

# ENVIRONMENTAL STEWARDSHIP

## INTRODUCTION

Albemarle County's landscape, located in the Virginia Piedmont and on the eastern flank of the Blue Ridge, provides a source of clean water for the community, vegetation and soils that sequester and store carbon dioxide, and a home to a diverse array of native plant and animal communities. The County's policies for environmental stewardship involve both protecting vital resources for the community's use and protecting healthy terrestrial and aquatic ecosystems. These are long-standing policies that have been updated through the years in previous Comprehensive Plans, the Biodiversity Action Plan, the Climate Action Plan, and the Stream Health Initiative. In addition, the County strives to support the water-quality goals of the Chesapeake Bay Preservation Act and has elected to implement some aspects of the Act, such as riparian buffer protection.

In the Development Areas, the County's stewardship focus is on responsible growth that allows the community to meet climate action goals, mitigating the water-quality impacts of urban development to protect stream health, and on equitably providing access to nature and green spaces within an urban setting. In the Rural Area, the focus is on landscape-scale conservation measures that are intended to protect public water supplies, improve stream health, protect and restore connected habitats for terrestrial and aquatic biodiversity, support agricultural producers

in adopting climate-smart practices, and maintain or increase forest cover and other natural landcover to meet goals of the Climate Action Plan and the Biodiversity Action Plan.

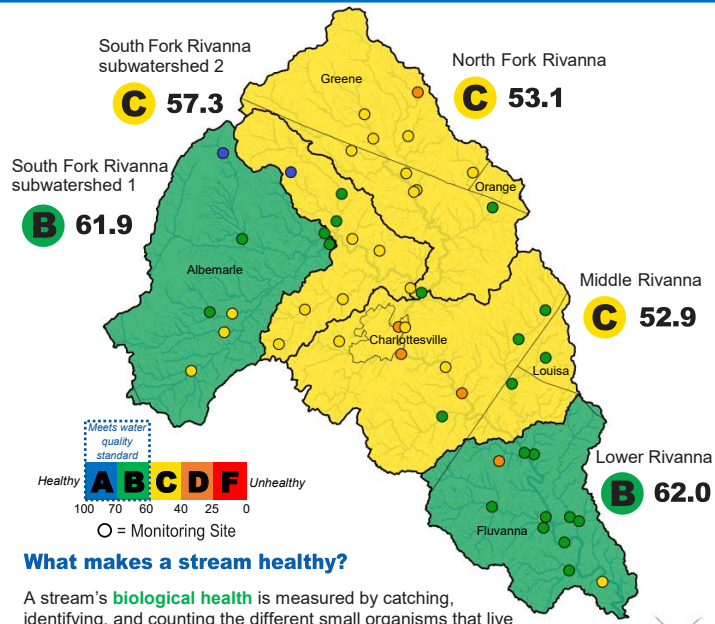
While the approaches to environmental stewardship vary by location across the County, the benefits of pursuing both urban and rural conservation solutions seek to provide equitable public services and quality of life to all residents. The results of stewardship actions across the County, including clean air and water, access to nature, and healthy living conditions, benefit the entire community. Environmental stewardship measures are also deeply tied to the County's Climate Action policies. Protecting and expanding natural land cover, such as forests and native grasslands, sequesters carbon in the soil, and so reduces the area's net emissions of greenhouse gases.

Major issues for environmental protection include the climate crisis; the biodiversity crisis; impacts of land development (rural residential development, increased impervious surfaces, etc.) on water supplies and stream health; erosion and pollution impacts on surface water and groundwater; reduction and fragmentation of wildlife habitats; and disconnection and isolation of habitats.



**Biological Health of the Rivanna River Watershed**

- C** Data collected from 2017 to 2022 at RCA's 50 long-term monitoring sites.
- RCA's volunteer stream monitors sample each site every spring and fall.
- Streams that score 60.0 or higher meet Virginia's water quality standard.



**What makes a stream healthy?**

A stream's **biological health** is measured by catching, identifying, and counting the different small organisms that live in it, such as clams, crayfish, and stonefly and mayfly larvae. A healthy stream has many different types of organisms living in it (high diversity). It also has organisms that need clean water to survive.



Stream health is important because it affects overall ecosystem health. Organisms in streams help keep our water clean by eating algae, fallen leaves, and debris. They are also an important food source for a wide range of animals, including fish, birds, and otters.

Learn more: [rivannariver.org/long-term-monitoring-program/](http://rivannariver.org/long-term-monitoring-program/)

*Rivanna River Report Card 2023. Stream health scores measured by sampling aquatic organisms (5-year period)*

## WATER QUALITY & STORMWATER MANAGEMENT

Clean water is critical both for human use and for healthy ecosystems. Healthy streams have high water quality, stable riparian corridors, and thriving aquatic and terrestrial habitats. Factors contributing to the degradation of healthy streams and water quality include sedimentation from land disturbance and erosion, bacteria from human and animal waste, nutrient pollution from agricultural operations and lawn care (which can cause algae blooms and diminish oxygen needed by aquatic species), and chemical contamination. Climate change also drives impacts to water quality, due to more frequent flooding and droughts and higher temperatures.

The County can address these impacts to local waters by using land conservation tools to limit land use conversion from rural land uses and natural land cover to residential uses in the Rural Area; supporting the protection and expansion of native landcover along streams; controlling the erosion and stormwater impacts of permitted development in the Development Areas and Rural Area; and implementing the recommendations of the Stream Health Initiative. In the Rural Area, protecting natural vegetation also helps to protect the groundwater sources that Rural Area residents depend on for water supply.

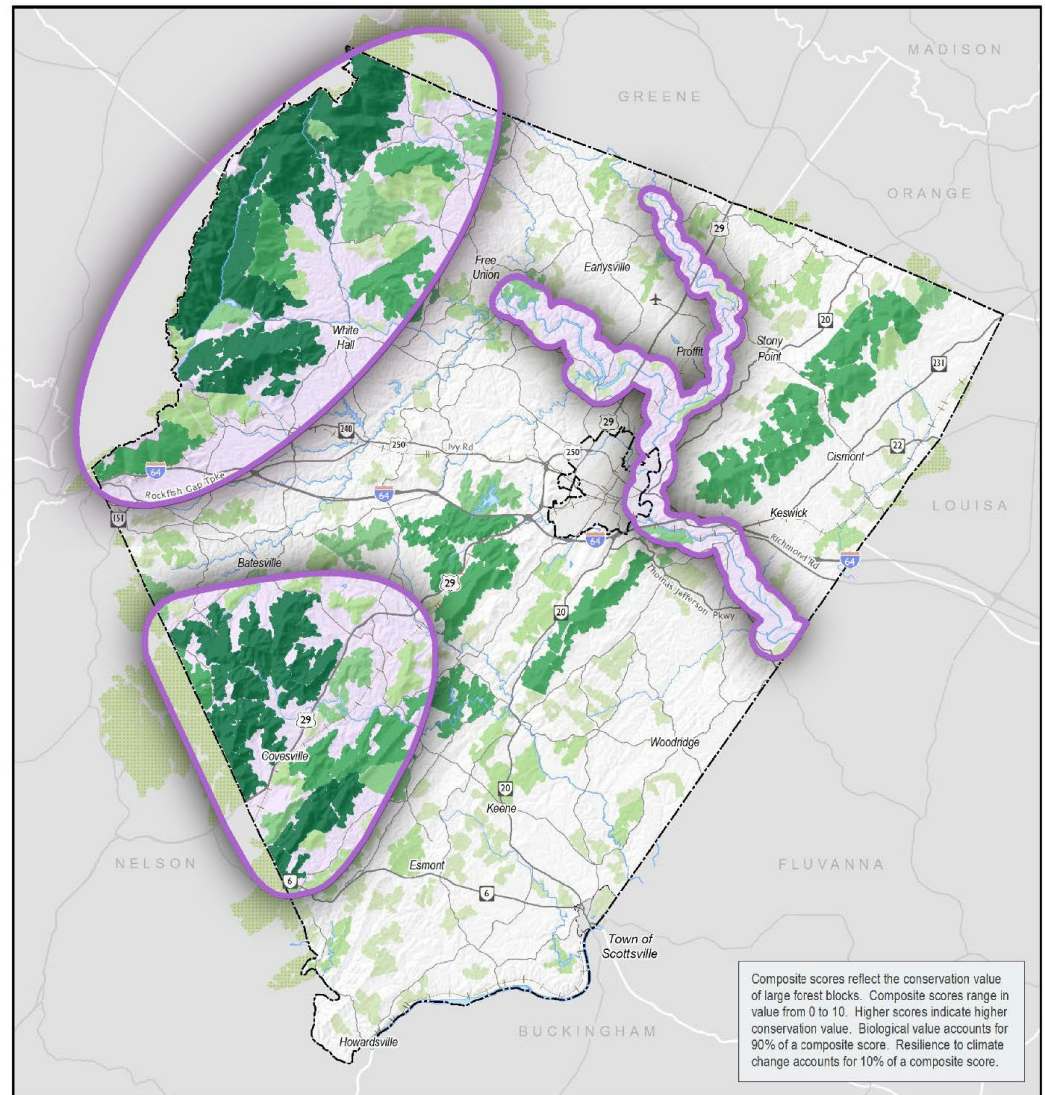
Protecting and restoring natural land cover, stream buffers, and natural floodplains also increases community resilience by mitigating large rainfall events and limiting the impacts of flooding.

In addition (as mandated by the federal Clean Water Act and state regulations), the County addresses impacts to water quality from development through the Virginia Erosion and Stormwater Management Program and the Municipal Separate Storm Sewer System Program, and contributes to implementation of local stream and Chesapeake Bay Total Maximum Daily Load (TMDL) plans. As such, the County plays a central role in preventing pollution and sedimentation of aquatic ecosystems and public water supplies.

# BIODIVERSITY

The County’s varied terrain and water systems support diverse communities of native animals and plants. It is true that, since the colonial period, land clearing and other impacts have seriously impacted native wildlife. Still, as noted in the 2004 report of the County’s Biodiversity Work Group, “we should not overlook the fact that an amazing biological world still exists in Albemarle County. Furthermore, the existing ecosystems continue to provide natural services essential to human communities.”

The County’s natural communities depend on a connected network of large habitat blocks, including forests, and on connected stream and wetland habitats, for breeding and survival. A key conservation approach is to keep large forest blocks intact, as many species are dependent on interior forest habitats. Keeping and improving habitat connections between forest blocks is also important, so that wildlife populations can thrive across the region, rather than becoming isolated and eventually eliminated in small, disconnected habitats. Connectivity is particularly important in an era of climate change, when wildlife populations are shifting across the landscape to find viable habitats.

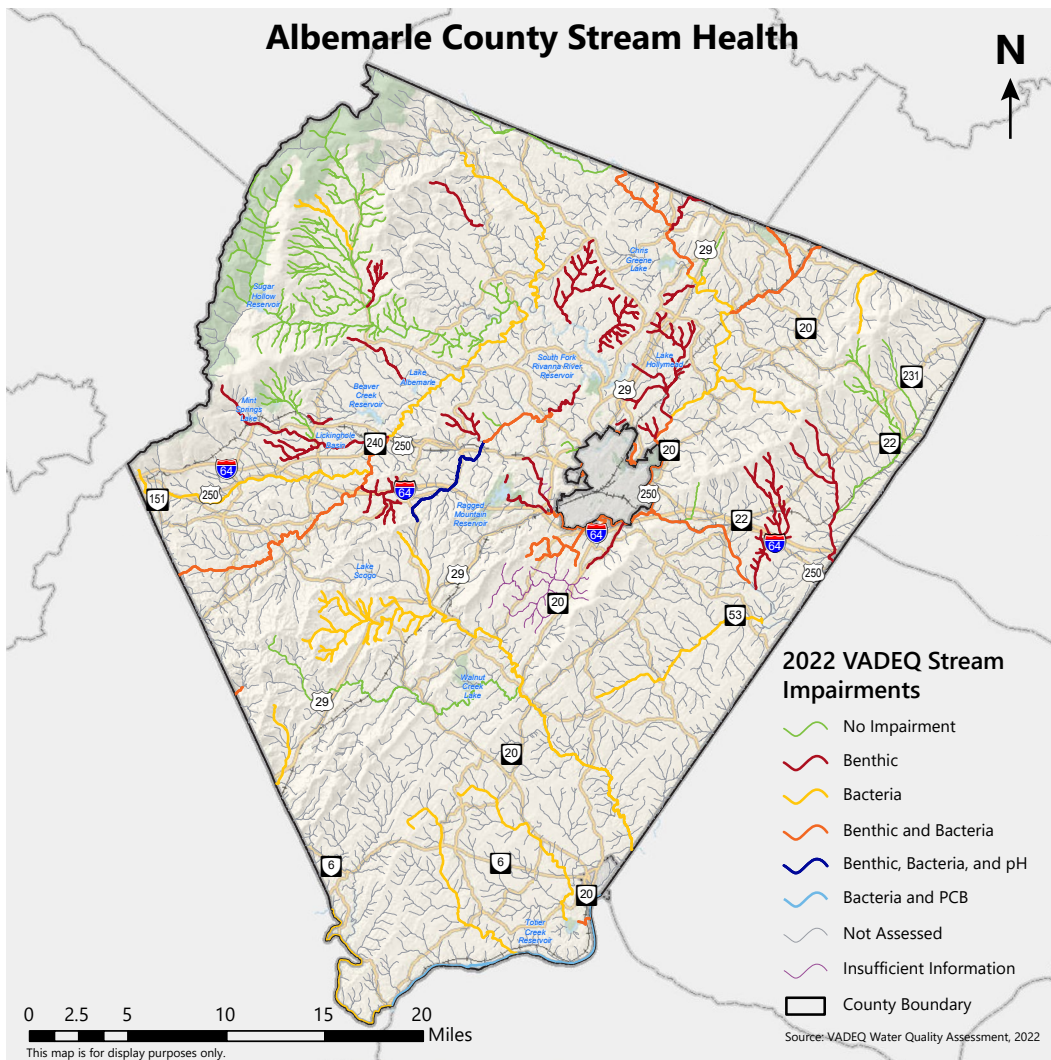


Composite scores reflect the conservation value of large forest blocks. Composite scores range in value from 0 to 10. Higher scores indicate higher conservation value. Biological value accounts for 90% of a composite score. Resilience to climate change accounts for 10% of a composite score.

**Map 4: Conservation Focus Areas**

 0 1 2 4 Miles <small>Prepared by Albemarle County Office of Geographic Data Services Map Product: 4/26/2018 This Map is for Display Purposes Only</small>	Airport (CHO)	<b>Large Forest Blocks (by composite score)</b>	Forest Block (portion outside County boundary)
	Major Roads	< 2 points	Conservation Focus Area
Railroads	2.1 - 3 points		
Major Water Bodies	3.1 - 4 points		
Major Streams	4.1 - 6 points		
	> 6 points		

*Conservation focus areas in Albemarle County from the Biodiversity Action Plan. Darker shades of green indicate priority protection forest blocks. The Rivanna River corridor is also included as a primary conservation zone.*



*Albemarle County streams evaluation: VA Dept. of Environmental Quality (DEQ), 2022. Many streams are impaired by excessive bacteria and/or poor benthic conditions (for aquatic organisms).*

The County can help to protect and increase biodiversity by using land conservation programs to protect large blocks of native existing habitats, including forests and other native habitat types, as well as known sites of high conservation value; supporting the protection and restoration of streams for aquatic habitat; permitting and supporting environmental restoration projects; controlling the spread of invasive species; and limiting the impacts of light pollution on wildlife. The County can support habitat connectivity through land conservation programs; through support for road and utility designs that maintain or restore landscape connections and include wildlife crossings; and through supporting removal of obsolete in-stream dams and other barriers to aquatic habitat connections. All of these actions should be guided by the Biodiversity Action Plan and Climate Action Plan, which need to be regularly updated to keep pace with landscape changes.

Fortunately, stewardship measures for any one goal will often provide benefits for others. For example, protecting forested landcover for carbon sequestration can, in many locations, also help protect the public water supply and stream health, and provide habitat for native wildlife. Similarly, protecting or restoring forested stream buffers for water-quality protection can also sequester carbon, provide habitat corridors to connect wildlife habitats, and reduce property damage caused by flooding.

## GOAL STATEMENT:

*Albemarle County will have healthy, thriving, and resilient ecosystems by preserving, restoring, and expanding the natural environment. We will prioritize the protection, restoration, and expansion of areas that provide habitats and connect land and water networks for local species, act as natural carbon sinks, and enhance our community's resilience to climate change. Our community will value the natural environment for its inherent beauty, benefits to the variety of local animals and plants, and its importance for quality of life for both residents and visitors.*

## OBJECTIVES + ACTIONS

OBJECTIVE	ENV 1. <i>Protect and restore the quality and connectivity of rivers, streams, wetlands, floodplains, and forested riparian buffers, including by implementing the recommendations of the Stream Health Initiative.</i>
ACTION	
1.1	Update the County's standards for restoring stream banks and mitigating permitted impacts to riparian buffers and update the Zoning Ordinance to permit environmental restoration projects by-right in all zoning districts.
1.2	In the Rural Area, implement the Land Conservation for Water Quality program to acquire new voluntary riparian conservation easements (donated and/or purchased), and to work with willing landowners to amend older conservation easements without strong buffer protections to add those requirements.
1.3	Establish a stream quality assessment program with county landowners to assess stream conditions and restoration needs on private properties.
1.4	In the Rural Area, implement the Riparian Conservation Assistance Program to help landowners overcome cost barriers to improving water quality and natural resource protection along priority riparian areas. Scale financial assistance to landowners' level of need.
1.5	Track and report on the impact of the County's water resource protection and restoration activities. Use existing data sources where available and fill data gaps where needed through GIS analyses, field surveys, and monitoring.
1.6	Develop metrics that can inform County staff and community about the condition of Albemarle County streams and watersheds over time. Use these metrics to help prioritize where to focus County's water resource protection and restoration funds and activities.
1.7	Partner with other rural localities to incentivize habitat restoration projects on private land by pursuing changes to state enabling legislation that would permit those projects to qualify for the Open Space category of use-value taxation.

<b>OBJECTIVE</b>	<i>ENV 2. Reduce the amount of unmanaged stormwater and other sources of nutrient and sediment pollution that enter natural waters, stream channels, and riparian areas.</i>
<b>ACTION</b>	
2.1	Update County ordinances and guidance documents to allow, encourage, or require Low Impact Development (LID).
2.2	Develop incentives for Low Impact Development (LID) and green infrastructure, such as rain gardens, green roofs, pervious pavements, and bioswales.
2.3	Evaluate current funding along with program needs and outcomes and increase funding as needed to the Albemarle Conservation Assistance Program, administered by the Thomas Jefferson Soil and Water Conservation District (TJSWCD), to support reduced stormwater impacts (sediment, chemical, and nutrient pollution) and increased biodiversity on developed land.
2.4	Increase funding to the Thomas Jefferson Soil and Water Conservation District to support additional staff and other resources to implement agricultural and residential property best management practices for water quality protection.
<b>OBJECTIVE</b>	<i>ENV 3. Protect and improve the quality and quantity of groundwater throughout the county.</i>
<b>ACTION</b>	
3.1	Partner with Virginia Department of Health to promote responsible management of septic systems through financial assistance and pump-out requirements, with a long-term goal of hiring staff for outreach, data collection, community input, administration, and enforcement.
3.2	Reduce impacts to groundwater and water supplies from private septic systems by incentivizing connections to the public sanitary sewer system for properties in the Development Areas that are on private septic systems, such as through the Albemarle Septic to Sewer Program.
3.3	Work with local and regional partners to monitor groundwater levels in the county and promote water conservation, particularly during times of drought.
3.4	Promote programs that support forest protection and reforestation, such as the Virginia Trees for Clean Water Grant Program, to protect and enhance the recharge of groundwater.
3.5	Provide outreach to community members, including newer residents, landowners, and students, on ways to protect water quality and biodiversity on privately-owned land, cost-share programs, and stewardship opportunities available in the county.

<b>OBJECTIVE</b>	ENV 4. <i>Protect and restore critical habitats for biodiversity and ecosystem health, including a network of large and well-connected native habitat blocks, priority areas identified in the Biodiversity Action Plan, the Mountain Protection Areas, dark skies, forested habitat corridors, and riparian buffers.</i>
<b>ACTION</b>	
4.1	<p>Update the Biodiversity Action Plan to:</p> <ul style="list-style-type: none"> <li>• Develop indicator measures for tracking the state of biodiversity in the County. Once developed, regularly maintain and update indicators and data.</li> <li>• Incorporate the most up to date information.</li> <li>• Provide a more specific map of priority habitat cores, patches, and corridors for protection.</li> <li>• Focus on prioritized actions for protection and restoration of landscape patterns that support and improve native biodiversity.</li> </ul>
4.2	<p>Use land-conservation tools to:</p> <ul style="list-style-type: none"> <li>• Protect core forest habitats and important sites (including those identified in the Biodiversity Action Plan), priority biodiversity areas, and the Mountain Protection Areas.</li> <li>• Pursue forest-vegetation protection for carbon sequestration.</li> <li>• Protect wildlife corridors (including any identified in the Biodiversity Action plan or the Virginia Wildlife Corridor Action Plan) and prevent creation of potential barriers to wildlife movement.</li> <li>• Protect forest cover on steep slopes.</li> </ul>
4.3	Revise the County’s lighting ordinance requirements to minimize the impacts of lighting on the health of animals, plants, and humans; to provide safe lighting for multimodal transportation options; and to protect and enhance dark skies and related wildlife habitat and travel.
4.4	Improve the templates of County- and ACEA-held easements to more specifically address appropriate management of important habitat areas.
4.5	Develop a management plan for the removal of invasive plants on County public lands.
4.6	Protect, increase, and restore habitat areas in County parks and on other County-owned land.
4.7	Assist landowners with acquiring grants and other financial and informational support to protect core habitats and important sites identified in the Biodiversity Action Plan.
4.8	Use available data to document occurrences of rare habitat types and species in the county.
4.9	Contribute funding to programs managed by local partner organizations that address invasive plant removal and native plant restoration.
4.10	Partner with community member-scientist groups and organizations to help gather data on the state of biodiversity in Albemarle County.
4.11	Consider establishing grant programs and/or other incentives to assist property owners in attaining compliance with dark sky initiatives.
4.12	Increase County outreach to landowners (including a new-landowner outreach program) on habitat protection and options for land management techniques that support native biodiversity and water quality.



OBJECTIVE	ENV 5. <i>Remove barriers to wildlife movement and improve habitat connectivity.</i>
ACTION	
5.1.	Require new stream crossings to use bridge or culvert designs that maintain connectivity for aquatic wildlife and organisms.
5.2.	Pursue dam removal, culvert replacement, fish-passage structures at dams, and other measures to replace barriers with passages viable for fish and other aquatic species that are consistent with flood control and stormwater management.
5.3	Identify and map barriers to the safe movement of wildlife along wildlife corridors and to stream-habitat connectivity (including dams and culverts).
5.4	Work with relevant state agencies to mitigate wildlife-movement barriers and reconnect interrupted corridors with voluntary private landowner participation.