UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

JUL 03 2013

Herschel T. Vinyard
Secretary
Florida Department of Environmental Protection
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Dear Secretary Vinyard:

The U. S. Environmental Protection Agency has completed its review of the site specific alternative criteria (SSAC) for total nitrogen (TN) and total phosphorus (TP) for the St. Lucie River Basin. Florida Department of Environmental Protection submitted revised Chapter 62-302, including the SSAC, to the EPA on June 13, 2012, as new or revised water quality standards with the necessary certification by FDEP general counsel, pursuant to 40 CFR Part 131. The SSAC were included in the list of site specific numeric interpretations of paragraph 62-302.530(47)(b), Florida Administrative Code (F.A.C.), referenced in paragraph 62-302.531(2)(a), F.A.C. and published at FDEP's website at http://www.dep.state.fl.us/water/wqssp/swq-docs.htm. FDEP submitted the numeric interpretations of the state narrative nutrient criterion for WBIDs 3193, 3194, 3194B, 3197, 3200, 3210, 3210A, 3211and 3218 expressed in the St. Lucie River Basin Total Maximum Daily Load report as the SSAC. FDEP intends for these SSAC to serve as numeric nutrient criteria for TN and TP for the St. Lucie Basin marine WBIDs and to serve as numeric nutrient criteria in place of the otherwise applicable TN and TP criteria set out in 62-302.531(2)(c) for the freshwater WBIDs.

In accordance with section 303(c) of the Clean Water Act, I am hereby approving the SSAC for the St. Lucie River Basin as revised water quality standards for TN and TP. Any other criteria applicable to this waterbody remain in effect, including the requirements of paragraph 62-302.530(47)(a), F.A.C. The details of the SSAC are discussed in the enclosed documentation. We would like to commend you and your staff for your continued efforts in environmental protection for the State of Florida.

If you have any questions regarding the EPA's approval, please contact me at (404) 562-9345 or have a member of your staff contact Ms. Annie M. Godfrey, Water Quality Standards Section Chief at (404) 562-9967.

Sincerely,

James D. Giattina
Director
Water Protection Division

Enclosure

cc: Matthew Z. Leopold, FDEP
Daryll Joyner, FDEP

Decision Document for Hierarchy 1 Site Specific Alternative Criteria for St. Lucie River Basin

Summary Information

WBID	Description	Class	Waterbody Type (*Impaired Waters Rule (IWR) Run 40*)	Listing Parameter	Concentration (mg/L)	Load (pounds/year)
3193	St. Lucie Estuary	Class III marine	Estuary	Nutrients Chlorophyll-a (chl-a)	Total Nitrogen (TN) 0.72 Total Phosphorus (TP) 0.081	-
3194	North Fork St. Lucie River	Class III marine	Estuary	Nutrients (chl-a) Dissolved Oxygen (DO)	TN 0.72 TP 0.081	TN 140,134 TP 15,765
3194B	North Fork St. Lucie Estuary	Class III marine	Estuary	Nutrients (chl-a) and DO	TN 0.72 TP 0.081	TN 103,747 TP 11,672
3197	C-24 Canal	Class III freshwater	Stream	Nutrients (chl-a) and DO	TN 0.72 TP 0.081	TN 348,957 TP 39,258
3200	C-23 Canal	Class III freshwater	Stream	Nutrients (chl-a) and DO	TN 0.72 TP 0.081	TN 242,202 TP 27,248
3210	South Fork St. Lucie Estuary	Class III marine	Estuary	Nutrients (chl-a)	TN 0.72 TP 0.081	TN 24,463 TP 2,752
3210A	South Fork St. Lucie River	Class III marine	Estuary	Nutrients (chl-a) and DO	TN 0.72 TP 0.081	TN 90,471 TP 10,178
3211	Bessey Creek	Class III marine	Estuary	Nutrients (chl-a) and DO	TN 0.72 TP 0.081	TN 29,981 TP 3,373
3218	C-44 Canal	Class III freshwater	Stream	DO	TN 0.72 TP 0.081	TN 242,929 TP 27,330

A nutrient and DO Total Maximum Daily Load (TMDL) for the St. Lucie River Basin WBIDs 3193, 3194, 3194B, 3197, 3200, 3210, 3210A, 3211, and 3218, was developed by Florida Department of Environmental Protection and approved by the Environmental Protection Agency on September 23, 2008, pursuant to section 303(d) of the Clean Water Act (CWA). This TMDL was developed to identify the level of nutrients that would prevent an imbalance of flora and fauna as required by the state's narrative nutrient criterion at paragraph 62-302.530(47)(b) Florida Administrative Code (F.A.C). FDEP determined that TN and TP loads identified in the table above in pounds/year (lbs/yr), not to be exceeded as an annual loads, and TN and TP

concentrations identified in the table above in mg/L, not to be exceeded, would meet its narrative criterion and adopted those loads and concentrations as TMDL values at subsection 62-304.705(1)-(9), F.A.C. FDEP has submitted the TN and TP loads and concentrations from the TMDL for the EPA review as hierarchy 1 site specific alternative nutrient criteria (SSAC) for the St. Lucie Basin, pursuant to section 303(c) of the CWA and the EPA's implementing regulations at 40 CFR Part 131. This decision document approves the SSAC for WBIDs 3193, 3194, 3194B, 3197, 3200, 3210, 3210A, 3211, and 3218, as identified in the table above, as loads not to be exceeded as an annual loads and/or concentrations not to be exceeded, as hierarchy 1 criteria for the St. Lucie Basin WBIDs 3193, 3194, 3194B, 3197, 3200, 3210, 3210A, 3211, and 3218. Any other criteria applicable to these waterbodies remain in effect including the requirements of paragraph 62-302.530(47)(a), F.A.C.

In a letter dated June 13, 2012, from Thomas M. Beason, General Counsel for the FDEP, to Gwendolyn Keyes Fleming, Regional Administrator of the EPA's Region 4 Office, FDEP submitted the numeric interpretations of the state narrative nutrient criterion as expressed in the St. Lucie Basin TMDL as the SSAC for the St. Lucie Basin WBIDs 3193, 3194, 3194B, 3197, 3200, 3210, 3210A, 3211, and 3218. These SSAC serve as primary site specific interpretations of Florida's narrative water quality criterion for nutrients set out in paragraph 62-302.530(47)(b), F.A.C., in accordance with paragraph 62-302.531(2)(a), F.A.C. Pursuant to section 303(c) of the CWA, these revised water quality standards are subject to review and approval by the EPA since FDEP intends for these SSAC to serve as numeric nutrient criteria for TN and TP for the St. Lucie Basin marine WBIDs and to serve as numeric nutrient criteria in place of the otherwise applicable TN and TP criteria set out in 62-302.531(2)(c) for the freshwater WBIDs. In the letter dated June 13, 2012, the FDEP General Counsel certified that the revised water quality standards were duly adopted pursuant to Florida law.

The EPA's decision to approve the criteria is subject to the results of consultation under section 7 of the Endangered Species Act with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. By approving the standards "subject to the results of consultation," the EPA retains its discretion to take appropriate action if the consultation identifies deficiencies in the standards requiring remedial action by the EPA. The EPA will notify FDEP of the results of the section 7 consultation upon completion of the action.

Description of waters for which the SSAC have been proposed

The waterbodies included in this TMDL document are all segments of the St. Lucie River Basin (see map on page 7). All waterbodies in the St. Lucie River Basin drain directly into the St. Lucie Estuary (SLE) or the Southern Indian River Lagoon (IRL-S). The SLE watershed lies in Martin and St. Lucie counties and covers approximately 832,500 acres, with the main land use types being agriculture (684,087 acres) and urban (117,387 acres). The inland portion of St. Lucie Estuary is made up of the North and South forks of the St. Lucie River, which converge at the Roosevelt Bridge and flow eastward. The SLE is associated with ocean inlets, rivers, canals, and gated structures that control the majority of the surface flows into the estuary and can modify flow rates significantly. Hydrologic alterations to the inland areas of St. Lucie and Martin counties have increased drainage rates to the SLE and IRL-S and expanded the effective drainage area relative to historic conditions. All waterbodies contained in this TMDL are Class III waterbodies, with designated uses of recreation, propagation, and maintenance of a healthy, well-

balanced population of fish and wildlife. The three canal WBIDs in this TMDL (3197, 3200, and 3218) are classified as freshwater streams while the remaining WBIDs in this TMDL are estuarine.

St. Lucie Estuary (WBID 3193) is a largely open water segment joining the Indian River Lagoon before exiting to the Atlantic Ocean via the St. Lucie Inlet. The WBID encompasses 3,226 acres and includes a small portion of the northeastern Stuart Municipal Separate Storm Sewer Systems (MS4) area. It is located within the Coastal planning unit, which totals 175,496 acres, incorporating the IRL-S, most of the SLE, and three Atlantic Ocean inlets: Ft. Pierce, St. Lucie, and Loxahatchee. As with most of the St. Lucie River Basin, the Coastal planning unit has undergone extensive modification to improve drainage. Consequently, large discharges of freshwater enter the IRL-S from urban and agricultural runoff.

North Fork St. Lucie River (WBID 3194) is located entirely within St. Lucie. North Fork St. Lucie Estuary (WBID 3194B) is located in portions of St. Lucie and Martin counties. The WBIDs 3194 and 3194B of the North Fork St. Lucie River comprise 34,372 acres and make up just over one quarter of the North St. Lucie planning unit. These WBIDs contain most of Port St. Lucie and a portion of the St. Lucie County MS4 area. Overall, the North St. Lucie planning unit extends from Ft. Pierce Inlet to the St. Lucie Inlet, with historic drainage into the St. Lucie Estuary. This segment contains four permitted wastewater facilities. The C-24 Canal (WBID 3197) comprises 109,015 acres in the northwest portion of the St. Lucie Basin and constitutes the entirety of the C-24 planning unit. This WBID receives drainage from the North St. Lucie planning unit and discharges into the North Fork of the St. Lucie Estuary. This canal transports nutrients and sediment associated with residential and urban stormwater runoff and septic seepage that can create temporal variability in the salinity of the SLE and are identified as causes of nutrient and DO impairment in the region. WBID 3197 contains one permitted wastewater facility. Land use in the C-24 planning unit includes approximately 75,680 acres of agricultural land and 12,682 acres of urban land.

C-23 Canal (WBID 3200) is located in the western portion of the St. Lucie River Basin. The WBID comprises 106,840 acres of the St. Lucie Basin and constitutes the entirety of the C-23 planning unit. This WBID receives drainage from the North St. Lucie planning unit and discharges into the North Fork of the St. Lucie Estuary. This canal transports nutrients and sediment associated with residential and urban stormwater runoff and septic seepage that can create temporal variability in the salinity of the SLE and are identified as causes of nutrient and DO impairment in the region. WBID 3200 contains one permitted wastewater facility. Land use in the C-24 planning unit includes approximately 80,300 acres of agricultural land and 2,753 acres of urban land.

South Fork St. Lucie Estuary (WBID 3210) is located in the central portion of the St. Lucie basin and flows directly into the St. Lucie Estuary. The WBID is located within the South St. Lucie planning unit, which encompasses 65,275 acres of land within Martin County, including Stuart, Palm City, Coral Gardens, Gomez, and Hobe Sound. WBIDs 3210, 3210A, and 3211 comprise 18,949 acres of the South St. Lucie planning unit. WBID 3210 contains three permitted wastewater facilities. The South St. Lucie Estuary creates a confluence at Roosevelt Bridge with

WBIDs 3193 and 3194B. Land use in the South St. Lucie planning unit includes approximately 16,948 acres of agricultural land and 21,203 acres of urban land.

South Fork St. Lucie River (WBID 3210A) is located southwest of South Fork St. Lucie Estuary and flows north into the St. Lucie Estuary. The WBID is located within the South St. Lucie planning unit. Land use in the South St. Lucie planning unit includes approximately 16,948 acres of agricultural land and 21,203 acres of urban land.

Bessey Creek (WBID 3211) is located in the central part of the basin and flows into the North Fork of the St. Lucie Estuary. The WBID is located within the South St. Lucie planning unit. WBID 3211 empties into the North Fork of St. Lucie Estuary. Land use in the South St. Lucie planning unit includes approximately 16,948 acres of agricultural land and 21,203 acres of urban land.

C-44 Canal (WBID 3218) is the connection between Lake Okeechobee and the St. Lucie River. The WBID comprises 123,078 acres of land located in the southwest corner of the St. Lucie River Basin. WBID 3218, which lies in the C-44 planning unit, directly connects Lake Okeechobee to the St. Lucie River and serves as both a navigational route between the east and west coasts of Florida and provides drainage for 78,927 acres of agricultural land and 3,122 acres of urban land empties into the South Fork St. Lucie River. WBID 3218 contains five permitted wastewater facilities.

Enrichment of the SLE is affected by intensified urbanization of coastal regions and agricultural activities in the western portions of the watershed. Modifications to the hydrologic characteristics of the area have increased runoff-related water volume and nutrient concentrations (Harper and Baker 2007). Other natural processes also impact nutrient concentrations in the SLE. Fifteen NPDES-permitted wastewater facilities exist within the SLE, all of which are either permitted to discharge only during a 25 year/72-hour storm event or are cooling or dewatering facilities which discharge ambient water without expected enrichment of nutrients. There are six permitted MS4 dischargers in the St. Lucie Basin. Lake Okeechobee is connected to the SLE through the C-44 Canal as a means for managing water levels within the lake. This canal facilitates significant, high-rate freshwater inputs to SLE from the lake, as well as associated increases in nutrient loading. A separate nutrient TMDL has been created for Lake Okeechobee; therefore, this St. Lucie River TMDL operates under the assumption that the target TP concentration (40 ppb) for Lake Okeechobee is being met.

Discussion of how the loads and concentrations were derived

WBIDs 3193, 3194, 3194B, 3197, 3200, 3210, 3210A and 3211 were verified as impaired for nutrients based on annual chl-a data collected from 1996-2003 that exceeded the state's thresholds of 11µg/L for estuaries or 20ug/L for streams. WBIDs 3194, 3194B, 3197, 3200, 3210A, 3211 and 3218 were verified as impaired for DO due to nutrients. The annual averages for TP and TN in all WBIDs exceeded the statewide median TP and TN concentrations from 1996 through 2005. The TP and TN annual average concentrations were 0.1-0.19 mg/L and 0.61-1.5 mg/L (WBID 3193) 0.1-0.31 mg/L and 0.9-1.54 mg/L (WBID 3194), 0.14-0.26 mg/L and 0.8-1.6 mg/L (3194B), 0.23-0.34 mg/L and 1.2-1.7 mg/L (WBID 3197), 0.23-0.5 mg/L and 1.3-1.7 mg/L (WBID 3200), 0.14-0.22 mg/L and 0.1-1.6 mg/L (WBID 3210), 0.16-0.25 mg/L and

1.1-1.8 mg/L (WBID 3210A), 0.15-0.22 mg/L and 0.88-1.1 mg/L (WBID 3211) and 0.12-0.22 mg/L and 1.2-1.8 mg/L (WBID 3218), respectively, as compared to the statewide median concentrations of 0.065 mg/L TP and 0.86 mg/L TN for non-impaired estuaries from 2000-2007.

Based on the information described above, all WBIDs were added to the verified list of impaired waters for the St. Lucie River by Secretarial Order in December 2004. To address the impairments in all WBIDs FDEP developed a nutrient and DO TMDL document which was approved by the EPA on September 23, 2008. FDEP adopted the 2004 South Indian River Lagoon Final Integrated Project Implementation Report and Environmental Impact Statement (IRL-S Plan) targets of 0.081 mg/L TP and 0.72 mg/L TN for this TMDL. The loads for each upstream WBID were derived to meet the target concentrations developed to protect seagrass as identified in the IRL-S Plan. The IRL-S Plan is discussed in detail below.

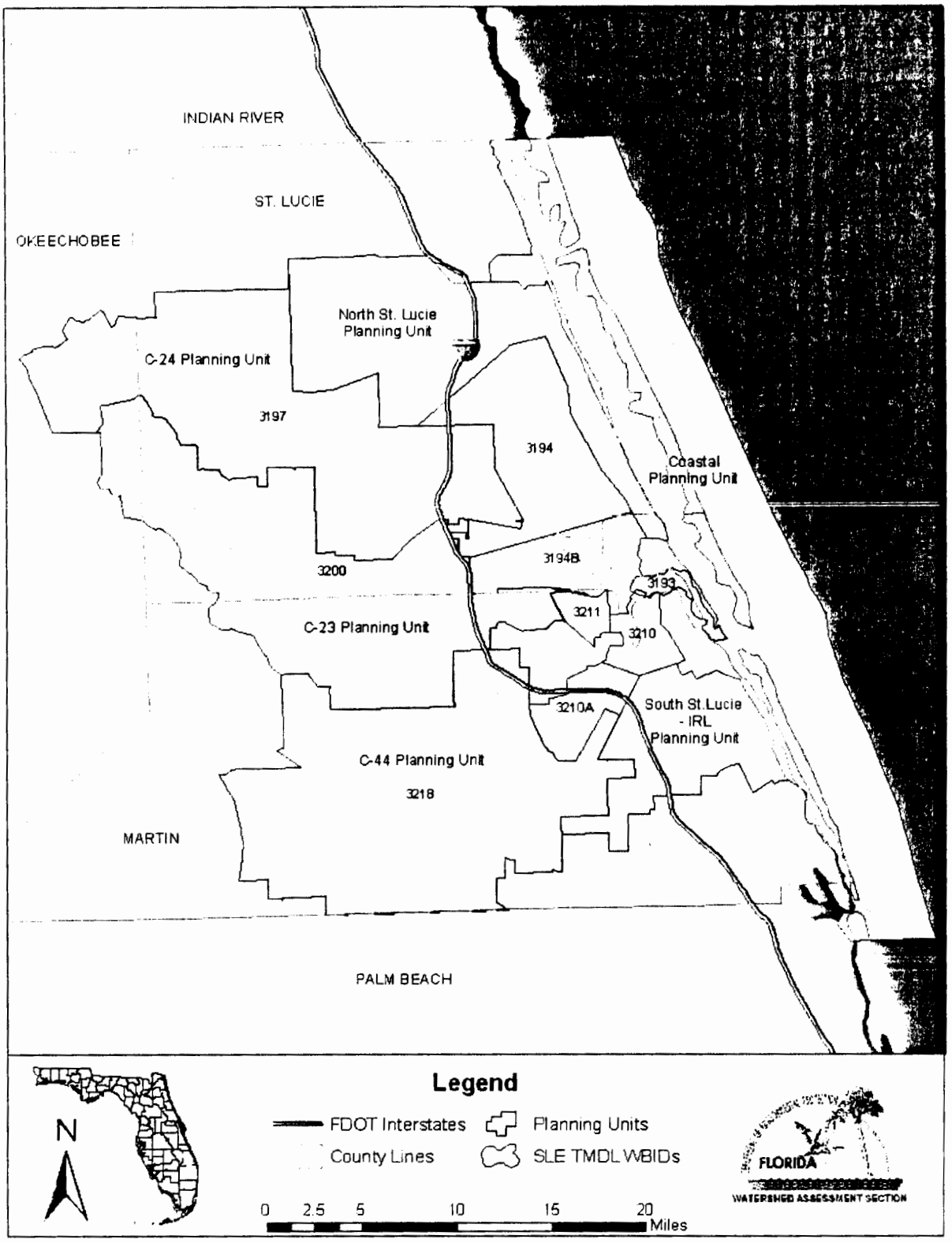
Consideration of TMDL loads and concentrations as new or revised water quality standards

The IRL-S Plan developed nutrient targets at Roosevelt Bridge (WBID 3913) that were considered protective of healthy seagrass beds in the lagoon. TP values were calculated based on the adjusted mean TP of all Florida estuaries, less some estuaries with high geologic inputs of phosphorus. TN values in the IRL-S Plan were identified based on the work of Chamberlain and Hayward (1996), which called for a 30 percent TN reduction (yielding a concentration of 0.721 mg/L with 1999-2004 data). The IRL-S Plan nutrient concentrations were reassessed by FDEP and the South Florida Water Management District in light of additional new water quality data. Based on this further assessment, FDEP validated the findings of the IRL-S Plan by comparing median 2000-2007 concentrations of TN, TP, and chl-a data for all estuaries in the state. The St. Lucie Estuary TMDL targets demonstrate similarity with values from the state-wide survey and support the conclusions drawn by the IRL-S Plan. Therefore, the IRL-S TN and TP concentration targets developed for the most downstream WBID 3193 at Roosevelt Bridge were used as targets in this TMDL. The nutrient targets for TN of 0.72 mg/L and for TP of 0.081 mg/L that were developed for WBID 3193 were also applied to all upstream WBIDs in the TMDL that contribute to the St. Lucie Estuary. The targets and corresponding loads are expected to fully restore balance to the flora and fauna in the estuary system based on the use of the most senstitive endpoint of seagrass. The nutrient targets established in this TMDL are regarded as being protective of the waterbody and also protective of downstream conditions in the Indian River Lagoon.

Conclusion

Based on the chemical, physical and biological data presented in the development of the TMDL, the EPA concludes that the SSAC for TN and TP, based upon that TMDL and established for the St. Lucie River Basin WBIDs 3193, 3194, 3194B, 3197, 3200, 3210, 3210A, 3211, and 3218 will protect healthy, well-balanced biological communities in the waters to which the SSAC apply and are consistent with the CWA and its implementing regulations. More specifically, the SSAC are consistent with both 40 CFR Part 131.11(b)(1)(ii), and the EPA's 304(a) guidance on nutrient criteria. The TN and TP SSAC for WBIDs 3193, 3194, 3194B, 3197, 3200, 3210, 3210A, 3211, and 3218 for TN and TP loads and concentrations identified in the table above (page 1 Summary Information), as loads not to be exceeded as annual loads and/or concentrations not to be exceeded, will protect water quality and aquatic life. Although, FDEP utilized the Southern Indian River Lagoon seagrass related water quality targets, FDEP did not

address all waters downstream of WBIDs addressed in this TMDL. Therefore, paragraph 62-302.531(4) will apply to these WBIDs in conjunction with the TN and TP Hierarchy 1 SSAC to ensure attainment and maintenance of water quality standards of downstream waters, in accordance with 40 CFR Part 131.10. In accordance with section 303(c) of the CWA, the SSAC for TN and TP loads and concentrations, as loads not to be exceeded as annual loads and/or concentrations not to be exceeded, are hereby approved as consistent with the CWA and 40 CFR Part 131.



Overview of waters included in this TMDL document (TMDL p. 7, Figure 1.2)

Appendix 1 – Summary of the TMDL Background

Names of Addressed Waters	St. Lucie Estuary North Fork St. Lucie River North Fork St. Lucie Estuary C-24 Canal C-23 Canal South Fork St. Lucie Estuary South Fork St. Lucie River Bessey Creek C-44 Canal
Waterbody Type(s)	Estuary Class III marine and Stream Class III freshwater
WBIDs	3193, 3194, 3194B, 3197, 3200, 3210, 3210A, 3211, 3218
Latitude/Longitude	NA.
Description	The inland portion of St. Lucie Estuary is made up of the North and South forks of the St. Lucie River, which converge at the Roosevelt Bridge and flow eastward (TMDL p. 1). The SLE is the combination of ocean, rivers, canals and gated structures that control a majority of the surface basin flows in the estuary and can modify flow rates significantly (TMDL p. 23). Alterations to the inland areas of St. Lucie and Martin counties have increased the drainage rates and overall drainage area of the SLE and IRL-S relative to historical conditions (TMDL p. 1). WBID 3193 is predominantly open water, encompassing 3,226 acres and includes a small portion of the northeastern Stuart MS4 area. WBID 3193 lies within the Coastal planning unit, which totals 175,496 acres, incorporating the IRL-S, most of the SLE, and three Atlantic Ocean inlets: Ft. Pierce, St. Lucie, and Loxahatchee. As with most of the St. Lucie River Basin, the Coastal planning unit has undergone extensive modification to improve drainage. Consequently, large discharges of freshwater enter the IRL-S from urban and agricultural runoff (TMDL p. 4). WBID 3194 and 3194B comprise 34,372 acres within St. Lucie and Martin counties and make up just over one quarter of the North St. Lucie planning unit. These two WBIDs contain most of Port St. Lucie and a portion of the St. Lucie County MS4 area. Overall, the North St. Lucie planning unit extends from Ft. Pierce Inlet to the St. Lucie Inlet, with historic drainage into the St. Lucie Estuary (TMDL p. 3). WBID 3194 has a modeled flow of 71,600 acre-ft/yr (TMDL p. 34, 60) and contains no major control structures that directly modify flow (TMDL p. 28, 30). This segment also contains four permitted wastewater facilities (TMDL p. 17). WBID 3194B has a modeled flow of 53,009 acre-ft/yr (TMDL p. 34, 61) and creates a confluence at Roosevelt Bridge with WBIDs 3193 and 3210 (TMDL p. 23). WBID 3197 comprises 109,015 acres in the northwest portion of the St.

	Lucie Basin and constitutes the entirety of the C-24 planning unit (TMDL 1, 7). This WBID receives drainage from the North St. Lucie planning unit and discharges into the North Fork of the St. Lucie Estuary (TMDL p. 3-4). Modeled flow for the C-24 Canal is 178,296 acre-ft/hr (TMDL p. 34, 62). This canal transports nutrients and sediment associated with residential and urban stormwater runoff and septic seepage that can create temporal variability in the salinity of the SLE and are identified as causes of nutrient and DO impairment in the region. WBID 3197 also contains one permitted wastewater facility (TMDL p. 17). Land use in the C-24 planning unit includes approximately 75,680 acres of agricultural land and 12,682 acres of urban land (TMDL p. 4). WBID 3200 comprises 106,840 acres of the St. Lucie Basin and constitutes the entirety of the C-23 planning unit (TMDL 1, 7). This WBID receives drainage from the North St. Lucie planning unit and discharges into the North Fork of the St. Lucie Estuary (TMDL p. 3-4). Modeled flow for the C-23 Canal is 123,751 acre-ft/hr (TMDL p. 34, 63). This canal transports nutrients and sediment associated with residential and urban stormwater runoff and septic seepage that can create temporal variability in the salinity of the SLE and are identified as causes of nutrient and DO impairment in the region. WBID 3200 contains one permitted wastewater facility (TMDL p. 17). Land use in the C-24 planning unit includes approximately 80,300 acres of agricultural land and 2,753 acres of urban land (TMDL p. 4). WBID 3210 lies within the South St. Lucie planning unit, which encompasses 65,275 acres of land within Martin County, Stuart, Palm City, Coral Gardens, Gomez, and Hobe Sound (TMDL p. 3). WBIDs 3210, 3210A, and 3211 comprise 18,949 acres of the South St. Lucie planning unit (TMDL p. 4, 7). WBID 3210 contains three permitted wastewater facilities (TMDL p. 17). The South St. Lucie Estuary has a modeled flow of 12,499 acre-ft/yr (TMDL p. 34, 64) and creates a confluence at Roosevelt Bridge with WBIDs 3193 and 3194B (TMDL p. 23). Land use in the South St. Lucie planning unit includes approximately 16,948 acres of agricultural land and 21,203 acres of urban land (TMDL p. 4). WBID 3210A lies within the South St. Lucie planning unit, which encompasses 65,275 acres of land within Martin County, including Stuart, Palm City, Coral Gardens, Gomez, and Hobe Sound (TMDL p. 3) and . WBIDs 3210, 3210A, and 3211 comprise 18,949 acres of the South St. Lucie planning unit (TMDL p. 4, 7). WBID 3210A has a modeled flow of 46,225 acre-ft/yr (TMDL p. 34, 65). Land use in the South St. Lucie planning unit includes approximately 16,948 acres of agricultural land and 21,203 acres of urban land (TMDL p. 3). WBID 3211 lies within the South St. Lucie planning unit, which encompasses 65,275 acres of land within Martin County, including

	Stuart, Palm City, Coral Gardens, Gomez, and Hobe Sound (TMDL p. 3) and . WBIDs 3210, 3210A, and 3211 comprise 18,949 acres of the South St. Lucie planning unit (TMDL p. 4, 7). WBID 3211 has a modeled flow of 15,318 acre-ft/yr (TMDL p. 34, 66) which uniquely empties into the North Fork of St. Lucie Estuary. Land use in the South St. Lucie planning unit includes approximately 16,948 acres of agricultural land and 21,203 acres of urban land (TMDL p. 3). WBID 3218 comprises 123,078 acres of land located in the southwest corner of the St. Lucie River Basin. WBID 3218, which lies in the C-44 planning unit, directly connects Lake Okeechobee to the St. Lucie River and serves as both a navigational route between the east and west coasts of Florida and provides drainage for 78,927 acres of agricultural land and 3,122 acres of urban land (TMDL p. 4). The Canal has a modeled flow of 124,122 acre-ft/yr (TMDL p. 34, 67) and empties into the South Fork St. Lucie River (TMDL p. 6-7). WBID 3218 contains five permitted wastewater facilities (TMDL p. 17).
Classification(s)	Class III (marine) (TMDL p. 13, IWR Run 40)
Basin	St. Lucie River Basin (TMDL p. 1)
Date Placed on Verified List	December 2004 (TMDL p. 1)
Date TMDL was approved by EPA	September 23, 2008 (EPA WATERS database – 6/4/12 query)
Reference Streams/Lakes	A reference-based approach was considered using 2000-2007 data from all non-impaired estuaries in the state (TMDL p. 21).
Source of Majority of Flow	The majority of flow to the St. Lucie Estuary is comprised of inputs from the North and South forks of the St. Lucie River and contributions from man-made waterways designed to enhance flood protection and irrigation (C-23, C-24, C-44). Modifications to the overall hydrology of the St. Lucie River Basin have expanded the drainage area to include almost 775 square miles, encompassing the majority of St. Lucie and Martin counties (TMDL pp. 1-2).
Indicators	The health of seagrass beds in the Indian River Lagoon was the initial consideration of the IRL-S Plan nutrient targets that were adopted by this TMDL, with waterbody and downstream protection incorporated subsequently (TMDL p. 20; IRL-S Plan; SFWMD and USACE 2004). FDEP provided support for the conclusions of the IRL-S Plan by (1) updating the IRL-S Plan to include additional more recent data and (2) comparing results with state-wide estuary descriptive statistics to demonstrate that the targets established were supportive of healthy aquatic environments (TMDL p. 21). Evidence that supported the impairment of waters in the St. Lucie Basin included seagrass decline, algal blooms, fish kills, oyster population declines, low benthic macroinvertebrates diversity, and sediment accumulation behind control structures (TMDL p. 4).
Identification of Causative Pollutants	WBID 3193 was verified as impaired for nutrients based on annual chl-a data from 1996-2005 exceeding the IWR threshold of 11 µg/L for

(as determined by measurements of response endpoints or indicators)	marine waters (TMDL p. 10-11, 22, 53). No causative pollutant was identified in this TMDL document, although relationships between nutrient concentrations, algal populations, DO, and BOD were discussed (TMDL p. xi-xii). WBID 3194 was verified as impaired for nutrients based on annual chl-a data from 1996-2005 exceeding the IWR threshold of 11 µg/L for marine waters (TMDL p. 10-11, 22, 53). WBID 3194 was also verified as impaired for DO based on exceedance of the F.A.C. 62-302 Class III marine DO criterion by at least 10 percent of observations using data collected from 1996-2003 (TMDL p. 10-11, 22, 53, 58). No causative pollutant was identified in this TMDL document for chl-a exceedance, although relationships between nutrient concentrations, algal populations, DO, and BOD were discussed (TMDL p. xi-xii). High TP and BOD concentrations were linked to DO impairment (TMDL p. x, 11, 58). WBID 3194B was verified as impaired for nutrients based on annual chl-a data from 1996-2005 exceeding the IWR threshold of 11 µg/L for marine waters (TMDL p. 10-11, 22, 54). WBID 3194B was also verified as impaired for DO based on exceedance of the F.A.C. 62-302 Class III marine DO criterion by at least 10 percent of observations using data collected from 1996-2003 (TMDL p. 10-11, 22, 54, 58). No causative pollutant was identified in this TMDL document for chl-a exceedance, although relationships between nutrient concentrations, algal populations, DO, and BOD were discussed (TMDL p. xi-xii). High TN concentrations were linked to DO impairment (TMDL p. x, 11). WBID 3197 was verified as impaired for nutrients based on annual chl-a data from 1996-2003 exceeding the IWR threshold of 20 µg/L for freshwater (TMDL p. 10-11, 22, 54). WBID 3197 was also verified as impaired for DO based on exceedance of the F.A.C. 62-302 Class III freshwater DO criterion by at least 10 percent of observations using data collected from 1996-2003 (TMDL p. 10-11, 22, 54, 58). No causative pollutant was identified in this TMDL document for chl-a exceedance, although relationships between nutrient concentrations, algal populations, DO, and BOD were discussed (TMDL p. xi-xii). High TP and BOD concentrations were linked to DO impairment (TMDL p. x, 11). WBID 3200 was verified as impaired for nutrients based on annual chl-a data from 1996-2003 exceeding the IWR threshold of 20 µg/L for freshwater (TMDL p. 10-11, 22, 55). WBID 3200 was also verified as impaired for DO based on exceedance of the F.A.C. 62-302 Class III freshwater DO criterion by at least 10 percent of observations using data collected from 1996-2003 (TMDL p. 10-11, 22, 55, 58). No causative pollutant was identified in this TMDL document for chl-a exceedance, although relationships between nutrient concentrations, algal populations, DO, and BOD were discussed (TMDL p. xi-xii).

	High TP concentrations were linked to DO impairment (TMDL p. x, 11). WBID 3210 was verified as impaired for nutrients based on annual chl-a data collected from 1996-2003 that exceeded the state's threshold of 11 µg/L for marine waters (IWR Run 40, TMDL p. 10). No causative pollutant was identified in this TMDL document for chl-a exceedance, although relationships between nutrient concentrations, algal populations, DO, and BOD were discussed (TMDL p. xi-xii). WBID 3210A was verified as impaired for nutrients based on annual chl-a data from 1996-2003 exceeding the IWR threshold of 11 µg/L for marine waters (TMDL p. 10-11, 22, 55). WBID 3210A was also verified as impaired for DO based on exceedance of the F.A.C. 62-302 Class III marine DO criterion by at least 10 percent of observations using data collected from 1996-2003 (TMDL p. 10-11, 22, 56, 58). No causative pollutant was identified in this TMDL document for chl-a exceedances, although relationships between nutrient concentrations, algal populations, DO, and BOD were discussed (TMDL p. xi-xii). High TN concentrations were linked to DO impairment (TMDL p. x, 11). WBID 3211 was verified as impaired for nutrients based on annual chl-a data from 1996-2003 exceeding the IWR threshold of 11 µg/L for marine waters (TMDL p. 10-11, 22, 56). The WBID was also verified as impaired for DO based on exceedance of the F.A.C. 62-302 Class III marine DO criterion by at least 10 percent of observations using data collected from 1996-2003 (TMDL p. 10-11, 22, 55, 58). No causative pollutant was identified in this TMDL document for chl-a exceedance, although relationships between nutrient concentrations, algal populations, DO, and BOD were discussed (TMDL p. xi-xii). High TP concentrations were linked to DO impairment (TMDL p. x, 11). WBID 3218 was verified as impaired for DO based on exceedance of the F.A.C. 62-302 Class III freshwater DO criterion by at least 10 percent using data collected from 1996-2003 (TMDL p. 10-11, 22, 57-58). High BOD concentrations were linked to DO impairment (TMDL p. x, 11).
Sources and Concentrations of Nutrient Enrichment	15 NPDES permitted point sources exist in the St. Lucie Basin. These facilities are either permitted to discharge to surface waters only during a 25-year/72-hour storm event or have discharges for cooling or dewatering. As a result, no significant sources of nutrients are estimated to be contributed from these facilities (TMDL p. 16). In addition, six permitted MS4s exist in the St. Lucie basin (TMDL p. 18). Significant nutrient loads enter the St. Lucie Estuary via freshwater discharge from Lake Okeechobee via the C-44 Canal. As a TP TMDL is already in place for Lake Okeechobee, FDEP models this input at nutrient levels corresponding to the TMDL (0.040 mg/L TP; 1.4 mg/L TN), instead of actual current ambient concentrations (TMDL p. 18).

Nutrient Watershed Region in Proposed 62.302	NA. WBID 3193 is an estuarine waterbody (IWR Run 40).
Proposed Nitrogen and Phosphorus SSAC for St. Lucie Basin WBIDs	
WBID 3193 (and WBIDs 3194 through 3218)	0.720 mg/L TN annually (21.4% reduction) (TMDL p. 37).
	0.081 mg/L TP annually (41.3% reduction) (TMDL p. 37).
3194	140,134 lbs/yr to meet the TN target concentration of 0.720 mg/L annually (25.0% reduction) (TMDL p. 37). 15,765 lbs/yr to meet the TP target concentration of 0.081 mg/L annually (42.2% reduction) (TMDL p. 37).
3194B	103,747 lbs/yr to meet the TN target concentration of 0.720 mg/L annually (28.8% reduction) (TMDL p. 37). 11,672 lbs/yr to meet the TP target concentration of 0.081 mg/L annually (58.1% reduction) (TMDL p. 37).
3197	348,957 lbs/yr to meet the TN target concentration of 0.720 mg/L annually (51.8% reduction) (TMDL p. 37). 39,258 lbs/yr to meet the TP target concentration of 0.081 mg/L annually (72.2% reduction) (TMDL p. 37).
3200	242,202 lbs/yr to meet the TN target concentration of 0.720 mg/L annually (51.7% reduction) (TMDL p. 37). 27,248 lbs/yr to meet the TP target concentration of 0.081 mg/L annually (78.6% reduction) (TMDL p. 37).
3210	24,463 lbs/yr to meet the TN target concentration of 0.720 mg/L annually (38.4% reduction) (TMDL p. 37). 2,752 lbs/yr to meet the TP target concentration of 0.081 mg/L annually (57.2% reduction) (TMDL p. 37).
3210A	90,471 lbs/yr to meet the TN target concentration of 0.720 mg/L annually (47.1% reduction) (TMDL p. 37). 10,178 lbs/yr to meet the TP target concentration of 0.081 mg/L annually (61.8% reduction) (TMDL p. 37).
3211	29,981 lbs/yr to meet the TN target concentration of 0.720 mg/L annually (23.9% reduction) (TMDL p. 37). 3,373 lbs/yr to meet the TP target concentration of 0.081 mg/L annually (51.2% reduction) (TMDL p. 37).
3218	242,929 lbs/yr to meet the TN target concentration of 0.720 mg/L annually (51.2% reduction) (TMDL p. 37). 27,330 lbs/yr to meet the TP target concentration of 0.081 mg/L annually (55.0% reduction) (TMDL p. 37).
Biological Index Score(s) (e.g. SCI, TSI, IBI)	None identified.