

**Fiscal Year 2005 Work Plan
for the Water Quality Academic Advisory Committee**

Prepared for the

Virginia Department of Environmental Quality
Office of Water Quality Programs

Submitted by

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Duration:

August 1, 2004, to June 15, 2005

FRESHWATER NUTRIENT CRITERIA

Goal and Objectives

The goal of FY05 the Academic Advisory Committee for freshwater nutrient criteria is to continue and build on AAC activities that were initiated during FY04. Two specific objectives are:

1. Complete remaining tasks for the lakes and reservoirs freshwater nutrient criteria and make final recommendations;
2. Conduct background research on rivers and streams freshwater nutrient criteria.

Objective 1: Lakes and Reservoirs Freshwater Nutrient Criteria

Two major tasks have been identified:

Task 1

Analyze the DEQ water quality data and other available data (as per Appendix A of the FY04 AAC report) to provide answers to the following questions:

1. Do lakes' game fish populations vary with the lakes' nutrient status?
2. Do Virginia lakes demonstrate consistent relationships between water-column water-column nutrient levels (TN and TP) and response variables (Secchi depth, and chlorophyll a)?
3. Are there detectable influences of factors such as non-algal turbidity, suspended solids, retention time, etc., that may be used to classify lakes?
4. Should Carlson's Trophic State Index (TSI) be considered as a scale to express Virginia's nutrient criteria?
5. What would be the implications of using the reference approach to establish nutrient criteria?

Task 2

Should analysis of DEQ monitoring and Virginia DGIF fishery status data fail to yield statistically significant relationships suitable for defining criteria for all fishery types, existing data for some or all fishery types may need to be considered as reference values. The AAC would conduct a literature search focusing on nutrient requirements for major fishery types found in Virginia (warm water fisheries, trout fisheries, and large impoundments supporting cool water fisheries in bottom waters), and interpret the results of data analysis (Task 1 above) in recommending candidate nutrient criteria.

Lakes and Reservoirs Nutrient Criteria Final Report

Based on the results of these analyses, the AAC will recommend candidate freshwater nutrient criteria for lakes that are protective of aquatic life. The AAC will also fully define the context for these candidate criteria values by providing:

- An assessment of the strength of evidential support provided by data analyses and other scientific information for the candidate criteria.
- An assessment of how such candidate criteria can be best expressed (as water column nutrient concentrations, response variables, and/or TSI values)
- An assessment of the degree to which available data support impoundment classification using factors, such as ecoregion, and morphometric parameters, such as retention time
- An analysis of how such candidate criteria relate to potential reference values

Objective 2: Streams and Rivers Freshwater Nutrient Criteria

Task 1

The AAC will conduct a comprehensive literature search on the following topics:

- Investigate methods for defining undesirable (nuisance) levels of periphytic algae in wadeable streams, and what such studies have concluded as undesirable (nuisance) levels.
- Investigate a corresponding approach to planktonic algae in non-wadeable streams.

Task 2

Conduct a workshop inviting people from other states with experience in nutrient criteria development (e.g., OH, WV, MD, etc., plus EPA's consultant, Jan Stevenson from Michigan State University) for the purpose of exchanging information on nutrient criteria development. It was suggested to look at Ohio and other states for what steps they have taken in developing stream nutrient criteria. EPA Region III might be willing to provide financial support for the development of such a workshop if all Region III states are included.

Task 3

The AAC will investigate two planned studies that have the potential to aid nutrient criteria development in Virginia (i.e., EMAP study through The Academy of Natural Sciences in Philadelphia and the joint U.S. Geological Survey/U.S. Environmental Protection Agency study of aquatic systems in the Mid-Atlantic region). The AAC will determine what results will be available, when they will be available, and what methods will be applied to generate those results. Based on

this information, the AAC will make a recommendation regarding the adequacy of these studies as a basis for establishing nutrient criteria in Virginia's wadeable rivers and streams. If the studies are determined to be inadequate as a basis for criteria development, a recommendation regarding what additional studies or data might be required to provide an adequate basis would be provided. (DEQ anticipates receiving the data from this work after January, 2005. Also, the agency may receive funding for a second year of the study.)

Task 4

Based on findings of FY05, develop a second phase work plan for FY06 activities. For non-wadeable streams that are dominated by planktonic algae, an analysis of DEQ monitoring data, such as relationships between water-column nutrients and chlorophyll-a, should be completed in the second phase, including the summer of 2005.

Meeting Schedule (conference calls may be scheduled if appropriate)

August 18, 2004

Freshwater Nutrient Criteria Stakeholder meeting

January 5 2005

AAC-DEQ joint meeting to discuss the lakes and reservoirs Freshwater Nutrient Criteria recommendations.

March 9, 2005

AAC-DEQ joint meeting to discuss preliminary findings of literature search related to streams and rivers nutrient criteria.

February-March 2005

Nutrient criteria development workshop as presented above, under Task 2 of Objective 2 (Workshop date to be decided later).

Reporting Schedule

January 31, 2005

Final recommendations related to lakes and reservoirs nutrient criteria (draft report to be completed by January 15).

June 15, 2005

Draft report and recommendations; FY06 work plan related to streams and rivers nutrient criteria.

Deliverables

The Water Center will compile comments and recommendations of the AAC on freshwater nutrient criteria for lakes and reservoirs and submit as a final report to DEQ. The final report for FY 05 will include a plan of work for FY 06.

BUDGET

Salaries and Wages

Jane Walker, Research Associate	5,000	
Fringe Benefits @ 32.5%	1,625	
Student Wages	1,000	
Total Personnel Cost		7,625

VT Sub-accounts (tentative)

Carl Zipper, Crop and Soil Environmental Sciences	3,000	
Eric Smith, Statistics	3,000	
John Ney, Fisheries	1,500	
Thomas Grizzard, Civil and Environmental Engineering	1,000	
Theo Dillaha, Biological Systems Engineering	1,000	
Fred Benfield, Biology	500	
Total VT Sub-accounts		10,000

Travel **875**

Sub-contractor Leonard Smock, Richmond **1,500**

Grand Total **20,000**

Appendix A

Members of the Water Quality Academic Advisory Committee (July 2004)

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