

Status of Proposed Nutrient Criteria

TCEQ Staff Draft

April 27, 2009

Notes:

- EPA is requiring numerical criteria for nutrients for major water bodies
- EPA has prioritized state nutrient development [EPA letter (12/18/08), requirements for Florida]
- TCEQ submitted an updated nutrient development plan in Nov 2006 that EPA agreed to
- The plan calls for criteria for reservoirs first; then rivers, then estuaries
http://www.tceq.state.tx.us/permitting/water_quality/wq_assessment/standards/WQ_standards_nutrient_criteria.html

Summary of TCEQ proposals at Water Quality Standards Workgroup on January 7, 2009:

- Establish criteria for chlorophyll *a* (chl *a*) for up to 100 major reservoirs based on historical data
- Apply criteria as a median long-term average for the main body of each reservoir
- Establish screening values for total phosphorus (TP) in Standards Implementation Procedures (IPs)
- For a description of nutrient criteria calculations:
http://www.tceq.state.tx.us/assets/public/permitting/waterquality/attachments/stakeholders/abbrev_nut_proc.pdf

Summary of comments and concerns from the Standards Workgroup:

- Recalculate criteria without older data, to reduce effects of changes in sampling and analysis
- Don't put TP screening values that would function like standards in the IPs
- On methodology requiring exceedance of both chl *a* criterion and TP screening value before listing as impaired: concerns about excessive statistical safeguards, but also some support
- Reconsider use of median rather than mean to evaluate sampling data for standards attainment
- Consider a minimum assessment level of less than 5 µg/L chl *a* when using fluorometric method
- Justify all criteria for chl *a* that are greater than 20 µg/L
- If criteria are expressed as chl *a*, establish a workable "translator" to address phosphorus and nitrogen
- Recalculate criteria with improved statistical methodology (e.g., "control charts")
- Re-evaluate criteria for specific reservoirs (a variety of comments on selected water bodies)
- Check with border states on criteria for shared reservoirs
- Reconvene nutrient workgroup – to address nutrient criteria development and implementation

TCEQ staff responses and additional considerations to date:

- Evaluate possibility and data availability for using only more recent data to calculate criteria
- Conduct additional "beta" testing on attainability of updated chl *a* criteria and TP screening values
- Assess options for confirmation of chl *a* exceedances, such as:
 - Use chl *a* criteria singly, and don't require confirmation for an impairment listing
 - Positive trend in other correlative indicators, such as a trophic state index
 - Establish less restrictive TP screening values (e.g., $\alpha = 0.15$ instead of 0.01)
 - Move TP screening values to different document than IPs
- Review options to address detection limits, minimum quantification levels
- Review other criteria assessment procedures, such as mean versus median of monitoring data
- Assess alternative statistical approaches for developing criteria based on site-specific data
- Reconvene nutrient workgroup
- Coordinate with border states
- Update criteria for selected reservoirs; remove Lake Texoma (in revised Appendix F)

Nutrient criteria topics for additional consideration by Nutrient Workgroup and TCEQ staff:

- Effects of using only recent data to calculate criteria
- Options to address detection limits, minimum quantification levels
- Alternative statistical approaches for developing criteria based on site-specific data
- Options for confirmation of chl *a* exceedances, such as:
 - Use chl *a* criteria singly, and don't require confirmation for an impairment listing
 - Positive trend in other correlative indicators, such as a trophic state index
 - Establish less restrictive TP screening values (e.g., $\alpha = 0.15$ instead of 0.01)
 - Move TP screening values to different document than IPs
- Other options for assessing criteria attainment, such as mean versus median of monitoring data
- Other comments on nutrient criteria from January 2009 workgroup

Excerpts on nutrient criteria from 1/6/09 draft of revised Water Quality Standards (for reference purposes):

307.3 Definitions.

(3) Aquatic vegetation--Refers to aquatic organisms, i.e., plant life, found in the water and includes phytoplankton; algae, both attached and floating; and vascular and nonvascular plants, both rooted and floating.

(33) Main pool station--A monitoring station that is located in the main body of a reservoir near the dam and not located in a cove or in the riverine portion or transition zone of a reservoir. The data from the monitoring station is used for nutrient criteria calculations and assessment.

(39) Nutrient numeric criteria--Criteria that are established to protect surface waters from excessive growth of aquatic plants which includes phytoplankton, floating algae, floating higher plants, attached algae, and rooted plants. Nutrient criteria for reservoirs are expressed in terms of chlorophyll *a* concentration per unit volume as a measure of phytoplankton density. Associated screening levels for total phosphorus are also expressed in terms of concentration per unit volume in water.

(40) Nutrient--A chemical constituent, mostly a form of nitrogen or phosphorus, that in excess and appropriate ratios can contribute to the growth of nuisance aquatic vegetation and impact uses as defined in this title.

307.4 General Criteria. (e) Nutrients. Nutrients from permitted discharges or other controllable sources shall not cause excessive growth of aquatic vegetation which impairs an existing, attainable, or designated use. Site-specific nutrient criteria, nutrient permit limitations, and/or separate rules to control nutrients in individual watersheds will be established where appropriate after notice and opportunity for public participation and proper hearing. Site-specific criteria related to chlorophyll *a* are listed in Appendix F of this title.

307.7 Site-specific Uses and Criteria. (b)(4)(E) Nutrient criteria. Numeric criteria to preclude excessive growth of aquatic vegetation are intended to protect multiple uses, such as primary, secondary and noncontact recreation, aquatic life, and public water supplies. Nutrient numeric criteria for specific reservoirs, expressed as concentrations of chlorophyll *a* in water, are listed in Appendix F of this title.

307.9 Determination of Standards Attainment. (e)(7) Chlorophyll *a* and total phosphorus in reservoirs.

(A) Standards attainment determinations shall be based on the median chlorophyll *a* value as compared to the chlorophyll *a* criteria in Appendix F of §307.10 of this title. If a chlorophyll *a* criterion is exceeded, then data for total phosphorus are compared to the screening level of concern for total phosphorus as listed in the standards implementation procedures. Nonattainment of the water quality standards is indicated if a water body exceeds both the chlorophyll *a* criterion and the total phosphorus screening level.

(B) Assessment of the chlorophyll *a* criteria in Appendix F, and of the total phosphorus levels of concern in the standards implementation procedures, will be based on the median of at least 10 measurements taken over a period of at least five years. The data for the assessment will be collected at the sampling stations used for calculating the criteria and screening levels, as listed in Appendix F and the standards implementation procedures, or from comparable stations in the main pool of the reservoir.