

February 26, 2018

Mr. Mario Sengco
Standards and Health Protection Division
Office of Water, Mailcode: 4305T
Environmental Protection Agency
1200 Pennsylvania Ave. N.W.
Washington, D.C. 20460
Via email: sengco.mario@epa.gov and posted to www.regulations.gov

Docket ID No. EPA-HQ-OW-2017-0010

RE: Water Quality Standards for the State of Missouri's Lakes and Reservoirs

Dear Mr. Sengco and other Agency Officials:

The Mississippi River Collaborative, which includes numerous organizations with members that use Missouri lakes and downstream waters for recreation, drinking water, commercial and sport fishing and other uses, and other organizations identified below which also rely on water quality in Missouri lakes and downstream waters, submit these comments on the draft federal nutrient criteria for the State of Missouri's Lakes and Reservoirs of the U.S. Environmental Protection Agency ("EPA").

Neither of the two proposed alternatives to establish federal nutrient criteria to protect designated uses for the State of Missouri's lakes and reservoirs can properly be adopted under federal law because, in violation of 40 CFR 131.11(a), they do not protect designated uses. For the same reason, the criteria that have been recently adopted by the State of Missouri cannot legally be approved by the United States Environmental Protection Agency under Section 303(c) of the Clean Water Act, 33 U.S.C. 1313(c).

Of the improper choices, Federal Alternative 1 is less objectionable than Federal Alternative 2, which is essentially identical to the wholly deficient proposed state standards. However, any criteria, including Alternative 1, that allow waiting for ecological damage to occur before taking action are improper and should not be established or approved by EPA.

Also, for additional reasons, the two federal alternatives and the Missouri criteria fail to protect drinking water, recreation and aquatic life uses adequately and also fail to protect downstream waters.

In this letter, commenters describe fundamental flaws in the EPA alternatives and the Missouri criteria before responding to specific EPA requests for comment.

I. There are fundamental flaws in both agency proposals and the recently adopted but unapproved Missouri criteria.

I-A. One does not protect something by waiting until it is damaged to act.

The proposed federal criteria and the state criteria do not protect for the obvious reason that they allow pollution to occur until it has begun to impair designated uses. The total nitrogen (TN) and total phosphorus (TP) criteria set in both federal alternatives and the Missouri draft criteria do not become operative until algal growth has reached unnaturally high levels, cyanobacteria counts have reached potentially dangerous levels, dissolved oxygen or pH standards have been violated or damage to aquatic life is apparent. The proposed federal and state criteria are not protective, in that same way that it is not protective to drive by continuing to keep one's foot on the gas until one has an accident.

Common sense dictates that waiting until damage has been done before applying criteria is not "protective," as has been repeatedly recognized by U.S.EPA in the past.

In responding in 2010 to a comment on draft Florida criteria for lakes, EPA wrote:

EPA believes that the intent of the water quality standards as described in the CWA section 303(c) is to be preventive in a way that would restore and maintain water quality; not to be reactive once impairments have been observed. EPA also notes that reliance upon biological responses as the arbitrator of a [impairment] listing may provide a false sense of security and preventiveness by the water quality criteria. It is the Agency's scientific understanding that there are confounding factors that may prevent a biological response in time and space in a particular waterbody, but the response may be present at that same space during another time when the confounding factors are removed or may be present in another space when water flows downstream where the confounding factors are absent. Additionally, there can be lag time between nutrient concentration and response - a concentration that is measured at a particular time is not necessarily the concentration that caused the response. (Ex. 1)

In rejecting such a wait until there has been damage approach in the past, Acting Assistant Administrator Nancy Stoner wrote in 2011:

Your letter proposes an integrated approach to assess waters for nutrient impairment, in which a waterbody would not be listed as impaired until after a nutrient response or impact is observed, even if nitrogen and/or phosphorus concentrations exceed the relevant standard. The Agency's primary concern with this approach is that waiting for visible algal growth or an alteration in the biological community ensures that the designated use is already impaired before action is taken to reduce nitrogen and phosphorus loadings. It takes a significant amount of time and resources for a waterbody to recover once visible signs of nitrogen and phosphorus enrichment are demonstrated. Assessing for nutrient causal parameters, and implementing the necessary controls if the causal criteria values are, or have the potential to be, exceeded, will help prevent a nutrient response.¹

See also, NPDES Permit Writer's Manual, U.S. EPA, September 2010, chapter 6, pp6-11.

¹ March 1, 2011 Letter to Ronald F. Poltak, New England Water Pollution Control Commission, at 3, available at <https://www.epa.gov/sites/production/files/2015-01/documents/newengland-interstate-nutrients-letter.pdf> (last visited February 15, 2018)

Specifically, with regard to a Missouri proposal that contained the same faulty concept of waiting until damage is done to apply TN and TP criteria which both current federal alternatives incorporate, EPA Region 7 wrote, "The MDNR's proposed screening-based thresholds for chlorophyll- α , total phosphorus and total nitrogen focus on waters already requiring restoration and would do little to protect designated uses." Letter from Karen Flournoy to John Madras (May 12, 2016).

One would not say that a parent had protected a child if the child was sent out in the winter without a coat until the child caught a cold, and the parent only then took action to make sure the child was dressed for the weather. To say that the proposed federal or state lake criteria "protect" designated uses is an abuse of the English language as well as an abuse of Missouri lakes. These criteria are designed to identify impairments; they do not protect against them.

EPA must assure that Missouri DNR does not adopt a reactive approach to nutrient by approval of such criteria. The TN and TP screening values developed by U.S. EPA and Missouri should be used to write permit limits now to protect against violations of the existing narrative standards and should be used as numeric standards.²

As stated in the "Guiding Principles on an Optional Approach for Developing and Implementing a Numeric Nutrient Criterion that Integrates Causal and Response Parameters (EPA-820-F-039, September 2013):

NPDES Permits must contain limits for any pollutants or pollutant parameters that are or may be discharged at levels that will cause, have a reasonable potential to cause, or contribute to an excursion above any WQS (40 CFR 122.44(d)(1)). Such limits must be sufficiently stringent to achieve all applicable WQs. *Under this approach, where reasonable potential exists, permit writers must include limits in permits to achieve the WQS and, in doing so, should develop water quality-based effluent limits based on the number nutrient causal parameters.*³ (emphasis added)

If it is MDNR's intent in passing these rules is to not impose limits in cases in which TN or TP may cause a violation of narrative water quality standards or the numeric DO or pH standard, that would properly be seen as a major change in the existing standard that would be subject to approval under 303(c). Florida

² Under federal law, Missouri in writing permits must limit pollutants that may cause or contribute to violations of water quality standards, including narrative standards. 40 CFR §122.44(d); *American Paper Institute v. USEPA*, 996 F. 2d 346, 350 (D.C. Cir 1993). The screening values for TN and TP developed by EPA should also be used to determine what is *de minimus* under the Missouri antidegradation rules.

³ <https://www.epa.gov/sites/production/files/2013-09/documents/guiding-principles.pdf>. p. 4.

Public Interest Research Group v. EPA, 386 F.2d 1070, 1088-90 (11th Cir. 2004)(whether state rule is a standard requiring review by EPA is determined by its practical effect)⁴

I-B. The record does not establish that the criteria are protective of drinking water or swimming.

In addition to the federal alternatives and the Missouri proposal being reactive rather than protective, the chlorophyll α , TN and TP screening values do not address many uses. Neither the U.S. EPA criteria nor the MDNR criteria appear to have given serious consideration to protection of drinking water or primary recreation uses.

EPA's reasoning regarding recreation and drinking water uses is:

Protecting a water body at reference conditions should inherently protect all designated uses and therefore should support the most sensitive use. EPA is unaware of compelling scientific evidence that would suggest that the reference condition approach employed would not protect Missouri's aquatic life, recreation and drinking water designated uses. 82 FR at 61221-22.

This reasoning is erroneous. First, EPA's recommended use of the 75th percentile of undisturbed or minimally disturbed reservoirs and lakes for nutrient criteria probably leaves about three-fourths of undisturbed waters unprotected.

Moreover, not all undisturbed lakes are (or were) suitable for use as drinking water and primary recreation. Even assuming that EPA, through use of the 75th percentile values for reservoirs and lakes thought to be relatively undisturbed, has identified the TP, TN, and chlorophyll levels that would be present in undisturbed waters, it is simply not the case that all undisturbed waters support all recreation and drinking water uses. There is no necessary relationship between a water body being undisturbed and support of certain uses.

Certainly, lakes that have been affected by pollutants are less likely to support uses, but there are waters with naturally high levels of nutrients as well as waters affected by cultural eutrophication.⁵ By lumping lakes that naturally would support swimming and drinking water supply with all undisturbed lakes to develop an estimate of average nutrient levels in an undisturbed lake and using that as the criteria, EPA is condemning the lakes that could naturally support swimming and drinking water supply to be polluted unnaturally to the levels of pollutants of lakes that naturally could not support these uses.

Further, lakes clogged with Eurasian milfoil or other nutrient-fed aquatic weeds are impaired for recreational uses, but that would not be reflected in suspended microalgal chlorophyll α levels.

Given the lack of precision provided in the draft federal alternatives and the Missouri criteria for eutrophication impacts and the likelihood that such impacts might be missed during a three-year period,

⁴ Also, if Missouri intends to quit protecting Missouri lakes until they are impaired that would be a major change in the state program that would require EPA approval under 40 CFR §123.62. Of course, such a change could not be approved.

⁵ Dodds, W. and Whiles, M, Freshwater Ecology, Academic Press (Second Ed. 2010) p. 470

it is entirely possible under these draft criteria that a badly impaired lake would be mistakenly graded as unimpaired.

Protection of drinking water and swimming uses requires identification of what is necessary to support those uses. Certain recreational uses and drinking water use have been harmed at chlorophyll *a* levels exceeding 10 µg/L.⁶ This figure is lower than EPA criteria alternative #1 for the plains and well below the EPA criteria Alternative #2/MDNR Chl-*a* Criteria (30/22/15 µg/L) and screening criteria (18/13/6 µg/L). Waters that naturally cannot meet levels needed to support recreation and drinking water uses should be assigned criteria following a use attainability analysis pursuant to 40 CFR 131.10(g)(1)

The EPA criteria #2/MDNR criteria further suffer from the fact that they focus on support of sport fishing although it is known that largemouth bass can tolerate badly nutrient-enriched waters.⁷

I-C. The Criteria do not protect downstream waters including the Gulf of Mexico.

EPA states that it is “confident” that the values chosen for Alternative #1 are protective of downstream waters (82 FR at 61224), but does not mention this issue with regard to Alternative #2 which is substantially similar to the Missouri criteria.

The basis for EPA’s confidence that its Alternative #1 values protects downstream waters are that lakes and reservoirs are generally “sinks” and criteria for lakes and reservoirs are generally lower than those for streams. (82 FR at 61224). EPA, however, does not consider downstream lakes in other states or the effect of nutrients originating in Missouri on the Gulf of Mexico. With regard to the latter, it should be noted that the 2017 Gulf Dead zone was the largest on record.⁸

II. Responses to Specific EPA Requests for Comment

Scattered through the EPA public notice are requests for comments on specific topics. Responses to these requests are as follows.

⁶ EPA Draft Human Health Recreational Ambient Water Quality Criteria (2016) (discussing World Health Organization finding “moderate” risk of “acute health effects” from recreation in water above 10 µg/L; available at <https://www.epa.gov/sites/production/files/2016-12/documents/draft-hh-rec-ambient-water-swimming-document.pdf>; Draft Reply to EPA Regarding Missouri’s Numeric Nutrient Criteria, available at <https://dnr.mo.gov/env/wpp/wqstandards/docs/draft-reply-to-epa-nutrients.pdf>; Bachmann, R.W., Bigham D.C., Hoyer, M.V. and Canfield, D.E. Jr., Phosphorus, Nitrogen and the Designated Uses of Florida Lakes, Lakes and Reservoir Management Vol. 28 (2012) available at <http://www.tandfonline.com/doi/full/10.1080/07438141.2011.650835>; Hoyer, M.V., Brown C.D., and Canfield D.E. Jr. Relations between Water Chemistry and Water Quality as Defined by Lake Users in Florida, Lake and Reservoir Management (2004) available at Lakewatch.ifas.ufl.edu/pubs/Hoyer_2004_Relations_water_chemistry.pdf, Nevada Nutrient Assessment Protocol for Lakes (2008) available at https://ndep.nv.gov/uploads/documents/nutrientprotocols_lakes_1_.pdf

⁷ Hoyer, M.V. and D.E. Canfield Jr. (1996) Largemouth bass abundance and aquatic vegetation in Florida lakes: An empirical analysis. *Journal of Aquatic Plant Management* 34: 23-32.

⁸ <https://healthygulf.org/blog/dead-zone-bigger-ever-report-reveals-americas-largest-meat-companies-role-polluting-gulf-mexico>

Whether response variables are the best indicators of impairment or non-impairment (82 FR at 61219)

Certainly, response variables can be indicators of impairment or non-impairment, but that is not the important question as to whether criteria protect designated uses. Finding that one has lung cancer is a strong indication of health impairment, but determining the number of cigarettes one should smoke using the criteria of whether or not one has lung cancer would not be protective.

Further, even in determining whether a water body is impaired, it is necessary to assure that all of the major response variables are being monitored. A lake clogged with aquatic weeds of a type known to be stimulated by nutrient pollution is not healthy even if the sestonic chlorophyll *a* levels are not excessive.

Whether a water is meeting its designated use if data on some or all response variables are missing (82 FR at 61219)

No, if data on response variables are missing, there is no way to know if the lake is meeting designated uses or not. As stated in the "Guiding Principles on an Optional Approach for Developing and Implementing a Numeric Nutrient Criterion that Integrates Causal and Response Parameters," "States interested in [the integrated approach that uses response parameters] should have a biological assessment program that confidently measures biological responses and other nutrient -related response parameters through a robust monitoring program to account for spatial and temporal variability to document the effects of nutrient pollution."⁹

Further, some of the values for response values specified in the draft criteria are too loose as to some uses. According to the science literature, drinking water, primary recreation, and some aquatic life uses cannot be met fully with chlorophyll α levels above 10 $\mu\text{g/L}$; aquatic plant growth can affect uses without affecting sestonic chlorophyll α levels; and cyanobacteria counts of 100,000 cells/mL are unacceptably high. By the time there are observed shifts in aquatic diversity at higher trophic levels, the lake is probably so badly damaged that it would take decades to recover if nutrient pollution was substantially reduced.

Whether the scope of waters covered is appropriate for the current rule (82 FR at 61219)

No, lakes that are supporting or have historically supported pollution-sensitive aquatic species, drinking water or recreation uses should be assigned additional criteria designed to protect those uses.

Whether the set of nutrient protection values as derived for Alternative #1 is appropriate. (82 FR at 61221)

No, although the numbers chosen as screening values in Alternative #1 are protective as to some uses, they exceed protective values for drinking water and swimming as explained above.

⁹ "Guiding Principles on an Optional Approach for Developing and Implementing a Numeric Nutrient Criterion that Integrates Causal and Response Parameters, p. 1

Whether the chl- α in Alternative #2 would protect designated uses (82 FR at 61225)

No, the chl- α values chosen in Alternative #2 are too high to protect some aquatic life, swimming, and drinking water uses. Further, by failing to consider aquatic plants, for example, P-stimulated Eurasian water milfoil (*Myriophyllum spicatum*), Alternative #2 is not protective.¹⁰

Whether Alternative #2 is valid as protective if a water body is not identified if it exceeds a screening value for TN or TP and chl- α but there are no documented eutrophication impacts. (82 FR at 61225)

No, Alternative #2 and the Missouri draft criteria are not protective, first, because one does not protect something by waiting until it is damaged.

Further, there can easily be eutrophication impacts without those impacts having been documented. This is particularly true given that the impacts considered under Alternative #2 are so severe that there has already been irreparable harm to the lake under consideration. Some of the impacts are also very difficult to measure.

Whether in addition to the Agency co-proposals other scientifically defensible options exists. (82 FR at 61225)

Yes, the Agency should consider criteria that:

- Use data from other states. There is no scientific reason to limit consideration of data to data collected within the State of Missouri. There is no reason to believe that the state border lines are of any importance to algae, fish or other aquatic life.
- Develop response criteria designed to protect particular uses (e.g. swimming, drinking water source, sensitive aquatic species) by focusing on the needs of those uses. Criteria developed in that fashion could be applied to each Missouri lake until it is shown, pursuant to 40 CFR 131.10(g), that that water cannot be expected to meet those uses.
- Independently apply TN and TP criteria without regard to response variables in order to be protective.

Whether use of the 50th percentile for the Plains for Alternative #1. (82 FR at 61255)

This is appropriate.

Conclusion

EPA should establish criteria that protect the designated uses of Missouri reservoirs and lakes. The record and the need to establish criteria to stop the continuing eutrophication of these water bodies requires that EPA immediately adopt the screening values given in Alternative 1 (Table L) for TN and TP

¹⁰ Smith, C.S. and J.W. Barko (1990) Ecology of Eurasian watermilfoil. *Aquatic Plant Management* 28: 55-64.

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as the applicable numeric criteria for Missouri lakes (not covered by other numeric criteria) for use in setting numeric water quality based effluent permit limits without use of any response variable.

Sincerely,

Albert Ettinger

Counsel to the Mississippi River Collaborative
53 W. Jackson #1664, Chicago, Illinois 60604
Ettinger.Albert@gmail.com

and

Arkansas Public Policy Panel

1308 W 2nd St
Little Rock, AR 72201

Great Rivers Environmental Law Center

319 W 4th St, #800
St. Louis, MO 63102

Great Rivers Habitat Alliance

PO Box 50014
St. Louis, MO 63105

Gulf Restoration Network

330 Carondelet St
New Orleans, LA 70117

Iowa Environmental Council

521 E Locust St, #220
Des Moines, IA 50309

Midwest Environmental Advocates

612 W Main St
Madison, WI 53703

Missouri Coalition for the Environment

3115 S Grand Blvd, # 650
St. Louis, MO 63118

Missouri Farmers Union

15593 245th St
Fairfax, MO 64446

Sierra Club, Missouri Chapter

2818 Sutton Ave
St. Louis, MO 63143

Tennessee Clean Water Network

625 Market St, 8th Floor
Knoxville, TN 37902