

Update on Nutrient Strategy for the Delaware River Estuary

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Background



Status

- ✓ Elevated nutrient loadings & concentrations (5x-10x Chesapeake)
- ✓ Absence of worst nutrient symptoms (hypoxia, Harmful Algal Blooms, fish kills)

Nutrient Criteria Process

- Nutrient concentrations to maintain “uses” & ecological health
- U.S. EPA Priority (National Nutrient Strategy - 1998; Stoner Memo - March 2011)
- DRBC Lead for Delaware Estuary & Delaware River
- Nutrients and/or “Nutrient-Related” Parameters (D.O., Chl *a*)
- Two Main Approaches
 - i. “Reference Condition”
 - ii. “Effects-Based” ← *only option for Delaware Estuary*

Background

History

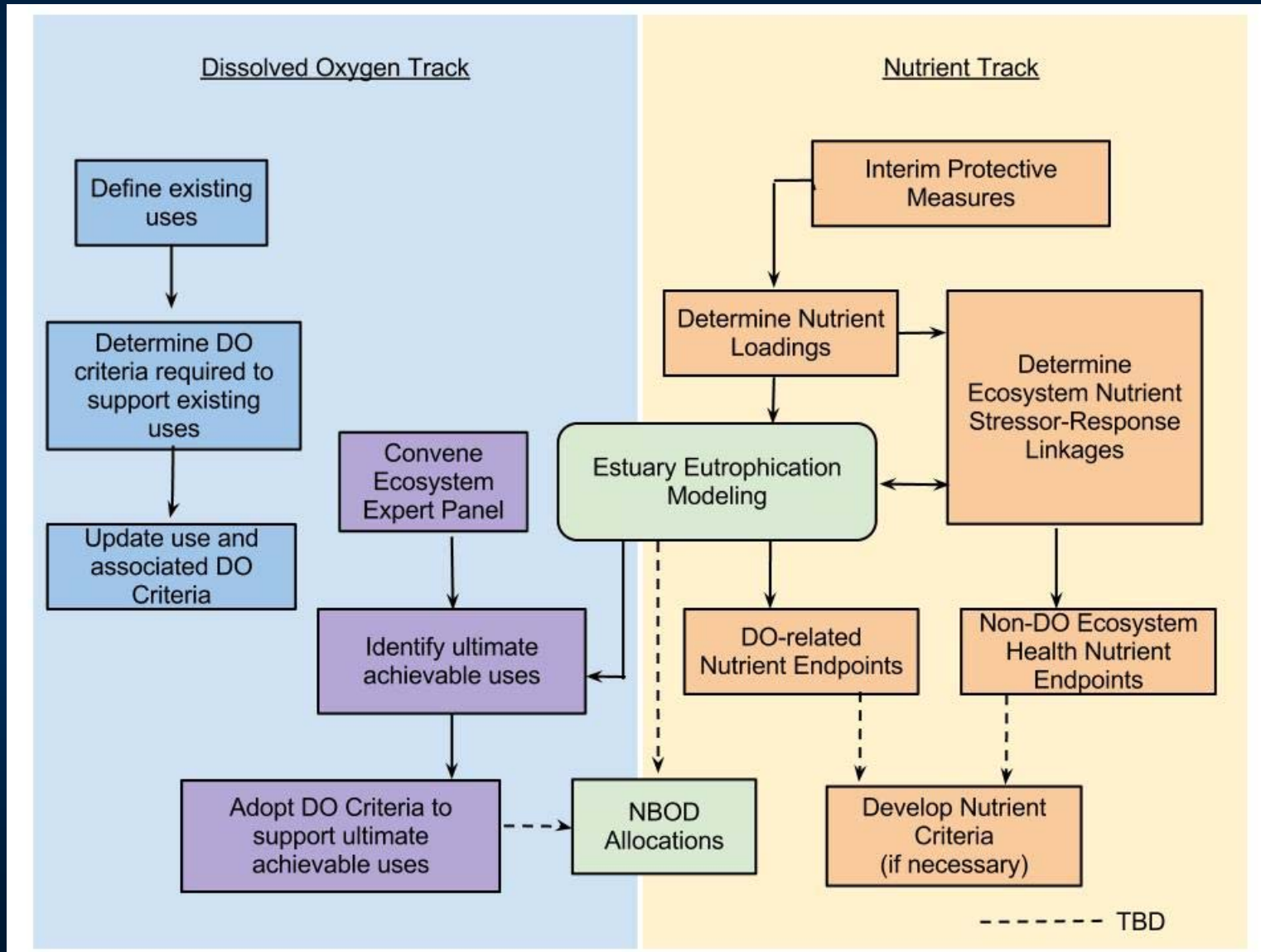
- 2007 - 2008: DRBC staff prepares Nutrient Criteria Strategy for discussion by Water Quality Advisory Committee (WQAC).
 - Strategy focused on the Special Protection Waters existing water quality (EWQ) as initial management approach.
 - Estuary approach focused on developing numerical values to protect existing water quality.
- July 2008: WQAC forms Nutrient Management Subcommittee to develop management options.

WQAC Discussions



- ❑ Discussions at the WQAC and MAC centered on the need for DRBC to develop and adopt interim criteria for nutrients for the estuary given the lack of controls on nutrients.
- ❑ Lack of consensus on the need for interim criteria.
- ❑ Given lack of evidence of severe nutrient impacts (fish kills, HAB, excessive algal & aquatic plant growth, water clarity) focus shifted to current dissolved oxygen levels.

Need For Dual Tracks



Phased Approach

- In 2009, the WQAC recommended a two phase approach to the development of nutrient criteria.
 - ✓ **Interim Protective Measures** - measures that could be implemented in the short term to address the current uses of the estuary and provide data to assess the need for nutrient criteria.
 - ✓ **Final Protective Measures** - measures that will result in achieving the highest protected use of the estuary including revised uses, wasteload allocations and, if necessary, nutrient criteria.

Interim Protective Measures

- Five interim protective measures were recommended:
 - ✓ **Point Source Nutrient Monitoring** - require nutrient monitoring of dischargers to the estuary.
 - ✓ Evaluate the feasibility of addressing nutrients through anti-degradation programs.
 - ✓ Develop and require **technology-based nutrient limitations** for new point source facilities.
 - ✓ Update **non-point source loading estimates** basin-wide.
 - ✓ Re-evaluate the interim protective measures.

Background



History (cont.)

- ❑ Sept 2009: WQAC vote on recommending Interim Protective Measures to Commission.
- ❑ Dec 2009: Presentation by Chair of WQAC to Commissioners on committee activity including recommendation on Interim Protective Measures for Nutrients.

Point Source Monitoring

- ❑ July 2010: Commissioners approve Resolution 2010-5.
- ❑ Elements coordinated thru the WQAC.
- ❑ Two year monitoring program.
- ❑ ~160 discharges identified.
 - Sampling frequency: monthly or quarterly depending on effluent flow.
 - 1 MGD flow threshold selected.
 - ~ 40 discharges would be required to conduct monthly sampling.
 - ~120 discharges would be required to conduct quarterly sampling.

Point Source Monitoring

□ Parameters:

- Nitrogen (NH_3 , NO_2 , NO_3 , TKN and SKN),
- Phosphorus (TP, SRP),
- Oxygen demand (BOD_5 , CBOD_5 and CBOD_{20}), and
- Ancillary parameters (flow, temperature, pH and D.O.)

□ Annualized Cost Per Discharge:

- Monthly Monitoring - \$1500
- Quarterly Monitoring - \$500

Point Source Monitoring

□ Current Status:

- 53 NPDES permittees were required to conduct monthly monitoring.
- Sampling commenced at most facilities in Fall 2011.
- 26 NPDES permittees were required to conduct quarterly monitoring.
- Sampling will commence at most of these facilities in Fall 2012.

□ DRBC staff is tracking data submittals and creating an Access data base for future assessments.

Ongoing Initiatives



- ❑ Nutrient Strategy Document: December 2012
- ❑ Non-point Source Loading Assessment: planned for first half of 2013.
- ❑ WQAC - will meet to discuss upgrading of designated use for Zones 3 to 5 to include propagation of resident fish/aquatic life and associated water quality criteria.
- ❑ New Eutrophication Model for the Estuary
 - ✓ Model Expert Panel - will be convened to assist in the selection and evaluation of a new model.
 - ✓ DRBC and ACOE staff are collaborating on the evaluation of the CH3D-Z model.

Future Initiatives

- ❑ Ecological Endpoint Expert Panel: convene panel to identify improvements to ecosystem of adopting higher dissolved oxygen criteria.
- ❑ New Eutrophication Model Components:
 - Improved hydrodynamic model - can also be used for linkage to salinity/chloride model for instream flow / reservoir evaluations.
 - Linkage to dissolved oxygen and nutrient water quality model.
- ❑ Reallocation of CBOD and allocations for NBOD, if necessary.

Questions?

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