

US EPA ARCHIVE DOCUMENT

Responsiveness Summary for the Panhandle:

Total Maximum Daily Loads for the Camp Branch (WBID 251) Nutrients and
Dissolved Oxygen

EPA Region 4

March 2013

General response to comments regarding status of NNC in Florida:

Commenters on this TMDL and other proposed TMDLs addressing nutrients in Florida have raised questions about whether and how these TMDLs are impacted by ongoing activities to establish numeric nutrient criteria in Florida.

In 1979, FDEP adopted narrative criteria for nutrients applicable to waters designated as Class I (Potable Water Supply), Class II (Shellfish Propagation or Harvesting), and Class III (Recreation and for propagation and maintenance of a healthy, well-balanced population of fish and wildlife). See paragraphs 62-302.530(47)(a) and (b), F.A.C. FDEP recently adopted numeric nutrient criteria (NNC) for many Class I, II, and III waters in the state, including streams. See sections 62-302.531 and .532, F.A.C. The State's NNC numerically interpret part of the state narrative criteria for nutrients, at paragraph 62-302.530(47)(b), F.A.C., which provides that nutrients may not cause an imbalance of flora and fauna. FDEP submitted its NNC to EPA for review pursuant to section 303(c) of the CWA and on November 30, 2012, EPA approved those criteria as consistent with the requirements of the CWA. The state criteria, however, are not yet effective for state law purposes.

Also, in November 2010, EPA promulgated numeric nutrient criteria for Class III inland waters in Florida, including streams, pursuant to a Consent Decree in Florida Wildlife Federation, et. al. v. EPA, No. 4:08-cv-00324-RH-WCS (N.D. Fla.). On February 18, 2012, the streams criteria were remanded back to EPA by the District Court for further explanation. On November 30, 2012, EPA re-proposed its stream NNC for those flowing waters not covered by Florida's NNC rule. Those criteria have not been finalized.

Therefore, for streams in Florida, the applicable nutrient water quality standard for CWA purposes remains the narrative criteria. While FDEP's nutrient rule is not yet effective for state law purposes, EPA believes that FDEP's numeric nutrient criteria represent FDEP's most recent interpretation of paragraph 62-302.530(47)(b), F.A.C. Also, the other part of the state narrative criteria for nutrients, at paragraph 62-302.530(47)(a), F.A.C., remains applicable to all Class I, II, and III waters in Florida.¹ Paragraph 62-302.530(47)(a) requires nutrients to be limited as necessary to prevent violations of other Florida water quality standards.

In developing the TMDLs in this response summary, EPA considered both paragraphs 62-302.530(47)(a) and (b). The nutrient end point for this TMDL represents the level of nutrients that will prevent nutrients from causing or contributing to nonattainment of the State's dissolved oxygen criteria pursuant to paragraph 62-302.530(47)(a). That endpoint, which requires that nutrients be reduced to natural background levels, was determined to be more stringent than the level of nutrients that may be necessary to prevent an imbalance of flora and fauna pursuant to paragraph 62-302.530(47)(b).

¹ Paragraph 62-302.530(47)(a), F.A.C. will remain applicable to all Class I, II, and III waters even after FDEP's nutrient rule becomes effective. See subsection 62-302.531(1), F.A.C.

1. GENERAL COMMENTS

Comment ID P0101.001.016

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 1

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

9. In Section 1, EPA states: The TMDL process establishes allowable loadings of pollutants or other quantifiable parameters for a waterbody based on the relationship between pollution sources and in-stream water quality conditions, so that states can establish water quality based controls to reduce pollution from both point and nonpoint sources and restore and maintain the quality of their water resources (EPA, 1991). <<Footnote 1: While EPA does not provide the reference for the citation, it are likely referring to its "Guidance for Water Quality-Based Decisions: The TMDL Process" (see the EPA, 1991, at the close of this document). >>

Florida (at the time of the publication of these reports) has a narrative standard for nutrients and BOD and it is necessary to "establish the relationship between pollution sources and in-stream water quality conditions." Therefore, reviewers of the EPA TMDL proposals would expect EPA to provide some analysis of the likely causes of the observed DO depressions below the state standard and the establishment of likely pollutants or other causes. Observed DO concentrations below state water quality standards can be caused by natural conditions or anthropogenic sources of pollutants such as BOD, nitrogen or phosphorus to the system. Florida's Impaired Waters Rule (IWR) requires identification of a causative pollutant for low DO before a TMDL is developed. In the case of the proposed TMDL, two cycles of FDEP evaluations did not find any causative pollutant or pollutant relationship to the observed DO values. However, FDEP has retained these WBIDs on the 303(d) List for DO until biological assessments can be conducted to determine if the observed DO values are the result of natural conditions and if the system, in its current impacted state, meets its designated use, is healthy, and well balanced.

Response

Florida's Impaired Waters Rule does require a causative pollutant to be identified before they would verify a waterbody for TMDL development. Because Camp Branch was on the 1998 303(d) list a TMDL needed to be developed to meet the consent decree. EPA's approach in developing nutrient and dissolved oxygen TMDLs not only looks for causative but contributing to a violation as well.

1.A LISTING

Comment ID P0101.001.001

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 1.a

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

FDEP classified the Camp Branch WBID as a Class 3F (Class III Freshwaters) stream. EPA corrected the land use classifications presented in the 2010 total maximum daily load (TMDL) proposal. Impacted land uses now appear to make up approximately 72 percent of the overall watershed. Agricultural uses including cropland (27 percent) and tree crops (27 percent) make up 75 percent of

these impacted uses. Unimpacted uses include upland forest (12 percent), wetlands (15 percent), and open water (1 percent). The EPA has corrected the 2012 TMDL proposal to include a major point source discharger (the Bonifay municipal wastewater treatment plant) to Camp Branch. Camp Branch appeared on the 1998 303(d) List for coliform bacteria, nutrients, and turbidity and appeared on the consent decree, making it a high-priority WBID for EPA. In Cycle 1 (2004), FDEP evaluated Camp Branch for nutrient impairment and found that "[e]nough data and information are present to determine that one or more designated uses may not be attained according to the Planning List methodology." In Cycle 2 (2010), FDEP made the same determination. However, long-term annual average for chlorophyll a (Chl a) for the stream is well below the stream screening value and the FDEP was unable to determine a causative pollutant. Because stream measurements frequently indicate that DO drops below the state standard of 5.0 mg/L and stream biology is not meeting standards, FDEP determined that it will not develop a DO TMDL, but that Camp Branch should remain on the 303(d) List.

Response

Camp Branch was on FDEP's 1998 303(d) list which was used for the basis of the TMDL consent decree. EPA is responsible for developing a TMDL for all WBIDs that were on this list, unless FDEP de-lists the waterbody (attaining uses) or EPA determines a TMDL is not needed. Because the waterbody remained impaired a TMDL was developed.

2.D GENERAL/MISCELLANEOUS

3.A WATER QUALITY EVALUATION

Comment ID P0101.001.002

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

One of the chief comments concerning the EPA's 2010 TMDL proposal was that EPA did not demonstrate that anthropogenically sourced pollutants to Camp Branch are significantly unbalancing the system or depressing the DO regime to a level that has created a condition where the stream is not meeting designated uses. EPA further did not demonstrate that DO levels observed below the statewide standard are not a natural condition of the waterbody. In fact, and as in the 2010 proposal, EPA's modeling exercise showed that the stream does not meet the state standard for DO even under modeled predevelopment conditions.

Response

EPA agrees with the conclusions of this comment, the dissolved oxygen criteria is not met under a natural condition. Therefore, the TMDL determination sets the load allocation and waste load allocation to a natural condition. This load insures that no anthropogenic source is causing or contributing to a depression in dissolved oxygen. A site specific alternative criteria or Alternate Dissolved Oxygen Criteria could be developed.

Comment ID P0101.001.003

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

EPA failed to provide an analysis of a causative pollutant or pollutants. It did not develop and test a conceptual model that explains the observed conditions. Instead, EPA chose to require area stakeholders to significantly reduce stormwater runoff loads of three arbitrarily chosen parameters: total nitrogen (TN), total phosphorus (TP), and biochemical oxygen demand (BOD), regardless of the effect that the load reduction might have on stream quality or the DO regime.

Response

EPA relied on peer reviewed and routinely used mechanistic models to develop the relationship between nutrient and BOD loads and dissolved oxygen. Tables 3 and 5 provide a comparison between total nitrogen, total phosphorus and BOD concentrations under the current and natural conditions scenario with respect to response of dissolved oxygen concentrations. The models indicate as nutrient and BOD loads are reduced to natural conditions the dissolved oxygen concentrations are increased.

Comment ID P0101.001.008

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

1. In the 2012 proposal, EPA still has not demonstrated the need for TMDLs for TN, TP, and BOD.

Response

EPA relied on peer reviewed and routinely used mechanistic models to develop the relationship between nutrient and BOD loads and dissolved oxygen. Tables 3 and 5 provide a comparison between total nitrogen, total phosphorus and BOD concentrations under the current and natural conditions scenario with respect to response of dissolved oxygen concentrations. The models indicate as nutrient and BOD loads are reduced to natural conditions the dissolved oxygen concentrations are increased.

Comment ID P0101.001.009

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

2. The EPA has not demonstrated that the parameters proposed for load reductions are causative of the observed DO regime.

Response

EPA believes that it has demonstrated the total nitrogen, total phosphorus and BOD contribute to depression in dissolved oxygen. When all anthropogenic sources are removed from the WBID, the models predict an increase in the average dissolved oxygen concentration, but still not meet the State's standard of 5 mg/L.

Comment ID P0101.001.011

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

4. EPA failed to show that, under the observed DO regime, the system is not healthy and well balanced, not able to assimilate current nutrient and BOD loads, or not meeting its designated use.

Response

The State of Florida has a dissolved oxygen criteria that is used to determine designated use. 44% of the dissolved oxygen measurements do not meet the State's standard of no less than 5 mg/L dissolved oxygen, therefore the WBID is determined to be impaired.

3.A.1 NUTRIENTS

Comment ID P0101.001.021

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a.1

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

14. Four stations were used to evaluate TN, providing EPA with a total of 25 observations during 2008. The minimum observed TN concentration in the creek was 0.24 mg/L during this period, and the maximum observation was 1.77 mg/L. The average over the period was 0.73 mg/L. The proposed numeric standard for TN for streams in this region is 0.67 mg/L, which is very close to the average provided. In fact, the measured TN value is only 8 percent different from the proposed numerical standard, but the TMDL proposal requires that area dischargers reduce nitrogen loading by 42 percent.

Response

Please see EPA's general response to comments received regarding the impacts on this TMDL of ongoing activities to establish numeric nutrient criteria in Florida. Because the waterbody was on the Florida's CWA section 303(d) list for nutrients and dissolved oxygen, EPA was required to consider the impacts of nutrients on dissolved oxygen, pursuant to paragraph 62-302.530(47)(a), F.A.C. The basis for this TMDL is the nutrient endpoint which implements paragraph 62-302.530(47)(a), as that endpoint determined to be more stringent than the level of nutrients that may be necessary to prevent an imbalance of flora and fauna pursuant to paragraph 62-302.530(47)(b).

Comment ID P0101.001.022

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a.1

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

15. Four monitoring stations provided 25 observations in 2008 for the EPA evaluation of TP. Values ranged from 0.073 mg/L to 1.2

mg/L. The average of the measurements (0.316 mg/L) is in excess of the EPA water quality standard for TP (0.06 mg/L) (EPA, 2010b), but EPA's discussion does not indicate that TP is causing the stream to be DO depressed below 5.0 mg/L nor is there any discussion that TP is a limiting nutrient in the system. Instead of investigating the potential for TP causation (and EPA's watershed model predicts that predevelopment TP is in excess of the standard), EPA chose instead to reduce TN, TP, and BOD to assumed predevelopment levels, with the prediction that the statewide (and perhaps inappropriate) freshwater standard will still not be met.

Response

Please see EPA's general response to comments received regarding the impacts on this TMDL of ongoing activities to establish numeric nutrient criteria in Florida. Because the waterbody was on the Florida's CWA section 303(d) list for nutrients and dissolved oxygen, EPA was required to consider the impacts of nutrients on dissolved oxygen, pursuant to paragraph 62-302.530(47)(a), F.A.C. The basis for this TMDL is the nutrient endpoint which implements paragraph 62-302.530(47)(a), as that endpoint determined to be more stringent than the level of nutrients that may be necessary to prevent an imbalance of flora and fauna pursuant to paragraph 62-302.530(47)(b).

3.A.2 DISSOLVED OXYGEN

Comment ID P0101.001.019

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a.2

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

12. The report states that four monitoring stations included measurements for DO and included a total of 25 observations. Of these, 44 percent of the measurements fell below 5.0 mg/L, with a minimum measurement of 0.52 mg/L and a maximum observed measurement of 10.5 mg/L. The average of the 25 measurements was 5.5 mg/L, which is above the state standard.

Response

Florida's water quality standard for dissolved oxygen in freshwater systems is not expressed as an average; it is an instantaneous value not be less than 5 mg/L. As pointed out by the commenter, it is exceeded 44% of the time.

Comment ID P0101.001.036

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a.2

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

29. The stream type under investigation in this proposed TMDL is found throughout Florida and the southeastern United States. Mild slopes, high summertime temperatures, large changes in seasonal flow patterns, high allochthonous inputs (such as leaf litter), and extensive floodplain inundation during high rainfall periods all characterize these streams. These streams are also often characterized by large variations in DO and depressions below state water quality standards (especially in low flow and summertime conditions). While few streams are immune from anthropogenic inputs of oxygen-demanding substances, considerable research has found that low

DO is a natural condition for summer months for many streams of these types (Bosch et al., 2002; Ice and Sugden, 2003; Vellidis et al., 2003 in Utley et al., 2008).

Response

EPA agrees with these statements and has shown through various modeling exercises that dissolved oxygen is naturally low. EPA must develop TMDLs to all applicable standards and do not have an option of changing or developing a site specific criteria in a TMDL.

Comment ID P0101.001.037

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a.2

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

30. Many southeastern United States streams do not meet the 5.0 mg/L DO levels naturally. The establishment of TMDLs in Florida and other southeastern states has shown that large numbers of streams do not meet the DO criteria set for them even without anthropogenic impacts. The FDEP nutrient criteria program has recognized that many waterbodies in the state of Florida often drop below 5 mg/L under natural conditions and still fully support aquatic life uses. More than 30 years of DO measurement data in Georgia show that DO in these streams has fallen below 4 mg/L over the entire measurement period and during all seasons of the year (Todd et al., date unknown).

Response

EPA agrees with these statements and has shown through various modeling exercises that dissolved oxygen is naturally low. EPA must develop TMDLs to all applicable standards and do not have an option of changing or developing a site specific criteria in a TMDL.

3.A.4 OTHER WATER QUALITY

Comment ID P0101.001.020

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a.4

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

13. The data set included BOD measurements from four stations and a total 25 observations. The values ranged from 0.3 mg/L to 6.5 mg/L. The average (1.79 mg/L) is below the state's screening value for BOD, indicating that it is likely not a causative pollutant. However, EPA still proposes that local nonpoint source dischargers reduce their BOD loading to the creek by 27 percent.

Response

FDEP's Impaired Waters Rule using a screening value of 2 mg/L BOD as a potential of being a causative pollutant, however it is not a water quality standard. It should be noted that the Camp Branch model indicates that BOD is lower in the natural condition scenario, which indicates that current BOD concentrations are elevated in the waterbody.

US EPA ARCHIVE DOCUMENT

Comment ID P0101.001.023

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 3.a.4

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

16. Four monitoring stations in the water segment provided Chl a measurements for EPA evaluation. The data set includes 25 observations from 2008 only. Values in the dataset ranged from 1.00 µg/L to 19 µg/L and averaged 5.99 µg/L over the evaluation period. This average value is well below the state stream Chl a screen of 20 µg/L, indicating that nutrients and excess algal growth are not likely unacceptably depressing DO in the system or that the system is out of balance.

Response

Please see EPA's general response to comments received regarding the impacts on this TMDL of ongoing activities to establish numeric nutrient criteria in Florida. Because the waterbody was on the Florida's CWA section 303(d) list for nutrients and dissolved oxygen, EPA was required to consider the impacts of nutrients on dissolved oxygen, pursuant to paragraph 62-302.530(47)(a), F.A.C. The basis for this TMDL is the nutrient endpoint which implements paragraph 62-302.530(47)(a), as that endpoint determined to be more stringent than the level of nutrients that may be necessary to prevent an imbalance of flora and fauna pursuant to paragraph 62-302.530(47)(b).

4.C FDEP PROPOSED WQS

Comment ID P0101.001.015

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 4.c

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

8. At present, Florida is in the process of revising its DO criteria. While it is recognized at this time that EPA cannot assess against these criteria, and must utilize the existing criteria, some acknowledgement of the determinations that have been made and recorded by FDEP that the DO criteria are at issue and are being modified should be put into the TMDL report.

Response

While EPA does understand that FDEP has begun the process of changing their dissolved oxygen criteria, EPA must use the currently promulgated criteria when developing TMDLs. When/if in the future the dissolved oxygen criteria are changed, this WBID could be assessed and new TMDL be developed to the new criteria.

6. ANALYTICAL APPROACH

Comment ID P0101.001.006

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

Additionally, the EPA modeling effort does not appear to have been conducted correctly. While EPA significantly expanded the land use categories used for the 2010 modeling effort and applied a wider range of event mean concentrations (EMCs) for the land use types, some of the EMC values do not reflect the best current literature values or local conditions. No calibration information was provided for the land use model. Calibrations for the water quality model show that the model does not correctly reflect the system and cannot be used to predict load reduction scenarios. The model calibration also appears to have inappropriately used sediment oxygen demand (SOD) as a key adjustable parameter without local measurements, literature citations, or other supporting information.

Response

Sediment oxygen demand is used a calibration parameter in the modeling, we do have a database of SOD measurements throughout the southeast that we use to set limits. Furthermore, we have a spreadsheet version of s sediment diagenesis model that is used to estimate SOD under the TMDL condition. All of the models are part of the administrative record and are made available upon request.

Comment ID P0101.001.010

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

3. There is no basis in Rule for requiring nutrient and BOD loading to be reduced to predevelopment conditions if it has not been demonstrated that the system is out of balance or is not meeting designated uses.

Response

Florida's water quality standards provide a definition of natural background:

"Natural Background" shall mean the condition of waters in the absence of man-induced alterations based on the best scientific information available to the Department. The establishment of natural background for an altered waterbody may be based upon a similar unaltered waterbody or on historical pre-alteration data. 62-302.200(15), FAC.

Florida's water quality standards also provide that:

Pollution which causes or contributes to new violations of water quality standards or to continuation of existing violations is harmful to the waters of this State and shall not be allowed. Waters having water quality below the criteria established for them shall be protected and enhanced. However, the Department shall not strive to abate natural conditions. 62-302.300(15) FAC

EPA sets the TMDL to the natural condition in the instance where the standard cannot be met, but no lower.

Comment ID P0101.001.017

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

10. EPA appears to have arbitrarily chosen three pollutants, TN, TP, and BOD, and developed load reductions for each that would presumably set loads to predevelopment conditions through the use of a watershed model. That is, the agency did not develop and test a conceptual model that includes the processes most likely affecting the stream biochemistry and ecology. (The quality and applicability of the model approach is discussed subsequently.) EPA's stated approach was to apply the watershed model and a dynamic water quality model calibrated to existing land use loading conditions and observed in-stream water quality measurements. Under this approach, the water quality model (once calibrated to existing conditions) is assumed to be predictive of the dose-response relationships between nutrient and BOD loading and DO depression and increased phytoplankton activity (Chl a). Researchers can then reduce causative pollutant loads until the DO water quality standard is met. However, EPA provided no discussion of the iterative process taken or an evaluation of the oxygen-depressing parameters in terms of which are "limiting." Most importantly, EPA failed to conduct an evaluation of the biological health of the system and failed to show that it is, in fact, not "well balanced" or supportive of designated uses. Because this step was lacking, EPA did not attempt to show what DO regime is protective of the uses and how much assimilative capacity the streams have against the uptake of BOD and nutrients.

Response

EPA adequately demonstrated that Camp Branch does not meet designated uses under current and natural conditions by comparing measured and predicted dissolved oxygen concentrations to the State's water quality standard of no less than 5 mg/L.

Comment ID P0101.001.018

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

11. EPA's modeling effort concluded that the state water quality standards for DO cannot be met even under predevelopment "natural" conditions. Putting aside the many questions concerning the calibration of the models, instead of providing a scientifically defensible means of quantifying TMDLs for causative pollutants, the modeling approach seems to provide further evidence that the segment under review naturally does not meet the state's general water quality standard for DO. It seems that instead of developing a TMDL for TN, TP, and BOD at assumed predevelopment loading conditions, a site-specific standard should be developed and the assimilative capacity of the system determined.

Response

EPA agrees that a site specific alternative criterion could be developed for Camp Branch, but until such time the Florida's water quality standards for Class III freshwater would have to be used for the development of TMDL. Developing an alternative criteria is not part of the TMDL process.

Comment ID P0101.001.026

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

19. Given the evidence from the water quality data analysis (i.e., nutrients meet (or nearly meet) the water quality standards and BOD and Chl a concentrations are below FDEP IWR screening values), it is incumbent upon EPA to first establish that there is, in fact, a water quality problem (i.e., the low DO observed in these streams is not a natural condition for which the local stream ecosystems are well adapted). If the condition is not natural, then EPA must show (with some confidence) that there is one or more causative pollutants for which load reductions would restore the systems to their designated uses.

Response

EPA clearly illustrated that the dissolved oxygen criteria was not being met in Camp Branch. EPA also determined that Camp Branch cannot meet the dissolved oxygen criteria under natural conditions. If there is not assimilative capacity in the waterbody anthropogenic sources cannot contribute to lowering dissolved oxygen below the natural condition.

Comment ID P0101.001.032

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

25. Returning a waterbody to predevelopment conditions is not the goal of the Clean Water Act (CWA) or state water quality standards. Instead, the CWA seeks to:

- provide, wherever attainable, water quality for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water ("fishable/swimmable"), and
- consider the use and value of State waters for public water supplies, propagation of fish and wildlife, recreation, agriculture and industrial purposes, and navigation. (EPA, 1994; p. 2-1)

Response

EPA agrees with commenter's statements about the Clean Water Act. The TMDL portion of the CWA requires pollutant load reductions to be determined to meet water quality standards were the waterbody was determined to be impaired.

Comment ID P0101.001.033

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

26. When conducting a Use Attainability Analysis for a waterbody, EPA provides the following direction to the states in "The Water Quality Standards Handbook" (EPA, 1994; p. 2-18): After field sampling is completed, all data must be integrated and summarized. If

this information is still not adequate, then further testing may be required and a more detailed pathway chosen. With adequate data, States should be able to make reasonably specific recommendations concerning the natural potential of the water body, levels of attainability consistent with this potential, and appropriate use designations. The evaluation procedure outlined here allows States a significant degree of latitude for designing assessments to meet their specific goals in water quality and water use.

Response

EPA agrees with this statement when determining designated use. Determining the designated use or doing a use attainability study is not part of TMDL development. Camp Branch is designated as Class III freshwater and is subjected to all of Florida's Class III freshwater quality standards.

Comment ID P0101.001.047

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

40. While there is recognition that the waterbody proposed for TMDL development has some level of anthropogenic impact (like all waterbodies in the state), the chief concern besides the inappropriate assumptions and implementation of the watershed and water quality models is that EPA has not demonstrated that the waterbody is, in fact, not meeting its designated use. If EPA defines the designated use as not meeting the statewide DO standard irrespective of the biological health and balance of the systems, then the systems are still impaired following the proposed load reductions. The waterbody still fails to meet the DO standard under the modeled natural conditions scenario.

Response

EPA does not define the designated use or whether the waterbody is impaired. Camp Branch's designated use is determined by the State of Florida and is assessed using the Impaired Waters Rule which implements the State's water quality standards. The dissolved oxygen standard is based upon a water column concentration and has no provision for biological health.

Comment ID P0101.001.048

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

41. EPA did not establish a causative pollutant in any case or make any reference or use of FDEP's Cycle 1 and Cycle 2 assessments of this waterbody. EPA instead chose to arbitrarily reduce three parameters (TN, TP, and BOD) to supposed predevelopment levels without regard to the effect of those load reductions on improving water quality, better meeting designated uses, or the cost to those that are required to make the load reductions when no establishment of injury to the system has been provided.

Response

EPA relied on peer reviewed and routinely used mechanistic models to develop the relationship between nutrient and BOD loads and

dissolved oxygen. Tables 3 and 5 provide a comparison between total nitrogen, total phosphorus and BOD concentrations under the current and natural conditions scenario with respect to response of dissolved oxygen concentrations. The models indicate as nutrient and BOD loads are reduced to natural conditions the dissolved oxygen concentrations are increased.

6.A APPROACH METHODOLOGY

Comment ID P0101.001.004

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.a

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

EPA utilized a mechanistic approach to the development of the TMDLs by adapting a watershed model (for determining nutrient, BOD, and hydrologic loads) and a water quality model [to predict instream concentrations of the target parameters and response variables (like DO and Chl a)] to the system. EPA's stated methodology included the development of a model for the existing condition. Once the model was established and calibrated, it can then be used to predict appropriate nutrient and BOD loading levels that meet the state DO standard. However, the DO standard could not be met even under the predevelopment condition scenario.

Response

EPA agrees with this statement. In the case where the dissolved oxygen concentration could be met under the natural condition, EPA would have reduced current loadings until the dissolved oxygen standard is met.

Comment ID P0101.001.005

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.a

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

Instead of abandoning this failed approach and trying to establish an appropriate TMDL by some demonstrable means, EPA instead chose to require that stakeholders reduce nutrient and BOD loads to the levels predicted by the model for the predevelopment condition. However, state regulations do not require waterbodies to meet natural conditions, but to meet their designated uses and allow for reasonable inputs of anthropogenic nutrients and BOD if the stream can assimilate them and still maintain a healthy and well-balanced condition.

Response

This TMDL determined there is no assimilative capacity for anthropogenic sources because the dissolved oxygen standard cannot be met under a natural condition. Until a change in the dissolved oxygen standard or the development of site specific alternative criterion any anthropogenic source must be at or below the natural background condition to assure they do not contribute to lowering dissolved oxygen concentrations.

Comment ID P0101.001.007

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.a

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

The TMDL proposal does not present evidence that the system is actually biologically impaired for DO or that TN, TP, or BOD loading is creating an imbalance in the system. Load reductions should not be proposed for these parameters without evidence of the harm that current levels are causing the system.

Response

Florida's dissolved oxygen standard has no consideration for biological condition.

Comment ID P0101.001.014

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.a

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

7. The modeling exercise determined that even under natural conditions, the state water quality standard for DO is not met. This should have triggered a more specific analysis of the system, is likely natural condition, and the likely maximum level of nutrients that the system can assimilate and still maintain balance and ecological health.

Response

A more specific analysis could be done in the future that would set a site specific alternative criteria for Camp Branch. A TMDL must be developed to meet water quality standards.

6.B WATERSHED MODELING ASSUMPTIONS

Comment ID P0101.001.024

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.b

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

17. The model report (Appendix A to the TMDL proposal) cites Harper (1994) as the source of the chosen EMC values. It further states that the derived EMCs were "calibrated to all data available for the watershed." However, this additional available watershed data is not presented. EPA should provide an explanation for the use of EMC values where they differ significantly from acceptable literature values. For example, the EPA utilized EMCs for BOD of 21 mg/L for commercial, high-density residential and industrial land uses. This value is twice the highest literature value for these uses and should be supported.

Response

Event mean concentrations used in the watershed model were adjusted (within range of literature) to calibrate the watershed model to observed condition. BOD values in the watershed model represent ultimate BOD which is fed forward to the water quality model. In some landuse types they can vary by a factor of 3.

Comment ID P0101.001.025

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.b

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

18. While EPA may have reviewed the literature on EMCs for various land uses over the last 17 years (i.e., since Harper, 1993), EPA does not discuss why it selected these values over Harper's (1994) update, from the further information contained in Harper (1998) or the extensive information provided in Harper and Baker (2007). There are many additional sources of potential land use EMC values, including a literature review by the U.S. Army Corps of Engineers (Lin, 2004) that may have provided a more robust and defensible data set for these TMDLs. If EPA consulted Harper (2007) and other newer sources, but found it inappropriate, the agency should provide a statement of why it instead utilized data that is nearly 20 years old and for a different region of the state.

Response

The sources of event mean concentrations represent the best available information for Florida. These sources are routinely used by FDEP and the water management districts doing water quality modeling studies.

Comment ID P0101.001.027

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.b

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

20. The Harper (1994) data is said to be "calibrated for all data available for the watershed," but none of these data are presented. No calibration information is presented either. For the watershed model to be predictive enough to justify imposing load reductions on nonpoint source dischargers in the area, EPA should be able to show that in-stream concentrations for TN, TP, and BOD are similar to those predicted by the model for each of the model segments over the simulation period. No such calibration information is shown.

Response

The calibration fit of the watershed model is evident in the water quality model calibration. EPA used the watershed model to provide flow and loadings to the water quality model. The water quality predicts the concentrations in the water that can be directly compared to measured data.

6.C WATERSHED MODEL CALIBRATION

Comment ID P0101.001.012

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.c

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

5. The land use model does not appear to properly predict current or natural nutrient and BOD loads to the system.

Response

When comparing the average predicted BOD to the average observed BOD the concentrations are very similar. The peaks of predicted BOD during storms are sometimes difficult to compare due to lack of data during the storms. The most critical comparison is the average concentrations, which have the biggest effect on dissolved oxygen. During the storm events flow in the system is high, and there are no dissolved oxygen violations.

Comment ID P0101.001.029

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.c

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

22. The EMC values selected and the modeled existing condition results in a predicted in-stream TN concentration (1.16 mg/L) that is 59% higher than the measured (0.73 mg/L) average concentration. This suggests that the model is significantly overestimating the current TN load to the system.

Response

The use of EMC in the watershed model allows the amount of pollutant in the case total nitrogen to be characterized based upon field measurements and literature values. It is difficult to compare nutrient EMC values to instream values especially at all flow regimes. Typically we do not have field measurements during storm events. Because the model has predictions during all flow events, the average is typically higher.

6.D WATER QUALITY MODELING ASSUMPTIONS

Comment ID P0101.001.034

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.d

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

27. In Section 4.1 of the model reports (Appendix A of the TMDL proposal), EPA states: "Other than nutrient load reductions the SOD

rate was reduced to reflect the reduced loadings." Other than the semantic error of treating BOD as a "nutrient" throughout these TMDL proposals, the second part of this statement is extremely troubling. In Table 3 of the model report, "WASP Kinetic Rates" are supplied for reaeration rate; SOD; phytoplankton maximum growth rate; phytoplankton carbon to chlorophyll ratio; BOD decay rate; and ammonia, nitrate, and phosphorus decay rates. However, no justification or citation is provided for the selection of the constants, and the same constants were used in all of the other systems in Choctawhatchee River Basin for which EPA has proposed DO TMDLs (see, for example, EPA, 2010a) (which can be expected to have some variability considering that they vary from estuarine to heavily impacted freshwater stream types). The model is sensitive to many of these variables. This is especially true of the reaeration rate and the selected SOD value.

Response

The constants that were used in the water quality model were determined through calibration. EPA agrees that these rate constants could change from one waterbody to another. EPA also believes many will stay fairly constant or have little to no impact on the models predictive capability. The reaeration rate used in the model is a function of the water velocity and depth and changes constantly. The SOD values are calibrated in the existing condition and could be the same or very similar to other waterbodies.

Comment ID P0101.001.035

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.d

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

28. Because there are no measured SOD data in the stream, there is considerable uncertainty in the SOD value used in the model. The SOD is often adjusted within a reasonable range as part of the model calibration process. The model uses an input SOD value of 2 grams per meter squared per day ($\text{g/m}^2/\text{d}$) according to Table 3, which is at the high range of values for estuarine mud. According to Chapra (1997), estuarine mud typically ranges between 1 and 2 $\text{g/m}^2/\text{d}$, with an average value of 1.5 $\text{g/m}^2/\text{d}$. Because the TMDL calculations hinge on scaling the SOD values to the simulated Chl a values, the uncertainty in the calibrated SOD values do not allow for accurate calculation of TMDLs. In fact, the unmeasured SOD parameter may explain how EPA was able to come close to "calibrating" the model to the averaged observed DO over the simulation period but achieve little success in predicting the individual DO observations.

Response

Sediment oxygen demand is used as a calibration parameter in the modeling, we do have a database of SOD measurements throughout the southeast that we use to set limits. Furthermore, we have a spreadsheet version of a sediment diagenesis model that is used to estimate SOD under the TMDL condition. All of the models are part of the administrative record and are made available upon request.

Comment ID P0101.001.038

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.d

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

31. Utley et al. (2008) cite Matlock et al. (2003) in their findings that SOD was responsible for 50 percent of the DO depletion in typical

streams that EPA studied that exhibited this effect. Utley et al. (2008) further found that "estimating SOD as the remaining oxygen demand in the model assuming all other parameters were known and measured correctly, can seriously misrepresent the true SOD being exerted on the system" (Cathey, 2005; Cathey et al., 2005 in Utley et al., 2008).

Response

The SOD rates that was used in the model was represented of values collected by EPA Region 4's field services group in other waterbodies.

Comment ID P0101.001.039

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.d

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

32. As noted by Zhen-Gang Ji (2008), "with this approach, the difficulty arises when SOD values need to be predicted for future conditions, such as wasteload reduction scenarios for water resource management. Thus, this approach does not lead to a robust estimate of benthic fluxes and introduces major uncertainty in the use of a water quality model as a predictive and management tool." The alternative described by Ji (2008) is to use a coupled sediment diagenesis model to evaluate sediment response to changes in external nutrient loads and predict nutrient fluxes.

Response

Sediment oxygen demand is used as a calibration parameter in the modeling, we do have a database of SOD measurements throughout the southeast that we use to set limits. Furthermore, we have a spreadsheet version of a sediment diagenesis model that is used to estimate SOD under the TMDL condition. All of the models are part of the administrative record and are made available upon request.

Comment ID P0101.001.040

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.d

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

33. Instead of a sediment diagenesis model, EPA states that it reduced the "SOD rate...to reflect the reduced loadings," apparently relying instead on a simple scaling relationship between the predicted Chl a concentration and sediment fluxes in order to predict future conditions.

Response

Sediment oxygen demand is used as a calibration parameter in the modeling, we do have a database of SOD measurements throughout the southeast that we use to set limits. Furthermore, we have a spreadsheet version of a sediment diagenesis model that is used to estimate SOD under the TMDL condition. All of the models are part of the administrative record and are made available upon request.

Comment ID P0101.001.041

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.d

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

34. However, the EPA approach of scaling SOD using predicted Chl a is not validated for these models. In fact, as shown in calibration figures in the model reports, the models do a poor job of predicting Chl a concentrations. Therefore, the use of model-predicted Chl a as a predictor of future SOD and benthic fluxes is highly uncertain and not sufficiently robust for use in determining TMDLs.

Response

Sediment oxygen demand is used as a calibration parameter in the modeling, we do have a database of SOD measurements throughout the southeast that we use to set limits. Furthermore, we have a spreadsheet version of a sediment diagenesis model that is used to estimate SOD under the TMDL condition. All of the models are part of the administrative record and are made available upon request.

Comment ID P0101.001.042

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.d

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

35. SOD is often a dominant sink of DO in these river systems but, in spite of this, it is often relegated to an adjustable parameter in TMDL DO models to make a suspect and partial conceptual model "calibration" and then arbitrarily adjusted down to incomplete literature values to adjust the model to the supposed "natural" condition. The Uteley et al. (2008) study also found that SOD was correlated to stream type and not land use. Arbitrarily adjusting the SOD down from calibrated conditions likely removes the most important DO sink from the model and confounds the DO processes acting on a natural system.

Response

EPA agrees that SOD may be a dominant oxygen sink especially at low flow. While it would be ideal to have measurements at existing conditions to be used in the TMDL, they do not exist because of the time and expense need to make the measurement. EPA uses a database of SOD measurements throughout the southeastern US and use like streams for bracketing our calibrated rates.

Sediment oxygen demand is used as a calibration parameter in the modeling, we do have a database of SOD measurements throughout the southeast that we use to set limits. Furthermore, we have a spreadsheet version of a sediment diagenesis model that is used to estimate SOD under the TMDL condition. All of the models are part of the administrative record and are made available upon request.

Comment ID P0101.001.043

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.d

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

36. The underlying assumption that SOD must be lowered significantly through reduction of nutrients (phosphorus and nitrogen) that

are causing algal blooms and increasing SOD through the deposition of the plant detritus likely does not consider the actual processes of the natural system, including the allochthonous inputs such as leaf litter and periphyton decay, low flow and high temperatures.

Response

EPA agrees that SOD is a function of carbon loading to the waterbody. This is considered in the modeling through BOD loadings, algal productivity and decay of detritus.

Comment ID P0101.001.044

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.d

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

37. The SOD parameter is so critical to the methodology used to calculate the load reductions that it is very important that this parameter be accurately simulated in the model and the process of lowering it through anthropogenic loading of nutrients be well-considered and supported. The literature does not support reducing SOD to levels not observed in peninsular Florida streams. Furthermore, given the uncertainty in the model-predicted Chl a concentrations, and the fact that the linear scaling relationship used to adjust model SOD is unverified, there is no confidence that the models reasonably predict any of the modeled conditions.

Response

Sediment oxygen demand is used as a calibration parameter in the modeling, we do have a database of SOD measurements throughout the southeast that we use to set limits. Furthermore, we have a spreadsheet version of a sediment diagenesis model that is used to estimate SOD under the TMDL condition. All of the models are part of the administrative record and are made available upon request.

6.E WATER QUALITY MODEL CALIBRATION

Comment ID P0101.001.013

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.e

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

6. The water quality model is poorly calibrated to the system, does not predict the actual measured data during the simulation period and, therefore, is not appropriate for use in predicting the conditions of load reduction scenarios.

Response

EPA used the best available information and approach for the development of this TMDL. EPA does agree there was not a lot of measured data under various flow and meteorological conditions. When and if more information becomes available this TMDL can be re-visited.

Comment ID P0101.001.028

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.e

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

21. EPA paired the Water Quality Analysis Simulation Program (WASP7) (EPA, 2006), "a dynamic compartment modeling program for aquatic systems" (EPA, 2010a; p. 16) to predict the "time varying concentrations for chlorophyll a, dissolved oxygen, nutrients (nitrogen, phosphorus) as [a] function of loadings, flows, and environmental conditions." In the TMDL proposal, EPA states that the WASP model "was calibrated to the current conditions of the... watershed using known meteorology, predicted loadings from the LSPC model and constrained by the observed data in [the water segment]." However, the data and graphs presented in the modeling reports do not show that the model was calibrated to the observed in-stream data measurements. The model was unable to predict observed concentrations of the parameters modeled and was even unable to closely predict the average concentrations of the parameters over the simulation period.

Response

EPA used the best available information and approach to develop this TMDL. The modeling approach used a multiyear simulation to characterize the average loadings to the waterbody. These periods of time considered by normal, wet and dry years, when comparing the average to the minimal monitoring points were few or any sample were taken during a storm could be misleading. When and if more information becomes available this TMDL can be re-visited.

Comment ID P0101.001.030

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.e

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

23. The model predicts that the average in-stream TN concentration for the natural condition will be 0.92 mg/L. This value is 26 percent higher than the measured current condition and 37 percent higher than the proposed numeric standard for this region.

Response

Please see EPA's general response to comments received regarding the impacts on this TMDL of ongoing activities to establish numeric nutrient criteria in Florida. Because the waterbody was on the Florida's CWA section 303(d) list for nutrients and dissolved oxygen, EPA was required to consider the impacts of nutrients on dissolved oxygen, pursuant to paragraph 62-302.530(47)(a), F.A.C. The basis for this TMDL is the nutrient endpoint which implements paragraph 62-302.530(47)(a), as that endpoint determined to be more stringent than the level of nutrients that may be necessary to prevent an imbalance of flora and fauna pursuant to paragraph 62-302.530(47)(b).

Comment ID P0101.001.031

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.e

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

24. Similarly, the model predicts that average in-stream concentrations of TP will be 100 percent higher than the proposed TP numeric standard. These results suggest that there are significant problems with the model development, the proposed numeric standards, or both.

Response

Please see EPA's general response to comments received regarding the impacts on this TMDL of ongoing activities to establish numeric nutrient criteria in Florida. Because the waterbody was on the Florida's CWA section 303(d) list for nutrients and dissolved oxygen, EPA was required to consider the impacts of nutrients on dissolved oxygen, pursuant to paragraph 62-302.530(47)(a), F.A.C. The basis for this TMDL is the nutrient endpoint which implements paragraph 62-302.530(47)(a), as that endpoint determined to be more stringent than the level of nutrients that may be necessary to prevent an imbalance of flora and fauna pursuant to paragraph 62-302.530(47)(b).

Comment ID P0101.001.045

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.e

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

38. Additionally, the model report provides graphs for TN, TP, DO, and Chl a showing the continuous model predictions over the simulation against available water quality observations. While the resolution of these graphs makes it hard to interpret how well the model predicts the observed events, the graphs clearly show that the model is not predictive of DO and Chl a throughout the period, so it is not correctly modeling the dose-response relationship between the nutrients and the response variables.

Response

EPA, using the best available information, applied and calibrated model to all available data. Ideally it would have been better to have more data over a longer period of time. When and if more information is available this TMDL could be re-visited.

Comment ID P0101.001.046

Author Name: Hearn Janet

Organization: Applied Technology and Management, for Florida Department of Transportation (FDOT)

Issue Category: 6.e

<<The following comment applies to the TMDL for Camp Branch (WBID 251).>>

39. Additionally, the average annual predictions for the model for the current versus the natural condition show no change in the concentration of predicted Chl a. If algal mass remains unchanged, EPA should provide some discussion concerning what pollutant(s) is depressing the DO in the system and why the TMDL requires large reductions in nutrients to achieve designated uses.

Response

Please see EPA's general response to comments received regarding the impacts on this TMDL of ongoing activities to establish numeric nutrient criteria in Florida. Because the waterbody was on the Florida's CWA section 303(d) list for nutrients and dissolved oxygen, EPA was required to consider the impacts of nutrients on dissolved oxygen, pursuant to paragraph 62-302.530(47)(a), F.A.C. The basis for this TMDL is the nutrient endpoint which implements paragraph 62-302.530(47)(a), as that endpoint determined to be more stringent than the level of nutrients that may be necessary to prevent an imbalance of flora and fauna pursuant to paragraph 62-302.530(47)(b).