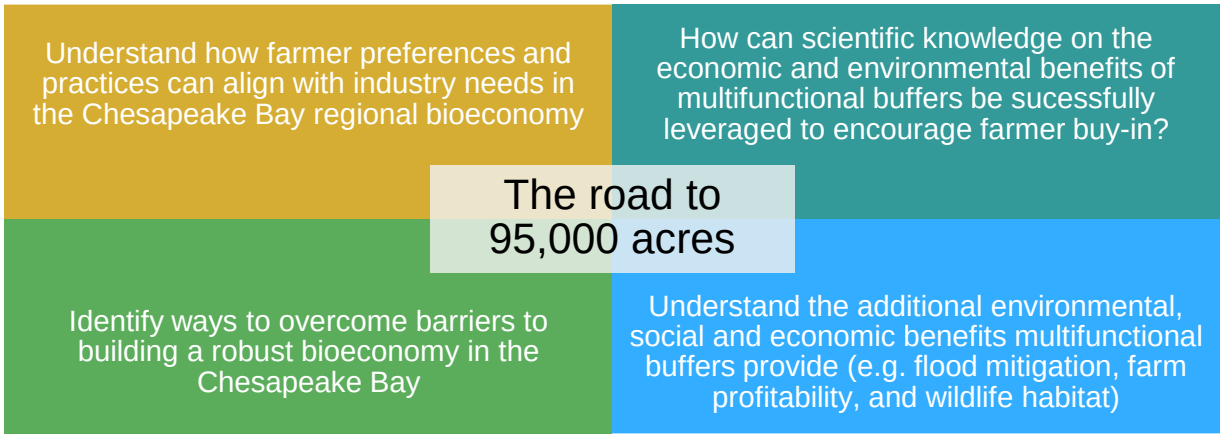
Scientific and Technical Advisory Committee (STAC) Workshop Proposal

Establishment of multifunctional riparian buffers: How do we accelerate the path to 95,000+ acres with the greatest economic, social and environmental impact?

The goal of this workshop is to accelerate the mandated establishment of riparian buffers in the Chesapeake Bay watershed to meet environmental goals with minimal government subsidies. To accelerate the establishment of effective buffers, STAC and others need to understand the state of knowledge on buffers, engage stakeholders around the current science, and create a roadmap to guide future buffer planning and implementation efforts. To achieve this, we will explore a market-based approach for multifunctional buffers, targeting opportunities to increase water quality, farm profitability and other benefits. The workshop will address the following key questions, concepts, and outcomes:



The Chesapeake Bay TMDL requires implementation of best management practices, including riparian buffers, to meet water quality goals by 2025. The 2014 Watershed Agreement includes a specific goal to "restore, enhance and protect a network of land and water habitats to support fish and wildlife, and to afford other public benefits…" One critical outcome for this goal is to "restore 900 miles/year of riparian forest buffers" so that at least 70% of riparian areas through the overall Bay watershed are forested. Like all Bay watershed states, Pennsylvania has a riparian buffer goal: a target of planting 95,000 acres by 2025. However, progress has been slow, in part because farmers assume converting conventional annual cropland acres to buffers will reduce farm profitability and farmers are therefore reluctant and unmotivated to buy-in. As of 2013, the Commonwealth had established fewer than 6,000 acres of buffers, meaning it would take decades at the current rate to meet the goals of the Watershed Implementation Plan and the needs of the Bay-wide TMDL. This workshop will provide the necessary roadmap STAC needs to further the science and accelerate the buffer plantings required by 2025.

Multifunctional buffers on marginal land (identified by sub-field economic analyses and high-resolution flood mapping) can provide benefits beyond water quality like flood control, increased soil fertility, wildlife habitat, individual farm viability, and rural economic growth. However, barriers exist to growing a bioeconomy that can support buffer plantings, including farmer preferences for traditional cropping systems, lack of strong links between science, farming, industry, government, and environmental groups, and the infancy of regional biomass markets. This workshop will address these barriers and bridge the gap between planting goals and reality. It builds on previous STAC workshops examining local benefits of BMP implementation (e.g., Quantifying Ecosystem Services and Co-Benefits of Nutrient and Sediment Pollutant Reducing BMPs, workshop March 2017). By exploring Pennsylvania as an example, workshop participants can pave a pathway to accelerate buffer plantings successfully. This will also help build on Pennsylvania's Department of Conservation and Natural Resources (DCNR) forest buffer work. While the workshop focuses on how multi-functional buffers could be implemented in Pennsylvania, the steering committee will seek key participants from other Chesapeake Bay states as well.

Workshop Objectives:

1. Summarize current riparian buffer implementation needs, practices, and research
2. Understand perspectives of legislators (funding), farmers (preferences), and industry (needs)
3. Identify social and economic barriers and ways to overcome them
4. Create a necessary framework for collaboration between researchers, farmers, and industry to accelerate and sustain multifunctional riparian buffers and the bioeconomy

We anticipate building new partnerships between academic institutions, farm producers and supply chain businesses, landowners, government agencies, environmental groups, and rural communities that together can address needs at the intersection of land conservation and preservation, water quality, farm profitability, and rural economic sustainability.

Format/Timeline: 2-day workshop in November 2018 in Harrisburg, PA or Lancaster County. Timing is flexible but should be held outside of busy planting/harvesting seasons (April-October) so that agricultural stakeholders may attend.

Audience: 40-50 participants from academia, government, industry, extension, agriculture, and environmental organizations.

Example Discussion Topics:

1. What are multifunctional riparian buffers?
2. How can we leverage sub-field economic analysis and high-resolution flood frequency mapping to benefit water quality and farm profitability by planting multifunctional riparian buffers?
3. Existing and potential biomass markets in Pennsylvania.
4. Empowering farmers with new markets—farmer testimonies.
5. How do we incorporate farmer preferences and motivations into necessary landscape change?
6. Existing barriers (e.g., regulatory) to riparian buffer implementation; ways to overcome them.
7. Growing the local and regional bioeconomy.
8. Industry needs for the developing local and regional bioeconomy.

Anticipated Product: A summary of current research, needs for implementing multifunctional riparian buffers, and recommendations to overcome barriers for STAC to utilize will be completed by January 2019 (before the Spring buffer planting season).

Resources Requested: $10,000 to be spent on meals (Day 1 lunch/dinner, Day 2 breakfast/lunch), refreshments, travel, meeting room (if needed), and overnight accommodations for participants. We will seek contributions from PA DCNR, DEP, and Penn State as well to help defray costs.

Previous workshops organized by proposed steering committee members:
Ann Swanson has been involved with several STAC workshops, as has Lara Fowler and Pete Kleinman. Although the proposed chair of the steering committee, Tom Richard, has not organized a STAC workshop, he has been exploring these issues in other events. For example, he chaired a session for Penn State Energy Days on Bioenergy and Water Quality (May 2017) where the panelists included Ann Swanson, Russell Redding, Paul Marchetti, Calvin Ernst and Dave Muth. He also helped develop a NEWBio Short Course on Perennial Crops for Bioenergy & Ecosystem Services (April 2017). At this course, academics, farmers, government officials and industry representatives learned and discussed the opportunities of perennial crop planting for environmental benefits and additional farmer profit. Further exploration through a workshop format will allow for identification of barriers and opportunities around riparian buffers.

Steering Committee (proposed steering committee members in bold have agreed to participate):

- **Lara Fowler**, Penn State Institutes of Energy and Environment, STAC member **(facilitator)**
- **Tom Richard**, Director, Penn State Institutes of Energy and Environment **(chair)**
- **Steph Herbstritt**, Penn State Ph.D. Student
- **Veronika Vazhnik**, Penn State Ph.D. Student
- **Deb Nardone**, Executive Director, Clearwater Conservancy
- **Ann Swanson**, Executive Director of Chesapeake Bay Commission
- **Pete Kleinman**, USDA-ARS, STAC member
- Jon Duncan, Penn State Assistant Professor of Hydrology
- **Su Fanok**, The Nature Conservancy

Other Anticipated Participants:

Agriculture:

- 40 Pennsylvania farmers in the Spring Creek and Spruce Creek watersheds, and Dauphin and Lancaster Counties identified through Clearwater Conservancy, local NRCS, and Cooperative Extension offices
- Local Cooperative Extension Agents

Government:

- Russell Redding, PA Secretary of Agriculture
- Brion Johnson, Executive Director of PennVest
- Gary Shenk, USGS-CBPO
- Mark Tomer, USDA ARS
- Sara Porter, USDA ARS
- Tamie Veith, USDA ARS
- Denise Coleman, State Conservationist, NRCS
- Mark Roberts, US Fish and Wildlife
- Dawn Hintz, Susquehanna River Basin Comm.
- Anne Hairston-Strang (MD-DNR)
- Louise Lawrence (MDA)
- Sally Claggett (USFS)

Academic:

- Armen Kemanian, Penn State
- Heather Gall, Penn State
- Rachel Rozum, Penn State
- Dan Ciolkosz, Penn State
- Mike Jacobson, Penn State
- Matt Royer, Penn State
- Esther Parish, Oak Ridge National Lab
- Wes Eaton, Penn State
- Rick Roush, Penn State

Industry:

- Calvin Ernst, Ernst Conservation Seeds/Ernst Biomass—the leading conservation seed supplier; one of the largest U.S. switchgrass seed suppliers, with over 5,000 acres of perennial grasses in PA
- Kevin Comer, Assoc. Principal & Sr. Project Manager, Antares Corporation
- Fred Circle, FDC Enterprises—leading grass establishment company in U.S. & nationally recognized ag. biomass supply chain innovator
- Diamond Sock—local company that uses switchgrass/perennial biomass in erosion/sediment control socks
- Federal Aviation Administration—interested in harvesting perennial grasses and other biomass for fuel
- Poultry bedding industry representatives
- Industrial absorbent industry representatives
- David Muth, Co-Founder, and Senior VP, AgSolver, Inc.—a tool for sub-field economic analysis
- Lee Lynd, Chief Scientific Officer, Enchi—enabler of advanced biofuel production
- Tom Schwartz, FDC Enterprises

Environmental:

- Clearwater Conservancy
- Pheasants Forever
- Trout Unlimited
- Lisa Schulte Moore, Iowa State STRIPS Program
- Lancaster County Conservancy
- Land Conservancy of Adams County
- Matt Ehrhart, Stroud Water Research Center
- Susquehanna Riverkeepers
- Mark Bryer, Kathy Boomer, The Nature Conservancy Chesapeake Bay Program