

How Can Nutrient TMDLs Best Be Developed as a Translation of a Narrative Standard?

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What is Ohio's Narrative Standard?

- Ohio Administrative Code 3745-1-04 Criteria Applicable to All Waters
- “The following general water quality criteria shall apply to all surface waters for the state including mixing zones. To every extent practical and possible as determined by the director, these waters shall be:...”

- “(B) Free from floating debris, oil, scum and other floating materials entering the waters as a result of human activity in amounts sufficient to be unsightly or cause degradation.”
- **“(E) Free from nutrients entering the waters as a result of human activity in concentrations that create nuisance growths of aquatic weeds and algae.”**

Different Waterbodies Need Different Approaches

- Focus will be on watersheds less than 500 square miles.
- Large rivers need a different approach due to their assimilative capacity.
- Ohio is pursuing a different assessment methods for large rivers.
- Headwaters are yet a separate approach (less than four square miles).

Weight-of-Evidence Approach

- The first step is to start with the biology.
- Use fish and macroinvertebrates.
- Attaining means both indices are attaining or in a non-significant departure.
- Non-attaining means one or both indices are below the non-significant departure.

Weight-of-Evidence Approach

- The second consideration is Dissolved Oxygen (D.O.) swings (max – min for 24-hr).
- Are the swings normal to low? This is defined as less than or equal to 6.5 mg/L swings.
- Wide D.O. swings are defined as greater than 6.5 mg/L.

Weight-of-Evidence Approach

- The third parameter to sample is benthic chlorophyll.
- Low to moderate benthic chlorophyll is considered to be less than or equal to 320 mg/m².
- High benthic chlorophyll is greater than 320 mg/m².



Benthic Algae Sampling

Weight-of-Evidence Approach

- One of five outcomes from sampling
 - Attaining use; not threatened
 - Attaining use, but may be threatened
 - Impaired, but cause(s) other than nutrients
 - Impaired; likely nutrients over-enrichment
 - Impaired; nutrients over-enrichment

Next Steps

- A total of four outcomes
- Each outcome has a flow chart to follow to determine the path forward
- Potential work could include additional sampling and nutrient management (NPDES, TMDLs or other)

Nutrient TMDL Targets

- If a conclusion is reached that the stream is impaired or threatened, then it's listed on the 303(d) list and TMDL development begins.
- Nutrient values from a 1999 statewide nutrient/habitat study have been used as instream targets (0.08 mg/l TP for very small streams up to 0.3 mg/l TP for larger rivers).
- Moving forward, targets for TMDLs will either be modeled (using QUAL2K or similar) or the reference values in our draft weight of evidence approach will be used (e.g. low risk TP value might be 0.131 mg/l where habitat is good).
- To date, mostly TP TMDLs because P usually limiting in Ohio streams.

Questions?

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