



**Chesapeake Bay Program**  
**SCIENTIFIC AND TECHNICAL ADVISORY COMMITTEE**  
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May 8, 2015

RE: Management Effects on Water Quality Trends Workshop Report

Nicholas DiPasquale, Chair, Chesapeake Bay Program Management Board  
U.S. Environmental Protection Agency  
410 Severn Avenue, Suite 109  
Annapolis, MD 21403

Cc: Management Board

Dear Mr. DiPasquale,

Please see the attached STAC workshop report entitled, “Estimating Land Management Effects on Water Quality Status and Trends.” This report provides a summary of the March 25-26, 2014 workshop recommendations related to the most promising analytical approaches and corresponding data needs for detecting linkages between management practices on the land and changes in water quality within the Chesapeake Bay Watershed. The workshop was designed to share the current state of the science on quantifying and explaining water quality trends among a broad community of watershed and estuarine researchers, identify promising technical approaches for isolating the effects of management actions on water quality in the watershed and estuary, and promote discussion and generate recommendations on three primary topics. The specific recommendations identified by workshop attendees are listed below.

- Prioritize work that adds the ability to estimate uncertainty to the Weighted Regressions on Time, Discharge, and Season (WRTDS) method;
- Continue to develop and apply General Additive Models (GAMs) to the appropriate response variables in tidal waters, and develop a process of ‘artificial intelligence’ that enables automated application of GAMs;
- The CBP partners should continue efforts to improve reporting and tracking of Best Management Practices (BMPs). Bay Program leadership and staff should ensure that any partnership-derived assumptions and decision rules applied are transparent in the processing of reported BMP data.

- The CBP should prioritize more comprehensive and improved monitoring of BMP effectiveness. This includes assessing BMP effectiveness over time, both with and without proper operation as well as required periodic maintenance.
- The CBP partnership should implement continuous monitoring for locations, times, and constituents that maximize utility for improving assessment of effectiveness of management actions.
- The CBP partnership should engage in a concerted effort to energize the academic and federal research communities to conduct collaborative studies using the most capable and feasible techniques from among those suggested in this report. A number of techniques hold promise for application at a range of scales, or even for integrated application across scales from small watersheds to the entire Chesapeake Bay drainage basin. Multiple tools and approaches were suggested both for small watershed studies and regional analysis. These approaches need to be evaluated to explain observed water quality changes.

Recommendations from the workshop will help guide the Partnership's efforts to better explain the effect of management practices on changes in water quality and to differentiate those changes in water quality that are due to system lags, changes in land uses, increasing population, and changing weather patterns. This improved understanding will support an adaptive management approach to restoration of Chesapeake Bay and its watershed.

We hope the Management Board, the Goal Implementation Teams and various workgroups find the recommendations of the workshop to be useful, and STAC looks forward to your feedback. STAC respectfully requests a written response to the workshop findings and recommendations from the CBP Management Board Chair by Monday August 10, 2015.

Please direct any questions you may have about this report and its recommendations to Natalie Gardner, the Chesapeake Bay Program's Scientific and Technical Advisory Committee Coordinator, and lead report author, Jeni Keisman of U.S. Geological Survey.

On behalf of the entire STAC, thank you again for considering these recommended next steps, and we look forward to working with you closely on this in the future.

Sincerely,

A handwritten signature in black ink, appearing to read "Kirk Havens", with a long horizontal line extending to the right.

Kirk Havens

Chair, Chesapeake Bay Program's Scientific and Technical Advisory Committee