



GREAT BAY MUNICIPAL COALITION

March 6, 2017

Ted Diers
Watershed Management Bureau
NH Department of Environmental Services
29 Hazen Drive
P.O. Box 95
Concord, NH 03302

RE: Dissolved Oxygen Water Quality Criteria for Marine Waters

Dear Ted:

The Great Bay Municipal Coalition (GBMC) enlisted Dr. Robert Diaz, a nationally recognized expert on dissolved oxygen, to review and opine on the current NHDES water quality standards. As you know NHDES and the GBMC jointly engaged Dr. Diaz as our expert reviewer on dissolved oxygen during the peer review of the draft 2009 NHDES Nutrient Criteria for Great Bay Estuary. The Coalition felt Dr. Diaz's expertise could be helpful as the Water Quality Standards Advisory Committee and NHDES consider updating the exiting NH dissolved oxygen water quality standards with particular focus on the application of those criteria to Great Bay Estuary. These waters are designated as Class B waters, with D.O. criteria of at least 75% of saturation as a daily average and an instantaneous minimum of 5.0 mg/L to protect aquatic life uses.

A letter from Dr. Diaz is attached in which he responds to several questions regarding the protectiveness of NH's current water quality standards and suggestions on what factors should be considered during the standards review. Dr. Diaz has provided unambiguous comments regarding the need for the current D.O. standards and recommendations for developing alternative water quality standards. These are briefly summarized below.

- Is the current D.O. 75% saturation criterion (daily average) necessary to ensure aquatic life use protection?

The current criterion is overly protective for almost all estuarine species that utilize Great Bay. Current literature would support use of concentration-based criteria rather than percent saturation to ensure appropriate criteria are set across habitats.



GREAT BAY MUNICIPAL COALITION

- Is a 5 mg/L instantaneous minimum D.O. necessary to ensure aquatic life use protection?

Based on the 2000 EPA Marine D.O. Criteria and other literature summaries, 5 mg/L is overly protective of all species for acute impacts and most species for chronic impacts.

- Can the 2000 EPA Marine D.O. Criteria and/or the 2003 Chesapeake Bay D.O. Criteria be applied to New Hampshire marine waters?

These D.O. criteria can be applied in New Hampshire. This would require that key species in Great Bay be identified to determine what is known about their D.O. requirements. This needs to be combined with an understanding of D.O. dynamics within Great Bay Estuary and the biology of the key species. Finally, if areas of the estuary become stratified, separate criteria may be required.

It is clear from these responses that the current D.O. criteria are not necessary to protect aquatic life uses and alternative criteria should be developed before the affected municipalities are forced to upgrade their treatment facilities to comply with the outdated D.O. standard. Not only will this waste scarce municipal resources, but it will provide no additional benefits and potentially cause more harm than good.

As you will note in Dr. Diaz's letter, identification of resident species and their critical periods for spawning and early growth stages is an important consideration. During our last Committee call, the subject of species and their critical times was discussed and NH Fish and Game's representative on the Committee acknowledged that NH Fish and Game has that information available. NHDES should formally request that NH Fish and Game provide the information to the Committee for its consideration as it works to develop recommendations to update the NH water quality standard for dissolved oxygen.

We have also reviewed the literature citations from the Power Point presentation (provided, via email, from T. Diers to D. Peschel, on February 24, 2017). (See, attached memorandum from Ben Kirby to John Hall, dated March 2, 2017). On the whole, none of these citations present an argument for using D.O. saturation as a criterion in lieu of concentration. In fact, most of these present recommendations for D.O. concentration criteria in line with the recommendations made by Dr. Diaz.

Therefore, we request that the State commit to updating its D.O. standards for Marine Waters consistent with the approach discussed in the attached comments from Dr. Diaz. Please share Dr. Diaz's letter with the Committee members before the next meeting as a way of introducing the discussion for the Committee.



GREAT BAY MUNICIPAL COALITION

Sincerely,

Dean Peschel

Attachments:

Letter from Robert J. Diaz to Dean Peschel, February 14, 2017

Memorandum from Ben Kirby to John Hall on "Articles Cited as Support for DO Saturation in New Hampshire WQS. March 2, 2017.