



The North Fork South Branch Potomac River flows past Seneca Rocks in Monongahela National Forest in Pendleton County, W.Va., on April 28, 2017.

I. Introduction

Of the many best management practices that improve the quality of waters and habitats in the Chesapeake Bay watershed, the single best management practice (BMP) may be the restoration of riparian forest buffers. Woody vegetation historically occurred along most streams in the Chesapeake Bay Watershed prior to European settlement, except where conditions were too wet, frequently disturbed, or salty. This historic condition is considered the optimal natural condition for streamside vegetation of the watershed and sets the target condition for buffer restoration. Riparian forest buffers (RFB) provide critical barriers between polluting landscapes and receiving waterways using relatively little land. Forest buffers reduce the adverse effect of excessive nitrogen, phosphorus and suspended sediment inputs. Per acre, they likely provide more benefits and are more cost-effective than any other BMP, especially when considering the added value of habitat at the critical juncture of land and water.

Forest buffers have been part of the fabric of Bay restoration since 1994 when the Executive Council first called upon the Chesapeake Bay Program (CBP) to develop a policy to “enhance riparian stewardship and efforts to conserve and restore riparian forest buffers (Directive 94-1).” Since then, many goals and plans have been put into place. These have met with varying degrees of success. The current effort, the

Riparian Forest Buffer Initiative (hereafter, the Initiative), is the biggest, most concerted effort by state and federal agencies to increase riparian forest buffers in the watershed to date.

New high-resolution mapping of land use in the Chesapeake watershed has shown that as much as 69% of the riparian area is in a natural condition (primarily forest or wetland). Previous estimates for riparian forests alone were about 58%. The goal to have a minimum of 70% of the riparian area in forests is now within reach. Furthermore, we learned there are ~1.4 million acres of bufferable (currently without a forest or natural buffer) area. Because Bay water quality is still impaired, and there is still a great need for this habitat, the goal posts for this goal may be shifting once the new Watershed Implementation Plans are completed. Tools associated with high-resolution mapping product will be helpful to restoring RFB and should be incorporated in TSP trainings.

The rate of new riparian forest restoration continued to decline despite a jump in 2016 due to a landowner survey in Pennsylvania that identified many acres of voluntary buffers. The pace of restoration needs to accelerate now to meet 2025 water quality goals. Furthermore, with CAST (Phase 6 of the CB Model), the number of RFB BMP acres in some states decreased because they were over 10 years old and had not been verified.

The federal-state Conservation Reserve Program (CRP/CREP) has long been the best program for restoring RFB in the watershed. However, since the states have felt the need to accelerate RFB, some are looking to make CRP more efficient and manageable, and are even hoping to create a federal-state program separate from CRP focused only on RFB. In recent years, most states have created programs and grants focused on the riparian area, but these do not take advantage of federal assistance.

As a result of new data from PennState and the Agriculture Research Service, we now have a better understanding that many (as much as one-third) of our riparian buffers have concentrated flow cutting through them. This flow, also called buffer by-pass, prevents the buffer from filtering runoff before it reaches the stream. There are actions that can be taken upland of the buffer and also some buffer design elements that could be used to reduce the likelihood of buffer by-pass.

II. Goal, Outcome and Baseline

This management strategy identifies approaches for achieving the following goal and outcome:



Vital Habitats Goal

Restore, enhance and protect a network of land and water habitats to support fish and wildlife, and to afford other public benefits, including water quality, recreational uses and scenic value across the watershed.

Riparian Forest Buffer Outcome

Continually increase the capacity of forest buffers to provide water quality and habitat benefits throughout the watershed. Restore 900 miles per year of riparian forest buffer and conserve existing buffers until at least 70 percent of riparian areas throughout the watershed are forested.

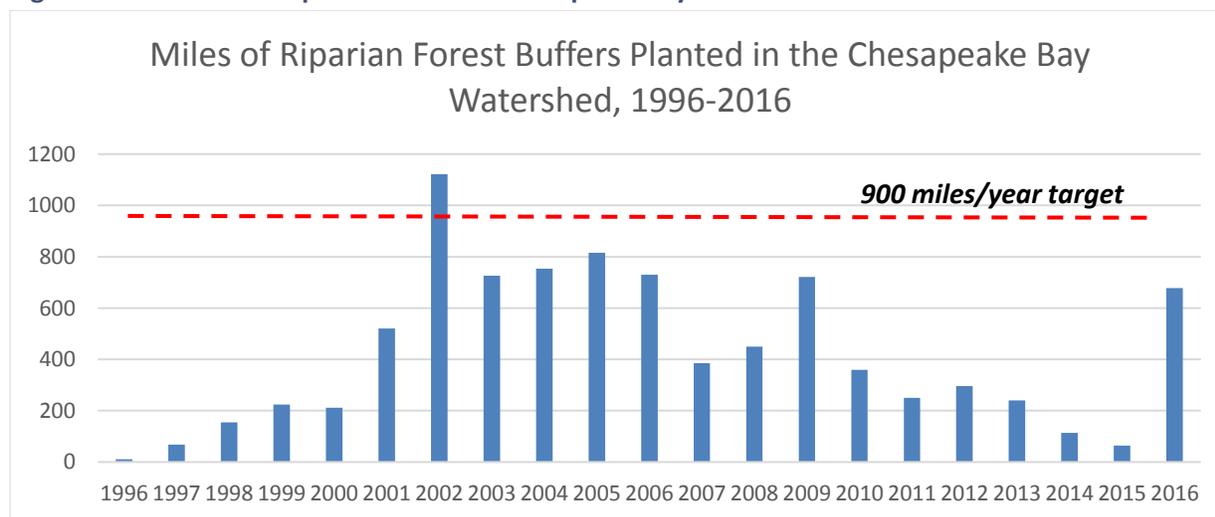
Baseline and Current Condition

The TCW worked with stakeholders to develop the issues to be addressed for this research strategy. These issues are listed in order of priority and are discussed in each of the appropriate sections of the research strategy. The issues are:

- Supply information to make fish and shellfish safe for human consumption.
- Understand the influence of contaminants degrading the health, and contributing to mortality, of fish and wildlife.
- Document the occurrence, concentrations, and sources of contaminants causing fish and wildlife degradation.
- Assess relative risk of contaminants, and options for mitigation, to inform policy and prevention strategies. Provide implications to consider in management approaches.
- Gather information on issues of emerging concern.

As much as 69 percent of the roughly 288,000 total riparian miles in the Bay watershed has a forest or natural buffer in place. A goal of 900 miles/year was a goal first set by the states in 2007. Since that time, this goal has never been reached. The current rate of restoration/tree planting, is shown in Figure 1. Buffer width is not prescribed but is between 35 and 300' wide, with an average 100' wide to achieve the benefits credited. Average width currently is ~95'.

Figure 1. Miles of new riparian forest buffer reported by states to CBP.



III. Participating Partners

The following partners have participated in the development of this strategy. Most participation has occurred as part of a State Task Force.

Chesapeake Bay Watershed Agreement Signatories

- Commonwealth of Pennsylvania
- State of Delaware

- State of West Virginia
- Chesapeake Bay Commission
- Commonwealth of Virginia
- State of New York
- State of Maryland

Other Key Participants

- **Federal:** Farm Service Agency, Natural Resource Conservation Service, Forest Service, US Geologic Service, US Fish and Wildlife Service, Department of Defense, Environmental Protection Agency, National Park Service, Army Corps of Engineers, Smithsonian Institution
- **Non-Governmental:** Alliance for the Chesapeake Bay, Chesapeake Bay Foundation, Trout Unlimited, The Nature Conservancy, Cacapon Institute, Casey Trees, Parks and People (Baltimore and Washington, D.C.), Delaware Center for Horticulture, Baltimore Greenspace, Pennsylvania Conservation Districts, Stroud Water Research Center, Pheasants Forever, Ducks Unlimited, Potomac Conservancy, Virginia Farm Bureau, Virginia Grain Producers, Virginia Agribusiness Council, Virginia Cattlemen’s Association, Virginia Dairymen’s Association, Maryland Farm Bureau Federation
- **Local:** Local Government Advisory Council; Soil and Water Conservation Districts; Anne Arundel County; Arlington County; Prince Georges County; Cumberland, MD; Fairfax County; Annapolis, MD; Baltimore County

IV. Factors Influencing Success

The following are natural and human factors that influence the partnership’s ability to attain the riparian forest buffer outcome. Because the restoration of riparian forest buffers is predominantly an agricultural practice, many of the factors influencing this outcome are common to agriculture. These are not readily within our control, and will not be ranked as part of this Management Strategy:

- Fluctuation in commodity crop values
- Inter-generational transfer of agricultural lands
- Loss of agricultural lands
- Lack of congressional authorization of a new Farm Bill, which caused Conservation Reserve Program to close in 2013 and 2014.

Note: Urban riparian buffers are included in the urban tree canopy and are addressed as part of the Tree Canopy Management Strategy along with related stormwater issues.

Other factors are more technical or relate to management/leadership. All of these factors have been identified to be of the highest order of priority from the various groups that have been assembled as part of the Initiative (specifically, the Steering Committee, State Task Forces, and the Innovators’ Roundtable). In working through the logic table for the revision of this Management Strategy, the following factors were determined to be most important:

- Partner Coordination
- Science and Technical Understanding

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- Improved Technical Assistance
 - Government Agency Engagement
 - Legislative Engagement
 - Landowner Engagement
 - Funding or Financial Resources
 - Non-governmental Engagement
 - Public Engagement

V. Current Efforts and Gaps

CBP partners have been working on the RFB outcome for over 24 years. In 2014, USDA, EPA and the Alliance for the Chesapeake began the Riparian Forest Buffer Initiative. It was clear that agriculture should have more ownership of this Outcome which is primarily placed on ag land. The CBP Forestry Workgroup can help and provide technical leadership in tree reforestation, but should not continue to be the sole lead for the RFP practice at the regional level. The Initiative developed a list of gaps/barriers which was heavily used in the first Management Strategy. There have been some positive new efforts in the last 2-3 years, such as the RFB leadership in Pennsylvania. Most of the successes are localized and need to expand to other parts of the watershed. The Forestry Workgroup identified these gaps in 2018 when updating the Logic Table:

- 1. Leadership.** While the Phase III of the WIPs have not been completed, all indications are that the rate of RFBs restoration will have to greatly accelerate to meet 2025 goals for water quality. There are ~1.4 million acres of opportunity, that is at once a lot and a limited number. Greater leadership at multiple points along a continuum—federal (DC), state (state agency leads, state ag leaders), and local (County NRCS or SWCD)—is needed. There needs to be a clear, coordinated response from all of these leaders to the need for RFB. Currently, a RFB leader has been appointed in each state, however this person needs to be empowered and recognized by other leaders. Also, the state RFB and WQ leads should meet regularly with the State Conservationist and solicit that person’s assistance in implementing state priority ag practices.

It is not sufficient for leadership to be identified and actively convene stakeholders—leadership must ensure there are efficient and dedicated programs to deliver in their state. This may involve developing new policies or tweaking old policies to ensure their stability and efficiency in getting RFB on the ground.

- 2. Need efficient, regularly-funded programs.** The feds and states have alternately been guilty of lapses in CRP. This creates trust issues—landowners need consistent, dependable programs or they can’t be sold. A separate state program could be developed to address Maintenance issues. This would ease burden to landowners and provide an economy of scale to get the work done by a dedicated group. Furthermore, inefficiencies in program delivery—where multiple people and agencies have a role in getting a single contract out—could be had. Additional funding is needed from feds, states and grants to sell these programs and take the risk out of enrolling.
- 3. Federal Policy.** CBP partners would benefit from Farm Bill language supporting RFB efforts. To a large degree, RFB progress has depended on CRP/CREP, but this program has been beleaguered with

acreage caps, time lags and shutdowns. Partners have been in favor of quicker, more flexible programs. Partners are calling for a higher acreage cap for CRP in the Farm Bill, adding more flexibility in program delivery, increasing maintenance and incentive funding, and something separate and new that would be specific to RFB. The Action Team is working on this recommendation and what the PSC could do to help.

4. **Improved technical assistance and staffing.** More technical assistance (TA) is needed in the Chesapeake for RFB and across the board as outlined in the recent report *Boots on the Ground*. Existing staff at the county level and consultants could be better trained to reinforce the TA staff delivering RFB well. Technical Service Providers (TSP) have access to new tools and need training to use them. New information on farm hydrology and buffer by-pass indicate the need for specialists to address this issue where it happens so buffers can do their job. In some cases, the buffer could be better designed to address buffer by-pass.
5. **Enhanced engagement at multiple levels (landowner, TSP and leadership).** Partners have been reaching out to landowners, TSPs and other partners on the importance of RFBs to various degrees of success. A comprehensive communications and outreach plan is proposed to provide guidance for future efforts. The CBP Communications team will be leading this effort.

Actions, Tools and Support to Empower Local Government and Others

- The Local Government Advisory Council has been engaged in the process of developing this Management Strategy.
- Targeting tools from federal and state government are available and will be better disseminated, with training, to local partners. These tools and high-resolution land cover imagery can help partners see how much opportunity exists in their area and where RFB program delivery should be targeted.
- Other programs, tools and support have been identified in the State Task Force reports and are partially reflected in the summary of them provided in the Appendix.

VI. Management Approaches

The following Management Approaches have been refined since the first Management Strategy to be more focused on high priority partnership actions.

The partnership will work together on these approaches to address the factors affecting our ability to meet the goal and to fill the gaps previously identified. The RFB management approaches were summarized from strategies identified in the Innovators' Roundtable in 2014 and through the draft [State Task Force](#) reports. These are still relevant. The following are the newly honed and reorganized management approaches – also reflected in the biennial workplan.

- Renew leadership to achieve an “all hands” approach
 - State RFB lead has been appointed in all Bay jurisdictions. There is a need to bolster this position with state agency lead support. In Pennsylvania, there are regular Coordinating meetings that are directly supported and often attended by cabinet-level leadership. The RFB lead should communicate regularly with the WIP lead and NRCS State Conservationist.

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- CBP’s Management Board asked for the formation of an RFB Action Team. This Team will report back to the MB at their September 2018 meeting with suggested leadership actions which they will share with the PSC.
 - Work on policies to advance RFB. Improved Farm Bill language that increases the acreage cap of CRP/CREP and makes it more flexible for RFB. Because of the high priority and unique challenges of RFB, some have suggested starting over with a program devoted to doing RFB effectively.
 - Improve existing Ag programs and continue to develop new ones
 - This leadership should flow to the local level where SWCDs, NRCS, and FSA could improve coordination RFB enrollment in counties showing up as light colored Develop programs to assist landowner with maintenance
 - Amend state Conservation Reserve Enhancement Program (CREP) agreements – increase flexibility and incentives; support verification
 - Conduct strategic, coordinated, and cost-effective RFB outreach across the watershed
 - Compile and disseminate information on what it takes to properly establish and maintain healthy multi-functional RFBs
 - Look broadly to align related projects/funding (e.g., state preservation programs, stream restoration, etc.)
 - Use federal funding as leverage to get more RFB
 - Integrate RFB as part of state stormwater programs (also see Tree Canopy MS)
 - Improve and Increase Technical Assistance
 - Maintain existing trained Riparian Foresters
 - Increase Technical Service Providers by working with NRCS, SWCDs and other agricultural consultants.
 - Increase state and local funding for CRP (or similar RFB program)
 - Find ways to make existing program more efficient
 - Provide more training for TSPs incorporating new tools and science.
 - Address whole farm planning with RFBs to improve farm hydrology issues and reduce buffer by-pass.
 - Outreach and Communications
 - Produce an Outreach and Communications Plan for RFB. This will help coordinate and hone outreach and communications efforts across the watershed, and help engage landowners and the general public.
 - Non-agricultural programs
 - Develop RFB/Tree planting program targeted to MS4s/local gov’ts that may include private investment
 - Analyze current spending on CBIG/319/SRF to determine what might be available for implementation of RFB programs on non-ag lands

Approaches Targeted to Local Participation

- Many of the identified management approaches are critically important at the local level. For example, local leadership promoting RFB as an essential practice to achieve their water quality goals. Local officials should be involved with SWCD, RC&Ds, county offices of NRCS and FSA, and

others working with landowners to ensure that the actions identified in this strategy are taking root and having an effect.

- Protect RFBs in local land use regulation. Local government has authority over conversion of agricultural land to another land use and loss of RFBs on agricultural lands is being tracked through the Chesapeake Bay Model and will have a negative impact on water quality. Tools to identify loss and potential loss of RFB will be made available.
- More programs for RFB on non-agricultural land need to be developed and promoted by local authorities. “Backyard buffers” and “Buffer in a Bay” are two such programs for suburban areas. RFB should be incorporated into State Stormwater Plans as a priority practice. Non-agricultural buffers are treated in more depth as part of Tree Canopy Management Strategy.
- Local governments are also landowners and should make it a priority to restore and protect riparian areas to forests wherever possible on public land.

Cross-Outcome Collaboration and Multiple Benefits

Riparian forest buffers provide multiple benefits; their restoration supports many of the outcomes of the 2014 Bay Watershed Agreement, most notably: water quality, brook trout, wetlands, tree canopy, and land protection. Management approaches that specifically benefit these other outcomes are:

- Add coordinators and technical assistance (TA) staff (wetlands, brook trout, water quality)
- Expand use of RFB teams—turnkey operations that help with everything from enrollment to maintenance (water quality, brook trout)
- Conduct more training for TA providers (water quality, wetlands, brook trout)
- Increase incentives for TA providers (water quality)
- Create GIS maps for targeting practices (brook trout, wetland, tree canopy, water quality)
- Expand RFB easement options through state and local policies/programs (look specifically at agricultural preservation programs) (land conservation)
- Refine tracking and monitoring programs through technology transfer (wetland, tree canopy, brook trout, water quality)

VII. Monitoring Progress

Current monitoring programs

State implementation of CBP BMP Verification, which recommends additional site visits, will strengthen monitoring and spur correction of maintenance issues associated with RFB. In most places, nearly 100 percent of plantings are visited by a professional, but new emphasis on maintenance combined with Verification will increase survival and make buffers more visually attractive.

Other forms of monitoring are based on tracking through annual progress reporting from the following sources:

- Contracted acres from FSA (these data can also be reported monthly and at the county level)
- Number of acres reported by states to CB Model
- Miles reported from Forestry Workgroup

New or proposed monitoring approaches

- Data derived from high-resolution satellite imagery are becoming more common and help monitor gain, loss, and survival of riparian forest buffers. These may be able to supplement one or more of the reports mentioned above. Resources to detect change in the amount of buffers using this imagery will be provided.
- Reports from partners on progress on actions in Management Strategy.
- Feedback on webinars and training that are proposed as part of the outreach strategy.

VIII. Assessing Progress

The biennial workplan will be the main tool for focusing collaboration across federal, state, local, and nongovernmental partners on the riparian forest buffer outcome. In addition to looking at program changes made at the regional level, we will track our progress in meeting the state actions set out in the State Task Force reports. Assessment of progress will be aligned with the cycle of state reporting for two-year milestones for the TMDL, because riparian forest buffer data are critical to meeting these milestones. Examining the alignment of the three sources of RFB data listed above will also indicate progress. As the first biennial workplan is nearing its end, another assessment process will be triggered to look at progress, challenges and lessons learned from the first workplan.

A draft of the biennial workplan for RFB will be available for comment in fall 2015. This will allow for the inclusion of all significant actions from the final RFB state task force reports action plan. CBP will work with partners on compiling a subset of priority actions for the biennial workplan after this Management Strategy has been finalized.

IX. Adaptively Manage

The partnership will use the following approaches to ensure adaptive management:

- Tracking progress toward the annual 900-mile goal, as well as identifying trends and priority areas.
- Riparian Forest Buffer Initiative provides a means to engage additional partners in helping make progress on actions in the Management Strategy and workplan.
- Chesapeake partners involved in related goals, i.e., conservation, brook trout, wetlands, healthy watersheds and others, provide an important source of mutual feedback on what works well and what does not.
- Throughout the year, the partnership's communication tools, including websites, webinars and special announcements, will inform progress toward the RFB goal and highlight needs or opportunities for partnership members to engage.
- Monthly Forestry Workgroup meetings provide a regular venue for evaluating and adjusting particular strategies that support the annual 900-mile goal.
- Annual reporting by the partnership and its members of best practices, success stories and other qualitative and quantitative successes is another means to recognize the impacts of existing programs, reflect on and adapt existing and new strategies, and grow the capacity and stewardship required to increase the amount of riparian forest buffers in the watershed

X. Biennial Workplan

A workplan to accompany this management strategy will be completed six months after this document is finalized. It will identify specific partner commitments for implementing the strategy and include the following information:

- Each key action
- Timeline for the action
- Expected outcome
- Partners responsible for each action
- Estimated resources