

Introduction to Wetland Nutrient Criteria

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Water Quality Criteria

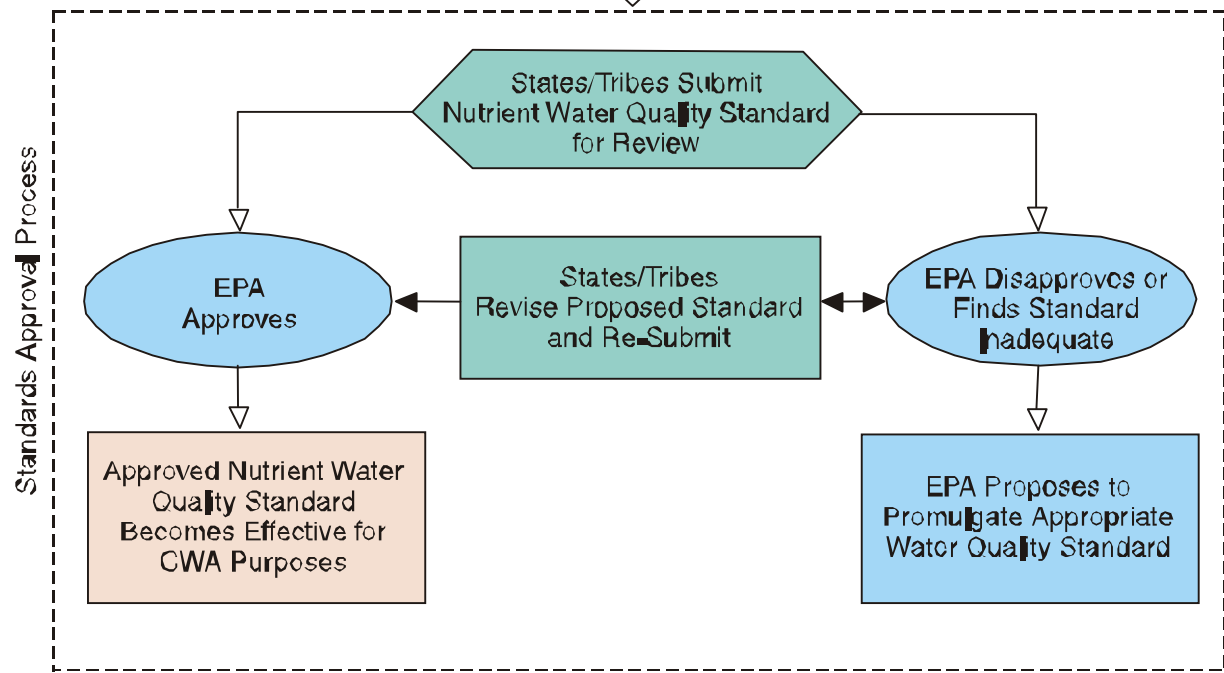
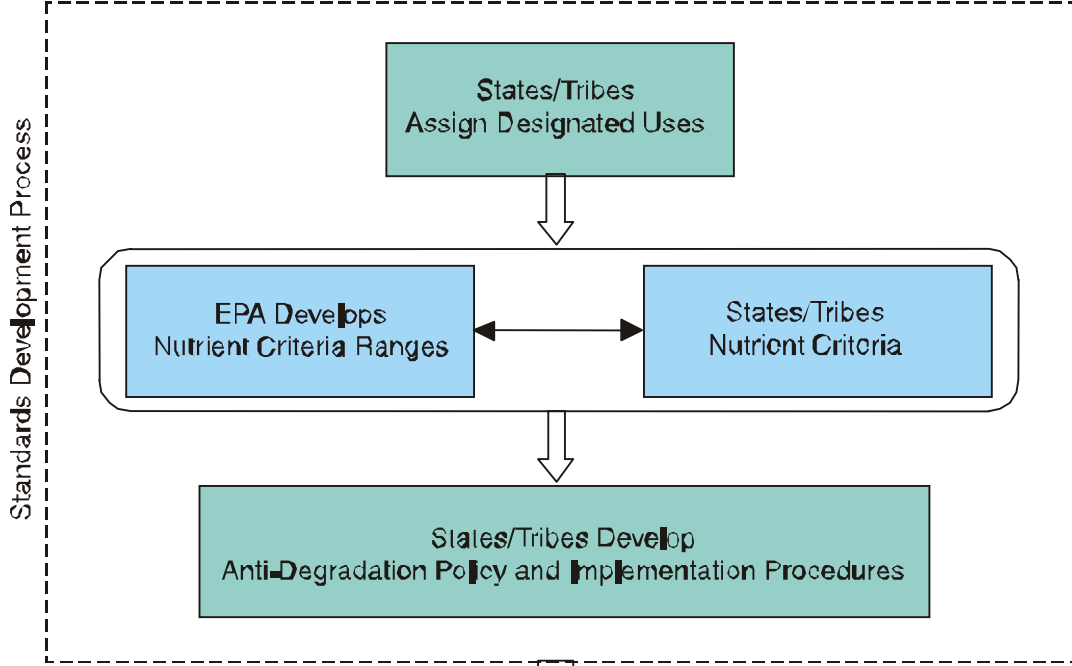
“elements of State water quality standards, expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use. When criteria are met, water quality will generally protect the designated use” (USEPA 1994)

Water Quality Standards

“Water quality standards (WQS) are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States, water quality criteria for such waters based upon such uses. Water quality standards are to protect public health or welfare, enhance the quality of the water, and serve the purposes of the Act (40 CFR 131.3)”

Components of Water Quality Standards

- Criteria, which are scientifically based;
- Designated uses, which involve economic, social and political considerations including effects on downstream receiving waters, and
- An anti-degradation policy, which protects the level of water quality necessary to maintain existing uses



Purposes of Water Quality Standards

Water quality standards define the goals for a waterbody by:

- Designating specific uses,
- Setting criteria to protect those uses, and
- Establishing an anti-degradation policy to protect existing water quality.

Waterbody Uses

A waterbody can be defined by an existing use (uses in place at the time of first promulgation of WQS) or by a designated use.

Once a use has been identified criteria must be established to protect those uses. Criteria may be narrative or numeric.

Why Nutrient Criteria?

- Nutrients rank consistently high as a primary cause of water quality impairment.
- Most States/Tribes do not currently monitor wetlands, so the extent of water quality impairment in wetlands is largely unknown.
- The proximity of many wetlands to known nutrient sources, and the inclusion of wetlands as waters of the US make development of wetland nutrient criteria a necessary part of any wetland protection strategy.
- Establishment of wetland monitoring programs will help define the extent of wetland water quality impairment with respect to nutrients and other stressors.

Overview of the Nutrient Criteria Development Process

- Ecoregional nutrient criteria will be developed to help account for natural variability
- Guidance documents will provide methodologies for deriving nutrient criteria for selected primary variables
- EPA Regional Nutrient Coordinators will lead State/Tribal technical and financial support
- Numeric ranges of nutrient criteria from existing and newly collected data will be used to derive criterion values
- Nutrient criteria will be used to evaluate the success of nutrient management efforts

EPA Strategy for Nutrient Criteria

- Water quality conditions are initially measured
- Reference conditions are established
- Waterbody condition is compared to appropriate reference conditions
- Management measures for maintaining or improving water quality are implemented

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Nutrient Criteria for Wetlands

Preview of the Wetland Guidance

Primary Variables—causal, response and supporting variables

- Causal—nutrient loading rates, extractable and total soil N and P, water column N and P
- Response—nutrient content of wetland vegetation (algal and/or higher plants), aboveground biomass and stem height
- Supporting—hydrologic condition/balance, conductivity, soil pH, soil bulk density, particle size distribution, soil organic matter content

Criteria Development Process

- Identify goals
- Classify wetlands
- Select appropriate variables
- Sample wetland classes (collect data)
- Analyze data
- Derive criteria
- Define and implement management actions
- Evaluate goal attainment

Approaches for Criteria Development

- Examine distributions of primary and supporting variables (i.e., the percentile approach)
- Develop relationships between measurements of nutrient exposure and ecological responses (i.e., tiered aquatic life uses)
- Utilize mechanistic or empirical models (site specific or literature derived) to describe relationships between nutrient loadings and chemical and/or biological responses



Keep Your Eyes on the Nutrient Criteria Website for Future Developments

www.epa.gov/ost/standards/nutrient.html