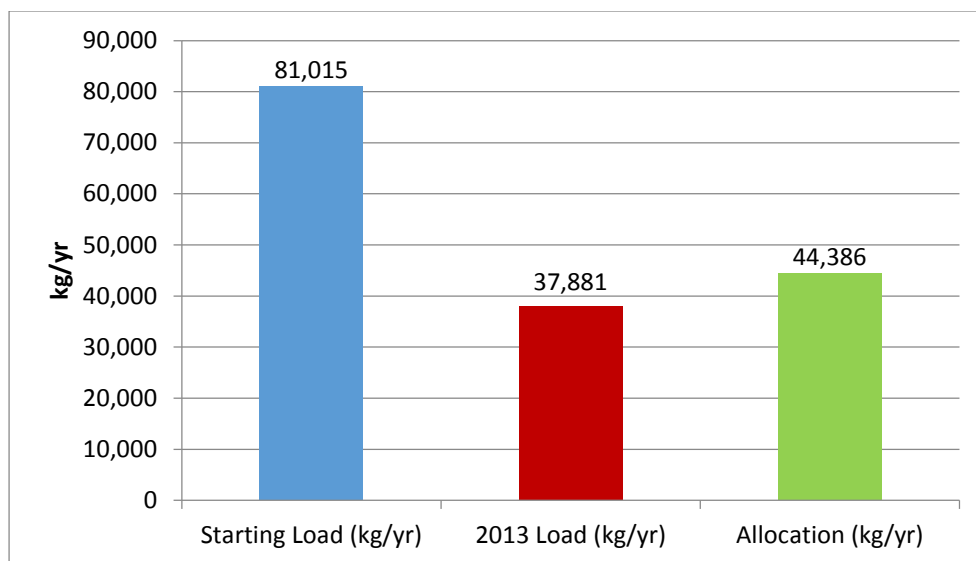
### **2.1 ACCOMPLISHMENTS BY SOURCE TYPE**

#### **2.1.1 WWTFs**

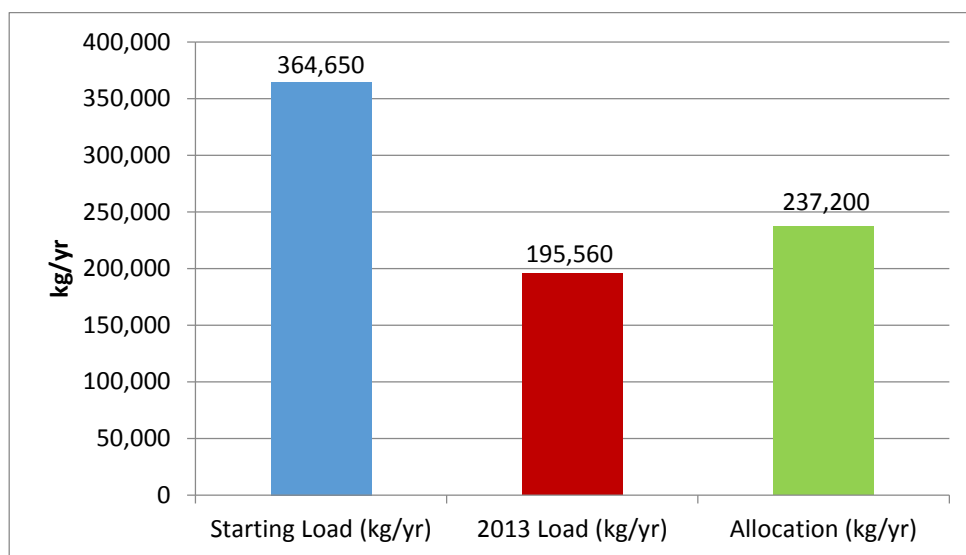
##### **2.1.1.1 Freshwater Reach**

###### ***WWTF Progress Towards the Freshwater TMDLs***

The WWTFs in the freshwater reach have already achieved and exceeded their portion of the TP and TN TMDLs, as shown in **Figure 3** and **Figure 4**. The first bar in the figures shows the starting load for the freshwater WWTFs, as calculated in the BMAP. The second bar shows the estimated 2013 load based on all completed freshwater WWTF projects. The third bar indicates the total allocation allowed for the WWTFs in the freshwater reach of the river.



**FIGURE 3: WWTF PROGRESS TOWARDS THE TP FRESHWATER TMDL**



**FIGURE 4: WWTF PROGRESS TOWARDS THE TN FRESHWATER TMDL**

#### 2.1.1.2 Marine Reach

##### *City of Atlantic Beach*

The city of Atlantic Beach's Main Wastewater Treatment Plant (WWTP) upgrade (Project AB-2) reached its operational level by October 1, 2013, as required in the BMAP. While not needed to meet the BMAP requirements, the city has designed and bid a reclaimed water facility to serve the Atlantic Beach Country Club (formerly Selva Marina Country Club) golf course and planned subdivision of up to 200 homes. Construction of the reclaimed water facility is expected to start in January 2014. This project will result in further reductions of TN to the St. Johns River.

On August 23, 2013, the Atlantic Beach WWTP project was featured in a presentation at the city of Jacksonville's Environmental Symposium for its improvements in sustainability and cost savings. On October 18, 2013, the Department's Secretary Herschel Vinyard and other top Department officials, along with the news media, toured the Atlantic Beach WWTP (see **Figure 5**), as the project was considered a success story for meeting limits while coming in on time and under budget, and saving over \$340,000 per year in operational costs.

A pre-BMAP trade was completed for the WWTP upgrades to include the allocations for the city's MS4. The city of Atlantic Beach may possibly be negotiating with the city of Jacksonville in the future to provide them with credits for four metric tons (MT) of TN.

October 24, 2013



Florida Department of Environmental Protection Secretary Herschel Vinyard Jr. left, and several other top DEP officials traveled to Atlantic Beach Friday to tour the newly upgraded wastewater treatment plant, along with two other wastewater plants in the Jacksonville area, to see first-hand how much progress had been made in meeting the TMDL Nitrogen removal standards for the St Johns River. Atlantic Beach's project is considered a success by meeting the new standards before the deadline, under budget and saving more than \$350,000 per year in operating costs. Vinyard listens as engineer John Collins, center, explains some of the plant design features. Atlantic Beach Utilities Director Donna Kaluzinak, right, hosted the tour.

**FIGURE 5: CITY OF ATLANTIC BEACH WWTP TOUR FEATURED IN A *BEACHES LEADER* ARTICLE**



### ***City of Jacksonville Beach***

The city of Jacksonville Beach completed the WWTF upgrade (Project JB-1). This project resulted in a reduction of 21,555 kg/yr of TN. The new WWTF is operational (see **Figure 6**), and the city is waiting for the contractor to provide the operation and maintenance (O&M) manuals and as-built drawings as part of the final punch list.



**FIGURE 6: CITY OF JACKSONVILLE BEACH UPGRADED WWTF**

### ***Clay County Utility Authority***

CCUA continues to expand its reclaimed water system with the construction of transmission mains, reclaimed water storage tanks, and pumping stations. A new reclaimed water storage tank (0.75 million gallons) and pumping station was recently completed at the Ridaught Landing WWTF site (**Figure 7**).

The final design of a reclaimed water storage reservoir is presently under way at the Mid-Clay WWTF site. Upon completion, this reservoir will provide for wet weather storage of excess reclaimed water that is currently discharged to the LSJR.

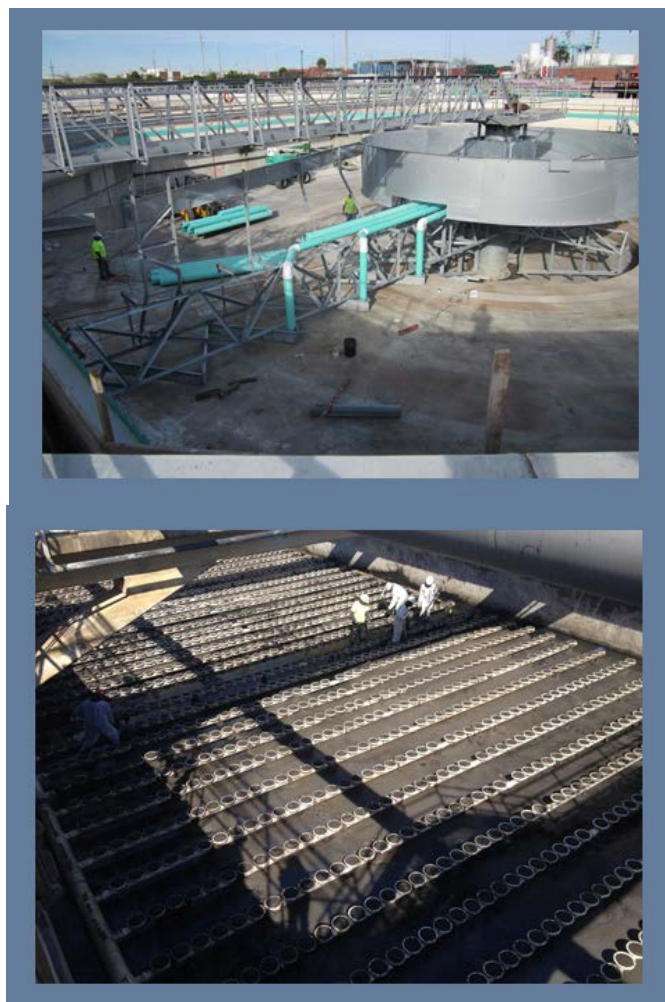
A major transmission main project consisting of two parallel 18-inch mains was completed to interconnect the Mid-Clay and Ridaught Landing service areas. With the completion of this project, reclaimed water can be delivered to any of CCUA's reclaimed water service areas from each of its regional WWTPs.



**FIGURE 7: CUA NEW RECLAIMED WATER STORAGE TANK AND PUMPING STATION AT RIDAUGHT LANDING WWTF**

### ***JEA***

The biological nutrient removal improvements at the JEA Buckman Water Reclamation Facility (WRF) were completed on July 24, 2013 (Project JEA-16) (see **Figure 8**). The Royal Lakes WRF was phased out on January 14, 2013 (Project JEA-11), the San Jose WRF was phased out on September 24, 2013 (Project JEA-15), and the Jax Heights WRF was phased out on March 27, 2013. These projects complete JEA's nutrient reduction obligations for the LSJR Main Stem TMDL and BMAP.



**FIGURE 8: JEA BUCKMAN WRF UPGRADE**

In addition, JEA is in discussion with the city of Jacksonville regarding a water quality credit trade. The city of Jacksonville has indicated that it is planning to meet between 23 and 38 MT of its nutrient reduction obligation through water quality credit trading prior to July 31, 2015.

### ***U.S. Navy***

The U.S. Navy completed the wastewater treatability pilot study at NS Mayport that established the proper treatment process to meet the TMDL (Project USN-5). The first phase of the NAS Jacksonville reuse system expansion, completed in July 2013, provides irrigation to the NAS golf course (Project USN-2) (see **Figure 9** and **Figure 10**). The design and permitting for the second phase reuse expansion (zero discharge) project to construct a pipeline and spray field at the south antennae farm area on NAS Jacksonville was also completed in 2013. Construction should start on this project in 2014 with funding from SJRWMD through the city of Jacksonville, and will be complete in late 2014 or early 2015.



**FIGURE 9: NAS JACKSONVILLE REUSE HOLDING POND AND IRRIGATION PUMP STATION**

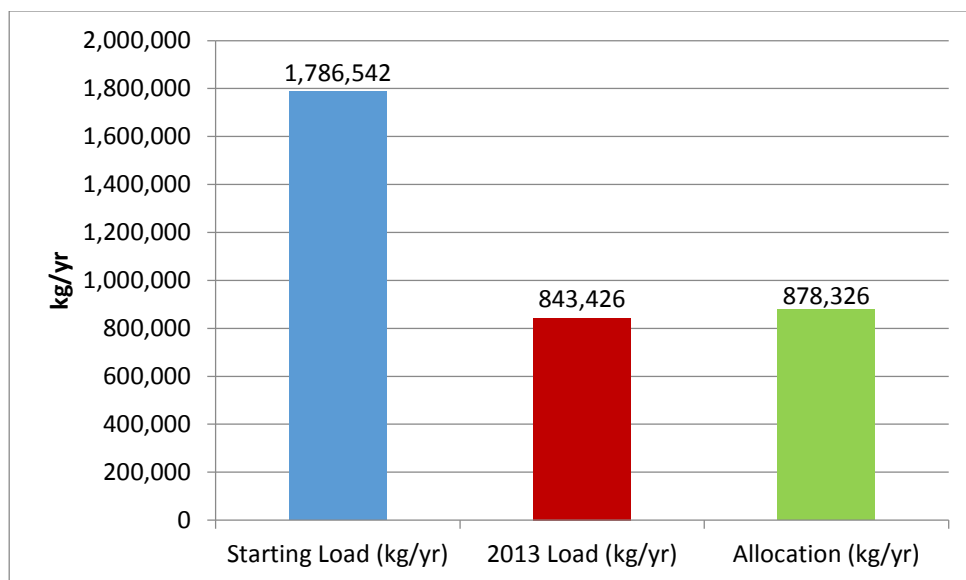


**FIGURE 10: NAS JACKSONVILLE REUSE PUMP STATION AT THE WWTF**

### ***WWTF Progress Towards the Marine Reach TMDL***

**Figure 11** shows the progress made towards meeting the WWTF portion of the marine TN TMDL. The first bar in the figure shows the starting load for the marine WWTFs, as calculated in the BMAP. The second bar shows the estimated 2013 load based on all completed marine WWTF projects (from the BMAP; 2009, 2010, 2011, and 2012 progress reports; and those listed above). The third bar indicates the total allocation allowed for the WWTFs in the marine reach of the river. The WWTFs in the marine section have exceeded the necessary reductions; however, several projects are still ongoing that are required for individual stakeholders to achieve their portion of the reductions.





**FIGURE 11: WWTF PROGRESS TOWARDS THE TN MARINE TMDL**

#### 2.1.1.3 Project Implementation Status

The section above described all the efforts in the past year related to project implementation including design and construction. These are important milestones that lead to project completion and actual load reductions. The WWTF projects that were completed during the last year and their associated load reductions are shown in **Table 5** for the marine reach. The freshwater reach WWTFs have already achieved their reductions.

**TABLE 5: WWTF PROJECTS COMPLETED IN THE MARINE REACH FOR TN IN 2013**

- = Empty cell/no data

| ENTITY                     | PROJECT NUMBER | DESCRIPTION                                                  | TN PROJECT REDUCTION (KG/YR) |
|----------------------------|----------------|--------------------------------------------------------------|------------------------------|
| City of Jacksonville Beach | JB-1           | Upgrade WWTF to Advanced Wastewater Treatment for TN Removal | 21,555                       |
| JEA                        | JEA-11         | Royal Lakes WRF Complete Phase-Out                           | 0                            |
| JEA                        | JEA-12         | Jax Heights WRF Complete Phase-Out                           | 0                            |
| JEA                        | JEA-15         | San Jose WRF Complete Phase-Out                              | 0                            |
| JEA                        | JEA-16         | Buckman WRF Upgrades                                         | 191,183                      |
| <b>Total</b>               | -              | -                                                            | <b>212,738</b>               |

## 2.1.2 MS4s

### 2.1.2.1 Freshwater Reach

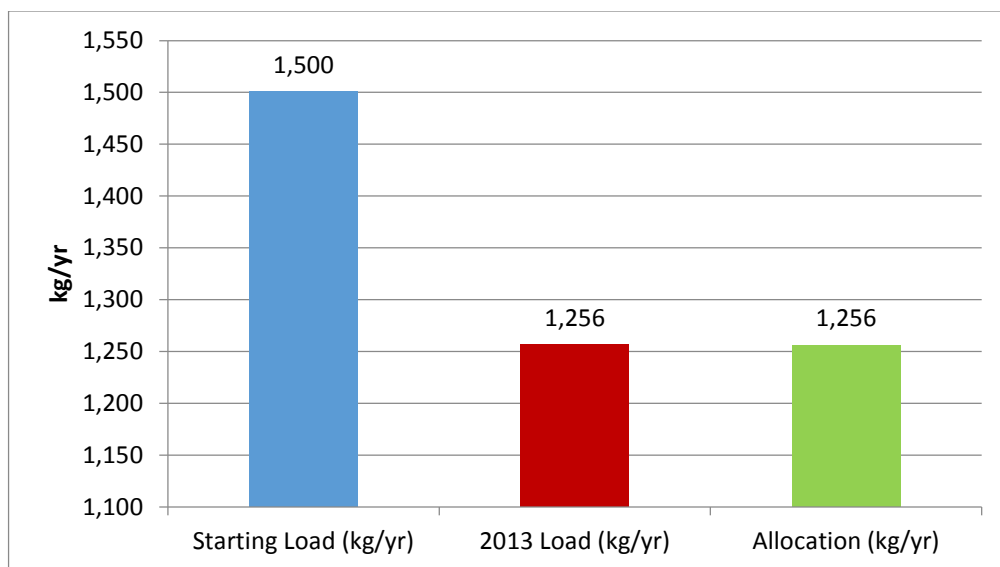
#### *Clay County*

Clay County continued its education and outreach program (Project CC-1). To help augment this program, the county is currently in contract negotiation with the St. Johns Riverkeeper. The planned contract will be for five years so that the Riverkeeper will provide the education outreach that has been reduced in Clay County ever since the Watershed Action Volunteers program was retired. This contract will pay the Riverkeeper to provide outreach to schools, special events, and associations, while teaching about water quality, erosion control, and marketing about rain barrels. If successful, the Riverkeeper will continue to be partnered with Clay County for many years to come.

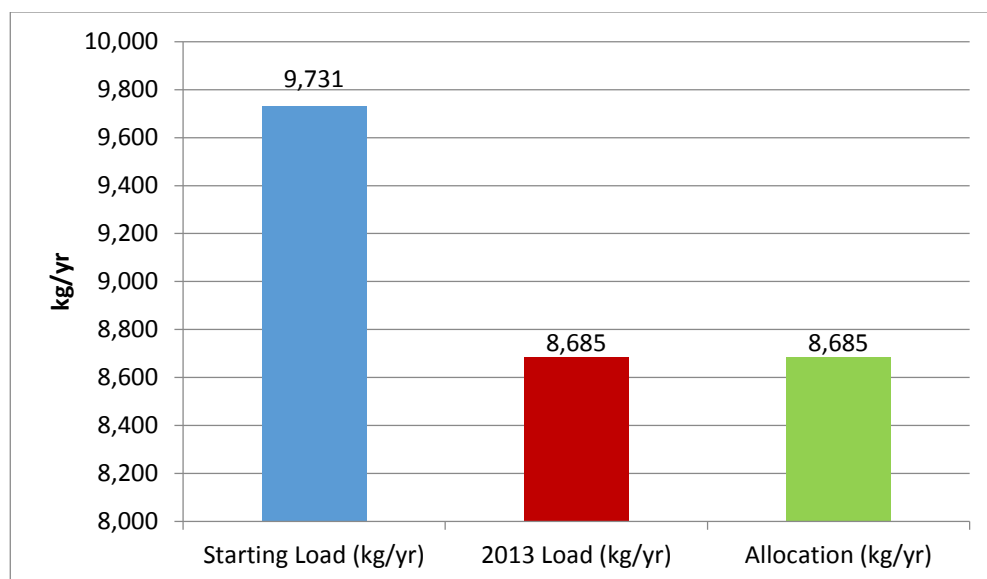
In addition, the county's established water quality trading mechanism with CCUA continued in 2013 (an interlocal agreement was executed in September 2009).

#### ***MS4 Progress Towards Meeting the Freshwater TMDLs***

**Figure 12** and **Figure 13** show the progress made towards meeting the MS4 portion of the freshwater TP and TN TMDLs, respectively. Through completed projects from the BMAP and 2009 and 2010 progress reports, as well as the ongoing efforts listed above, the MS4s in the freshwater reach have met the TP and TN reductions required under the BMAP.



**FIGURE 12: MS4 PROGRESS TOWARDS THE TP FRESHWATER TMDL**



**FIGURE 13: MS4 PROGRESS TOWARDS THE TN FRESHWATER TMDL**

### 2.1.2.2 Marine Reach

#### *City of Jacksonville*

In the original BMAP document, the city of Jacksonville outlined a toolbox approach to reducing TN discharged to the LSJR through the city's MS4. This toolbox included stormwater wet detention, septic tank phase-outs, public education, regulatory and policy implementation, and low impact development projects/policies. Each of these tools is being used to provide the most effective program to meet the BMAP goals. **Table 6** lists the specific activities that have taken place in previous and current reporting periods.

**TABLE 6: CITY OF JACKSONVILLE INITIATIVES FOR PREVIOUS AND CURRENT REPORTING PERIODS**

| <b>BMAP PROJECT NUMBER</b> | <b>TOOLBOX APPROACH</b>                                          | <b>REDUCTION PREVIOUSLY PROVIDED (MT OF TN)</b> | <b>REDUCTION IN CURRENT REPORTING PERIOD (MT OF TN)</b> | <b>TOTAL REDUCTIONS (MT OF TN)</b> |
|----------------------------|------------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------------|------------------------------------|
| COJ-42 through COJ-50      | Stormwater Projects                                              | 0.160                                           | 0.404                                                   | 0.564                              |
| COJ-123                    | Septic Tank Phase-out Projects (Lateral-Only Connections [LOCs]) | 0.000                                           | 0.000                                                   | 0.000                              |
| COJ-52 and COJ-124         | Septic Tank Phase-out Projects                                   | 2.934                                           | 0.000                                                   | 2.934                              |
| COJ-51                     | Public Education and Regulatory and Policy Implementation        | 13.145                                          | 0.000                                                   | 13.145                             |
| COJ-121                    | Street Sweeping                                                  | 5.553                                           | 0.000                                                   | 5.553                              |
| COJ-122                    | BMAP Credit Trading                                              | 0.000                                           | 0.000                                                   | 0.000                              |
| <b>Not applicable</b>      | <b>Total</b>                                                     | <b>21.794</b>                                   | <b>0.404</b>                                            | <b>22.198</b>                      |

Five stormwater projects have been completed this year, as outlined in **Table 7**.

**TABLE 7: CITY OF JACKSONVILLE STORMWATER PROJECTS COMPLETED IN 2013**

\*A portion of the water quality credits for Smith Broward Pond, Paul Avenue Phase I, and Upper Deer Creek Pond Expansion was used for compensatory treatment. The water quality credits shown reflect only those remaining credits available to be allocated to the TMDL.

| <b>NAME</b>                             | <b>BMAP PROJECT NUMBER</b> | <b>TREATMENT</b> | <b>TN (MT/YR)</b> |
|-----------------------------------------|----------------------------|------------------|-------------------|
| Melba/Green Street                      | COJ-42                     | Wet Detention    | 0.220             |
| Smith Broward Pond*                     | COJ-42                     | Wet Detention    | 0.025             |
| Riverview Drainage Improvements Phase I | COJ-48                     | Wet Detention    | 0.047             |
| Upper Deer Creek Pond Expansion*        | COJ-42                     | Wet Detention    | 0.096             |
| Paul Avenue Phase I*                    | COJ-42                     | Wet Detention    | 0.016             |
| <b>Total</b>                            | <b>Not applicable</b>      | <b>Total</b>     | <b>0.404</b>      |

The city has identified septic tank phase-out projects based on providing LOCs to existing sewer systems. Each LOC will remove one septic tank, and the nutrient reductions for each of these septic tanks will be estimated using the ArcNLET tool developed by Florida State University for the Department. The city is currently reviewing the latest model run to determine the most cost-effective subset of LOCs for this project. During this effort, the city noted some significant issues with the quality of certain input datasets used in the model (refer to **Section 3.1.2.1** for more details). Progress on LOC projects is expected to be reported during the 2014 BMAP update.

Since the adoption of the BMAP, the city has implemented and reported on six septic tank phase-out projects in the annual BMAP progress reports (Oakwood Villas, Lake Forest, Scott Mill, Murray Hill B, Pernecia, and Glynlea). At the time of reporting, the methodology outlined during BMAP development was used to estimate nutrient reductions associated with the phase-out projects. The ArcNLET model



(run November 2012) estimates reductions in these areas to be 2.934 MT/year. It is believed that the November 2012 ArcNLET run that estimated this reduction was based on the phase-out of remaining septic tanks rather than an estimation of those septic tanks removed as part of the Better Jacksonville Plan projects. The city, in coordination with JEA, is compiling a list of all residences connected as a part of the Better Jacksonville Plan projects. These residences will be run using ArcNLET to refine the estimated nutrient reduction for the projects and will be reported as part of the 2014 BMAP update.

The city will continue to coordinate with the ArcNLET Technical Advisory Committee to recommend Department approval if additional credits are warranted based on suggested improvements to the model by the Technical Advisory Committee.

The city of Jacksonville has continued its street sweeping (Project COJ-121). Although no additional reductions are identified from street sweeping as part of the plan forward, the city has recognized the importance of this activity as it relates to water quality and will continue to pursue opportunities to enhance/improve on its efforts. The city has also continued its public education and outreach (Project COJ-51).

The city has identified multiple potential opportunities for BMAP water quality credit trading with other entities. The city may elect to negotiate with each “credit owner” and execute binding agreements as needed.

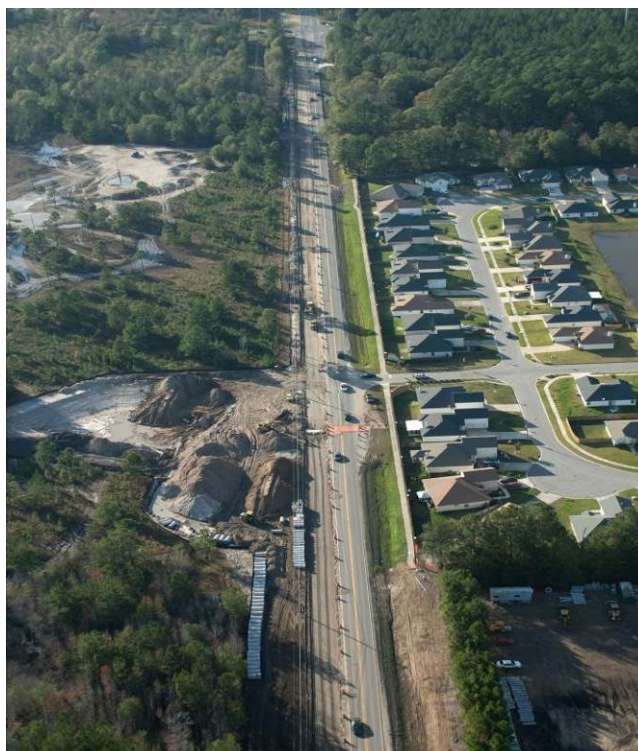
### ***Florida Department of Transportation***

FDOT continued its BMAP-related works on structural and nonstructural BMPs, such as street sweeping, litter pickup, stormwater management systems maintenance, and public education and outreach (Projects COJ-117 and COJ-118). FDOT’s public education is through Drainage Connection Permit inserts, and public outreach activities are performed during preconstruction and public hearing meetings. FDOT partners with the city of Jacksonville on public service announcements. FDOT is also negotiating with the city of Jacksonville to help the city reach its reduction goals for the LSJR Main Stem BMAP.

### ***Clay County***

Clay County continued its education and outreach program (Project CC-12). To help augment this program, the county is currently in contract negotiation with the St. Johns Riverkeeper (refer to **Section**

2.1.2.1 for additional details). The county completed the Old Jennings Road widening project from Blanding Boulevard to Branan Field Road (Project CC-21), which has an estimated reduction of 17 kg/yr of TN (**Figure 14**). The county also has a project under way for widening County Road 209 from County Road 220 to the Black Creek Bridge (Project CC-20).



**FIGURE 14: CLAY COUNTY OLD JENNINGS ROAD WIDENING PROJECT AND TREATMENT POND**

### ***St. Johns County***

The Masters Tract Regional Stormwater Treatment (RST) Facility (Project SJC-17) is currently under construction and should be completed in December 2014 (see **Figure 15** and **Figure 16**). In addition, St. Johns County continued the fully county-funded stormwater education program (Project SJC-11).

The county has had greater than anticipated success in securing grant funding to implement BMAP-related nutrient reduction projects. This has allowed several important projects to move forward with the Masters Tract RST Facility currently under construction. The county has also developed excellent relations with SJRWMD to identify regional projects, evaluate their effectiveness, and assist with grant funding. These regional projects have helped the county work towards meeting its Algal Initiative load reduction requirements.



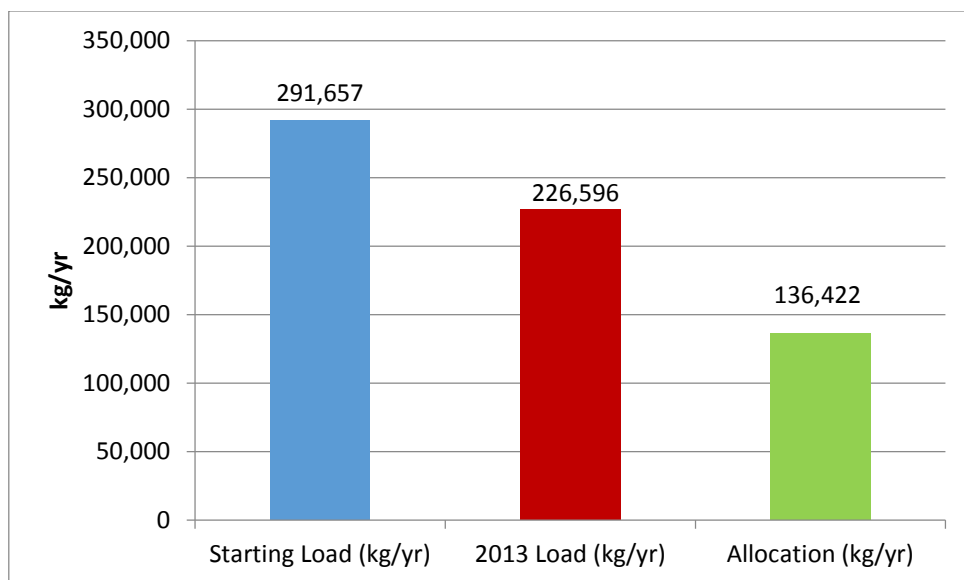
**FIGURE 15: ST. JOHNS COUNTY MASTERS TRACT RST FACILITY CONSTRUCTION IN SEPTEMBER 2013**



**FIGURE 16: ST. JOHNS COUNTY MASTER TRACT RST FACILITY WET DETENTION POND CONSTRUCTION**

### ***MS4 Progress Towards Meeting the Marine TMDLs***

**Figure 17** shows the progress made towards meeting the MS4 portion of the marine TN TMDL. The first bar in the figure shows the starting load for the marine MS4s from the BMAP. The second bar shows the estimated 2013 load based on all completed marine MS4 projects (from the BMAP; 2009, 2010, 2011, and 2012 progress reports; and those listed above). The third bar indicates the total allocation allowed for the MS4s in the marine reach of the river.



**FIGURE 17: MS4 PROGRESS TOWARDS THE TN MARINE TMDL**

### 2.1.2.3 Project Implementation Status

The section above described all of the activities that were under way during the past year, including efforts that are not yet complete or are continuous, such as public education. The MS4 projects that were completed during the last year and their associated load reductions are shown in **Table 8** for the marine reach. The MS4s in the freshwater reach have met the required TN and TP reductions; therefore, no additional projects were completed in the reporting period.

**TABLE 8: MS4 PROJECTS COMPLETED IN THE MARINE REACH IN 2013**

| ENTITY               | PROJECT NUMBER | DESCRIPTION                                                                     | TN PROJECT REDUCTION (KG/YR) |
|----------------------|----------------|---------------------------------------------------------------------------------|------------------------------|
| City of Jacksonville | COJ-124        | Better Jacksonville Plan Septic Tank Phase-Out Projects                         | 2,936                        |
| Clay County          | CC-21          | Old Jennings Road Widening Project from Blanding Boulevard to Branan Field Road | 17                           |
| <b>Total</b>         | -              | -                                                                               | <b>2,953</b>                 |

### 2.1.3 URBAN STORMWATER

#### 2.1.3.1 Freshwater Reach

##### *City of Palatka*

The city of Palatka continued work on the downtown watershed first-flush treatment project (Project PAL-7), which is projected to be completed in October 2014.

### **Clay County**

Clay County continued its education and outreach program (Project CC-4). To help augment this program, the county is currently in contract negotiation with the St. Johns Riverkeeper (refer to **Section 2.1.2.1** for additional details). The county also continued its trade with CCUA (Project CC-6).

### **Putnam County**

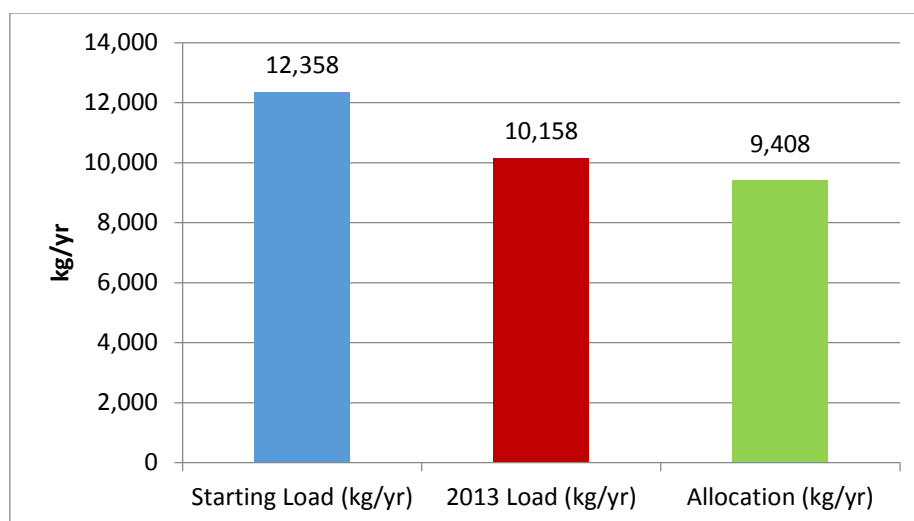
Putnam County received the bids for the construction of the East Putnam County Regional WWTF, and the project is scheduled to be awarded in January 2014. Once this project is completed, the trade with Hiawatha WWTF (Project PUT-2) and septic tank phase-out (Project PUT-3) can be completed.

### **St. Johns County**

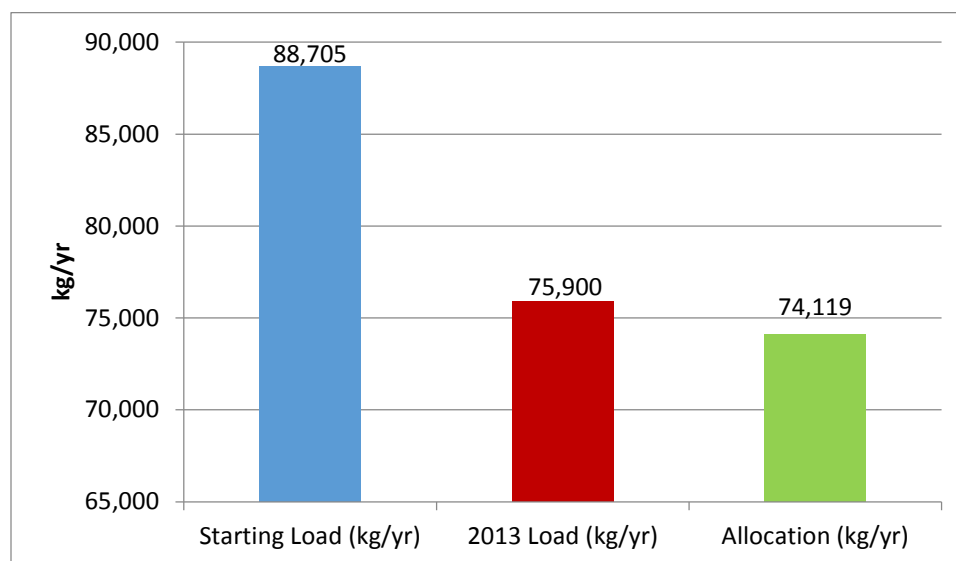
St. Johns County made its annual payment of \$30,000 to the town of Hastings for the 198.2 kg/yr of TP reduction per the 2009 agreement for water quality credit trading (Project SJC-7). The county's educational efforts (Project SJC-3) also continued this year.

### **Non-MS4 Progress Towards Meeting the Freshwater TMDLs**

**Figure 18** and **Figure 19** show the progress made towards meeting the non-MS4 portion of the freshwater TP and TN TMDLs. The first bar in the figures shows the starting load for the freshwater non-MS4s from the BMAP. The second bar shows the estimated 2013 load based on all completed freshwater non-MS4 projects (from the BMAP; 2009, 2010, 2011, and 2012 progress reports; and those listed above). The third bar indicates the total allocation allowed for the non-MS4s in the freshwater reach of the river.



**FIGURE 18: NON-MS4 PROGRESS TOWARDS THE TP FRESHWATER TMDL**



**FIGURE 19: NON-MS4 PROGRESS TOWARDS THE TN FRESHWATER TMDL**

### 2.1.3.2 Marine Reach

#### ***Camp Blanding***

Camp Blanding completed several projects during the last year. The Avenue C Paving and Improvements project included 19,406 linear feet of milled and paved surface at a cost of \$676,000. The Avenue C Mitered End Construction Replacements involved the installation of twenty mitered end construction units at a cost of \$20,000. The Avenue D Paving Improvements consisted of 22,963 linear feet of milled and paved surface at a cost of \$799,800. For the Multijurisdictional Counterdrug Task Force Training Academy construction site, three stormwater management facilities with a combined storage of 27,111 cubic feet and 400 linear feet of swales were added at a cost of \$190,800. The project at the Explosive Ordinance Disposal Armory included 92 linear feet of ditch paving, 250 linear feet of 24-inch reinforced concrete pipe installed, 60 linear feet of 18-inch reinforced concrete pipe installed, 1,220 linear feet of open swale improved, and two mitered end construction units installed. The cost of this project was \$133,500. The Fitness Center building improvements included 36,000 cubic feet of stormwater retention and 358 linear feet of swales at a cost of \$74,700.

In addition, the Camp Blanding Joint Training Center TMDL project was kicked off, with a total cost of \$167,000 for 2013–14. The kick-off meeting was held on September 26, 2013; the coordination and data collection were completed on November 12, 2013; and the field assessment and BMAP inventory were completed on January 16, 2014. Sampling sites, which include stormwater monitoring locations,



have been gathered (see **Figure 20**) and are currently under review by the contractor and Camp Blanding representative.



**FIGURE 20: CAMP BLANDING GATHERING STORMWATER DATA CONTROL POINTS FOR THE BMAP STUDY**

### ***Clay County***

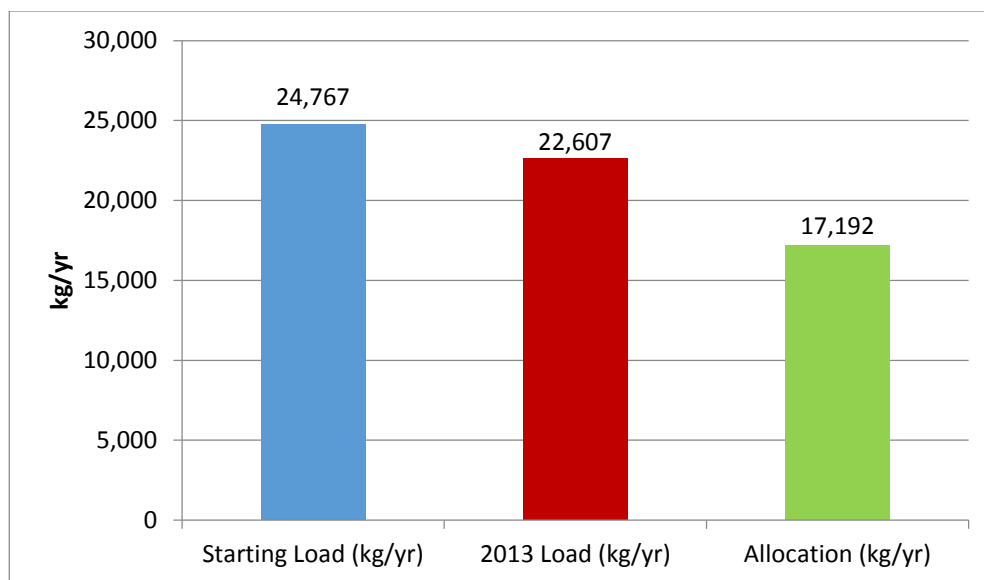
Clay County continued its education and outreach program (Project CC-17). To help augment this program, the county is currently in contract negotiation with the St. Johns Riverkeeper (refer to **Section 2.1.2.1** for additional details).

### ***St. Johns County***

St. Johns County completed the Bishop Estates Road baffle box project (Project SJC-28). The county's educational efforts (Project SJC-21) also continued this year. St. Johns County completed the design of improvements to the Deep Creek West RST facility, and the project will go to bid in January 2014 (Project SJC-29). The county will take over ownership of this RST facility in 2016. In January 2014, an alternatives analysis study was initiated for the siting of an additional RST facility.

### ***Non-MS4 Progress Towards Meeting the Marine TMDL***

**Figure 21** shows the progress made towards meeting the non-MS4 portion of the marine TN TMDL. The first bar in the figure shows the starting load for the marine non-MS4s from the BMAP. The second bar shows the estimated 2013 load based on all completed marine non-MS4 projects (from the BMAP; 2009, 2010, 2011, and 2012 progress reports; and those listed above). The third bar indicates the total allocation allowed for the non-MS4s in the marine reach of the river.



**FIGURE 21: NON-MS4 PROGRESS TOWARDS THE TN MARINE TMDL**

### 2.1.3.3 Project Implementation Status

The section above described all the efforts in the past year related to project implementation including design and construction. The non-MS4 projects that were completed during the last year and their associated load reductions are shown in **Table 9** for the marine reach.

**TABLE 9: NON-MS4 PROJECTS COMPLETED IN THE MARINE REACH FOR TN IN 2013**

-- Empty cell/no data

| ENTITY           | PROJECT NUMBER | DESCRIPTION                 | TN PROJECT REDUCTION (KG/YR) |
|------------------|----------------|-----------------------------|------------------------------|
| St. Johns County | SJC-28         | Bishop Estates Baffle Boxes | 119                          |
| <b>Total</b>     | -              | -                           | <b>119</b>                   |

## 2.1.4 AGRICULTURE

### 2.1.4.1 BMP Implementation Status

In 2013, FDACS staff signed up growers under the vegetable and agronomic crop, sod, cow/calf, and nursery BMP manuals. Because of limited staff, the enrollment goals have not been met, but progress is continuing. In September 2013, FDACS undertook a significant effort to help producers comply with the statutory requirement for agricultural operations within BMAP areas to implement BMPs or monitor their water quality. Further discussion of the outreach effort and its results is included in **Section 3.1.4**.



The cumulative enrollment numbers are contained in **Table 10**. Enrolled parcels are depicted in **Figure 22**. To date, no producers have opted to monitor water quality instead of implementing BMPs. An estimate of load reductions due to BMP implementation and SJRWMD RST facilities is shown in **Table 11**.

**TABLE 10: AGRICULTURAL ACRES ENROLLED IN BMPs AS OF DECEMBER 31, 2013**

N/A = Not applicable.

<sup>1</sup> Due to improved mapping, reported acres are all within the LSJR Basin; previous reports were based on county boundaries.

<sup>2</sup> Enrollment numbers will depend on the ability of field staff to identify and locate producers, changes in land uses, and actual number of acres in production on an operation. Even with 100% enrollment, the acres will not match the 2004 land use numbers.

| 2004 SJRWMD LAND USE     | 2004 ACRES     | FDACS-ADJUSTED ACRES FOR ENROLLMENT | RELATED FDACS BMP PROGRAMS               | ACREAGE ENROLLED <sup>1</sup> | RELATED NOTICES OF INTENT | REMAINING ACREAGE <sup>2</sup> |
|--------------------------|----------------|-------------------------------------|------------------------------------------|-------------------------------|---------------------------|--------------------------------|
| Pasture                  | 55,457         | 55,547                              | Cow/Calf, Future (Hay)                   | 33,350                        | 37                        | 22,197                         |
| Row/Field/Mixed Crops    | 42,546         | 42,546                              | Vegetable/Agronomic Crops                | 24,535                        | 51                        | 18,011                         |
| Fallow Cropland          | 1,446          | N/A                                 | N/A                                      | N/A                           | N/A                       | N/A                            |
| Horse Farm               | 3,145          | 3,145                               | Equine (adopted March 2012)              | 37                            | 3                         | 3,108                          |
| Citrus                   | 375            | 375                                 | Ridge Citrus, Flatwoods Citrus           | 37                            | 2                         | 338                            |
| Abandoned Citrus         | 30             | N/A                                 | No enrollment needed                     | N/A                           | N/A                       | N/A                            |
| Tree Crops               | 298            | 298                                 | Specialty Fruit & Nut                    | 50                            | 3                         | 248                            |
| Nurseries and Vineyards  | 56             | 56                                  | Specialty Fruit and Nut , Future Nursery | 0                             | N/A                       | 56                             |
| Tree Nurseries           | 1,207          | 1,207                               | Specialty Fruit and Nut , Future Nursery | 0                             | N/A                       | 1,207                          |
| Ornamentals              | 964            | 964                                 | Container Nursery, Future Nursery        | 253                           | 8                         | 711                            |
| Shade Ferns              | 336            | 336                                 | Future Nursery                           | 0                             | 0                         | 336                            |
| Hammock Ferns            | 362            | 362                                 | Future Nursery                           | 0                             | 0                         | 362                            |
| Sod Farms                | 4,678          | 4,678                               | Statewide Sod                            | 2,762                         | 7                         | 1,916                          |
| Specialty Farms          | 26             | 26                                  | Conservation Plan Rule                   | 0                             | N/A                       | 26                             |
| Dairies                  | 1,070          | 1,070                               | Future Dairy Manual                      | 0                             | N/A                       | 1,070                          |
| Cattle Feeding           | 475            | 475                                 | Conservation Plan Rule                   | 0                             | N/A                       | 475                            |
| Poultry Feeding          | 196            | 196                                 | Conservation Plan Rule                   | 0                             | N/A                       | 196                            |
| Other Open Lands – Rural | 854            | N/A                                 | No enrollment needed                     | N/A                           | N/A                       | N/A                            |
| <b>Totals</b>            | <b>113,521</b> | <b>111,281</b>                      | <b>N/A</b>                               | <b>61,024</b>                 | <b>111</b>                | <b>50,257</b>                  |

**TABLE 11: AGRICULTURAL TN AND TP LOAD REDUCTION ALLOCATION AND ESTIMATED REDUCTIONS IN LOADS FROM BMPs AND RSTs**

<sup>1</sup> Estimated reductions are based only on BMP implementation for vegetable/row crops. FDACS will work with the Department and SJRWMD on a method to determine reductions from other commodities, and a reduction credit for acreage no longer in agricultural production.

<sup>2</sup> RSTs were constructed by SJRWMD. The reduction is associated with the Deep Creek RST minus credits for O&M given to St. Johns County.

| REDUCTION CATEGORY                                       | TN FRESHWATER (KG/YR) | TP FRESHWATER (KG/YR) | TN MARINE (KG/YR) |
|----------------------------------------------------------|-----------------------|-----------------------|-------------------|
| Load Reduction Allocation                                | 116,364               | 12,481                | 8,630             |
| Estimated Load Reductions via BMPs <sup>1</sup>          | 58,163                | 2,950                 | N/A               |
| Estimated Load Reduction via completed RSTs <sup>2</sup> | 2,702                 | 1,227                 | N/A               |
| <b>Remaining Load Reductions Needed</b>                  | <b>55,499</b>         | <b>8,304</b>          | <b>8,630</b>      |

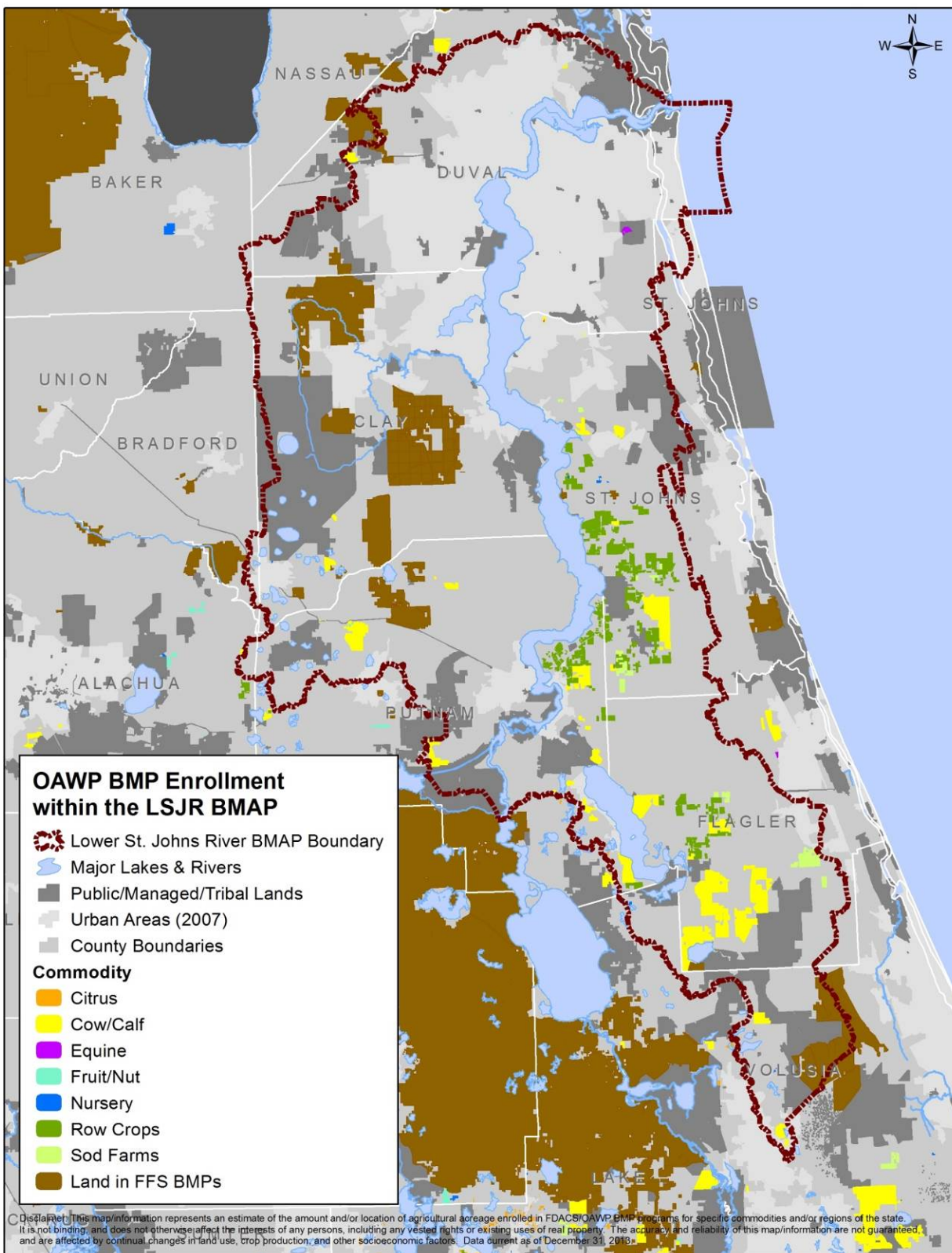


FIGURE 22: MAP OF AGRICULTURAL BMP ENROLLMENT IN THE LSJR BASIN

FDACS adopted a statewide citrus manual, effective January 9, 2013, which consolidated four regional citrus BMP programs and incorporated the rest of the state. The related rule requires all operations previously enrolled in the Ridge Citrus BMP program to re-enroll in the new, more comprehensive program by January 8, 2015. Previously enrolled flatwoods citrus operations were grandfathered in, but also must follow the applicable guidelines contained in the University of Florida–Institute of Food and Agricultural Sciences (UF–IFAS) publication, *Nutrition of Florida Citrus Trees* (Obreza and Morgan 2008). Revisions to the container nursery manual are nearing completion, with adoption anticipated in early 2014. Revisions to the vegetable/row crop manual have been initiated, with adoption anticipated in late 2014.

The Tri-County Agricultural Area (TCAA) Water Management Partnership formed in 2011 has made significant progress in working with growers to implement irrigation system upgrades and fertilizer management practices to reduce nutrient loadings to the LSJR and enhance water conservation. Partnership activities in 2013 focused on providing cost-share to growers for alternative irrigation systems and fertilizer banding equipment. Further discussion is provided below on partnership efforts, along with a listing and some examples of approved projects and practices.

#### ***Agricultural Load Reduction Allocation and BMP Load Reduction Estimates***

**Table 11** lists the reductions required of agricultural land uses in the LSJR Basin and the estimated load reductions achieved through the implementation of BMPs by vegetable/row crop operations. Due to the inaccuracies in 2004 land use information and changes in land use since 2004, the estimated total load for agriculture may be greater than the actual loading.

#### ***Agricultural Land Use Data***

Agricultural acreage in the LSJR Basin has declined since the 2004 land use data were collected. In addition, some categories of agricultural land use may include acreage that is not in production or that is not actually agriculture. This is because aerial photos of land use are not always clear enough to interpret accurately. The potential for misinterpretation is generally greatest in the pasture categories. FDACS staff are working with the Department and SJRWMD to determine more accurately the agricultural acreage in the basin.

#### **2.1.4.2 TCAA Water Management Partnership**

The objective of the TCAA Water Management Partnership is to contribute to the improved health of the LSJR through on-farm and regional water management projects and practices that reduce the movement of nutrients to the river, improve water conservation, and result in more efficient farm management while maintaining the long-term viability of agriculture in the TCAA. The primary resource concern is the movement of phosphorus from farmlands into the LSJR and its tributaries; however, nitrogen movement is also a concern.

To address these concerns, the TCAA Water Management Partnership is providing funding for water management projects and other practices to better manage and/or treat stormwater runoff and better target or reduce nutrient applications. Technical support and education/outreach to promote enhanced farm practices is also a key component. TCAA Water Management Partnership partners include the following:

- *TCAA growers.*
- *FDACS.*
- *Department.*
- *SJRWMD.*
- *U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS).*
- *UF–IFAS.*
- *St. Johns County.*
- *Floridan Resource Conservation and Development Council.*
- *Florida Farm Bureau.*
- *Florida Fruit and Vegetable Association.*

Project types and cost-share items that currently are considered for funding by the TCAA Water Management Partnership include the following (see **Figure 23** through **Figure 26**); however, other ideas for projects that would further the program objective may be proposed:

- *Projects:*

- o Surface and subsurface drip irrigation.
- o Overhead irrigation.
- o Tailwater recovery.
- o Regional water reuse.
- o Regional wet detention.

— *Practices/Equipment:*

- o Banding equipment.
- o Pump upgrades w/soil moisture sensors.
- o Soil moisture sensors.

The growers and agencies (FDACS, Department, SJRWMD, NRCS, and UF–IFAS) are working together to install and demonstrate these projects and practices on TCAA farms through cost-share funding, education, and technical assistance. Ten irrigation projects have been approved; most have been completed and the rest are under way. The purchase of 13 fertilizer banding machines also has been approved, and 10 of those have been purchased. Approved irrigation projects include the following:

- *Subsurface drip irrigation on potatoes.*
- *Surface drip irrigation on potatoes.*
- *Irridrain on potatoes and sod.*
- *Overhead on sod, cabbage, and potatoes.*



**FIGURE 23: AGRICULTURE OVERHEAD PIVOT IRRIGATION ON SOD WITH FERTIGATION**



**FIGURE 24: INSTALLATION OF IRRIDRAIN SYSTEM**





**FIGURE 25: AGRICULTURAL FERTILIZER BANDING EQUIPMENT**



**FIGURE 26: INSTALLATION OF SUBSURFACE DRIP TAPE**

To be eligible for cost-share funding, TCAA growers must be enrolled in and implementing applicable FDACS BMPs. This is one of eight eligibility requirements, including the willingness to undergo monitoring to determine the benefits of the projects and to host and participate in educational/demonstration activities on the project site.

FDACS staff are coordinating the partnership's efforts. SJRWMD has provided \$2.25 million in cost-share for the partnership, with \$750,000 of that dedicated to the purchase of fertilizer banding equipment. FDACS provided \$350,000 in fiscal year 2013–14. Almost \$1 million of the total cost share was distributed in fiscal year 2012–13, and the rest is being distributed in fiscal year 2013–14. The Department is providing the funds to monitor the water quality and conservation benefits of four of the approved projects, and plans to contribute about \$2 million for additional banding equipment purchases and irrigation projects.

Through the National Water Quality Incentives Program, the NRCS provided increased targeted cost share in two specified subbasins within the TCAA for farms that enrolled in the Environmental Quality Incentives Program. Total program funds obligated for the TCAA since 2012 through grower contracts are approximately \$467,790. NRCS plans to continue to set aside funds for the TCAA in 2014, with a beginning obligation of \$124,500; however, this may increase significantly based on grower feedback. In 2013, NRCS added subsurface drip irrigation to its list of eligible projects for cost-share, due to its cost-effectiveness and the growing interest of producers in trying this irrigation method.

Demonstration days and other educational efforts will stem from funded projects. While the current focus for projects is on more efficient irrigation systems to reduce nutrient runoff and leaching, irrigation/stormwater recovery and reuse projects are under discussion for future funding. These may be on individual farms or may be joint projects between two or more farms.

The partnership is intended to be perpetual, to foster ongoing collaboration among agencies and growers. While funding amounts for projects and practices may vary from year to year, there will be continued support for farmers to enhance their farming practices and reduce their nutrient inputs while maintaining or increasing yields.



#### **2.1.4.3 BMP Compliance Process**

To ensure that agricultural landowners know of their statutory responsibility to implement BMPs within the BMAP area, FDACS did a broad mail-out (about 2,400 letters) to landowners with property of ten acres or more with a county agricultural tax classification, and to nurseries of all sizes. A great number of these properties have turned out to be noncommercial agriculture of smaller acreages (10 to 30 acres), largely planted pines with no fertilization or other active management. However, a significant number of commercial operations responded to the letter and have been enrolled in FDACS BMPs or will be enrolled in the next several months. The Florida Forest Service indicates that approximately 57,172 acres were enrolled in forestry BMPs from September through December 2013 as a result of the mail-out. The FDACS Office of Agricultural Water Policy (OAWP) reports that approximately 7,627 acres were enrolled in fruit/nut, cow/calf, equine, and nursery BMP programs during that time as a result of the mail-out. Follow-up activities will intensify during the next three to six months.

Landowners who did not respond to the FDACS letter received a “compliance assistance” letter from the Department, urging them to contact FDACS to determine whether they need to enroll in agricultural BMPs and to follow through with enrollment, as applicable. For those who are in commercial agriculture and do not respond to repeated contacts, the Department will take enforcement action, with the ultimate goal of having them implement BMPs.

#### **2.1.4.4 RST Facilities**

SJRWMD has completed two RST facilities, Deep Creek West (also known as Yarborough) and Dog Branch (also known as Edgefield), in the TCAA. Modeling assessments conducted prior to the construction of the Deep Creek RST estimated reductions of 998 kg/yr of TN and 816 kg/yr of TP. The Edgefield RST was estimated to achieve reductions of 2,404 kg/yr of TN and 1,089 kg/yr of TP.

Differences in nutrient loads entering and exiting the Deep Creek West facility (inflow canal load versus wetland outflow load) are calculated to generate the actual annual total load reductions and overall RST treatment efficiency. Annual TN reductions range from 3,208 kg in 2009; 3,012 kg in 2010; 4,308 kg in 2011; 1,816 kg in 2012; to 2,727 in 2013. The annual average nitrogen reduction for 2009 through 2013 was 3,015 kg/yr, which exceeds the estimated TN load reductions (1,000 kg/yr) outlined in the LSJR Main Stem BMAP for the Deep Creek West RST.

For the Deep Creek West RST, annual reductions in TP range from 1,317 kg in 2009; 1,399 kg in 2010; 1,723 kg in 2011; 1,608 kg in 2012; to 1,368 kg in 2013. The annual average phosphorus reduction for 2009 through 2013 was 1,483 kg/yr, which also exceeds the estimated TP load reductions (818 kg/yr) outlined in the LSJR Main Stem BMAP. In general, greater treatment efficiencies and reductions are associated with storm events while treatment under ambient conditions can be minimal, and in some cases, nutrients are exported from the RST. The overall 2013 treatment efficiencies for the Deep Creek West RST system were approximately 42% for TN and 40% for TP.

Based on the findings of a wetland dye tracer study conducted in June 2010 at the Deep Creek West RST facility, only 5.1 acres of the 38-acre wetland are functioning under baseflow conditions due to hydraulic short circuiting and dead zones throughout the wetland. SJRWMD and St. Johns County will start construction in spring 2014 to increase flow volumes and storage volumes in the pond, which will increase the wetted area of the wetland, thus increasing residence time and treatment.

Pollutant loading cannot be calculated for the Dog Branch RST at this time due to the absence of flow data; thus, only pollutant concentrations are available for assessment. Monthly ambient concentration data (2007–13) for the Dog Branch RST (inflow concentration versus wetland outflow concentration) indicated a 38% reduction in TP concentration and a 39% reduction in TN concentration. Average ambient TN concentrations were 1.9 milligrams per liter (mg/L) in the inflow and 1.17 mg/L at the wetland outflow. TP concentrations were 0.55 mg/L in the inflow and 0.33 mg/L at the wetland outflow. Average storm event concentrations (2008–12) for the Dog Branch RST indicated an 82% reduction in TN and 91% reduction in TP. Average storm TN concentrations were 6.45 mg/L in the inflow and 1.14 mg/L at the wetland outflow. TP concentrations were 3.68 mg/L in the inflow and 0.33 mg/L at the wetland outflow.

While these current treatment performance estimates derived from ambient and storm data represent only reductions in concentrations, the data are encouraging and lead SJRWMD to believe that the facility is effectively reducing pollutants under both ambient and storm conditions. As flow and volume data become available, these data, in conjunction with pollutant concentrations, will be used to determine a more accurate assessment of treatment performance and watershed pollutant load reductions.

Within the freshwater reach, SJRWMD contractors in 2010 completed a technical memorandum and associated BMP Optimization Model addressing a nutrient reduction strategy for the TCAA. This report suggests that RST areas, such as those already constructed, may not offer the lowest life-cycle cost per mass of TN and TP. Alternatively, field-level treatment, which may require updating standard irrigation practices to reuse of irrigation water, or drip or overhead irrigation combined with fertigation, may be more justified from an economic perspective. SJRWMD is participating in the TCAA Water Management Partnership, as discussed above.

Dairy farms comprised the primary contributing agricultural operations within the marine reach. These operations have been abandoned as confirmed by land use assessments, thus negating the need for RST facilities within that section of the river.

## **2.2 IMPROVING SCIENTIFIC UNDERSTANDING**

### **2.2.1 WATER QUALITY MONITORING**

#### **2.2.1.1 Freshwater Reach for the Chlorophyll-*a* Target**

The monitoring plan includes routine ambient sampling to determine progress towards the chlorophyll-*a* target in the freshwater reach, and an intensified sampling program from April to September, when blooms are the most likely. Because of the patchiness of algal blooms, the WBID-wide average bloom density from 2009 to 2011 was calculated with data collected from a multistation transect monitoring program, with sampling undertaken every two weeks by Department staff, and laboratory analysis funded by Georgia Pacific and Seminole Electric. Concurrent with this sampling, SJRWMD, Florida Department of Health (FDOH), and National Oceanic and Atmospheric Administration (NOAA) staff have been working to apply the Medium Resolution Imaging Spectrometer (MERIS) sensor data, carried aboard the ENVISAT satellite, with the intent of using these data to replace the more time-consuming transect sampling endeavor. This approach appeared promising, with the MERIS data matching the transect data closely in comparisons done during the large 2010 river bloom.

Unfortunately, the ENVISAT satellite ceased functioning in April 2012. Calibration of the available satellite sensor data is continuing, with the expectation to have an established algorithm and protocol ready for the replacement Sentinel series satellite, planned for launch in 2014. Until then, SJRWMD plans to reinstitute some river monitoring to provide improved areal coverage of algal blooms.

SJRWMD previously conducted the ambient sampling on a biweekly basis at nine sites. However, during 2012, SJRWMD discontinued four of the monitoring sites (stations SJRCC, SJRCW, SJM37, and SAVSCRAO) and decreased the monitoring frequency at station SJSR16 from biweekly to monthly. SJRWMD recently resumed sampling at station SJRCC. Therefore, SJRWMD is conducting ambient freshwater sampling for six stations, and these data are regularly uploaded to the Florida Storage and Retrieval (STORET) database.

#### **2.2.1.2 Marine Reach for the DO Target**

Compliance with the DO target in the marine reach of the river is determined through data from three continuous DO stations, where samples are collected every 15 minutes. The U.S. Geological Survey (USGS) station at Dames Point is an existing station, and DO was sampled at this station throughout the last year. The data from this station are maintained by USGS and can be accessed through their website. There are also two BMAP stations at Fulton Point and Clapboard Creek. The Department operates and maintains these stations and stores the continuous DO data. The channel marker that the DO sondes at the Fulton Point station were attached to was hit in March 2012 and was then hit again in July 2012. Therefore, DO data from this station were not collected for most of 2012 and for all of 2013. The DO sondes at the Clapboard Creek station went missing in early February 2013; therefore, data were not collected for the majority of 2013.

#### **2.2.1.3 River and Tributary Inflow Monitoring**

The tributaries monitoring includes ambient sampling to determine the loads entering the main stem of the river from its tributaries and to estimate the reductions associated with the implementation of stormwater projects. For the ambient monitoring, SJRWMD samples 16 stations, of which 4 are sampled biweekly, 7 are sampled monthly, and 5 are sampled bimonthly. This sampling occurred on schedule over the last year. JEA is responsible for sampling 5 stations on a bimonthly basis, and this sampling occurred on schedule throughout the year. In addition, the city of Jacksonville maintains a long-term network, which provides supporting data for the BMAP monitoring plan (**Figure 27**). All of the ambient monitoring data are uploaded to Florida STORET on a regular basis.



**FIGURE 27: CITY OF JACKSONVILLE WATER QUALITY SAMPLING**

### **2.2.2 ALGAL INITIATIVE**

The development of the St. Johns River Nutrient Reduction Initiative (“Algal Initiative”) is proceeding at a steady pace. A broad range of project options have been identified and SJRWMD has completed two RST facilities (see **Section 2.1.4.4**). SJRWMD executed its first year of gizzard shad harvesting from Lake George. The project began June 3, 2013, and was completed September 6, 2013, and resulted in a total harvest of 1,173,570 pounds of gizzard shad. The shad harvest provided a direct reduction of 9,389 pounds of phosphorus and 28,167 pounds of nitrogen from Lake George and the downstream river area.

In addition, SJRWMD continues to explore the potential for macrophyte management and harvesting within the Lower and Middle St. Johns River Basins. Numerous upstream project opportunities within the Middle St. Johns River Basin are being examined, including the Deep Creek Basin in Volusia County, and the Wekiva River and Econlockhatchee River Basins, as well as the acquisition of agricultural lands on the shores of Lake Jesup with associated improvements to provide water quality treatment of stormwater entering the lake.

St. Johns County has initiated the construction of an additional RST on property obtained from SJRWMD, known as the Masters Tract, adjacent to Deep Creek near Hastings. Estimated reduction values for this facility are 2,370 kg/yr of TN and 1,190 kg/yr of TP. The total estimated cost of this project is \$6,432,000. St. Johns County and SJRWMD are collaborating on the design and construction of improvements to the Deep Creek West RST facility that will result in improved water quality treatment from that facility.

### **2.2.3 SJRWMD FUNDING FOR ADDITIONAL NUTRIENT REDUCTIONS**

Several cost-share agreements for the expansion of reclaimed water service have been executed, including those with Palatka, JEA, CCUA, Neptune Beach, and NAS Jacksonville. Per the BMAP, water quality credits are being held for the river based on the SJRWMD *ad valorem* funding contribution, prorated in relation to the total project cost. Held credits do not accrue to the recipient and are not available for TMDL compliance or for sale as water quality credits to other entities. Credit reductions will be documented in the recipient's domestic wastewater facilities permit. The estimated amount of credit reservations by SJRWMD is 45,503 kg/yr of TN. These reductions will be finally calculated for adoption within permit at the time projects are completed and based on final construction costs and actual nutrient reduction data.

## **2.3 FUNDING**

Camp Blanding received \$167,000 for a TMDL–BMAP study in 2013 to determine baseline pollutant loads within the Camp Blanding Joint Training Center. Tasks 1 through 3 have been completed as of January 16, 2014 (refer to **Section 2.1.3.2** for more details).

The city of Atlantic Beach received a grant for its reclaimed water facility from SJRWMD in the amount of \$442,000. The total construction cost for this project is \$1,259,000.

Clay County received a United States Agricultural Service Funding Agreement from the NRCS for bank stabilization. During Tropical Storm Debbie, a ditch along Wells Road and a portion of Indigo Branch at Richards Road experienced significant erosion. The grant provides a 75% reimbursement for a project total up to \$520,000. Both projects have been designed and will start construction by February 1, 2014.

St. Johns County received \$2.6 million in legislative appropriations for the Master Tract RST Facility through SJRWMD, and an additional \$796,007 in Section 319 funding for this project. The county also received \$50,636 for an RST alternatives analysis, and \$500,000 in legislative appropriations for the Deep Creek West RST Facility through SJRWMD.

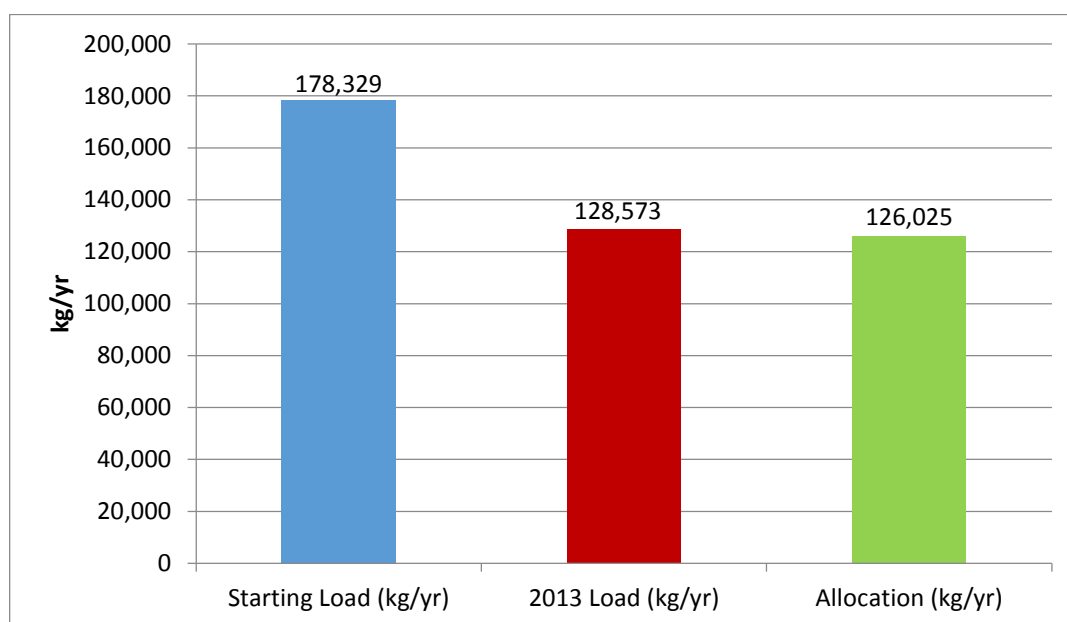
The U.S. Navy received funding from SJRWMD to construct the second phase of the NAS Jacksonville reuse expansion (zero discharge) project.

## 2.4 SUMMARY OF ACCOMPLISHMENTS

The tables and figures below (Table 12 and Figure 28, Table 13 and Figure 29, and Table 14 and Figure 30) illustrate the load reductions made by the stakeholders in the LSJR Basin and the remaining reductions in nutrient loading needed to achieve the TMDLs in each segment of the river.

**TABLE 12: PROGRESS TOWARDS THE TP TMDL IN THE FRESHWATER REACH**

| SOURCE       | % OF CONTROLLABLE LOAD | STARTING LOAD (KG/YR) | 2013 LOAD (KG/YR) | ALLOCATION (KG/YR) | REMAINING REDUCTIONS (KG/YR) | % COMPLETE |
|--------------|------------------------|-----------------------|-------------------|--------------------|------------------------------|------------|
| WWTF         | 45%                    | 81,015                | 37,881            | 44,386             | 0                            | 100%       |
| MS4          | 1%                     | 1,500                 | 1,256             | 1,256              | 0                            | 100%       |
| Non-MS4      | 7%                     | 12,358                | 10,158            | 9,408              | 750                          | 75%        |
| Agriculture  | 47%                    | 83,455                | 79,278            | 70,974             | 8,304                        | 33%        |
| <b>Total</b> | <b>100%</b>            | <b>178,329</b>        | <b>128,573</b>    | <b>126,025</b>     | <b>2,549</b>                 | <b>95%</b> |

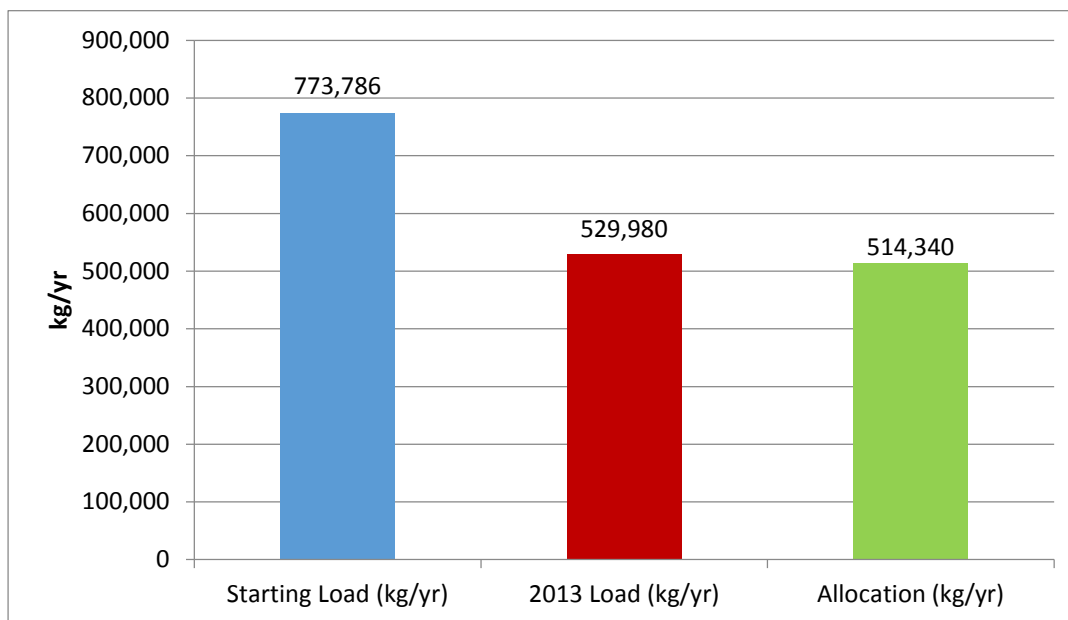


**FIGURE 28: PROGRESS TOWARDS THE TP TMDL IN THE FRESHWATER REACH**



**TABLE 13: PROGRESS TOWARDS THE TN TMDL IN THE FRESHWATER REACH**

| SOURCE       | % OF CONTROLLABLE LOAD | STARTING LOAD (KG/YR) | 2013 LOAD (KG/YR) | ALLOCATION (KG/YR) | REMAINING REDUCTIONS (KG/YR) | % COMPLETE |
|--------------|------------------------|-----------------------|-------------------|--------------------|------------------------------|------------|
| WWTF         | 47%                    | 364,650               | 195,560           | 237,200            | 0                            | 100%       |
| MS4          | 1%                     | 9,731                 | 8,685             | 8,685              | 0                            | 100%       |
| Non-MS4      | 17%                    | 88,705                | 75,900            | 74,119             | 1,781                        | 88%        |
| Agriculture  | 40%                    | 310,700               | 249,835           | 194,336            | 55,499                       | 52%        |
| <b>Total</b> | <b>100%</b>            | <b>773,786</b>        | <b>529,980</b>    | <b>514,340</b>     | <b>15,640</b>                | <b>94%</b> |

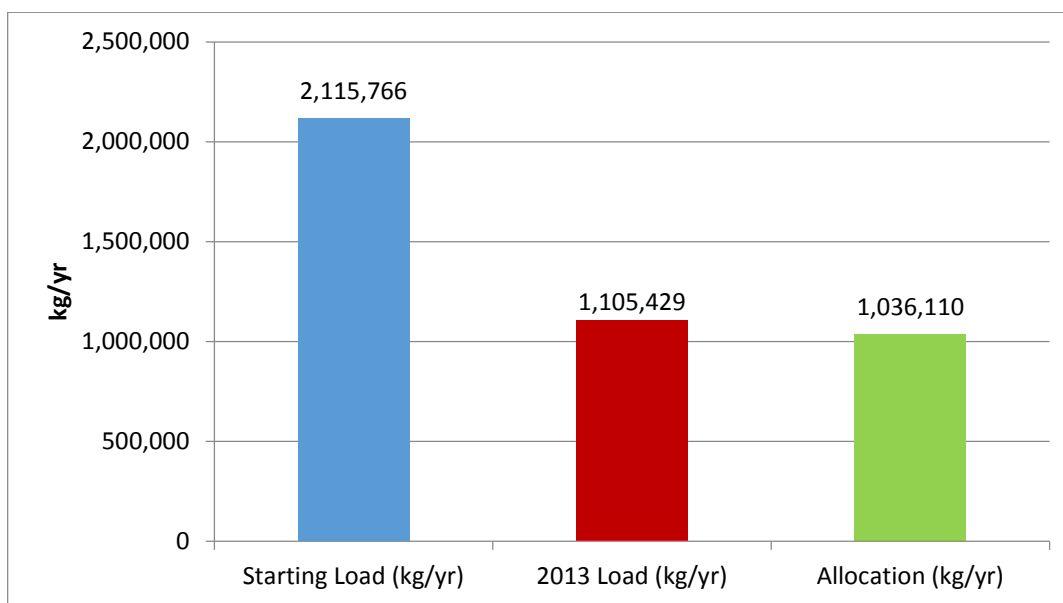


**FIGURE 29: PROGRESS TOWARDS THE TN TMDL IN THE FRESHWATER REACH**

**TABLE 14: PROGRESS TOWARDS THE TN TMDL IN THE MARINE REACH**

\* The WWTFs in the marine section have exceeded the necessary reductions; however, several projects are still ongoing that are required for individual stakeholders to achieve their portion of the reductions.

| SOURCE       | % OF CONTROLLABLE LOAD | STARTING LOAD (KG/YR) | 2013 LOAD (KG/YR) | ALLOCATION (KG/YR) | REMAINING REDUCTIONS (KG/YR) | % COMPLETE |
|--------------|------------------------|-----------------------|-------------------|--------------------|------------------------------|------------|
| WWTF*        | 84%                    | 1,786,542             | 843,426           | 878,326            | 0                            | 100%       |
| MS4          | 14%                    | 291,657               | 226,596           | 136,422            | 90,174                       | 42%        |
| Non-MS4      | 1%                     | 24,767                | 22,607            | 17,192             | 5,415                        | 29%        |
| Agriculture  | 1%                     | 12,800                | 12,800            | 4,170              | 8,630                        | 0%         |
| <b>Total</b> | <b>100%</b>            | <b>2,115,766</b>      | <b>1,105,429</b>  | <b>1,036,110</b>   | <b>69,319</b>                | <b>94%</b> |



**FIGURE 30: PROGRESS TOWARDS THE TN TMDL IN THE MARINE REACH**

## **SECTION 3: MAJOR ISSUES**

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The major issue in BMAP implementation this past year has been securing funding for projects, which caused some delays in the implementation of BMAP projects. In addition, the DO station at Fulton Point has been inactive since March 2012, and the DO station Clapboard Creek has been inactive since February 2013. Additional details of the issues encountered this past year are described in **Section 3.1**.

### **3.1 ISSUES BY SOURCE TYPE**

#### **3.1.1 WWTFs**

##### **3.1.1.1 Marine Reach**

###### ***U.S. Navy***

The process to implement the necessary capital upgrades to the NS Mayport WWTP (Project USN-5) is contingent on Congressional funding approval, a lengthy procedure that has delayed project construction for implementing load reductions due in October 2015. In addition, there has been a one-year delay in completing Project USN-2, the reuse expansion project at NAS Jacksonville.

However, Phase 1 of the reuse project has been completed and the project funding for Phase 2 has been secured. Therefore, the Department has reasonable assurance that USN-2 will be completed in the next year and the load reductions achieved. The Department will continue to monitor the Navy's progress in meeting its overall reduction schedule and its progress on Project USN-5.

#### **3.1.2 MS4s**

##### **3.1.2.1 Marine Reach**

###### ***City of Jacksonville***

The Department sent a warning letter to the city of Jacksonville on June 21, 2013, expressing concern that a detailed implementation plan had not been submitted describing how the city would meet its 2015 and 2023 load reduction deadlines. In reply, the city submitted an initial response on September 3, 2013, and the Department approved the city's revised detailed plan in November. The plan describes how the city will meet the reductions through a combination of stormwater projects, septic tank phase-out, and water quality credit trading. The Department will continue to monitor the city's progress and the milestones outlined in the project plan.

As the city of Jacksonville implements septic tank phase-outs to achieve nutrient reduction targets, predictive and analytical capabilities continue to be a limiting factor in the city's ability to plan and quantify project benefits. During the identification of LOC projects, the city noted some significant issues with the quality of certain input datasets used in the model (most notably the publicly available waterbody polygon coverage). While these datasets have great value at the countywide or regional scale, they are often too coarse at the field or plot scale needed to support calculation of the impact of a small cluster of septic tanks, or of an isolated septic tank.

Consequently, the city is volunteering resources to improve this dataset to better estimate the nutrient reductions associated with the LOC program. Additionally, current datasets for septic tank phase-outs do not include projects previously completed by the city under the Better Jacksonville Plan. Estimates from ArcNLET current model runs (run November 2012) are being used as a placeholder at the current time while the city creates the dataset of completed phase-outs based on JEA utility connection data. This dataset will be run using ArcNLET to refine the estimated nutrient reduction for Better Jacksonville Plan projects, and will be reported along with the completed LOC projects as part of the 2014 BMAP update.

### **3.1.3 URBAN STORMWATER**

#### **3.1.3.1 Freshwater Reach**

##### ***Putnam County***

Putnam County trade with Hiawatha WWTF (Project PUT-2) has been delayed from completion on August 31, 2014, to April 30, 2015. The county's septic tank phase-out (Project PUT-3) has been delayed from completion on December 31, 2014, to April 30, 2015. These projects are contingent on the construction of the East County Regional WWTF, which is scheduled to be awarded in January 2014. The county will still complete these projects by the 2017 deadline allowed for the Algal Initiative projects, and so there is no compliance issue with the BMAP at this time.

#### **3.1.3.2 Marine Reach**

##### ***Camp Blanding***

Camp Blanding did not complete the regrading of the existing swale system (Project CB-1) by December 31, 2013, as required. Camp Blanding will coordinate with the Department to quantify its

other completed project reductions and will establish a new schedule with the Department to complete its swale project or alternative activities that achieve the required reductions.

#### **3.1.4 AGRICULTURE**

Enrollment of agricultural acreage in FDACS BMPs in the LSJR Basin has not reached the 100% target contained in the BMAP. As shown in **Table 10**, enrollment in the LSJR BMAP area as of December 31, 2013, is 62,055, or 56% of the target enrollment. Within the TCAA, an area of specific concern, the enrollment is 39,875 acres, or 70% of the TCAA acreage. Two FDACS field staff and two contracted staff cover the entire SJRWMD region, which hosts 11 adopted BMAPs and 3 more under development. As of December 31, 2013, enrollment within the entire SJRWMD was more than 636,000 acres, including about 506,400 acres of cow/calf, 66,000 acres of citrus, and 36,000 acres of row crops. Almost 9,000 acres each of nurseries and dairies also are enrolled throughout the region, as well as 7,400 acres of sod, 1,800 acres of fruit/nut crops, and almost 500 acres of equine operations.

It is important to remember that even if all commercial agricultural operations participate in FDACS BMPs, the enrolled acreage will not add up to the target acreage for several reasons:

- *Only the acres that are in production and need BMPs will be recorded on the notices of intent and tracked in the FDACS BMP Tracking System.*
- *The land use data upon which target enrollment is based are from 2004; since that time, agricultural acreage has declined in the basin.*
- *The land use data contain inaccuracies that inflate the amount of agricultural acreage in the basin.*
- *There is a significant amount of noncommercial open land, pasture, and forestry acreage that is not appropriate for enrollment in FDACS BMP programs. Many landowners who receive the agricultural tax classification, and whose property may show up under agricultural land use on SJRWMD land use data, do not engage in production agriculture. They may have small gardens, a few animals, or just passive tree growth.*

## **3.2 WATER QUALITY MONITORING ISSUES**

The channel marker that the DO sondes at the Fulton Point station were attached to was hit in March 2012 and was then hit again in July 2012. Therefore, DO data from this station were not collected for

most of 2012 and for all of 2013. The DO sondes at the Clapboard Creek station went missing in early February 2013; therefore, data were not collected at this location in 2013 either. The Department is in the process of ensuring that the data sondes are in working order so that they can be redeployed once the housing for the sondes is ready. The Department estimates that the DO stations will be reestablished in March 2014.

## **SECTION 4: UPCOMING YEAR ACTIVITIES**

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The fifth annual BMAP progress report will encompass the period from January 1 to December 31, 2014. The activities that will occur during this time are summarized in **Section 4.1** and **Section 4.2**.

### **4.1 UPCOMING EFFORTS BY SOURCE TYPE**

#### **4.1.1 MS4s**

##### **4.1.1.1 Marine Reach**

###### ***City of Jacksonville***

The city of Jacksonville will continue with the septic tank phase-out projects (Projects COJ-52 and COJ-123) and the implementation of the stormwater projects (Projects COJ-42 through COJ-50), and will continue to pursue other projects and/or water quality credit trades.

###### ***Clay County***

Clay County will complete the wet detention pond associated with the County Road 209 widening (Project CC-20), which will result in a reduction of 45 kg/yr of TN.

#### **4.1.2 URBAN STORMWATER**

##### **4.1.2.1 Freshwater Reach**

###### ***City of Palatka***

The city of Palatka will complete the downtown first-flush treatment (Project PAL-7) in October 2014.

#### **4.1.3 AGRICULTURE**

FDACS will focus on significantly increasing enrollment in all commodities, and on supporting and expanding the TCAA Water Management Partnership. Extension agents and researchers with UF-IFAS will continue to assist growers in nutrient application and irrigation efficiencies, and in applying for cost-share funds for water management projects and BMPs. FDACS staff will continue to provide coordination and technical support for the partnership. The SJRWMD, Department, and NRCS will continue to assist growers with developing project concepts and monitoring plans, along with providing cost-share funds as available.

## **4.2 WATER QUALITY MONITORING**

For the freshwater sampling, SJRWMD will continue to monitor at its ambient stations. In the river's marine reach, both the city of Jacksonville and SJRWMD have continued to operate their long-term water quality monitoring programs. The Department will reinstate the DO stations at Fulton Point and Clapboard Creek as soon as possible for the marine reach monitoring. The SJRWMD and JEA will continue the ambient water quality sampling in the tributaries.



## SECTION 5: WATER QUALITY TRENDS

### 5.1 PRECIPITATION AND HYDROLOGIC CONDITIONS FOR 2013

The unusual rainfall pattern of 2012 was repeated again in 2013; below-normal rainfall in winter and early spring was followed by unusually high precipitation accumulations in spring (**Figure 31**). For the second year in a row, Black Creek in May exceeded flood stage, with some local flooding of residences and roads. Higher-than-normal rainfall persisted throughout the summer in the northwest portion of the LSJR Basin, leading to regional above-normal rainfall totals for the year. Short-term rainfall accumulations were also unusually high in late April and May in the east central portion of the LSJR Basin, in the watersheds encompassing the TCAA. Rainfall accumulations for an 8-day span from April 29 to May 6 exceeded 13 inches at the SJRWMD rainfall station at Elkton. This rainfall pattern altered the tributary and river discharge pattern that was below normal from October 2012 to April 2013, and then above normal for most of the summer (**Figure 32**).

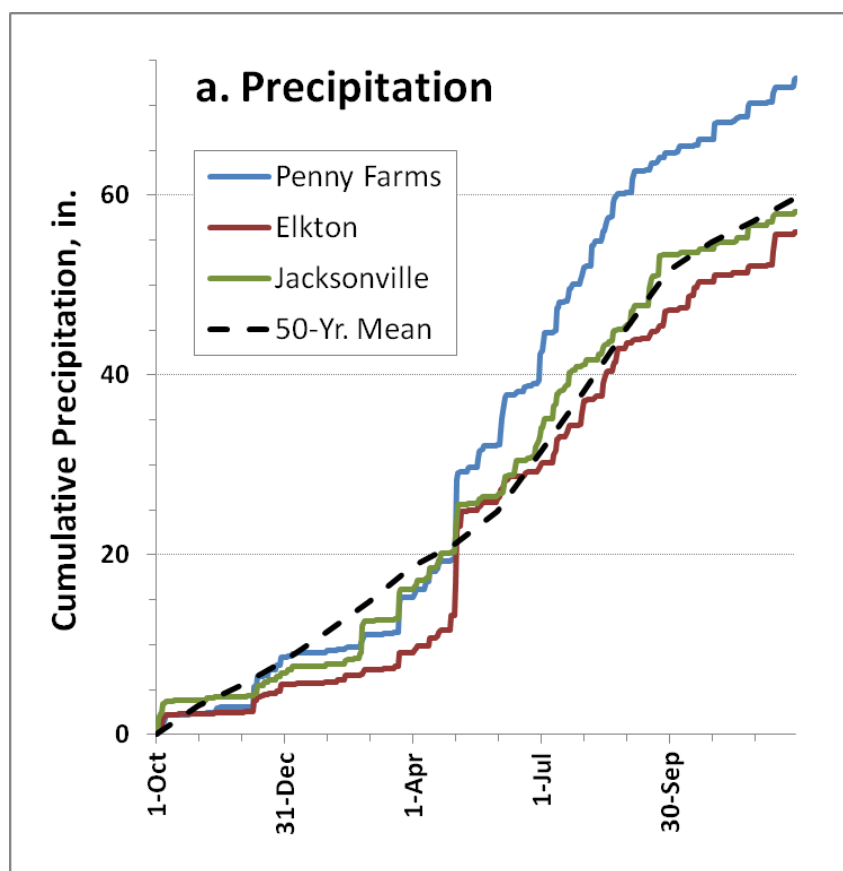
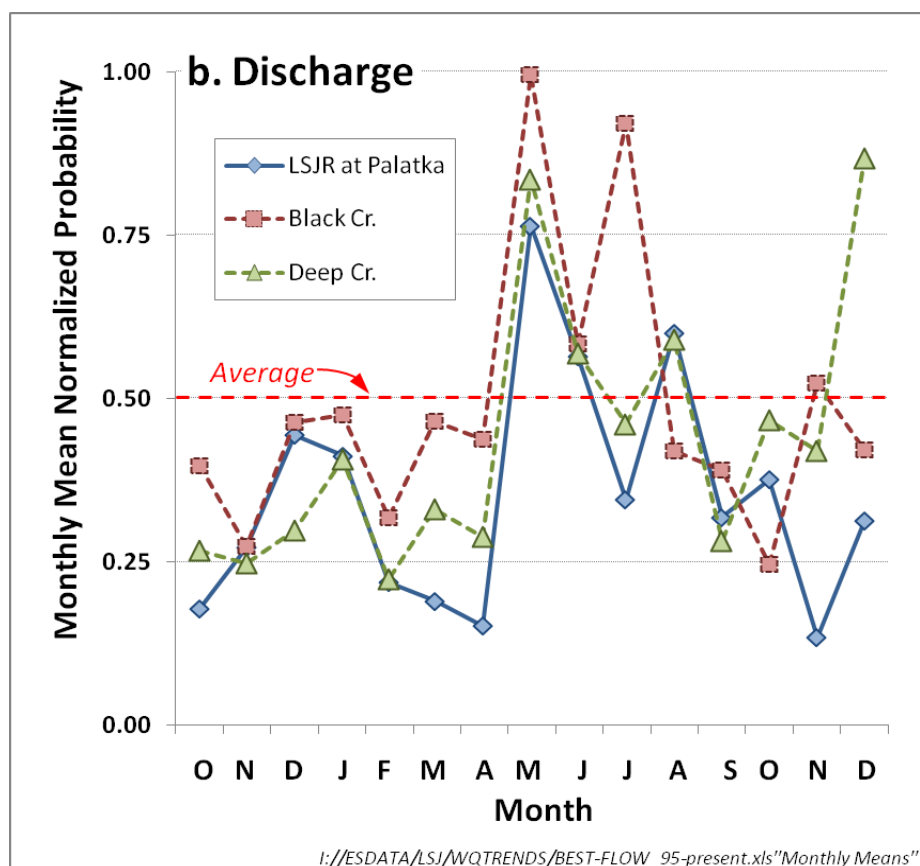


FIGURE 31: CUMULATIVE RAINFALL, OCTOBER 1, 2012–DECEMBER 31, 2013



**FIGURE 32: NORMALIZED MONTHLY MEAN DISCHARGE, OCTOBER 1, 2012–DECEMBER 31, 2013**

This “inverted” rainfall pattern led to a late spring and summer river salinity condition lower than the median condition, with freshwater conditions extending northward to River Mile 30 at Piney Point (**Figure 33**). When freshwater conditions extend into the southern Jacksonville portion of the LSJR, this reach becomes conducive to the growth of freshwater blue-green algae (cyanobacteria). The greater depth of this reach and higher input of nutrient runoff associated with more freshwater inflow tends to favor the colonial species *Microcystis aeruginosa*, and this cyanobacterium was observed in sampling events through much of the spring and summer. The strong tendency for this species to float and windrow was evident, and numerous shoreline scums were reported throughout the summer by agency samplers, the public, and the media (**Figure 34**).

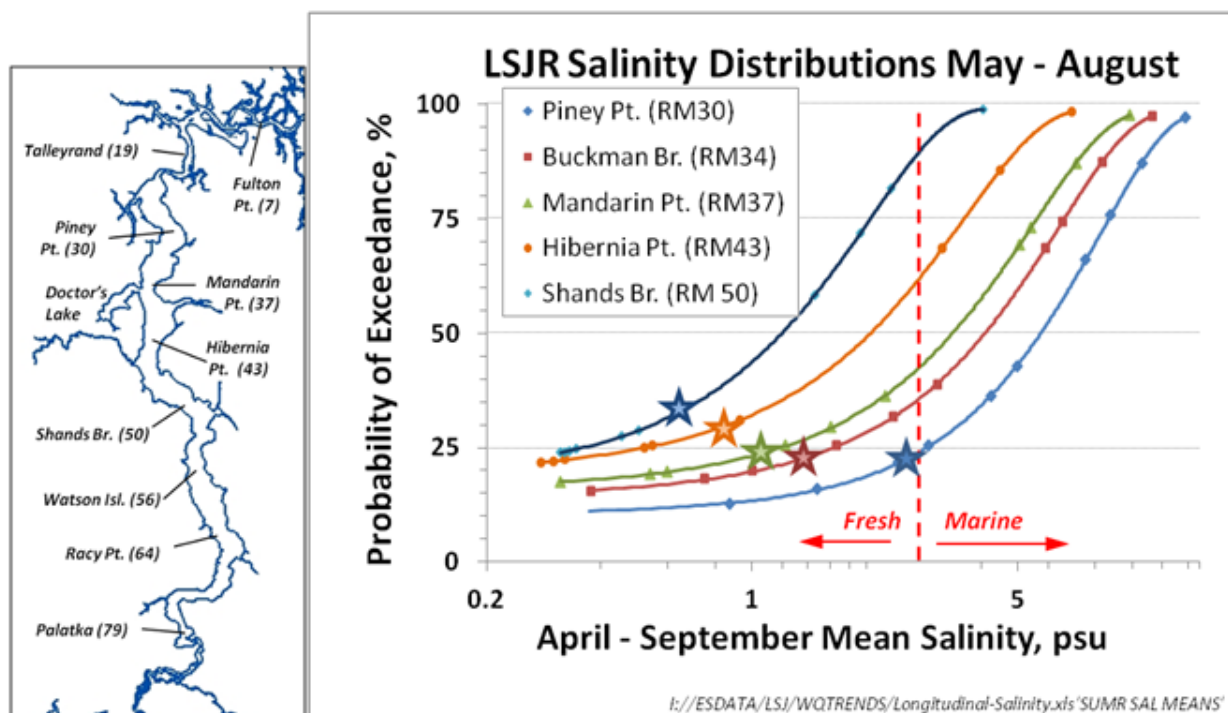


FIGURE 33: MEAN SALINITY IN THE OLIGOHALINE REACH OF THE LSJR, MAY 2013–AUGUST 2013



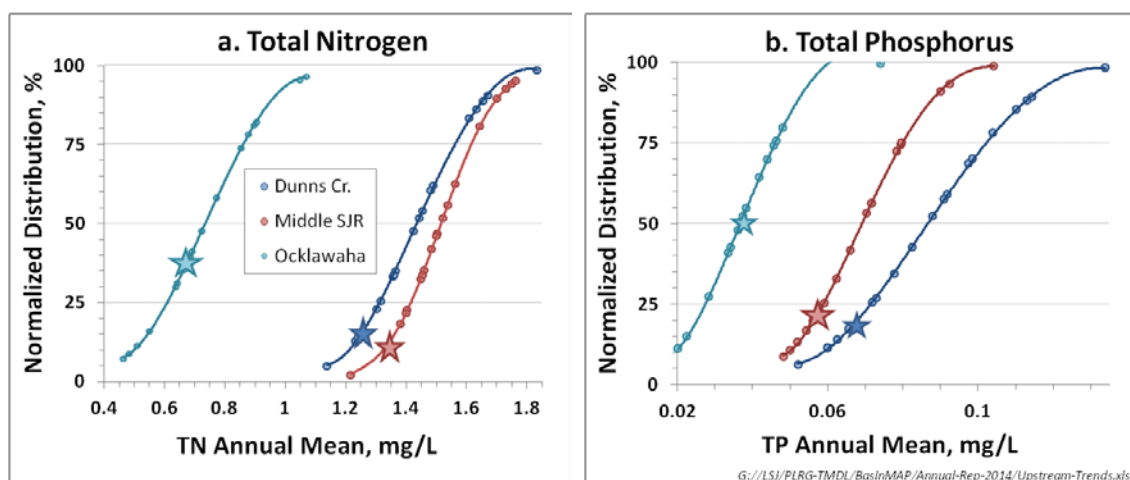
FIGURE 34: IMAGES OF THE LSJR *MICROCYSTIS AERUGINOSA* BLOOM AT MANDARIN POINT ON AUGUST 12, 2013 (LEFT), AND DOCTOR'S LAKE ON DECEMBER 3, 2013 (RIGHT)

## 5.2 TRENDS IN UPSTREAM NUTRIENT CONCENTRATIONS AND LOADS TO THE LSJR

The upstream extent of the LSJR begins at the confluence of the Middle St. Johns and the Ocklawaha Rivers, 100 miles upstream of the mouth. Just downstream of the Ocklawaha confluence, at River Mile 89, Dunns Creek, the outlet of the 585-square-mile Crescent Lake Basin, enters the river. Combined, these three major tributaries to the LSJR represent 69% of the median discharge measured for the St. Johns River at Jacksonville. Owing to these large flow contributions, trends in their TN and TP

concentrations affect the LSJR, particularly in the freshwater reach. For this assessment, trends in nutrient concentrations are assessed with the Kendall-Mann time series analysis, a robust nonparametric statistical test that is unaffected by non-normal distributions in the data.

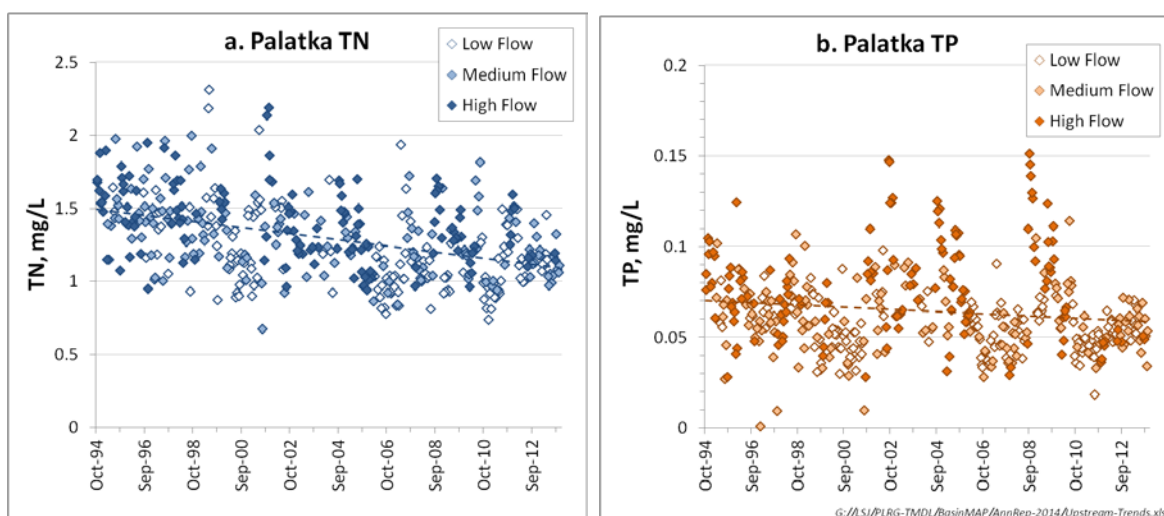
The long-term ambient water quality monitoring station at Palatka (River Mile 79) is just downstream of the confluence of these three inflows, and trends in nitrogen and phosphorus at this location provide an indication of the change in this combined upstream load over time. Significant downward trends in nitrogen concentration have occurred at this location since 1995, with these reductions significant over the range in flows and for both the warmer season (April–September), when phytoplankton blooms are more likely to occur, and in cooler months (October–March) (**Figure 35**) (with the exception of low-flow conditions for the latter, though the downward trend in this case, at  $p = 0.059$ , is nearly significant at the 0.05 level). The mean TN at Palatka during 2013 calendar year was 1.14 mg/L, slightly below the long-term mean of 1.29 mg/L. Though TP concentrations at this location appear to exhibit a slight downward trend, this trend is not significant, with the exception of warm season (April – September) low-flow conditions. During calendar year 2013, the mean TP concentration at Palatka was 0.056 mg/L, below the long-term mean of 0.064 mg/L. Mean 2013 nutrient concentrations at Palatka were also very close to the TMDL target mean concentrations determined from the TMDL model-allocated loads verification simulation of 1.27 mg/L for TN and 0.058 mg/L for TP.



**Note:** The Normalized Distribution value represents the percent of time the values is equaled or exceeded; for example, a 25<sup>th</sup> percentile concentration is relatively low, and is exceeded 75% of the time. Stars indicate the 2013 mean concentrations.

**FIGURE 35: NORMALIZED DISTRIBUTIONS OF WATER-YEAR (OCTOBER–SEPTEMBER) ANNUAL MEAN TN AND TP CONCENTRATIONS (LEFT AND RIGHT, RESPECTIVELY) FOR THE THREE MAJOR INFLOWS TO THE LSJR**

The mean 2013 nutrient concentrations for the three major inflows just upstream of Palatka were at or below the long-term (1995–2013) average. The mean water-year (October–September) TN concentrations exiting Crescent Lake (which flows into the LSJR by way of Dunns Creek) and Lake George, at 1.24 mg/L and 1.33 mg/L, were well below the long-term median concentrations for these sites (**Figure 36**). The 2013 mean TN concentration for the Ocklawaha River was 0.66 mg/L, just below the long-term median annual mean of 0.69 mg/L. The 2013 mean TP concentrations entering the LSJR from the Middle St. Johns through Lake George and Dunns Creek were 0.059 mg/L and 0.059 mg/L, also well below the median concentrations for these monitoring locations (**Figure 36**), while the Ocklawaha River 2013 annual mean TP, at 0.037 mg/L, was very near the long-term median concentration (**Table 15**).



**FIGURE 36: TRENDS IN TN AND TP (LEFT AND RIGHT, RESPECTIVELY) AT THE LONG-TERM WATER QUALITY MONITORING STATION IN THE LSJR AT THE HIGHWAY 17 BRIDGE IN PALATKA, 1995–2013**

**TABLE 15: MEDIAN TN AND TP CONCENTRATIONS AT NEAR PALATKA**

\* Indicates a significant downward trend ( $p < 0.05$ ).

\*\* Indicates no trend.

| FLOW CONDITION | TN (OCT-MAR) | TN (APR-SEP) | TP (OCT-MAR) | TP (APR-SEP) |
|----------------|--------------|--------------|--------------|--------------|
| Low Flow       | 0.059**      | <0.001*      | 0.796**      | 0.026*       |
| Medium Flow    | <0.001*      | <0.001*      | 0.405**      | 0.053**      |
| High Flow      | <0.001*      | 0.017*       | 0.302**      | 0.378**      |

### 5.3 TRENDS IN RIVER NUTRIENTS AND TMDL TARGETS

The trends in river TN and TP concentration are a key indicator of the progress of nutrient pollution control endeavors. Because of the large proportion of total river load entering from upstream, nutrient

pollution control solely within the LSJR Basin cannot completely achieve water quality targets, but pollution control efforts should nonetheless lead to detectable changes in river monitoring data.

To assess the progress in nutrient pollution reduction, two long-term monitoring locations in or near the TMDL “worst-case” WBIDs are examined here. In the freshwater reach, the benchmark station in the center of WBID 2213K at Racy Point is used to assess trends. The Racy Point station has had twice-monthly sampling through the 1995 to 2013 assessment period, and thus is balanced with respect to sampling density through time and has sufficient detail to elucidate trends. It also has historically exhibited the highest nutrient and chlorophyll-*a* concentrations within the LSJR freshwater reach; hence improvements in water quality here are a “litmus test” of the TMDL reductions.

In the marine reach, the long-term monitoring station at River Mile 17 near Talleyrand is relied upon to assess nutrient trends. Though this station is in WBID 2213D, 10 miles upstream of the “worst-case” WBID 2213B, it has a continuous data record of at least monthly sampling dating back to 1985, and is less affected by marine salinity mixing, and therefore is more representative of river loads. To improve compatibility in the data combined in this analysis that have been collected by various programs through time, only surface collections are used from the Talleyrand site.

In the LSJR TMDL process, nutrient load allocations were established to achieve water quality targets tailored to the predominant eutrophication-related adverse water quality impacts affecting the freshwater and marine reaches of the river. For the freshwater reach, the primary water quality objective was to reduce the density and duration of nuisance algal blooms to a level that would not adversely affect the functioning of healthy aquatic food chains. In the LSJR marine reach, the primary adverse impact of eutrophication was found to arise from the oxygen demand of declining algal blooms and decomposing algal organic matter; thus for this reach the TMDL assimilative capacity is based on the maintenance of viable DO levels.

### **5.3.1 LSJR FRESHWATER REACH TRENDS IN NUTRIENTS**

Trends in observed TN and TP concentrations from 1995 through 2013 for the Racy Point station are shown in **Figure 37**. Because concentrations are significantly correlated with river and tributary discharge, data over the assessment period are separately assessed for low (the lowest one-third of mean flows), medium (middle third of mean flows), and high flow (highest one-third of mean flows) categories. Trends within flow categories can be indicative of the relative progress in sources of nutrient

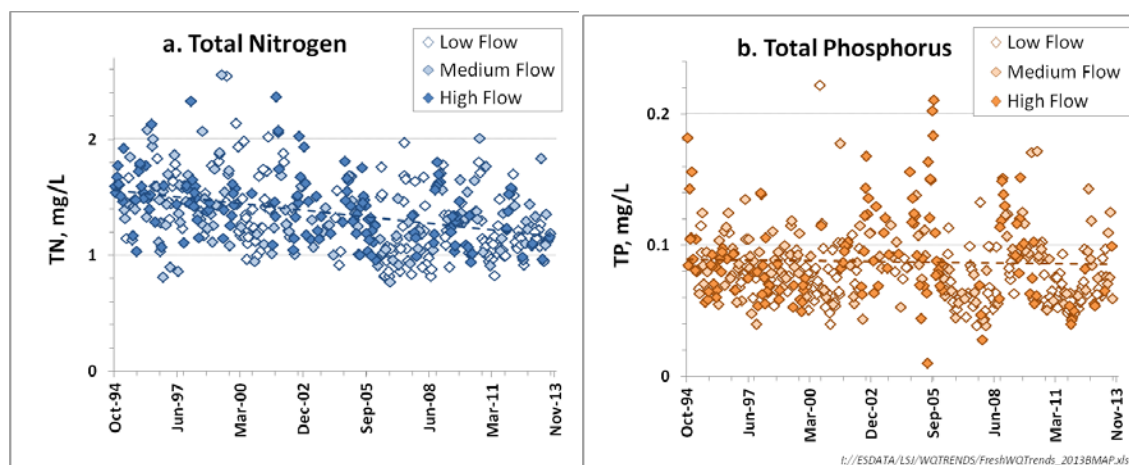
pollutant load. Elevated nutrient concentrations during low-flow conditions can indicate that point source loads contribute significantly to receiving water concentrations, while elevated high-flow concentrations suggest that nonpoint source runoff is a significant contributor. Trends are also separated by half-year “seasons,” as trends during the warm half-year season (April – September) potentially have a greater effect on bloom concentrations ().

From 1995 through 2013, TN at the Racy Point station has exhibited a significant downward trend (**Figure 37**). With the exception of the October to March medium-flow condition, all combinations of season and discharge exhibit a significant downward trend at this location. The 2013 calendar year median TN concentration, 1.15 mg/L, is below the long-term median concentration of 1.31 mg/L, and also below the TMDL model verification simulation (a model simulation based on 1995 to 1999 hydrologic conditions, with all sources at the allocated loads) mean concentration of 1.21 mg/L. While this concentration is not a standard, it is a useful benchmark of nutrient reduction progress.

There is no significant trend in TP when all flow categories and seasonal data are combined, but there is a significant downward trend for data collected between April and September under low-flow conditions, and a nearly significant downward trend for October to March low flow ( $p = 0.085$ ). An unusual seasonal divergence in trends occurs under high-flow conditions, in which October to March data exhibit a significant downward trend, while April–September data exhibit a significant increasing trend (**Table 16**).

The additions of water volume during Rodman Reservoir drawdowns from 2007 to 2008 and 2011 to 2012 may have contributed to this anomalous high-flow downward trend. For these years, the added volume from the release of reservoir storage elevated river discharge into the “high” category at times when antecedent river discharge was actually low, and this, in combination with the fact that reservoir TP concentration is low relative to the St. Johns River, may have had the effect of diluting downstream river phosphorus. During these drawdown phases, LSJR TP concentration at Racy Point dropped to as low as 0.028 mg/L in December 2007 and 0.040 mg/L in November 2011. When the significance test is rerun with all of the reservoir drawdown years removed, there is no significant downward trend in Racy Point TP high-flow, October to March condition.





**FIGURE 37: TRENDS IN TN AND TP (LEFT AND RIGHT, RESPECTIVELY) AT THE LONG-TERM MONITORING STATION AT RACY POINT**

**TABLE 16: MEDIAN TN AND TP CONCENTRATIONS AT RACY POINT**

\* Indicates a significant downward trend ( $p < 0.05$ ).

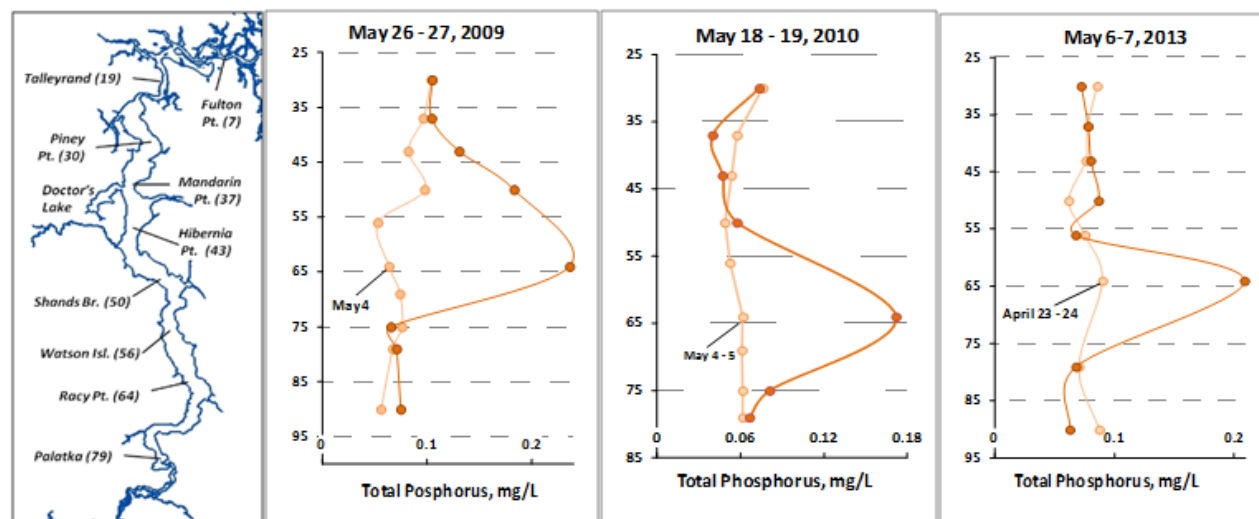
\*\* Indicates no trend.

\*\*\* Indicates significant upward trend ( $p > 0.95$ ).

| FLOW CONDITION | TN (OCT-MAR) | TN (APR-SEP) | TP (OCT-MAR) | TP (APR-SEP) |
|----------------|--------------|--------------|--------------|--------------|
| Low Flow       | 0.005*       | <0.001*      | 0.085**      | 0.001*       |
| Medium Flow    | 0.233**      | 0.002*       | 0.567**      | 0.326**      |
| High Flow      | <0.001*      | 0.002*       | 0.031*       | 0.965***     |

Significantly increasing high-flow, April to September TP trends appear to have been influenced by an unusual precipitation pattern that has been repeated recently, in which large rainfall events have occurred during April to May, a time when rainfall accumulations are historically low. Such events occurred in three of the last five years (2009, 2010, and 2013). These unseasonably high precipitation events led to large nonpoint source inputs into the freshwater reach in the vicinity of the worst-case WBIDs, and monitoring performed before and after these storms clearly shows highly elevated TP concentrations (**Figure 38**) for the poststorm condition. The 2013 calendar year median TP concentration, 0.074 mg/L, is below the long-term median concentration of 0.079 mg/L, but greater than the TMDL model verification simulation median concentration of 0.060 mg/L. Excluding the extremely high concentration of 0.209 mg/L following the May 1–3 rainfall, the 2013 median concentration would have been 0.072 mg/L.





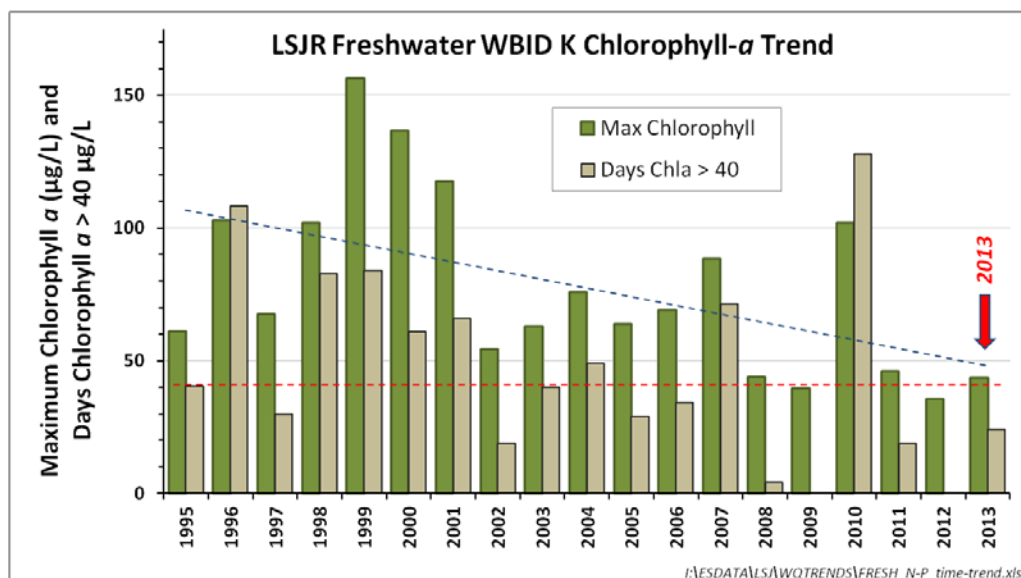
**FIGURE 38: COMPARISON OF BEFORE AND AFTER TP CONCENTRATIONS IN THE LSJR FOLLOWING LARGE PRECIPITATION EVENTS IN 2009, 2010, AND 2013**

### 5.3.2 LSJR FRESHWATER REACH TMDL CRITERIA PERFORMANCE

The LSJR is a system dominated by the pelagic (open water) food chain, in which algae, the base of the food chain, are consumed by microscopic animals (rotifers, crustaceans, and insect larvae, collectively referred to as the zooplankton), which are in turn consumed by juvenile fish. Plankton monitoring in the LSJR has established that during blue-green algal (cyanobacteria) blooms, important pelagic zooplankton decline, shunting organic carbon from algal primary productivity instead to bacterial decomposition. To prevent this decline, a criterion was designed that sought to limit the duration of a nuisance bloom, defined as a concentration of chlorophyll-*a* of more than 40 micrograms/liter ( $\mu\text{g/L}$ ) to a duration no longer than 40 days.

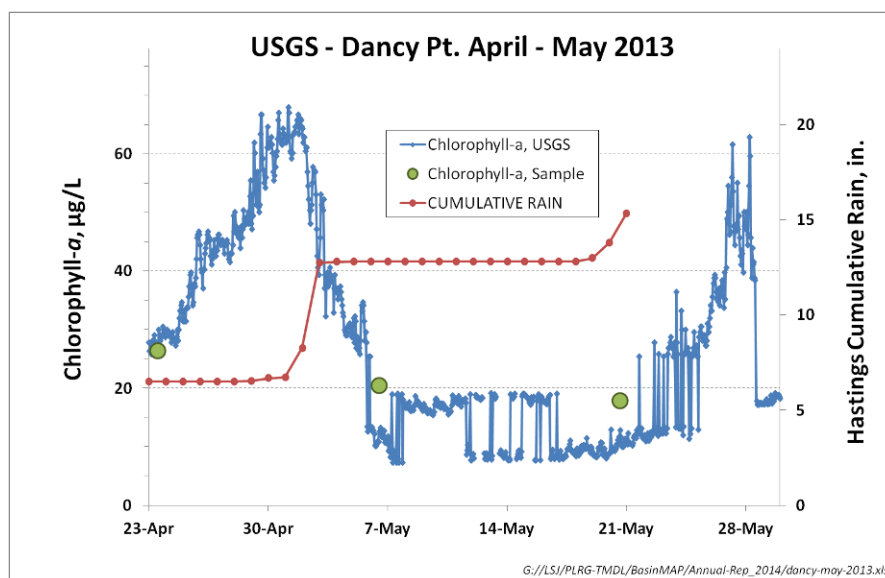
As was the case for nitrogen and low-flow condition phosphorus concentrations, monitoring data for the freshwater reach Racy Point station in WBID 2213K indicate that algal bloom density and duration at the have been declining over time (see **Figure 39**). During the summer bloom season of 2013, the maximum total chlorophyll-*a* observed at Racy Point was 43.5  $\mu\text{g/L}$  (40.7  $\mu\text{g/L}$  for pheophytin-adjusted chlorophyll-*a*), for a sample collected on July 8. Continuous, real-time measurements of chlorophyll-*a* made at the nearby USGS water quality station at Dancy Point suggest that between monitoring dates of April 23 and May 8, bloom density likely increased beyond the observed monitoring event maximum of 43.5  $\mu\text{g/L}$  (**Figure 40**). This bloom expansion was diluted and exported downstream by the runoff from the large rainfall accumulations occurring from May 1 to 3. When this chain of events occurs in the freshwater LSJR, it is not unusual for the truncated bloom, along with the nonpoint source nutrients and

internally loaded nitrogen from cyanobacterial N-fixation, to be transported downstream, favoring a succession to a *Microcystis aeruginosa*–dominated bloom, as was the case for 2013.



**Note:** Red dashed line identifies the bloom threshold concentration of 40 µg/L. The blue dashed line identifies the trend from 1995 to 2013, which has a significant negative slope of 2.5 days decline per year.

**FIGURE 39: ANNUAL MAXIMUM CHLOROPHYLL-A AND DURATION OF CHLOROPHYLL-A GREATER THAN 40 µg/L FOR THE LONG-TERM LSJR FRESHWATER REACH STATION AT RACY POINT**



**Note:** Blue line represents the USGS-measured phycocyanin pigment concentration, converted to chlorophyll-a based on an existing relationship between historical same date-matched chlorophyll-a measurements. Green circles indicate the measured chlorophyll-a from ambient sampling events at the nearby monitoring station at Racy Point. Rainfall data were obtained from the UF–IFAS Florida Automated Weather Network site at Hastings.

**FIGURE 40: SPRING BLOOM TIME SERIES FOR WBIDs 2213K AND 2213L IN THE FRESHWATER LSJR, 2013**

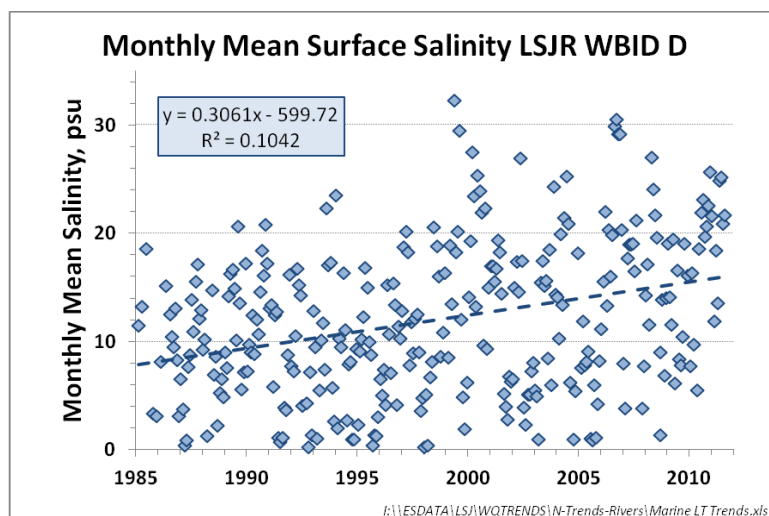
### **5.3.3 LSJR MARINE REACH TRENDS IN NUTRIENTS**

Water quality and nutrient concentrations have been monitored regularly at several sites within WBID 2213D continuously since 1985. In 1991, the cooperative interagency monitoring program within the LSJR established the joint site referred to as JAXSJR17 within this WBID, and this location has been monitored regularly with at least a monthly frequency by the city of Jacksonville, JEA, and SJRWMD since that time. In 1996, these agencies adopted a same-day high and low tide sampling protocol at the site, to provide an unbiased estimate of daily mean chemistry without the effect of tide at the time of sampling. In 2012, SJRWMD abbreviated this protocol, to sample once per day at low slack tide.

Tide and river discharge are important considerations when evaluating data from this site, or for all sites that are affected by marine water encroachment. Because the concentration of offshore Atlantic inner-shelf water TN and TP is lower than that of the river, long-term changes in sea level and river discharge that lead to a greater proportion of marine water in the river can affect river nutrient concentration trends, and obscure trends related to changes in the external load. These long-term trends are reflected in salinity measurements, and monitoring data from 1985 to 2011 suggest that this location may be experiencing a gradual increase in ambient salinity (**Figure 41**) over this period. The marine water encroachment could lead to an apparent downward trend in concentration that is not driven by nutrient pollution load decreases. For that reason, the nutrient trends examined here have been adjusted to reflect the fresh end concentration, without the effect of marine water dilution. This done by applying a simple conservative mixing calculation to the observed sample date nutrient concentrations, assuming the following:

- *Pure ocean water has a salinity of 35 practical salinity units (psu), while pure river water has a salinity of 0.5 psu.*
- *The ambient background ocean TN concentration is 0.325 mg/L, and the background TP concentration is 0.048 mg/L.*

For example, if a TN concentration of 1.0 mg/L were measured on a day in which the matching salinity was 17.75 psu, the sample would be considered to be half seawater, and half river water, and the corrected river water-only TN would be:  $(34.5/(35-17.75))*(1.0-0.325)+0.325 = 1.675$  mg/L.

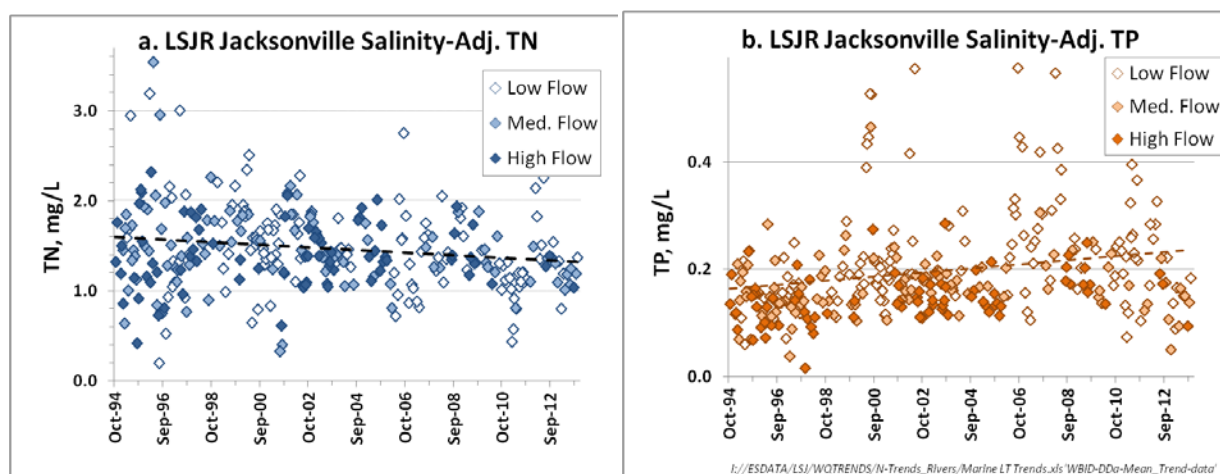


**FIGURE 41: LONG-TERM TREND IN MONTHLY MEAN SALINITY IN THE LSJR IN WBID 2213D**

The time series trends for salinity-adjusted TN and TP at the JAXSJR17 site from 1995 to 2013 are shown in **Figure 42**. For data collected under low-discharge conditions, TN exhibits a significant decline. TN concentrations are declining under medium-flow conditions for October through March data, and are close to exhibiting a significant decline for medium-flow April through September data ( $p = 0.106$ ). For samples collected under high-flow conditions, the data exhibit a significant increasing trend (April through September), or exhibit no trend (October through March) (**Table 17**).

For 2013, the calendar year median surface TN (not salinity-adjusted) was 0.897 mg/L, slightly below the long-term median of 1.016 mg/L, though it should be noted that the 2013 median is based on the sampling of low tide only, which would lead to a higher median than that of the historical random or high tide-low tide paired sampling. The median predicted TMDL model verification simulation TN concentration is 0.753 mg/L.

In contrast to the trends for TN, TP concentrations appear to be trending upwards, although it appears that concentrations peaked in 2007 through 2009, and have been declining since that time. A trend analysis of compartmentalized data shows significant increases under high-flow conditions, and for April through September low-flow conditions, with nearly significant trends exhibited for other season and flow combinations. For calendar year 2013, the median surface TP concentration for SJRWMD monitoring data was 0.108 mg/L (not salinity adjusted), below the long-term median of 0.127 mg/L, and well below the July 2007 to December 2009 median of 0.165 mg/L. The median predicted TMDL model verification simulation TP concentration is 0.098 mg/L.



**FIGURE 42: SALINITY-ADJUSTED TN AND TP (LEFT AND RIGHT, RESPECTIVELY) FOR THE LONG-TERM WATER QUALITY MONITORING STATION AT LSJR RIVER MILE 17 (ID JAXSJR17)**

**TABLE 17: MEDIAN TN AND TP CONCENTRATIONS AT RIVER MILE 17**

\* Indicates a significant downward trend ( $p < 0.05$ ).

\*\* Indicates no trend.

\*\*\* Indicates significant upward trend ( $p > 0.95$ ).

| FLOW CONDITION | TN (OCT-MAR) | TN (APR-SEP) | TP (OCT-MAR) | TP (APR-SEP) |
|----------------|--------------|--------------|--------------|--------------|
| Low Flow       | 0.010*       | 0.005*       | 0.912**      | 0.995***     |
| Medium Flow    | 0.003*       | 0.106**      | 0.908**      | 0.834**      |
| High Flow      | 0.808**      | 0.957***     | 0.969***     | 0.958***     |

As an alternative to the salinity adjustment of nutrient concentrations for the assessment of trends, actual TN and TP concentrations were plotted against salinity for a pre-TMDL time interval (1995–99) and post TMDL (2009–13) to examine the differences for equivalent salinity conditions (**Figure 43**). TN concentrations are significantly correlated with salinity, and while the pre-TMDL and post-TMDL regressions are not greatly separated, the current relationship (2009–13) between salinity and TN is below that of the pre-TMDL relationship, with an average difference of 0.15 mg/L at the current mean salinity of about 16 psu. This is comparable to the difference between the TMDL assessment window time interval (1995–99) and post-TMDL (2009–13) predictions from the time series regression of 0.209 mg/L.

This salinity adjustment is not viable for TP, as concentrations are not correlated with salinity. The scatter plot does, however, suggest that at lower salinity, the current period exhibits higher TP concentrations than that of the pre-TMDL interval. While the source of this increased TP is currently unknown, some research suggests that as salinity encroachment into freshwater tidal wetlands increases, these wetlands may begin to exude higher concentrations of phosphorus, due to the increase in anaerobic

bacterial activity and release of bound P as wetland soils are exposed to higher concentrations of sulfate from marine water influence (Hackney *et al.* 2012).

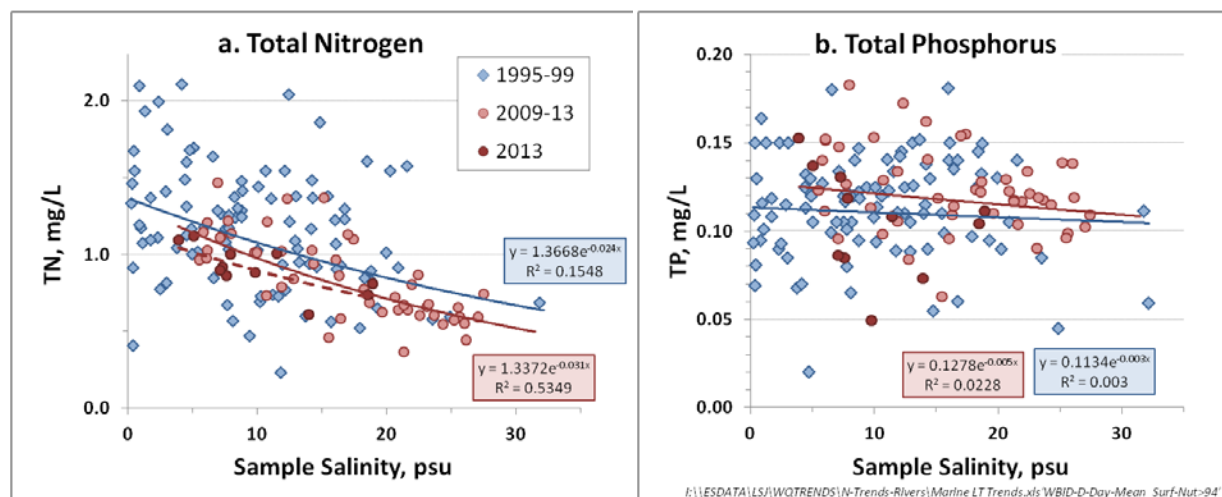


FIGURE 43: SCATTER PLOTS OF TN AND TP (LEFT AND RIGHT, RESPECTIVELY) VERSUS SALINITY FOR THE TALLEYRAND MONITORING STATION

#### 5.3.4 LSJR MARINE REACH TMDL CRITERIA PERFORMANCE

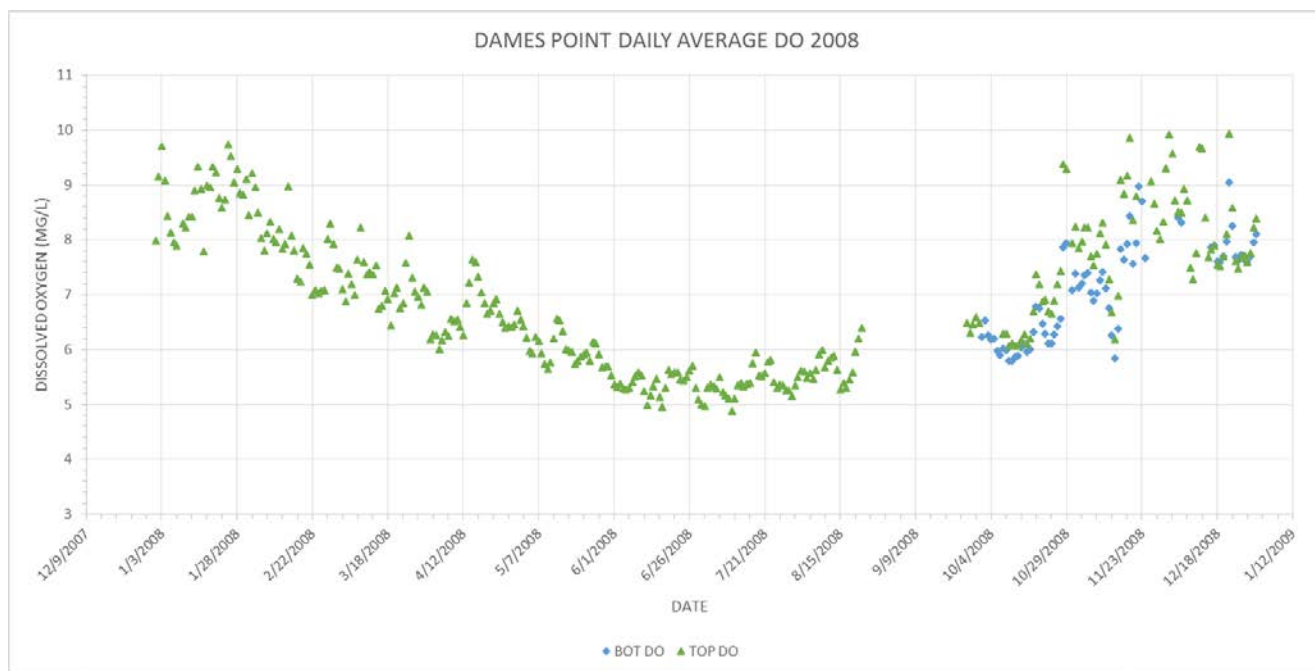
DO, specific conductance, and water temperature measurements are reported from two depths by the USGS at the Dames Point Bridge (USGS 302309081333001) site. The upper level depth is 8 feet below average water surface, and the lower level depth is 15 feet below average water surface. Data over the 2008 to 2013 period were processed to obtain daily average DO concentrations and DO saturation (DOSAT). Daily average DO concentrations were then ranked from low to high to assign observations in the respective bins to determine whether the DO SSAC was attained. The DO SSAC was expressed as follows:

$$\left( \text{Total Fractional Exposure} \right) = \frac{\text{Days between } 4.0 - < 4.2 \text{ mg/L}}{16 \text{ day Max}} + \frac{\text{Days between } 4.2 - < 4.4 \text{ mg/L}}{21 \text{ day Max}} + \frac{\text{Days between } 4.4 - < 4.6 \text{ mg/L}}{30 \text{ day Max}} + \frac{\text{Days between } 4.6 - < 4.8 \text{ mg/L}}{47 \text{ day Max}} + \frac{\text{Days between } 4.8 - < 5.0 \text{ mg/L}}{55 \text{ day Max}}$$

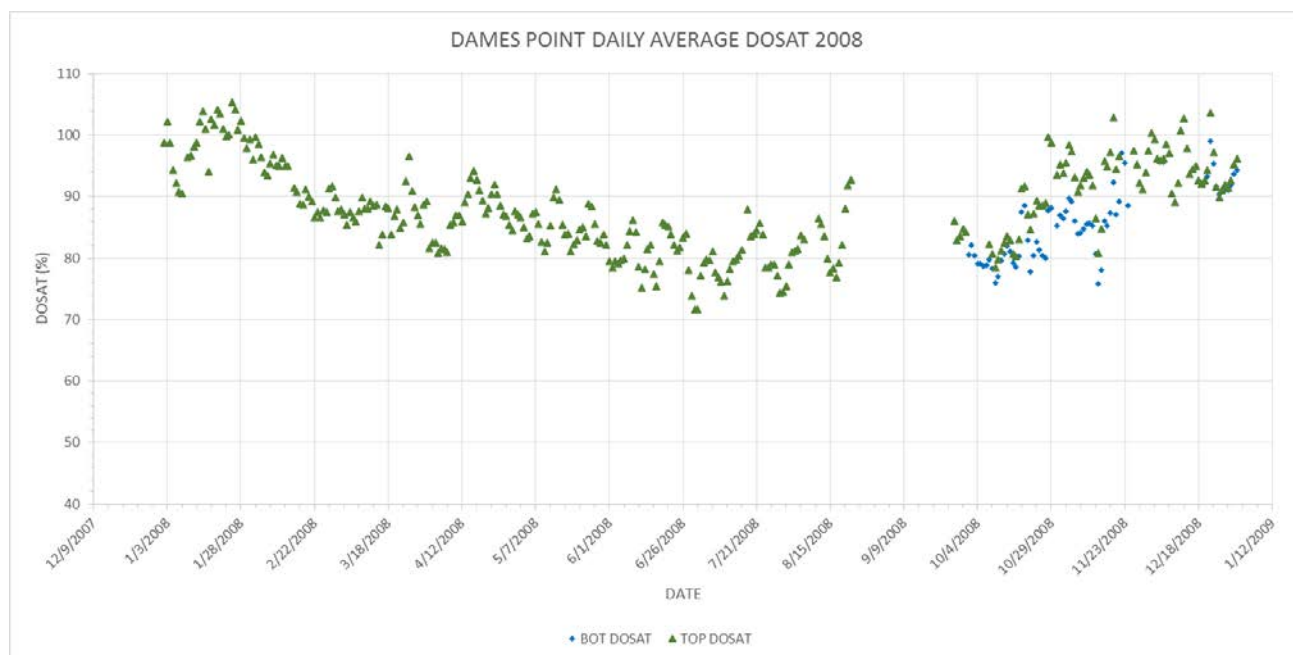
The total fractional exposure must be at or below one for the annual evaluation period for attainment. In the sections below, annual graphs are presented of daily average DO and DOSAT at the two depths along with summary statistics.

#### 5.3.4.1 2008 DO Evaluation

Daily average DO and DOSAT values for 2008 are presented in **Figure 44** and **Figure 45**. **Table 18** provides summary statistics. The total fractional exposure based on the number of daily averages in each of the DO bins for both the top and bottom depths is given in **Table 19**. Since the total fractional exposure was less than 1 at both depths, the DO SSAC was attained during 2008. Note, however, that only 72 daily averages were available at the bottom depth and only represented the October through December period.



**FIGURE 44: DAILY AVERAGE DO CONCENTRATIONS AT DAMES POINT IN 2008**



**FIGURE 45: DAILY AVERAGE DOSAT AT DAMES POINT IN 2008**

**TABLE 18: SUMMARY STATISTICS OF DAILY AVERAGE DO AND DOSAT FOR 2008**

| STATISTIC          | BOTTOM DO | BOTTOM DOSAT | TOP DO | TOP DOSAT |
|--------------------|-----------|--------------|--------|-----------|
| Number of Cases    | 72.00     | 72.00        | 319.00 | 312.00    |
| Minimum            | 5.80      | 75.77        | 4.89   | 71.56     |
| Maximum            | 9.05      | 99.08        | 9.93   | 105.33    |
| Mean               | 7.08      | 86.00        | 6.94   | 88.13     |
| Standard Deviation | 0.88      | 6.03         | 1.29   | 7.19      |
| 1%                 | 5.80      | 75.83        | 4.98   | 73.85     |
| 5%                 | 5.88      | 77.78        | 5.26   | 77.39     |
| 10%                | 5.97      | 78.68        | 5.35   | 79.14     |
| 20%                | 6.12      | 79.97        | 5.59   | 81.53     |
| 25%                | 6.25      | 80.42        | 5.77   | 82.61     |
| 30%                | 6.29      | 80.75        | 5.96   | 83.74     |
| 40%                | 6.75      | 83.99        | 6.32   | 85.51     |
| 50%                | 7.12      | 85.81        | 6.81   | 87.55     |
| 60%                | 7.51      | 87.58        | 7.27   | 89.37     |
| 70%                | 7.67      | 89.72        | 7.74   | 91.91     |
| 75%                | 7.71      | 91.07        | 7.94   | 93.45     |
| 80%                | 7.87      | 92.15        | 8.18   | 94.97     |
| 90%                | 8.15      | 94.52        | 8.84   | 98.43     |
| 95%                | 8.43      | 95.58        | 9.22   | 100.80    |
| 99%                | 9.03      | 98.64        | 9.77   | 103.95    |



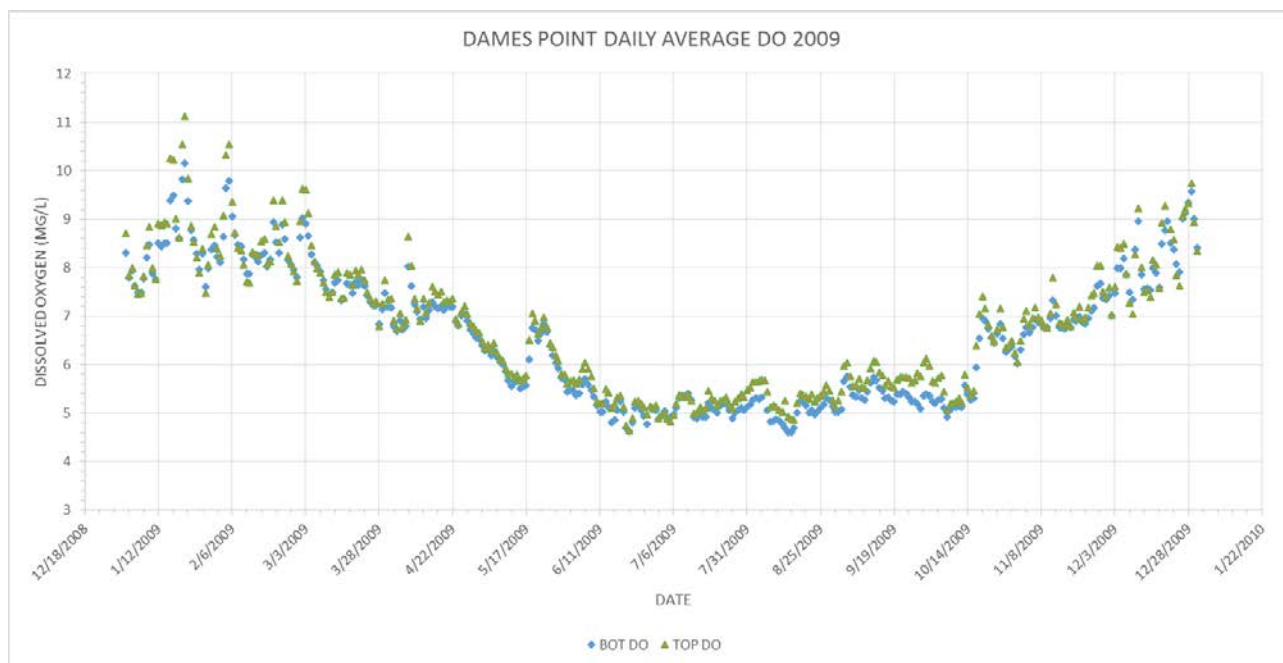
**TABLE 19: TOTAL FRACTIONAL EXPOSURE CALCULATION FOR 2008**

| SONDE  | DO 4.0-<4.2 | DO 4.2-<4.4 | DO 4.4-<4.6 | DO 4.6-<4.8 | DO 4.8-<4.0 | EXPOSURE |
|--------|-------------|-------------|-------------|-------------|-------------|----------|
| Top    | 0           | 0           | 0           | 0           | 4           | 0.07     |
| Bottom | 0           | 0           | 0           | 0           | 0           | 0        |

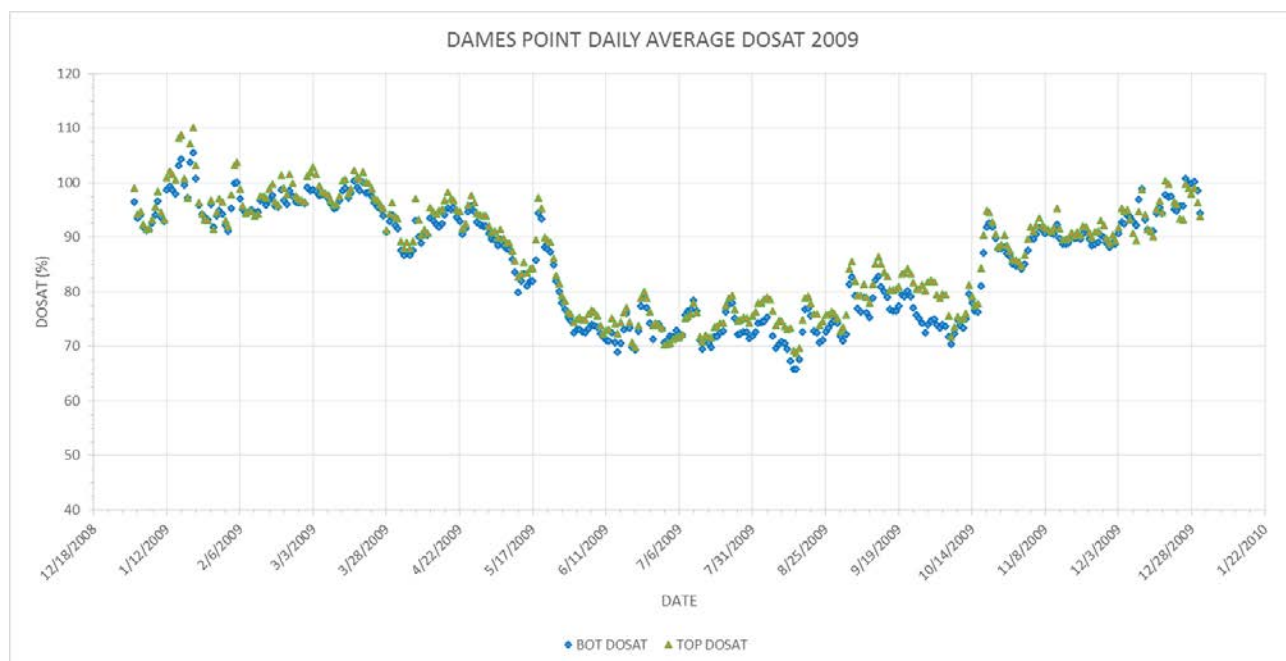
#### 5.3.4.2 2009 DO Evaluation

Daily average DO and DOSAT values for 2009 are presented in **Figure 46** and **Figure 47**.

**Table 20** provides summary statistics. The total fractional exposure based on the number of daily averages in each of the DO bins for both the top and bottom depths is given in **Table 21**. Since the total fractional exposure was less than 1 at both depths, the DO SSAC was attained during 2009.



**FIGURE 46: DAILY AVERAGE DO CONCENTRATIONS AT DAMES POINT IN 2009**



**FIGURE 47: DAILY AVERAGE DOSAT AT DAMES POINT IN 2009**

**TABLE 20: SUMMARY STATISTICS OF DAILY AVERAGE DO AND DOSAT FOR 2009**

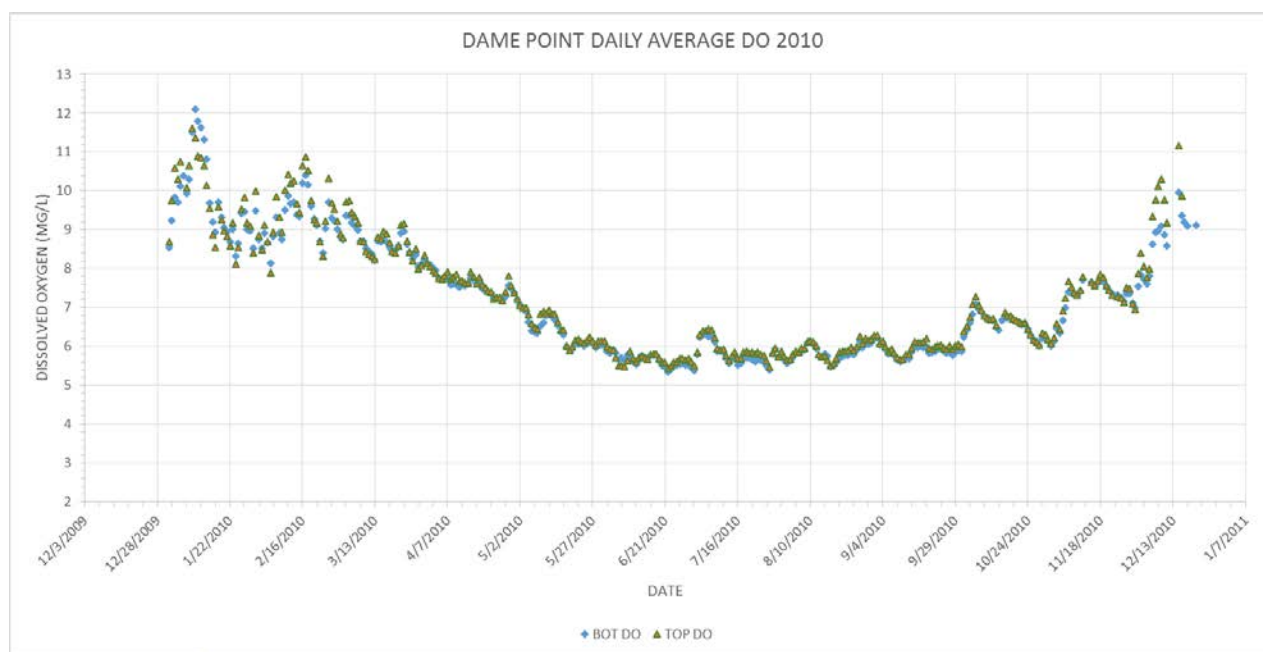
| STATISTIC          | BOTTOM DO | BOTTOM DOSAT | TOP DO | TOP DOSAT |
|--------------------|-----------|--------------|--------|-----------|
| Number of Cases    | 363.00    | 363.00       | 364.00 | 364.00    |
| Minimum            | 4.60      | 65.77        | 4.64   | 68.80     |
| Maximum            | 10.15     | 105.46       | 11.12  | 110.16    |
| Mean               | 6.60      | 85.62        | 6.77   | 87.28     |
| Standard Deviation | 1.36      | 10.13        | 1.37   | 9.76      |
| 1%                 | 4.69      | 67.73        | 4.85   | 69.84     |
| 5%                 | 4.88      | 70.75        | 5.05   | 72.31     |
| 10%                | 5.02      | 71.96        | 5.19   | 73.99     |
| 20%                | 5.18      | 73.79        | 5.38   | 75.91     |
| 25%                | 5.28      | 74.98        | 5.53   | 77.83     |
| 30%                | 5.36      | 76.54        | 5.67   | 79.28     |
| 40%                | 5.75      | 81.96        | 6.04   | 84.28     |
| 50%                | 6.71      | 88.76        | 6.79   | 89.86     |
| 60%                | 6.99      | 91.16        | 7.16   | 91.82     |
| 70%                | 7.48      | 93.33        | 7.49   | 94.40     |
| 75%                | 7.68      | 94.37        | 7.77   | 95.22     |
| 80%                | 7.95      | 95.43        | 8.00   | 96.46     |
| 90%                | 8.46      | 97.73        | 8.69   | 98.94     |
| 95%                | 8.89      | 98.87        | 9.09   | 100.97    |
| 99%                | 9.63      | 102.80       | 10.30  | 106.64    |

**TABLE 21: TOTAL FRACTIONAL EXPOSURE CALCULATION FOR 2009**

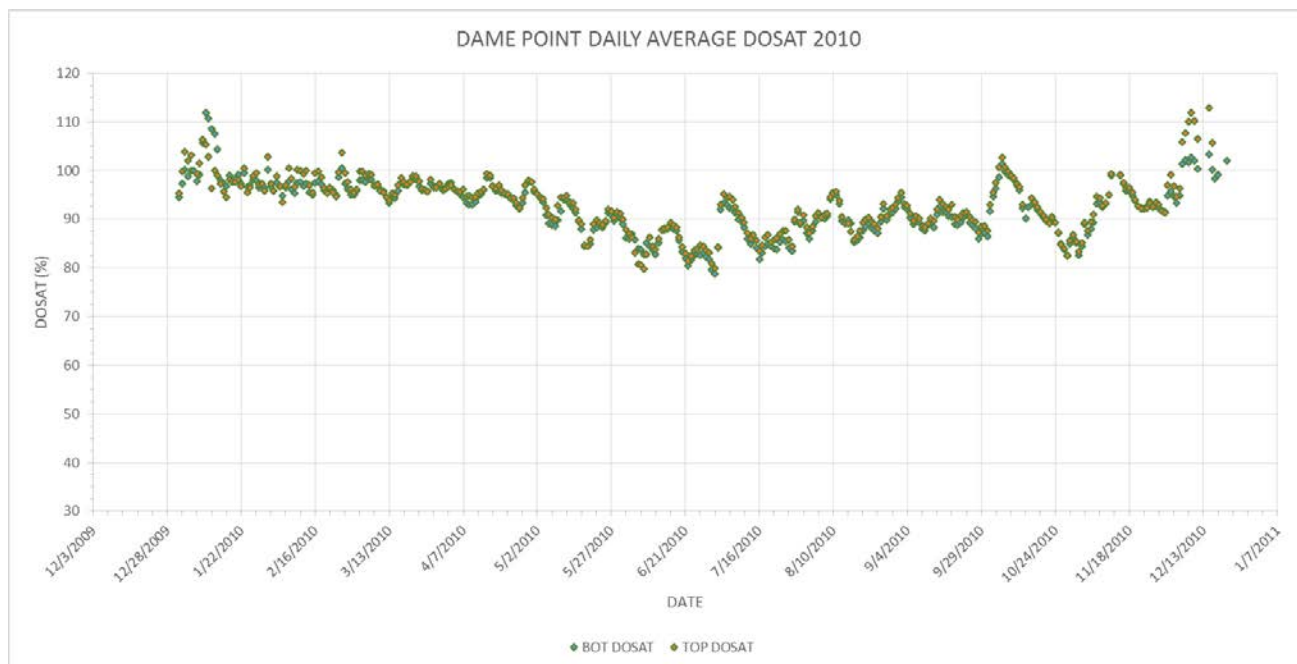
| SONDE  | DO 4.0-<4.2 | DO 4.2-<4.4 | DO 4.4-<4.6 | DO 4.6-<4.8 | DO 4.8-<5.0 | EXPOSURE |
|--------|-------------|-------------|-------------|-------------|-------------|----------|
| Top    | 0           | 0           | 0           | 2           | 11          | 0.24     |
| Bottom | 0           | 0           | 1           | 7           | 21          | 0.56     |

### 5.3.4.3 2010 DO Evaluation

Daily average DO and DOSAT values for 2010 are presented in **Figure 48** and **Figure 49**. **Table 22** provides summary statistics. The total fractional exposure based on the number of daily averages in each of the DO bins for both the top and bottom depths is given in **Table 23**. Since the daily average DO at both depths was above 5.0 mg/L throughout 2010, the total fractional exposure was 0 at both depths, and the DO SSAC was attained during 2010.



**FIGURE 48: DAILY AVERAGE DO CONCENTRATIONS AT DAMES POINT IN 2010**



**FIGURE 49: DAILY AVERAGE DOSAT AT DAMES POINT IN 2010**

**TABLE 22: SUMMARY STATISTICS OF DAILY AVERAGE DO AND DOSAT FOR 2010**

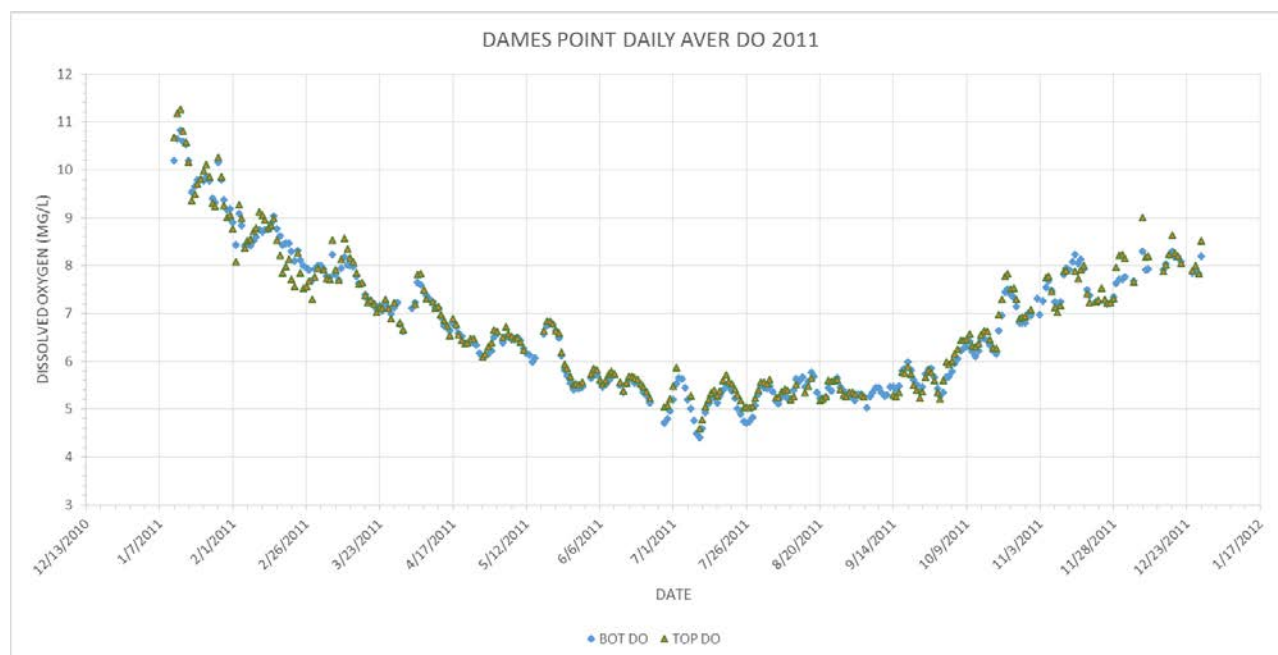
| STATISTIC          | BOTTOM DO | BOTTOM DOSAT | TOP DO | TOP DOSAT |
|--------------------|-----------|--------------|--------|-----------|
| Number of Cases    | 348.00    | 348.00       | 341.00 | 341.00    |
| Minimum            | 5.35      | 78.82        | 5.44   | 79.78     |
| Maximum            | 12.09     | 111.78       | 11.61  | 112.88    |
| Mean               | 7.19      | 92.46        | 7.27   | 93.17     |
| Standard Deviation | 1.49      | 5.52         | 1.52   | 5.66      |
| 1%                 | 5.43      | 81.53        | 5.50   | 80.81     |
| 5%                 | 5.57      | 83.30        | 5.63   | 83.81     |
| 10%                | 5.66      | 84.89        | 5.70   | 85.71     |
| 20%                | 5.81      | 87.70        | 5.87   | 88.37     |
| 25%                | 5.87      | 88.74        | 5.96   | 89.31     |
| 30%                | 5.98      | 89.26        | 6.03   | 89.99     |
| 40%                | 6.21      | 90.90        | 6.27   | 91.69     |
| 50%                | 6.73      | 92.74        | 6.81   | 93.50     |
| 60%                | 7.40      | 94.71        | 7.44   | 95.16     |
| 70%                | 7.87      | 95.94        | 7.91   | 96.21     |
| 75%                | 8.46      | 96.57        | 8.40   | 96.86     |
| 80%                | 8.72      | 97.28        | 8.74   | 97.40     |
| 90%                | 9.30      | 98.58        | 9.62   | 99.48     |
| 95%                | 9.71      | 100.16       | 10.23  | 101.71    |
| 99%                | 11.52     | 107.57       | 10.92  | 110.10    |

**TABLE 23: TOTAL FRACTIONAL EXPOSURE CALCULATION FOR 2010**

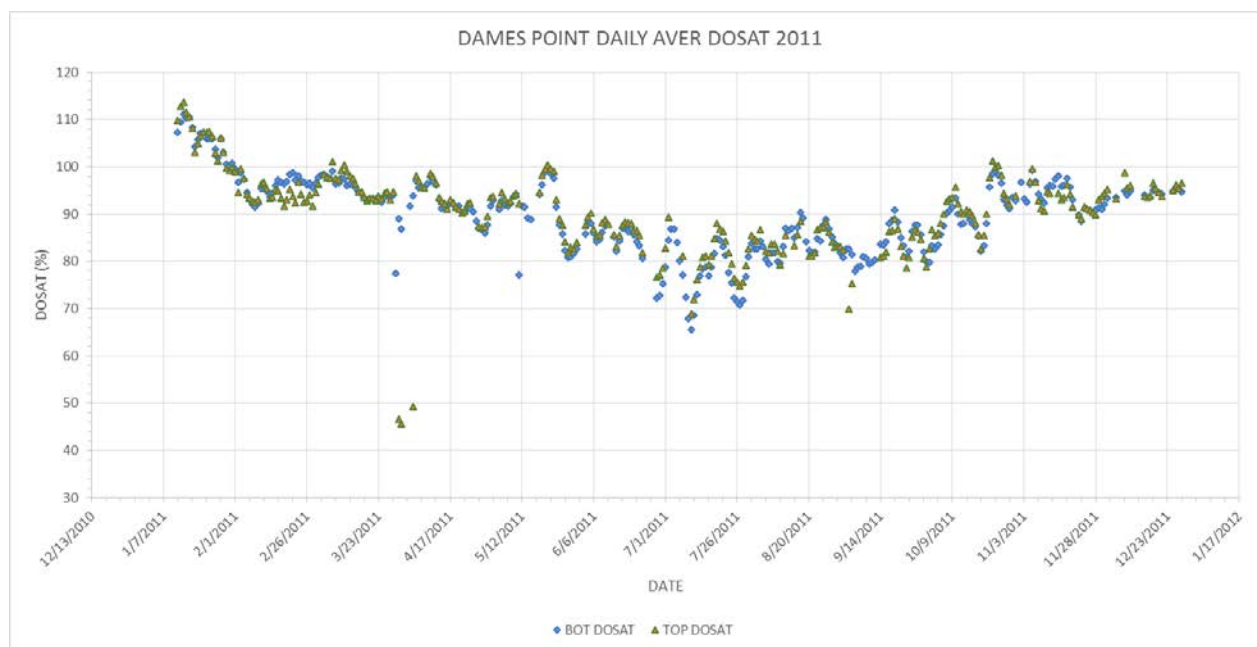
| SONDE  | DO 4.0-<4.2 | DO 4.2-<4.4 | DO 4.4-<4.6 | DO 4.6-<4.8 | DO 4.8-<4.0 | EXPOSURE |
|--------|-------------|-------------|-------------|-------------|-------------|----------|
| Top    | 0           | 0           | 0           | 0           | 0           | 0        |
| Bottom | 0           | 0           | 0           | 0           | 0           | 0        |

#### 5.3.4.4 2011 DO Evaluation

Daily average DO and DOSAT values for 2011 are presented in **Figure 50** and **Figure 51**. **Table 24** provides summary statistics. The total fractional exposure based on the number of daily averages in each of the DO bins for both the top and bottom depths is given in **Table 25**. Since the total fractional exposure was less than 1 at both depths, the DO SSAC was attained during 2011.



**FIGURE 50: DAILY AVERAGE DO CONCENTRATIONS AT DAMES POINT IN 2011**



**FIGURE 51: DAILY AVERAGE DOSAT AT DAMES POINT IN 2011**

**TABLE 24: SUMMARY STATISTICS OF DAILY AVERAGE DO AND DOSAT FOR 2011**

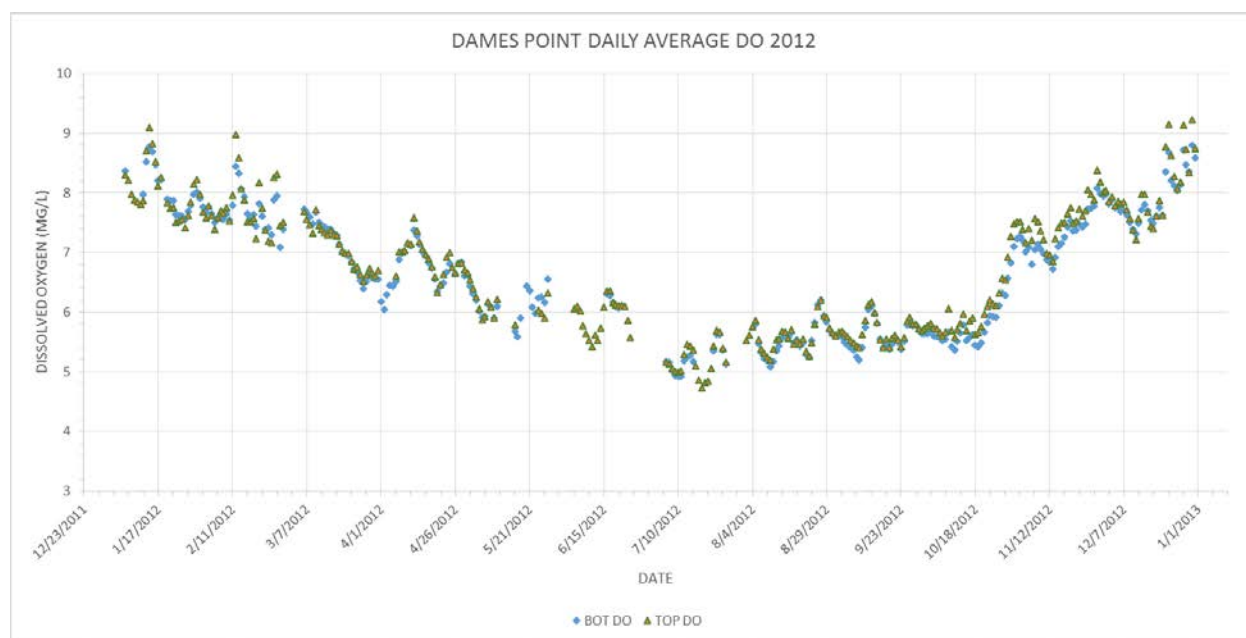
| STATISTIC          | BOTTOM DO | BOTTOM DOSAT | TOP DO | TOP DOSAT |
|--------------------|-----------|--------------|--------|-----------|
| Number of Cases    | 323.00    | 322.00       | 289.00 | 289.00    |
| Minimum            | 4.40      | 65.60        | 4.60   | 45.66     |
| Maximum            | 10.83     | 111.08       | 11.26  | 113.59    |
| Mean               | 6.74      | 89.88        | 6.89   | 90.47     |
| Standard Deviation | 1.39      | 8.00         | 1.40   | 8.71      |
| 1%                 | 4.68      | 70.06        | 5.03   | 56.92     |
| 5%                 | 5.06      | 77.04        | 5.21   | 78.51     |
| 10%                | 5.25      | 79.91        | 5.30   | 81.11     |
| 20%                | 5.43      | 82.62        | 5.52   | 84.05     |
| 25%                | 5.48      | 84.06        | 5.60   | 85.53     |
| 30%                | 5.60      | 85.28        | 5.73   | 86.68     |
| 40%                | 6.07      | 87.81        | 6.33   | 89.35     |
| 50%                | 6.50      | 91.15        | 6.66   | 92.12     |
| 60%                | 7.11      | 93.02        | 7.22   | 93.28     |
| 70%                | 7.50      | 94.51        | 7.70   | 94.41     |
| 75%                | 7.78      | 95.59        | 7.84   | 95.20     |
| 80%                | 7.95      | 96.33        | 8.01   | 96.43     |
| 90%                | 8.53      | 98.28        | 8.78   | 99.39     |
| 95%                | 9.38      | 102.35       | 9.36   | 103.11    |
| 99%                | 10.55     | 109.71       | 10.76  | 111.11    |

**TABLE 25: TOTAL FRACTIONAL EXPOSURE CALCULATION FOR 2011**

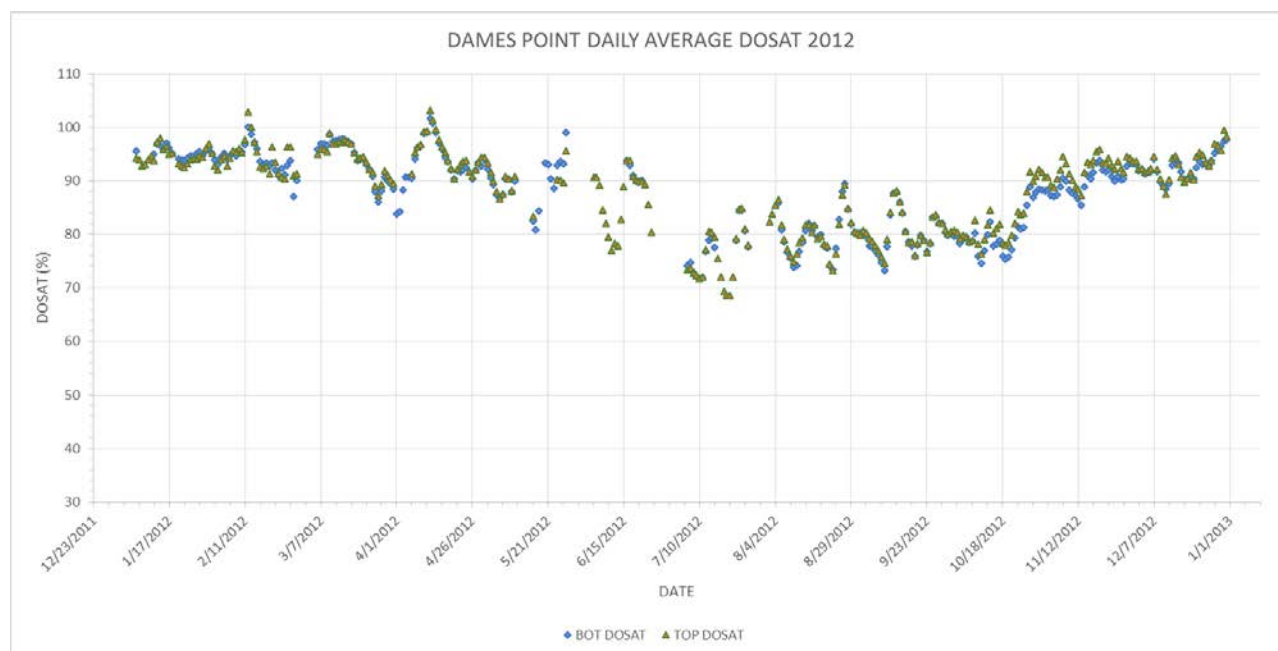
| SONDE  | DO 4.0-<4.2 | DO 4.2-<4.4 | DO 4.4-<4.6 | DO 4.6-<4.8 | DO 4.8-<4.0 | EXPOSURE |
|--------|-------------|-------------|-------------|-------------|-------------|----------|
| Top    | 0           | 0           | 0           | 2           | 0           | 0.04     |
| Bottom | 0           | 0           | 2           | 6           | 5           | 0.25     |

#### 5.3.4.5 2012 DO Evaluation

Daily average DO and DOSAT values for 2012 are presented in **Figure 52** and **Figure 53**. **Table 26** provides summary statistics. The total fractional exposure based on the number of daily averages in each of the DO bins for both the top and bottom depths is given in **Table 27**. Since the total fractional exposure was less than 1 at both depths, the DO SSAC was attained during 2012.



**FIGURE 52: DAILY AVERAGE DO CONCENTRATIONS AT DAMES POINT IN 2012**



**FIGURE 53: DAILY AVERAGE DOSAT AT DAMES POINT IN 2012**

**TABLE 26: SUMMARY STATISTICS OF DAILY AVERAGE DO AND DOSAT FOR 2012**

| STATISTIC          | BOTTOM DO | BOTTOM DOSAT | TOP DO | TOP DOSAT |
|--------------------|-----------|--------------|--------|-----------|
| Number of Cases    | 294.00    | 294.00       | 312.00 | 312.00    |
| Minimum            | 4.93      | 71.72        | 4.73   | 68.58     |
| Maximum            | 8.79      | 101.63       | 9.23   | 103.17    |
| Mean               | 6.67      | 88.06        | 6.70   | 88.19     |
| Standard Deviation | 1.00      | 7.25         | 1.06   | 7.45      |
| 1%                 | 4.97      | 72.41        | 4.86   | 70.86     |
| 5%                 | 5.25      | 75.65        | 5.27   | 75.56     |
| 10%                | 5.40      | 77.61        | 5.45   | 77.98     |
| 20%                | 5.59      | 79.77        | 5.64   | 80.12     |
| 25%                | 5.67      | 80.79        | 5.71   | 81.05     |
| 30%                | 5.84      | 83.62        | 5.81   | 82.83     |
| 40%                | 6.20      | 88.04        | 6.11   | 88.75     |
| 50%                | 6.65      | 90.31        | 6.68   | 90.68     |
| 60%                | 7.09      | 91.75        | 7.19   | 92.18     |
| 70%                | 7.43      | 93.08        | 7.50   | 93.52     |
| 75%                | 7.56      | 93.76        | 7.57   | 93.98     |
| 80%                | 7.65      | 94.15        | 7.71   | 94.50     |
| 90%                | 7.93      | 96.27        | 8.02   | 96.27     |
| 95%                | 8.22      | 97.46        | 8.31   | 97.20     |
| 99%                | 8.71      | 99.65        | 9.11   | 100.60    |

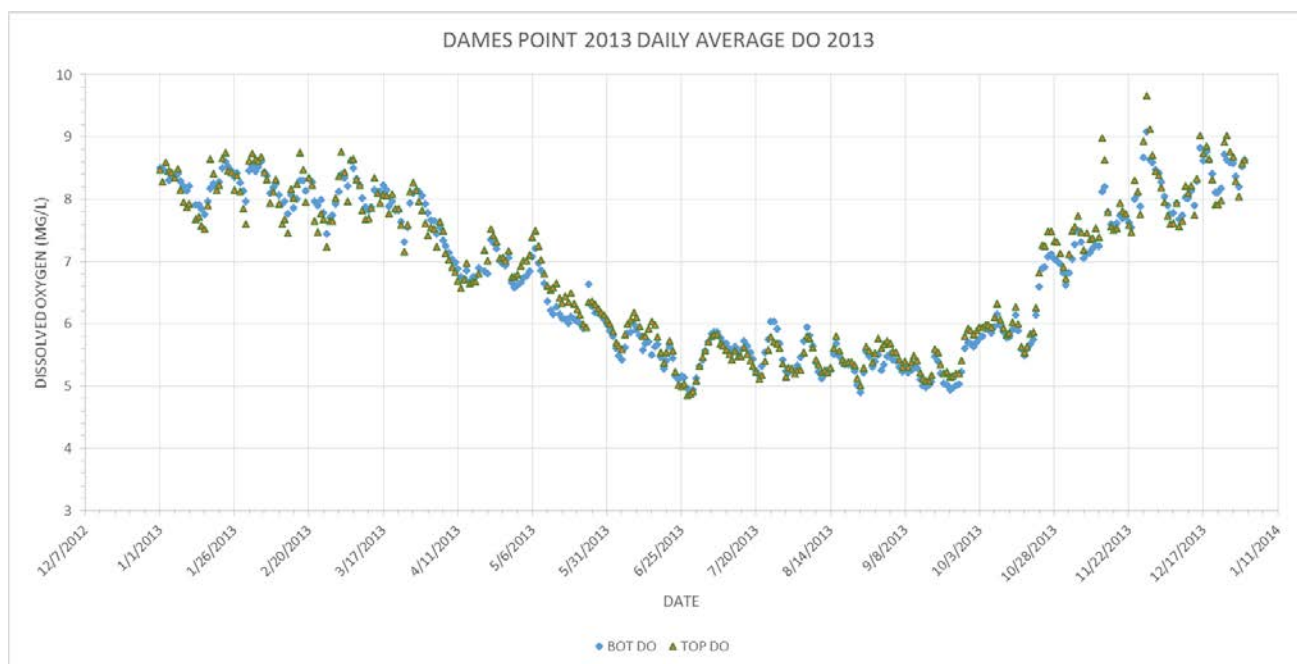


**TABLE 27: TOTAL FRACTIONAL EXPOSURE CALCULATION FOR 2012**

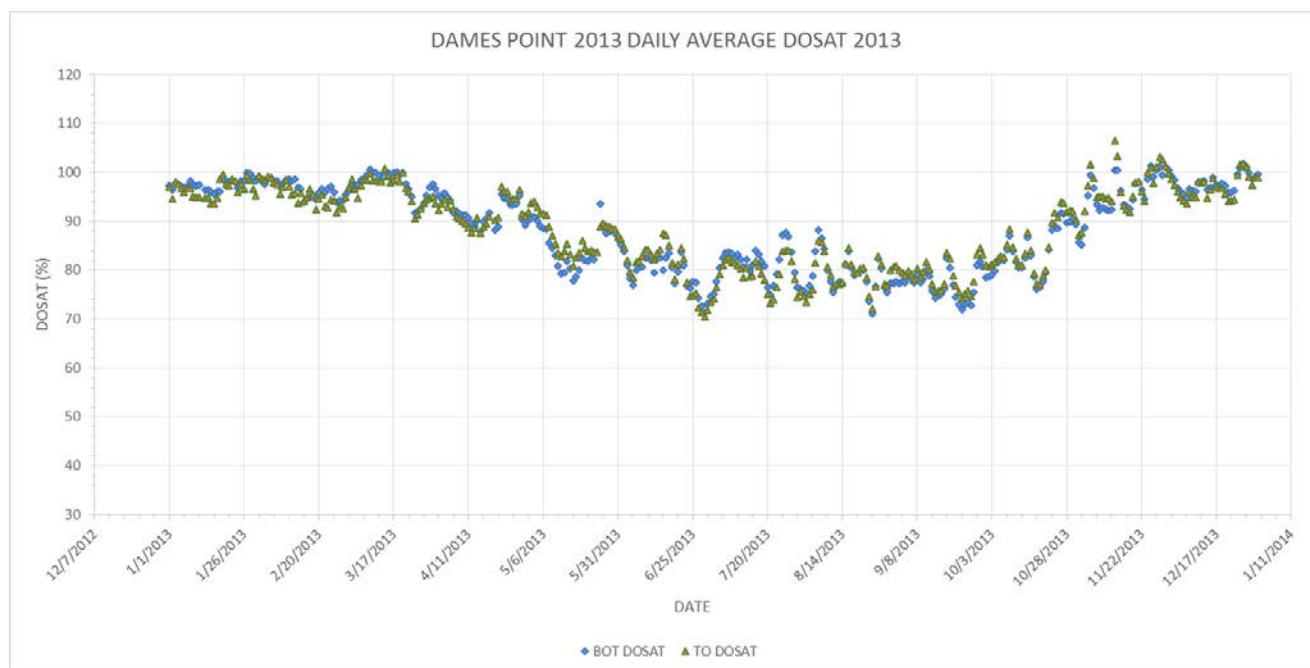
| SONDE  | DO 4.0-<4.2 | DO 4.2-<4.4 | DO 4.4-<4.6 | DO 4.6-<4.8 | DO 4.8-<4.0 | EXPOSURE |
|--------|-------------|-------------|-------------|-------------|-------------|----------|
| Top    | 0           | 0           | 0           | 1           | 4           | 0.09     |
| Bottom | 0           | 0           | 0           | 0           | 3           | 0.05     |

#### 5.3.4.6 2013 DO Evaluation

Daily average DO and DOSAT values for 2013 are presented in **Figure 54** and **Figure 55**. **Table 28** provides summary statistics. The total fractional exposure based on the number of daily averages in each of the DO bins for both the top and bottom depths is given in **Table 29**. Since the total fractional exposure was less than 1 at both depths, the DO SSAC was attained during 2013.



**FIGURE 54: DAILY AVERAGE DO CONCENTRATIONS AT DAMES POINT IN 2013**



**FIGURE 55: DAILY AVERAGE DOSAT AT DAMES POINT IN 2013**

**TABLE 28: SUMMARY STATISTICS OF DAILY AVERAGE DO AND DOSAT FOR 2013**

| STATISTIC          | BOTTOM DO | BOTTOM DOSAT | TOP DO | TOP DOSAT |
|--------------------|-----------|--------------|--------|-----------|
| Number of Cases    | 362.00    | 362.00       | 363.00 | 363.00    |
| Minimum            | 4.90      | 71.07        | 4.85   | 70.37     |
| Maximum            | 9.09      | 101.77       | 9.66   | 106.40    |
| Mean               | 6.80      | 88.45        | 6.85   | 88.60     |
| Standard Deviation | 1.22      | 8.69         | 1.21   | 8.32      |
| 1%                 | 4.95      | 72.69        | 5.00   | 72.11     |
| 5%                 | 5.13      | 75.21        | 5.19   | 75.07     |
| 10%                | 5.25      | 76.80        | 5.31   | 77.09     |
| 20%                | 5.49      | 79.40        | 5.56   | 80.19     |
| 25%                | 5.63      | 80.42        | 5.65   | 81.18     |
| 30%                | 5.71      | 81.77        | 5.81   | 82.28     |
| 40%                | 6.04      | 83.85        | 6.17   | 84.69     |
| 50%                | 6.84      | 89.42        | 6.92   | 90.52     |
| 60%                | 7.34      | 93.57        | 7.48   | 93.62     |
| 70%                | 7.89      | 96.13        | 7.73   | 94.88     |
| 75%                | 8.00      | 96.78        | 7.92   | 95.88     |
| 80%                | 8.13      | 97.43        | 8.09   | 96.77     |
| 90%                | 8.38      | 98.68        | 8.43   | 98.42     |
| 95%                | 8.53      | 99.91        | 8.65   | 99.39     |
| 99%                | 8.71      | 101.16       | 9.02   | 102.53    |

**TABLE 29: TOTAL FRACTIONAL EXPOSURE CALCULATION FOR 2013**

| SONDE  | DO 4.0-<4.2 | DO 4.2-<4.4 | DO 4.4-<4.6 | DO 4.6-<4.8 | DO 4.8-<4.0 | EXPOSURE |
|--------|-------------|-------------|-------------|-------------|-------------|----------|
| Top    | 0           | 0           | 0           | 0           | 3           | 0.05     |
| Bottom | 0           | 0           | 0           | 0           | 7           | 0.13     |

## 5.4 LITERATURE CITED

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## **APPENDIX A: BMAP PROJECTS**

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The BMAP project tables below show the status of the projects as of December 31, 2013. These tables provide information on the nutrient reduction attributed to each individual project and the remaining nutrient load after each project is implemented, shown in both kilograms per year (kg/yr) and pounds per year (lbs/yr). The expected load reductions are subtracted from the entity's starting point load. The remaining nutrient balance once all projects have been implemented by an entity should be equal to or exceed the allocation for that entity's facility or facilities. The schedule to implement each of the projects is also included in the tables.

**Notes to tables:**

N/A = Not applicable

- = Empty cell/no data

## FRESHWATER PHOSPHORUS ALLOCATION

*Name of Facility*

*Wasteload Allocation (kg/yr)*

*Clay County MS4 (FLR04E045) ..... 212.6 kg/yr*

| FACILITY NAME    | PROJECT NUMBER | DESCRIPTION                                                          | TYPE(S) OF BMP(S) IMPLEMENTED | ACRES TREATED | DEADLINE  | PROJECT TP REDUCTION (KG/YR) | PROJECT TP REDUCTION (LBS/YR) |
|------------------|----------------|----------------------------------------------------------------------|-------------------------------|---------------|-----------|------------------------------|-------------------------------|
| CC MS4 FLR04E045 | N/A            | Total Reduction Required                                             | N/A                           | N/A           | N/A       | 191.9                        | 422.2                         |
| CC MS4 FLR04E045 | CC-1           | Education Program                                                    | N/A                           | N/A           | Ongoing   | 16.2                         | 35.6                          |
| CC MS4 FLR04E045 | CC-2           | FDOT State Road (SR) 21 Widening from SR 215 to County Road (CR) 220 | Dry retention (1")            | 12            | Completed | 2.3                          | 5.1                           |
| CC MS4 FLR04E045 | CC-3           | Trade with CCUA                                                      | N/A                           | N/A           | Completed | 173.4                        | 381.5                         |
| CC MS4 FLR04E045 | N/A            | Total Project Reductions                                             | N/A                           | N/A           | N/A       | 191.9                        | 442.2                         |
| CC MS4 FLR04E045 | N/A            | Credit/(Deficit)                                                     | N/A                           | N/A           | N/A       | 0                            | 0                             |

**City of Green Cove Springs Aggregate (FL0635618).....1,929.2 kg/yr**

| FACILITY NAME                              | PROJECT NUMBER | DESCRIPTION              | DEADLINE  | PROJECT TP REDUCTION (KG/YR) | PROJECT TP REDUCTION (LBS/YR) |
|--------------------------------------------|----------------|--------------------------|-----------|------------------------------|-------------------------------|
| Green Cove Total (Aggregate)               | N/A            | Total Reduction Required | N/A       | 1,935.8                      | 4,258.8                       |
| GCS – Harbor Rd FL0020915, South FL0030210 | GCS-3          | Operational Changes      | Completed | 2,486                        | 5,469.2                       |
| Green Cove Total (Aggregate)               | N/A            | Total Project Reductions | N/A       | 2,486                        | 5,469.2                       |
| Green Cove Total (Aggregate)               | N/A            | Credit/(Deficit)         | N/A       | 550.2                        | 1,210.4                       |

**City of Green Cove Springs MS4 (FLR04E103).....1,043.7 kg/yr**

| FACILITY NAME     | PROJECT NUMBER | DESCRIPTION                        | TYPE(S) OF BMP(S) IMPLEMENTED | ACRES TREATED | DEADLINE  | PROJECT TP REDUCTION (KG/YR) | PROJECT TP REDUCTION (LBS/YR) |
|-------------------|----------------|------------------------------------|-------------------------------|---------------|-----------|------------------------------|-------------------------------|
| Green Cove MS4    | N/A            | Total Reduction Required           | N/A                           | N/A           | N/A       | 52                           | 114                           |
| GCS MS4 FLR04E103 | GCS-3          | SW Drainage System Improvements    | Wet Detention (1", 21 day)    | 54.6          | Completed | 15                           | 33                            |
| GCS MS4 FLR04E103 | GCS-4          | Cypress Baffle Box                 | Baffle Box                    | 125           | Completed | 6                            | 13                            |
| GCS MS4 FLR04E103 | GCS-5          | Green Cove Springs Industrial Park | Wet Detention (2.5", 21 day)  | 91.6          | Completed | 31                           | 68                            |
| GCS MS4 FLR04E103 | GCS-6          | Vystar Credit Union                | Dry Detention                 | 1.8           | Completed | 0                            | 0                             |
| Green Cove MS4    | N/A            | Total Project Reductions           | N/A                           | N/A           | N/A       | 52                           | 114                           |
| Green Cove MS4    | N/A            | Credit/(Deficit)                   | N/A                           | N/A           | N/A       | 0                            | 0                             |

**City of Palatka WWTF (FL0040061).....5,954.7 kg/yr**

| FACILITY NAME             | PROJECT NUMBER | DESCRIPTION              | DEADLINE                 | PROJECT TP REDUCTION (KG/YR) | PROJECT TP REDUCTION (LBS/YR) |
|---------------------------|----------------|--------------------------|--------------------------|------------------------------|-------------------------------|
| Palatka WWTF              | N/A            | Total Reduction Required | N/A                      | 4,000.3                      | 8,800.7                       |
| Palatka WWTF<br>FL0040061 | PAL-1          | Reuse to Golf Course     | Completed                | 1,730                        | 3,806                         |
| Palatka WWTF<br>FL0040061 | PAL-2          | Reuse to Ballfields      | Completed                | 691                          | 1,520                         |
| Palatka WWTF<br>FL0040061 | PAL-3          | Reuse to Cemeteries      | Completed                | 1,205                        | 2,651                         |
| Palatka WWTF<br>FL0040061 | PAL-4          | Reuse at WTP             | Completed                | 1,555                        | 3,421                         |
| Palatka WWTF<br>FL0040061 | PAL-5          | Zero Discharge           | Completed –<br>06/30/212 | 4,774                        | 10,503                        |
| Palatka WWTF              | N/A            | Total Project Reductions | N/A                      | 9,955                        | 21,901                        |
| Palatka WWTF              | N/A            | Credit/(Deficit)         | N/A                      | 5,954.7                      | 13,100.3                      |

**Georgia-Pacific (FL0002763).....33,182 kg/yr**

| FACILITY NAME   | PROJECT NUMBER | DESCRIPTION                   | DEADLINE  | PROJECT TP REDUCTION (KG/YR) | PROJECT TP REDUCTION (LBS/YR) |
|-----------------|----------------|-------------------------------|-----------|------------------------------|-------------------------------|
| Georgia-Pacific | N/A            | Total Reduction Required      | N/A       | 30,693                       | 67,525                        |
| Georgia-Pacific | GP-1           | Complete Process Improvements | Completed | 30,693                       | 67,525                        |
| Georgia-Pacific | N/A            | Total Project Reductions      | N/A       | 30,693                       | 67,525                        |
| Georgia-Pacific | N/A            | Credit/(Deficit)              | N/A       | 0                            | 0                             |



Name of Facility.....Load Allocation (kg/yr)

City of Palatka Non-MS4.....1,507.8 kg/yr

| FACILITY NAME   | PROJECT NUMBER | DESCRIPTION                              | TYPE(S) OF BMP(S) IMPLEMENTED | DEADLINE   | PROJECT TP REDUCTION (KG/YR) | PROJECT TP REDUCTION (LBS/YR) |
|-----------------|----------------|------------------------------------------|-------------------------------|------------|------------------------------|-------------------------------|
| Palatka Non-MS4 | N/A            | Total Reduction Required                 | N/A                           | N/A        | 0                            | 0                             |
| Palatka Non-MS4 | PAL-7          | Downtown Watershed First-Flush Treatment | Stormwater Treatment System   | 10/01/2014 | Not quantified               | Not quantified                |
| Palatka Non-MS4 | N/A            | Total Project Reductions                 | N/A                           | N/A        | 0                            | 0                             |
| Palatka Non-MS4 | N/A            | Credit/(Deficit)                         | N/A                           | N/A        | 0                            | 0                             |

**City of Palatka Non-MS4 Project Schedule**

| DOWNTOWN WATERSHED FIRST-FLUSH TREATMENT | DEADLINE   |
|------------------------------------------|------------|
| a. Final Design                          | 07/15/2013 |
| b. Secure Permitting                     | 08/01/2013 |
| c. Bid                                   | 03/01/2014 |
| d. Begin Construction                    | 06/01/2014 |
| e. End Construction                      | 10/01/2014 |

Clay County Non-MS4.....499.4 kg/yr

| FACILITY NAME | PROJECT NUMBER | DESCRIPTION                                                                    | TYPE(S) OF BMP(S) IMPLEMENTED | ACRES TREATED | DEADLINE  | PROJECT TP REDUCTION (KG/YR) | PROJECT TP REDUCTION (LBS/YR) |
|---------------|----------------|--------------------------------------------------------------------------------|-------------------------------|---------------|-----------|------------------------------|-------------------------------|
| CC Non-MS4    | N/A            | Total Reduction Required                                                       | N/A                           | N/A           | N/A       | 267.9                        | 589.4                         |
| CC Non-MS4    | CC-4           | Education Program                                                              | N/A                           | N/A           | Ongoing   | 30.7                         | 67.5                          |
| CC Non-MS4    | CC-5           | FDOT Construction of 7 New Wet Ponds on SR 15 from Putnam County Line to SR 16 | Wet Pond (1", 14 days)        | 281           | Completed | 89.5                         | 196.9                         |
| CC Non-MS4    | CC-6           | Trade with CCUA                                                                | N/A                           | N/A           | Completed | 147.7                        | 324.9                         |
| CC Non-MS4    | N/A            | Total Project Reductions                                                       | N/A                           | N/A           | N/A       | 267.9                        | 589.4                         |
| CC Non-MS4    | N/A            | Credit/(Deficit)                                                               | N/A                           | N/A           | N/A       | 0                            | 0                             |

**Hastings Non-MS4** ..... **49.3 kg/yr**

| FACILITY NAME    | PROJECT NUMBER | DESCRIPTION                                              | TYPE(S) OF BMP(S) IMPLEMENTED | ACRES TREATED | DEADLINE  | PROJECT TP REDUCTION (KG/YR) | PROJECT TP REDUCTION (LBS/YR) |
|------------------|----------------|----------------------------------------------------------|-------------------------------|---------------|-----------|------------------------------|-------------------------------|
| Hastings Non-MS4 | N/A            | Total Reduction Required                                 | N/A                           | N/A           | N/A       | 43.6                         | 95.9                          |
| Hastings Non-MS4 | HAS-1          | WWTP Chemical Feed Systems                               | N/A                           | N/A           | Completed | 249.1                        | 548.0                         |
| Hastings Non-MS4 | HAS-2          | FDOT 4 Laning of SR 207                                  | Wet Pond (1", 14 days)        | 12            | Completed | 3.6                          | 7.9                           |
| Hastings Non-MS4 | HAS-3          | FDOT 4 Laning of SR 207 from CR 305 to Cypress Link Blvd | Wet Pond (1", 14 days)        | 106           | Completed | 33.6                         | 73.9                          |
| Hastings Non-MS4 | N/A            | Total Project Reductions                                 | N/A                           | N/A           | N/A       | 286.3                        | 629.9                         |
| Hastings Non-MS4 | N/A            | Credit/(Deficit)                                         | N/A                           | N/A           | N/A       | 242.7                        | 533.9                         |

**Putnam County Non-MS4** ..... **3,964.9 kg/yr**

| FACILITY NAME  | PROJECT NUMBER | DESCRIPTION                                                                                      | TYPE(S) OF BMP(S) IMPLEMENTED | ACRES TREATED | DEADLINE   | PROJECT TP REDUCTION (KG/YR) | PROJECT TP REDUCTION (LBS/YR) |
|----------------|----------------|--------------------------------------------------------------------------------------------------|-------------------------------|---------------|------------|------------------------------|-------------------------------|
| Putnam Non-MS4 | N/A            | Total Reduction Required                                                                         | N/A                           | N/A           | N/A        | 2,025.5                      | 4,456.1                       |
| Putnam Non-MS4 | PUT-1          | Trade with Putnam Lanes WWTF                                                                     | N/A                           | N/A           | Completed  | 12.5                         | 27.5                          |
| Putnam Non-MS4 | PUT-2          | Trade with Hiawatha WWTF                                                                         | N/A                           | N/A           | 04/30/2015 | 49.8                         | 109.6                         |
| Putnam Non-MS4 | PUT-3          | Septic Tank Phase-Out                                                                            | N/A                           | N/A           | 04/30/2015 | 298.0                        | 656.0                         |
| Putnam Non-MS4 | PUT-4          | Edgefield RST O&M Value                                                                          | N/A                           | N/A           | Completed  | 269.1                        | 592.0                         |
| Putnam Non-MS4 | PUT-5          | FDOT Construction of 7 New Wet Ponds on SR15 from Clay County Line to South of Gordon Wilkins Rd | Wet Pond (1", 14 days)        | 1,181         | Completed  | 376.8                        | 829.0                         |
| Putnam Non-MS4 | PUT-6          | Algal Initiative                                                                                 | N/A                           | N/A           | 10/31/2017 | 824.6                        | 1,814.0                       |
| Putnam Non-MS4 | PUT-8          | Education and Outreach                                                                           | Education                     | N/A           | Ongoing    | 194.7                        | 428.0                         |
| Putnam Non-MS4 | N/A            | Total Project Reductions                                                                         | N/A                           | N/A           | N/A        | 2,025.5                      | 4,456.1                       |
| Putnam Non-MS4 | N/A            | Credit/(Deficit)                                                                                 | N/A                           | N/A           | N/A        | 0                            | 0                             |

**Putnam County Non-MS4 Project Schedule**

**Trade with Hiawatha WWTF**

| PROJECT                                    | SCHEDULE                                                                                                                               |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| a. Start Date                              | Completed                                                                                                                              |
| b. Completion Date – Design                | Completed                                                                                                                              |
| c. Completion Date – Construction          | Line is constructed but need East Putnam County Regional WWTF to be completed for regional tie in. Estimated completion is 04/30/2015. |
| d. Completion Date – Completion of Project | 04/30/2015                                                                                                                             |

**Septic Tank Phase-Out**

| PROJECT                                    | SCHEDULE   |
|--------------------------------------------|------------|
| a. Start Date                              | Completed  |
| b. Completion Date – Design                | Completed  |
| c. Completion Date – Construction          | 04/30/2015 |
| d. Completion Date – Completion of Project | 04/30/2015 |

**Algal Initiative**

| PROJECT                                  | SCHEDULE   |
|------------------------------------------|------------|
| a. Start Date                            | Completed  |
| b. Completion Date – Project Assessment  | Completed  |
| c. Completion Date – Project Fundraising | 10/31/2012 |
| d. Completion Date – Construction        | 10/31/2017 |

**St. Johns County Non-MS4.....3,296.6 kg/yr**

| FACILITY NAME | PROJECT NUMBER | DESCRIPTION                              | DEADLINE  | PROJECT TP REDUCTION (KG/YR) | PROJECT TP REDUCTION (LBS/YR) |
|---------------|----------------|------------------------------------------|-----------|------------------------------|-------------------------------|
| SJC Non-MS4   | N/A            | Total Reduction Required                 | N/A       | 430.8                        | 947.8                         |
| SJC Non-MS4   | SJC-3          | Stormwater Education                     | Ongoing   | 186.4                        | 410.1                         |
| SJC Non-MS4   | SJC-4          | Low-Impact Development                   | Ongoing   | Not quantified               | Not quantified                |
| SJC Non-MS4   | SJC-5          | Slow Release Fertilizer Ordinance        | Completed | Not quantified               | Not quantified                |
| SJC Non-MS4   | SJC-6          | Deep Creek RST O&M value                 | Completed | 255.9                        | 563.0                         |
| SJC Non-MS4   | SJC-7          | Purchase Hastings WWTF Reduction Credits | Completed | 198.2                        | 436.0                         |
| SJC Non-MS4   | N/A            | Total Project Reductions                 | N/A       | 640.5                        | 1,409.1                       |
| SJC Non-MS4   | N/A            | Credit/(Deficit)                         | N/A       | 209.7                        | 461.3                         |

**Welaka Non-MS4.....90.4 kg/yr**

| FACILITY NAME  | PROJECT NUMBER | DESCRIPTION              | DEADLINE  | PROJECT TP REDUCTION (KG/YR) | PROJECT TP REDUCTION (LBS/YR) |
|----------------|----------------|--------------------------|-----------|------------------------------|-------------------------------|
| Welaka Non-MS4 | N/A            | Total Reduction Required | N/A       | 81.6                         | 179.5                         |
| Welaka Non-MS4 | WEL-1          | Septic Tank Phase-Out    | Completed | 153.0                        | 336.6                         |
| Welaka Non-MS4 | N/A            | Total Project Reductions | N/A       | 153.0                        | 336.6                         |
| Welaka Non-MS4 | N/A            | Credit/(Deficit)         | N/A       | 71.4                         | 157.1                         |

## POINT SOURCE – FRESHWATER NITROGEN ALLOCATION

*Name of Facility*

*Wasteload Allocation (kg/yr)*

**Clay County MS4 (FLR04E045) ..... 2,418 kg/yr**

| FACILITY NAME       | PROJECT NUMBER | DESCRIPTION                                                                                                    | TYPE(S) OF BMP(S) IMPLEMENTED | ACRES TREATED | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|---------------------|----------------|----------------------------------------------------------------------------------------------------------------|-------------------------------|---------------|-----------|------------------------------|-------------------------------|
| CC MS4<br>FLR04E045 | N/A            | Total Reduction Required                                                                                       | N/A                           | N/A           | N/A       | 352                          | 774                           |
| CC MS4<br>FLR04E045 | CC-1           | Education Program                                                                                              | N/A                           | N/A           | Ongoing   | 111                          | 244                           |
| CC MS4<br>FLR04E045 | CC-2           | FDOT SR 21 Widening<br>from SR 215 to CR 220                                                                   | Dry retention<br>(1")         | 12            | Completed | 5                            | 11                            |
| CC MS4<br>FLR04E045 | CC-7           | Atmospheric Deposition<br>Load Reduction – Seminole<br>Electric Selective Catalytic<br>Reduction (SCR) Upgrade | N/A                           | N/A           | Completed | 236                          | 519                           |
| CC MS4<br>FLR04E045 | N/A            | Total Project Reductions                                                                                       | N/A                           | N/A           | N/A       | 352                          | 774                           |
| CC MS4<br>FLR04E045 | N/A            | Credit/(Deficit)                                                                                               | N/A                           | N/A           | N/A       | 0                            | 0                             |

**City of Green Cove Springs Aggregate (FL0635618)..... 7,752.5 kg/yr**

| FACILITY NAME                              | PROJECT NUMBER | DESCRIPTION              | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|--------------------------------------------|----------------|--------------------------|-----------|------------------------------|-------------------------------|
| Green Cove Total (Aggregate)               | N/A            | Total Reduction Required | N/A       | 6,847.5                      | 15,064.5                      |
| GCS – Harbor Rd FL0020915, South FL0030210 | GCS-3          | Operational Changes      | Completed | 9,641                        | 21,210.2                      |
| Green Cove Total (Aggregate)               | N/A            | Total Project Reductions | N/A       | 9,641                        | 21,210.2                      |
| Green Cove Total (Aggregate)               | N/A            | Credit/(Deficit)         | N/A       | 2,793.5                      | 6,145.7                       |

**City of Green Cove Springs MS4 (FLR04E103)..... 6,266.5 kg/yr**

| FACILITY NAME     | PROJECT NUMBER | DESCRIPTION                                                           | TYPE(S) OF BMP(S) IMPLEMENTED | ACRES TREATED | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|-------------------|----------------|-----------------------------------------------------------------------|-------------------------------|---------------|-----------|------------------------------|-------------------------------|
| Green Cove MS4    | N/A            | Total Reduction Required                                              | N/A                           | N/A           | N/A       | 694.5                        | 1,528                         |
| GCS MS4 FLR04E103 | GCS-3          | SW Drainage System Improvements                                       | Wet Detention (1", 21 day)    | 54.6          | Completed | 28                           | 62                            |
| GCS MS4 FLR04E103 | GCS-4          | Cypress Baffle Box                                                    | Baffle Box                    | 125           | Completed | 15                           | 33                            |
| GCS MS4 FLR04E103 | GCS-5          | Green Cove Springs Industrial Park                                    | Wet Detention (2.5", 21 day)  | 91.6          | Completed | 58                           | 128                           |
| GCS MS4 FLR04E103 | GCS-6          | Vystar Credit Union                                                   | Dry Detention                 | 1.8           | Completed | 0.5                          | 1                             |
| GCS MS4 FLR04E103 | GCS-7          | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade | N/A                           | N/A           | Completed | 593                          | 1,305                         |
| Green Cove MS4    | N/A            | Total Project Reductions                                              | N/A                           | N/A           | N/A       | 694.5                        | 1,528                         |
| Green Cove MS4    | N/A            | Credit/(Deficit)                                                      | N/A                           | N/A           | N/A       | 0                            | 0                             |

**City of Palatka WWTF (FL0040061) ..... 38,845 kg/yr**

| <b>FACILITY NAME</b>      | <b>PROJECT NUMBER</b> | <b>DESCRIPTION</b>       | <b>DEADLINE</b>           | <b>PROJECT TN REDUCTION (KG/YR)</b> | <b>PROJECT TN REDUCTION (LBS/YR)</b> |
|---------------------------|-----------------------|--------------------------|---------------------------|-------------------------------------|--------------------------------------|
| Palatka WWTF              | N/A                   | Total Reduction Required | N/A                       | 22,044                              | 48,497                               |
| Palatka WWTF<br>FL0040061 | PAL-1                 | Reuse to Golf Course     | Completed                 | 13,000                              | 28,600                               |
| Palatka WWTF<br>FL0040061 | PAL-2                 | Reuse to Ballfields      | Completed                 | 5,227                               | 11,499                               |
| Palatka WWTF<br>FL0040061 | PAL-3                 | Reuse to Cemeteries      | Completed                 | 9,091                               | 20,000                               |
| Palatka WWTF<br>FL0040061 | PAL-4                 | Reuse at WTP             | Completed                 | 11,727                              | 25,799                               |
| Palatka WWTF<br>FL0040061 | PAL-5                 | Zero Discharge           | Completed –<br>06/30/2012 | 21,844                              | 48,057                               |
| Palatka WWTF              | N/A                   | Total Project Reductions | N/A                       | 60,889                              | 133,956                              |
| Palatka WWTF              | N/A                   | Credit/(Deficit)         | N/A                       | 38,845                              | 85,459                               |

**Georgia-Pacific WWTF (FL0002763) ..... 165,909 kg/yr**

| FACILITY NAME   | PROJECT NUMBER | DESCRIPTION                   | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|-----------------|----------------|-------------------------------|-----------|------------------------------|-------------------------------|
| Georgia-Pacific | N/A            | Total Reduction Required      | N/A       | 92,246                       | 202,941                       |
| Georgia-Pacific | GP-1           | Complete Process Improvements | Completed | 92,246                       | 202,941                       |
| Georgia-Pacific | N/A            | Total Project Reductions      | N/A       | 92,246                       | 202,941                       |
| Georgia-Pacific | N/A            | Credit/(Deficit)              | N/A       | 0                            | 0                             |

**Seminole Electric (FL0036498)..... 14,732 kg/yr**

| FACILITY NAME               | PROJECT NUMBER | DESCRIPTION              | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|-----------------------------|----------------|--------------------------|-----------|------------------------------|-------------------------------|
| Seminole Electric Total     | N/A            | Total Reduction Required | N/A       | 6,314                        | 13,891                        |
| Seminole Electric FL0036498 | SE-1           | SCR Upgrade              | Completed | 6,314                        | 13,891                        |
| Seminole Electric Total     | N/A            | Total Project Reductions | N/A       | 6,314                        | 13,891                        |
| Seminole Electric Total     | N/A            | Credit/(Deficit)         | N/A       | 0                            | 0                             |



**Name of Facility**

**Load Allocation (kg/yr)**

**City of Palatka Non-MS4..... 8,858 kg/yr**

| FACILITY NAME   | PROJECT NUMBER | DESCRIPTION                                                           | TYPE(S) OF BMP(S) IMPLEMENTED | DEADLINE   | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|-----------------|----------------|-----------------------------------------------------------------------|-------------------------------|------------|------------------------------|-------------------------------|
| Palatka Non-MS4 | N/A            | Total Reduction Required                                              | N/A                           | N/A        | 825                          | 1,815                         |
| Palatka Non-MS4 | PAL-6          | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade | N/A                           | Completed  | 825                          | 1,815                         |
| Palatka Non-MS4 | PAL-7          | Downtown Watershed First-Flush Treatment                              | Stormwater Treatment System   | 04/01/2014 | Not quantified               | Not quantified                |
| Palatka Non-MS4 | N/A            | Total Project Reductions                                              | N/A                           | N/A        | 825                          | 1,815                         |
| Palatka Non-MS4 | N/A            | Credit/(Deficit)                                                      | N/A                           | N/A        | 0                            | 0                             |

**City of Palatka Non-MS4 Project Schedule**

| DOWNTOWN WATERSHED FIRST-FLUSH TREATMENT | DEADLINE   |
|------------------------------------------|------------|
| a. Final Design                          | 01/15/2013 |
| b. Secure Permitting                     | 02/01/2013 |
| c. Bid                                   | 06/01/2013 |
| d. Begin Construction                    | 08/01/2013 |
| e. End Construction                      | 01/01/2014 |

**Clay County Non-MS4..... 4,659 kg/yr**

| FACILITY NAME | PROJECT NUMBER | DESCRIPTION                                                                    | TYPE(S) OF BMP(S) IMPLEMENTED | ACRES TREATED | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|---------------|----------------|--------------------------------------------------------------------------------|-------------------------------|---------------|-----------|------------------------------|-------------------------------|
| CC Non-MS4    | N/A            | Total Reduction Required                                                       | N/A                           | N/A           | N/A       | 920                          | 2,024                         |
| CC Non-MS4    | CC-3           | Education Program                                                              | N/A                           | N/A           | Ongoing   | 223                          | 491                           |
| CC Non-MS4    | CC-4           | FDOT Construction of 7 New Wet Ponds on SR 15 from Putnam County Line to SR 16 | Wet Pond (1", 14 days)        | 281           | Completed | 172                          | 378                           |
| CC Non-MS4    | CC-8           | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade          | N/A                           | N/A           | Completed | 525                          | 1,155                         |
| CC Non-MS4    | N/A            | Total Project Reductions                                                       | N/A                           | N/A           | N/A       | 920                          | 2,024                         |
| CC Non-MS4    | N/A            | Credit/(Deficit)                                                               | N/A                           | N/A           | N/A       | 0                            | 0                             |

**Hastings Non-MS4.....448 kg/yr**

| FACILITY NAME    | PROJECT NUMBER | DESCRIPTION                                                           | TYPE(S) OF BMP(S) IMPLEMENTED | ACRES TREATED | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|------------------|----------------|-----------------------------------------------------------------------|-------------------------------|---------------|-----------|------------------------------|-------------------------------|
| Hastings Non-MS4 | N/A            | Total Reduction Required                                              | N/A                           | N/A           | N/A       | 177                          | 389                           |
| Hastings Non-MS4 | HAS-1          | WWTP Chemical Feed Systems                                            | N/A                           | N/A           | Completed | 176                          | 388                           |
| Hastings Non-MS4 | HAS-2          | FDOT 4 Laning of SR 207                                               | Wet Pond (1", 14 days)        | 12            | Completed | 7                            | 15                            |
| Hastings Non-MS4 | HAS-3          | FDOT 4 Laning of SR 207 from CR 305 to Cypress Link Blvd              | Wet Pond (1", 14 days)        | 106           | Completed | 65                           | 143                           |
| Hastings Non-MS4 | HAS-4          | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade | N/A                           | N/A           | Completed | 54                           | 119                           |
| Hastings Non-MS4 | N/A            | Total Project Reductions                                              | N/A                           | N/A           | N/A       | 302                          | 664                           |
| Hastings Non-MS4 | N/A            | Credit/(Deficit)                                                      | N/A                           | N/A           | N/A       | 125                          | 275                           |

**Putnam County Non-MS4 ..... 33,976 kg/yr**

| FACILITY NAME  | PROJECT NUMBER | DESCRIPTION                                                                                      | TYPE(S) OF BMP(S) IMPLEMENTED | ACRES TREATED | DEADLINE   | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|----------------|----------------|--------------------------------------------------------------------------------------------------|-------------------------------|---------------|------------|------------------------------|-------------------------------|
| Putnam Non-MS4 | N/A            | Total Reduction Required                                                                         | N/A                           | N/A           | N/A        | 9,639                        | 21,206                        |
| Putnam Non-MS4 | PUT-1          | Trade with Putnam Lanes WWTF                                                                     | N/A                           | N/A           | Completed  | 50                           | 110                           |
| Putnam Non-MS4 | PUT-2          | Trade with Hiawatha WWTF                                                                         | N/A                           | N/A           | 04/30/2015 | 150                          | 330                           |
| Putnam Non-MS4 | PUT-3          | Septic Tank Phase-Out                                                                            | N/A                           | N/A           | 04/30/2015 | 1,097                        | 2,414                         |
| Putnam Non-MS4 | PUT-4          | Edgefield RST O&M Value                                                                          | N/A                           | N/A           | Completed  | 594                          | 1,307                         |
| Putnam Non-MS4 | PUT-5          | FDOT Construction of 7 New Wet Ponds on SR15 from Clay County Line to South of Gordon Wilkins Rd | Wet pond (1", 14 days)        | 1,181         | Completed  | 723                          | 1,591                         |
| Putnam Non-MS4 | PUT-6          | Algal Initiative                                                                                 | N/A                           | N/A           | 10/31/2017 | 1,551                        | 3,412                         |
| Putnam Non-MS4 | PUT-7          | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade                            | N/A                           | N/A           | Completed  | 4,056                        | 8,923                         |
| Putnam Non-MS4 | PUT-8          | Education and Outreach                                                                           | Education                     | N/A           | Ongoing    | 1,418                        | 3,119                         |
| Putnam Non-MS4 | N/A            | Total Project Reductions                                                                         | N/A                           | N/A           | N/A        | 9,639                        | 21,206                        |
| Putnam Non-MS4 | N/A            | Credit/(Deficit)                                                                                 | N/A                           | N/A           | N/A        | 0                            | 0                             |

**Putnam County Non-MS4 Project Schedule**

**Trade with Hiawatha WWTF**

| PROJECT                                    | SCHEDULE                                                                                                                               |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| a. Start Date                              | Completed                                                                                                                              |
| b. Completion Date – Design                | Completed                                                                                                                              |
| c. Completion Date – Construction          | Line is constructed but need East Putnam County Regional WWTF to be completed for regional tie in. Estimated completion is 04/30/2015. |
| d. Completion Date – Completion of Project | 04/30/2015                                                                                                                             |

**Septic Tank Phase-Out**

| PROJECT                                    | SCHEDULE   |
|--------------------------------------------|------------|
| a. Start Date                              | Completed  |
| b. Completion Date – Design                | Completed  |
| c. Completion Date – Construction          | 04/30/2015 |
| d. Completion Date – Completion of Project | 04/30/2015 |

**Algal Initiative**

| PROJECT                                  | SCHEDULE   |
|------------------------------------------|------------|
| a. Start Date                            | Completed  |
| b. Completion Date – Project Assessment  | Completed  |
| c. Completion Date – Project Fundraising | 10/31/2012 |
| d. Completion Date – Construction        | 10/31/2017 |

**St. Johns County Non-MS4.....25,340 kg/yr**

| FACILITY NAME | PROJECT NUMBER | DESCRIPTION                                                            | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|---------------|----------------|------------------------------------------------------------------------|-----------|------------------------------|-------------------------------|
| SJC Non-MS4   | N/A            | Total Required Reduction                                               | N/A       | 1,850                        | 4,070                         |
| SJC Non-MS4   | SJC-3          | Stormwater Education                                                   | Ongoing   | 1,078                        | 2,372                         |
| SJC Non-MS4   | SJC-4          | Low-Impact Development                                                 | Ongoing   | Not quantified               | Not quantified                |
| SJC Non-MS4   | SJC-5          | Slow Release Fertilizer Ordinance                                      | Completed | Not quantified               | Not quantified                |
| SJC Non-MS4   | SJC-6          | Deep Creek RST O&M Value                                               | Completed | 313                          | 689                           |
| SJC Non-MS4   | SJC-8          | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade  | Completed | 1,937                        | 4,261                         |
| SJC Non-MS4   | SJC-27         | Application of Freshwater Non-MS4 TN Credits to Marine Non-MS4 Section | Completed | -1,391                       | -3,060                        |
| SJC Non-MS4   | N/A            | Total Project Reductions                                               | N/A       | 1,937                        | 4,261                         |
| SJC Non-MS4   | N/A            | Credit/(Deficit)                                                       | N/A       | 87                           | 191                           |

**Welaka Non-MS4..... 838 kg/yr**

| FACILITY NAME  | PROJECT NUMBER | DESCRIPTION                                                           | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|----------------|----------------|-----------------------------------------------------------------------|-----------|------------------------------|-------------------------------|
| Welaka Non-MS4 | N/A            | Total Reduction Required                                              | N/A       | 337.0                        | 741.4                         |
| Welaka Non-MS4 | WEL-1          | Septic Tank Phase-Out                                                 | Completed | 490.0                        | 1,078.0                       |
| Welaka Non-MS4 | WEL-2          | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade | Completed | 100.0                        | 220.0                         |
| Welaka Non-MS4 | N/A            | Total Project Reductions                                              | N/A       | 590.0                        | 1,298.0                       |
| Welaka Non-MS4 | N/A            | Credit/(Deficit)                                                      | N/A       | 253.0                        | 556.6                         |

## POINT SOURCE – MARINE NITROGEN ALLOCATION

*Name of Facility*

*Wasteload Allocation (kg/yr)*

**Anheuser Busch – Main Street (FL0041530)..... 12,418 kg/yr**

| FACILITY NAME                | PROJECT NUMBER | DESCRIPTION                   | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|------------------------------|----------------|-------------------------------|-----------|------------------------------|-------------------------------|
| Anheuser Busch – Main Street | N/A            | Total Reduction Required      | N/A       | 11,981                       | 26,358                        |
| Anheuser Busch – Main Street | ANB-1          | Complete Process Improvements | Completed | 11,981                       | 26,358                        |
| Anheuser Busch – Main Street | N/A            | Total Project Reductions      | N/A       | 11,981                       | 26,358                        |
| Anheuser Busch – Main Street | N/A            | Credit/(Deficit)              | N/A       | 0                            | 0                             |

**City of Atlantic Beach Aggregate (FL0626881) ..... 21,188 kg/yr**

| FACILITY NAME                  | PROJECT NUMBER | DESCRIPTION                                                                  | DEADLINE               | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|--------------------------------|----------------|------------------------------------------------------------------------------|------------------------|------------------------------|-------------------------------|
| Atlantic Bch Total (Aggregate) | N/A            | Total Reduction Required                                                     | N/A                    | 28,087                       | 61,791                        |
| Buccaneer WWTP FL0023248       | AB-1           | Complete Upgrade to Sequencing Batch Reactor                                 | Completed              | 9,985                        | 21,967                        |
| Main WWTP FL0038776            | AB-2           | Upgrade to Biological Nutrient Removal and Flow Transfer from Buccaneer WWTF | Completed – 10/01/2013 | 22,119                       | 48,661                        |
| Atlantic Bch Total (Aggregate) | N/A            | Total Project Reductions                                                     | N/A                    | 32,104                       | 70,628                        |
| Atlantic Bch Total (Aggregate) | N/A            | Credit/(Deficit)                                                             | N/A                    | 4,017                        | 8,837                         |

**City of Atlantic Beach MS4 (FLS000012)..... 1,651 kg/yr**

| FACILITY NAME              | PROJECT NUMBER | DESCRIPTION                                                                                   | TYPE(S) OF BMP(S) IMPLEMENTED         | ACRES TREATED | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|----------------------------|----------------|-----------------------------------------------------------------------------------------------|---------------------------------------|---------------|-----------|------------------------------|-------------------------------|
| Atlantic Bch MS4           | N/A            | Total Reduction Required                                                                      | N/A                                   | N/A           | N/A       | 823                          | 1,811                         |
| Atlantic Bch MS4 FLS000012 | AB-4           | Core City Capital Improvement Project: Stormwater, Sanitary Sewer, and Water Systems Upgrades | 2 <sup>nd</sup> Generation Baffle Box | 180           | Completed | 659                          | 1,450                         |
| Atlantic Bch MS4 FLS000012 | AB-5           | Hopkins Creek Stormwater Treatment System                                                     | Wet Detention                         | 53            | Completed | 12                           | 26                            |
| Atlantic Bch MS4 FLS000012 | AB-6           | FDOT Widening of SR 10 (Atlantic Blvd) Roadway & Bridge Upgrade                               | Wet Pond (1", 14 days)                | 152           | Completed | 50                           | 110                           |
| Atlantic Bch MS4 FLS000012 | AB-7           | FDOT Atlantic Blvd and Mayport Rd Interchange                                                 | Wet Pond (1", 14 days)                | 50            | Completed | 18                           | 40                            |
| Atlantic Bch MS4 FLS000012 | AB-8           | FDOT Wonderwood Connector Segment 1 – Girvin to Sandcastle                                    | Wet Pond (1", 14 days)                | 70            | Completed | 6                            | 13                            |
| Atlantic Bch MS4 FLS000012 | AB-9           | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade                         | N/A                                   | N/A           | Completed | 78                           | 172                           |
| Atlantic Bch MS4           | N/A            | Total Project Reductions                                                                      | N/A                                   | N/A           | N/A       | 823                          | 1,811                         |
| Atlantic Bch MS4           | N/A            | Credit/(Deficit)                                                                              | N/A                                   | N/A           | N/A       | 0                            | 0                             |

**City of Jacksonville/FDOT MS4 (FLS000012) .....96,016 kg/yr**

<sup>1</sup> The load reductions associated with septic tank phase-out have been revised based on the Florida State University septic tank model. While the estimates may be further refined based on acceptable site-specific information, new estimates have been established and the septic tank study is complete.

<sup>2</sup> Additional projects and/or water quality credit trades must be completed by the due date for the septic tank phase-out project, which is December 31, 2023.

| <b>FACILITY NAME</b> | <b>PROJECT NUMBER</b> | <b>DESCRIPTION</b>                                                                          | <b>TYPE(S) OF BMP(S) IMPLEMENTED</b>  | <b>ACRES TREATED</b> | <b>DEADLINE</b> | <b>PROJECT TN REDUCTION (KG/YR)</b> | <b>PROJECT TN REDUCTION (LBS/YR)</b> |
|----------------------|-----------------------|---------------------------------------------------------------------------------------------|---------------------------------------|----------------------|-----------------|-------------------------------------|--------------------------------------|
| COJ MS4<br>FLS000012 | N/A                   | Total Reduction Required                                                                    | N/A                                   | N/A                  | N/A             | 147,422                             | 324,328                              |
| COJ MS4<br>FLS000012 | COJ-1                 | Big Fishweir Creek-Murray Hill Phase I – Drainage Improvements                              | 2 <sup>nd</sup> Generation Baffle Box | 219                  | Completed       | 80                                  | 176                                  |
| COJ MS4<br>FLS000012 | COJ-2                 | Sixmile Creek-West 1 <sup>st</sup> Street/Melson Avenue – Drainage Improvements             | Wet Detention                         | 254                  | Completed       | 470                                 | 1,034                                |
| COJ MS4<br>FLS000012 | COJ-3                 | McCoys Creek Pond A & B                                                                     | Wet Detention                         | 680                  | Completed       | 750                                 | 1,650                                |
| COJ MS4<br>FLS000012 | COJ-4                 | McCoys Creek Pond F                                                                         | Wet Detention                         | 11                   | Completed       | 10                                  | 22                                   |
| COJ MS4<br>FLS000012 | COJ-5                 | Riverside Ave – Baffle Boxes                                                                | 2 <sup>nd</sup> Generation Baffle Box | 70                   | Completed       | 40                                  | 88                                   |
| COJ MS4<br>FLS000012 | COJ-6                 | St Augustine Rd (Emerson to US 1) – Regional Pond Facilities                                | Wet Detention                         | 167                  | Completed       | 200                                 | 440                                  |
| COJ MS4<br>FLS000012 | COJ-7                 | Powers Ave/Old Kings Rd – Regional Pond Facilities                                          | Wet Detention                         | 520                  | Completed       | 620                                 | 1,364                                |
| COJ MS4<br>FLS000012 | COJ-8                 | Fouraker Rd – from Old Middleburg Rd to Normandy Blvd Regional Pond Facilities              | Wet Detention                         | 32                   | Completed       | 40                                  | 88                                   |
| COJ MS4<br>FLS000012 | COJ-9                 | Greenland Rd – from St. Augustine Rd to Coastal Lane – Detention Pond Facilities            | Wet Detention                         | 33                   | Completed       | 30                                  | 66                                   |
| COJ MS4<br>FLS000012 | COJ-10                | Barnes Rd – from University Blvd to Parental Home Rd – Detention Pond Facilities            | Wet Detention                         | 97                   | Completed       | 20                                  | 44                                   |
| COJ MS4<br>FLS000012 | COJ-11                | Emerson St – from Emerson St Expwy to Spring Glenn Rd – Detention Pond Facility             | Wet Detention                         | 17                   | Completed       | 20                                  | 44                                   |
| COJ MS4<br>FLS000012 | COJ-12                | Bowden Rd – from US 1 to Salisbury Rd – Detention Pond Facilities                           | Wet Detention                         | 98                   | Completed       | 130                                 | 286                                  |
| COJ MS4<br>FLS000012 | COJ-13                | Parental Home Rd Phase I (Bowden Rd from Salisbury Rd to Dean Rd) – Detention Pond Facility | Wet Detention                         | 28                   | Completed       | 20                                  | 44                                   |
| COJ MS4<br>FLS000012 | COJ-14                | Parental Home Rd Phase II (Beach Blvd to Ibach Rd) Detention Pond Facility                  | Wet Detention                         | 82                   | Completed       | 10                                  | 22                                   |
| COJ MS4<br>FLS000012 | COJ-15                | Lorretto Rd from S.R. 13 to Old St. Augustine Rd – Detention Pond Facilities                | Wet Detention                         | 55                   | Completed       | 50                                  | 110                                  |



*Final Five-Year Assessment Report LSJR Main Stem Basin Management Action Plan – February 2014*

| <b>FACILITY NAME</b> | <b>PROJECT NUMBER</b> | <b>DESCRIPTION</b>                                                                       | <b>TYPE(S) OF BMP(S) IMPLEMENTED</b> | <b>ACRES TREATED</b> | <b>DEADLINE</b> | <b>PROJECT TN REDUCTION (KG/YR)</b> | <b>PROJECT TN REDUCTION (LBS/YR)</b> |
|----------------------|-----------------------|------------------------------------------------------------------------------------------|--------------------------------------|----------------------|-----------------|-------------------------------------|--------------------------------------|
| COJ MS4<br>FLS000012 | COJ-16                | Belford Rd-Pottsburg Ck. to Touchton Rd.<br>Detention Pond Facilities                    | Wet Detention                        | 20                   | Completed       | 10                                  | 22                                   |
| COJ MS4<br>FLS000012 | COJ-17                | Royal Terrace Phases<br>A+B+C+D+E+1+2+3+4 – Master Pond<br>Facility                      | Wet Detention                        | 332                  | Completed       | 410                                 | 902                                  |
| COJ MS4<br>FLS000012 | COJ-18                | University Pointe Regional Pond Facility                                                 | Wet Detention                        | 102                  | Completed       | 150                                 | 330                                  |
| COJ MS4<br>FLS000012 | COJ-19                | Cleveland Rd –<br>Phase I-B Wet Detention Pond                                           | Wet Detention                        | 269                  | Completed       | 150                                 | 330                                  |
| COJ MS4<br>FLS000012 | COJ-20                | Hogan Creek                                                                              | Wet Detention                        | 48                   | Completed       | 50                                  | 110                                  |
| COJ MS4<br>FLS000012 | COJ-21                | McCoy Creek Pond D                                                                       | Wet Detention                        | 27                   | Completed       | 30                                  | 66                                   |
| COJ MS4<br>FLS000012 | COJ-22                | Upper Deer Creek<br>Regional Stormwater Facility                                         | Wet Detention                        | 537                  | Completed       | 840                                 | 1,848                                |
| COJ MS4<br>FLS000012 | COJ-23                | Hugh Edwards Canal                                                                       | Wet Detention                        | 329                  | Completed       | 760                                 | 1,672                                |
| COJ MS4<br>FLS000012 | COJ-24                | Cedar River Outfall Improvements                                                         | Wet Detention                        | 1,452                | Completed       | 530                                 | 1,166                                |
| COJ MS4<br>FLS000012 | COJ-25                | Sandalwood Canal                                                                         | Wet Detention                        | 3,118                | Completed       | 880                                 | 1,936                                |
| COJ MS4<br>FLS000012 | COJ-26                | Moncrief Creek                                                                           | Wet Detention                        | 619                  | Completed       | 650                                 | 1,430                                |
| COJ MS4<br>FLS000012 | COJ-27                | Lincoln Villas-East Side –<br>Regional Pond Facility                                     | Wet Detention                        | 185                  | Completed       | 100                                 | 220                                  |
| COJ MS4<br>FLS000012 | COJ-28                | Old Middleburg Rd from Wilson Blvd to<br>103 <sup>rd</sup> St – Regional Pond Facilities | Wet Detention                        | 192                  | Completed       | 210                                 | 462                                  |
| COJ MS4<br>FLS000012 | COJ-29                | Lakeshore Woodcrest Drainage<br>Improvement                                              | Wet Detention                        | 296                  | Completed       | 440                                 | 968                                  |
| COJ MS4<br>FLS000012 | COJ-30                | Townsend Rd Drainage improvements                                                        | Wet Detention                        | 151                  | Completed       | 60                                  | 132                                  |
| COJ MS4<br>FLS000012 | COJ-31                | Lenox Ave (Highway to McDuff)                                                            | Wet Detention                        | 108                  | Completed       | 180                                 | 396                                  |
| COJ MS4<br>FLS000012 | COJ-32                | Wesconnett Blvd (Blanding to Blanding)                                                   | Wet Detention                        | 396                  | Completed       | 40                                  | 88                                   |
| COJ MS4<br>FLS000012 | COJ-33                | Durkeeville West                                                                         | Wet Detention                        | 106                  | Completed       | 160                                 | 352                                  |

*Final Five-Year Assessment Report LSJR Main Stem Basin Management Action Plan – February 2014*

| <b>FACILITY NAME</b> | <b>PROJECT NUMBER</b> | <b>DESCRIPTION</b>                         | <b>TYPE(S) OF BMP(S) IMPLEMENTED</b> | <b>ACRES TREATED</b> | <b>DEADLINE</b> | <b>PROJECT TN REDUCTION (KG/YR)</b> | <b>PROJECT TN REDUCTION (LBS/YR)</b> |
|----------------------|-----------------------|--------------------------------------------|--------------------------------------|----------------------|-----------------|-------------------------------------|--------------------------------------|
| COJ MS4<br>FLS000012 | COJ-34                | Huffman Blvd                               | Wet Detention                        | 16                   | Completed       | 20                                  | 44                                   |
| COJ MS4<br>FLS000012 | COJ-35                | Spring Park Rd/Emerson to University       | Wet Detention                        | 36                   | Completed       | 50                                  | 110                                  |
| COJ MS4<br>FLS000012 | COJ-36                | Barnes Rd/Kennerly to University           | Wet Detention                        | 418                  | Completed       | 720                                 | 1,584                                |
| COJ MS4<br>FLS000012 | COJ-37                | Pritchard Rd (Jones to Interstate (I) 295) | Wet Detention                        | 116                  | Completed       | 0                                   | 0                                    |
| COJ MS4<br>FLS000012 | COJ-38                | Lenox, Lane to Normandy                    | Wet Detention                        | 47                   | Completed       | 30                                  | 66                                   |
| COJ MS4<br>FLS000012 | COJ-39                | Cahoon Rd, Phase I                         | Wet Detention                        | 23                   | Completed       | 20                                  | 44                                   |
| COJ MS4<br>FLS000012 | COJ-40                | Pulaski Rd (Eastport Dr to New Berlin Rd)  | Wet Detention                        | 19                   | Completed       | 20                                  | 44                                   |
| COJ MS4<br>FLS000012 | COJ-41                | Lamoya Roadway Project                     | Wet Detention                        | 17                   | Completed       | 0                                   | 0                                    |
| COJ MS4<br>FLS000012 | COJ-42                | LSJR Upstream of Trout River               | Wet Detention                        | 3,141                | 12/31/2023      | 1,292                               | 2,842                                |
| COJ MS4<br>FLS000012 | COJ-43                | Ortega River                               | Wet Detention                        | 7,169                | 12/31/2023      | 15                                  | 33                                   |
| COJ MS4<br>FLS000012 | COJ-44                | Arlington River                            | Wet Detention                        | 3,352                | 12/31/2023      | 1,137                               | 2,501                                |
| COJ MS4<br>FLS000012 | COJ-45                | LSJR Downstream of Trout River             | Wet Detention                        | 514                  | 12/31/2023      | 579                                 | 1,274                                |
| COJ MS4<br>FLS000012 | COJ-46                | Intracoastal Waterway                      | Wet Detention                        | 7,646                | 12/31/2023      | 0                                   | 0                                    |
| COJ MS4<br>FLS000012 | COJ-47                | Julington Creek                            | Wet Detention                        | 4,404                | 12/31/2023      | 128                                 | 282                                  |
| COJ MS4<br>FLS000012 | COJ-48                | Trout River                                | Wet Detention                        | 5,329                | 12/31/2023      | 1,065                               | 2,343                                |
| COJ MS4<br>FLS000012 | COJ-49                | Broward River                              | Wet Detention                        | 837                  | 12/31/2023      | 0                                   | 0                                    |
| COJ MS4<br>FLS000012 | COJ-50                | Dunn Creek                                 | Wet Detention                        | 1,300                | 12/31/2023      | 631                                 | 1,388                                |
| COJ MS4<br>FLS000012 | COJ-51                | Public Education Activities                | N/A                                  | N/A                  | Ongoing         | 13,146                              | 28,920                               |
| COJ MS4<br>FLS000012 | COJ-121               | Street Sweeping                            | Street Sweeping                      | N/A                  | Ongoing         | 5,553                               | 12,217                               |

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| FACILITY NAME        | PROJECT NUMBER | DESCRIPTION                                                              | TYPE(S) OF BMP(S) IMPLEMENTED | ACRES TREATED | DEADLINE   | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|----------------------|----------------|--------------------------------------------------------------------------|-------------------------------|---------------|------------|------------------------------|-------------------------------|
| COJ MS4<br>FLS000012 | COJ-52         | Septic Tank Phase-Out Projects <sup>1</sup>                              | Septic Tank Phase-Out         | N/A           | 12/31/2023 | 6,200                        | 13,640                        |
| COJ MS4<br>FLS000012 | COJ-123        | LOC Septic Tank Phase-Out Projects                                       | Septic Tank Phase-Out         | N/A           | 07/31/2015 | 1,660                        | 3,652                         |
| COJ MS4<br>FLS000012 | COJ-124        | Better Jacksonville Plan Septic Tank Phase-Out Projects                  | Septic Tank Phase-Out         | N/A           | Completed  | 2,936                        | 6,459                         |
| COJ MS4<br>FLS000012 | COJ-122        | Future Projects and/or Trades <sup>2</sup>                               | To Be Determined              | N/A           | 06/30/2023 | 82,423                       | 181,331                       |
| COJ MS4<br>FLS000012 | COJ-53         | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade    | N/A                           | N/A           | Completed  | 6,926                        | 15,237                        |
| COJ MS4<br>FLS000012 | N/A            | City of Jacksonville Projects Subtotal                                   | N/A                           | N/A           | N/A        | 132,691                      | 291,919                       |
| COJ MS4<br>FLS000012 | COJ-54         | FDOT Urban Office Reconstruction                                         | Dry Retention w/ Underdrain   | 7             | Completed  | 9                            | 20                            |
| COJ MS4<br>FLS000012 | COJ-55         | FDOT Fort George Inlet Bridge                                            | Wet Pond (1", 14 days)        | 18            | Completed  | 6                            | 13                            |
| COJ MS4<br>FLS000012 | COJ-56         | FDOT Widening of Riverside Area                                          | Wet Pond (1", 14 days)        | 14            | Completed  | 5                            | 11                            |
| COJ MS4<br>FLS000012 | COJ-57         | FDOT Widening of Merrill Rd between Wompi Dr and Milcoe Rd               | Wet Pond (1", 14 days)        | 58            | Completed  | 21                           | 46                            |
| COJ MS4<br>FLS000012 | COJ-58         | FDOT Widening of Merrill Rd between 9A and Wompi Dr                      | Wet Pond (1", 14 days)        | 69            | Completed  | 25                           | 55                            |
| COJ MS4<br>FLS000012 | COJ-59         | FDOT Widening of SR 13 to 6 Lane Divided Highway                         | Wet Pond (1", 14 days)        | 174           | Completed  | 63                           | 139                           |
| COJ MS4<br>FLS000012 | COJ-60         | FDOT Bch Blvd Widening from Intracoastal Waterway (ICWW) to E. of Penman | Wet Pond (1", 14 days)        | 25            | Completed  | 9                            | 20                            |
| COJ MS4<br>FLS000012 | COJ-61         | FDOT I-295 and SR 21 (Blanding) Interchange Upgrade                      | Wet Pond (1", 14 days)        | 42            | Completed  | 15                           | 33                            |
| COJ MS4<br>FLS000012 | COJ-62         | FDOT I-295 and SR 17 (Blanding) Interchange Expansion                    | Wet Pond (1", 14 days)        | 96            | Completed  | 35                           | 77                            |
| COJ MS4<br>FLS000012 | COJ-63         | FDOT JTB/Belfort Rd Interchange                                          | Wet Pond (1", 14 days)        | 155           | Completed  | 56                           | 123                           |
| COJ MS4<br>FLS000012 | COJ-64         | FDOT Pine Avenue Sidewalk                                                | Dry Retention (1")            | 7             | Completed  | 9                            | 20                            |
| COJ MS4<br>FLS000012 | COJ-65         | FDOT 9A from Baymeadows Rd to I-95                                       | Wet Pond (1", 14 days)        | 550           | Completed  | 200                          | 440                           |
| COJ MS4<br>FLS000012 | COJ-66         | FDOT Widening of I-95 from St. Johns County Line to 9A/I-295             | Wet Pond (1", 14 days)        | 175           | Completed  | 64                           | 141                           |

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| <b>FACILITY NAME</b> | <b>PROJECT NUMBER</b> | <b>DESCRIPTION</b>                                                       | <b>TYPE(S) OF BMP(S) IMPLEMENTED</b> | <b>ACRES TREATED</b> | <b>DEADLINE</b> | <b>PROJECT TN REDUCTION (KG/YR)</b> | <b>PROJECT TN REDUCTION (LBS/YR)</b> |
|----------------------|-----------------------|--------------------------------------------------------------------------|--------------------------------------|----------------------|-----------------|-------------------------------------|--------------------------------------|
| COJ MS4<br>FLS000012 | COJ-67                | FDOT Widening of I-95 from I-295 to South of JTB                         | Wet Pond (1", 14 days)               | 441                  | Completed       | 160                                 | 352                                  |
| COJ MS4<br>FLS000012 | COJ-68                | FDOT Widening of SR 10 (Atlantic Blvd from St. Johns Bluff to San Pablo) | Wet Pond (1", 14 days)               | 1096                 | Completed       | 397                                 | 873                                  |
| COJ MS4<br>FLS000012 | COJ-69                | FDOT Widening of Southside Blvd                                          | Dry Retention                        | 146                  | Completed       | 53                                  | 117                                  |
| COJ MS4<br>FLS000012 | COJ-70                | FDOT New JTB/9A Interchange                                              | Detention/ Retention (1")            | 339                  | Completed       | 442                                 | 972                                  |
| COJ MS4<br>FLS000012 | COJ-71                | FDOT Southside (SR 115) Frontage Rd                                      | Wet Pond (1", 14 days)               | 8                    | Completed       | 3                                   | 7                                    |
| COJ MS4<br>FLS000012 | COJ-72                | FDOT I-95 Improvement - from I-295 to Nassau County Line South Project   | Wet Pond (1", 14 days)               | 291                  | Completed       | 105                                 | 231                                  |
| COJ MS4<br>FLS000012 | COJ-73                | FDOT I-95 Improvement – S. of Clarke Rd to I-295                         | Wet Pond (1", 14 days)               | 94                   | Completed       | 34                                  | 75                                   |
| COJ MS4<br>FLS000012 | COJ-74                | FDOT 9A Improvement - South Project                                      | Wet Pond (1", 14 days)               | 176                  | Completed       | 64                                  | 141                                  |
| COJ MS4<br>FLS000012 | COJ-75                | FDOT 9A from South of Atlantic to Beach Blvd                             | Wet Pond (1", 14 days)               | 124                  | Completed       | 45                                  | 99                                   |
| COJ MS4<br>FLS000012 | COJ-76                | FDOT I-295/I-95/9A Interchange                                           | Wet Pond (1", 14 days)               | 580                  | Completed       | 200                                 | 440                                  |
| COJ MS4<br>FLS000012 | COJ-77                | FDOT Branan Field Chafee Roadway Project                                 | Wet Pond (1", 14 days)               | 187                  | Completed       | 115                                 | 253                                  |
| COJ MS4<br>FLS000012 | COJ-78                | FDOT Wonderwood Connector Segment 1 Project Girvin to Sandcastle         | Wet Pond (1", 14 days)               | 70                   | Completed       | 19                                  | 42                                   |
| COJ MS4<br>FLS000012 | COJ-79                | FDOT JIA South Access Connector Project                                  | Dry Detention                        | 63                   | Completed       | 82                                  | 180                                  |
| COJ MS4<br>FLS000012 | COJ-80                | FDOT I-95 Widening from Lem Turner to I-295 Project                      | Wet Pond (1", 14 days)               | 117                  | Completed       | 42                                  | 92                                   |
| COJ MS4<br>FLS000012 | COJ-81                | FDOT 4 Laning of SR 13                                                   | Wet Pond (1", 14 days)               | 105                  | Completed       | 38                                  | 84                                   |
| COJ MS4<br>FLS000012 | COJ-82                | FDOT SR 21 Widening from S. of Cedar River to E. of Cassat               | Wet Pond (1", 14 days)               | 19                   | Completed       | 7                                   | 15                                   |
| COJ MS4<br>FLS000012 | COJ-83                | FDOT Arlington Expressway Project                                        | Unknown                              | 27                   | Completed       | 10                                  | 22                                   |
| COJ MS4<br>FLS000012 | COJ-84                | FDOT Merrill Rd Southside Blvd Interchange Project                       | Wet Pond (1", 14 days)               | 15                   | Completed       | 5                                   | 11                                   |
| COJ MS4<br>FLS000012 | COJ-85                | FDOT Baymeadows Project from East of US 1 to SR 13                       | Wet Pond (1", 14 days)               | 35                   | Completed       | 9                                   | 20                                   |

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| <b>FACILITY NAME</b> | <b>PROJECT NUMBER</b> | <b>DESCRIPTION</b>                                                              | <b>TYPE(S) OF BMP(S) IMPLEMENTED</b> | <b>ACRES TREATED</b> | <b>DEADLINE</b> | <b>PROJECT TN REDUCTION (KG/YR)</b> | <b>PROJECT TN REDUCTION (LBS/YR)</b> |
|----------------------|-----------------------|---------------------------------------------------------------------------------|--------------------------------------|----------------------|-----------------|-------------------------------------|--------------------------------------|
| COJ MS4<br>FLS000012 | COJ-86                | FDOT SR 115/8 <sup>th</sup> St Project                                          | Wet Pond<br>(1", 14 days)            | 31                   | Completed       | 11                                  | 24                                   |
| COJ MS4<br>FLS000012 | COJ-87                | FDOT SR 115/8 <sup>th</sup> St Project                                          | Wet Pond<br>(1", 14 days)            | 4                    | Completed       | 1                                   | 2                                    |
| COJ MS4<br>FLS000012 | COJ-88                | FDOT JTB from I-95 to Gate Parkway Project                                      | Wet Pond<br>(1", 14 days)            | 58                   | Completed       | 21                                  | 46                                   |
| COJ MS4<br>FLS000012 | COJ-89                | FDOT I-295 from West of Duval to Biscayne Blvd                                  | Wet Pond<br>(1", 14 days)            | 20                   | Completed       | 7                                   | 15                                   |
| COJ MS4<br>FLS000012 | COJ-90                | FDOT Beaver Street (US 90) Project from Stockton to Tyler                       | Wet Pond<br>(1", 14 days)            | 7                    | Completed       | 3                                   | 7                                    |
| COJ MS4<br>FLS000012 | COJ-91                | FDOT 9A from Baymeadows to JTB Project                                          | Wet Pond<br>(1", 14 days)            | 195                  | Completed       | 71                                  | 156                                  |
| COJ MS4<br>FLS000012 | COJ-92                | FDOT JTB/A1A Interchange Project                                                | Wet Pond<br>(1", 14 days)            | 20                   | Completed       | 3                                   | 7                                    |
| COJ MS4<br>FLS000012 | COJ-93                | FDOT Southside Blvd/I-95 Connector                                              | Dry Retention (1")                   | 76                   | Completed       | 99                                  | 218                                  |
| COJ MS4<br>FLS000012 | COJ-94                | FDOT Beach Blvd Improvement from West of FCCJ to East of San Pablo              | Wet Pond<br>(1", 14 days)            | 165                  | Completed       | 60                                  | 132                                  |
| COJ MS4<br>FLS000012 | COJ-95                | FDOT widening of SR 13                                                          | Unknown                              | 227                  | Completed       | 82                                  | 180                                  |
| COJ MS4<br>FLS000012 | COJ-96                | FDOT Branan Field Chafee Roadway Project (Argyle Forrest to 103 <sup>rd</sup> ) | Wet Pond<br>(1", 14 days)            | 112                  | Completed       | 40                                  | 88                                   |
| COJ MS4<br>FLS000012 | COJ-97                | FDOT Branan Field Chafee Roadway Project (103 <sup>rd</sup> to I-10)            | Wet Pond<br>(1", 14 days)            | 150                  | Completed       | 55                                  | 121                                  |
| COJ MS4<br>FLS000012 | COJ-98                | FDOT Southside (SR 115) & Beach Blvd (SR 202) Interchange & Road Widening       | Wet Pond<br>(1", 14 days)            | 33                   | Completed       | 12                                  | 26                                   |
| COJ MS4<br>FLS000012 | COJ-99                | FDOT Wonderwood Connector Segment 2                                             | Wet Pond<br>(1", 14 days)            | 58                   | Completed       | 21                                  | 46                                   |
| COJ MS4<br>FLS000012 | COJ-100               | FDOT JTB/Kernan Project                                                         | Wet Pond<br>(1", 14 days)            | 65                   | Completed       | 24                                  | 53                                   |
| COJ MS4<br>FLS000012 | COJ-101               | FDOT I-95 from JTB to Emerson                                                   | Dry Retention (1")                   | 105                  | Completed       | 137                                 | 301                                  |
| COJ MS4<br>FLS000012 | COJ-102               | FDOT Heckscher Dr / 9a Interchange-1 DRS                                        | Dry Retention (1")                   | 103                  | Completed       | 89                                  | 196                                  |
| COJ MS4<br>FLS000012 | COJ-103               | FDOT Heckscher Dr / 9a Interchange-2 WDS                                        | Wet Pond<br>(1", 14 days)            | 68                   | Completed       | 25                                  | 55                                   |
| COJ MS4<br>FLS000012 | COJ-104               | FDOT Wonderwood Segment 3 Project                                               | Wet Pond<br>(1", 14 days)            | 69                   | Completed       | 25                                  | 55                                   |

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| <b>FACILITY NAME</b> | <b>PROJECT NUMBER</b> | <b>DESCRIPTION</b>                                                       | <b>TYPE(S) OF BMP(S) IMPLEMENTED</b> | <b>ACRES TREATED</b> | <b>DEADLINE</b> | <b>PROJECT TN REDUCTION (KG/YR)</b> | <b>PROJECT TN REDUCTION (LBS/YR)</b> |
|----------------------|-----------------------|--------------------------------------------------------------------------|--------------------------------------|----------------------|-----------------|-------------------------------------|--------------------------------------|
| COJ MS4<br>FLS000012 | COJ-105               | FDOT Collins Rd Collector Distributor                                    | Wet Pond<br>(1", 14 days)            | 142                  | Completed       | 51                                  | 112                                  |
| COJ MS4<br>FLS000012 | COJ-106               | FDOT JTB / I-95 Ramp Project<br>(40-031-18233-6)                         | Wet Pond<br>(1", 14 days)            | 54                   | Completed       | 20                                  | 44                                   |
| COJ MS4<br>FLS000012 | COJ-107               | FDOT SR 5 US 1 Project (209516-3-52-01)                                  | Wet Pond<br>(1", 14 days)            | 27                   | Completed       | 10                                  | 22                                   |
| COJ MS4<br>FLS000012 | COJ-108               | FDOT 4 Laning of SR 207                                                  | Wet Pond<br>(1", 14 days)            | 12                   | Completed       | 7                                   | 15                                   |
| COJ MS4<br>FLS000012 | COJ-109               | FDOT 4 Laning of SR 207 from CR 305 to<br>Cypress Link Blvd              | Wet Pond<br>(1", 14 days)            | 106                  | Completed       | 65                                  | 143                                  |
| COJ MS4<br>FLS000012 | COJ-110               | FDOT 4 Laning of SR207 from SR 15<br>(US 17) to CR 207                   | Wet Pond<br>(1", 14 days)            | 538                  | Completed       | 330                                 | 726                                  |
| COJ MS4<br>FLS000012 | COJ-111               | FDOT 6 Laning of I-95 from Flagler County<br>Line to SR 16               | Wet Pond<br>(1", 14 days)            | 800                  | Completed       | 255                                 | 561                                  |
| COJ MS4<br>FLS000012 | COJ-112               | FDOT I-95 Rest Area Reconstruction                                       | Wet Pond<br>(1", 14 days)            | 52                   | Completed       | 17                                  | 37                                   |
| COJ MS4<br>FLS000012 | COJ-113               | FDOT 6 Laning of I-95 from World Golf<br>Village to Duval CountyLline    | Wet Pond<br>(1", 14 days)            | 537                  | Completed       | 237                                 | 521                                  |
| COJ MS4<br>FLS000012 | COJ-114               | FDOT Widening of SR 16                                                   | Swale Treatment<br>System            | 68                   | Completed       | 22                                  | 48                                   |
| COJ MS4<br>FLS000012 | COJ-115               | FDOT SR 207 from I-95 to SR 312                                          | Wet Pond<br>(1", 14 days)            | 102                  | Completed       | 33                                  | 73                                   |
| COJ MS4<br>FLS000012 | COJ-116               | FDOT SR 207 from SR 312 to US 1                                          | Wet Pond<br>(1", 14 days)            | 536                  | Completed       | 171                                 | 376                                  |
| COJ MS4<br>FLS000012 | COJ-117               | FDOT Stormwater Education Efforts in<br>St. Johns County                 | N/A                                  | N/A                  | Ongoing         | 286                                 | 629                                  |
| COJ MS4<br>FLS000012 | COJ-118               | FDOT Education Efforts in<br>City of Jacksonville                        | N/A                                  | N/A                  | Ongoing         | 1,461                               | 3,214                                |
| COJ MS4<br>FLS000012 | COJ-119               | Atmospheric Deposition Load Reduction –<br>Seminole Electric SCR Upgrade | N/A                                  | N/A                  | Completed       | 769                                 | 1,692                                |
| COJ MS4<br>FLS000012 | COJ-120               | FDOT Future Projects and/or Trade<br>(Fertilizer Cessation)              | N/A                                  | N/A                  | Completed       | 18,445                              | 40,663                               |
| COJ MS4<br>FLS000012 | N/A                   | FDOT Projects Subtotal                                                   | N/A                                  | N/A                  | N/A             | 25,312                              | 55,768                               |
| COJ MS4<br>FLS000012 | N/A                   | Total Project Reductions                                                 | N/A                                  | N/A                  | N/A             | 158,003                             | 347,687                              |
| COJ MS4<br>FLS000012 | N/A                   | Credit/(Deficit)                                                         | N/A                                  | N/A                  | N/A             | 10,581                              | 23,359                               |

***City of Jacksonville Schedule***

**Future COJ Stormwater Projects**

| PROJECT                                               | SCHEDULE   |
|-------------------------------------------------------|------------|
| a. Start Date                                         | Completed  |
| b. Completion Date – Attain 50% of Required Reduction | 07/31/2015 |
| c. Completion Date – Completion of Project            | 12/31/2023 |

**Septic Tank Phase-Out Projects**

| PROJECT                                            | SCHEDULE   |
|----------------------------------------------------|------------|
| a. Start Date                                      | Completed  |
| b. Completion Date - Phase Out 50% of Septic Tanks | 07/31/2015 |
| c. Completion Date – Completion of Project         | 12/31/2023 |

**City of Jacksonville Beach WWTF (FL002031)..... 21,015 kg/yr**

| FACILITY NAME         | PROJECT NUMBER | DESCRIPTION                                                  | DEADLINE               | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|-----------------------|----------------|--------------------------------------------------------------|------------------------|------------------------------|-------------------------------|
| Jax Bch WWTF          | N/A            | Total Reduction Required                                     | N/A                    | 19,135                       | 42,097                        |
| Jax Bch WWTF FL002031 | JB-1           | Upgrade WWTF to Advanced Wastewater Treatment for TN removal | Completed – 12/31/2013 | 21,555                       | 47,421                        |
| Jax Bch WWTF          | N/A            | Total Project Reductions                                     | N/A                    | 21,555                       | 47,421                        |
| Jax Bch WWTF          | N/A            | Credit/(Deficit)                                             | N/A                    | 2,420                        | 5,324                         |

**City of Jacksonville Beach MS4 (FLS000013)..... 4,804 kg/yr**

| FACILITY NAME         | PROJECT NUMBER | DESCRIPTION                                                           | ACRES TREATED | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|-----------------------|----------------|-----------------------------------------------------------------------|---------------|-----------|------------------------------|-------------------------------|
| Jax Bch MS4           | N/A            | Total Reduction Required                                              | N/A           | N/A       | 170                          | 374                           |
| Jax Bch MS4 FLS000013 | JB-2           | FDOT Beach Blvd Widening (Pond 2)                                     | 38.87         | Completed | 14                           | 31                            |
| Jax Bch MS4 FLS000013 | JB-3           | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade | N/A           | Completed | 156                          | 343                           |
| Jax Bch MS4           | N/A            | Total Project Reductions                                              | N/A           | N/A       | 170                          | 374                           |
| Jax Bch MS4           | N/A            | Credit/(Deficit)                                                      | N/A           | N/A       | 0                            | 0                             |



**City of Neptune Beach WWTF (FL0020427) ..... 6,162 kg/yr**

| FACILITY NAME                | PROJECT NUMBER | DESCRIPTION                   | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|------------------------------|----------------|-------------------------------|-----------|------------------------------|-------------------------------|
| Neptune Beach WWTF FL0020427 | N/A            | Total Reduction Required      | N/A       | 5,286                        | 11,629                        |
| Neptune Beach WWTF FL0020427 | NB-1           | Complete Process Improvements | Completed | 7,322                        | 16,108                        |
| Neptune Beach WWTF FL0020427 | N/A            | Total Project Reductions      | N/A       | 7,322                        | 16,108                        |
| Neptune Beach WWTF FL0020427 | N/A            | Credit/(Deficit)              | N/A       | 2,036                        | 4,479                         |

**City of Neptune Beach MS4 (FLS000012) ..... 1,437 kg/yr**

| FACILITY NAME     | PROJECT NUMBER | DESCRIPTION                                                           | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|-------------------|----------------|-----------------------------------------------------------------------|-----------|------------------------------|-------------------------------|
| Neptune Beach MS4 | N/A            | Total Reduction Required                                              | N/A       | 47                           | 103                           |
| Neptune Beach MS4 | NB-2           | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade | Completed | 47                           | 103                           |
| Neptune MS4       | N/A            | Total Project Reductions                                              | N/A       | 47                           | 103                           |
| Neptune MS4       | N/A            | Credit/(Deficit)                                                      | N/A       | 0                            | 0                             |

**Clay County MS4 (FLR04E045) ..... 21,188 kg/yr**

| <b>FACILITY NAME</b> | <b>PROJECT NUMBER</b> | <b>DESCRIPTION</b>                                                                             | <b>TYPE(S) OF BMP(S) IMPLEMENTED</b> | <b>ACRES TREATED</b> | <b>DEADLINE</b>                | <b>PROJECT TN REDUCTION (KG/YR)</b> | <b>PROJECT TN REDUCTION (LBS/YR)</b> |
|----------------------|-----------------------|------------------------------------------------------------------------------------------------|--------------------------------------|----------------------|--------------------------------|-------------------------------------|--------------------------------------|
| CC MS4<br>FLR04E045  | N/A                   | Total Reduction Required                                                                       | N/A                                  | N/A                  | N/A                            | 4,061                               | 8,934                                |
| CC MS4<br>FLR04E045  | CC-9                  | Wells Rd Improvements                                                                          | Wet Detention Pond                   | 120                  | Completed                      | 9                                   | 20                                   |
| CC MS4<br>FLR04E045  | CC-10                 | CR 224 Phase I                                                                                 | Wet Detention Pond                   | 70                   | Completed                      | 38                                  | 84                                   |
| CC MS4<br>FLR04E045  | CC-11                 | CR 224 Phase II                                                                                | Wet Detention Pond                   | 140                  | Completed                      | 68                                  | 150                                  |
| CC MS4<br>FLR04E045  | CC-12                 | Education Program                                                                              | N/A                                  | N/A                  | Ongoing                        | 1,010                               | 2,222                                |
| CC MS4<br>FLR04E045  | CC-13                 | FDOT Construction of Stormwater Management Systems for Clay County Recreational Trail on SR 15 | Retention/ Detention (1")            | 69                   | Completed                      | 90                                  | 198                                  |
| CC MS4<br>FLR04E045  | CC-14                 | FDOT SR 15 Widening @ Fleming Island                                                           | Retention/ Detention (1")            | 606                  | Completed                      | 1,336                               | 2,939                                |
| CC MS4<br>FLR04E045  | CC-15                 | FDOT SR 15 Widening @ Fleming Island from Village Sq Park Rd to South of Margarets Walk Rd     | Retention/ Detention (1")            | 301                  | Completed                      | 664                                 | 1,461                                |
| CC MS4<br>FLR04E045  | CC-16                 | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade                          | N/A                                  | N/A                  | Completed                      | 846                                 | 1,861                                |
| CC MS4<br>FLR04E045  | CC-20                 | CR 209 Widening from CR 220 to Black Creek Bridge                                              | Wet Detention Pond                   | 23                   | Under way – Completion 02/2014 | 45                                  | 99                                   |
| CC MS4<br>FLR04E045  | CC-21                 | Old Jennings Rd Widening from Blanding Blvd to Branan Field Rd                                 | Wet Detention Pond                   | N/A                  | Completed                      | 17                                  | 37                                   |
| CC MS4<br>FLR04E045  | N/A                   | Total Project Reductions                                                                       | N/A                                  | N/A                  | N/A                            | 4,123                               | 9,070                                |
| CC MS4<br>FLR04E045  | N/A                   | Credit/(Deficit)                                                                               | N/A                                  | N/A                  | N/A                            | 62                                  | 136                                  |

**Clay County Utility Authority Aggregate (FL0629006) ..... 63,963 kg/yr**

| FACILITY NAME                    | PROJECT NUMBER | DESCRIPTION                                 | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|----------------------------------|----------------|---------------------------------------------|-----------|------------------------------|-------------------------------|
| CCUA Total Facilities            | N/A            | Total Reduction Required                    | N/A       | -2,394                       | -5,267                        |
| Fleming Island WWTF<br>FL0043834 | CCUA-1         | Upgrade to APRICOT and Reuse                | Completed | 18,195                       | 40,029                        |
| Miller Street WWTF<br>FL0025151  | CCUA-2         | Reuse Water Upgrades Including Spencer WWTP | Completed | 16,209                       | 35,670                        |
| Miller Street WWTF<br>FL0025151  | CCUA-3         | WWTF Improvements To Meet APRICOT Standards | Completed | 10,335                       | 22,737                        |
| CCUA Total Facilities            | N/A            | Total Project Reductions                    | N/A       | 44,739                       | 98,426                        |
| CCUA Total Facilities            | N/A            | Credit/(Deficit)                            | N/A       | 47,133                       | 103,693                       |

**JEA Aggregate (FL0620564)..... 654,672 kg/yr**

| <b>FACILITY NAME</b>          | <b>PROJECT NUMBER</b> | <b>DESCRIPTION</b>                                                                                      | <b>CONSTRUCTION COMPLETE</b> | <b>ACHIEVE OPERATIONAL EFFECTIVENESS</b> | <b>PROJECT TN REDUCTION (KG/YR)</b> | <b>PROJECT TN REDUCTION (LBS/YR)</b> |
|-------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------|------------------------------|------------------------------------------|-------------------------------------|--------------------------------------|
| JEA Total Facilities          | N/A                   | Total Reduction Required                                                                                | N/A                          | N/A                                      | 741,951                             | 1,632,292                            |
| JEA Julington Creek FL0043591 | JEA-1                 | Complete Process Improvements                                                                           | Completed                    | N/A                                      | 5,909                               | 13,000                               |
| JEA Arlington East FL0026441  | JEA-2                 | Complete Process Improvements                                                                           | Completed                    | N/A                                      | 92,727                              | 204,000                              |
| JEA District II FL0026450     | JEA-3                 | Complete Process Improvements                                                                           | Completed                    | N/A                                      | 140,000                             | 308,000                              |
| JEA Southwest FL0026468       | JEA-4                 | Complete Process Improvements                                                                           | Completed                    | N/A                                      | 45,909                              | 101,000                              |
| JEA Buckman FL0026000         | JEA-5                 | Complete Process Improvements                                                                           | Completed                    | N/A                                      | 50,455                              | 111,000                              |
| JEA Monterey FL00230604       | JEA-6                 | Complete Process Improvements                                                                           | Completed                    | N/A                                      | 35,455                              | 78,001                               |
| JEA Mandarin FL0023493        | JEA-7                 | Complete Process Improvements                                                                           | Completed                    | N/A                                      | 12,726                              | 27,997                               |
| JEA San Pablo FL0024767       | JEA-8                 | Complete Phase-Out                                                                                      | Completed                    | N/A                                      | 6,364                               | 14,001                               |
| JEA Woodmere FL0026786        | JEA-9                 | Complete Phase-Out                                                                                      | Completed                    | N/A                                      | 10,000                              | 22,000                               |
| JEA Beacon Hills FL0026778    | JEA-10                | Complete Phase-Out                                                                                      | Completed                    | Completed                                | 5,700                               | 12,540                               |
| JEA Royal Lakes FL0026751     | JEA-11                | Complete Phase-Out                                                                                      | Completed – 01/14/2013       | Completed – 01/14/2013                   | 0                                   | 0                                    |
| JEA Jax Heights FL0023671     | JEA-12                | Complete Phase-Out                                                                                      | Completed – 03/27/2013       | Completed – 03/27/2013                   | 0                                   | 0                                    |
| JEA Arlington East FL0026441  | JEA-13                | Complete Process Improvements                                                                           | Completed                    | Completed                                | 118,172                             | 259,978                              |
| JEA District II FL0026450     | JEA-14                | Complete Process Improvements                                                                           | Deferred                     | Deferred                                 | 0                                   | 0                                    |
| JEA San Jose FL0023663        | JEA-15                | Complete Phase-Out                                                                                      | Completed – 09/24/2013       | Completed – 09/24/2013                   | 0                                   | 0                                    |
| JEA Buckman FL0026000         | JEA-16                | Complete Process Improvements                                                                           | Completed – 07/24/2013       | Completed – 07/24/2013                   | 191,183                             | 420,603                              |
| JEA Facilities                | JEA-17                | Reuse Expansion (approximately 10 million gallons per day) at Arlington East, Mandarin, and District II | Completed                    | Completed                                | 59,090                              | 129,998                              |
| JEA Total Facilities          | N/A                   | Total Project Reductions                                                                                | N/A                          | N/A                                      | 773,690                             | 1,702,118                            |
| JEA Total Facilities          | N/A                   | Credit/(Deficit)                                                                                        | N/A                          | N/A                                      | 31,739                              | 69,826                               |

**Smurfit-Stone Container (FL0000400)..... 74,305 kg/yr**

| FACILITY<br>NAME | PROJECT<br>NUMBER | DESCRIPTION                   | DEADLINE  | PROJECT TN<br>REDUCTION<br>(KG/YR) | PROJECT TN<br>REDUCTION<br>(LBS/YR) |
|------------------|-------------------|-------------------------------|-----------|------------------------------------|-------------------------------------|
| Smurfit-Stone    | N/A               | Total Reduction Required      | N/A       | 71,684                             | 157,705                             |
| Smurfit-Stone    | SS-1              | Complete Process Improvements | Completed | 71,684                             | 157,705                             |
| Smurfit-Stone    | N/A               | Total Project Reductions      | N/A       | 71,684                             | 157,705                             |
| Smurfit-Stone    | N/A               | Credit/(Deficit)              | N/A       | 0                                  | 0                                   |

**St. Johns County MS4 (FLR04E025) ..... 746 kg/yr**

\* This project is located in the freshwater reach. The trading ratio from the freshwater reach to marine reach is 1:1.

| FACILITY NAME     | PROJECT NUMBER | DESCRIPTION                                                               | TYPE(S) OF BMP(S) IMPLEMENTED | ACRES TREATED | DEADLINE   | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|-------------------|----------------|---------------------------------------------------------------------------|-------------------------------|---------------|------------|------------------------------|-------------------------------|
| SJC MS4 FLR04E025 | N/A            | Starting Load                                                             | N/A                           | N/A           | N/A        | 2,311                        | 5,084                         |
| SJC MS4 FLR04E025 | SJC-11         | Stormwater Education                                                      | Education                     | N/A           | Ongoing    | 153                          | 337                           |
| SJC MS4 FLR04E025 | SJC-12         | Low-Impact Development                                                    | N/A                           | N/A           | Ongoing    | Not quantified               | Not quantified                |
| SJC MS4 FLR04E025 | SJC-13         | Slow Release Fertilizer Ordinance                                         | N/A                           | N/A           | Completed  | Not quantified               | Not quantified                |
| SJC MS4 FLR04E025 | SJC-14         | FDOT 4 Laning of SR 312                                                   | Wet Pond (1", 14 days)        | 38            | Completed  | 14                           | 31                            |
| SJC MS4 FLR04E025 | SJC-15         | FDOT A1A Stormwater Retrofit from Duval County Line to Thousand Oaks Lane | Dry Detention                 | 98            | Completed  | 216                          | 475                           |
| SJC MS4 FLR04E025 | SJC-16         | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade     | N/A                           | N/A           | Completed  | 60                           | 132                           |
| SJC MS4 FLR04E025 | SJC-17         | Algal Initiative – Masters Tract RST Facility*                            | Wet Pond, Treatment Wetland   | N/A           | 10/31/2017 | 1,868                        | 4,109                         |
| SJC MS4 FLR04E025 | N/A            | Total Project Reductions                                                  | N/A                           | N/A           | N/A        | 2,311                        | 5,084                         |
| SJC MS4 FLR04E025 | N/A            | Credit/(Deficit)                                                          | N/A                           | N/A           | N/A        | 0                            | 0                             |

**St. Johns County MS4 Schedule**

| ALGAL INITIATIVE                         | SCHEDULE   |
|------------------------------------------|------------|
| a. Start Date of Project                 | Completed  |
| b. Completion Date – Project Assessment  | Completed  |
| c. Completion Date – Project Fundraising | 10/31/2012 |
| d. Completion Date – Construction        | 10/31/2017 |

**Town of Orange Park WWTF (FL0023922)..... 7,940 kg/yr**

| FACILITY NAME             | PROJECT NUMBER | DESCRIPTION              | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|---------------------------|----------------|--------------------------|-----------|------------------------------|-------------------------------|
| Orange Park WWTF          | N/A            | Total Reduction Required | N/A       | 16,946                       | 37,281                        |
| Ash Street WWTF FL0023922 | OP-1           | Phase 1 Improvements     | Completed | 15,953                       | 35,097                        |
| Ash Street WWTF FL0023922 | OP-2           | Phase 2 Improvements     | Completed | 6,942                        | 15,272                        |
| Orange Park WWTF          | N/A            | Total Project Reductions | N/A       | 22,885                       | 50,369                        |
| Orange Park WWTF          | N/A            | Credit/(Deficit)         | N/A       | 5,939                        | 13,088                        |

**Town of Orange Park MS4 (FLR04E075)..... 3,348 kg/yr**

| FACILITY NAME   | PROJECT NUMBER | DESCRIPTION                                                           | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|-----------------|----------------|-----------------------------------------------------------------------|-----------|------------------------------|-------------------------------|
| Orange Park MS4 | N/A            | Total Reduction Required                                              | N/A       | 103                          | 227                           |
| Orange Park MS4 | OP-4           | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade | Completed | 103                          | 227                           |
| Orange Park MS4 | N/A            | Total Project Reductions                                              | N/A       | 103                          | 227                           |
| Orange Park MS4 | N/A            | Credit/(Deficit)                                                      | N/A       | 0                            | 0                             |

**U.S. Navy Aggregate (FL0639451) ..... 11,684 kg/yr**

| FACILITY NAME                   | PROJECT NUMBER | DESCRIPTION                               | DEADLINE   | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|---------------------------------|----------------|-------------------------------------------|------------|------------------------------|-------------------------------|
| USN Total (Aggregate)           | N/A            | Total Reduction Required                  | N/A        | 30,345                       | 66,759                        |
| NAS Jax WWTF<br>FL0000957       | USN-1          | Reuse to Timuquana Country Club           | Completed  | 7,693                        | 16,925                        |
| NAS Jax WWTF<br>FL0000957       | USN-2          | Expand Reuse System                       | 02/25/2015 | 2,790                        | 6,138                         |
| NAS Jax WWTF<br>FL0000957       | USN-3          | Inflow/infiltration (I/I) Repair Projects | Completed  | 2,790                        | 6,138                         |
| NS Mayport<br>WWTF<br>FL0000922 | USN-4          | I/I Repair Projects                       | Completed  | 5,753                        | 12,657                        |
| NS Mayport<br>WWTF<br>FL0000922 | USN-5          | Modifications to Mayport WWTF             | 10/01/2015 | 11,319                       | 24,901                        |
| USN Total (Aggregate)           | N/A            | Total Project Reductions                  | N/A        | 30,345                       | 66,759                        |
| USN Total (Aggregate)           | N/A            | Credit/(Deficit)                          | N/A        | 0                            | 0                             |



**U.S. Navy Aggregate Schedule**

**Expand Reuse System**

| PROJECTS                                  | SCHEDULE   |
|-------------------------------------------|------------|
| a. Start Date                             | Completed  |
| b. Completion Date – Design               | Completed  |
| c. Submit 1 <sup>st</sup> Progress Report | Completed  |
| d. Submit 2 <sup>nd</sup> Progress Report | Completed  |
| e. Submit 3 <sup>rd</sup> Progress Report | Completed  |
| c. Completion Date - Construction         | 02/25/2015 |
| d. Completion Date – Project              | 02/25/2015 |

**Modifications to Mayport WWTF**

| PROJECTS                      | SCHEDULE   |
|-------------------------------|------------|
| a. Start Date                 | Completed  |
| b. Completion Date – Design   | 02/25/2014 |
| c. Begin Construction         | 04/01/2014 |
| d. End Construction           | 07/01/2015 |
| e. Operational Level Attained | 10/01/2015 |

**U.S. Navy MS4s (FLR04E091 and FLR04E056)..... 7,232 kg/yr**

| FACILITY NAME | PROJECT NUMBER | DESCRIPTION                                                           | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|---------------|----------------|-----------------------------------------------------------------------|-----------|------------------------------|-------------------------------|
| USN MS4s      | N/A            | Total Reduction Required                                              | N/A       | 298                          | 656                           |
| USN MS4       | USN-6          | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade | Completed | 298                          | 656                           |
| USN MS4       | N/A            | Total Project Reductions                                              | N/A       | 298                          | 656                           |
| USN MS4       | N/A            | Credit/(Deficit)                                                      | N/A       | 0                            | 0                             |

*Name of Facility*

*Load Allocation (kg/yr)*

**Camp Blanding Non-MS4** ..... **1,220 kg/yr**

| FACILITY NAME | PROJECT NUMBER | DESCRIPTION                                                           | TYPE(S) OF BMP(S) IMPLEMENTED | ACRES TREATED | DEADLINE   | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|---------------|----------------|-----------------------------------------------------------------------|-------------------------------|---------------|------------|------------------------------|-------------------------------|
| Camp Blanding | N/A            | Total Reduction Required                                              | N/A                           | N/A           | N/A        | 1,650                        | 3,630                         |
| Camp Blanding | CB-1           | Regrade Existing Swale System                                         | Swales                        | 2,220         | 12/31/2013 | 1,999                        | 4,398                         |
| Camp Blanding | CB-2           | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade | N/A                           | N/A           | Completed  | 98                           | 216                           |
| Camp Blanding | N/A            | Total Project Reductions                                              | N/A                           | N/A           | N/A        | 2,097                        | 4,613                         |
| Camp Blanding | N/A            | Credit/(Deficit)                                                      | N/A                           | N/A           | N/A        | 447                          | 983                           |

**Camp Blanding Non-MS4 Schedule**

| REGRADE EXISTING SWALE SYSTEM                                             | SCHEDULE   |
|---------------------------------------------------------------------------|------------|
| a. Start Date of Project                                                  | Completed  |
| b. Completion – Regrade 1 <sup>st</sup> set of swales                     | Completed  |
| c. Completion – Regrade 2 <sup>nd</sup> set of swales                     | Completed  |
| d. Completion – Regrade 3 <sup>rd</sup> set of swales                     | Completed  |
| f. Completion – Regrade 4 <sup>th</sup> and 5 <sup>th</sup> set of swales | 12/31/2013 |
| g. Completion – Completion of Project                                     | 12/31/2013 |

**Clay County Non-MS4..... 11,107 kg/yr**

| FACILITY NAME | PROJECT NUMBER | DESCRIPTION                                                                | TYPE(S) OF BMP(S) IMPLEMENTED | ACRES TREATED | DEADLINE  | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|---------------|----------------|----------------------------------------------------------------------------|-------------------------------|---------------|-----------|------------------------------|-------------------------------|
| CC Non-MS4    | N/A            | Total Reduction Required                                                   | N/A                           | N/A           | N/A       | 944                          | 2,077                         |
| CC Non-MS4    | CC-17          | Education Program                                                          | N/A                           | N/A           | Ongoing   | 482                          | 1,060                         |
| CC Non-MS4    | CC-18          | FDOT SR 23 Improvement from Kindlemore Rd to Duval County Line – 5 Systems | Wet Pond (1", 14 days)        | 112           | Completed | 69                           | 152                           |
| CC Non-MS4    | CC-19          | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade      | N/A                           | N/A           | Completed | 393                          | 865                           |
| CC Non-MS4    | N/A            | Total Project Reductions                                                   | N/A                           | N/A           | N/A       | 944                          | 2,077                         |
| CC Non-MS4    | N/A            | Credit/(Deficit)                                                           | N/A                           | N/A           | N/A       | 0                            | 0                             |

**St. Johns County Non-MS4.....4,865 kg/yr**

\* This project is located in the freshwater reach. The trading ratio from the freshwater reach to marine reach is 1:1.

\*\* Reductions are estimates pending design finalization.

| FACILITY NAME | PROJECT NUMBER | DESCRIPTION                                                           | TYPE(S) OF BMP(S) IMPLEMENTED           | ACRES TREATED | DEADLINE   | PROJECT TN REDUCTION (KG/YR) | PROJECT TN REDUCTION (LBS/YR) |
|---------------|----------------|-----------------------------------------------------------------------|-----------------------------------------|---------------|------------|------------------------------|-------------------------------|
| SJC Non-MS4   | N/A            | Total Reduction Required                                              | N/A                                     | N/A           | N/A        | 4,981                        | 10,958                        |
| SJC Non-MS4   | SJC-17         | Algal Initiative – Masters Tract RST Facility*                        | Wet Pond, Treatment Wetland             | N/A           | 10/31/2017 | 277                          | 609                           |
| SJC Non-MS4   | SJC-18         | Greenbriar Rd Paving/Improvements                                     | Wet Ponds                               | 40            | Completed  | 33                           | 73                            |
| SJC Non-MS4   | SJC-21         | Stormwater Education                                                  | Education                               | N/A           | Ongoing    | 492                          | 1,082                         |
| SJC Non-MS4   | SJC-22         | Low-Impact Development                                                | N/A                                     | N/A           | Ongoing    | Not quantified               | Not quantified                |
| SJC Non-MS4   | SJC-23         | Slow Release Fertilizer Ordinance                                     | N/A                                     | N/A           | Completed  | Not quantified               | Not quantified                |
| SJC Non-MS4   | SJC-24         | FDOT SR 312 from US 1 to SR 3                                         | N/A                                     | 38            | Completed  | 84                           | 185                           |
| SJC Non-MS4   | SJC-25         | Atmospheric Deposition Load Reduction – Seminole Electric SCR Upgrade | N/A                                     | N/A           | Completed  | 390                          | 858                           |
| SJC Non-MS4   | SJC-26         | Algal Initiative                                                      | N/A                                     | N/A           | 10/31/2017 | 611                          | 1,344                         |
| SJC Non-MS4   | SJC-27         | Application of Freshwater Non-MS4 Credits                             | N/A                                     | N/A           | Completed  | 1,391                        | 3,060                         |
| SJC Non-MS4   | SJC-28         | Bishop Estates Baffles Boxes                                          | 2 <sup>nd</sup> Generation Baffle Boxes | N/A           | Completed  | 119                          | 262                           |
| SJC Non-MS4   | SJC-29         | Deep Creek West RST Improvements**                                    | Wet Pond, Treatment Wetland             | N/A           | 10/31/2017 | 909                          | 2,000                         |
| SJC Non-MS4   | SJC-30         | Fruit Cove Secret Oaks Place Baffle Box                               | 2 <sup>nd</sup> Generation Baffle Boxes | N/A           | 10/31/2017 | 42                           | 92                            |
| SJC Non-MS4   | SJC-31         | Fruit Cove Lemon Wood Rd Baffle Box                                   | 2 <sup>nd</sup> Generation Baffle Boxes | N/A           | 10/31/2017 | 104                          | 229                           |
| SJC Non-MS4   | SJC-32         | Fruit Cove Degrove Rd Baffle Box                                      | 2 <sup>nd</sup> Generation Baffle Boxes | N/A           | 10/31/2017 | 36                           | 79                            |
| SJC Non-MS4   | SJC-33         | CR 13 & Joe Ashton Rd Baffle Box                                      | 2 <sup>nd</sup> Generation Baffle Boxes | N/A           | 10/31/2017 | 75                           | 165                           |
| SJC Non-MS4   | SJC-34         | Colee Cove Rd Baffle Box                                              | 2 <sup>nd</sup> Generation Baffle Boxes | N/A           | 10/31/2017 | 350                          | 770                           |
| SJC Non-MS4   | SJC-35         | CR 13 Culvert Box #8                                                  | 2 <sup>nd</sup> Generation Baffle Boxes | N/A           | 10/31/2017 | 68                           | 150                           |
| SJC Non-MS4   | N/A            | Total Project Reductions                                              | N/A                                     | N/A           | N/A        | 4,981                        | 10,958                        |
| SJC Non-MS4   | N/A            | Credit/(Deficit)                                                      | N/A                                     | N/A           | N/A        | 0                            | 0                             |

**St. Johns County Non-MS4 Schedule**

| ALGAL INITIATIVE                         | SCHEDULE   |
|------------------------------------------|------------|
| a. Start Date of Project                 | Completed  |
| b. Completion Date – Project Assessment  | Completed  |
| c. Completion Date – Project Fundraising | 10/31/2012 |
| d. Completion Date – Construction        | 10/31/2017 |