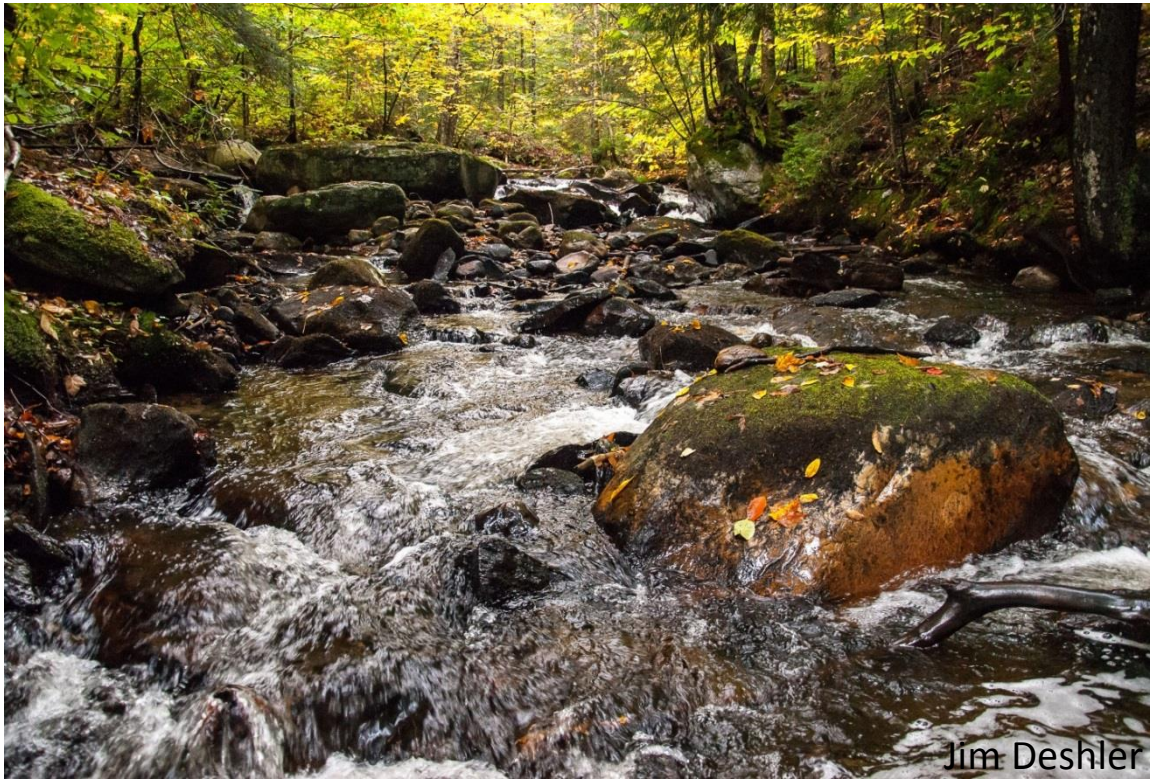
# Proposed Nutrient Criteria for Vermont's Inland Lakes and Wadeable Streams




Vermont Department of Environmental Conservation
Watershed Management Division
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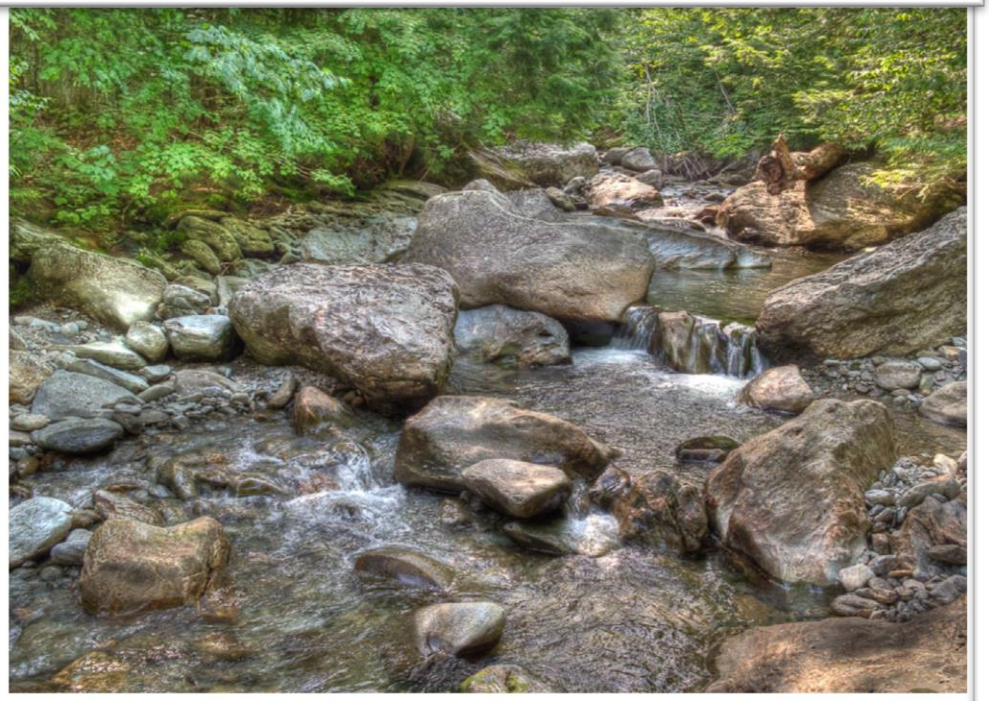


# Scope and Limitations of the Analysis

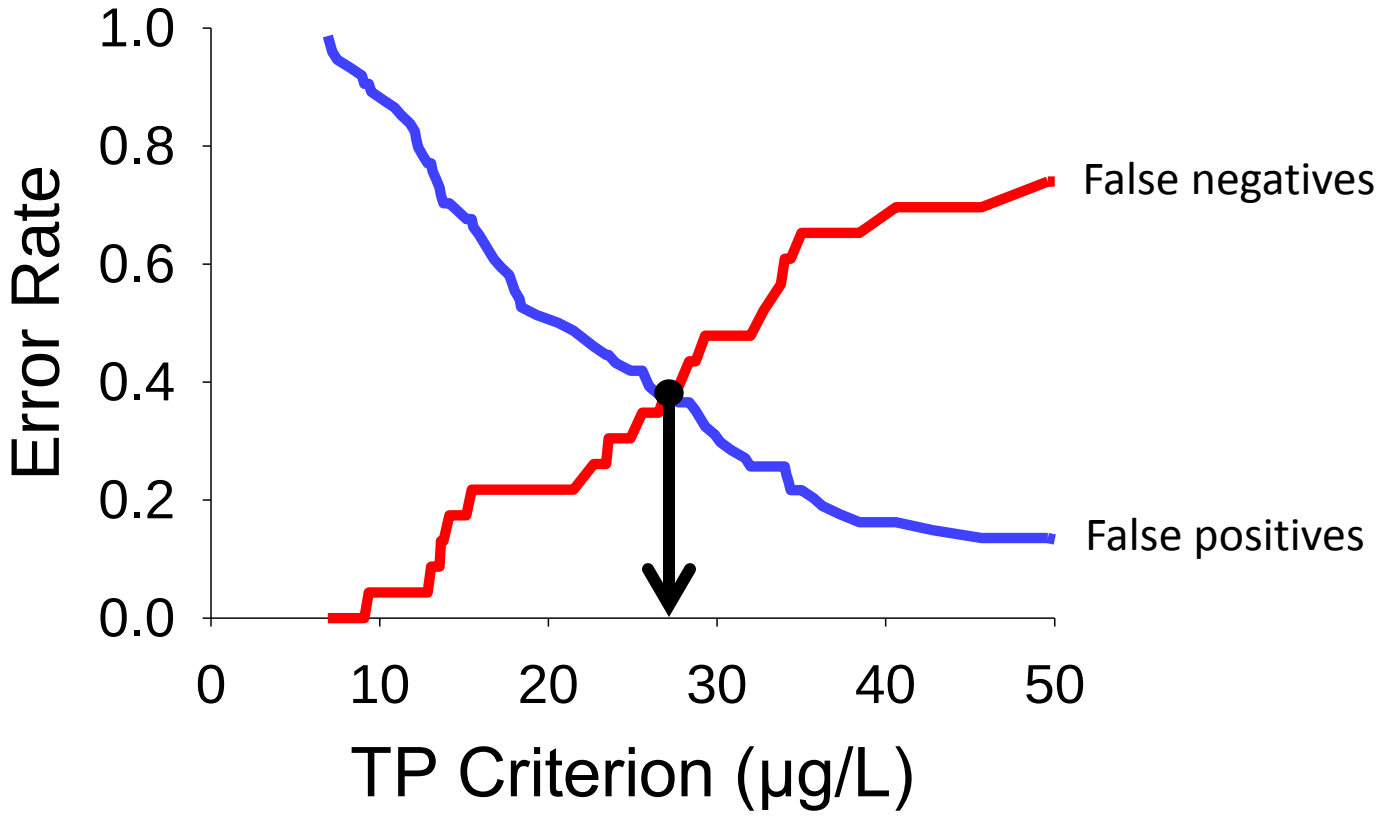
| Designated Use | Waterbody Type: Inland Lakes and Reservoirs | Waterbody Type: Wadeable Streams | Waterbody Type: Non-Wadeable Streams |
|---|---|---|---|
| Aquatic biota, wildlife, and aquatic habitat | Not analyzed | Evaluated as change in biota from reference condition | Not analyzed |
| Aesthetics | Evaluated from lake user survey | Not analyzed | Not analyzed |
| Swimming and other primary contact recreation | May be supported if aesthetic uses are supported | Not analyzed | Not analyzed |
| Boating, fishing, and other recreational uses | May be supported if aesthetic uses are supported | May be supported if biological uses are supported | Not analyzed |
| Public water supplies | Not analyzed | Not analyzed | Not analyzed |
| Irrigation of crops and other agricultural uses | May be supported if aesthetic uses are supported | May be supported if biological uses are supported | Not analyzed |

# The Vermont Lake User Survey

# The Vermont DEC Wadeable Stream Macroinvertebrate Community Assessment Procedure

islandwood.org

# Minimizing false positive and false negative impairment determinations



# Rule Structure Example

In all Class B waters except for segments within Lake Champlain and Lake Memphremagog, compliance with nutrient criteria shall be achieved either by compliance with the nutrient concentration values in Table 5 **or** by compliance with all nutrient response conditions in Table 5.

| | | Small, High-Gradient Streams | Medium, High-Gradient Streams | Warm-Water, Medium-Gradient Streams | Lakes and Reservoirs | All Other Waters |
|---|---|---|---|---|---|---|
| **Nutrient Concentrations** | | | | | | |
| | Total Phosphorus (µg/L) | 12 | 15 | 27 | 18 | |
| **Nutrient Response Conditions** | | | | | | |
| | Secchi Disk Depth (meters) | | | | 2.6 | |
| | Chlorophyll-a (µg/L) | | | | 7.0 | |
| | pH | Not to exceed 8.5 standard units. | | | | |
| | Turbidity | Consistent with the criteria in Section 3-04 B.1 of these rules. | | | | |
| | Dissolved Oxygen | Consistent with the criteria in Section 3-04 B.2 of these rules. | | | | |
| | Aquatic Biota, Wildlife, and Aquatic Habitat | Consistent with the criteria in Section 3-03 B.4 of these rules, implemented according to the numeric thresholds established in the Vermont Department of Environmental Conservation Biocriteria for Fish and Macroinvertebrate Assemblages in Vermont Wadeable Streams and Rivers - Implementation Phase, dated February 10, 2004 or as more recently updated. | | | | |

# Nutrient Criteria Decision Framework

| | Phosphorus ≤ Criterion | Phosphorus > Criterion |
|---|---|---|
| All Response Conditions Met | A | B |
| Not All Response Conditions Met | C | D |

# Proposed Vermont Nutrient Criteria Decision Framework

| | Assessment and Listing Decisions |
|---|---|
| **A. Phosphorus concentration less than or equal to criterion. All nutrient response conditions met.** | |
| | **Not impaired by nutrients.** Rotational basin monitoring on an approximate five-year schedule will be conducted. |
| **B. Phosphorus concentration greater than criterion. All nutrient response conditions met.*** | |
| | **Not impaired by nutrients.** Annual monitoring will be conducted for phosphorus concentration and all nutrient response conditions at sites affected by permitted discharges. Rotational basin monitoring on an approximate five-year schedule will be conducted at other sites. |
| **C. Phosphorus concentration less than or equal to criterion. Not all nutrient response conditions met.** | |
| | **Impaired, but not necessarily by nutrients.** Site will be studied to determine the cause of impairment. If found to be impaired by nutrients, an alternate (lower), site-specific nutrient criterion may need to be established for permitting purposes. |
| **D. Phosphorus concentration greater than criterion. Not all nutrient response conditions met.** | |
| | **Impaired by nutrients.** Annual monitoring will be conducted for phosphorus concentration and all nutrient response conditions at sites affected by permitted discharges. |

* If data are unavailable for any applicable response condition, then the waterbody would be assessed as impaired by nutrients, pending further data collection.

# Proposed Vermont Nutrient Criteria Decision Framework

| | Discharge Permitting Decisions |
|---|---|
| **A. Phosphorus concentration less than or equal to criterion. All nutrient response conditions met.** | |
| | If a new or increased discharge is proposed, the permit will limit the phosphorus concentration increase according to the anti-degradation policy. No new or increased phosphorus discharge would be permitted that would cause the phosphorus concentration to be greater than the criterion. If a current discharge has reasonable potential to produce a phosphorus concentration above the criterion value, then annual monitoring will be conducted at the site for phosphorus concentration and all nutrient response conditions. If response conditions are worsening or indicate a likelihood that an impairment will develop, more stringent permit limits will be applied in order to prevent the impairment. |
| **B. Phosphorus concentration greater than criterion. All nutrient response conditions met.** | |
| | If a new or increased discharge is proposed, the permit will limit the effluent phosphorus concentrations and loads to the existing amounts or less. If response conditions are worsening or indicate a likelihood that an impairment will develop, more stringent permit limits will be applied in order to prevent the impairment. |
| **C. Phosphorus concentration less than or equal to criterion. Not all nutrient response conditions met.** | |
| | If the site is determined not to be impaired by nutrients but a new or increased discharge is proposed, the permit will limit the nutrient increase according to the anti-degradation policy. In no case will amounts be permitted that would cause the phosphorus concentration criterion to be exceeded. If the site is determined to be impaired by nutrients, then more stringent permit limits will be applied in order to correct the impairment. |
| **D. Phosphorus concentration greater than criterion. Not all nutrient response conditions met.** | |
| | More stringent permit limits will be applied in order to correct the impairment. A Total Maximum Daily Load (TMDL) designed to achieve the phosphorus concentration criterion may be required. |