ASSESSMENT OF EUTROPHICATION IN ESTUARIES AND COASTAL WATERS: NOAA'S ESTUARINE EUTROPHICATION ASSESSMENT UPDATE PROGRAM

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The National Estuarine Eutrophication Assessment (NEEA) Update Program is a management oriented program designed to improve monitoring and assessment efforts through the development of type specific classification of estuaries that will allow improved assessment methods, development of analytical and research models and tools for managers which will help guide and improve management success for estuaries and coastal resources.

The assessment methodology, a Pressure-State-Response approach, uses a simple model for determination of Pressure and statistical criteria for indicator variables (where possible) to determine State. The Response determination is mostly heuristic though research models are being developed to improve this component. The three components are determined individually and then combined into a single rating. The method applied to Barnegat Bay gives an overall rating of Bad. This system has high anthropogenic inputs (Pressure - high), nutrient related impacts are high (State - high), though future conditions are expected to improve (Response - improve low). These results are typical of shallow lagoonal systems and can be used to inform managers particularly if this is applied periodically to evaluate management success.

Type specific indicator variables and thresholds are being considered to improve the accuracy and management implications of the model. Research models and analytical tools are under development to help improve the link between science and management. Finally, a socioeconomic component is being developed to evaluate the impact of nutrient related water quality problems on various human uses of estuaries and coastal waterbodies.

Usefulness of the NEEA/ASSETS methodology to managers:

- This model is used to evaluate the type, severity and location of eutrophic conditions, to determine probable causes, and to provide this information to managers such that observed problems can be addressed appropriately.
- It can be used to track trends in condition through time thus informing managers about the success of management measures and the potential need for modifications if they are not working in the manner expected.
- Type specific indicator variables and thresholds are being developed such that nutrient input/water body response relationships can be used to determine the level above which systems will develop undesirable conditions and to inform managers about appropriate management responses.
- Screening and research models and other analytical tools developed in this program will be made available online (e.g. www.eutro.org) and can inform managers about the level of impairment in comparison to other systems, the success of potential management scenarios, what variables are best to monitor as early warning signs for different types of systems, and what can be expected if loadings are reduced.

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