Getting to Wetland-Specific Water Quality Standards

New Hampshire’s Approach

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Overview

• What is our *purpose* for developing wetland water quality standards?
• What is the *process* that New Hampshire is pursuing to develop standards?
• Usability of the templates to that process?
Clean Water Act Programs and NH State Authorities

Water Quality Certifications for Large Water Withdrawals

NH Dredge & Fill & Mitigation

Implement strategies

NPDES

SRF

Sec 404

Sec 401

Sec 319

Assessment [305(b)/303(d) Integrated Report]

Meeting WQ standards?

No

List as Impaired [Category 4A, 4B, 4C or 5 (i.e., 303(d) List)]

Yes

Apply antidegradation

Set Designated Uses and WQ Criteria to Protect the Uses
Water Quality Standards

- Designated uses
- Anti-degradation
- Criteria
NH’s Wetland Resources

- Palustrine Scrub/Shrub: 25.46%
- Palustrine Forested: 48.28%
- Palustrine Aquatic Bed: 13.41%
- Palustrine Emergent: 13.41%
- Estuarine: 2.78%
- Palustrine non-vegetated: 9.04%
- Lacustrine: 0.23%
- Riverine: 0.52%
Designated Uses
NH’s Current Narrative Criteria for Wetlands

Biological & Aquatic Community Integrity

• The surface waters shall support and maintain a balanced, integrated, and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region.

• Differences from naturally occurring conditions shall be limited to non-detrimental differences in community structure and function. (Env-Wq 1703.19)

Wetlands Narrative Criteria

• Wetlands shall be subject to the criteria listed in this part (Env-Wq 1700).

• Wherever the naturally occurring conditions of the wetlands are different from the criteria listed in these rules, the naturally occurring conditions shall be the applicable water quality criteria. (Env-Wq 1703.02)
Wetland WQS Templates

- all, depressional, estuarine, lacustrine, lacustrine fringe, marine, mineral flats
- organic flats, palustrine, riverine, slope, tidal fringe, [state-defined type] wetlands, as

defined by the Cowardin, HGM, [state-defined] classification scheme, shall maintain

- biological, physical, chemical, hydrological conditions - as determined by
- established baselines, least-human-altered wetlands, least-impacted wetlands
- reference-standard wetlands, reference wetlands, state-specific standard - including, but not

limited to: [choose all] base flow, flow regime, and wetland hydroperiod

chemical, nutrient, and dissolved oxygen regime of the wetland

- conditions favorable to protection and propagation of threatened, endangered, and at-risk species

- conductivity, floristic quality, integrity of species diversity, abundance, and zonation
- normal movement of fauna, pH of wetland waters, salinity, size and shape
- soil type and horizon structure, water currents, erosion, or sedimentation patterns
- water levels or elevations, water temperature variations.
Maine’s Biological Condition Gradient (BCG) and Tiered Aquatic Life Use (TALU)

- **1. Native or natural condition**: Minimal loss of species; some density changes may occur.
- **2. Some replacement of sensitive species; functions fully maintained**: Some sensitive species maintained but notable replacement by more tolerant taxa; altered distributions; functions largely maintained.
- **3. Tolerant species show increasing dominance; sensitive species are rare; functions altered**: Severe alteration of structure and function.

**Stressor Gradient**

- **Low**
- **High**

**Biological Condition Gradient**

- **Natural**
- **Degraded**
NH: Develop Numeric Biological Thresholds

Initial focus on thresholds for:

- Open water/fringing wetlands (riverine, lacustrine, and palustrine emergent wetlands); 23-48% of universe per NWI
- Designated Use: Aquatic Life Integrity

Indicators to use in numeric translators:

- Macroinvertebrates in open water/fringing wetlands. (Use Maine’s model and evaluate appropriateness)
- Ecological Integrity Assessment (Nature Serve/ NH Natural Heritage Bureau) and Maine’s Wetland Human Disturbance Assessment
- Floristic Quality Assessment or other vegetation-based metrics/indices
Current Monitoring Effort to Develop Thresholds

Targeted monitoring (NWI & aerial imagery)

- Aquatic macroinvertebrates
- Water grab sample
- Field meters (water)
- Vegetation survey
- Landscape survey
  - Including GIS analysis (land use)
Variables in Maine’s Wetland Macroinvertebrate Provisional Linear Discriminant Model

- Total abundance
- Ephemeroptera abundance
- Odonate relative abundance
- Trichoptera relative abundance
- Shredder taxa relative abundance
- Non-insect relative richness
- Sensitive taxa abundance
- Sensitive taxa relative abundance
- Sensitive taxa richness
- Intermediate taxa relative abundance
- Intermediate taxa richness
- Ratio of sensitive to eurytopic taxa abundance
FQA: Develop range of weighted Coefficient of Conservatism values for wetland systems

From Minnesota (MPCA, 2012)
EIA: Field Data and GIS

Land Use Index = 10  Land Use Index = 1.27
Water Quality Certifications, Antidegradation, Wetlands Mapping

- Water Quality Certifications – Develop Guidance for Baseline Wetlands Data
  - Develop interim guidance (before rulemaking at a later date)
    - Pre-development (baseline) data to collect
    - Triggers that would exempt certain projects from wetlands monitoring.
- Antidegradation: Outstanding Resource Waters
  - Should other waters/wetlands receive this protection/designation?
- Wetlands mapping
  - Update to better represent resource
  - Support probabilistic assessments
Other Challenges Unique to Wetlands

• Access
  • They may be surface waters, but they often are on private property.

• Addressing impairments
  • May relate to upland development adjacent to wetland.
Summary

• Work towards development of numeric thresholds using macroinvertebrates and vegetation as indicators.
• Apply thresholds for assessments under §305b.
• Require collection of baseline data as part of WQC (under §401 and state statute)
• Update wetlands mapping.
• Seek changes in statute and rules to strengthen applicability of WQS for wetlands.
• Future effort: revise NH’s two-tier classification system
Questions?

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