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# Draft Ambient Water Quality Criteria Recommendations for Lakes/Reservoirs: Association of Clean Water Administrators/Association of State Drinking Water Administrators Comments

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The Association of Clean Water Administrators and Association of State Drinking Water Administrators (collectively “ACWA”) submitted August 20th comments to the United States Environmental Protection Agency (“EPA”) on a document titled:

*Draft Ambient Water Quality Criteria Recommendations for Lakes and Reservoirs of the Conterminous United States Information Supporting the Development of Numeric Nutrient Criteria*

The two organizations describe themselves as the primary entities responsible for carrying out Clean Water Act and Safe Drinking Water Act programs on a daily basis.

Water Quality Criteria (“WQC”) are ambient water quality conditions deemed protective for the use established for a water body. States are required to adopt WQC to protect designated uses pursuant to Section 303 of the Clean Water Act. The WQC must specify maximum concentrations of pollutants that may be present in the water without impairing its suitability for certain uses. However, they can assume three forms. They may include:

1. Numerical terms reflecting maximum concentration of a particular pollutant in the receiving water;
2. Bioassay or biomonitoring results which reflect mortality rates of certain waterborne organisms relative to the concentrations of particular pollutants; or
3. Terms narrative in nature.

Clean Water Act National Pollution Discharge Elimination System permits must incorporate the limitations necessary to ensure the maintenance of the water quality standards applicable to the water body receiving the wastewater.

The scientific basis or rationale for a particular WQC is obviously important. The WQC represents a judgment as to what levels, concentrations, or conditions can support a desired use for a water body. An

indication of the importance of the WQC is the Clean Water Act's requirement that the EPA periodically issued new or revised WQC. States can develop their own WQC if justified by technical data. EPA also undertakes this task pursuant to Section 304(d) of the Clean Water Act. EPA WQC are frequently used by the states in establishing or revising their water quality standards.

EPA has for a number of years been considering strategies to develop nutrient WQC for lakes and reservoirs. EPA issued guidance in 2013 referencing a combined criterion approach. This approach was not limited to numeric phosphorus and nitrogen limits. States could potentially include biological, physical, and chemical parameters.

The phrase "nutrients" refers to nitrogen and phosphorus.

The draft numeric document EPA published in the May 22nd Federal Register references national criteria recommendations which are described as models for total nitrogen and total phosphorus concentrations in lakes and reservoirs. The designated uses for which they are intended to protect are stated to include:

- Aquatic life
- Recreation
- Drinking Water Source Protection

The draft WQC are stated to be based on stressor-response models. They link pollution stressors (i.e., nitrogen, phosphorus) to responses associated with protection of designated uses.

EPA states they would replace previously recommended ambient nutrient criteria for lakes and reservoirs.

By way of introduction, ACWA notes their general support of a stressor/response, risk-based approach to replace the 2000/2001 reference condition approach to numeric criteria development.

ACWA states:

We comment here with particular interest in the possible use of the finalized Draft LNNC to protect recreators, aquatic life, and drinking water sources from excessive nutrients and harmful algal blooms (HABs) that have the potential to adversely impact human health and drinking water treatment processes and costs. Therefore, states are keenly interested in the science and technical approaches used in the Draft LNNC.

Included in the comments are recommendations that EPA should:

1. Clarify the nature of the draft LNNC
2. Continue working with states prior to finalization
3. Provide states the model code they need, more-accessible model formats, and model clarity
4. Provide targeted support for exploring or adopting the models
5. Provide the following targeted support to enhance states' exploration and/or adoption of the models
6. Provide targeted training sessions to states
7. Provide clearly outlined procedures and processes for EPA to provide support and collaborate with states to include their data
8. Provide linkages to existing standards and models to aid state understanding of how the Draft LNNC methodology relates in form and function to existing approaches for deriving criteria for nutrients and other parameters used in the model
9. Develop a Data Dictionary

10. Publish draft technical guidance prior to finalization, with explicit identification of points of subjectivity in site- or state-specific use or calibration of models, as well as the underlying statistical methodology(s)
11. Clearly explain the assumptions made, as well as the alternative approaches that were considered, but not chosen
12. Document all issues raised about the models/R Shiny App, whether these reflect inconsistencies in derived values, difficulty in using the App, or other limitations that required a fix or adjustment.
13. Publish draft implementation guidance prior to finalization
14. Add information about how these national data gaps can potentially be offset by using state and local data, and where EPA can aim to include them in future national datasets and models
15. Clarify the parameters and data collection that would enhance continental scale characterization of cyanotoxin and disinfection by-product precursors or taste and odor chemicals abundance
16. Include the ability to establish a risk metric related to the microcystin model that also supports reduced DBPs as a function of TN and TP limits that hinder algal biomass and resulting organic matter
17. Clarify scale relating to cyanotoxins
18. Add information to acknowledge that some states set water quality criteria based on the assumption that drinking water utilities should only need to use standard treatment protocols to protect human health from contaminants in drinking water sources
19. Account for potential future drinking water designated uses
20. Before states are asked to consider the model-derived criteria for Chl a as a tool for minimizing microcystin concentrations to protect recreational uses, provide an assessment explaining how other drivers of microcystin production have been accounted for
21. Note that dermal contact vs. ingestion needs further explanation
22. Note that important pathways need to be considered and accounted for
23. Work with states to adapt the model to generating state- or lake-specific metrics, even when the underlying relationships are not sufficiently quantified for EPA to feel compelled to include under CWA 304(a) at this time
24. Note that linkage between future lake warming and protection of fish propagation needs inclusion or clarification
25. Articulate if and how a long-term lake warming trend—and the accompanying alterations in food web dynamics—is accounted for in the models
26. Adjust the endpoint and risk metric for cool- and coldwater fish to ensure support of fish propagation, rather than adult survival through the warmest summertime periods only
27. Clarify the uncertainty of these estimates and provide an assessment of effects that these assumptions have on the model output(s), and whether/how EPA validated assumptions using data
28. Clarify the seasonal applicability of the models and whether states may have the ability to “mix and match” seasonal and year-round values in part derived using the Draft LNNC methodology
29. Note that TN model’s national average of DOC inhibits site-specific TN criteria

30. Note that lake depth has inherent variability, and it is not clear if models capture this or typical lake management approaches
31. Specify the data beyond TN, TP, and Chl a—in an index of parameters, with suggested frequency—towards deriving each recommended criteria, if additional types of data are necessary or useful in improving the model accuracy
32. Note that model-derived criteria may render management guidelines counter to a lake’s natural conditions
33. Note that the stressor response approach can be enhanced by accounting for all known factors to the extent data are available
34. Note that it is unclear if the Draft LNNC apply to some coastal lakes influenced by salinity
35. Note that lake water quality can vary while still meeting water quality goals
36. Specify the definition used to determine if a lake is “dimictic” so that a state may easily determine applicability of the hypoxia model
37. Note that available broad and site-specific data may limit model utility
38. Note that states need clarity about the role of elevation in the Draft LNNC
39. Describe updates to NLA data and the Draft LNNC
40. Develop a table summarizing NLA usage
41. Develop an example of NLA-only-based criteria value(s)
42. Provide a summary of NLA data used in the Draft LNNC and flag important strengths and limitations in NLA data of concern to states and EPA
43. Clarify how and why two sets of water quality sampling at the national scale are nationally representative
44. Know the audience: Revise the document to accommodate broader subset of water quality professionals
45. Include typical executive summary components to aid understanding of criteria methodology, variables and parameters, and expectations
46. Model equations need quick reference
47. Use groupings for clarity
48. Revise document structure to reflect conceptual models (Figure 1 and Figure 2) and operation of the Draft LNNC modeling
49. Note what plays a role in the Draft LNNC models
50. Ensure Parallel Construction throughout the document
51. Use headings as opportunities to enhance conceptual clarity
52. Clarify Section 2.2.2., recreational use.
53. Ensure consistency in Section 3.1.1, biological data

A copy of the comments can be downloaded [here](#).