

South Central Connecticut Regional Water Authority
90 Sargent Drive, New Haven, Connecticut 06511-5966 203-562-4020
<http://www.rwater.com>

July 24, 2009

Comments: DEP Water Quality Standards dated Dec 17, 2002/April 12, 1996

John Hudak
Environmental Planning Manager
Regional Water Authority

1. Item 21 on page 5 states “Surface waters identified as potential drinking water supplies in the Long Range Plan for Management of Water Resources prepared and adopted pursuant to Section 22a-352 of the Connecticut General Statutes shall be designated Class AA.” This law requiring this Plan was passed in 1967. Since the Plan has not been prepared to date and may never be developed, we suggest that this provision also apply to potential drinking water supplies identified in individual public Water Supply Plans submitted and approved pursuant to 25-32d of the Connecticut General Statutes.

2. The DEP’s definition of “natural” to mean conditions due to “normal use of the land”...”provided best management practices are used.”, etc., creates confusion in reading and interpreting the water quality criteria stated as “none other than natural origin”. In addition it at least appears at times that this DEP version of the word is used interchangeably with the dictionary definition. For example, the Class AA criteria for silt and sand deposits is “none other than natural origin except as may result from normal agricultural, road maintenance, construction activity or dredging activity...provided all reasonable controls or Best Management Practices are used in such activities...”. In this case, if “natural” means the DEP definition, the rest of the sentence is redundant.

In some cases, the dictionary meaning of the term “none other than natural origin” may be appropriate for some criteria, such as taste and odor and the parameter that includes sludge deposits, solid refuse, floating solids, oil and grease, etc.

We recommend that in cases where the DEP wishes to make allowances for “normal use of the land”, that more clear and direct language be used with “natural” retaining its more commonly used meaning. As an example, here’s some suggested language for the Class AA criteria for phosphorus:

None other than of natural origin, or anthropogenic inputs at levels compatible with designated uses provided all reasonable controls, Best Management Practices, and watershed land use regulations are in place to control phosphorus.

3. The dissolved oxygen criteria “not less than 5 mg/L at any time” is not realistic or feasible for the hypolimnions of most stratified lakes and reservoirs typically found in Connecticut without artificial aeration.
4. While lake trophic criteria (page 13) to define oligotrophic, mesotrophic, and eutrophic lakes, will always be somewhat subjective, my impression is that the parameter ranges for mesotrophic lakes are too wide. I would draw the upper boundaries for phosphorus, nitrogen, chlorophyll, and secchi disk transparency closer to 20 µg/L, 400 µg/L, 10 µg/L, and 2.5 to 3 meters, respectively. One suggestion is using ranges based on Carlson’s trophic level index, which is widely used by others, including the US EPA (see table below taken which can be found at <http://dipin.kent.edu/tsi.htm>). This also will provide more consistency when comparing trophic states to other northern temperate lakes.

Source: Carlson, R.E. and J. Simpson. 1996. *A Coordinator's Guide to Volunteer Lake Monitoring Methods*. North American Lake Management Society. 96 pp.

A list of possible changes that might be expected in a north temperate lake as the amount of algae changes along the trophic state gradient.

TSI	Chl (ug/L)	SD (m)	TP (ug/L)	Attributes	Water Supply	Fisheries & Recreation
<30	<0.95	>8	<6	Oligotrophy: Clear water, oxygen throughout the year in the hypolimnion	Water may be suitable for an unfiltered water supply.	Salmonid fisheries dominate
30-40	0.95-2.6	8-4	6-12	Hypolimnia of shallower lakes may become anoxic		Salmonid fisheries in deep lakes only
40-50	2.6-7.3	4-2	12-24	Mesotrophy: Water moderately clear; increasing probability of hypolimnetic anoxia during summer	Iron, manganese, taste, and odor problems worsen. Raw water turbidity requires filtration.	Hypolimnetic anoxia results in loss of salmonids. Walleye may predominate
50-60	7.3-20	2-1	24-48	Eutrophy: Anoxic hypolimnia, macrophyte problems possible		Warm-water fisheries only. Bass may dominate.
60-70	20-56	0.5-1	48-96	Blue-green algae dominate, algal scums and macrophyte problems	Episodes of severe taste and odor possible.	Nuisance macrophytes, algal scums, and low transparency may discourage swimming and boating.
70-80	56-155	0.25-0.5	96-192	Hypereutrophy: (light limited productivity). Dense algae and macrophytes		
>80	>155	<0.25	192-384	Algal scums, few macrophytes		Rough fish dominate; summer fish kills possible