

COMMENTS OF COLORADO NUTRIENT COALITION  
ON WATER QUALITY CONTROL DIVISION'S  
JUNE 2010 COLORADO NUTRIENT CRITERIA CONCEPT PAPER

July 15, 2010

The Colorado Nutrient Coalition (Coalition) is a recently formed and growing coalition of municipalities, sanitation districts, water districts, and other water and wastewater associations from around the state. Its purpose is to develop expert insights and comments upon the nutrients strategies and proposals of the Colorado Water Quality Control Division (WQCD). Providing comments on the June 10 Nutrient Criteria Concept Paper is the first opportunity for this Coalition to begin to formulate its concerns and initiate discussion with the Division about those concerns.

The Coalition is committed to assisting the WQCD in achieving appropriate designated uses and in developing nutrient criteria with sound policy and technical bases. The Coalition should not be seen as opposing the development and implementation of nutrient standards. It does seek to assist the Division. This includes a fuller dialogue and understanding of the scientific issues and the choices made by the Division.

The Coalition appreciates that the Concept Paper is opening the dialogue on setting table value standards, followed by watershed basin-based, site-specific standards and then the steps leading to their implementation. As seen in the discussion at the July Work Group meeting, there is a real desire for dialogue. The Nutrient Concept Paper is a big step in removing ambiguity and providing the big picture so that the separate parts can be seen in context. The Concept Paper should be a growing document to enable focus on separate issues. This is particularly so concerning the development of standards.

1. Page 1, Overview: We believe that Table Value Standards (TVS) should not be set for Total Nitrogen. No case has been made on why a standard is necessary to protect uses in Colorado. All reservoirs with nutrient standards have only phosphorus as the limiting nutrient. No case has been made on why a Colorado standard is necessary to protect uses outside of Colorado. This issue needs further discussion. Would not a Basic Standard consisting of a narrative standard be the best approach for total nitrogen standard setting during TMDLs or in a basin-specific standard setting? The necessity for cause-effect relationship is demonstrated on a site-specific basis.
2. Results of studies reviewed by the Coalition justify that Table Value Standards (TVS) for Total Phosphorus are more appropriately set as (a) ranges of nutrient values for (b) different use protection needs (c) enabling processes considering relevant statewide and site specific information in ultimately setting the applicable standards. These ranges of values reflect a rule-making assessment per CRS 24-8-204 and Clean Water Act § 303 and 304 that considers use and value of waters,

practicality and technical and economic feasibility of treatment, and extent to which the discharge to be controlled is significant.

3. Numeric criteria as Table Value Standards (TVS) and as subsequent segment-specific standards should be adopted with the full recognition that nutrient impacts vary widely, particularly in stream environments, and that the current science is unable to reliably predict the degree of nutrient control needed to protect uses. Likewise, lake or reservoir requirements should be a function of certain critical physical attributes and intended uses. Confirmation that nutrient induced use impairment indicators are exceeded should be demonstrated prior to the adoption of TVS numeric criteria or segment-specific standards. The Concept Paper should recognize that the standards proposed have not yet been accepted and it is widely understood that establishing nutrient criteria is problematic (See, April 28, 2010 ASIWPCA letter to USEPA regarding Florida WQS proposal; See also, 2002 Colorado Nutrient Development Plan “Relating Nutrient Criteria (Especially Algae) To Designated Uses Is One Of The Most Intractable Problems In Nutrient Criteria Development Process”). Multiple lines of evidence are needed to confirm that there is a causal relationship between the proposed TVS numeric criteria or segment-specific standards and protection of uses.
4. Page 2, Numerical Criteria: The Coalition has concerns about the scientific validity of the proposed criteria for Lakes and Reservoirs. This includes setting single standards for both types of waters that may have radically different characteristics and use attainment needs. Distinct criteria should be assigned to sub-classification of uses related to depth of lakes. Standards for Reservoirs should be site-specific only, because Reservoirs are unnatural water bodies.
5. The Coalition supports balancing of competing uses for Lakes and Reservoirs. A more quantified statistical survey of users may help define a consensus of fishermen seeking high nutrients concentrations in contrast with recreationalists seeking lower concentrations related to greater clarity.
6. The Coalition supports setting chlorophyll a levels necessary to protect high quality drinking water sources that take into consideration potential for increasing disinfection by-products. The Coalition understands that setting chlorophyll a levels is to be applied on a site-specific basis, considering the relative importance of algal growth in disinfection by-product formation following enhanced filtration of the surface water if required by Federal law.
7. The Coalition has been and continues to be concerned about the scientific validity of setting nutrient standards that were developed using the evolving MMI. The strength and advantage of the MMI (i.e., bioassessment of benthic macroinvertebrates) is in integrating and detecting the effects of multiple stressors over time, not in detecting the effects of a single potential “stressor” relative to an instantaneous measurement of that “stressor.” There is no demonstrated direct relationship/correlation between nutrient levels and invertebrate populations, as

recently documented by EPA in assessing nutrient criteria for Florida. (Similarly, a Technical Evaluation by the Coalition is in final editing demonstrating the lack of relationship/correlation using Colorado's data.) The EPA Science Advisory Board also strongly criticized EPA for asserting a direct connection between nutrient levels and invertebrates. Further, it makes little sense, even if there were a valid direct relationship, to rely on a statistically-derived nutrient impairment threshold when the corresponding MMI scores (i.e., 66.5 for cold water and 57 for warm water) are far higher than threshold scores adopted for impairment listing determinations in general (i.e., 46 for cold water and 25 for warm water). If the MMI can only reliably detect impairment *in general* at those much lower scores, how can the WQCD conclude that impairment *attributable to nutrients* can be detected at these much higher scores? The reference reaches used, the data collected, the indices selected, and the purposes for which they are used must be subjected to rigorous scientific scrutiny after the Division has completed its continuing concept development. Scientific Peer Review by independent reviewers is vital to ensuring that the Division's position is defensible.

8. The Coalition is concerned that Montana's 150 mg/m<sup>2</sup> of periphyton as the recreational threshold for undesirable aesthetics is being recommended without sufficient confirmation that it is appropriate for Colorado, be it too lax or too stringent. Aesthetic concerns are a site-specific issue that should not be addressed on a statewide basis as proposed by the Division. Instead, a framework for deciding what is not aesthetically acceptable under Colorado law needs to be developed. If the state has confirmatory evidence to support use of the Montana criteria for Colorado, please provide it.
9. Page 3: The Coalition appreciates the WQCD's confirmation that TVS adoption in 2011 will be followed by Basin hearings for site-specific standard setting. The TVS are not self-implementing. We understand that segment-specific standards must first be adopted before the numeric values are used in a regulatory context. The Coalition assumes that the subsequent basin hearings will be on the current schedule from 2012 to 2016. If this assumption is in error, please define the schedule and sequence of the basin hearings.
10. Page 3, 2<sup>nd</sup> paragraph: Segment-specific standards should be based on, not only considerations of natural or irreversible human induced conditions precluding attainment. They should also be based on site-specific factors that aggravate or mitigate the causal connection, if any, between nutrients and excessive algae and its adverse impacts on various beneficial uses – both locally and regionally.
11. More specifically, for segment-specific standard setting and its implementation, the Coalition supports defining processes in regulation and guidance to account for "confounding factors" that affect whether or not nutrients cause beneficial or adverse effects. Confounding factors include, for example, stream substrate, flashy flows, erosive stream bed environments, and constant canopy coverage that are sufficient to preclude algae formation and its adverse impacts on dissolved

oxygen and ultimately aquatic life or other uses. Other site-specific factors that must be considered include active intervention techniques in streams (e.g., channel restoration; riparian reestablishment) and reservoirs (e.g., oxygenation, biomanipulation), which might be far more effective than source control at protecting/restoring designated uses and also more cost-effective. Such an approach may be especially efficacious where there are legacy impacts (e.g., from mining), wildfire impacts, localized geological features that contribute high natural levels of TP, etc.

12. We recommend considering the use of stream surveys to confirm multiple indicators of adverse effects resulting from excess nutrients similar to New Mexico, New Jersey and others. This enables avoidance of NPDES permit limits in New Jersey where adequate evidence demonstrates that nutrients do not “render the water unsuitable for the designated use.” ASIWPCA requested that EPA use this approach in applying stream standards in Florida to ensure state resources are properly directed. The Coalition supports this approach.
13. The Division’s presentation on the mechanisms linking nutrients to algae and resultant adverse effects on the uses is scheduled for August 10, 2010. It is essential to understand the mechanisms linking causes to effects and the influences that interfere with such causal processes, and to justify site-specific standards distinct from thresholds not reflecting the dynamic nature of each segment. The TVS need to be informed by information about the link between nutrients and algae. The April 27, 2010 Scientific Advisory Board criticisms of EPA’s empirical methods warrant discussion at the August or September meetings because similar methods are being employed in deriving the stream standards.
14. Table Value Standards should be accompanied by a streamlined means to modify and select site-specific standards that are “necessary” to protect the use.
15. Temporary modifications occur when standards are uncertain. The TVS should provide the considerations to be raised to demonstrate scientific uncertainty sufficient to justify temporary modifications. Considerations should include: stream surveys demonstrating no dissolved oxygen (DO) violations on a diurnal basis, no widely variable pH, presence of flashy or high velocity stream flows, and erosive streambeds. Others should be specified.
16. By assigning consideration of costs to obtaining a Discharger Specific Variance, the Coalition is concerned that consideration of costs is precluded in standard setting by the Concept Paper. That is not consistent with State law at 24-8-204. Costs, particularly those constituting widespread and substantial adverse economic impacts, are relevant in segment-specific hearings as a part of any downgrading of a designated use. This will likely occur where drinking water classifications are not existing uses.

17. Where existing uses preclude downgrading of classifications, then discharger specific variances must be used - so long as the adopted standard is truly certain and beyond dispute.
18. When the temporary modification results in a site-specific standard hearing, it is essential that consideration of costs be weighed in the overall risk analysis. Nutrients are not toxics with defined thresholds, so far. In the absence of such bright lines, continuums of risk must be weighed against costs, energy consumption and the Colorado statutory requirements for setting standards. Discussions should continue on developing matrices to sequentially evaluate sustainability elements.
19. The presumption in the third full paragraph on page 3 that Discharger Specific Variances (DSV) will be considered appropriate when setting segment-specific standards should still allow for the adoption of site-specific standards, or enabling temporary modifications where standards uncertainty is shown. The impression is that the DSV may take the place of site-specific standard setting. This invites reliance on a legal concept totally untested in Colorado for its legality or practicality. While EPA promotes it, various environmental groups initially opposed it. Most important, the presumption pushes dischargers to the current limits of technology without any confirmation that adverse consequences of nutrients in fact occur or even have a reasonable potential to occur. No DSV should occur without prior independent confirmation of excessive nutrient consequences, as shown by the weight of cumulative evidence of response variables, such as monitored DO sags, pH variability, macroinvertebrate characterization, or chlorophyll-a-concentrations.
20. The Concept Paper must strongly enable the use of Temporary Modifications to resolve the uncertainty that must surround the site-specific standard setting. This can be years of data collection and analysis before certainty is determined. As has and will be shown, Colorado's lakes and streams standards proposals are highly uncertain. Site-specific confirmation is required. Temporary Modifications are the only steps for resolving that uncertainty. For the Commission to force dischargers into Discharger Specific Variances at 0.05 mg/l TP as interim "Limits of Technology" rather than allowing Temporary Modifications to determine if any less stringent standard is appropriate at all is arbitrary and capricious, even if the Commission has that choice between Temporary Modifications or Discharger Specific Variances.
21. At page 4, paragraph B, the Division anticipates proposing as the current limit of technology phosphorus treatment as practiced by dischargers to Cherry Creek Reservoir and Dillon Reservoir that is 0.05 mg/L. Is this the Discharger Specific Variance interim or final step? The third paragraph under B is important assurance that other grounds for site-specific standards will be considered. However, it should be stated that the setting of appropriate site-specific standards is the first priority, and use of the discharger specific variance is the standard

contingency to be used only if a site-specific standard is not justified, a temporary modification is unnecessary, and attainment is infeasible.

22. At page 4, paragraph C, concerning nitrogen, the Division proposes delaying the effective date of a new nitrogen table value standard to January 1, 2017 to allow further time to reconsider it in the Basic Standards hearing of June 2016. During that hiatus, no 'limit of technology' (biological nutrient removal (BNR)) would apply, due to the delayed effectiveness date. But there is no declaration that in developing 303(d) lists of impaired waters the suspended nitrogen criteria will not be used for interpreting the narrative standard and resulting in 303(d) listings. The EPA and State guidance's enable use of even proposed criteria for interpreting narrative criteria. If the nitrogen standard is too uncertain to be effective, it should not be adopted.
23. For nitrogen, the essential question is whether a nitrogen standard is needed at all to protect river and stream uses. It is not a matter of delaying the date the standard becomes legally binding or effective, but whether to adopt one at all. Other non-coastal states have not adopted TN objectives and EPA has approved those requirements. These include Minnesota, Georgia, Illinois, Oklahoma, Oregon, Rhode Island, New Jersey, Virginia, Washington where total phosphorus but not total nitrogen standards have been adopted for rivers and streams. Colorado's lakes and reservoirs with control regulations in place do not have nitrogen standards. Nitrogen limits should be considered only where merited based on site-specific investigations. A huge concern for dischargers would disappear if the EPA and state determine no state-wide nitrogen criteria need to be proposed or are necessary.
24. Page 5, D: Concerning stormwater, the Coalition concurs that BMPs are the appropriate means for controlling stormwater. But what is meant by the WQCD in its last sentence that "additional requirements" might occur in a permit? Even in the presence of TMDL-based loading allocations, numeric concentration-based effluent limits such as monthly limits are infeasible to set. Loading limits such as annual averages may be more feasible, but the primary sources are so diffuse, no technology can be seen as the "limit of technology" for Discharger Specific Variances.
25. Concerning nonpoint sources at pages 5 & 6, the Coalition seeks a cooperative approach with agricultural as well as other urban sources. However, as Kansas and other states recognize, nonpoint sources may constitute the overwhelming majority of nutrient loading. Further the Clean Water Act does not provide a reliable mechanism for preventing loading from nonpoint sources. It is noticeably biased to force point sources to minimal discharge levels in circumstances where the overwhelming nonpoint source loading removes any environmental benefit despite the significant expense paid by point sources. Discussion within the state should address how to be equitable and effective on attaining standards. In particular, the Division should consider facilitating a market or trading

mechanism wherein funding is made available to implement and maintain best management practices for nonpoint sources rather than to build expensive and less effective treatment works on point sources. In addition, standards should address the potential costs of TMDL development and nonpoint source controls in order to attempt to meet the proposed standards.

26. The Concept Paper does not address effect of the proposed course of action on 401 certifications, including the type, reasonableness, and cost of conditions that may be imposed if a project will not comply with nutrient standards.
27. The Division's "Concept" differs sharply from that proposed in its 2002 "Nutrient Criteria Development Plan For Colorado." In that plan, the Division committed to developing "nutrient criteria that fully reflect localized conditions and protect specific designated uses." 2002 Plan at 3. It also committed to developing regional and waterbody-specific classifications that have comparable characteristics. 2002 Plan at 4-5.

A meaningful organization of stream networks ultimately depends on the identification of geomorphologically similar stream reaches that respond to nutrient loads in a similar fashion. Classification systems that incorporate these factors should be used in developing a spatial framework for habitat indicators. Some of the factors that are anticipated to be included in the classification system for streams and rivers in Colorado include: beneficial uses, designated uses, land use/watershed characteristics, underlying geology, stream order, size/shape, downstream water body, flow, downstream loading, stream gradient (slope), width/depth ration [sic], entrenchment ratio, sinuosity, channel materials, etc. This information is critical in assessing the relationship between nutrients and the algal community. It is anticipated that data related to these parameters will need to be collected and organized as we proceed with the nutrient criteria development process.

It should also be recognized that there may be water bodies that will require site-specific consideration. Examples of stream segments that may need site specific interpretations of nutrient criteria include those with the following characteristics: water transfers or diversions, effluent dominated, highly engineered water bodies, or water bodies that cross ecoregional boundaries (Tetra Tech, 2002).

Additional classification for lakes and reservoirs may be based on physical characteristics such as: Lake vs. reservoir, geologic origins, surface area, mean depth, reservoir management, residence time, stratification and mixing, or ecoregion. We recommend avoiding trophic classifications.

Classifications may not be as important in a site-specific context, but will be part of the general assessment for regional criteria.

Although this document emphasizes the basic split in water body types (streams vs. lakes), it is Colorado's intention to consider water quality of downstream waters and to ensure that applicable standards provide for the attainment of downstream water quality standards. Overall, the goal of this task is to determine categories of water bodies that will have different nutrient criteria.

2002 Plan at 5. Contrary to these sound conclusions and commitments by the Division, which have only been bolstered by new evidence and studies in subsequent years, it is now proposing to adopt one-size-fits-all criteria without a sound technical basis or exigency to support its new approach.

**Conclusion:**

The Coalition seeks to improve on the concerns and positions raised here through subsequent analysis and meetings with the Division and others. The Coalition appreciates the willingness of the Division to be transparent on its strategy and direction and by these comments seeks to be similarly transparent in its concerns. The Coalition anticipates the Division will join in embracing these concerns.