

June 2001

Public Comments on Ecoregional Nutrient Criteria Documents

27 separate comments were received on the Ecoregional Nutrient Criteria Recommendations published Jan. 9, 2001. The following lists all commenters:

1. North Carolina Department of Environment. and Natural Resources
2. Florida Department of Environmental Protection
3. Michigan Department. of Environmental Quality
4. Utah Department of Environmental Quality
5. Idaho Department of Environmental Quality
6. Minnesota Pollution Control Agency
7. Agricultural Retailers Association
8. Sugar Cane Growers Cooperative of Florida
9. City of Riverdale, California
10. Madison Metropolitan Sewage District
11. National Council of Farmer Cooperatives
12. Fertilizer Institute
13. American Farm Bureau Association
14. American Forest and Paper Association and the National Council for Air and Stream Improvement
15. Association of Metropolitan Sewerage Agencies
16. Barnes and Thornburg for the Water Quality Association
17. Collier and Shannon for the Specialty Steel Institute of North America
18. Metropolitan Council Environmental Services of Minnesota
19. Metropolitan Water Reclamation District of Greater Chicago
20. Western Coalition of Arid States
21. County Sanitation Districts for Los Angeles County
22. Midwest Environmental Advocates
23. Tri-Tac, the California Association of Sanitation Agencies, and the Southern California Alliance of POTWs
24. University of Florida
25. National Council for Air and Stream Improvement, Inc.
26. West Virginia Rivers Coalition
27. National Water Quality Monitoring Council

The following issues were expressed most frequently:

- **The frequency distribution approach used by EPA is arbitrary and results in inappropriate, stringent criteria that do not focus on environmental outcomes:** By definition, 75 percent of all waters in an ecoregion will not meet the resulting nutrient standards and will be deemed impaired, regardless of whether designated uses are

actually being protected.

EPA Response: The frequency distribution approach is not used to establish criteria; rather it is used to determine one of the components of a criterion, the reference condition. This reference condition is one element of a criterion which should be considered along with historical background information, possible model extrapolations of data, and consideration of possible downstream impacts on those waters by a regional panel of experts (Regional Technical Assistance Group or RTAG). These five elements combined in an ecoregional and coastal province classification scheme determine the nutrient criteria for each of at least four variables; total phosphorus, total nitrogen, chlorophyll-a, and clarity (others, such as dissolved oxygen and algal species may also be used).

Further, the scientific community uses frequency distributions as a common basic interpreter of data with the upper and lower quartiles as an admittedly subjective, but traditional approach to viewing the extent of a distribution about a central tendency. It is not mandatory or expected that the reference condition so derived be translated directly into a criterion. The selection of an upper quartile (or lower quartile with mixed water quality samples) is also consistent with the EPA policy to set levels protective of the majority of waters.

- **Data reduction methods are confusing:** There is confusion in calculating seasonal and annual median values in relation to the 25th percentiles. It appears the process may result in artificially low estimates. Additionally, EPA does not give adequate consideration to the summer values, which often will be higher than other seasons, due to low stream flow and high temperatures.

EPA Response: Each criterion document presents 25th percentiles for each season as well as all seasons. This was done because it was difficult to justify developing criteria for only one season for all ecoregions. For example, in some ecoregions the most significant season for **loadings** of nutrients into the system may be winter or spring depending on climate and rainfall, while the most significant season for primary production may be summer or fall, depending on the ecoregion. Each document also provides two figures, 4a and 4b which attempt to illustrate the data reduction efforts for each of the ecoregional reference conditions (25th percentiles). Future editions of the criteria documents may include further clarification of the data reduction efforts or include yearly data tables to further illustrate the seasonal and temporal variability within the dataset. Also, states and tribes are at liberty to index their reference condition values on a given season, usually the spring or summer are selected. States can and are encouraged to select the season most appropriate to their region to minimize nutrient impairments.

- **Pristine reference waterbodies will be incorrectly classified as impaired: The criteria should be set at concentrations high enough to include 100 percent of the pristine waters, not just 75 percent of them.**

EPA Response: See response to #1 above. The 75th percentile represents an appropriate

margin of safety to add to the minimum threshold, excludes the effect of spurious outliers, and serves as a first-order recommendation of a sufficiently protective value. The choice of the 75th percentile was a practical decision informed by scientific information. It represents the effort to avoid imposing undue penalty on high-quality mesotrophic lakes in regions where the lakes are predominantly oligotrophic. By selecting the upper percentile of reference lakes, there is greater likelihood that more of the broad population of lakes will comply. Conversely, in regions of intense cultural enrichment, a lower percentile of the distribution of the remaining lakes used as a reference must be selected to avoid establishing criteria based on degraded conditions. States can choose alternative percentiles with appropriate justification.

Criteria fail to meet the requirements of the Clean Water Act: EPA made no attempt to associate its ecoregional criteria recommendations with designated use or use the latest scientific knowledge. Furthermore, EPA ignores the benefits of nutrients to ecosystem health and assumes there is a clear nutrient threshold beyond which eutrophic problems occur.

EPA Response: Ecoregional nutrient and biological criteria are distinct from chemical criteria as originally described in the Clean Water Act. These are not criteria specific to designated use. Rather because they are reference condition-based, they are expected to support the broad array of aquatic life criteria in accordance with the Clean Water Act. These values are intended to be used by the Agency and the States/Tribes as benchmarks for comparison and evaluation when the States/Tribes prepare their own nutrient or biological criteria equated to particular designated uses.

- **Nutrient criteria are likely to create regulatory burden:** These proposed criteria values are likely to trigger numerous additional 303(d) impairment determinations and associated TMDLs that do not reflect actual impairments to beneficial uses. This will present an overwhelming obstacle to States and Tribes that are already struggling to develop TMDLs for currently listed sites.

EPA Response: There is the potential for additional 303(d) impairment determinations since many States do not have numerical nutrient standards in place at this time. However, on the other hand, many findings of nutrient impairment have been made qualitatively rather than quantitatively as evidenced by the results in past 305(b) reports. So it is not entirely clear what effect a more definitive numerical criteria will have on impairment determinations as compared to those made in the past, which were made, in many using best professional judgement.

- **EPA makes misleading characterizations:** EPA states that “approximately half of the national waters reported as impaired are attributable to excess nutrients.” This is an incomplete and misleading characterization in that EPA has only surveyed 19 percent of the nation’s total waterways.

EPA Response: EPA clearly states that as much as half of the surface waters surveyed in this country do not meet water quality objectives.

- **Criteria are generated with problematic data:** North Carolina recently determined

errors in their data and request that it be removed from the data set until results are corrected. Additionally, in the Rivers and Streams XII document, there are errors in TP concentrations; the text has 4.0 mg/l, while the table recommends a value of 40 ug/l or .4 mg/l.

EPA Response: These errors will be addressed in the database and in the criterion document.

- **The implementation schedule (i.e., 2004) does not provide adequate time for States and Tribes to collect sufficient data and develop and adopt criteria into rule.**

EPA Response: EPA is developing implementation guidance which will provide further guidance on flexibilities and expectations for adoption of criteria into state standards.

UPDATE:

See November 14, 2001 implementation guidance memo.

- **Criteria are too resource intensive for States and Tribes:** Data collection will be necessary to refine ecoregional criteria or develop an alternative scientifically defensible approach. Additional time will be required defending state criteria that differ from EPA's ecoregional values. Furthermore, States and Tribes will need additional funding to conduct the data analysis and additional monitoring that will be needed to establish these criteria.

EPA Response: EPA acknowledges that additional sampling and monitoring will require additional time and costs. EPA will also continue to fund nutrient sampling, monitoring, and cause and effect relationship modeling. Contact your Regional Nutrient Coordinator for details on the latest EPA RFP supporting the nutrient effort.

- **Recommended criteria represents a defined risk to fisheries:** Criteria documents fail to recognize the competing nature of "clean water" objectives and water quality necessary to support healthy fisheries. The recommended criteria may be considerably lower than concentrations needed to support fisheries.

EPA Response: The Agency agrees that in some instances, increased ambient enrichment produces a larger fishery than otherwise attainable, i.e. bass production in a warm water lake. But, generally cultural eutrophication has a negative effect. Where enrichment is documented as beneficial by regional specialists, EPA recommends that nutrient criteria development be developed to promote the removal of that amount of ambient total nitrogen and phosphorus in excess of optimal fish production as determined by consultation of the RTAG with state and federal fisheries biologists and water resource managers.

- **EPA should consider economic impacts and technological feasibility when issuing guidance (e.g., effluent dominated streams):** There are limits to the amount of nutrients

that can be removed at wastewater treatment facilities. There are high costs associated with nutrient removal, and phosphorus removal from wastewater often leads to phosphorus application on land through biosolids.

EPA Response: The Clean Water Act directs EPA to develop criteria which are scientifically defensible and protective of aquatic life. It clearly states that cost and technological feasibility consideration must not be part of the process to develop criteria, which are solely scientifically based. When a state formally proposed a nutrient standard, there is opportunity for discussion and debate regarding the costs and feasibility of meeting the standard.

- **EPA should focus on the nutrient of concern and develop site-specific criteria instead of aggregated ecoregions:** Regulation of multiple nutrients is unnecessary when typically only one limiting nutrient is of concern. This issue emphasizes the need for site-specific criteria within each state.

EPA Response: It is generally accepted that in fresh waters, phosphorus is most often the limiting nutrient determining the extent of vegetative growth (although there are nitrogen limited fresh water lakes, reservoirs, rivers and streams), conversely in the lower reaches of estuaries and in coastal marine waters nitrogen is most often the limiting nutrient because of the abundance of phosphorus in those waters. Because the continental waters of most of the U.S. cumulatively drain to the coasts, nitrogen and phosphorus in run off can be expressed in cultural eutrophication problems at a considerable distance from their sources. Nitrogen entering the upper Mississippi River has been traced to the Gulf of Mexico and phosphorus in rapidly flowing streams has been argued to have no ill effects to the stream, but can cause algal booms in the receiving waters of a larger water course or lake or reservoir. Thus, both nutrients are potential sources of problems in all waters both proximal and distant. A policy of setting criteria for only one or the other in a given region has the potential to displace the responsibility for nutrient abatement from the area of the source to a downstream jurisdiction. This not only places an undue burden on the recipient of this imported material, it increases the costs of abatement because source control is lost as a management option. EPA is, however, willing to consider limiting-nutrient criteria development in localities where it can be conclusively shown that the unrestricted nutrient has no detrimental downstream or down current effects.

- **The criteria documents (e.g., wetlands document) ignore nutrient field investigations, research, and historical data.** Actual field data and scientific literature is not included in the criteria documents.

EPA Response: EPA acknowledges that these are areas which need to be addressed but are best addressed at the regional or local level. EPA anticipates that States will add information on reference sites within their state to the reference conditions derived by EPA, as well as historical and more recent data in literature, to build a weight of evidence in deriving a criterion.

