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 criterion (SSAC) for total nitrogen (TN) for the Caloosahatchee Estuary. The 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 was 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 interpretation of the state narrative nutrient criterion for WBIDs 3240A, 3240B and 3240C expressed in the Caloosahatchee Estuary Total Maximum Daily Load report as the SSAC. FDEP intends for the SSAC to serve as the numeric nutrient criterion for TN for the Caloosahatchee Estuary.

In accordance with section 303(c) of the Clean Water Act, I am hereby approving the site specific numeric interpretation of the state narrative nutrient criteria for the Caloosahatchee Estuary WBIDs 3240A, 3240B and 3240C as the revised water quality standard for TN. Any other criteria applicable to these waterbodies 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 Criterion for Caloosahatchee Estuary

Summary Information

WBID	Description	Class	Waterbody Type	Listing Parameter
3240A	Tidal Caloosahatchee	Class III (marine)	Estuary	Nutrients (chlorophyll-*a* (chl-*a*))
3240B	Tidal Caloosahatchee			Nutrients (chl-*a*)
3240C	Tidal Caloosahatchee			Nutrients (chl-*a*)

A nutrient Total Maximum Daily Load (TMDL) for the Caloosahatchee Estuary WBIDs 3240A, 3240B, and 3240C, was developed by Florida Department of Environmental Protection and approved by the Environmental Protection Agency on September 30, 2009, 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 a total nitrogen (TN) load of 9,086,094 pounds/year (lbs/yr), not to be exceeded as an annual load, would meet its narrative criterion and adopted that load as a TMDL value at subsection 62-304.800(2), F.A.C. FDEP has submitted the TN load from the TMDL for the EPA review as a hierarchy 1 site specific alternative nutrient criterion (SSAC) for the Caloosahatchee Estuary, 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 of 9,086,094 lbs/yr TN, not to be exceeded as an annual load, as a hierarchy 1 criterion for the Caloosahatchee WBIDs 3240A, 3240B and 3240C. Any other criteria applicable to this waterbody 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 FDEP, to Gwendolyn Keyes Fleming, Regional Administrator of the EPA's Region 4 Office, FDEP submitted the numeric interpretation of the state narrative nutrient criterion as expressed in the Caloosahatchee TMDL as the SSAC for the Caloosahatchee WBIDs 3240A, 3240B and 3240C. This SSAC serves as a primary site specific interpretation 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, this revised water quality standard is subject to review and approval by the EPA since FDEP intends for this SSAC to serve as a numeric nutrient criterion for TN for the Caloosahatchee Estuary segments. In the letter dated June 13, 2012, FDEP General Counsel certified that the revised water quality standard was duly adopted pursuant to Florida law.

The EPA's decision to approve this criterion 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 standard 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 a SSAC has been proposed

The water segments covered in this TMDL (WBIDs 3240A, 3240B, and 3240C) are tidal segments that are classified as Class III marine and are located downstream of the Franklin Lock and Dam (Control Structure S-79) on the Caloosahatchee River (see map on page 5). The three waterbodies cover 33.2 river miles (44% of the river's total length) in the downstream portion of the 75-mile-long Caloosahatchee River. The Caloosahatchee River flows from the southeast corner of Lake Okeechobee westward, through three control structures managed by the U.S. Army Corps of Engineers (Moore Haven Lock [S-77], Ortona Lock [S-78], and Franklin Lock [S-79]), discharging to San Carlos Bay below Ft. Meyers and ultimately to the Gulf of Mexico.

The basin draining to the Caloosahatchee River covers approximately 1,339 square miles. The waters draining directly to the Caloosahatchee Estuary include 20 WBIDs located in Lee and Charlotte counties and account for 38 percent of the larger Caloosahatchee River Basin. The remaining 62 percent of the watershed drains into upstream portions of the river that eventually flow into the Caloosahatchee Estuary. About half of the upstream water that flows into the Caloosahatchee Estuary through the S-79 control structure originates in Lake Okeechobee, with additional upstream input from tributaries to the C-43 canal (main channel of the Caloosahatchee River upstream of control structure S-79).

The majority of the land in the Caloosahatchee watershed is in urban and built-up land uses (41%), most of which is occupied by low and medium density residential land uses. The remaining watershed area is primarily comprised of wetlands (15%), agricultural lands (14%), and upland forests (13%). The Caloosahatchee River is classified as Class III with designated uses of recreation, propagation, and the maintenance of a healthy, well-balanced population of fish and wildlife.

Discussion of how the load was derived

The three WBIDs addressed by this TMDL were verified as impaired for nutrients based on assessment methodologies identified in Florida's Impaired Waters Rule (IWR) at Chapter 62-303, F.A.C. Consequently, these WBIDs were added to the verified list of impaired waters in 2004. The nutrient TMDL for the Caloosahatchee Estuary WBIDs 3240A, 3240B, and 3240C was adopted at 62-304.800(2) and was for a loading of TN of 9,086,094 lbs/yr. FDEP identified TN as the causative pollutant for the nutrient impairment in all three WBIDs. TN was determined as the limiting nutrient based on the TN/TP ratios in the three water segments in the TMDL.

WBID 3240A exceeded the chl-*a* threshold of 11 µg/L in 1999, 2000, 2001, and 2002, with average chl-*a* concentrations ranging from 12.2 to 19.22 during these four years. WBID 3240B exceeded the chl-*a* threshold in one year (2000) of the verified period, with an average concentration of 21.42 µg/L. The stream segment WBID 3240C was verified as impaired for nutrients on the basis of exceeding the IWR 20 µg/L chl-*a* threshold for streams. WBID 3240C exceeded the threshold in one year (2000) of the verified period with an average concentration of 24.77 µg/L.

FDEP utilized research activities that focused on the relationships between chl-*a*, color, and turbidity, and the percentage of photosynthetically active radiation (PAR) reaching the seagrass meadows. The critical area of seagrass was determined to be the "media deep edge," and this

became the target depth for the receipt of minimum PAR percentage consistent with a healthy meadow. The TMDL uses light attenuation depth targets based upon ensuring that sufficient light can reach critical seagrass habitat depths. The targets include two components: critical seabed depths below which healthy seagrass is thought to be viable and a minimum percentage of PAR necessary for a healthy seagrass meadow at these critical seabed depths. The targets were set to ensure that the areas in San Carlos Bay at 2.2 meters (m) critical depth or less and areas in the mid to lower Caloosahatchee Estuary at 1 m critical depth or less receive a minimum of 25 percent PAR to sustain a healthy seagrass meadow. The depth targets are also supported by one study which determined that seagrasses in the neighboring Charlotte Harbor region would need between 15 and 30 percent PAR and another study in the region which determined that a 25 percent PAR was necessary.

The TMDL is expressed as a TN load reduction that satisfies the light attenuation depth targets. After modeling existing and background TN loads, FDEP simulated the loads needed to meet the chl-*a* levels that achieve the target PAR. Model results showed that a 19.8 percent reduction of nonpoint source TN would satisfy the light attenuation target of 25 percent PAR. A three percent margin of safety led to a final TN reduction of 23 percent from the current loading of 11,800,122 lbs/yr to achieve the TN TMDL of 9,086,094 lbs/yr. Based upon these reduction loads in TN, it was shown that the median concentrations of chlorophyll-*a* and TN for the simulation period would be 3.9 µg/L and 0.45 mg/L, respectively. In comparison, studies done in 2005 determined that a healthy chl-*a* concentration for San Carlos Bay (to support seagrass and meet light requirements) was within the 3.2 - 3.9 µg/L range. It was also determined from the simulation that in the lower and middle estuary, the median chl-*a* concentrations were 6.2 and 7.2 µg/L, respectively. The associated TN concentrations were 0.53 and 0.72 mg/L, respectively. The estimated chl-*a* concentration for this TMDL is more conservative than the estimated 8 µg/L from studies conducted in 2005 and is consistent with the estimate done by similar studies suggesting that a TN concentration of 0.7 mg/L or less for the middle Caloosahatchee Estuary is protective.

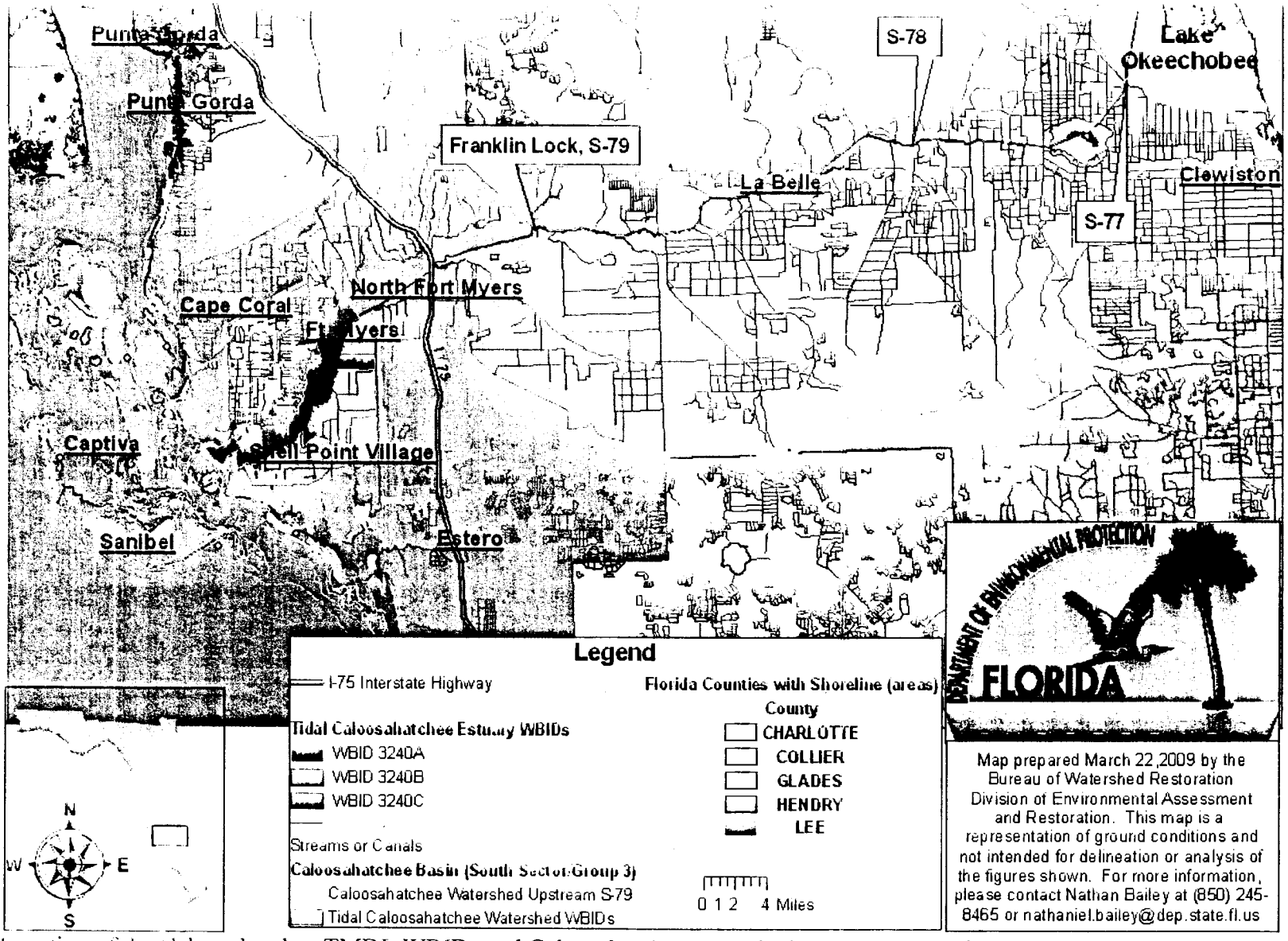
Consideration of TMDL load as a new or revised water quality standard

For this estuary FDEP chose a prescriptive and sensitive endpoint of healthy seagrass beds. Seagrass depth targets were developed to control nutrients and restore seagrass based on models linking nitrogen loads to seagrass depth targets. The seagrass depth targets meet the light attenuation depth targets and will support healthy seagrass meadows in San Carlos Bay and the Caloosahatchee Estuary. As discussed in the TMDL, the chl-*a* and TN concentrations are consistent with levels that are protective of healthy seagrass meadows. Therefore, the reduction in TN loads in the estuary was determined to be protective to ensure flora and fauna balance.

Conclusion

Based on the chemical, physical and biological data presented in the development of the SSAC, the EPA concludes that the SSAC for TN established for the Caloosahatchee Estuary WBIDs 3240A, 3240B, and 3240C protects healthy, well-balanced biological communities in the waters to which the SSAC applies and is consistent with the CWA and its implementing regulations. More specifically, the SSAC is consistent with both 40 CFR Part 131.11(b)(1)(ii), and the EPA's 304(a) guidance on nutrient criteria. The TN SSAC for WBIDs 3240A, 3240B, and 3240C for TN loading of 9,086,094 lbs/yr, not to be exceeded as an annual load, will protect water quality

and aquatic life. FDEP did not address downstream protection in this TMDL. Paragraph 62-302.531(4) will apply to these WBIDs in conjunction with the 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 of 9,086,094 lbs/yr, not to be exceeded as an annual load, is hereby approved as consistent with the CWA and 40 CFR Part 131.



Location of the Caloosahatchee TMDL WBIDs and Caloosahatchee watershed (TMDL p. 13, Figure 1.1)

Appendix 1 – Summary of the TMDL Background

Name(s) of Addressed Water(s)	Caloosahatchee Estuary (all three segments named Tidal Caloosahatchee)
Waterbody Type(s)	Estuary (2), Stream (1) (TMDL p. 14)
WBIDs	3240A, 3240B, 3240C
Latitude/Longitude	NA.
Description	The three waterbodies covered in this TMDL document (WBIDs 3240A, 3240B, and 3240C) are located downstream of the Franklin Lock and Dam (Control Structure S-79) on the tidal portion of the Caloosahatchee River (TMDL p. 12). These three waterbodies cover 33.2 river miles (44% of the river's total length) in the most downstream portion of the 75-mile-long Caloosahatchee River. The Caloosahatchee River flows from the southeast corner of Lake Okeechobee westward, through three control structures managed by the USACE (Moore Haven Lock [S-77], Ortona Lock [S-78], and Franklin Lock [S-79]), discharging to San Carlos Bay below Ft. Meyers and ultimately to the Gulf of Mexico (TMDL p. 12-13).
Classification(s)	WBIDs 3240A, 3240B and 3240C are Class III marine waterbodies. (TMDL p. 14, 18, 21, 26).
Basin	Caloosahatchee Basin (TMDL p. 12)
Date Placed on Verified List	May 27, 2004 (TMDL p. 12)
Date TMDL was approved by EPA	September 30, 2009 (EPA WATERS database query 6/4/12)
Reference Streams/Lakes	NA.
Source of Majority of Flow	The basin draining to the Caloosahatchee River covers approximately 1,339 square miles (TMDL p. 12). The watershed draining directly to the Caloosahatchee Estuary includes 20 WBIDs located in Lee and Charlotte counties and accounts for 38 percent of the larger Caloosahatchee River Basin; the remaining 62 percent drains into upstream portions of the river that eventually flow into the Caloosahatchee Estuary (TMDL p. 12, 14). About half of the upstream water that flows into the Caloosahatchee Estuary through the S-79 control structure originates in Lake Okeechobee, with additional upstream input from tributaries to the C-43 canal (main channel of the Caloosahatchee River upstream of control structure S-79) (TMDL p. 14). The schedule and quantity of upstream flows through USACE managed control is highly regulated with input from the South Florida Water Management District (TMDL p. 14). Observed 2001-2005 annual average flows at S-79, S-78, and San Carlos sampling stations were 2,376 cfs, 1,760 cfs, and 7.90 cfs, respectively (TMDL p. 48). The TMDL states that "recent changes in land use have resulted in higher peak flows and volumes during the wet seasons, and lower flows during the dry seasons" (TMDL p. 74).
Indicators	The TMDL uses an indicator of 25 percent of light (PAR) reaching critical seagrass depths throughout the Caloosahatchee Estuary and San Carlos

	Bay (TMDL p. 26-27, 61). Numerous studies were cited that describe the relationship between nutrients and submerged aquatic vegetation (McPherson and Miller, 1987; Corbett and Hale, 2006; Janicki Environmental, 2003; Corbett, 2006; Corbett et al., 2005; Doering and Chamberlain, 2005; Hand et al. 1990; Dixon, 2000) (TMDL p. 26, 61, 67, 73).
Identification of Causative Pollutants (as determined by measurements of response endpoints or indicators)	The three WBIDs covered in this TMDL were verified as impaired for nutrients as a result of chl-*a* levels exceeding IWR assessment thresholds of 11 µg/L for the estuarine WBIDS (3240A and 3240B), and 20 µg/L for the stream WBID (3240C). During Cycle 1 (1997-2004) WBID 3240A exceeding the IWR threshold in four years (mean of these years 16.5 µg/L), WBID 3240B exceeded the IWR threshold in one year (21.4 µg/L), and WBID 3240C exceeded the IWR threshold in one year (24.8 µg/L) (TMDL p. 22). Nitrogen was identified as the limiting nutrient (TN/TP ratio < 10) for WBIDs 3240A, 3240B, and 3240C with median TN/TP ratios of 7.75, 7.5 and 8.77, respectively (TMDL p. 5).
Sources and Concentrations of Nutrient Enrichment	Of the total simulated TN loads to the Caloosahatchee River, 82.5 percent is from the C-43 canal upstream of the S-79 control structure. The remaining 17.5 percent is from loads downstream of the control structure (TMDL p. 73-74). Six NPDES domestic wastewater facilities are permitted to discharge to the Caloosahatchee River, all of which are already meeting advanced wastewater treatment standards for nitrogen and have more stringent phosphorus removal. The TMDL reported TN discharges and permitted discharge for five of these facilities with a permitted TN load of 258,746 lbs/yr and an actual TN load discharged of 147,076 lbs/yr (TMDL p. 36-37). The TMDL notes that none of these facilities are expected to contribute substantially to the nutrient load (1.2% of the overall watershed total), and therefore in the WLA assigns each the current permitted load (TMDL p. 77). No mention of other NPDES-permitted industrial facilities is made. Stormwater collection systems in the area of these WBIDs are covered under one Phase I MS4 permit and a Phase II MS4 permit (TMDL p. 38).
Nutrient Watershed Region in Proposed 62.302	NA for the estuarine WBIDs (3240A and 3240B); WBID 3240C is a Peninsular Stream (IWR Run 40).
Proposed Nitrogen SSAC and Frequency	***WBIDs 3240A, 3240B, and 3240C:*** 9,086,094 lbs/yr (23% reduction of the annual average TN loading) (TMDL p. 77).
Proposed Phosphorus SSAC and Frequency	NA.
Biological Index Score(s) (e.g. SCI, TSI, IBI)	NA.