Summary of Observed Approaches

Nutrient-Related 303(d) Listings and TMDLs

• Listing for nutrient and nutrient-related impairments based on:
  ▫ Numeric criteria for causal parameter (e.g., nitrogen or phosphorus)
  ▫ Numeric criteria for response indicator (e.g., dissolved oxygen, chlorophyll a, turbidity)
  ▫ Narrative criteria using translation (e.g., no imbalance of indigenous population, no nuisance algae)

• TMDLs controlling nitrogen and/or phosphorus:
  ▫ Nitrogen or phosphorus water quality concentration as the basis (e.g., nitrogen or phosphorus numeric criteria concentrations)
  ▫ Modeled nitrogen or phosphorus loads without nitrogen or phosphorus water quality concentration (e.g., model nitrogen loads from chlorophyll a water quality target)
Regulations and Guidance on Nutrients TMDLs

• 130.7(c)(1) – States establish TMDLs at levels necessary to attain and maintain the applicable *narrative* and numerical WQS

• 130.7(c)(1)(ii) - TMDLs may be established using a pollutant-by-pollutant or biomonitoring approach; in many cases both techniques may be needed. Site-specific information should be used wherever possible

• EPA’s *Protocol for Developing Nutrient TMDLs (1999)* provides recommendations for selecting water quality indicators and target values:
  ▫ If available, the numeric standard should be used as the TMDL indicator and target value
  ▫ If numeric criteria are not available, or if supplemental indicators are needed, the TMDL developer should base selection on both scientific or technical considerations and practicality and cost considerations; the selection must necessarily consider site-specific factors
  ▫ The target value for the chosen indicator can be based on: comparison to similar but unimpaired waters; user surveys; empirical data summarized in classification systems; literature values; or best professional judgment
Number of CWA Section 303(d) Listed Nutrient-related Waterbody-pollutant Combinations by Region & State

Based on CWA Section 303(d) data available in ATTAINS as of March 29, 2011
Nutrient-Related Listings by Pollutant Type

Based on CWA Section 303(d) data available in ATTAINS as of March 29, 2011
Nutrient-Related Listings by Waterbody Type

Based on CWA Section 303(d) data available in ATTAIns as of March 29, 2011
Source Categories of Nutrient-related TMDLs

Based on CWA Section 303(d) data available in ATTAINS as of March 29, 2011
Nutrient Related TMDLs

Using EPA Approved Numeric WQC

- N/P Criteria
- Response Criteria (DO, Chlor a, bio, etc..) •DO most common

Not Using Numeric WQC (N/P or Response)

- Model load directly for Response Indicator
- Develop a Concentration Target (P/N)

From EPA Recommended Criteria for N/P

From State Guidance on N/P

From Stressor/Response Correlation

From Reference Waterbody Condition

Modeled from State Guidance for response indicator
Number of CWA Nutrient-related TMDLs by State

Based on CWA Section 303(d) data available in ATTAINS as of March 29, 2011
Nutrient-Related TMDLs by Waterbody Type

Based on CWA Section 303(d) data available in ATTAINS as of March 29, 2011
Nutrient-Related TMDLs by Pollutant Type

Based on CWA Section 303(d) data available in ATTAINS as of July, 2011