



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 14 2009

OFFICE OF
WATER

Mr. Michael Sole, Secretary
Florida Department of Environmental Protection
3900 Commonwealth Boulevard, Mail Stop 49
Tallahassee, FL 32399-3000

Dear Secretary *Mike* Sole:

This letter constitutes a determination under Clean Water Act (CWA) section 303(c)(4)(B) that new or revised water quality standards for nutrients are necessary to meet the requirements of the CWA for the State of Florida. I am gratified to have learned that your Department supports EPA's determination that numeric nutrient water quality criteria are necessary to meet the requirements of the CWA for the State of Florida.

In considering whether new or revised standards are necessary, EPA recognizes that Florida has invested over \$20 million in collecting and analyzing data on the relationship between nutrient levels and biological impacts for purposes of developing numeric nutrient criteria and that Florida has implemented some of the most progressive nutrient management strategies in the Nation. Moreover, for over a decade, the State has developed and demonstrated an impressive track record of commitment, innovation, and stakeholder outreach and collaboration in its efforts to manage nutrient-related pollution. Florida achieved this record not only as a result of its longstanding commitment to environmental protection but also because it recognized the widespread and very substantial nutrient pollution challenges it faces.

Despite Florida's widely recognized efforts, substantial water quality degradation from nutrient over-enrichment remains a significant challenge in the State and one that is likely to worsen with continued population growth and environmental and land-use changes. EPA has determined that numeric nutrient water quality criteria are necessary for the State of Florida to meet the CWA requirement to have criteria that protect applicable designated uses. Additionally, numeric nutrient criteria will create clear water quality goals and easily measurable quantitative baselines to support stronger collaboration and more effective partnerships with both point and nonpoint source dischargers of nutrient pollution.



Today's determination affirms the wisdom of the substantial investments that Florida has made to date in nutrient data collection, analysis, and stakeholder involvement, and is fully consistent with the State's commitment to a stronger nutrient control program through a greater emphasis on the development of numeric nutrient criteria. Today's determination will support Florida in building upon its already strong record of water quality protection, result in criteria protective of applicable designated uses, and further expand and strengthen the numerous partnerships and collaborative projects Florida has led and supported to date.

Statutory and Regulatory Background

Section 303(c) of the CWA requires States and authorized Tribes (hereafter, collectively referred to as "States") to adopt water quality standards for waters of the United States within their applicable jurisdictions. Section 303(c)(2)(A) and EPA's implementing regulations at 40 CFR part 131 require, among other provisions, that State water quality standards include the designated use or uses to be made of the waters and the criteria necessary to protect those uses. EPA's regulations at 40 CFR § 131.11(a)(1) provide that States shall "adopt those water quality criteria that protect the designated use" and that such criteria "must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use."

States are also required to review their water quality standards at least once every three years and, if appropriate, revise or adopt new standards (CWA section 303(c)(1)). States are required to submit these new or revised water quality standards to EPA for review and approval or disapproval (CWA section 303(c)(2)(A)). Finally, CWA section 303(c)(4)(B) authorizes the Administrator to determine, even in the absence of a State submission, that a new or revised standard is needed to meet the CWA's requirements. When deciding whether a CWA section 303(c)(4)(B) determination is warranted for a particular state, EPA considers each situation based on its particular facts and circumstances. The CWA does not specify particular information or factors that EPA must consider when deciding to exercise its discretion under section 303(c)(4)(B), and EPA thus considers each individual case on its merits. The authority to make a determination under CWA section 303(c)(4)(B) is discretionary and resides exclusively with the Administrator, unless delegated by the Administrator. For the purposes of today's determination, the Administrator has delegated this authority to me, Benjamin H. Grumbles, EPA's Assistant Administrator for Water.

Florida's Current Nutrient Program

Florida has taken a number of steps to control nutrient pollution within the State. In addition to adopting a narrative nutrient criterion and implementing that criterion through NPDES permits, water body assessments, and TMDLs, Florida has established other programs and laws to control nutrient pollution in the State. Despite the State's substantial efforts, however, EPA concludes that, based on the available data, information, and trends, Florida's narrative nutrient criterion alone is not sufficient to

protect applicable designated uses, and that numeric nutrient criteria are necessary to meet the requirements of the CWA.

With respect to addressing nutrient pollution, Florida:

- (1) has adopted a nutrient-specific narrative criterion in its water quality standards, in addition to detailed nutrient-specific assessment procedures in its Impaired Waters Rule (IWR),
- (2) encourages individual watershed management plans through the State's Basin Management Action Plans (BMAPs), and
- (3) has enacted other State laws and programs regarding point and nonpoint source control such as the Grizzle-Figg Act of 1990.

Florida's Narrative Water Quality Criterion for Nutrients and the IWR

Florida's narrative water quality criterion for nutrients provides, in relevant part, that "in no case shall nutrient concentrations of a body of water be altered so as to cause an imbalance in natural populations of aquatic flora or fauna."¹ Florida's implementation of the criterion is based on site-specific detailed biological assessments and analyses together with site-by-site outreach and stakeholder engagement in the context of specific CWA-related actions, specifically National Pollutant Discharge Elimination System (NPDES) permits, total maximum daily loads (TMDLs), and assessment and listing decisions.

When deriving NPDES permit limits, Florida initially conducts a site-specific analysis to determine whether a proposed discharge has the reasonable potential to cause or contribute to an exceedance of the narrative water quality criterion in the receiving water or any other affected water. This analysis first involves examining the proposed discharge to determine, in the case of nutrients, whether the discharge contains phosphorus or nitrogen and second, determining the ambient water quality of the receiving water and any other affected waters with regard to nutrient levels and biological impacts. In Florida's case, the State then determines what levels of nutrients would "cause an imbalance in natural populations of aquatic flora or fauna" and translates those levels into numeric "targets" for the receiving water and any other affected waters. If Florida finds that there is reasonable potential, the State calculates permit limits stringent enough to ensure that such a discharge will not cause or contribute to an exceedance of the nutrient target levels (and therefore cause an "imbalance in natural populations of aquatic flora and fauna") for the water body and any other affected water bodies.

Accurately determining, on a water-by-water basis for thousands of waters, the levels of nutrients that would "cause an imbalance in natural populations of aquatic flora or fauna" is a difficult, lengthy, and data-intensive undertaking. This work involves performing detailed site-specific analyses of the receiving water and any other affected waters. If the State has not already completed this analysis for a particular water, it can be very difficult to accurately determine, in the context and timeframe of the NPDES

¹ See Florida Administrative Code (F.A.C. rule 62-302-530(47)(b)).

permitting process, the levels of nutrients that would “cause an imbalance in natural populations of aquatic flora or fauna” and process NPDES permits in a timely manner. For example, in some cases, adequate “cause and effect” data may take several years to collect and therefore may not be available for a particular water at the time of permitting.

Numeric nutrient criteria in Florida would enhance the effectiveness of NPDES permits in protecting designated uses and enable Florida permit writers to derive effluent limitations without the resource intensive and burdensome process of conducting site-specific analyses to determine the appropriate numeric target value. Therefore, numeric nutrient criteria would ensure that criteria are in place that will protect the designated uses of Florida’s waters as required by the CWA and EPA’s implementing regulations.

Having numeric nutrient criteria in place would have a similar effect in development of TMDLs. When developing TMDLs, Florida translates, as it does when determining reasonable potential and deriving limits in the permitting context, the narrative nutrient criterion into a numeric target that the State determines is necessary to meet the narrative criterion and protect applicable designated uses. This process also involves a site-specific analysis to determine the nutrient levels that would “cause an imbalance in natural populations of aquatic flora or fauna” in a particular water. Each time a site-specific analysis is conducted to determine what the narrative criterion means for a particular water body in developing a TMDL, the State takes site-specific considerations into account and devises a method that works for the data and information available. EPA maintains that numeric criteria for nutrients would enable the State to, in a more timely manner, establish TMDLs that identify nutrient reductions necessary to protect the designated uses. These resource intensive efforts to interpret the State’s narrative criterion contribute to delays in implementing the criterion and therefore affect the State’s ability to provide the needed protections for applicable designated uses.

In adopting the IWR, Florida took important steps toward improving implementation of its narrative nutrient criterion by establishing and publishing an assessment methodology to identify waters impaired for nutrients. This methodology includes numeric nutrient impairment “thresholds,” above which waters are automatically deemed impaired. For all other waters, the IWR specifies a process for conducting site-specific assessments to enable Florida to determine on a site-specific basis whether there is an imbalance in flora or fauna, before a formal impairment or listing decision can be made for these waters. This site-specific process necessarily results in additional delays in identifying all waters impaired by nutrients; such a delay would not exist with numeric criteria.

The thresholds of impairment used in the IWR are expressed as an increasing annual trend in trophic state index (TSI) for lakes and chlorophyll-a mean values for streams, estuaries, and open coastal waters. While these impairment thresholds and the site-specific assessment processes are useful for identifying impaired waters, significant delays in identifying all nutrient-impaired waters unavoidably result from the need to implement the narrative criterion on a site-specific basis for many waters. Numeric nutrient criteria are necessary to facilitate and expedite the identification of all nutrient

impaired waters in Florida; thereby providing necessary protection for the State's designated uses, as required by the CWA.

Implementation of the State's Basin Management Action Plans (BMAPs) and Other Florida Laws and Programs for Nutrient Control

As mentioned above, Florida has other innovative and important State programs designed to control nutrient pollution, such as those adopted to limit nutrient pollution in geographically specific areas. Numeric nutrient criteria will provide more precise, pre-determined targets that will facilitate more effective implementation of these programs and provide greater certainty as to the level of water quality necessary to protect the State's designated uses.

One of the State's innovative programs is the development of Basin Management Action Plans (BMAPs) through which Florida assembles groups of stakeholders to develop plans in order to implement State-adopted and EPA-approved TMDLs. These BMAPs outline strategies to implement TMDLs once they are established and include an implementation schedule, a method for evaluating the effectiveness of the BMAP, and funding strategies, as well as ways to address any future increases in pollutant loadings. NPDES permits may also be revised as necessary in order to implement BMAPs, and permitted dischargers (including storm water and other nonagricultural dischargers) implement Best Management Practices (BMPs) "to the maximum extent practicable" to reduce pollution. Nonpoint source dischargers are also covered by BMAPs, and may demonstrate compliance with the Plan by implementing BMPs or conducting water quality monitoring.² An essential prerequisite for successful implementation of this critical watershed approach is that the State first must undertake the process of determining impairments and then developing a TMDL. Timely development of TMDLs, established at levels necessary to protect designated uses, will be facilitated by having numeric nutrient criteria in place so that the State can more effectively and expeditiously implement the State's BMAP program.

In addition to BMAPs, Florida has implemented additional innovative approaches to address nutrient pollution. A good example is the 1990 Grizzle-Figg Act, (see Florida Statutes 403.086³), which requires limits of 5/5/3/1 mg/l (BOD₅/SS/TN/TP⁴) for all domestic wastewater treatment facilities in the Tampa Bay area. In 1999, the Florida State Legislature established Advanced Wastewater Treatment (AWT) limits at 5/5/3/1 mg/l (BOD₅/SS/TN/TP) for wastewater facilities in the Florida Keys (see Laws of Florida Chapter 99-395⁵). Florida has also adopted other rules to limit nutrient pollution in geographically specific areas like the Indian River Lagoon System, the Everglades Protection Area, and Wekiva Springs. In these cases, Florida has either specifically limited nutrient pollution in the water body, from point and nonpoint source discharges, limited discharges altogether, or, in the case of the Everglades Protection Area,

² http://www.waterinstitute.ufl.edu/research/projects/downloads/p001-Ch7_SpringsNutrients.pdf

³ http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=Ch0403/Sec086.H

⁴ Biological Oxygen Demand (BOD₅), Suspended Solids (SS), Total Nitrogen (TN), and Total Phosphorus (TP)

⁵ http://laws.flrules.org/files/Ch_1999-395.pdf

constructed stormwater treatment areas that can remove nutrients from runoff. Implementation of these types of programs could be refined and enhanced if decision makers are aware of the numeric nutrient criteria that are necessary to protect designated uses.

Magnitude of Nutrient Over-Enrichment in Florida

Water quality degradation due to nutrient over-enrichment is a significant environmental issue in Florida. Florida's Department of Environmental Protection has acknowledged and documented the magnitude of over-enrichment. According to Florida's 2008 Integrated Report,⁶ approximately 1,000 miles of rivers and streams, 350,000 acres of lakes, and 900 square miles of estuaries are impaired for nutrients in the State. To put this into context, these values represent approximately 16% of the assessed river and stream miles, 36% of the assessed lake acres, and 25% of the assessed square miles of estuaries that Florida has listed as impaired under the IWR. The actual number of miles and acres of waters impaired for nutrients is likely higher, as many waters currently classified as "unassessed" may also be impaired.

This conclusion is based upon a range of available information, including the vast amounts of monitoring data that exist on nutrient-related parameters in Florida waters. With almost 800,000 nutrient-related data points in STORET (including nitrogen, phosphorus, chlorophyll-a, and turbidity), Florida has substantially more data points than any other State or Territory to clearly characterize the magnitude of its nutrient challenges.

Monitoring Data and Impairments Indicate that Nutrient Problems Persist in Florida

An analysis of United States Geological Survey (USGS) monitoring data for nutrients in certain locations in Florida shows that levels of nutrient pollution have not significantly improved since 1980 despite strong efforts to control nutrient pollution. Concentrations of Total Phosphorus (TP) and Total Nitrogen (TN) have remained relatively constant at an average of 0.15mg/L and 1.4mg/L, respectively.⁷ Additionally, Florida's recurrent harmful algal blooms continue to pose threats to public drinking water supplies and recreational sites. Harmful algal blooms that occur inland and near shore are typically caused by excess nutrients.⁸

Nutrient pollution in Florida has a predictable and widespread impact. The extent of this impact has been well documented and tracked for many years. According to Florida's most recent EPA-approved CWA section 303(d) list from 2002,⁹ of the 823 waters listed as impaired in Florida, over 60% (over 550 waters) are impaired for nutrients.

⁶ http://www.dep.state.fl.us/water/docs/2008_Integrated_Report.pdf

⁷ USEPA. 2000. STORET Legacy Data Center. <http://www.epa.gov/storet/dbtop.html>

⁸ http://www.dep.state.fl.us/water/tmdl/docs/2006_Integrated_Report.pdf

⁹ http://www.dep.state.fl.us/water/tmdl/adopted_gp1.htm

Florida's Environment is Unique and Presents Special Challenges

Florida's natural physical factors, including flat topography and numerous wetlands, a warm and humid climate, nutrient-rich soils, hydrology, and erosion caused by tropical storms and hurricanes make controlling nutrient pollution particularly challenging because these conditions are especially conducive to nutrient over-enrichment. In addition, human caused impacts such as hydrological modifications (i.e., canals), intensive agricultural production, population growth and associated urban and suburban development have had a broad and widespread effect. Effectively addressing current nutrient impairments in the State represents a significant challenge and is compounded by a projected population growth of almost 80 percent in Florida from 2000 to 2030.¹⁰ Further development and urbanization will likely result in increased nutrient runoff and pressure to utilize remaining agricultural lands more intensively.¹¹

Within the continental United States, Florida possesses unique and nationally valued aquatic ecosystems, including shallow coral reefs, freshwater and salt marshes, swamps, and mangroves.¹² These aquatic ecosystems are particularly sensitive to the effects of excessive nutrients which threaten the State's significant biological diversity. The number of species in Florida (3,500 native vascular plants and 1,500 vertebrates) is higher than in all but three other states. Further, Florida also has many endemic species (410 invertebrates, 258 plants and vertebrates) that are not found anywhere else on Earth.¹³ Florida has many water-filled caves and sinkholes that serve as hotspots of biological diversity and provide homes to many species of aquatic life, some unique to particular Florida locations.¹⁴ Additionally, Florida is the only state in the continental United States to have extensive shallow coral reef formations near its coasts (i.e. within five miles).¹⁵ A recent study initiated by the United Nations Food and Agriculture Organization found that the single richest concentration of marine life in the Atlantic Ocean lies some 10 miles off the tip of Southern Florida within the Florida Straits.¹⁶ This biological diversity relies on sufficient quality habitat and other natural resources, including clear, transparent waters low in phosphate and nitrogen nutrients.^{13, 14} Especially in the case of coral reefs and flora and fauna in natural spring environments, clear water with plenty of light and oxygen available is critical to the protection of the species that inhabit these locations. Nutrient enriched water can have reduced transparency and low dissolved oxygen levels that are not protective of the natural biology in Florida. Effectively managing nutrient levels in Florida's lakes, flowing waters, estuaries and coastal waters through numeric nutrient criteria is important to maintaining the ecosystems in these waters and important ecosystems that are near shore.

The combined impacts of urban and agricultural activities along with Florida's physical features and important and unique aquatic ecosystems make it clear that the

¹⁰ <http://www.census.gov/population/projections/SummaryTabA1.pdf>

¹¹ http://www.dep.state.fl.us/water/docs/2008_Integrated_Report.pdf

¹² <http://sofia.usgs.gov/publications/ofr/2005-1021/>

¹³ <http://edis.ifas.ufl.edu/CR004>

¹⁴ <http://www.floridasprings.org/anatomy/life/>

¹⁵ <http://www.dep.state.fl.us/coastal/habitats/coral.htm>

¹⁶ <http://www.scienceblog.com/community/older/2003/D/20031748.html>

current use of the narrative nutrient criterion alone is insufficient to ensure protection of applicable designated uses. Numeric nutrient criteria will strengthen the foundation for identifying impaired waters, preparing TMDLs and developing NPDES permits, as well as support the State's ability to effectively partner with point and nonpoint sources to control nutrients, thus providing the necessary protection for the State's designated uses.

Determination

Nutrient pollution in Florida remains a significant and growing challenge. Recognizing this, Florida has invested tens of millions of dollars in the collection of data to establish the cause and effect relationship between nutrients and biological conditions in order to be well positioned to establish what the State, itself, believes are much needed numeric nutrient water quality criteria. As discussed above, despite Florida's considerable data collection and analysis efforts and outreach with stakeholders to date, the State is relying on its narrative nutrient criterion, the application of which is resource intensive, time consuming, and less than effective in implementing programs to protect water quality and prevent impairments of designated uses due to nutrient over-enrichment. The very substantial and widespread nature of nutrient challenges faced by the State and the barriers to effective implementation associated with narrative nutrient criteria in Florida, such as the need for numerous, highly technical site-specific analyses prior to the development of water quality-based effluent limitations in NPDES permits and TMDLs, strongly support the need in this case for numeric nutrient criteria to effectively protect designated uses and prevent impairments. In many circumstances, narrative criteria can be an effective tool for protecting designated uses, particularly when the scope and nature of the environmental problem is easily and clearly defined and derivation of appropriate control measures can be effectively and expeditiously accomplished (e.g., toxic pollutants and bioassessments). However, achieving faster and more effective progress in water quality protection with regard to nutrients is critical in Florida due to the significant and far-reaching impacts of nutrient pollution on the unique and highly valued aquatic ecosystems that exist in the State. In this case, numeric nutrient criteria are needed to protect Florida's designated uses.

While Florida has made headway on this issue by developing a methodology in the IWR that allows the State to automatically list certain waters with higher levels of nutrients, Florida still must conduct case-by-case assessments to determine if an imbalance in flora or fauna exists for waters below the IWR impairment thresholds. The existence of numeric nutrient criteria will facilitate Florida's efforts to identify all nutrient-impaired waters. Quantifiable nutrient criteria also will facilitate Florida's efforts to establish TMDLs and appropriate WQBELs in NPDES permits as necessary to adequately protect applicable designated uses. It will also create a strong and clear baseline against which to measure progress and upon which to support stronger and more effective point and nonpoint partnerships.

For all of these reasons, EPA hereby determines under CWA section 303(c)(4)(B) that new or revised water quality standards for nutrients in the form of numeric nutrient criteria are necessary in the State of Florida to meet the requirements of the CWA (CWA

section 303(c)(2)(A) and 40 CFR § 131.11(a)(1)). Numeric nutrient criteria will enable the State to implement nutrient controls more broadly, effectively, and expeditiously to protect applicable designated uses and meet the challenge of the extent and severity of nutrient pollution in Florida. EPA notes that it has not previously made a determination on whether numeric nutrient criteria are necessary in Florida, and clarifies this point so as to resolve any questions that may previously have arisen on this issue.

EPA's Expectation Regarding a Remedy to this Situation

Section 303(c)(4) of the CWA requires that the Administrator promptly prepare and publish proposed regulations setting forth a new or revised water quality standard when the Administrator makes a determination. EPA will move forward to develop federal proposed regulations setting forth numeric nutrient criteria for Florida and expects that these criteria will be developed in a manner that ensures that there will be no imbalance in natural populations of flora and fauna in Florida waters. EPA will work collaboratively with Florida's technical experts to generate data and conduct analyses. EPA understands that Florida has an extensive stakeholder outreach and comment process underway and has already committed to share with EPA the public comments and stakeholder input received by Florida in this process, so that EPA may consider this input as it develops the federal proposal. EPA intends that the criteria will be protective of applicable designated uses, based on sound scientific rationale, responsive to the specific needs of Florida's waters, and sufficient to meet the needs of the State's complete suite of water quality management tools.

In terms of schedule, the State of Florida has made significant progress in collecting data needed to adopt nutrient criteria for its lakes and flowing waters. Florida expects to complete data collection, laboratory analysis of the data, and compilation of the data by March 2009. EPA anticipates that six months will then be required to complete detailed analyses of the data to identify the relationships between nutrient causal variables, e.g. nitrogen and phosphorus, and key response variables, e.g., chlorophyll a, Secchi depth, periphyton, and dissolved oxygen (DO). This analysis will be an important step in developing the numeric nutrient criteria. EPA expects that an additional four months will be needed to organize, document and assemble the complex technical analysis and administrative record to support and prepare the preamble and federal proposal for publication.

For estuaries and coastal waters, Florida is working to compile and assess the adequacy of the data available to develop nutrient criteria. EPA has reviewed the State's progress and assessed the remaining work associated with this analysis and estimates that 12-24 months will be necessary to develop these criteria values, reflecting the broader technical uncertainties and additional evaluation that will be necessary to determine cause and effect relationships between nutrients and biological response parameters in these waters. Additionally, there is a possibility that additional data collection may be needed should the analyses yield inconclusive results.

In conclusion, EPA expects to propose numeric nutrient criteria for lakes and flowing waters within 12 months, and for estuaries and coastal waters, within 24 months. EPA expects to work closely and collaboratively with the State of Florida to ensure that these numeric nutrient criteria are protective of applicable designated uses, based on sound scientific rationale, responsive to the specific needs of Florida's waters, responsive to available public and stakeholder input, and sufficient to meet the needs of the State's complete suite of water quality management tools. As always, in the event that Florida adopts and EPA approves new or revised water quality standards that sufficiently address this determination before EPA promulgates federal water quality standards, EPA would no longer be obligated to promulgate federal water quality standards.

Sincerely,



Benjamin H. Grumbles
Assistant Administrator

cc: Mr. Jimmy Palmer, Regional Administrator, EPA Region 4
Mr. James D. Giattina, Director, Water Management Division, EPA Region 4