

# **Quantifying Ecosystem Services and Co-Benefits of Nutrient and Sediment Reducing BMPs: A 2016 STAC Workshop Proposal**

## **Submitted by:**

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Jana Davis, Chair, CBP Vital Habitats Goal Implementation Team  
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Mike Foreman, Chair, CBP Partnership, Leadership, and Mgmt Goal Implementation Team  
Bill Dennison, Co-Chair, CBP Scientific, Technical Assessment and Reporting Team  
Scott Phillips, Co-Chair, CBP Scientific, Technical Assessment and Reporting Team  
Ann Swanson, Executive Director, Chesapeake Bay Commission

## **Workshop Steering Committee**

Mark Bryer, The Nature Conservancy, Co-Chair  
Beth McGee, Chesapeake Bay Foundation, Co-Chair  
Rich Batiuk, U.S. EPA Chesapeake Bay Program Office  
James Davis Martin, Virginia Department of Environmental Quality  
Jennifer Greiner, U.S. Fish and Wildlife Service/CBPO  
Steve Newbold, U.S. Environmental Protection Agency [STAC Rep-confirmed]  
Scott Phillips, U.S. Geological Survey  
Kristin Saunders, University of Maryland Center for Environmental Sciences  
Tom Schueler, Chesapeake Stormwater Network  
Lisa Wainger, Univ. of Maryland Center for Environmental Sciences [STAC Rep-confirmed]

## **Description of the Workshop**

The Chesapeake Bay Program partnership recognizes the need to make it easier for decision-makers across the watershed to appropriately value local ecosystem services in addition to clean water. This workshop would focus on designing a Partnership framework for assembling information that allows for translation of a suite of eco-services (flood attenuation, recreational values, storm buffering capacity, open-space access and wildlife habitat) into a common currency that can be considered alongside water quality when making decisions and motivating action. Results would be used by the jurisdictions in the development of their Phase 3 Watershed Implementation Plans to optimize achievement of nutrient/sediment load reductions while enhancing progress toward related outcomes in the 2014 Bay Watershed Agreement.

## **Justification for the Workshop**

The Water Quality, Vital Habitats, Healthy Watersheds and Partnership Goals Implementation Teams, and STAR Team propose a two-day workshop directed towards understanding the state of the science and identifying the building blocks of an institutional framework for a Partnership-based system for developing and approving ecosystem services and co-benefits from the implementation of nutrient and sediment reducing best management practices. The desired outcomes of this workshop will draw heavily upon the study of group decision making, understanding the motivations behind human behavior change, and the science of defining and then quantifying a multitude of benefits from practices, treatments, technologies, and restoration actions.

Near term outcomes from and longer term desired responses to the workshop include:

- Understanding the state of the science supporting both defining and then quantifying the array of possible ecosystem services and co-benefits from the implementation of nutrient and sediment reducing best management practices [**late fall 2016**];
- Initial prioritization of which sets of ecosystem services and co-benefits are primed and ready for quantification and which will require additional scientific investigation or comprehensive data gathering and synthesis [**late fall 2016**];
- Identification of the collaborative institutional structures, procedures, and governance needed to sustain a system for complete ‘processing’ of ecosystem services and co-benefits and then setting the stage for some level of Partnership review and approval [**winter/spring 2017**]; and
- Identification of needed enhancements to or wholesale changes to the Partnership’s monitoring networks, linked models and other decision support tools, shared research prioritization and support mechanisms, and shared management decision making processes to fully embrace and support factoring in ecosystem services and co-benefits into the heart of the Partnership’s restoration and protection programs and accountability, prioritization, and crediting systems [**summer 2017**].

Coming out of the workshop, the four Goal Implementation Team’s Chairs and Coordinators, along with the Partnership’s Cross Goal Implementation Team Coordinator, would continue to work directly with STAR and STAC on developing a more complete set of information gathering and synthesis procedures and share decision making governance protocols for moving forward with the workshop recommendations. The objective would be to seek, in **the summer/fall of 2017**, Management Board approval of a framework for applying ecosystem services and co-benefits within the day-to-day operations of the Partnership well into the future.

### **Workshop Timing, Urgency and Rationale**

The timing of the workshop will take advantage of both the February 2016 STAC Optimization Workshop and the Partnership’s full attention on the Chesapeake Bay 2017 Midpoint Assessment. The STAC Optimization Workshop will help forge the connections with the Partnership’s growing array of decision support tools (e.g., CAST, BayFAST), ensuring many local, state and federal partners will have direct access to the ability to apply the ecosystem services and co-benefits in their decision making processes. With the Partnership focused, in part, on building the basis for the jurisdictions’ development of their Phase III Watershed Implementation Plans, there will be great receptivity to building in the means for quantifying other benefits to local partners from the implementation of BMPs. In the longer timeframe, a growing application of ecosystem services and co-benefits will serve to forge stronger interconnections between the current 10 goals and 31 outcomes of the Chesapeake Bay Watershed Agreement. And this proposal directly addresses the FY16 STAC workshop recommended theme of human dimensions – integration of social and economic issues into restoration, relying on the STAC workshop format to integrate work from an array of scientific disciplines.

### **Workshop Presenters and Moderators**

- Presenters describing regional and national examples of programs directed towards studying, understanding, and developing ecosystem services and co-benefits.
- Presenters synthesizing the current state of the physical, biological, and social sciences related to both quantifying and applying ecosystem services and co-benefits within large scale collaborative decision making organizational structures.
- Presenters describing how ecosystem services and co-benefits can best be used to motivate expanded behavior change and support decision making factoring in multiple desired outcomes.
- Presenters walking through the CBP partnership's experiences and lessons learned with shared decisions on nutrient and sediment BMP definition, pollutant load reduction efficiencies, tracking, verification and reporting, and model simulation.
- Presenters pointing to the opportunities and mechanisms for incorporating quantified ecosystem services and co-benefits into the suite of Partnership models and other decision support tools.
- Moderators will be directly drawn from the Steering Committee membership.

### **Targeted Workshop Participants**

This workshop will target academic institutional participants from the relevant social, human behavioral, economic, watershed, ecosystem processes, and source sector sciences. The workshop will also target participation of a diverse array of Goal Implementation Team members to ensure their individual and collective perspectives are factored into the workshop. The workshop will also target an array of local implementers and decision makers to provide a reality check on desired applications of ecosystem systems and co-benefits. Targeting about 40-45 participants in the workshop.

### **Workshop Logistics, Timing, and Location**

The workshop would be scheduled for the fall 2016 so that the outcomes of the workshop can work themselves through the Partnership during the course of 2017 (see target dates on page 2), with the target for the beginning of implementation in a management context starting in early 2018. Would prefer locating the workshop on an academic campus (e.g., UMCES-CBL, SERC, UMBC) if possible, to both save costs and add to the working nature of the workshop.

### **Estimated Budget**

Venue: \$1,500 Food: \$3,000 Travel for Presenters: \$4,000 Total: \$8,500

Matching Funds: \$2,000 from EPA, supporting the venue costs and part of the travel cost for federal and non-federal participants to offset part of the \$8,500 in requested funding.

### **Past STAC Workshops and Peer Reviews Related to This Proposal**

February 2016 Optimization Workshop; 2011 Integrating the Social Sciences into Chesapeake Bay Restoration; 2007 and 2008 BMP Peer Reviews

**Attachment:** Letter from four GIT chairs, two STAR co-Chairs and CBC Executive Director.



**410 Severn Avenue Suite 112 | Annapolis, MD 21403 | 410-267-5700**

February 16, 2016

Chesapeake Bay Program Scientific and  
Technical Advisory Committee c/o  
Chesapeake Research Consortium  
645 Contees Wharf Road  
Edgewater, Maryland 21037

Dear CBP STAC Members:

On behalf of our respective members, we are pleased to submit the attached 2016 STAC workshop proposal entitled *Quantifying Ecosystem Services and Co-Benefits of Nutrient and Sediment Reducing BMPs*.

The Chesapeake Bay Program partnership recognizes the need to make it easier for decision-makers across the watershed to appropriately value local ecosystem services in addition to clean water. This workshop would focus on designing a Partnership framework for assembling information that allows for translation of a suite of eco-services (flood attenuation, recreational values, storm buffering capacity, open-space access and wildlife habitat) into a common currency that can be considered alongside water quality when making decisions and motivating action. Results would be used by the jurisdictions in the development of their Phase 3 Watershed Implementation Plans to optimize achievement of nutrient/sediment load reductions while enhancing progress toward related outcomes in the 2014 Chesapeake Bay Watershed Agreement.

From our perspective, the strength of this workshop is that it is an opportunity to get the Partnership focused on determining how incentives can be aligned across goals, outcomes, and management strategies. We need to collectively evaluate how well the Bay TMDL driven management actions support other Bay and watershed restoration goals using quantitative metrics that leverage available data.

This workshop will formally start the conversation within the Partnership about how to generate quantitative metrics that resonate with stakeholders as well as decision makers when there is insufficient data to monetize the benefits. We need to learn to speak with different units other than pounds reduced of nitrogen and phosphorus; but these words don't necessarily need stated in terms of dollars.

With the Partnership focused, in part, on building the basis for the jurisdictions' development of their Phase III Watershed Implementation Plans, there will be great receptivity to building in the means for quantifying other benefits to local partners from the implementation of BMPs. In the longer timeframe, a growing application of ecosystem services and co-benefits will serve to forge

**The Chesapeake Bay Program is a regional partnership that has led the restoration of the Chesapeake Bay since 1983. Find us at [www.chesapeakebay.net](http://www.chesapeakebay.net).**



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stronger interconnections between the current 10 goals and 31 outcomes of the Chesapeake Bay Watershed Agreement.

We strongly encourage your consideration of our proposed 2016 STAC workshop. As you can witness by the number of Partnership leadership signatures below and the diversity of partners represented on the recommended Workshop Steering Committee, we believe the focus of this workshop has true cross programmatic applications over the array of challenges facing Chesapeake Bay and watershed restoration.

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