



## **Request To Southeast Watershed Alliance To Sponsor An Independent Peer Review of the 2009 NHDES Nutrient Criteria**

**What Is a Peer Review?** *A peer review is a process where recognized experts are asked to review a scientific body of work. The review committee is provided all available information relevant to the issue and is open to public participation. After all the information is presented to the experts, a series of charge questions are presented to them to answer. The questions are designed to determine whether the reviewed document is based on sound scientific principles and if the reports conclusions are drawn using accepted scientific analysis.*

**Why is a peer review needed?** *The 2009 NHDES Numeric Nutrient Criteria document establishes a water quality standard for nitrogen in the Great Bay estuary of .3 mg/l to be protective of eelgrass. The Great Bay Municipal Coalition have engaged consultants to review the document and determined that the document is flawed in its analysis and the conclusions are unfounded. The Coalition has spent more than 2 years attempting to engage NHDES in a technical discussion on the issue without success. The nitrogen water quality standard is very low and its consequences will be severe. It is unlikely that the estuary will ever meet the water quality standard whatever actions are required to reduce nitrogen. In the short term wastewater treatment plants are being given permit limits that will cost hundreds of million dollars. In order to reduce non point sources of nitrogen stormwater discharges will be required to reduce nitrogen and when that fails to meet the water*

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*quality standard strict land use restrictions will be implemented stifling any growth in the watershed.*

**What is the basis for needing the peer review?** *The following facts are now known based on the depositions and new information from PREP. These facts mandate the need to reconsider the prior DES recommendations on how to protect Great Bay resources:*

1. Algal levels in the system did not change materially from 1980 to present, despite an estimated 59% increase in TN levels between 1980 and 2004 and *therefore TN inputs could not have caused changed transparency in the system and therefore reducing TN inputs will not improve system transparency as assumed by DES.* (Trowbridge deposition- June 21, 2012; see also “State of the Estuary Reports 2000-2006 and draft 2013 Report)
  2. Transparency in the major tidal rivers (Squamscott, Lamprey, Upper Piscataqua) is poor, but the available data (not previously analyzed by DES) shows that (1) the effect of algal growth on transparency is negligible (2) CDOM and turbidity are the key factors controlling transparency in the system and (3) regulating TN in the tidal rivers *will not result in any demonstrable improvement in transparency or allow for eelgrass re-establishment in these areas.* (Trowbridge deposition – July 11, 2012; Exhibits 2, 3 and 4)
  3. Great Bay itself is generally not a transparency limited system because eelgrass populations receive sufficient light during the tidal cycle. (Trowbridge deposition – June 21, 2012 and Short deposition- May 14, 2012, as discussed in numerous emails between DES, EPA and Dr. Short)
  4. A large increase in rainfall and major floods occurring from 2006-2008 (a natural condition) could be the primary cause of significant eelgrass declines that occurred in Great Bay during that period due to salinity changes and increased turbidity and CDOM. DES failed to assess the importance of these events in triggering the eelgrass decline in the
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system despite the obvious temporal correlation. (Trowbridge deposition – July 11, 2012 – chart CDOM changes from 2004-2010)

5. The various DES/PREP analyses that confirmed (1) TN increases did not cause changes in transparency, algal levels or DO and (2) a “cause and effect” relationship between TN and transparency/DO did not exist, were excluded from the technical information presented in the 2009 numeric nutrient criteria document and, therefore, were never presented to EPA’s internal peer review panel. (Trowbridge deposition - July 11, 2012)
6. Dissolved nutrient concentrations have now returned to 1970-1980 levels. (See charts from PREP SOE 2013) This dramatic change in ambient DIN levels appears to be the result of reduced rainfall and increased eelgrass growth. These results indicate natural processes were controlling eelgrass populations and nitrogen levels in the system.

*These data confirm that the assumptions underlying the 2009 criteria document are flawed and attainment of those criteria will not provide meaningful ecological benefits. A peer review would provide a rational explanation of the changes in eelgrass populations and nitrogen levels in this system that would better direct future research and resource protection efforts.*

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