

## Water Quality Standards Advisory Committee

### MEETING MINUTES

Thursday, January 10, 2013 1:30 pm – 3:30 pm

Department of Environmental Services

Rooms 112/113/114

29 Hazen Drive, Concord, NH

#### Attendees

Name	Organization
Dan Blais	Home Builders and Remodelers' Association of NH
Joe Boyer	Plymouth State University
Sam Demeritt	NH Wildlife Federation
Donna Hanscom	NH Water Pollution Control Association
John Hodsdon	NH Farm Bureau Federation
John Magee	NH Fish & Game Department
Eileen Miller	NH Association of Conservation Districts
Allan Palmer	Rivers Management Advisory Committee
Kenneth Rhodes	Associated General Contractors of NH
Jason Smith	NH Fish & Game Department
Tracy Tarr	NH Association of Natural Resource Scientists

#### DES Attendees

Ted Diers

Philip Trowbridge

Shane Csiki

Sandy Crystall

Gregg Comstock

#### 1) Introductions

The meeting began with a round of introductions.

#### 2) Approval of the 4/12/2012 meeting minutes

The minutes for the 10/11/12 meeting were approved without correction.

#### 3) New EPA Recreational Water Quality Criteria (bacteria concentrations at designated bathing beaches)

Phil Trowbridge gave an update on EPA's new recommendation for Recreational Water Quality Criteria. Copies of the slides are attached. Major points:

- In November 2012, EPA published new Recreational Water Quality Criteria guidance.
- The criteria are applicable to the primary contact recreation designated use, which is most closely associated with public bathing beaches.
- The existing NH water quality standards appear to be at least as protective as the new EPA guidance. However, DES staff are still reviewing the details of the EPA recommendation.
- DES is not planning to change the statute (RSA 485-A:8) to match the EPA recommendation at this time.
- There was some discussion among the WQSAC the implications of adopting the EPA recommendation for beach closures and NPDES permittees.

#### **4) Update from subcommittee on wetland water quality standards**

Sandy Crystal gave an update on subcommittee work on wetland water quality standards (WWQS). Copies of her slides are attached. Topics discussed by the WQSAC were:

- Effects of pesticides used by communities for mosquito control on wetland organisms.
- The importance of establishing reference sites to set an appropriate baseline for each wetland classification and geographic region.
- The difference between prime wetlands designation (a political process) and wetland water quality standards (an ecological assessment).
- Consideration of vernal pools as the universe of wetlands to be monitored and assessed. The initial work will likely focus on permanently saturated wetlands. Wetlands such as vernal pools will be tackled later.

#### **5) Plan for updating Env-Wq 1700 with new EPA recommended criteria for toxic contaminants and ammonia**

Phil Trowbridge led a discussion about updating the water quality criteria for toxic substances in Env-Wq 1700 by 2016 (see attached slides). The main points and points of discussion were:

- There have been changes to the EPA recommended criteria for over 100 toxic substances since 1999 when this section of Env-Wq 1700 was last updated.
- DES is cross-checking the current criteria in Env-Wq 1700 against the latest EPA recommendations and compiling a list of any other changes needed relative to toxic substances.
- To understand the potential impacts of the changes for dischargers, DES will attempt to catalog all NPDES permittees in New Hampshire with limits for toxic substances. If the number of permittees is large, DES will focus on those with low dilution factors and low hardness because they would be worst-case.
- The evaluation should consider laboratory method detection limits for both traditional and clean techniques.
- There was some interest in understanding what EPA and other states are doing to regulate pharmaceuticals and personal care products (PPCP).
- There was some interest in understanding how EPA and other states are using Maximum Contaminant Levels (for drinking water) in place of surface water quality criteria.
- There was some interest in nanoparticles (manufactured colloidal-size particles).
- Metals should be a priority for the research because many permittees have limits for metals.
- DES agreed to proceed with the review and to report back to the WQSAC.

#### **6) Other Business**

Some of the WQSAC members had questions/concerns about recent changes to the rainfall totals used for Alteration of Terrain permit applications. DES staff relayed the questions/concerns to the Alteration of Terrain Bureau.

#### **7) Adjourn**

The meeting was adjourned at 3:25 pm.

**Attachments**

- Slides for Item #3 (Recreational Water Quality Criteria)
- Slides for Item #4 (Wetland Water Quality Standards)
- Slides for Item #5 (Criteria for Toxic Substances)

# NH Recreational Water Quality Criteria

- Defined in statute, RSA 485-A:8
  - FW beaches
  - Class A ambient
  - Class B ambient
  - Tidal waters (including tidal beaches)
- 60-day averaging period for geomeans

**CHAPTER 485-A  
WATER POLLUTION AND WASTE DISPOSAL  
Classification of Waters  
Section 485-A:8**

**485-A:8 Standards for Classification of Surface Waters of the State.** – It shall be the overall goal that all surface waters attain and maintain specified standards of water quality to achieve the purposes of the applicable classification. For purposes of classification there shall be classes or grades of surface waters as follows:

1. Class A waters shall be of the highest quality and shall contain not more than either a geometric mean based on at least 1 sample obtained over a 60-day period of 10 Escherichia coli per 100 milliliters, or greater than 153 Escherichia coli per 100 milliliters in any one sample, and for designated beach areas shall contain not more than a geometric mean based on at least 3 samples obtained over a 60-day period of 40 Escherichia coli per 100 milliliters, or 10 Escherichia coli per 100 milliliters in any one sample, unless naturally occurring. This shall not be binding if any average or water use waters of the classification in the vicinity of the classification shall be considered as being consistently acceptable for water supply uses after adequate treatment.

2. Class B waters shall be of the second highest quality and shall have no observable physical characteristics, shall contain a geometric mean based on at least 15 samples obtained over a 60-day period of 20 Escherichia coli per 100 milliliters, or greater than 40 Escherichia coli per 100 milliliters in any one sample, and for designated beach areas shall contain not more than a geometric mean based on at least 3 samples obtained over a 60-day period of 70 Escherichia coli per 100 milliliters, or 10 Escherichia coli per 100 milliliters in any one sample, unless naturally occurring. There shall be no deposit of sewage or wastes and water except those which have received adequate treatment to prevent the occurrence of the biological, physical, chemical or toxicological characteristics in hot or warm streams, nor shall such deposit of sewage or wastes be made to appear like or be the treatment of sewage in or on receiving waters. The pH range for surface waters shall be 6.5 to 8.5 except when due to natural causes. Any stream requiring access except for the discharge of treated sewage, water or cooling water, shall be dammed, or channel shall be so made as to be approximately similar with the one adjacent to the dam. The water of the classification shall be considered as being acceptable for fishing, swimming and other recreational purposes, and shall be suitable for use as a water supply. There is no intent in this subdivision of the department that the class B criteria contain reasonably to use as a source of water or of water for a variety of industrial uses and/or uses, temporary or permanent, nor shall the water be established by other adopted under RSA 485-A:6, XE, which term, as a maximum, the amount the water is used for purposes of XE.

# New EPA Recreational Water Quality Criteria Guidance

- Applicable to primary contact recreation
  - Fresh waters
  - Tidal waters
- Adopted 11/26/12

<http://water.epa.gov/scitech/guidance/standards/criteria/health/recreation/index.cfm>

**EPA** United States Environmental Protection Agency  
Office of Water EPA-823-G-12-001  
April 2012

**2012 Recreational Water Quality Criteria**

**Summary**  
EPA has released 2012 recreational water quality criteria (RWQC) recommendations for contact recreation. The recommendations are based on the latest research and are intended to protect public health and the environment. The recommendations are based on the latest research and are intended to protect public health and the environment. The recommendations are based on the latest research and are intended to protect public health and the environment.

**What are the recommendations?**  
The 2012 RWQC will use an averaging period of 30 days for the geometric mean and a 10% exceedance rate for the upper limit. The 2012 RWQC will use an averaging period of 30 days for the geometric mean and a 10% exceedance rate for the upper limit. The 2012 RWQC will use an averaging period of 30 days for the geometric mean and a 10% exceedance rate for the upper limit.

# Comparison of NH Criteria and EPA Guidance for Fresh Waters

<b>E. coli Concentration</b>	Geomean (cts/100ml)	Upper Limit (cts/100ml)
NH FW Beaches	47	88
NH Class A	47	153
NH Class B	126	406
<b>New EPA Guidance</b>	<b>126*</b>	<b>410 (STV*)</b>

\* 30-day averaging period  
STV = "Statistical Threshold Value", not to be exceeded by more than 10% of samples

# Comparison of NH Criteria and EPA Guidance for Tidal Waters

<b>Enterococcus Concentration</b>	Geomean (cts/100ml)	Upper Limit (cts/100ml)
NH Tidal Beaches	35	104
NH Class B	35	104
<b>New EPA Guidance</b>	<b>35*</b>	<b>130 (STV*)</b>

\* 30-day averaging period  
STV = "Statistical Threshold Value", not to be exceeded by more than 10% of samples

## Wetland Water Quality Standards Subcommittee - Status Report

Sandy Crystall, PWS  
January 10, 2013



## Since April 2012...

### Subcommittee met:

- April
  - Overview of Wetland Assessment and wetland WQS
  - Wetland mapping
- May
  - Overview of 2011 EPA's NWCA sampling and rapid assessment method work
- October
  - Presentations on biomonitoring (Dave Neils) and Wetlands biomonitoring (Maine DEP- Jeanne DiFranco)

Set up webpage and FTP server with additional documents

## Biological indices are used to interpret narrative criteria.

NH DES Administrative Rule Env-Wq 1700 – water quality criteria

Env-Wq 1703.19 Biological and Aquatic Community Integrity.

- (a) 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.
- (b) Differences from naturally occurring conditions shall be limited to non-detrimental differences in community structure and function.

### Biologic index – the measures of condition

Bio-criteria – the threshold which the measures of condition are compared against

Based on outcomes, biological community is assessed as meeting or not meeting criteria/not supporting designated use (impairment determination)

### Biological Indices To Date:

- Serve as the core indicator of Aquatic Life Use (ALU) for streams and rivers for water quality reports
- 100+ assessments completed in 2012 305(b) / 303(d) water quality report
- Utilized in 2008/09 to complete statewide probabilistic assessments of all state's streams and rivers
- Used in assessing impacts, related stressors (nutrients, stormwater) by investigating stressor : response curves
- Utilized for fish and macroinvertebrates, but could include other "assemblage types" or non-biological attributes

... Are the most direct and cost-effective measure of condition

### What Indices Are Not:

- Short-term commitments
- Indicators of cause of impairment
- Snake oil

## Anatomy of a biological index: The multi-metric approach

- 1) Identification of "reference" sites – baseline for building foundation of index
- 2) Classification system/stratification – to reduce natural variability in community composition that is attributable to environmental differences
- 3) Identification of metrics most responsive to disturbance
- 4) Development of scoring system
- 5) Selection of "threshold"
- 6) Validation testing

A well-constructed index is:

- Useful
- Low maintenance
- Efficient
- Valuable
- Protective

## Maine's Annual Monitoring

- Lacustrine and riverine fringe wetlands
- Emergent and aquatic bed vegetation
- Water depth < 1 meter in area sampled
- Rotating basin schedule (5 basins)



## Maine

- Reference Site Criteria
  - 51 reference sites selected using objective criteria:
    - Watershed land use 95% or greater "natural" (forest or wetland)
    - Total DEP Human Disturbance Score  $\leq 10$ ; no single category score  $> 5$
    - Specific conductance  $< 100 \mu\text{S}/\text{cm}$  (only 8 of 51 sites exceeded  $50 \mu\text{S}/\text{cm}$ )
- Tolerance Values for Wetland Invertebrates (Maine Tolerance Index)
  - Calculated for individual taxa using species optima. Resulting tolerance values scaled from 1 - 100.
  - Three categories determined for taxa tolerance metrics:
    - Sensitive taxa: values  $\leq 22.0$
    - Intermediate taxa: 22.1 - 42.9
    - Eurytopic taxa: values  $\geq 43.0$

## Maine's Wetland Macroinvertebrate Provisional Linear Discriminant Model Variables

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

## Maine's Next Steps

- Test provisional macroinvertebrate model as new data are collected and refine as necessary
- Incorporate model into rules as wetland-specific aquatic life use criteria
- Complete analysis of wetland algae data and begin algae model development
- Pilot monitoring and assessment projects for other biological assemblages and wetland types (including forested wetlands)

## Our Next Steps

Prepare draft plan to incorporate:

- Information from research
- Our knowledge and experience with biomonitoring, including two seasons of using different assessment approaches for wetlands
- Potential application of Maine's approach (test applicability)
- Incorporate other assessment methods to enable transition to other wetland types in the future
  - For example, Floristic Quality Assessment Index

## Questions?

The health of our waters is the principal measure of how we live on the land.

- Luna Leopold

## Water Quality Criteria for Toxic Substances

- Established in rule, Env-Wq 1703.21
- Last updated 1999
- New EPA guidance for:
  - 104 substances
  - 8 metals
  - Freshwater ammonia (soon)

TABLE 1703.1  
Water Quality Criteria for Toxic Substances

NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES

Chemical	Concentration in water (µg/L)				Concentration in tissue (ppm)	
	Acute	Chronic	Acute	Chronic	Freshwater	Marine
Arsenic	10	1.0	10	1.0	1000	1000
Boron	100	10	100	10	1000	1000
Chromium	100	10	100	10	1000	1000
Copper	1.0	0.1	1.0	0.1	100	100
Cadmium	1.0	0.1	1.0	0.1	100	100
Lead	1.0	0.1	1.0	0.1	100	100
Mercury	1.0	0.1	1.0	0.1	100	100
Manganese	100	10	100	10	1000	1000
Nickel	100	10	100	10	1000	1000
Selenium	10	1.0	10	1.0	1000	1000
Silver	1.0	0.1	1.0	0.1	100	100
Zinc	100	10	100	10	1000	1000

## Process for Identifying Changes to Env-Wq 1703.21

- Cross check NH rules vs new EPA guidance
- Compare criteria to laboratory detection limits
- Research other suggested changes
  - Mercury - fish tissue conc. vs water conc.
  - Use hardness values <25 mg/L
  - Biotic ligand models
  - Aluminum - total vs acid soluble
  - Arsenic - dissolved vs inorganic
  - Seeking input for any other needed changes...

## Process for Identifying Impacts of Updated Criteria on Permittees

- Catalog NPDES permits with limits for toxic substances
- Prioritize by:
  - Low dilution factor
  - Low hardness
- Estimate potential impacts of rule change