



# Florida Department of Environmental Protection

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February 1, 2011

Ms. Stephanie Sanzone  
Designated Federal Officer  
EPA Scientific Advisory Board (1400R)  
U. S. Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Washington, D.C., 20460

SUBJECT: Florida DEP's Comments on the SAB's Discussion Draft

Dear Ms. Sanzone:

This letter provides the Florida Department of Environmental Protection's (Department) comments on the Science Advisory Board (SAB) Nutrient Criteria Review Panel's "Discussion Draft" of their review of EPA's technical support document (TSD) for the development of numeric nutrient criteria (NNC) for Florida's estuaries and coastal waters, and southern canals. We were very impressed with this initial draft, particularly given that the Panel's first meeting was on December 13-14, 2010, and believe that it accurately highlights the complexity of NNC development. However, we also believe that the limited time available for the review and the overly general nature of the charge questions have constrained both the scope and level of detail of the review. We offer the following specific comments on topics that we believe warrant further elaboration by the Panel.

We would like to note that we convened a day-long meeting of our Marine Technical Advisory Committee (MTAC) on January 27, 2011 to discuss the draft report (two days after the draft was posted). While this schedule provided an extremely short amount of time to review the draft report before the meeting and to summarize the comments made during the meeting, our comments reflect input of the MTAC membership.

## 1) Definition of "Balanced"

We agree with the Panel that the definition of what constitutes "balanced" natural populations of aquatic flora and fauna is critically important and should be included in EPA's TSD. However, we recommend that the Panel also provide

recommendations to EPA on how best to define this important term. Ideally, recommendations would be provided for each biological endpoint, would guide EPA on how to focus the definition to nutrient-related effects, and would recognize that a wide variety of factors other than nutrients, such as hydrologic management, may be the driving force in maintaining a “balanced” system in some estuaries. This last point is critically important because it is the Department’s intent to direct public and private resources to mitigating actual environmental problems, and EPA should recognize that there are many instances where reducing nutrients would have no demonstrable environmental benefit.

We addressed the topic of defining a healthy, balanced community on pages 6–10 of our version of EPA’s TSD (“Overview of Approaches for Numeric Nutrient Criteria Development in Marine Waters”), and encourage the Panel to consider our recommendations, which relied on a weight-of-evidence approach. In fact, we believe this issue is so important that we recommend that the Panel revisit the charge questions after they have reached consensus on the definition of balanced so that panel members can fully address linkages between “balanced” biological endpoints and water quality.

## 2) Integration of Multiple Approaches

We also agree with the Panel that there would be greater confidence in the NNC if all three of EPA’s proposed approaches were applied in each estuary (where sufficient data are available), and that the EPA document should discuss how the results from multiple approaches would be integrated into the final NNC. However, we request that the NRP provide recommendations on how EPA should integrate the results from different methods. We recommend that EPA give different weights to each approach depending on the confidence associated with the approach for the specific estuary, rather than simply average the different sets of criteria (or simply take the lowest set of criteria). We also recommend that stressor-response approaches, which are more directly associated with maintaining designated uses, should have more weight.

## 3) SAB Comments on Reference Approach

We agree with the majority of the comments made by the SAB on the reference approach, including the comments about the importance of hydrologic modifications and extreme weather events, and the recommendation for EPA to explicitly state the general hydrologic range over which targets (NNC) would apply. We think it would be helpful if the Panel made recommendations on the length of record and data density or level of confidence needed to use the reference approach to establish appropriate, protective criteria. EPA should also be requested to

provide more details about the statistical approach they will use to establish NNC, while taking into account both spatial and temporal variability.

We also suggest that the Panel provide guidance regarding the benefits and challenges of using a reference area (spatial) approach versus a reference time (historical, temporal) approach. Given that the Department has evidence that many Florida estuaries are currently healthy, the reference approach may be widely applicable, and the attributes of these two alternative sub-approaches should be considered in more detail by the SAB Panel.

#### 4) Water Quality Simulation Models

While the Department relies on water quality models for a variety of applications in its permitting and TMDL Programs, we share the concern expressed by the Panel that, given the constraints of the Consent Decree, there are insufficient time and data to develop models that are adequate for development of NNC. Given the likely possibility that EPA may nonetheless proceed with the modeling approach, we recommend the Panel make specific recommendations on what steps are needed to calibrate and validate water quality models for NNC development, including requirements to collect site-specific data for key model coefficients and minimum validation criteria.

#### 5) SAB Comments on Stressor-Response Approach

We agree with the SAB recommendation that the stressor – response approach should receive more attention in the TSD. We also agree that relationships between nutrients and the response are sometimes too variable to set criteria, and request that the SAB provide additional guidance on the minimum explanatory power needed in a nutrient- ecological response relationship to be considered useful for setting criteria.

#### 6) SAB Comments on Seagrass Endpoint

We agree with the Panel's comments related to the use of seagrass (SAV) as a biological endpoint, including the observation that the TSD did not provide specific decision criteria for acceptable changes in SAV populations and the comment that EPA may need to also look at macrophytes and epiphytes. Regarding any potential decision criteria related to changes in seagrass coverage, it is important to acknowledge that there is significant year-to-year variability in SAV coverage due to a variety of factors unrelated to nutrients, including salinity, color, and mapping limitations. We have found that the deep edge of the SAV beds is a very useful management target, but it is also the most challenging area to accurately measure

from aerial surveys. As such, in situ measurements are needed to accurately ground truth SAV coverage and density.

Regarding the Panel's suggestion to consider the successful approach used in Tampa Bay, which linked nutrient loading with SAV loss, we would like to note that management goals focused on nutrient loading better address impacts due to macrophytes and epiphytes than approaches relying on nutrient concentrations. As pointed out in the draft report, it is also important to acknowledge the role of herbivore control ("top down") of epiphyte biomass. While we certainly recommend the approach used in Tampa Bay, we would also like to note that nutrient response relationships in many Florida estuaries and coasts are not nearly as straight-forward, often because nutrient loading is not the sole or even dominant stressor.

7) SAB Comments on Faunal Community Endpoint and Dissolved Oxygen

We agree with the Panel that more explanation is needed in the TSD on how EPA will use the Dissolved Oxygen (DO) criterion to maintain a balanced faunal community, including how linkages will be made between the faunal community and DO and which faunal metrics will be assessed. The draft report makes an excellent case that many Florida estuaries naturally do not attain the DO criterion, and as such, the DO criterion is not a good surrogate for faunal community health. We would like to refer the Panel to Appendix A of our nutrient TSD where we provided additional details on naturally low DO in Florida.

The Panel suggests that an appropriate DO target may be better characterized by a range of values rather than a single value and in terms of percent saturation (as opposed to concentration), particularly in South Florida warm subtropical waters. It would be helpful if the Panel proposed a specific value or range of values for a percent saturation target or a method to determine such a target.

8) Load Versus Concentration

The draft report clearly notes that TN and TP loading are better predictors of chlorophyll a, hypoxia, and SAV loss than nutrient concentrations and that nutrient loading is the ultimate driver of ecosystem changes, while nutrient concentrations are actually response variables. However, we request that the Panel provide a specific recommendation on whether EPA should be provided the flexibility to adopt NNC as loads, rather than concentrations, if loads are a better predictor of ecosystem health in a specific estuary. This is an extremely important issue, particularly when considering previously adopted and approved nutrient Total Maximum Daily Loads (which are often expressed as loads) as estuary-specific

NNC, and we request that the Panel review pages 37 and 38 of the Department's approach document on this subject.

We would like to note that EPA has expressed a preference for concentration-based NNC because concentrations can be directly measured, while loading-based NNC are more challenging to assess for use-attainment. However, it is important to note that nutrient loads can be measured, particularly in estuaries dominated by river flow (which are the most likely estuaries to be controlled by loading). Furthermore, even if the TN and TP criteria are established as a load, more readily measured concentration-based criteria can be established for response variables like chlorophyll a. We believe that the NNC should be expressed in the manner most appropriate for a specific estuary.

9) SAB Comments on Uncertainty

We agree with the Panel about the importance of addressing uncertainty, including the need to explicitly state and detail the level of uncertainty with predicted responses, and the need to "ground-truth" relationships between nutrients and responses. We also agree that EPA needs to better document other factors that modify relationship between nutrients and endpoints, and thereby contribute to uncertainty. When addressing uncertainty, we request that the Panel provide recommendations for the minimum threshold of certainty (scientific support) needed to establish NNC under each approach and recommend that EPA not promulgate NNC for specific estuaries until those minimum requirements are met.

Further, we request that the Panel provide recommendations that EPA should not simply make a series of conservative assumptions when minimum requirements are not met. Instead, EPA should be advised to further refine their models to better explain the variance in nutrients and endpoints.

10) SAB Comments on NNC Development for Coastal Waters

We agreed with the majority of the Panel's conclusions related to EPA's plans to use satellite imagery for the development of chlorophyll a criteria for coastal waters, including the Panel's caution that chlorophyll a levels are influenced by multiple factors, the recommendation to re-segment the coastal area using bathymetry, and the recommendation to cross-calibrate imagery from different satellites. However, we disagree with the Panel's recommendation and underlying presumption that "obvious antecedent bloom data points be removed from analyses as these are likely not representative of desired reference conditions." While the blooms are certainly not "desired", they have been demonstrated to be part of the historical (1800's) natural condition, and as such, should be included in the analysis (see pages 79 and

80 of the DEP TSD). If the Panel decides not to change their position on this issue, we request that the report clarify that the bloom conditions should also be excluded when evaluating coastal waters for attainment of the NNC.

The Panel pointed out that it was not clear whether the ten-year satellite dataset constituted an adequate baseline. We think it would be helpful if the Panel provided recommendations regarding methods to evaluate the magnitude of longer term factors that explain variability, and recommendations on how to address the variability in the proposed criteria.

We also suggest that additional clarification is needed about a) the panel's suggestion to move away from direct measurements of chlorophyll a and instead to consider using "anomalies" as a means of removing interferences, and b) what was meant by the reference to "Type I and Type II" waters.

#### 11) SAB Comments on DPVs

We agree with the Panel's statement that DPVs may not contribute to water quality protection beyond that which is already achieved by TMDLs, and the Panel's specific recommendations related to DPVs. However, we would like to emphasize that DPVs clearly "formalize, and unnecessarily restrict" the TMDL allocation process (rather than "appear to"), and more generally, that DPVs unnecessarily restrict the State's ability to tailor restoration strategies for specific estuaries. We believe that DPVs are neither legally or technically needed for effective NNC implementation, and encourage the Panel to relay a similar opinion to EPA.

#### 12) Use of Local Knowledge

We believe it is very important that both the Panel and EPA take into account the extensive local knowledge when developing estuary-specific criteria, and would like to again refer the Panel to DRAFT criteria documents that we have prepared for estuarine systems in Florida. While we provided select examples from these documents in our overview document, the SAB may wish to review the individual estuary reports as well, and the reports are available at our website (<http://www.dep.state.fl.us/water/wqssp/nutrients>).

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In closing, we would like to note that we are a strong proponent of peer review and believe that EPA has assembled an outstanding panel. Our goal for this process is for EPA to make the most of this opportunity to obtain the Panel's input on this important topic. Given the number of topics that warrant further consideration by the Panel, we recommend that the Panel request additional time to complete their review. If you or any of the SAB have any questions about our comments, please do not hesitate to call me at (850)245-8431.

Sincerely,

Daryll Joyner, Chief  
Bureau of Assessment and Restoration Support