



# Final Report of the Riparian Forest Buffer Panel

---

## [Introduction](#)

## [Findings](#)

### [Land Use-Specific Findings](#)

- [On Agricultural Land](#)
- [On Forested Land](#)
- [On Developed and Developing Lands](#)

## [Recommendations](#)

### [Definition: Riparian Forest Buffer](#)

### [Goals](#)

### [Policies](#)

- [Recommendation 1: Enhance Program Coordination and Accountability](#)
- [Recommendation 2: Promote Private Sector Involvement](#)
- [Recommendation 3: Enhance Incentives](#)
- [Recommendation 4: Support Research, Monitoring and Technology Transfer](#)
- [Recommendation 5: Promote Education and Information](#)

## [Conclusion](#)

See also the [Riparian Forest Buffer Panel Interim Report](#) and the Chesapeake Executive Council [1996 Adoption Statement on Riparian Forest Buffers](#)

---

## *Introduction*

In October 1994, the [Chesapeake Executive Council](#) adopted [Directive 94-1](#) which called upon the Chesapeake Bay Program to develop a set of goals and actions to increase the focus on riparian stewardship and enhance efforts to conserve and restore [riparian forest buffers](#). The Council recognized that forests along waterways are an important resource that protects water quality and provides habitat and food necessary to support fish and wildlife

survival and reproduction. The Council appointed a panel to recommend a set of policies, recommend an accepted definition of forest buffers, and suggest quantifiable goals. The Panel was a diverse group of thirty-one members, comprised of federal, state, and local government representatives, scientists, land managers, citizens, and farming, development, forest industry, and environmental interests. This report contains our principal findings and recommendations. Background material which describes in more detail the technical basis for the recommendations and elaborates on the implementation options is available as a Technical Support document.

The Panel adopted a set of principles to guide its deliberations. These principles formed the basis of the Panel's work and are reflected in its recommendations:

- Develop goals based on sound science
- Recommend flexible strategies
- Focus on voluntary incentive-based approaches
- Increase private and non-profit partnerships
- Enhance, streamline, and coordinate existing government programs
- Be responsive to landowner needs and ensure stakeholder involvement
- Respect private property rights

---

## *Findings*

Based on stakeholder input and an extensive review of the science, programs, experience, and opportunities related to riparian forest management, the Panel found that:

● Streams and rivers in the Chesapeake Bay watershed offer a great diversity of form and function. Changes in the landscape have altered many streams and shorelines from their natural condition. There are an estimated 111,000 miles of perennial and intermittent streams in the watershed. Small first and second order streams are often the most critical in terms of downstream water quality and living resources. As a result of aerial surveys, it is estimated that more than 50 percent of the Bay's waterways are bordered with 100 feet or more of forest on each side.

● A stream and its riparian area function as one. The condition of the riparian area helps determine the quality and integrity of stream channels and habitat available for fish and other wildlife. Riparian areas interact with the flow of surface and groundwater from upland areas and play an important role in water quality.

● A sound scientific foundation exists to support the nutrient reduction and ecological values and functions of riparian forest buffers and to promote their use as a management tool.

- Riparian forest buffers will contribute to accomplishing Chesapeake Bay Program goals for nutrient reduction (especially the year 2000 cap), tributary strategies, submerged aquatic vegetation restoration, fish passage, and habitat restoration.

- While many approaches to stream protection and riparian buffers exist, few have targeted the conservation and restoration of riparian forests.

- Landowners see riparian forest buffers as more permanent than other stream protection alternatives. They consequently need additional incentives and/or more inducement to establish this type of buffer on productive land that is generating or has significant potential to generate non-forest income.

- Existing programs are not adequately funded, integrated, or coordinated to effectively target riparian forest buffers and track accomplishments.

- Although streamside vegetation of any kind is desirable, forests provide the greatest number of benefits and highest potential for meeting both water quality and habitat restoration objectives. There are situations throughout the watershed where it will not be possible to provide forest buffers. In these instances, other buffers will provide some of the desired benefits.

---

## Land Use-Specific Findings from Stakeholder Meetings

The Panel also recognizes that existing land uses affect the approach to buffers. Related to these major land uses, the Panel found that:

- *On Agricultural Land*

Riparian forest buffers are currently used as a management practice on some farm fields and pastures and as a component of some conservation management plans. With increased effort, the promotion of riparian forest buffers can become a part of routine farm conservation planning efforts. A discussion of standards for their use can be found in the Technical Support document to this report.

Site-specific conservation plans must incorporate landowner objectives and the range of practices necessary to achieve healthy and functional riparian systems. Restoration of degraded conditions and long-term success will depend on a flexible riparian system conservation approach that examines a farm in relation to its adjacent properties and the stream's relationship to its watershed. Implementing successful riparian system conservation includes 1) encouraging practical management measures that limit soil disturbance and reduce potential water quality impacts, 2) increasing shade, habitat, and food for fish and

riparian-dependent wildlife, and 3) maintaining economic viability of farming operations.

Teams such as the USDA State Technical Committees can assist in targeting, coordinating, and tracking implementation of federal, state, and local programs for riparian forest buffers and riparian system conservation on agricultural land.

The Panel found that successful implementation of buffers on agricultural land will require 1) enhanced educational programs for landowners, 2) technical support and financial incentives aimed at agriculture, and 3) public recognition of the value and importance of farm land in this rapidly urbanizing watershed.

### ***On Forested Land***

Riparian forest buffers in the context of forest management raise different issues than other land uses. Because the land is already forested, efforts are focused on retaining forest land and on techniques for its future management. On lands where forests are managed for silviculture, clearly accepted guidelines already exist for "streamside management zones" and are widely practiced on public lands, by industry, and by private landowners.

Forest management, which includes timber harvesting, is compatible with maintaining functioning riparian forest buffers. Deriving income from management of riparian forests should be integrated with a wider range of management objectives.

The success of a riparian forest buffer retention strategy relies in part on creating a favorable climate for continued forest land ownership. Actions which will contribute to this climate include: 1) education and voluntary participation by landowners and forestry professionals with riparian forest buffer criteria, 2) recognition by the public that managed forests are a beneficial land use for water quality and habitat, and 3) appropriate technical support and financial incentives for riparian forest retention and recommended management.

The Panel found that the work underway in the forest industry, especially the Sustainable Forestry Initiative, could and should serve as a model.

### ***On Developed and Developing Lands***

Implementation of riparian forest buffers in developed areas is different from agricultural or forestry settings. First, the changes resulting from impervious cover of buildings, streets, and other infrastructure are permanent and typically result in cumulative changes in the hydrological regime. In contrast, the changes resulting from farming and forestry can be reversed. Secondly, the per-unit value of developed land is significantly greater than the per-unit value of farm or forest land.

A strategy to implement riparian forest buffers on developed lands must include a recognition of these unique considerations. For high-density urban environments, the focus should rely primarily on education, citizen involvement, and general awareness of the importance of natural systems and people's connection to them. Restoration should be promoted where feasible, and through local outreach with grassroots and civic organizations. Recommendations for urban and suburban alternatives to a riparian forest

buffer must be developed for those areas where development has already precluded the maintenance or establishment of a forest buffer.

In developing areas, there is a greater opportunity to conserve environmental benefits. Maintaining structural, hydrological, and functional integrity of riparian systems is an essential objective of development planning and construction.

A key component to successful implementation of riparian forest buffers in developed and developing areas is to support existing federal, state, and county laws and local ordinances. In addition, local zoning and subdivision ordinances, comprehensive land use plans, regional or watershed-specific stormwater management plans, and riparian system conservation plans are appropriate mechanisms. Effective implementation of riparian forest buffers on developed and developing lands can result from a set of guidelines that ensure consistency and clarity, but remain flexible to site-specific needs. Specifically the Panel was impressed with approaches which: 1) allow flexibility for expansion, contraction, and averaging with respect to buffer width criteria so as to account for the 100-year flood plain, steepness of slope, adjacent wetlands, limited lot size, stormwater ponds, etc., 2) provide for flexible uses within the riparian forest buffer, including freedom to harvest timber for firewood or commercial use, consistent with state forestry harvesting guidelines, 3) promote riparian forest buffers as part of stormwater management planning, and allow pollution removal effectiveness of buffers to be credited in stormwater management plans and calculations, and 4) provide flexibility for development density compensation where forest buffers are required or proposed so that developers can establish the same number of lots on the parcel outside the riparian forest buffer as would be allowed without a riparian forest buffer.

These findings, which are supported by background information included in the Technical Support document, formed the basis for the recommendations which follow.

---

## *Recommendations*

The [Executive Council](#) asked the Panel to consider and make recommendations, where appropriate, for 1) accepted definitions of forest buffers which address ecologically beneficial characteristics and functions of riparian forests while accommodating resource management activities appropriate within the riparian zone, 2) a quantifiable goal or goals to serve as a long-term target for the maintenance and restoration of riparian forests, as well as a timetable, 3) ways to strengthen communication and partnerships to better coordinate policy and program actions, and 4) ways to support other stream protection efforts.

### ● DEFINITION

Clarity of definition is important, perhaps more so than consistency from one jurisdiction to the next. The Panel recommends that the Executive Council adopt the following definition of riparian forest buffers, to be applied throughout the Bay watershed:

**Riparian Forest Buffer:** An area of trees, usually accompanied by shrubs and other vegetation, that is adjacent to a body of water which is managed to maintain the integrity of stream channels and shorelines, to reduce the impact of upland sources of pollution by trapping, filtering, and converting sediments, nutrients, and other chemicals, and to supply food, cover, and thermal protection to fish and other wildlife.

Width is an important consideration in the overall effectiveness of forest buffers. The appropriate width of the forested buffer will vary depending on site conditions, topography, adjacent land use, and the benefits one is trying to gain by installing a buffer. Technical guidance on buffer width can be found in the Technical Support document as well as various other sources.

---

## *Goals*

The Panel recommends that the Council adopt one long-term and two immediate goals:

- Assure that every stream in the watershed is protected by a riparian forest or other buffer.
  - Conserve existing forests along streams and shorelines.
  - Increase basin-wide riparian forest buffers through restoration benchmarks to be established by each signatory in 1998 with the aim of accelerating the present rate of reforestation in the riparian area. Priorities should be focused on those areas that will provide the greatest benefit.
- 

## *Policies*

Maintaining existing buffers along all streams and shorelines will not be an easily-achieved goal. Restoring forest buffers in areas where they are most needed will also be difficult. However, the present level of effort is inadequate, and the Executive Council is urged to enable the realization of these goals by making adequate staff resources, technical assistance, tax relief, financial incentives, and education programs available.

The Panel believes that adoption of five policy recommendations will help enable the signatories to establish and develop implementation strategies. These five recommendations address the remainder of the Panel's charge.

### **Recommendation 1: Enhance Program Coordination and Accountability**

*"Establish mechanisms to streamline, enhance, and coordinate existing programs related to buffers and riparian system conservation."*

Suggested actions include:

- Establish coordinating teams to address how riparian forest buffer retention and

restoration goals are being achieved. These teams should report annually to the Chesapeake Bay Program [Implementation Committee](#).

- Use federal, state, or other sources of funding to establish personnel in each jurisdiction capable of specializing in landowner outreach and education and local program assistance for riparian forest buffer design, establishment, management, and education.
- Encourage public land managers to review current practices and policies (e.g. mowing, wildlife management, encroachment, disturbance, and practices on leased land) and to develop plans and goals for riparian system and riparian forest buffer protection and restoration.
- Evaluate and modify existing federal and state cost-share and assistance programs to simplify the process, streamline implementation, and ensure that they support a wide range of riparian system conservation practices, including planting trees and shrubs, maintenance of plantings until successfully established, use of temporary fencing, and development of off-stream water sources.

### ● **Recommendation 2: Promote Private Sector Involvement**

*"Build partnerships with the private sector to help support the promotion and implementation of riparian forest buffer retention and restoration activities."*

Suggested actions include:

- Establish a recognition program in each state to reward and recognize developers, farmers, and forest landowners for riparian forest buffer accomplishments and proper riparian system conservation.
- Establish demonstration projects which enlist industrial/corporate landowners to establish riparian forest buffer restoration/retention on their lands.
- Convene a workshop to explore ways to facilitate and encourage land trusts to increase the conservation of riparian forests and riparian systems, to include provisions in existing easement agreements for riparian forest buffer establishment and stream enhancement activities, and to track lands protected by permanent easements.
- Improve the ability of non-governmental partners such as private, nonprofit, and watershed organizations to assist in landowner outreach, education, and buffer restoration efforts by establishing grants through public/private endowments supported by multiple funding sources. Ensure an adequate and inexpensive supply of native riparian planting materials.
- Continuously work to involve citizen groups and volunteers in riparian forest buffer planting and management efforts in rural and urban areas and build a cadre of private individuals who can assist government agencies to design, organize, and implement stream improvement and riparian restoration projects.

### ● **Recommendation 3: Enhance Incentives**

*"Develop and promote an adequate array of incentives for landowners and*

***developers to encourage voluntary riparian buffer retention and restoration."***

Suggested actions include:

- Compile a list of existing federal and state tax advantages, tax relief provisions, conservation easement tax benefits, tree planting credits, and other tax options that currently exist and market these tools to landowners.
- Deliver to Congress an Executive Council proposal to amend inheritance tax law and provisions that unintentionally result in conversion of forests and agricultural land to other land uses, making opportunities for riparian forest retention difficult.
- Create flexible state income tax incentives (such as tax credits for tree planting, retention, or easement expenses in buffers) to promote riparian forest buffers.
- Enable, encourage, and, where necessary, amend legislation to ensure that local governments have the authority to promote preferential property tax strategies.
- Implement, within existing state land trust or conservation easement programs, mechanisms which emphasize riparian forest buffers and riparian systems.
- Develop strategies and tools to promote local implementation of flexible land development practices which enhance riparian forest buffer retention, such as density compensations, pollution removal credits for riparian forests in stormwater management plans and calculations, more flexible use of buffer resources, and off-site mitigation or buffer trading within existing regulatory programs.
- Encourage agencies to evaluate their regulatory and conservation programs and develop approaches that will not penalize landowners who restore buffers.

**Recommendation 4: Support Research, Monitoring, and Technology Transfer**

***"Increase the level of scientific and technical knowledge of the function and management of riparian forest and other buffers, as well as their economic, social, ecological, and water quality values."***

Suggested actions include:

- Update state and federal technical assistance handbooks, manuals, and specifications and provide a field handbook providing guidance on the benefits, functions, design, establishment, and management of riparian forest buffers.
- Develop a research agenda that addresses information needs regarding riparian forest buffers, such as landowner concerns, economic analysis of costs and benefits, and ecological and physical relationships.
- Conduct an analysis of riparian forest and other buffer effectiveness and targeting for nutrient removal and living resource habitat enhancement.
- Commit to repeating the inventory of riparian forests in the Chesapeake Bay watershed at periodic intervals, continually refining the technological capabilities and resolution of the inventory, in order to accurately measure progress and program accomplishments against the baseline findings of the inventory completed in 1996.

**Recommendation 5: Promote Education and Information**

*"Encourage [Bay signatories](#) to implement education and outreach programs about the benefits of riparian forest buffers and other stream protection measures."*

Suggested actions include:

- Publish state directories for riparian forest buffer and stream protection and restoration assistance programs for use by landowners, citizens, and local governments.
  - Coordinate the development of educational materials and tools (such as public service announcements, videos, posters, fact sheets, displays, brochures, field tours, Internet homepage, etc.) and implement a basin-wide public outreach and education program about the benefits of healthy streams and riparian areas.
  - Initiate ongoing training and education programs as appropriate for developers, loggers, the forest industry, consultants, and citizen groups as well as other resource professionals and decision-makers to communicate the importance of riparian forest buffer and riparian system conservation, methods of protection and establishment, and the use of watershed and stream assessments.
  - Ensure coordination among agencies providing landowner assistance to develop and implement a strategy for enhanced outreach, technical assistance, and education related to stream restoration and riparian forest buffers on private and public lands.
  - Establish and publicize riparian forest buffer and riparian system conservation demonstration sites in each jurisdiction which are representative of all physiographic regions and land uses.
- 

## *Conclusion*

The environmental benefits of riparian forest buffers presents the [Executive Council](#) with a unique opportunity to develop a Bay-wide policy that will help in meeting the Bay Program's goals to reduce nutrients and restore habitat for living resources. The Panel urges the Executive Council to adopt these recommendations and will call upon their respective staffs to implement a comprehensive riparian system conservation policy which includes forest buffers as an important component. Revisiting the goals of the policy, evaluating programs, and redirecting actions as necessary will be important as the Chesapeake Bay Program monitors progress in adding forest buffers and improving riparian system conservation. The adoption and implementation of a riparian system conservation policy will assure that the huge effort mounted by the Executive Council over the past decade continues to advance, while simultaneously respecting the partnerships that have been forged, the legal responsibilities of the various levels of government, and the evolving knowledge base which forms the foundation of this work.

---

[Return to top of this document](#)

[Return to Home](#)

For more information, contact the Chesapeake Bay Program Office, 410 Severn Avenue, Suite 110, Annapolis, MD 21403, Tel: (800) YOUR-BAY, Fax: (410) 267-5777. We welcome your [suggestions and comments](#) about our website.



*Last modified 9:57 AM on 11/27/96*