

**LOUDOUN COUNTY  
VIRGINIA**

# LINEAR PARKS & TRAILS SYSTEM

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## **A COUNTYWIDE PLAN**

2021

**DESIGNWORKSHOP**

# ACKNOWLEDGMENTS

This plan is made possible by the commitment to developing a detailed implementation plan for an interconnected, countywide linear parks and trails system by the Loudoun County Board of Supervisors, the Parks, Recreation, and Open Space Advisory Board, the Linear Parks and Trails Subcommittee and Parks, Recreation and Community Services staff.

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# 01 EXECUTIVE SUMMARY

BACKGROUND

INTRODUCTION

METHODS

FRAMEWORK PLAN

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## ABOUT THIS PLAN

The Loudoun County Board of Supervisors on January 17, 2019 directed the Loudoun County Parks, Recreation and Open Space (PROS) Board to develop a plan for an interconnected, countywide linear parks and trails system (LPAT).

A vision statement for the project — developed by the LPAT subcommittee of the Parks, Recreation and Open Space Board and shown in full on the following page — reflects the Board's and County residents' ambitious vision for an interconnected, equitable, high-quality system of linear parks, trails and blueways.

The Countywide Linear Parks and Trails System Plan offers a roadmap for the County and its partners to build out an interconnected system that protects natural and cultural resources, honors Loudoun County's unique sense of place, and connects residents to each other and to the County's natural and cultural landscapes, community nodes and destinations.

The plan seeks to provide multi-use experiences for a variety of users along its corridors — hikers, walkers, nature enthusiasts, runners, equestrians, cyclists and canoe and kayak paddlers. Trails typically are natural surface and traverse a variety of natural and cultural resource corridors such as stream

valleys, ridges, scenic byways and gravel roads.

These resource corridors are the foundation for an interconnected and widely accessible system of high-quality natural and cultural experiences for all of Loudoun County. Beyond these resource corridors, other opportunities for public linear park and trail access are also explored, such as existing easements, utility and road corridors, likely future development parcels, and public lands.

This document's conceptual design and planning strategies are to be used as a resource for the future development and redevelopment of the County's linear parks and trails, ensuring the County is equipped to build out a system that is true to the vision laid out by the Board and by the public.

This planning process is just the start of the long-term public/private partnership that will lead to a robust and interconnected system of accessible linear parks and trails for Loudoun County. A large-scale system of linear parks and trails will serve a variety of functions, including recreation, alternative transportation, wildlife habitat, water quality protection, flood hazard reduction, aquifer recharge, erosion prevention, property value enhancement, economic development, and scenic beauty.

## VISION STATEMENT

### LINEAR PARKS & TRAILS PLAN

*The committee seeks an interconnected system of multi-use passive recreation linear parks and trails that connect communities across Loudoun County's 500 square miles. Passive recreation users may include walkers, hikers, mountain bikers, equestrians, nature enthusiasts, and other user groups.*

*This system of linear parks and trails will provide benefits including healthy recreation opportunities, bolstering of local tourism, and provision of wildlife habitat. Prioritizing multi-use public access trails while protecting and enhancing the ecological value of trail corridors are mutual goals of the system.*

*Additional community benefits include improved physical and mental health and wellness, increased safety along corridors, and a connection to the natural world including support for conservation.*

## IMPORTANT DEFINITIONS

**LINEAR PARKS** are elongated open space corridors that are managed for conservation, recreation, and/or multi-modal transportation values. Linear park corridors often follow the alignment of a natural or open space feature in the landscape, such as a riverfront, stream valley, ridgeline, overland along a railroad right-of-way converted to recreational use, scenic road, or other routes.

Linear parks provide open-space connections linking parks, nature preserves, cultural features, or historic sites with each other and with urban, suburban, and rural areas. Linear parks are designed to protect wildlife, biodiversity, and scenic beauty, while providing passive recreation opportunities. The size and design of linear parks varies and depends on its context, function, and location, but will generally consist of a wildlife corridor, continuous multi-use trail, waysides and seating, and other passive recreation uses.

Ideally, corridors should be wide enough (>300') to provide habitat for safe movement, breeding, and privacy for wildlife, while protecting water quality, native trees and vegetation, and sensitive habitat areas. Trails should be woven within the corridor in an ecologically sensitive manner. Corridor crossings of major roads should be designed to discourage wildlife and motor vehicle conflicts.

**TRAILS** are paths intended for non-motorized multi-use passive recreation. Typical trail users include walkers, mountain bikers, equestrians, nature enthusiasts, trail runners, and dog walkers, among others.

Preferred trail routing provides connections from origins, such as trailheads with suitable parking and neighborhoods with walkable access, to destinations, such as parks, neighborhoods, retail establishments, and natural, historic, and cultural attractions. Trails are generally natural surfaced.

Trails are open to the public for their use and enjoyment.

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## PUBLIC PROCESS & KEY TAKEAWAYS

The planning process happened in the midst of the COVID-19 pandemic, necessitating a creative and multi-pronged approach to public engagement. The County and planning team developed an engagement strategy that included:

- » **1** volunteer trail mapping exercise
- » **1** project website
- » **4** online surveys
- » **4** virtual public webinars — offered midday and in the evening, with webinar recordings posted online
- » **8** virtual focus group discussions

Additionally, the consultant team met with the Linear Parks and Trails Subcommittee throughout the process for insight and guidance on the direction of the plan.

Discussions and feedback guided this plan's development and helped to ensure that all elements — from the understanding of system gaps to the plan's recommended strategies and design guidelines — reflect the experiences and vision of the Loudoun County public.

### Following are key takeaways from the public process:

- » **Loudoun County residents' highest priority for the system is countywide connectivity.** This drove the plan's focus on a "backbone" system of interconnected linear park and trail corridors that cross the

entire county and to which secondary and tertiary trail connections can be built out over time.

- » **Within the project vision statement, the concepts that resonated most with respondents were connectivity and natural resource protection.** The plan seeks to place linear parks and trails within protected stream and habitat corridors to advance these dual public priorities.
- » **Funding and public access are challenges to buildout of an interconnected, countywide linear park and trail system.** Public-private partnerships, flexible real estate strategies, volunteerism, continuous engagement, and community ownership in the quality of linear parks and trails are crucial for short-term implementation and long-term success.
- » **While most County residents have access to a car, respondents would prefer to access linear parks and trails by walking or biking rather than driving to trailheads or parks.**
- » **Respondents were willing to travel further for linear parks and trails in high-quality protected natural areas; these special experiences are seen as destinations unto themselves.** But residents also want closer-to-home access to everyday natural surface trails and loops.
- » **Most surveyed HOA members expressed strong support for connections between HOA trails and the linear park and trail system, including public access to trails on private HOA land,** as long as corridors honor the wishes of private property owners, protect habitat and water quality, and consider public maintenance support.



## COUNTY-WIDE SURVEYS

Served to inform the plan on existing obstacles, most frequent uses, demographics, user types, trail design and experiential preferences.

**2,215**  
RESPONDENTS

\*total respondents for all surveys as of June 4, 2021

## VOLUNTEER MAPPING

An interactive opportunity for residents to fill gaps in county trail data and contribute to an exhaustive inventory of the county's current trail system.

**77**  
PARTICIPANTS

## PUBLIC WEBINARS

Afforded transparency between project leadership and the county and informed residents of project milestones for providing additional feedback and input.

**276**  
PARTICIPANTS

\*total participants in both public workshop

## STAKEHOLDER MEETINGS

Provided user specific insight on considerations for trail design, access and amenity needs, and strategies for long-term trail and park sustainability.

**33**  
PARTICIPANTS

**Figure 1:** Summary Volunteer Effort and Outreach Sample Sizes

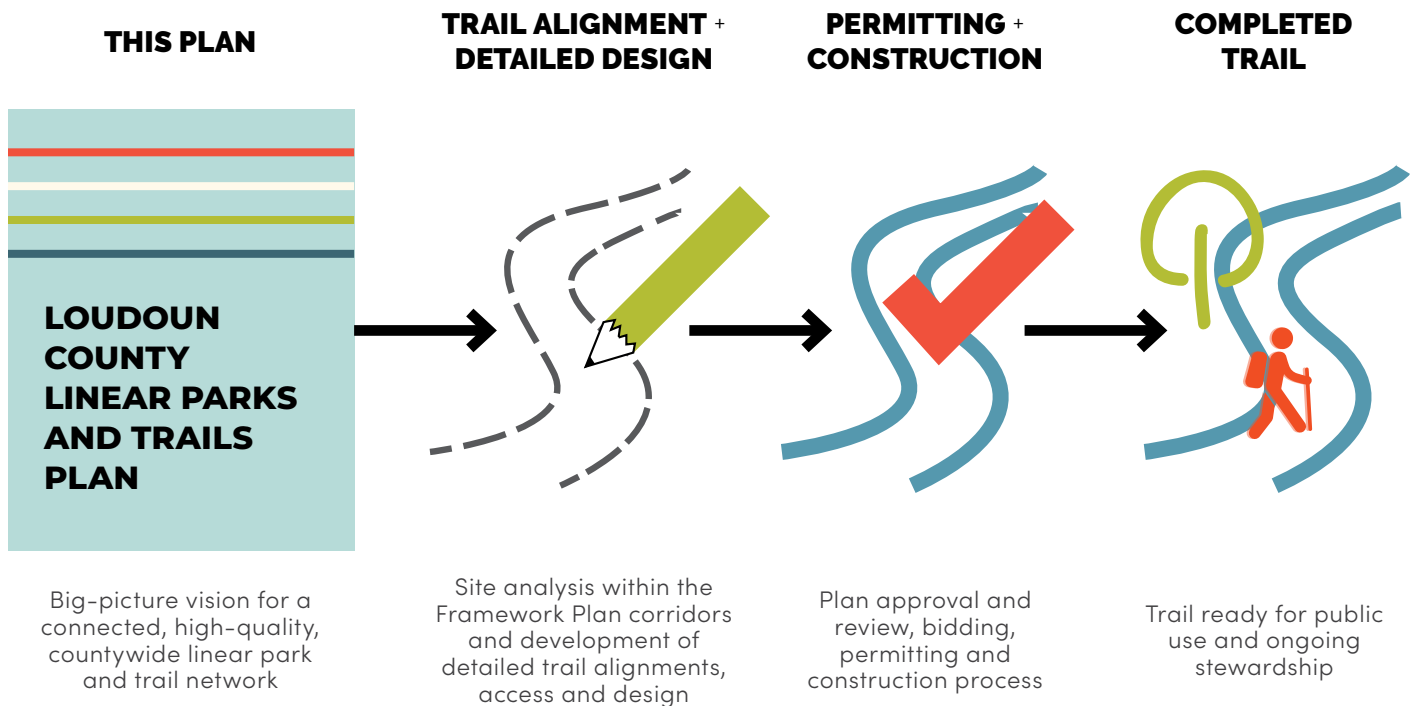
## FRAMEWORK PLAN

The Loudoun County Linear Parks and Trails Framework Plan is the County’s vision for an interconnected system of multi-use linear parks, trails and blueways with multiple benefits for community connectivity, health and wellness, natural and cultural resource protection, and economic development.

The Framework Plan lays out the process for identifying gaps and opportunities for linear parks and trails. Then it builds on those observations to propose a backbone of the countywide linear park and trail network that will be built out over time.

The Framework Plan does not recommend specific trail alignments or designs. Rather, it identifies broad corridors within which the County and its partners—through future phases of work—will pursue detailed trail alignments, access, design and construction.

The Linear Parks and Trails Plan offers a high-level analysis and vision for countywide connectivity. It establishes shared goals and principles that are informed by a public process. It acts as a reference to aid internal and external coordination of linear park and trail projects. And it helps the County allocate the resources needed to pursue future phases of analysis and implementation.



**Figure 2:** Next steps to implement the Countywide Linear Parks and Trails Plan



**Figure 3:** Layered open space, recreational and educational benefits of the “corridor” approach

## CORRIDOR APPROACH

Wherever possible, the Linear Parks and Trails Framework Plan follows open space corridors in stream valleys, along ridges, or through rural farmland and prioritizes land that is easiest to implement. This approach reflects the County’s goal to align its linear park and trail system with its preserved natural and cultural landscapes, resulting in layered recreational, ecological and cultural benefits.

This Plan’s use of the term “corridor” is important for several reasons:

- » It emphasizes the powerful connection between the County’s future linear park and trail system and its critical riparian and wildlife corridors, which are healthiest when they are part of extensive, contiguous networks of protected open space.
- » It reflects the importance of a multi-pronged and flexible approach to identifying partnership and land acquisition opportunities in order to form continuous linear park and trail

corridors across many individual parcels. This approach for identifying “resource corridors” is described later in this chapter.

- » It differentiates between the high-level recommendations of this Plan and more detailed trail alignments. The Framework Plan corridors are broad strokes that are not parcel-specific. They provide a shared vision to align the work of the County and its partners, while offering the flexibility needed to respond to gaps and opportunities.

The Framework Plan corridors are the backbone of Loudoun County’s linear park and trail system. They can also be seen as the “hub” within a “hub-and-spoke” model of linear parks and trails, with future secondary and spur connections built over time to expand the system’s connectivity and diversity of experiences for hikers, bikers, nature enthusiasts, equestrians and paddlers.

## PLAN PRINCIPLES

- » **Connect communities and destinations across Loudoun County's 500 square miles.**
- » **Provide safe, equitable and inclusive access to linear parks and trails.**
- » **Provide a high-quality linear park and trail experience.**
- » **Protect natural resources and enhance the ecological value of linear park and trail corridors.**
- » **Promote economic development and tourism.**
- » **Ensure the plan is implemented.**

The planning team identified different types of land that represent the greatest opportunities for stitching together a high-quality and continuous linear park and trail system throughout Loudoun County's 500 square miles.

This "low-hanging fruit" for potential new linear park and trail alignments includes resource corridors and private land opportunities.

Following identification of these resource corridors and private land opportunities, the framework planning process evaluated linear park and trail opportunities using two different methodologies—one that is specific to the historical rural character of Rural Loudoun County, and another tailored to the higher-density character of Eastern Loudoun County. Both methods analyzed the same data, but with different emphasis given the different goals of the linear park and trail systems for western and eastern Loudoun County.

The Framework Plan results in extensive expansion of the County's linear park and trail system, providing a backbone trail network that reaches throughout the County. However the Framework Plan corridors alone do not satisfy the County's long-term level of service goal. In order to reach that goal, the County could include planned trails in the County's transportation plan in the LOS calculations and/or develop partnerships to build out secondary trails and spurs over time to connect to the primary network of trails.

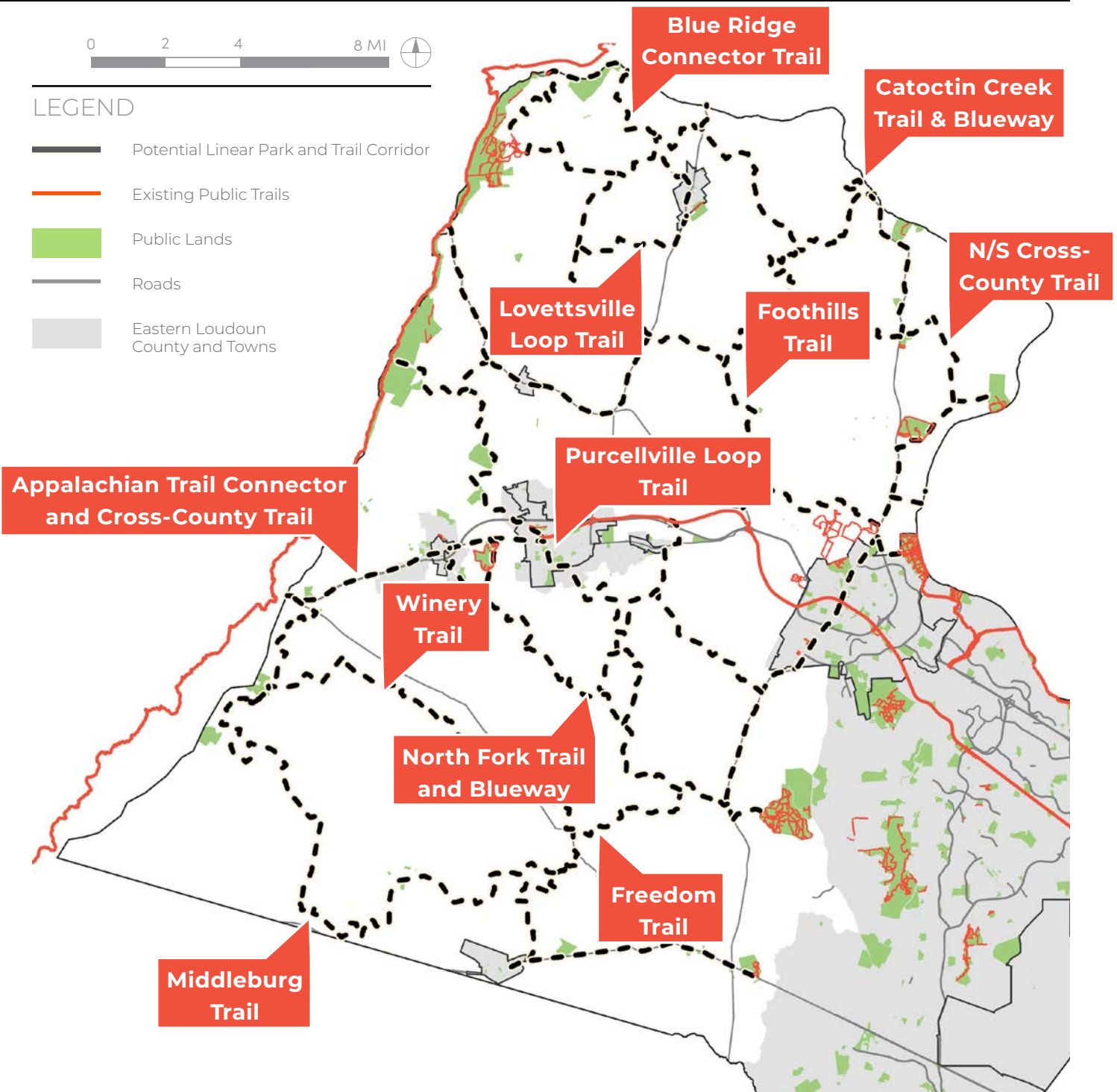


Table 1: Resource Corridors and Private Land Opportunities

RESOURCE CORRIDOR	PROS	CONS
<b>Publicly Owned or Publicly Accessible Land</b>	Minimal barrier to securing public trail access where existing or future use allows. High potential for flexibility in design of linear park and trail features and alignment.	Other land uses might not be compatible with linear parks and trails.
<b>Protected Hydrological Systems (Stream and River Corridors, Floodplains and Wetlands)</b>	Opportunity to align linear park and trail goals with natural resource and water quality protection goals, on land not suitable for other uses.	Need to design trails and amenities to minimize impact to sensitive environments. Public access agreement must be secured for privately owned land.
<b>Non-Riparian Habitat Corridors</b>	Opportunity to align linear park and trail goals with natural resource and critical habitat protection goals.	Need to design trails and amenities to minimize impact to sensitive environments. Public access agreement must be secured for privately owned land.
<b>Scenic Byways and Historic Gravel Roads</b>	Opportunity to align linear park and trail goals with cultural landscape protection goals. Public access ensured within public right-of-way.	Need to design trails for safety and high-quality experience within roadways. Careful coordination required with VDOT.
PRIVATE LAND OPPORTUNITY	PROS	CONS
<b>Utility Easements</b>	Land already protected from other uses, with easement held by potential institutional partner.	Public access must be negotiated. Trail experience in cleared, straight-line utility easements might not align with natural and cultural experience goals for linear parks and trails.
<b>Privately Owned Land with Existing Conservation Easement</b>	Land already protected from other uses, with easement held by potential institutional partner. Land type often aligns with the natural and cultural landscape emphasis of the linear parks and trails plan.	Public access must be negotiated.
<b>Privately Owned Vacant Land with Residential, Commercial or Industrial Zoning</b>	Opportunity for future site development to include open space protection and public trail development through proffer or zoning ordinance.	Timing and outcome uncertain and relies on future development.
<b>HOA Open Space Land</b>	Land is already protected from development and adjacent to residential communities that can be served by the countywide linear park and trail system.	Non-starter if the potential partner HOA does not desire public access to the land, but it can serve as an access point for HOA members to the broader plan.



# MAP 1: LINEAR PARKS & TRAILS FRAMEWORK PLAN – RURAL LOUDOUN



## LINEAR PARKS & TRAILS FRAMEWORK PLAN

By utilizing natural resource corridors and focusing on the connections between natural and historic destinations, Rural Loudoun County can close existing gaps in access and bolster tourism opportunities.

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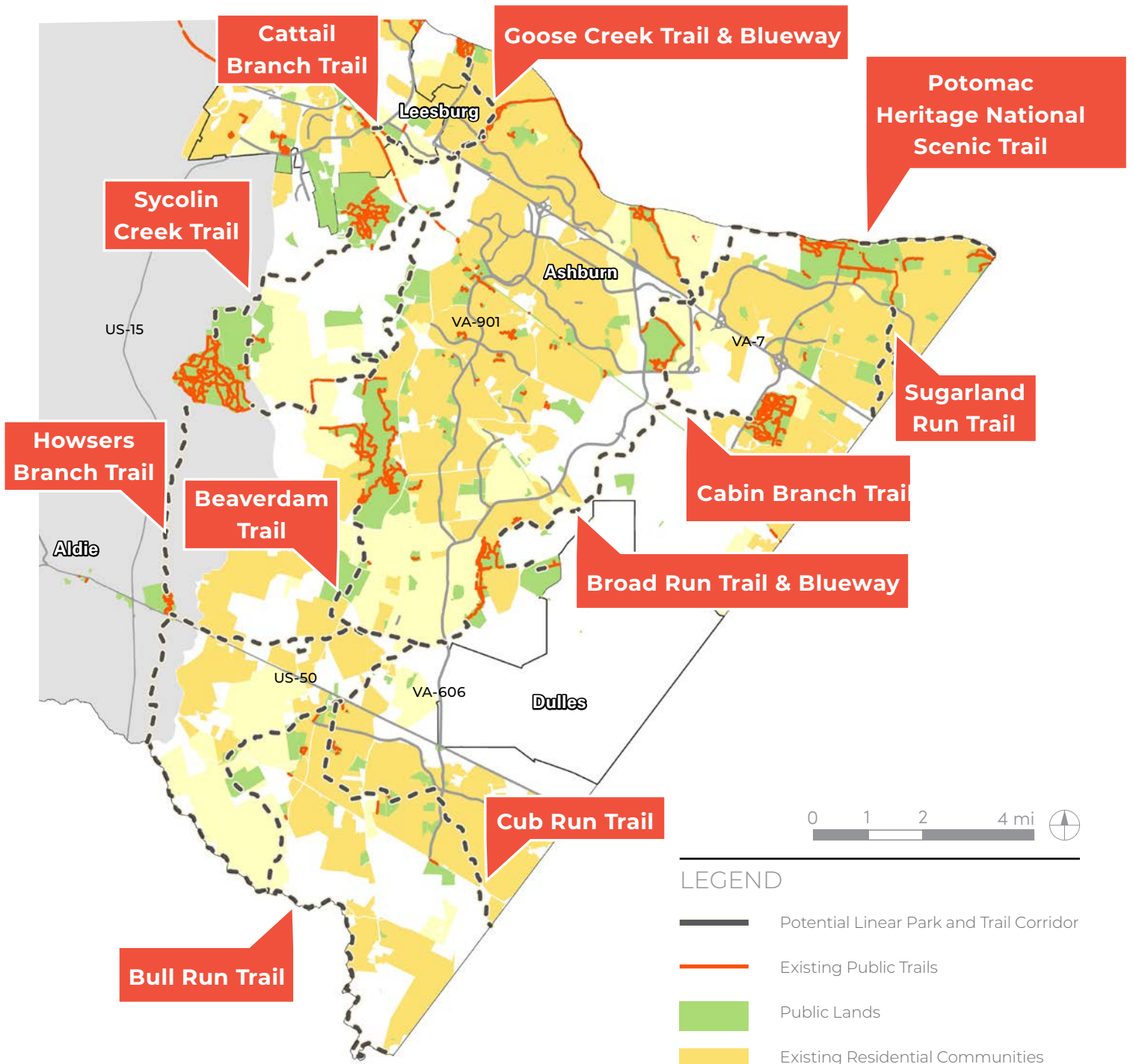


Table 2: Rural Loudoun Proposed Linear Park and Trail Corridor Summary

LINEAR PARK & TRAIL CORRIDOR	NEW MILEAGE	TRAIL ACCESS POINTS	BLUEWAY ELEMENTS	CONNECTIVITY ACROSS COUNTY LINES
Appalachian Trail Connector and Cross-County Trail	7.4 mi	8		●
Blue Ridge Connector Trail	18.8 mi	15	●	●
Catoctin Creek Trail & Blueway	21.3 mi	13	●	●
Freedom Trail	24.4 mi	22		
Foothills Trail	19.7 mi	12		●
Lovettsville Loop Trail	12.8 mi	11		
Middleburg Trail	22.4 mi	13	●	
N/S Cross-County Trail	18.8 mi	15	●	●
North Fork Trail and Blueway	20.7 mi	18	●	
Purcellville Loop Trail	17.2 mi	16		
Winery Trail	24.5 mi	11		
<b>RURAL LOUDOUN TOTALS</b>	<b>208 miles</b>	<b>154</b>		










# MAP 2: LINEAR PARKS & TRAILS FRAMEWORK PLAN – EASTERN LOUDOUN



## LINEAR PARKS AND TRAILS FRAMEWORK PLAN

By following the County’s rivers and streams, new linear parks, trails and blueways would significantly expand access and create varied trail loops and experiences throughout Eastern Loudoun communities.

### LEGEND

-  Potential Linear Park and Trail Corridor
-  Existing Public Trails
-  Public Lands
-  Existing Residential Communities
-  Approved Residential Communities
-  Roads
-  Rural Loudoun County

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Table 3: Eastern Loudoun Proposed Linear Park and Trail Corridor Summary

LINEAR PARK & TRAIL CORRIDOR	NEW MILEAGE	TRAIL ACCESS POINTS	BLUEWAY ELEMENTS	CONNECTIVITY ACROSS COUNTY LINES
Beaverdam Trail	4.7 mi	6		
Broad Run Trail	21.2 mi	35	●	
Bull Run Trail	9.9 mi	5		●
Cabin Branch Trail	2.1 mi	3		
Cattail Branch Trail	1.7 mi	3		
Cub Run Trail	6.7 mi	13		●
Goose Creek Trail	9.7 mi	17	●	
Howsers Branch Trail	6.4 mi	6		
Potomac Heritage National Scenic Trail	6.4 mi	8		●
Sugarland Run Trail	2.8 mi	3		●
Sycolin Creek Trail	6.1 mi	6		
<b>EASTERN LOUDOUN TOTALS</b>	<b>78 miles</b>	<b>105</b>		

Table 4: Per Capita LOS for Existing and Framework Trails

EXISTING LEVEL OF SERVICE		FRAMEWORK PLAN LEVEL OF SERVICE	
TRAIL MILEAGE	PER 1,000 RESIDENTS	TRAIL MILEAGE	PER 1,000 RESIDENTS
224	<b>0.5 mi</b>	509	<b>1.2 mi</b>



## TEN-YEAR PLAN

The Ten-Year Plan identifies priority linear park, trail and blueway projects from within the larger Framework Plan, establishes a ten year outlook, and recommends next steps to kickstart implementation. The Ten-Year Plan is an important resource to help the County develop its financing, staffing and partnership approach for an expanded linear parks and trails system. It is also an important tool for engaging the public, showing progress, and demonstrating the positive impact of an expanded linear park and trail system.

## COST SCENARIOS

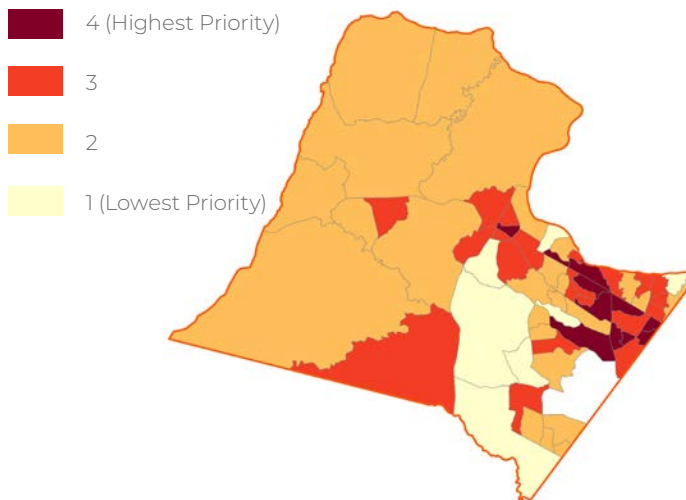
The Linear Parks and Trails Plan identifies corridors within which the County and its partners will pursue the detailed alignment, design and construction of linear park, trail and blueway projects in the future.

This Plan provides a range of possible costs to help the County establish funding expectations and priorities for design and build-out of the system. High-level costs are calculated per mile of Framework Plan corridor. This Plan prices Framework Corridor buildout at \$350,000 to \$1,300,000 per mile.

Dollar ranges do not include potential acquisition, permitting or environmental mitigation costs or ongoing maintenance. The corridor cost figures do not account for scenarios in which developers or other regional partners share trail planning and construction costs.

## PRIORITIZATION MODEL

The Ten-Year Plan uses a prioritization model to rank the linear park and trail projects defined in the Framework Plan and to divide them into tiers. Through this process, the team refined a set of criteria to identify the highest-priority linear park and trail projects based on a combination of factors—including the short-term likelihood of securing necessary trail alignments and funding, the projects' impact in closing critical linear park and trail gaps, and the projects' ability to advance the County's goal of creating equitable access to the linear parks and trails system. High-priority communities for equitable linear park and trail planning were identified at the Census tract level based on economic and environmental



**Figure 4:** High-priority Loudoun County Census tracts as identified by an equity-weighted mapping methodology that considered household income, homeownership rates and tree canopy cover

Table 5: Loudoun County Linear Park and Trail Project Prioritization Model

PRIORITIZATION CRITERIA	SCORING DESCRIPTION	WEIGHT
<b>CONNECTIVITY</b>		
<b>Fills Regional Trail Gap</b>	New connection to an existing regional trail, such as the Appalachian, W&OD or Potomac Heritage	1
<b>Improves Weak Link</b>	New connection between two existing County trails	1
<b>Connects to Regional Destination</b>	New connection to a regional destination, such as a historic town center or important natural area	1
<b>Connects to Trail System in Neighboring Jurisdiction</b>	New connection to existing or planned trails in neighboring counties and states	1
<b>EQUITY</b>		
<b>Improves Trail Access in High-Priority Community</b>	New connections to or within Census tracts identified as high-priority from an equitable trail planning standpoint  High-priority Census tracts (Fig. 14) were identified through a weighted mapping methodology developed with stakeholder input (Appendix XX)	<b>3</b>
<b>Improves Level of Service in Underserved Community</b>	New trail within a Census tract that currently has zero trails	<b>2</b>
<b>PUBLIC INTEREST</b>		
<b>Included in Other Local, County or Regional Plans</b>	Proposed in other County or regional plans	1
<b>Protects Natural Resources</b>	Located within a protected riparian, wildlife or other natural resource corridor	1
<b>Protects Cultural Resources</b>	Promotes public access to and protection of a historic or cultural resource	1

data and with input from County stakeholders.

**PROJECT PHASING**

The prioritization model informed the distribution of Framework Plan linear park and trail projects into tiers, with Tier 1 being the highest priority for short-term projects that promote equity in the system while building important cross-county connections.

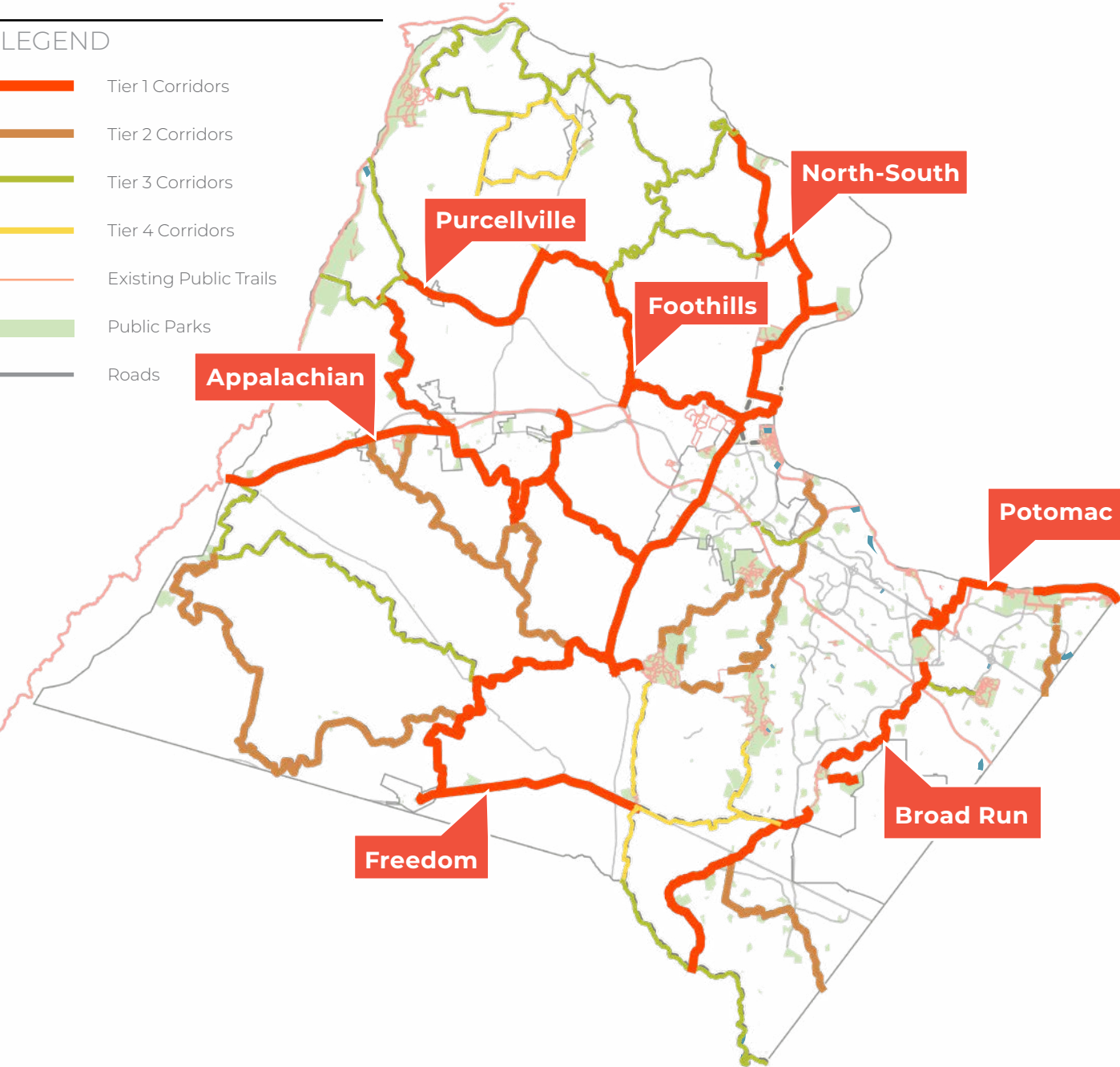
For planning and budgeting purposes, the Ten-Year Plan recommends that the County begin to pursue detailed planning and construction of the full Framework Plan system, with the following qualifications.

Full buildout of Framework Plan linear parks and trails is not realistic within a ten-year timeframe, given the complexity of securing public access for trail alignments throughout the County. But

# MAP 3: FRAMEWORK PLAN PROJECT PRIORITIZATION TIERS

## LEGEND

- Tier 1 Corridors
- Tier 2 Corridors
- Tier 3 Corridors
- Tier 4 Corridors
- Existing Public Trails
- Public Parks
- Roads



progress can be made within all corridors and opportunities identified for closing short-term gaps through public right-of-way, land leases and other measures.

Given the large scale and cost of building out the entire Framework Plan system—and the importance of implementing high-quality short-

term demonstration projects—the Ten-Year Plan recommends a staggered budgeting approach whereby higher-tier projects are budgeted at a higher per-mile cost and lower-tier projects at a lower per-mile cost. The result will be an emphasis on funding high quality linear park, trail and blueway facilities within those corridors that



**Table 6: Estimated Ten-Year Costs for Loudoun County Linear Parks and Trails**

PROJECT TYPE	ESTIMATED PLANNING AND CONSTRUCTION COST	ESTIMATED TEN-YEAR MAINTENANCE COST	TOTAL ESTIMATED TEN-YEAR COST
Tier 1	\$148,200,000	\$1,710,000	\$149,910,000
Tier 2	\$68,300,000	\$1,024,500	\$69,324,500
Tier 3 and 4	\$51,050,000	\$1,531,500	\$52,581,500
Existing	-	\$3,360,000	\$3,360,000
<b>TOTALS</b>	<b>\$267,550,000</b>	<b>\$7,626,000</b>	<b>\$275,176,000</b>

are most important for building a system that serves residents equitably, while ensuring progress is made on the trail projects that are lower-priority but still critical for realizing countywide connectivity. Estimated costs are in Table 6.

**ACTION ITEMS**

The County should prioritize the following action items to maintain the momentum of the linear park and trail planning process, work efficiently toward buildout of the Framework Plan, and position itself to take advantage of funding, acquisition and partnership opportunities when they arise.

The Ten-Year Plan provides more detailed funding, real estate, policy and partnership strategies for working toward implementation and buildout of the linear park and trail system.

**STAFFING**

- 1. Hire a linear park and trail manager and assistant to oversee grant pursuits, internal

and external committees, volunteer efforts and overall coordination of implementation efforts.

- 2. Hire a natural resource manager to ensure linear park and trail corridors are adequately protected for habitat protection and water quality.
- 3. Hire maintenance staff as needed to coordinate and supplement the linear park and trail maintenance efforts of volunteer groups.

**MARKETING**

- 4. Hire a consultant to develop branding guidelines for the linear park and trail system signage and print and online marketing materials. The consultant should work with the County Department of Transportation and Capital Infrastructure, towns, neighboring jurisdictions, Northern Virginia Regional Commission, NOVA Parks, Visit Loudoun and other stakeholders to develop a clear



**Table 7: Benefits and Drawbacks of Typical Real Estate Tools**

TOOL	BENEFITS	DRAWBACKS
<b>Proffer</b>	Private development projects result in significant public linear park and trail benefits, often for large contiguous tracts of land. Access is granted indefinitely.	Use and success of proffers are highly dependent on the rate of new development in an area. Less feasible for rural or already developed areas.
<b>Fee Simple Acquisition</b>	Grants Loudoun County total control over linear park and trail design, development and management over time.	Loudoun County is responsible for all costs associated with upkeep and improvement of the property.
<b>Easement</b>	Allows the private owner to retain property ownership and management, while granting permanent public access for trail use, maintenance and improvements.	Easements place restrictions on an owner’s long-term use of the property, and the restrictions pass on to future property owners.
<b>Land Lease</b>	Opportunity to secure access to land without requiring the owner to give up long-term control or ownership rights.	Land leases can be terminated without reason at the expiration of the lease agreement, potentially disrupting a linear park and trail network.

and coordinated marketing and communications strategy that promotes linear park and trail awareness, public support, and high-quality user experiences. It would be best to wait until the new zoning ordinance is implemented or closer to its implementation since it has guidance on signage for the County.

- 5. Pursue development of an online hub and facility tracking software to provide up-to-date public information about the state of the County’s linear parks, trails and blueways while informing the ongoing efforts of County and volunteer maintenance teams.

**FUNDING**

- 6. Coordinate across County departments to develop a

funding strategy that draws from a diversity of County, state, federal and private funding streams to meet the capital and operational needs of the linear park and trail system buildout.

- 7. Prioritize short-term funding for items that will position the County to leverage other funds—such as additional staffing to support grant and volunteer coordination; planning, design and approval processes to ensure high-priority projects are shovel-ready; and matching funds that will be required for short-term grant pursuits.

**REAL ESTATE**

- 8. Continue to pursue land donations, easements and the construction of public linear park and trail facilities through

the proffer system, with the Linear Parks and Trails Plan as a guiding document for the County and developers.

9. Build relationships with institutional partners that are well-positioned to help the County reach out to private landowners and negotiate public trail access—including non-profit easement holders, homeowners associations and utilities.
10. Develop a flexible toolkit for acquiring public trail access on private land—including fee simple acquisitions, purchase options, easements and leases. Develop marketing materials to help the County communicate to private landowners the implications and benefits of various approaches to providing public trail access.

## **POLICY**

11. As part of the County's zoning ordinance update, incorporate strengthened language for contiguous open space requirements, cluster developments, public linear park and trail requirements, density bonuses, and the establishment of impact fees to fund linear park and trail system buildout and meet the service demands of a growing population.
12. Pursue establishment of Transfer and Purchase of Development Rights programs

to secure open space protection and linear park and trail corridors within those protected lands.

## **PARTNERSHIPS**

13. The Parks, Recreation and Open Space Board should consider reforming the Linear Parks and Trails Subcommittee to ensure this important group can continue to advocate for implementation. The makeup of this committee should be examined to ensure it includes the expertise and diversity of experience necessary to provide guidance and oversight.
14. Establish an internal Linear Parks and Trails Committee to oversee progress and maintain close interdepartmental coordination.
15. Continue to build partnerships with other local and regional governments, commissions and park authorities to ensure regional connectivity and to take advantage of opportunities to share costs of system implementation and maintenance.
16. Continue to build partnerships with local and regional linear park and trail non-profits and foundations to take advantage of opportunities for collaboration through planning, grants, facility construction, maintenance, education and advocacy.

## PARK FOUNDATION

17. Pursue establishment of a Loudoun County Park Foundation to support implementation and awareness of the linear park and trail system and other County recreational facilities through fundraising, advocacy and volunteer coordination. Dedicated non-profit park foundations have been shown to effectively supplement limited tax dollars through fundraising, advocacy, volunteer coordination and other forms of support that are outside the traditional scope of the public agencies they support.

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## DESIGN GUIDELINES

The Design Guidelines create principles and design standards for the linear park and trail system and were informed by stakeholder user groups. The guidelines set the tone and expectations for a world-class user experience, in addition to best practices in environmental, social and economic sustainability.

The guidelines are intended to provide the County and its partners with flexibility in design and construction of linear park and trail features and amenities that suit diverse contexts and allow for adaptation over time to satisfy shifting demand and available resources.

Goals include:

### 1. Environmental

- » Conserve, preserve and restore natural systems and their integrity to provide ecosystem services for the community and future generations.
- » Embed resiliency in the design of the linear parks and trails to withstand and rebound from future environmental changes and disturbances.

### 2. Economic

- » Utilize durable and regionally available materials.
- » Form mutually beneficial partnerships to execute the plan, including public-private partnerships.

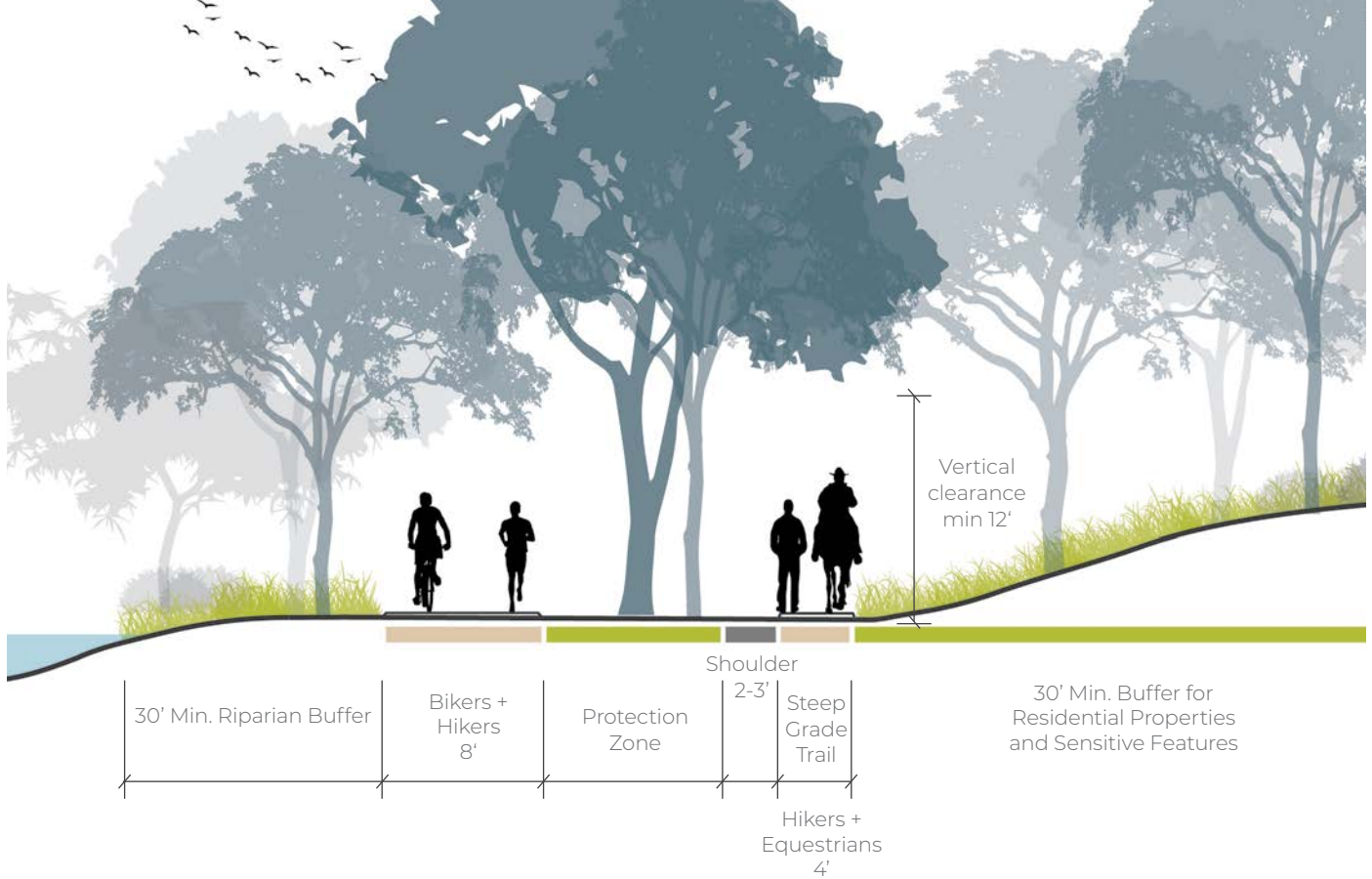
### 3. Social

- » Create equitable plans that address all communities and their specific needs.
- » Conserve Loudoun County's unique cultural landscape and historic resources.
- » Prioritize the health, safety and well-being of all communities by providing comfortable, safe and accessible linear parks and trails for people of all ages and abilities.

The figure on the following page is an example of one trail type included in the Design Guidelines.



# PRIMARY TRAIL TYPE D - WEST LOUDOUN, SENSITIVE LAND OR STEEP GRADES



**Table 8: Primary Multi-Use and Equestrian Cross-County Trail Conditions- D**

<b>Users</b>	Hikers, all bikers, equestrians
<b>Contexts</b>	Rural, town, suburban, ridges, stream valleys, utility ROW, road ROW
<b>PRCS Trail Classes</b>	3 and 4
<b>Typical Tread Widths</b>	4-8'
<b>Materials</b>	Compacted aggregate (prohibited in floodplain), resin stabilized aggregate (prohibited in floodplain), natural soil surface, wood mulch, sand
<b>Maintenance</b>	Every 5 to 10 years
<b>Slopes</b>	Up to 10% for Bikers + Hikers Trail, Up to 20% for Equestrians + Hikers Trail / Cross slope 3.5% max
<b>Buffers and Clearance</b>	Locate primary trails outside riparian or habitat corridors, with spur access provided at strategic locations
<b>Amenities, Safety and Other Design Features</b>	Railing or fence 54" tall when adjacent to a drop-off of 1' or greater / Resting places every 200' for slopes less than 8.33%, every 30' for slopes 8.33% to 10%, and every 10' for slopes greater than 10%



Rural Loudoun County / Photo credit: Adobe Stock

02

# PROJECT INTRODUCTION

**PROJECT BACKGROUND**

**WHY IS THIS PLAN IMPORTANT?**

**WHAT DOES THE PLAN INCLUDE?**

**IMPORTANT DEFINITIONS**

---

## INTRODUCTION

Loudoun County is rich in natural and historic features, including attractive stream and heritage corridors that reach most parts of the County. Resource corridors are the foundation for an affordable, interconnected and widely accessible system of linear parks and trails reaching all parts of Loudoun County.

Stream corridors are not only important natural habitats and provide important water management services, but also one of the most valuable resource corridors for the linear parks and trails plan. Much of the land along a stream is undevelopable, and protection of that land for open space can provide a multitude of benefits to Loudoun County residents, including passive recreation.

The linear park and trails system is not limited to the opportunity that natural, stream corridors present. Other resource corridors such as existing easements, heritage corridors, utility and road corridors, and other public lands are also opportunities to create a countywide system in Loudoun County.

Building this network over time through the proffer of new trails and protected natural corridors, as part of development projects and collaborating with private

landowners of corridor areas, can create a major asset of enormous benefit to the entire community. A large-scale system of trails and parks will improve health and quality of life, attract business investment, improve security, increase regard and protection for natural areas and preserve critical natural drinking water and storm management systems, as shown in other communities. Designed properly and in collaboration with the County's transportation plan, it can provide alternative transportation routes for many residents.

The purpose of this document is to share a conceptual plan for a countywide linear park and trail system, creating a roadmap to accomplish the goals stated in the Linear Parks and Trails (LPAT) Subcommittee's Vision Statement. These conceptual design and planning strategies are to be used as a resource for the future development and redevelopment of the County's linear parks and trails. This planning process is just the start of the long-term public/private partnership that will lead to a robust and interconnected system of accessible linear parks and trails for Loudoun County.

The interconnected system will link and protect the various natural, recreational, and cultural resources in and around Loudoun County. A large-scale system of linear parks

and trails will serve a variety of functions, including recreation, alternative transportation, wildlife habitat, water quality protection, flood hazard reduction, aquifer recharge, erosion prevention, property value enhancement, economic development, and scenic beauty.

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## PROJECT BACKGROUND

The Loudoun County Board of Supervisors on January 17, 2019 directed the Loudoun County Parks, Recreation and Open Space (PROS) Board to develop a detailed implementation plan for an interconnected, countywide linear parks and trails system. As a part of this effort, a white paper was developed to summarize the value a linear parks and trails system would have for Loudoun County (Emerald Ribbons Countywide Parks and Trails Network – White Paper Draft 11.2018).

PROS subsequently appointed representatives from key stakeholder groups to the LPAT Subcommittee to advance this initiative. The LPAT Subcommittee is comprised of individuals representing groups organized in support of parks, recreation, and community services; trail walking; mountain biking; equestrian activities; land conservation; towns; and wildlife habitat protection.

## VISION STATEMENT

### LINEAR PARKS & TRAILS PLAN

The committee seeks an interconnected system of multi-use passive recreation linear parks and trails that connect communities across Loudoun County's 500 square miles. Passive recreation users may include walkers, hikers, mountain bikers, equestrians, nature enthusiasts, and other user groups.

This system of linear parks and trails will provide benefits including healthy recreation opportunities, bolstering of local tourism, and provision of wildlife habitat. Prioritizing multi-use public access trails while protecting and enhancing the ecological value of trail corridors are mutual goals of the system.

Additional community benefits include improved physical and mental health and wellness, increased safety along corridors, and a connection to the natural world including support for conservation.

Individual stakeholder visions reflect the diversity of values from Loudoun County trail users.

The LPAT Subcommittee agreed upon the overall vision statement, shown at right, that is the guiding light for the LPAT Plan. Furthermore, the LPAT Subcommittee has agreed upon a service-level goal that Loudoun County residents shall have access to a trail that permits public use located within 1/8-mile for areas with residential unit density greater than 3 units per acre, and within 1/2-mile for areas with residential unit density of 3 units or fewer per acre.

In June of 2020, Loudoun County issued a Request for Proposals from consultants with the intent to obtain proposals from qualified firms to provide consultant services to develop a conceptual design and provide planning services to develop a County Wide Linear Parks and Trails System. In November of 2020, Design Workshop, Inc. was selected and contracted to lead the plan's development.

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## WHY IS THIS PLAN IMPORTANT?

*From the Emerald Ribbons  
Countywide Parks and Trails  
Network – White Paper Draft  
11.2018*

### **Loudoun County residents expressed a strong desire for more trails and natural areas for recreational activities, school and work trips and improving health and wellbeing.**

- » Open spaces and nature corridors are rapidly disappearing in Loudoun due to increased and rapid development.
- » The wonder of nature and trees can produce mental, emotional, and physical health benefits. Research has shown that time in natural environments lowers blood pressure, pulse rate, and cortisol level, improves mood and may even boost our immunity to cancer and other diseases.
- » The creation and development of this county-wide linear park and trail network will bring

the County together as one community. Various groups (HOAs, non-profits, and County government) will work together to define the type of routes and facilities that needed in each Supervisor's District to allow more social interaction and build out a social infrastructure, as opposed to just more roads and more housing.

- » The first Envision Loudoun public input session on rewriting the County's Comprehensive Plan had 962 comments mentioning the environment. The most mentioned of these comments called for more trails, bike paths and parks. County residents want to bike, hike, watch nature, dog walk, run, jog, train, share the environment with their children, and otherwise just get out in the outdoors and destress from their daily lives.
- » Loudoun comprises 521 square miles, yet only 1.6% of this is public parkland. Loudoun has only 87 miles of hiking trails, which does not meet County standard of 0.65 miles/1000 population or ~226 miles for the current population of 400,000. Loudoun has tremendous assets, but little or no access to these assets.

### **Parks and trails come with a multitude of community benefits.**

- » **Increased economic development.**
  - Large companies seek areas with parks and trails:
    - Ruby Tuesday's CEO said they located their corporate headquarters along the Maryville-Alcoa Greenway in Tennessee in part because it "provided a sense of community to

this area, as well as the many benefits it provides to our more than 300 employees.”

- “The greenways are increasingly recognized as an important regional amenity, supporting redevelopment opportunities, attracting new businesses, aiding in employee and student recruitment, while encouraging housing construction, festivals, outfitters and tourism growth.” (Source: 2018 Roanoke Valley Greenway Plan)

» **Increased property value.**

- Properties within ¼ mile of the Radnor Trail in PA were valued at almost \$70,000 more than properties farther away. Listings in this community frequently mention trail access as an amenity. (Source: The Economic Benefits of Land Conservation, TPL, 2007)

» **Increased safety on corridors.**

- Chief Charles Tennant on Youghiogheny River Trail in Pennsylvania says: “The trail has not caused any increase in the amount of crimes reported...We have found that the trail brings in so many people that it has actually led to a decrease in problems we formally encountered such as underage drinking.”

» **Improved physical and mental health and wellness.**

- Rates of obesity and diabetes are significantly lower in highly walkable neighborhoods. (Source: May, 2016 JAMA Vol 315, Number 20)

## IMPORTANT DEFINITIONS

**Linear parks** are elongated open space corridors that are managed for conservation, recreation, and/or multi-modal transportation values. Linear park corridors often follow the alignment of a natural or open space feature in the landscape, such as a riverfront, stream valley, ridgeline, overland along a railroad right-of-way converted to recreational use, scenic road, or other routes.

Linear parks provide open-space connections linking parks, nature preserves, cultural features, or historic sites with each other and with urban, suburban, and rural areas. Linear parks are designed to protect wildlife, biodiversity, and scenic beauty, while providing passive recreation opportunities. The size and design of linear parks varies and depends on its context, function, and location, but will generally consist of a wildlife corridor, continuous multi-use trail, waysides and seating, and other passive recreation uses.

Ideally, corridors should be wide enough (>300') to provide habitat for safe movement, breeding, and privacy for wildlife, while protecting water quality, native trees and vegetation, and sensitive habitat areas. Trails should be woven within the corridor in an ecologically sensitive manner. Corridor crossings of major roads should be designed to discourage wildlife and motor vehicle conflicts.

**Trails** are paths intended for non-motorized multi-use passive recreation. Typical trail users include walkers, mountain bikers, equestrians, nature enthusiasts, trail runners, and dog walkers, among others.

Preferred trail routing provides connections from origins, such as trailheads with suitable parking and neighborhoods with walkable access, to destinations, such as parks, neighborhoods, retail establishments, and natural, historic, and cultural attractions. Trails are generally natural surfaced.

Trails are open to the public for their use and enjoyment.

- » **Increased tourism and economic impact.**
  - Three Rivers Heritage Trail 2014 User Survey and Economic Impact Analysis found that in 2014 this Pittsburgh trail received roughly 622,873 visits resulting in an economic impact of \$8,286,026. 75.5% of users were city residents, 15.5% lived in the county outside of Pittsburgh and 9% came from further away. (Source: <https://conservationtools.org/guides/97-economic-benefits-of-trails>)
- » **Protection of natural and historical resources.**
  - “Protecting environmental corridors through establishing and managing greenways represents one method (to be used in conjunction with other approaches) to safeguard vital ecological processes.” (Jonathan M. Labaree, Author of *How Greenways Work, A Handbook on Ecology*)
- » **Connection to the natural world and support for conservation.**
  - “Appalachian Trail visionary, Benton MacKaye, had the desire that Trail would offer an experience that joined humans and nature. Today, the A.T. connects rural communities and working farms and forest; squeezes through rapidly developing regions; and provides the foundation for world-class outdoor recreation and tourism opportunities.” (Source: <https://appalachiantrail.org/home/conservation/landscape-protection>)

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## WHAT DOES THE PLAN INCLUDE?

### TASK 1: LINEAR PARKS AND TRAILS SYSTEM FRAMEWORK PLAN

- » Develop a plan that shows how Loudoun County residents will be connected to a linear parks and trails system, estimate costs to build and maintain the trail system, includes public engagement and community discussions, and provides recommendations for accomplishing the goals of the LPAT Subcommittee.

### TASK 2: LINEAR PARKS, TRAILS & INTERSECTIONS

- » Provide recommendations on designing trails to accommodate various users and define how they interact and where separation of users may be appropriate.
- » Provide recommendations for locations and timelines for implementation of priority areas/ trail development opportunities based on level of service/current access of user groups, including equestrian, mountain biking, walking, and other passive recreation uses.
- » Develop feasibility study of system – looking at topography, stream/road crossings, environmental sensitivity, ownership type, etc. to identify/classify level of complexity of potential system.
- » Determine the desirable trail attributes or level of service (i.e., amenities, distances, locations) necessary to meet the current and future demand for users.
- » Develop a “trail system” approach utilizing existing major



trails such as the Washington & Old Dominion (W&OD), Potomac Heritage Trail, and other public lands as spines, from which linear parks and trails will connect.

- » Define locations for potential trailheads that include parking and access to the planned system that accommodate all user groups.

### **TASK 3: DESIGN ELEMENTS**

- » Develop conceptual designs for an interconnected linear parks and trails system that crosses diverse landscapes – from rural areas to heavy industry to high density residential throughout the county.
- » Designs should identify opportunities to highlight areas of historic, cultural, and natural significance across the system.
- » Designs should provide solutions for challenges for all user groups such as major road crossings, trail interaction with rivers and streams, steep slopes, high value wildlife habitats, and accommodations to preserve landowner privacy.
- » Utilizing public feedback, design elements will highlight the unique features of various zones and community-inspired nodes.
- » Provide suggestions for linear parks and trail segments to be distinctly designed in recognition of unique areas (e.g., towns, historic places) traversed, while maintaining a cohesive brand across the county.
- » Design should recognize the potential value of the linear parks and trails system as wildlife habitat prioritizing native plants and removing invasive species, while protecting water quality, reducing flood hazards, preventing erosion, recharging aquifers, and preserving scenic beauty.

### **TASK 4: REGULATORY AND REAL ESTATE STRATEGY**


- » Identify how other Virginia jurisdictions address legal concerns of landowners.
- » Provide best practices that are coordinated within our zoning ordinance that is currently under revision.
- » Assess regulatory processes across other Virginia jurisdictions and provide recommendations to acquire park land, rights of way, easements, and other elements to successfully complete a linear parks and trails system.
- » Ensure recommendations and plans are made in accordance with the 2019 Comprehensive Plan, Zoning Ordinances, Facility Standards Manual, PRCS Strategic Plan, and other relevant documents.

### **Task 5: FINANCING**

- » Forecast cost of linear parks and trails system construction and maintenance – range type estimate based on typical design.
- » Explore various financing options available to successfully fund this project.
- » Assess viability of a non-profit foundation, such as a “park foundation,” as a component of how to support the linear parks and trails system.
- » Estimate additional resources that may be needed to manage the implementation of the plan, development of the system, and ongoing maintenance efforts.

### **TASK 6: COMMUNITY ENGAGEMENT**

- » Plan and facilitate a series of public and community input sessions and community



discussions to gather public input.

- » Develop a marketing strategy to build a coalition of private and public interests and raise public awareness.
- » Establish a unique image for the plan process and to establish a presence in the community that attracts participation and expands community awareness of the process.

### **TASK 7: MASTER PLANNING OF SIGNATURE PROJECT**

- » Develop a detailed plan for completion of a “signature” trail project, as identified by the LPAT Subcommittee. Development of the signature project will be integrated into and proceed concurrent to the Linear Parks and Trails Framework Plan. The Signature Project will be a beacon project for the Linear Parks and Trails System and serve as a working model for practices that will be utilized for future buildout of the system.
- » Utilize linear parks and trails development actions contained within this SOW and existing plans to fully plan for the signature project.
- » Provide detailed cost estimates to construct and maintain the signature project.
- » Engage the public to solicit feedback on project.



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# REFERENCES

IN  
PROGRESS



Middleburg horse country / Photo credit: Creative Commons

# 03 PLANNING CONTEXT

**COMMUNITY DEMOGRAPHIC TRENDS**

**NATURAL & CULTURAL RESOURCES**

**OTHER COUNTY PLANS**

**REAL ESTATE CASE STUDIES**

## COMMUNITY DEMOGRAPHIC TRENDS

Loudoun County has ranked among the top 20 fastest growing counties in the nation every year since 2000, and its population continues to increase by an average of 30 new residents daily.

As the County population becomes larger and more diverse, the urgency grows to build a linear park and trail system that reaches all communities and connects people to recreational opportunities and the County’s unique natural and cultural landscapes.

## POPULATION GROWTH

From 2000 to 2020, the percentage of Loudoun’s Hispanic or Latinx identifying residents increased from 5.9 percent to 14.7 percent of the total population. The percentage of the County’s Asian identifying residents increased between 2000 to 2020 from 5.5 percent to 20.4 percent. The County’s White population decreased from 85.5 percent to 60.9 percent from 2000 to 2020.

Loudoun’s foreign-born population more than doubled in that same time. Almost a quarter of the County’s population were foreign-born residents in 2019, and 31.5 percent of Loudoun residents identified as speaking a language other than English at home. Of those households, 41.1 percent speak Spanish and 29.5 percent speak Asian and Pacific Island languages.

The linear park and trail system facilities—particularly signage and marketing materials—should be designed to welcome and accommodate users from diverse backgrounds, including residents who speak languages other than English.

## HOUSEHOLDS

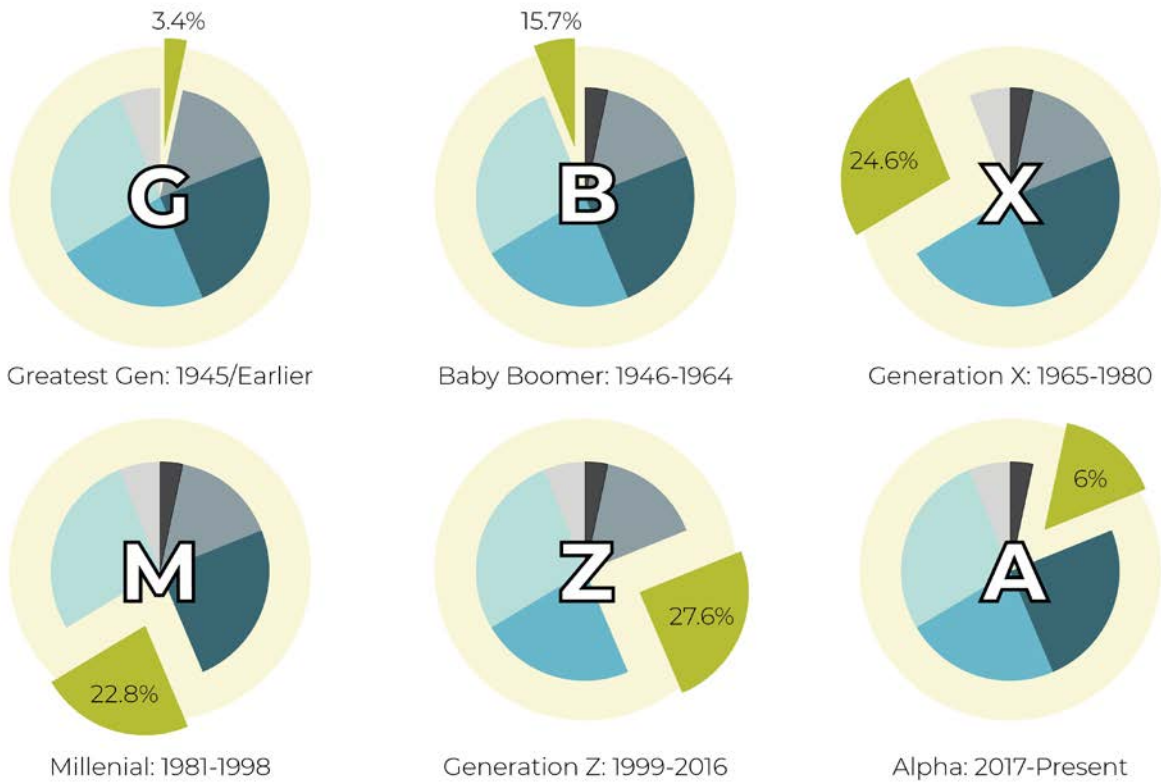
For the last fourteen years Loudoun has ranked as the county with the highest median household income (MHI) in the nation. Loudoun County’s MHI is \$141,905, compared to the national MHI of \$68,708

### Loudoun Demographic Trends

- **423,766**: Population
- **140,485**: Number of households
- **\$141,905**: Median annual household income
- **36.1**: Median age
- **27.6%**: Percent of population belonging to Generation Z (Generation Z falls within the County’s median age)
- **24.5%**: Percent of foreign-born population
- **3**: Average number of people in a household
- **6%**: Percent of population with no high school diploma
- **63%**: Percent of population with a bachelor’s degree or higher
- **78%**: Percent of white-collar level employees
- **8.2%**: Percent of unemployment

Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-year Estimates; 2000 Census

Figure 17: Demographic trends

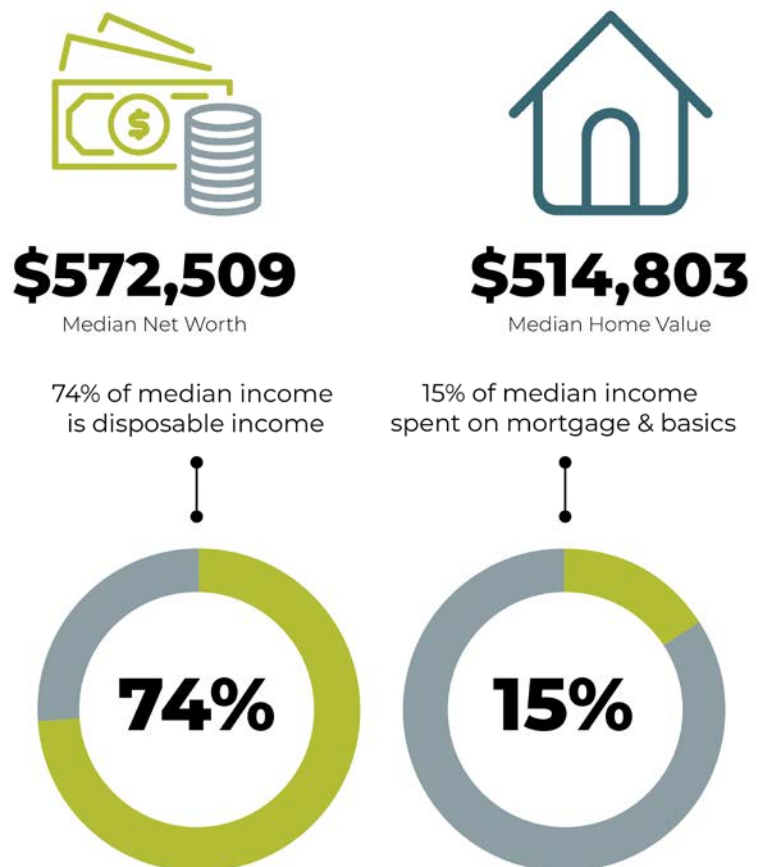


**Figure 18:** Population by generation

and Virginia’s MHI of \$74,222. Only 15 percent of Loudoun residents’ income is spent on mortgage and basics.

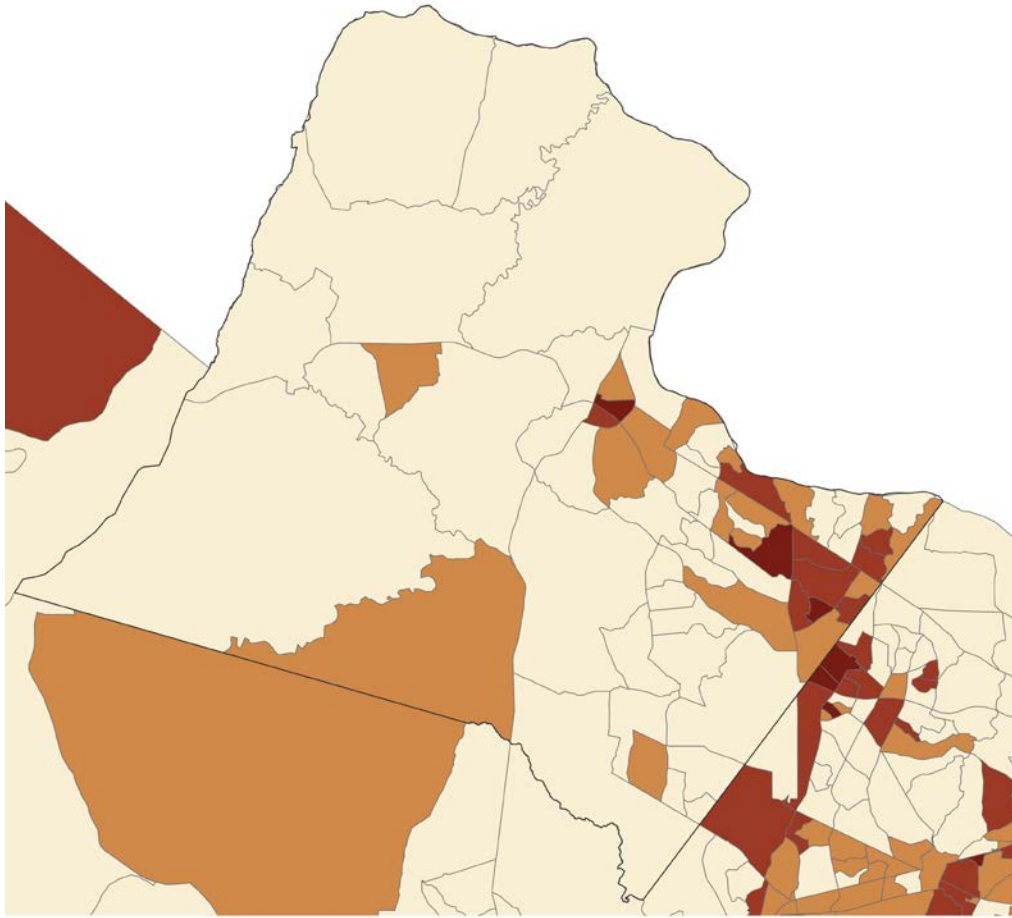
Forty-three percent of the County’s households are identified as “at risk” according to the CDC because they either lack access to a vehicle, have a member with a disability, or have members who are aged 65 or older.

The County faces an urgent need to protect natural and cultural resources and expand public amenities in the face of growth. Given this need and the County’s relative wealth, the linear parks and trails plan should offer an ambitious vision for countywide access and connectivity of high-quality.

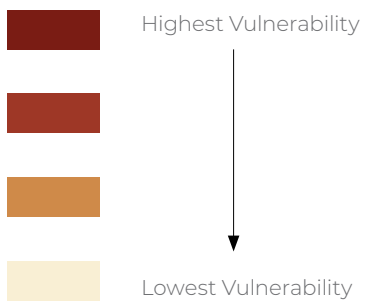


**Figure 19:** Economic characteristics of households

# MAP 5: SOCIAL VULNERABILITY - CDC



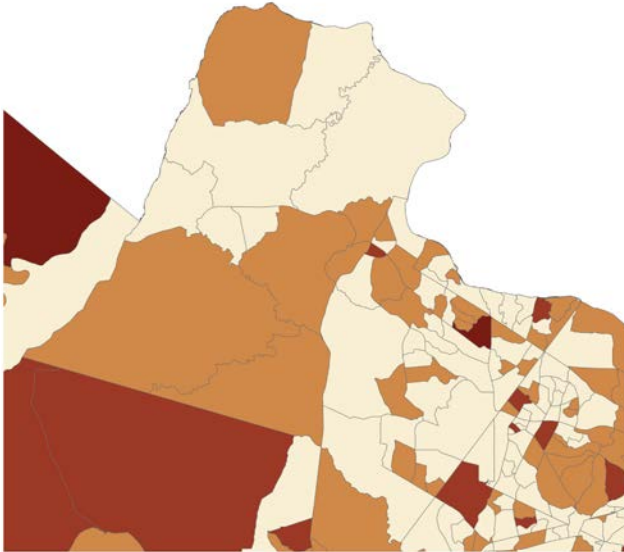
## LEGEND



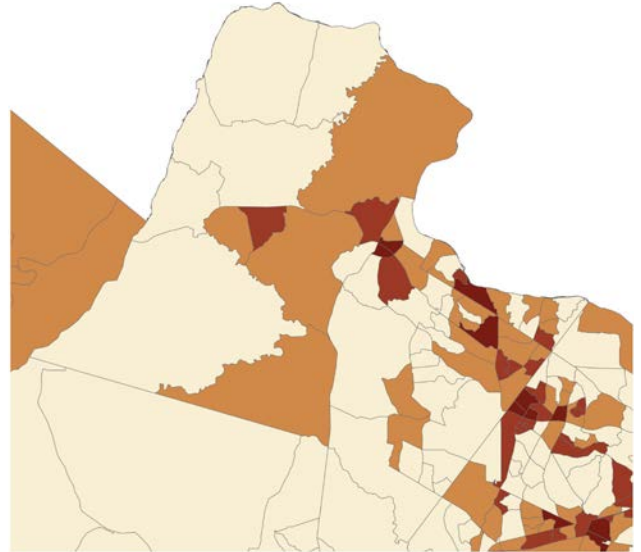


## MAP 6: SOCIAL VULNERABILITY - CDC

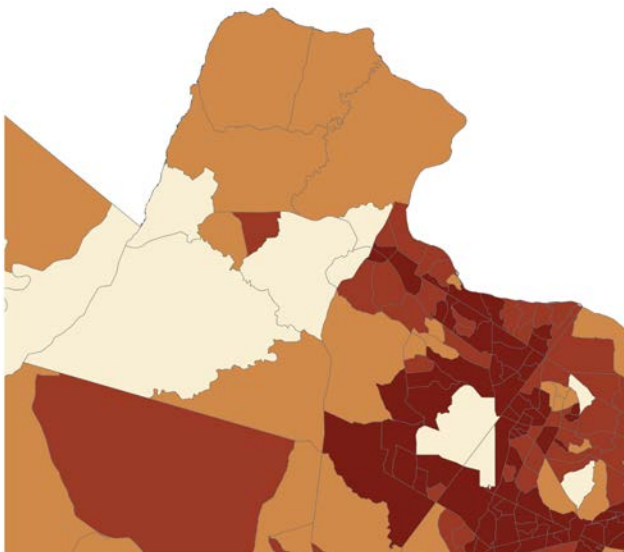
HOUSEHOLD COMPOSITION & DISABILITY



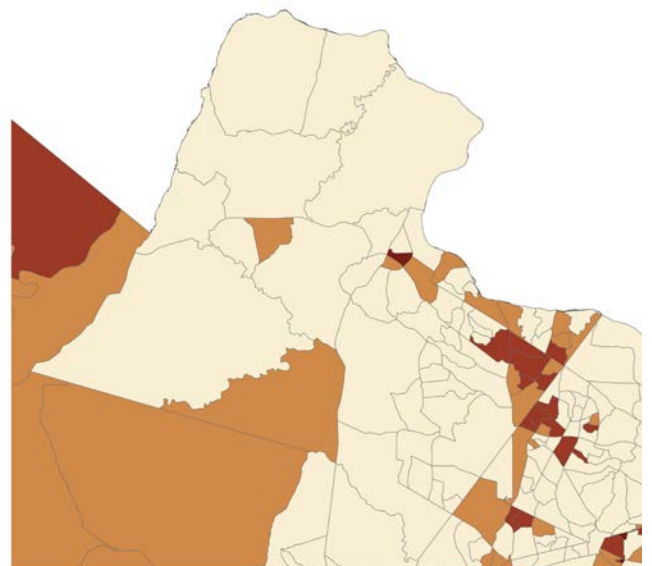
HOUSING TYPE & TRANSPORTATION



RACE, ETHNICITY & LANGUAGE



BELOW POVERTY INDEX





## NATURAL AND CULTURAL RESOURCES

Loudoun County has an extensive network of natural and cultural resources that provide residents and visitors access to a variety of recreational opportunities, historic sites, fresh and local agriculture and livestock products, and tourism destinations both natural and man-made.

A significant challenge for the County is the protection of these important resources in the face of growth and development. The open space protection goals of the linear park and trail system can support other County goals of natural and cultural resource preservation. The interconnected system can link and protect these resources in and around Loudoun County.

The County's unique natural and open space features include riverfronts, stream valleys, ridgelines and scenic roads. By protecting these corridors, the linear park and trail system can help to promote wildlife habitat, water quality, flood hazard reduction, aquifer recharge, erosion control and scenic beauty.

Loudoun County is also home to almost 100 historic properties and districts including houses, churches, train stations, inns and quarters of the enslaved. Known as "DC's Wine Country," the County boasts 40

















wineries and additional breweries, distilleries and agritourism destinations that boost the local economy.

The linear park and trail system will create new connections to these destinations and complement the County's existing and planned trails and greenspaces. It will also create equitable access and new connections across Loudoun County's communities—from the historic and agricultural resources of rural Loudoun to the commercial, educational and residential destinations in the eastern part of the County.

# MAP 7: CULTURE & HISTORY



## LEGEND

- |   |                          |   |  |   |  |
|---|--------------------------|---|--|---|--|
|  | Local Park               |  | Planned Development Office Park            |  | Potomac Heritage National Scenic Trail |
|  | Visit Loudoun Points     |  | Commercial Center                          |  | Appalachian Trail                      |
|  | National Register Points |  | Planned Development Transit Related Center |  | Washington and Old Dominion Trail      |
|  | Leesburg JLMA Employment |  | Public Land Use                            |  | Loudoun County Trails                  |
|  | Suburban Employment      |  | Historic Districts                         |  | Parks and Conservation Land            |
|  | Urban Employment         |   |  |   |  |

## CULTURE & HISTORY

Historic districts and agritourism destinations anchor rural Loudoun, with communities and commercial and educational destinations concentrated in the east.

# MAP 8: NATURAL SYSTEMS



## LEGEND

 Public Trails on Public Lands

 Public Trails on Private Lands

 Appalachian Trail

 Potomac Heritage National Scenic Trail

 Washington and Old Dominion Trail

 300ft Riparian Buffer

## NATURAL SYSTEMS

The County's web of natural systems guide development of the linear parks and trails system. The Plan will balance protecting and providing public access to Loudoun's natural systems.

 Wetlands

 Floodplains: <640AC, 640AC, Potomac Floodplain

## OTHER COUNTY PLANS

The Loudoun County Linear Parks and Trails Plan is intended to provide a roadmap and recommend specific projects and strategies for achieving the County’s big-picture linear park and trail planning goals. The Plan will be referenced and used as a resource for future development and redevelopment of the County’s parks, open space, trails, facilities and recreation system.

The Linear Parks and Trails Framework Plan should be updated regularly (at least every 10 years) and referenced by other planning documents in order to streamline linear park and trail planning in Loudoun County.

Following are the ways that the Loudoun County Linear Parks and Trails Plan supports and supplements other County planning documents.

### LOUDOUN COUNTY GENERAL PLAN

The General Plan, along with the Countywide Transportation Plan, is part of the County’s comprehensive plan to manage community growth and the provision of capital facilities.

It is important that the goals and recommendations of the Linear Parks and Trails Plan align with and support action items in the Loudoun County General Plan. Following are ways that the plans

relate to one another, organized by General Plan chapters.

### Land Use

- » **Quality Development:** The linear park, trail, blueway and intersection design guidelines in Chapter 8 supplement County efforts to promote a sense of place and diversity of experiences through high-quality, context-specific design. The Plan strategies and design guidelines also support the General Plan’s call for public and private facilities to utilize universal design principles wherever practicable. | **General Plan Actions 1.1.A, 1.1.B, 1.1.C, 3.1.A**
- » **Infill and Redevelopment:** Infill and redevelopment projects are identified as significant opportunities to extend and connect the public linear park and trail system, particularly in Eastern Loudoun County. | **General Plan Actions 1.1.A, 1.2.H**

### Natural, Environmental, and Heritage Resources

- » **Natural Resources:** Loudoun County’s linear park, trail and blueway system will benefit from the General Plan’s approach to aligning natural resource protection with passive recreation opportunities. The ability to plan for future linear parks and trails within protected open space and riparian corridors will be critical to expand the network, fill service gaps and meet the high public demand for trail amenities. | **General Plan Actions 1.1.C, 1.1.D, 1.1.G, 1.2.A, 2.1.A, 2.1.E, 2.2.A, 2.2.B, 2.2.C, 2.5.D, 4.1.E, 4.2.A, 4.2.B, 6.2.B**
- » **Historical and Cultural Resources:** The system will also benefit from the General Plan’s



**Figure 20:** Lucketts Community Center, an example of adaptive reuse of historic schools as noted in the Loudoun County General Plan / Photo credit: Creative Commons

actions to preserve historic sites, scenic corridors, Scenic Rivers and significant geological features. These protected areas should be targeted for linear park, trail and blueway alignments where possible in order to capitalize on already protected open space, provide special trail experiences, and improve public access to the unique heritage resources of Loudoun County. | **General Plan Actions 5.1.F, 5.1.G, 5.1.O**

**Economic Development**

- » **Competitive Environment:** Robust linear park and trail systems and easy access to nature are important quality-of-life indicators. By expanding Loudoun County’s network, the Linear Parks and Trails Plan supports the General Plan’s policy to create desirable places

to attract workers, businesses, residents and visitors. Steady implementation of the Linear Parks and Trails Plan should be viewed as an important element of County and municipal economic development efforts.

- » **Tourism:** The expanded linear park, trail and blueway system will become a critical part of the County’s tourism and hospitality infrastructure, especially in Rural Loudoun County. The County should seek opportunities to align the Plan with countywide tourism development and marketing efforts. | **General Plan Actions 5.2.A**

**Fiscal Management and Public Infrastructure**

- » **Land Acquisition and Open Space Protection:** The General Plan includes several actions to improve the County’s ability to

## PLANNING CONTEXT

acquire land and protect open space—including support for proactive acquisition of sites for public facilities and “banking” property for future capital projects; establishing new and improving existing programs and regulatory mechanisms to secure publicly accessible open space through easements, land dedication and purchase; continuing open space requirements under the Open Space Preservation Program; and allowing through updated development regulations for open space requirements to be met through off-site permanent open space that creates a more usable, desirable or environmentally significant open space.

The alignments identified in the Linear Parks and Trails Plan will help to ensure these land acquisition and open space protection efforts are focused and coordinated, resulting in a strategic and interconnected system of publicly accessible lands and the equitable distribution of public facilities. | **General Plan Actions 3.1.B, 3.1.H, 3.1.I, 3.1.J, 3.1.K, 3.1.L**

- » **Linear Parks, Trails and Public Facilities:** The General Plan emphasizes the importance of pursuing an interconnected system of linear parks and trails located within contiguous networks of protected open space and natural resources. The Linear Parks and Trails Plan provides the roadmap for achieving this vision and carries forward recommendations from the General Plan for implementation.

As future public facilities are planned, the Linear Parks and Trails Framework Plan should be updated in order to reflect the General Plan’s vision for a system of connected and

co-located public facilities. | **General Plan Actions 1.1.B, 1.4.B, 1.4.C, 1.4.H, 8.1.D**

## COUNTYWIDE TRANSPORTATION PLAN

The Countywide Transportation Plan (CTP) includes a bicycle and pedestrian plan with recommended sidewalks, shared-use paths and on-road bicycle facilities throughout the County. The CTP and Linear Parks and Trails Plan should support and complement one another, with the paved active transportation paths of the CTP expanding access to the natural surface and recreational trails of the linear park and trail system. County staff should ensure the different systems are coordinated and that connections are designed to promote a positive user experience.

## LOUDOUN COUNTY PARKS, RECREATION AND COMMUNITY SERVICES MASTER PLAN

The Parks, Recreation and Community Services Master Plan calls for increased investment in parks with natural areas. The County’s linear park and trail network will be an important part of the overall park and recreation system and should build connectivity between the County’s other recreational facilities, both existing and planned.





**Figure 21:** Example of Shared Transit Lanes from the Countywide Transportation Plan

**ZONING ORDINANCE UPDATE**

Loudoun County is in the midst of a process to rewrite its zoning ordinances to align with the recommendations of the General Plan and other efforts.

Implementation of the Linear Parks and Trails Plan will be aided by ordinance updates that promote natural and cultural resource preservation, open space protection, and investment in a connected countywide system of public facilities. The long-term land acquisition and facility needs identified in the Linear Parks and Trails Plan should inform the County’s process to update the zoning ordinance.

Additionally, signage and wayfinding for the LPAT system will need to be closely coordinated

with the new ordinance when it is adopted.

**LOUDOUN COUNTY FACILITIES STANDARDS MANUAL AND PARKS, RECREATION AND COMMUNITY SERVICES DESIGN GUIDELINES**

These County documents should be updated to reference the linear park and trail recommendations and standards included in this document’s Design Guidelines.

### REAL ESTATE CASE STUDIES

#### CITY OF CHARLOTTESVILLE

The City of Charlottesville has nearly six miles of paved trails and over 30 miles of unpaved nature trails available to its residents. However, this was not always the case. Trail development in the City started with the Rivanna Trails Foundation, a local non-profit organization with a mission to “promote, create, and protect pathways, trails, and greenways in the Rivanna River Watershed that connect communities and people to one another and to nature.”<sup>1</sup> In the early days of the non-profit, handshake agreements resulted in a loosely knit and not legally permanent network of trails. While the foundation had done an excellent job stringing together land to form a trail network, they were unable to make any significant improvements to the land and often lost trails to new development. However, the success of the foundation and demand for linear greenspace from the public made the City realize that they needed a dedicated parks and trails planner to spearhead the development a trail system. The addition of a staff member dedicated to park and trail development has allowed the City to take a proactive approach to developing and protecting

greenspace. The City still works closely with the Rivanna Trails Foundation and leverages its status as a non-profit to engage with landowners who may not want to dedicate or sell land to the government.

The City prefers to purchase land in a fee simple ownership agreement whenever possible. From the City’s perspective, fee simple ownership is the preferred method of land acquisition because it allows them to have total control over the property and absolves private landowners of any legal liability associated with public use. To pursue fee simple purchases, the City created a dedicated fund financed through general fund revenue for both park- and trail-related land purchases and improvements. In situations where purchasing the land is not an option, the City will request an easement on the landowner’s property. If a landowner is hesitant to provide an easement without compensation, the City will occasionally use money from its dedicated parks and trails fund to improve certain aspects of the dedicated property.

In cases where landowners may be hesitant to engage with the City, the Rivanna Trails Foundation has historically acted as a diplomatic entity. In these cases, the Foundation works with the landowner to establish a short-

<sup>1</sup> *Rivanna Trails Foundation - Welcome*



term dissolvable land lease for the property. The Foundation holds the lease agreement and works to build a relationship with the landowner during the duration of the lease. The Foundation's goal is that the landowner sees positive benefits from the trail and willingly sells or donates the land used for the park or trail to the City. The City feels that this strategy has been effective, allowing them to acquire permanent easements from landowners who may have been initially resistant to working with them.

The two-pronged strategy of the City working in tandem with the foundation has allowed Charlottesville to leverage multiple

real estate tools while engaging with landowners at varying stages of comfort and willingness to provide land for a linear trails system.

## ALBEMARLE COUNTY

Albemarle County has over 80 miles of maintained trails within its parks and greenway system. The development of a county-wide trail system stems from the County Board of Supervisors and Parks and Recreation staff working deliberately on strategic parks and greenway plans. Most trails within the County follow riparian corridors; however, the County has also attempted to proactively acquire land within undeveloped areas to link riparian trail networks.

## PLANNING CONTEXT

Most of the trail development within Albemarle County has been driven through the legislative process. The County has regularly acquired land through proffered dedications or land access agreements with developers. While the County has seen benefits from land dedications and easements, it has struggled to bridge the gap between developers' expectations of the quality and appearance of the completed trail segment and the reality of the improvements and maintenance that the County is able to accomplish. The County strongly suggested that cash proffers should be pursued in tandem with land dedications to secure the funding necessary to develop and adequately maintain a trail system over time.

In cases where the County does not have the funds needed to maintain or improve trails, it leverages a network of local non-profits to take ownership over the maintenance of portions of the County's trail network. The County has established multiple Memorandum of Understanding (MOU) agreements with various non-profits that provide the labor needed for trail upkeep and improvements. While non-profit organizations provide the labor, the County provides the raw materials and equipment necessary for maintenance and improvement projects. From the County's perspective, this network

of volunteers is critical to maintain and improve its trail system.

## FAIRFAX COUNTY

Since its establishment in 1950, the Fairfax County Park Authority has grown into the "primary public mechanism in Fairfax County for the preservation of environmentally sensitive land and resources, areas of historic significance and the provision of recreational facilities and services."<sup>2</sup> The Park Authority currently oversees 427 parks on more than 23,000 acres of land and has an expansive trail network spanning more than 325 miles. While technically part of the County government, the Authority is structured as an independent entity with its own Board of Supervisors. The Park Authority can issue bonds for projects, and often partners with the County Board of Supervisors and other agencies on issues related to land ownership and management.

To acquire land for parks and trail projects, the Park Authority utilizes several tools and strategies such as land swaps, donations, purchases, easements, and proffers. The Park Authority often leverages the Countywide Trails Plan, which depicts the general location of proposed public trails along roadways, streams, and utility easements. For proffered dedications and by right

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<sup>2</sup> *About Us | Park Authority (fairfaxcounty.gov)*

development, the Trails Plan forms the foundation of the County's requests for land dedications or the construction of new trails. When an application passes through the legislative process, the County looks at the Trails Plan and bases their recommendations off the Plan's suggested trail location. The Trails Plan is intentionally flexible on trail location to allow for maximum flexibility during the development process. Alternatively, the Authority will collect cash proffers that can be used for land acquisition or the development and improvement of trails. Cash contributions are placed in a County fund that is not entirely controlled by the Park Authority, meaning if they wish to access the funds, they require permission from their Board of Supervisors. If the funds are not spent within a predefined timeframe, they go to Public Works or back to the developer, creating an urgency to spend proffered cash contributions.

In 2005 the Park Authority began work on the Cross County Trail which transformed a chain of existing trails to make a continuous 44-mile trail from the Potomac down to the Occoquan. The project has been implemented through a mix of easements, converting existing dirt trails to multi-use, improving stream crossings, and other methods resulting in a continuous effort to improve, realign and reroute trails to meet the overall vision. To fill

gaps in the trail network the Park Authority looks at site plans, zoning cases, private acquisition, and public improvements to identify opportunities to complete the trail network. While the Authority has historically had limited luck with acquiring easements for trail access, they will pursue an easement when it is for a single parcel of property controlled by a common entity, such as an HOA. The Authority does not have a preference between pursuing easements or fee simple purchases. The Authority's perspective is the benefit of an easement is that the County does not have to maintain the property, while the benefit of a fee simple purchase is that the county has greater flexibility in aligning the trail and other site facilities.

The Park Authority works closely with area NGOs, including its own dedicated foundation which raises funds for projects and oversees volunteer groups. The Authority has also formed organizational partnerships with private companies, non-profit groups, and utility companies to develop parks facilities.



# 04 TREND ANALYSIS

LOUDOUN COUNTY RECREATION TRENDS  
STATE & REGIONAL RECREATION TRENDS  
NATIONAL RECREATION TRENDS  
IMPACT OF COVID-19

## TREND ANALYSIS

### LOUDOUN COUNTY RECREATION TRENDS

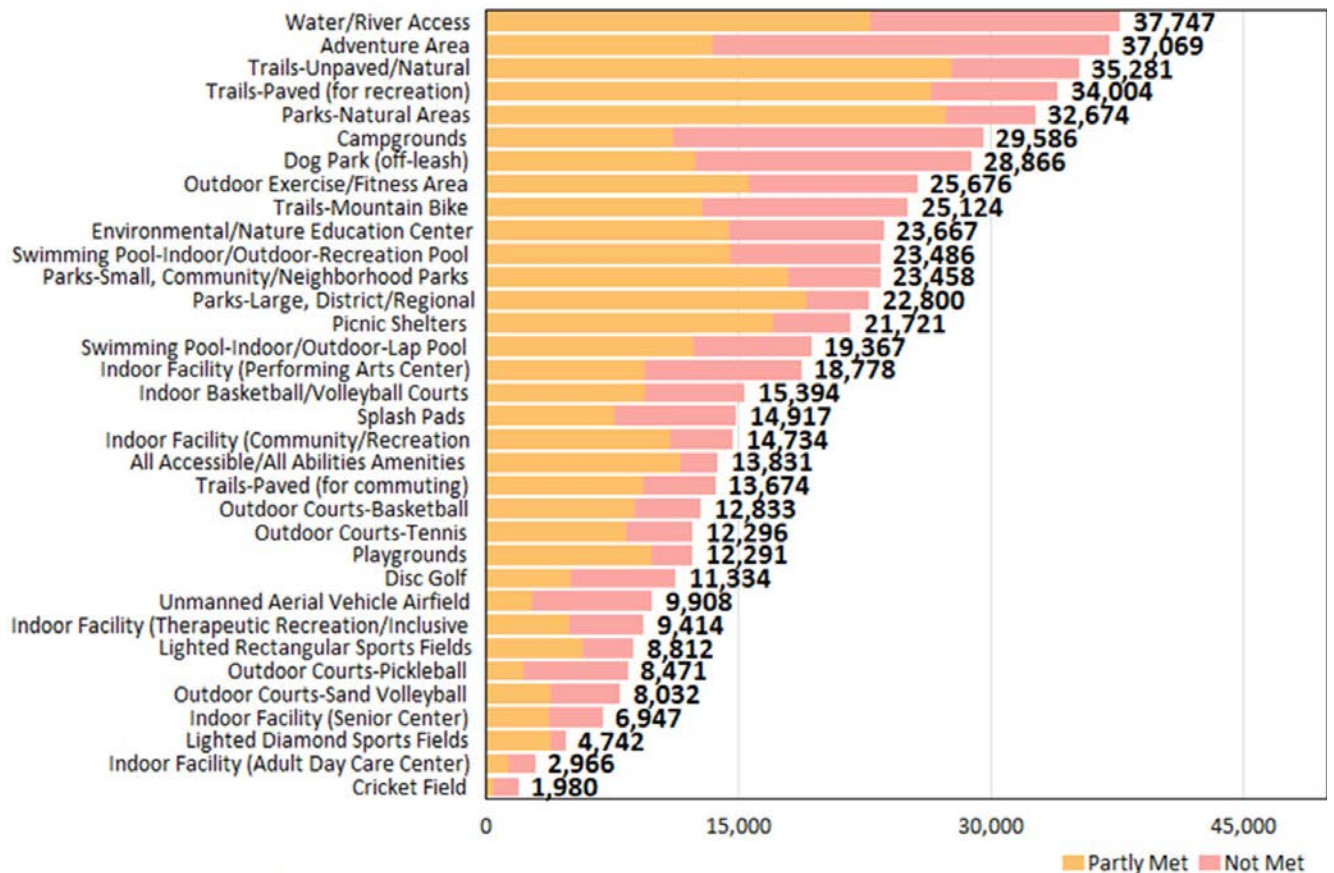
Countywide surveys and market analysis show that Loudoun County residents want more facilities for accessing nature, waterways and trails. As the County's population grows, so will the urgency to protect and expand the Countywide network of connected natural areas and trails.

The Linear Parks and Trails Plan is one of several plans that will position the County to meet these needs and maintain the high quality of life that residents cherish,

by protecting and expanding the County's natural, cultural and recreational assets. This chapter examines local and national trends in recreation use and trail planning that are relevant to this Plan.

### LOUDOUN COUNTY PARKS, RECREATION AND COMMUNITY SERVICES SURVEY

The Linear Parks and Trails Plan was developed concurrently with the Parks, Recreation and Community Services Master Plan, which administered a statistically valid countywide survey to determine priorities for parks, recreation



**Figure 6:** Estimated Number of Households Whose Needs for Facilities Are Partly Met or Not Met

Source: Loudoun County Parks, Recreation and Community Services System Master Plan Needs Assessment Survey 2020 - ETC Institute



facilities, program offerings, and special event offerings in Loudoun County. The survey was administered during the COVID-19 pandemic.

Survey administrators developed a Priority Investment Rating (PIR) that equally weighs (1) the importance that residents place on certain facilities and programs, and (2) the number of residents who express unmet needs for the facility/program. Based on this Priority Investment Rating approach, the top four facilities (of 34 total options) were:

1. Trails – Paved for Recreation (PIR=189)
2. Trails – Unpaved/Natural (PIR = 187)
3. Parks – Natural Areas (PIR=187)
4. Water/River Access (PIR=159)

The survey results demonstrate the importance of the Linear Parks and Trails Plan and the opportunity for the County to coordinate its linear park and trail and park and recreation planning in order to fill the gap between County residents' demand and the current availability and accessibility of trails, natural areas and waterways.

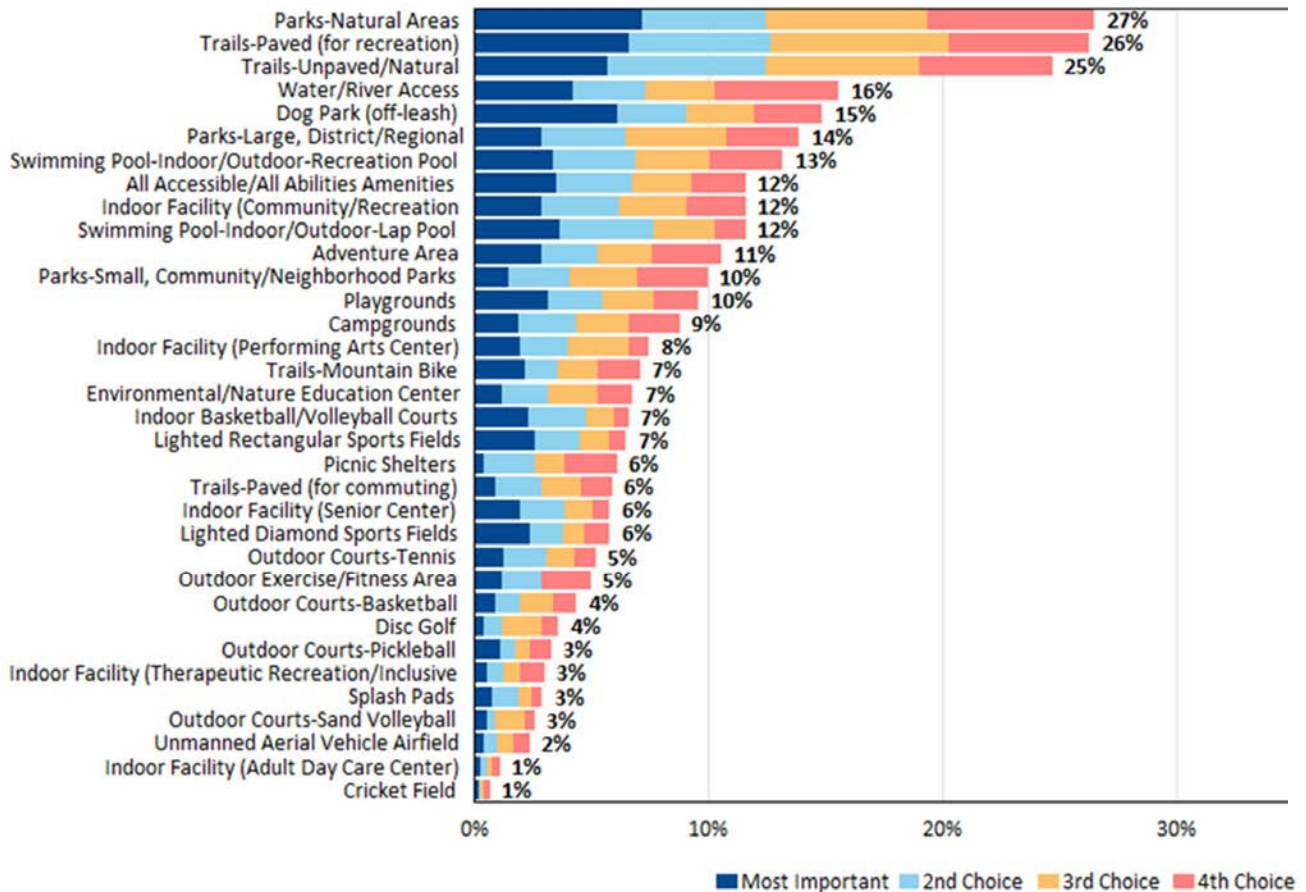


Figure 7: Facilities Most Important to Households

Source: Loudoun County Parks, Recreation and Community Services System Master Plan Needs Assessment Survey 2020 - ETC Institute

## TREND ANALYSIS

### **LOUDOUN COUNTY SPORTS AND LEISURE MARKET POTENTIAL ANALYSIS**

Data from ESRI's 2020 Sports and Leisure Market Potential for the County and state show that Loudoun County residents are recreating more than both the state and national averages.

Table 1 shows the level of participation in various recreational activities by County and statewide residents. Market Potential Index (MPI) data measures the probable demand for a product or service in a certain geography. The MPI shows the likelihood that an adult resident of the area will participate in certain activities when compared to the national average. The national average is 100; therefore, numbers below 100 would represent a lower than average participation rate, and numbers above 100 would represent higher than average participation rate. MPI data also provide a comparison between the estimated percentage of the U.S. population and local population that participate in each activity.

High index numbers (>100) are significant because they demonstrate that there is a greater potential that residents will participate in programs and have a need for related facilities. The MPI and estimated participant numbers are helpful tools for estimating resident participation in identified activities and projecting the need

for facilities in the future, although the number of expected adults is not precise and excludes the important youth demographic.

The activities in Table 1 are sorted by the highest number of adults in Loudoun County who have participated in these activities in the past 12 months. It's important to highlight that almost all activities have participation rates higher than the national average (MPI greater than 100). Virginia's MPIs are also high, but not close to the County levels, which have a fair number of activities with MPIs well over 130. The only activities with participation rates below the national average are hunting with a shotgun, hunting with a rifle, and fresh water fishing (MPIs of 63, 66, and 96, respectively).

Walking for exercise is the most popular activity in Loudoun County, with almost 30% of adults in households reporting to have participated in that activity. Other activities with high participation rates include swimming, jogging/running, hiking, weight lifting, and road bicycling.

Highlighted rows in Table 1 indicate activities that can be served by the recommendations of the Linear Parks and Trails Plan.

Table 8: Recreation and Participation

PRODUCT/CONSUMER BEHAVIOR	LOUDOUN COUNTY			VIRGINIA	
	EXPECTED NUMBER OF HOUSEHOLDS	PERCENT	MPI	PERCENT	MPI
Walking for exercise	87,952	29.4%	124	25.3%	107
Swimming	61,221	20.5%	134	16.9%	111
Jogging/running	54,794	18.3%	150	13.8%	113
Hiking	49,037	16.4%	135	13.8%	114
Weight lifting	44,775	15%	146	11.6%	113
Bicycling (road)	37,600	12.6%	136	10.3%	111
Bowling	33,782	11.3%	129	9.2%	105
Yoga	33,651	11.3%	137	9.2%	112
Golf	32,539	10.9%	136	9%	113
Fishing (fresh water)	31,384	10.5%	96	11.3%	103
Basketball	28,686	9.6%	122	8.2%	105
Aerobics	26,977	9%	128	7.5%	106
Canoeing/kayaking	19,626	6.6%	103	7.1%	112
Bicycling (mountain)	17,454	5.8%	143	4.6%	112
Soccer	16,813	5.6%	134	4.3%	103
Boating (power)	16,447	5.5%	129	4.7%	110
Tennis	15,461	5.2%	144	4.1%	114
Backpacking	14,735	4.9%	145	3.9%	116
Baseball	14,646	4.9%	122	4.1%	101
Ping pong	14,600	4.9%	142	3.8%	111
Target shooting	14,249	4.8%	106	4.7%	104
Frisbee	14,189	4.7%	128	4.1%	110
Football	14,161	4.7%	102	4.7%	102
Fishing (salt water)	12,638	4.2%	107	4.2%	105
Skiing (downhill)	11,902	4%	162	3%	123
Volleyball	11,760	3.9%	116	3.4%	101
Zumba	11,713	3.9%	120	3.3%	100
Pilates	10,887	3.6%	143	2.9%	115
Ice skating	10,468	3.5%	124	3.2%	113
Softball	9,085	3%	107	2.8%	98
Motorcycling	8,583	2.9%	101	2.9%	102
Hunting with rifle	7,813	2.6%	66	4.1%	104
Horseback riding	7,434	2.5%	108	2.4%	106

Source: ESRI Business Analyst Sports + Leisure Market Potential Report and Recreation Expenditures Report 2020

## TREND ANALYSIS

**Table 9: Top 10 Outdoor Recreation Activities by Participation in Northern Virginia Region**

ACTIVITY	% REGIONAL HOUSEHOLDS
Visiting natural areas	79
Walking for pleasure	76
Visiting parks (local, state & national)	65
Driving for pleasure	60
Swimming/outdoor pool	54
Sunbathing/relaxing on a beach	47
Visiting historic areas	45
Viewing the water	42
Swimming/beach lake river (open water)	36

Source: Virginia Outdoors Plan 2018

**Table 10: Outdoor Recreation Opportunities Listed as Most Needed by Northern Virginia Regional and Statewide Survey Respondents**

ACTIVITY	%	
	REGION	STATE
Natural areas	53	54
Parks	51	49
Trails	46	4
Water trails	39	43
Historic areas	34	39
Playing fields, sports and golf facilities	28	22

Source: Virginia Outdoors Plan 2018

## STATE AND REGIONAL RECREATION TRENDS

### VIRGINIA OUTDOORS PLAN

Outdoor recreation is an integral part of the lives of Virginia's residents. With more miles of the Appalachian Trail than any other state and almost 62% of the Commonwealth recorded as

forested, Virginia's pristine and diverse landscapes contribute to a high quality of life and are some of the reasons for visitation and livability.

However, more residents and higher visitation rates translate to more stress on parks, natural areas, sensitive landscapes and wildlife habitats, more wear-and-tear and higher maintenance costs, and more crowding and competition for access to trails and recreation facilities.

The Virginia Outdoors Plan 2018, which serves as the Statewide Comprehensive Outdoor Recreation Plan (SCORP), indicates that at least 92% of Virginians participate in some form of outdoor recreation. The report shows that respondents to the 2017 Virginia Outdoors Demand Survey said the main reasons for their participation in outdoor recreation included physical activity/exercise (66.9% of responses), experiencing nature (59.3%), and taking a break from routine/reducing stress (58%).

The top outdoor recreation activities in the state for 2017 were visiting natural areas, driving for pleasure, and walking for pleasure. It's important to note that visiting natural areas has only recently taken first place after walking for pleasure was on top of the charts from 2006 until 2017. This information complements data from the report that shows that

almost half of the residents in both urban and rural areas think natural areas and parks are the most needed outdoor recreation opportunities.

Loudoun County is part of the Northern Virginia region, which includes three other counties (Arlington, Fairfax, and Prince William), the cities of Alexandria, Fairfax, Falls Church, Manassas and Manassas Park, and the incorporated towns of Herndon, Leesburg, Purcellville, Vienna and Dumfries. This region is home to almost a quarter of the state's population and is also the most culturally diverse of the Commonwealth. The region is rich with a variety of landscapes that include the Blue Ridge Mountains and Piedmont.

Table 92 shows the top outdoor recreation activities for the residents of the region. Top of the list are visiting natural areas, walking for pleasure, and visiting parks. This insight goes hand in hand with what these residents noted as most needed outdoor recreation opportunities shown in Table 103. Again, the regional demand for access to natural areas and trails supports the work of the Linear Parks and Trails Plan and suggests the importance of regional collaboration.

## ECONOMIC IMPACTS OF RECREATION

The outdoor recreation industry has a small, but significant role in the economy of the State of Virginia. According to the Outdoor Industry Association, in 2019, outdoor recreation in Virginia generated over \$9.3 billion, which accounts for 1.7 percent of the state's gross domestic product (GDP). This was up almost three percent from 2018. This added value to the state's GDP ranks Virginia's outdoor recreation industry as the seventeenth largest in the country. In 2019, outdoor recreation also provided more than 120,000 jobs in the state, which is about 2.3 percent of Virginia's employment. This amounts to about \$4.7 billion in wages and salaries, and \$1.2 billion in state and local tax revenue.

In 2017, Virginia's state parks attracted visitors who spent an estimated \$226.1 million, and almost half of that amount was from out-of-state visitors. The 2017 Virginia State Park Economic Impact Report claims that more than 3,500 jobs were supported through these visitations.

The Virginia Outdoors Plan states that per-capita spending on parks and recreation in Loudoun County is about \$100, almost \$30 more than the statewide average.

According to the ESRI Business Analyst data shown in Table 11,

## TREND ANALYSIS

Virginians spend over \$1.37 billion yearly on recreational vehicles and fees, and sports, recreation, and exercise equipment. Residents of Loudoun County spend nearly \$100 million. A closer look into the average amount spent per person reveals that residents of Loudoun County spend nearly twice as much on recreation than the average Virginian. Expenditures are highest for exercise equipment and gear; game tables; hunting and fishing equipment; and camp fees.

ESRI's Sports and Leisure Market Potential 2020 data in Table 12 shows spending levels on sports and recreation equipment over a year period are higher in Loudoun County than the national average (MPIs over 100). The MPI grows higher for the larger spending categories. This shows that Loudoun County residents are more likely than their fellow Americans or Virginians to spend on recreation equipment, even when the cost is higher than \$250.

**Table 11: Recreation Expenditures**

	LOUDOUN COUNTY			VIRGINIA	
	SPENDING POTENTIAL INDEX	AVERAGE \$ SPENT PER PERSON	TOTAL	AVERAGE \$ SPENT PER PERSON	TOTAL
Recreational Vehicles and Fees	189	\$295	\$41,387,355	\$181.10	\$598,797,970
Docking and Landing Fees for Boats and Planes	201	\$20	\$2,874,746	\$12.01	\$39,723,819
Camp Fees	192	\$119	\$16,754,542	\$71.25	\$235,580,678
Payments on Boats/Trailers/Campers/RVs	181	\$107	\$15,073,661	\$70.10	\$231,770,937
Rental of Boats/Trailers/Campers/RVs	197	\$48	\$6,684,406	\$27.74	\$91,722,536
Sports, Recreation and Exercise Equipment	207	\$419		\$234.96	\$776,894,848
Exercise Equipment and Gear, Game Tables	197	\$130	\$18,202,532	\$76.68	\$253,524,723
Bicycles	212	\$66	\$9,219,358	\$35.42	\$117,128,994
Camping Equipment	219	\$49	\$6,827,200	\$25.58	\$84,576,207
Hunting and Fishing Equipment	205	\$128	\$17,962,588	\$72.62	\$240,115,184
Winter Sports Equipment	224	\$11	\$1,586,261	\$5.76	\$19,048,540

Source: ESRI Business Analyst Recreation Expenditures Report 2020

**Table 12: Amount Spent on Sports/Recreation Equipment**

	LOUDOUN COUNTY		VIRGINIA	
	EXPECTED NUMBER OF ADULTS/HHS	% MPI	% MPI	MPI
\$1-99	19,111	6.4%	109	6%
\$100-\$249	21,613	7.2%	129	6.1%

Source: ESRI Business Analyst Sports + Leisure Market Potential Report and Recreation Expenditures Report 2020

## NATIONAL RECREATION TRENDS

Supplementing input from Loudoun County residents, a study of national recreation trends is helpful for understanding changing needs and informing decisions about the activities that may need additional accommodation in the future. Information released through the Sports and Fitness Industry Association’s (SFIA) 2020 (based on data collected in 2019) Topline Report on Sports, Fitness, and Leisure Activities reveals that the most popular sport and recreational activities nationwide include walking for fitness, treadmill, free weights, running/jogging, and hiking.<sup>1</sup>

The report also highlights the lowest point of inactivity recorded in the past six years in America. Nevertheless, the difference in the level of inactivity between different income groups is still a matter of

concern, with households earning less than \$25,000 per year showing an increasing inactivity rate over the past five years.

## GENERAL FITNESS TRENDS

According to the SFIA report, fitness sports participation rates have been the highest for five consecutive years, with the participation rate increasing yearly throughout that time frame. In 2019, 67.3% of people indicated they had participated in some form of fitness activity; the second activity category (outdoor sports) came in with 50.7%.<sup>2</sup>

The most popular fitness activity by far is fitness walking, which had over 111 million participants in 2019.<sup>3</sup> Over five years, the activities that grew most rapidly were rowing machine (up 5.5%), kettle bells (up 4.7%), aquatic exercise (up 4.3%), cross-training style workouts (up 3.8%) and yoga (up 3.8%).<sup>4</sup>

<sup>1</sup> Sport & Fitness Industry Association (SFIA) Sports, Fitness, And Leisure Activities Topline Participation Report 2020, pages 22-34

<sup>2</sup> Ibid, page 8

<sup>3</sup> Ibid, page 23

<sup>4</sup> Ibid, page 22-24

## TREND ANALYSIS

### OUTDOOR RECREATION TRENDS

The second most popular of activity groups was Outdoor Sports, with more than 50.7% of people reporting that they have participated in such activities in 2019. Outdoor recreation activities encourage an active lifestyle, can be performed individually or with a group, and are not limited by time constraints. In 2019, the most popular activities in the outdoor recreation category included hiking (49.6 million), road bicycling (39.3 million), freshwater fishing (39.1 million) and camping (28.1 million).<sup>5</sup>

### NON-PARTICIPANT INTEREST

The SFIA report also includes a chapter that shows which sports interest non-participants. The first part of this section shows that for most age segments, fishing, camping, biking, and hiking were aspirational activities. Swimming for fitness was also a popular aspirational activity for groups older than 25 years. When activities were viewed by income, fishing, camping, bicycling, and swimming were all top desired activities for all income groups. Fishing and camping were more popular among lower-income groups, while bicycling and swimming were more popular among higher-income groups.

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<sup>5</sup> Sport & Fitness Industry Association (SFIA) Sports, Fitness, and Leisure Activities Topline Participation Report 2020, page 22-24

### NATIONAL TRENDS IN PARKS AND RECREATION

The National Recreation and Park Association (NRPA) looks annually at hot topics and trends that parks and recreation departments may see become a focus in their localities in the coming year, citing those elements in the annual Top Trends in Parks and Recreation Report. The 2020 list includes some topics that may apply to Loudoun County.

### CLIMATE CHANGE IMPACTS

The NRPA states that certain areas will face climate crises from extreme heat. Future heat waves are predicted to bring about temperatures that will exceed 115 degrees in many U.S. cities, and the NRPA states that the “unsustainable future is not so far away.”<sup>6</sup> According to numerous experts, there are plenty of challenges for parks and open space that will arise due to extreme heat, but there are also plenty of opportunities that these spaces can offer when facing climate change. Trees and green infrastructure are recognized not only for their recreational uses, but also for their importance to health and well-being, specifically in a climate-changing world.

The NRPA reiterates that parks provide natural infrastructure

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<sup>6</sup> National Recreation and Park Association (NRPA). Top Trends in Parks and Recreation 2020



that help communities reduce urban heat island effect and mitigate the impacts of extreme heat. They also predict that new parks, linear green spaces and trail corridors will be designed to cool communities, as well as to provide recreational benefits.

## TECHNOLOGY

Another theme that continues to prevail in the NRPA's trends report is technology. For the past three years, the Association has continued to feature and discuss advancements that present parks and open spaces with opportunities and challenges.

In 2020, their website discussed Micromobility Devices in Parks and how “mobility culture” is profoundly impacting urban design and personal transportation. The traditional ways that people would access parks have been upended.<sup>7</sup> This in turn has affected park planning and design standards. E-scooters, e-mountain bikes and other motorized personal mobility devices that may be deemed bothersome to some administrators and visitors have opened new recreation opportunities in parks. This has triggered different reactions across the nation, with some choosing to geofence (limiting mobile connectivity) their parks, others that choose to be indifferent, and others that have embraced this new technology and

are even developing amenities like shared bicycle docks.

Other technologies that have been cited include beacon counters, geofencing and drones. These technologies have shown their capacity to work as monitoring systems in parks thanks to their simplicity, relatively low cost, and countless features and possibilities. Many parks are free and without staff, and this technology can monitor and count how many people are using the parks and trails. This data can help administrators understand what the most popular areas are, times of day, etc.

With advances in technology, reduced prices and greater public acceptance, drones are presenting some form of tech recreation opportunities; however, this raises concerns over privacy intrusions, safety violations, and disruptive activity. The NRPA predicts that park and recreation agencies will embrace the use of technology for a variety of purposes.

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## IMPACT OF COVID-19

The Coronavirus (COVID-19) pandemic could have a lasting impact on people and their demand for nature and outdoor recreation. Parks and trails act as critical infrastructure, serving physical, mental, and emotional needs, and early signs indicate that the pandemic has significantly increased public demand for

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<sup>7</sup> *Ibid*

## TREND ANALYSIS

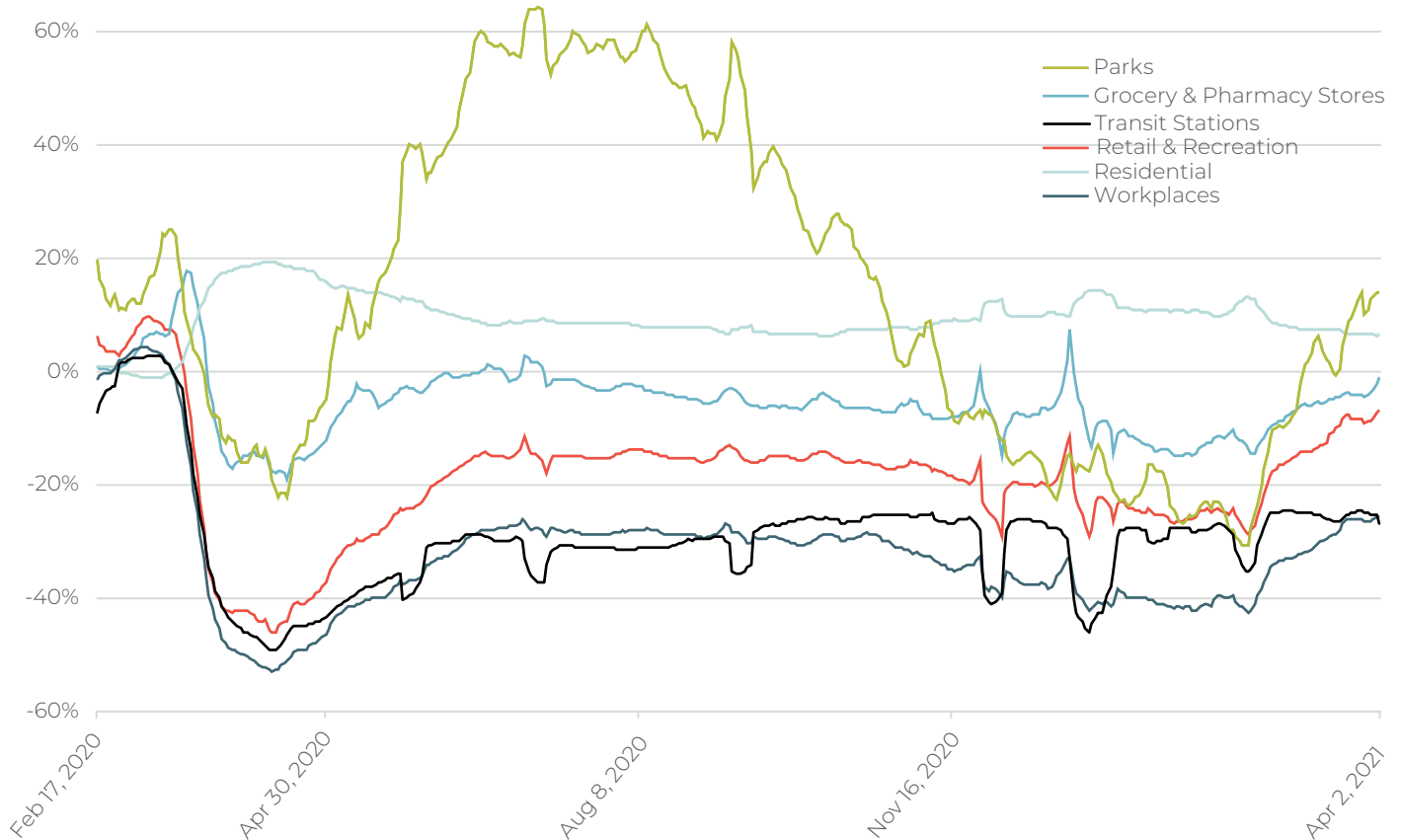
accessible open space and trail networks.

For Loudoun County and other jurisdictions, opportunities to respond to the lingering effects of the pandemic include:

- Flexible, adaptive and expansive outdoor spaces for classes and programming that cannot safely be provided indoors
- Trails to fill gaps in public transportation
- Expanding access and resources in high-density areas and raising awareness of under-utilized resources;
- Socially distanced outdoor activities that alleviate social isolation for vulnerable populations

- Free and easy access to high-quality nature and trails for youth and for underserved populations facing the inability to 'pay to play'

Figure 83 shows movement trends throughout the country from February 17, 2020 to April 2, 2021 as collected in aggregated, anonymized sets of data from Google users. It shows that parks have experienced the most significant change in movement trends relative to a pre-pandemic baseline, with park visitation during the summer of 2020 increasing by about 60% compared to previous years. Figure 94 data from Apple Maps shows how route requests for walking and biking have



**Figure 8:** National Google Mobility Trends Relative to Pre-Pandemic Baseline

Source: Google Mobility Trends, Accessed 04/06/2021

changed compared to pre-pandemic levels. In Loudoun County, requests for walking directions have increased by 98% on average.

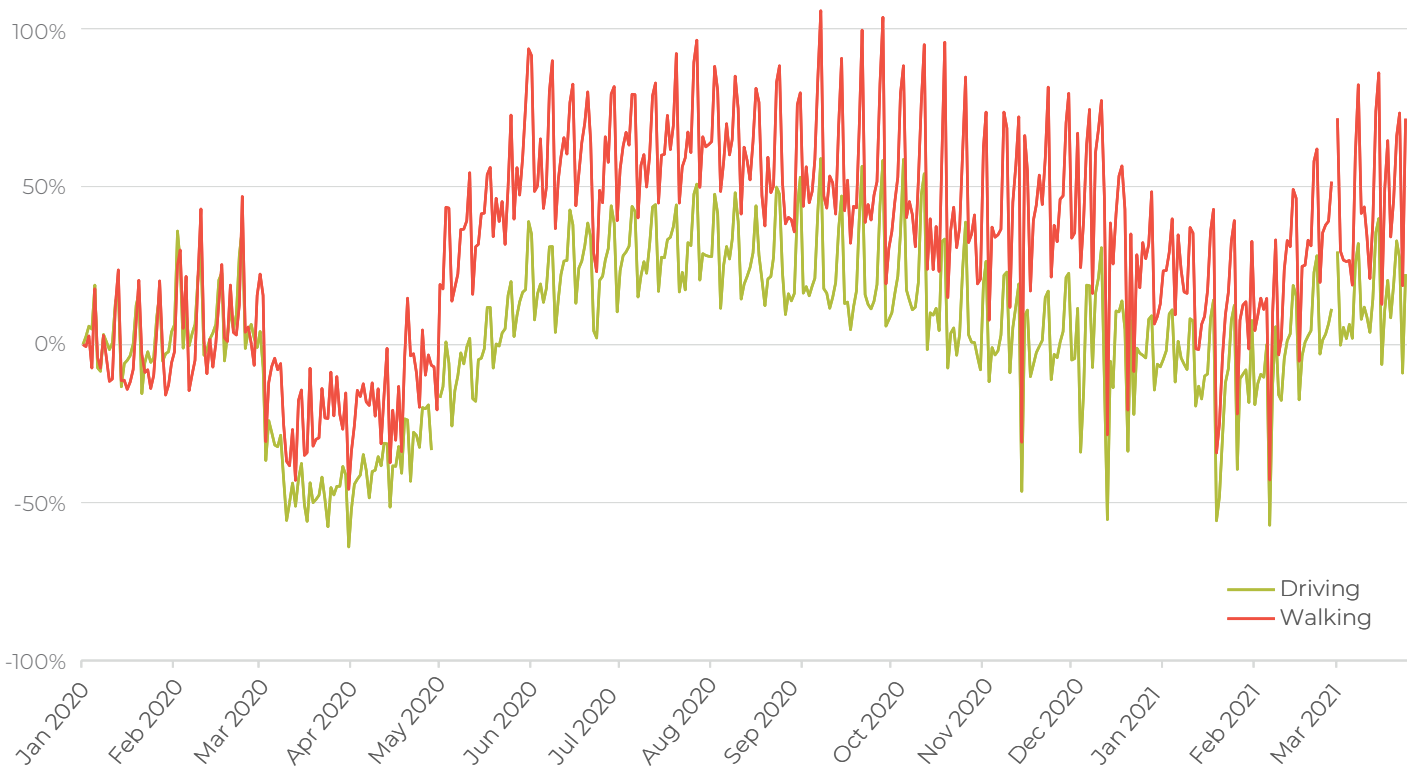
The Sports and Fitness Industry Association (SFIA) survey of membership in June of 2020 showed that 72% of respondents expect individual sports and 66% anticipate outdoor sports to be the two top product categories to return to health post-COVID-19. Only 37% of respondents anticipate that youth sports will return in 2021 or later.<sup>8</sup> The NRPA Youth Sports at Park and Recreation Agencies report also stated that 90% of

park and recreation professionals report that the pandemic had a significant detrimental impact on their agencies' youth sports programming during the summer and fall of 2020, suggesting a need for parks and recreation agencies to reach youth in new ways.<sup>9</sup>

Combined, the recreation trends and County surveys point to the importance of building out Loudoun County's system of linear parks and trails to meet residents' needs, promote health and wellness, and protect the County's landscapes and quality of life.

8 Sports & Fitness Industry Association (SFIA). COVID-19 Industry Impact Report June 2020 Results

9 National Recreation and Park Association (NRPA). 2020 Youth Sports at Park and Recreation Agencies.



**Figure 9:** Loudoun County Apple Maps Routing Requests Relative to Pre-Pandemic Baseline

Source: Apple Maps, Accessed 04/06/2021



# 05 PUBLIC PROCESS

**ENGAGEMENT STRATEGY**

**COMMUNITY FEEDBACK**

**FOCUS GROUP DISCUSSIONS**

## PUBLIC PROCESS

### ENGAGEMENT STRATEGY

The planning process happened in the midst of the COVID-19 pandemic, necessitating a creative and multi-pronged approach to public engagement. The County and planning team developed an engagement strategy that included:

- » 1 volunteer trail mapping exercise
- » 1 project website
- » 4 online surveys
- » 4 virtual public webinars — offered midday and in the evening, with webinar recordings posted online
- » 8 virtual focus group discussions

Additionally, the consultant team met with the Linear Parks and Trails

Subcommittee throughout the process for insight and guidance on the direction of the plan.

Though the COVID-19 pandemic limited engagement sessions to a mostly virtual setting, residents and stakeholders of Loudoun County brought energy and rigor to the community feedback process for the Countywide Linear Parks and Trails System Plan.

Discussions and feedback guided this plan's development and helped to ensure that all elements — from the understanding of system gaps to the plan's recommended strategies and design guidelines — reflect the experiences and vision of the Loudoun County public.

#### ONLINE SURVEYS

Served to inform the plan on existing obstacles, most frequent uses, demographics, user types, trail design and experiential preferences.

**2,352**  
RESPONDENTS

\*total respondents for all surveys

#### PUBLIC WEBINARS

Afforded transparency for the planning process and informed residents of project milestones and proposals in need of public feedback and input.

**276**  
PARTICIPANTS

\*total participants in four public webinars

#### FOCUS GROUPS

Provided user-specific insight on considerations for trail design, access and amenity needs, and strategies for long-term trail and park sustainability and equity.

**33**  
PARTICIPANTS

**Figure 10:** Summary of Primary Engagement Strategies and Participation

### VOLUNTEER MAPPING

An interactive opportunity for residents to fill gaps in County trail data and contribute to an inventory of the County’s current public trail system.

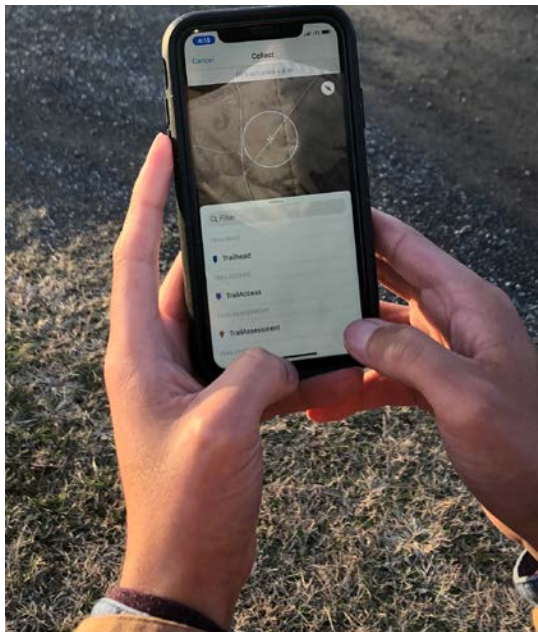
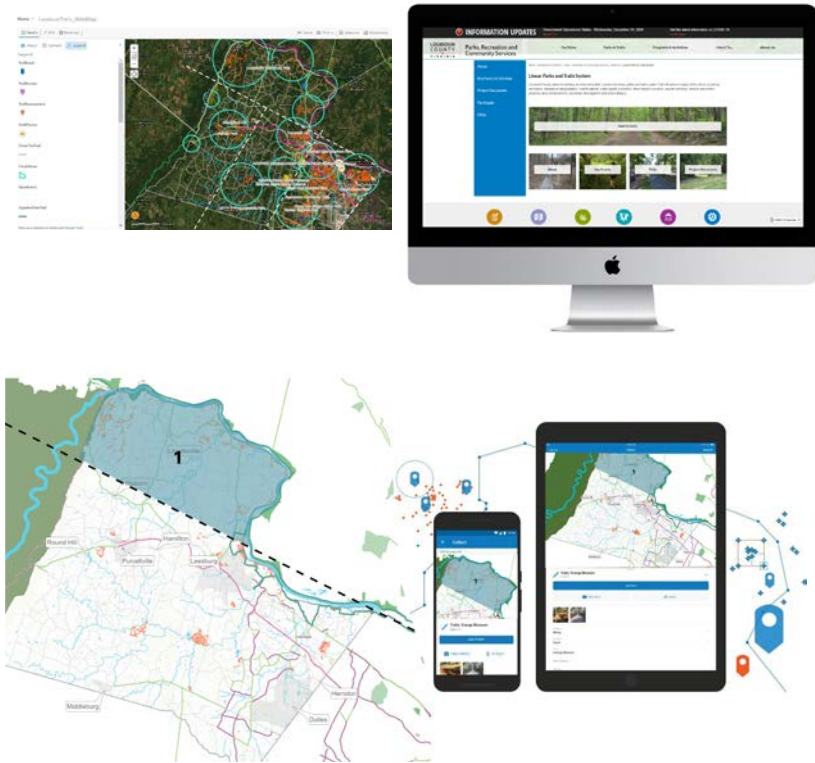
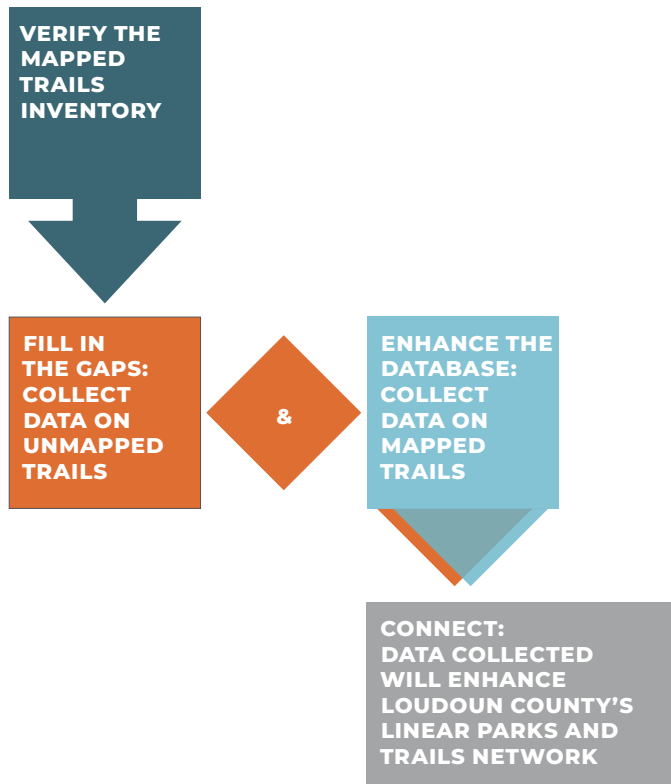


Figure 11: Images and Takeaways from the Volunteer Trail Mapping Effort

## PUBLIC PROCESS



**Figure 12:** Inclusive Stakeholder Engagement - Bridging the Digital Divide



**Figure 13:** Goals of the Volunteer Efforts

## COMMUNITY FEEDBACK

### VOLUNTEER TRAIL MAPPING EXERCISE

The planning team asked volunteers to help identify missing trail information by:

1. Identifying and mapping missing public trails, and
2. Collecting existing public trail information, such as trail surface type, photographs, width, and parking access.

Volunteers used the ArcGIS Collector app with County-specific map layers to input trail data, whether from the comfort of the volunteer's home or out on the trails. Data collected was used to update the County's trails data, inform a series of gap analyses, and build a framework for potential linear park and trail connections.

This exercise offered a hands-on way for County residents to participate in the planning process. It was also an invaluable opportunity for the planning team to become familiar with the Loudoun County landscape and to benefit from the expertise of linear park and trail users and stakeholders.



## SURVEY NO. 1 — BIG-PICTURE SYSTEM VISION & GOALS

Survey 1 introduced Loudoun County residents to the project vision statement and asked for their big-picture vision and priorities for the linear park and trail system.

### KEY TAKEAWAYS

- » **Survey respondents' highest priority was countywide connectivity.** This drove the plan's focus on a "backbone" system of interconnected linear park and trail corridors that cross the entire county and to which secondary and tertiary trail connections can be built out over time.
- » **Within the project vision statement, the concepts that resonated most with respondents were connectivity and natural resource protection.** The plan seeks to place linear parks and trails within protected stream

and habitat corridors to advance these dual public priorities.

- » **Funding and public access are challenges to buildout of an interconnected, countywide linear park and trail system.** Public-private partnerships, flexible real estate strategies, volunteerism, continuous engagement, and community ownership in the quality of linear parks and trails are crucial for short-term implementation and long-term success.

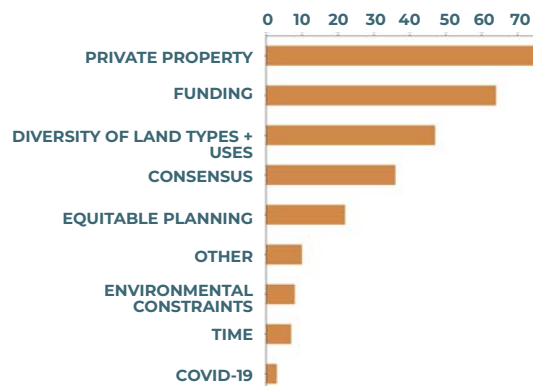
SURVEY 1

608

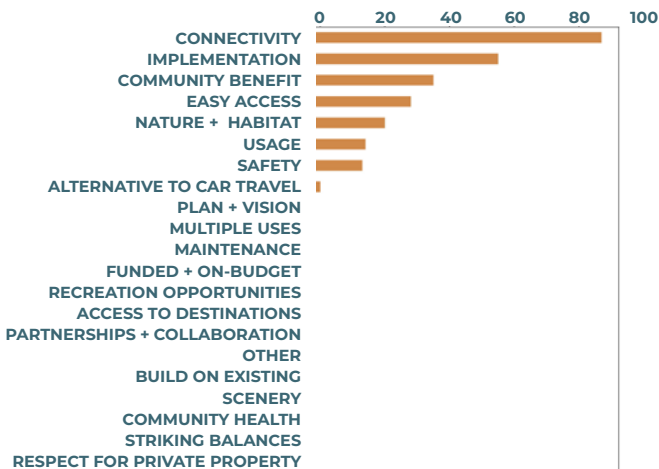
RESPONDENTS AS OF JUNE 2021

95% confidence level  
4% margin of error

### WHAT IS THE PROJECT'S BIGGEST CHALLENGE?



### WHAT WILL DEFINE SUCCESS FOR THE LINEAR PARKS & TRAILS PLAN?



### WHAT IS THE MOST IMPORTANT WORD TO YOU IN THE PROJECT STATEMENT?

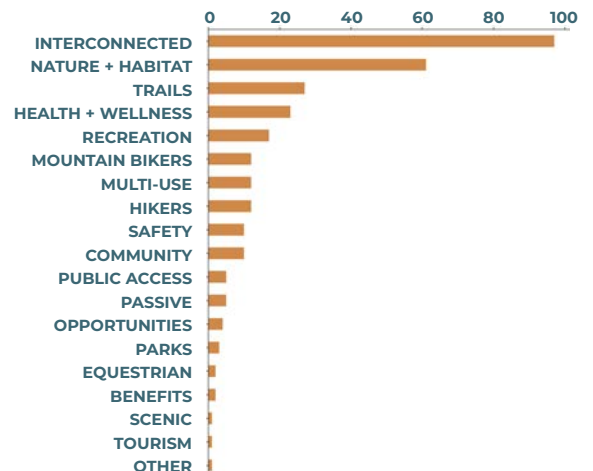


Figure 14: Results from Survey 1: Big-Picture System Vision and Goals

## PUBLIC PROCESS

### SURVEY 2

# 1,329

RESPONDENTS  
AS OF JUNE 2021

95% confidence level  
3% margin of error

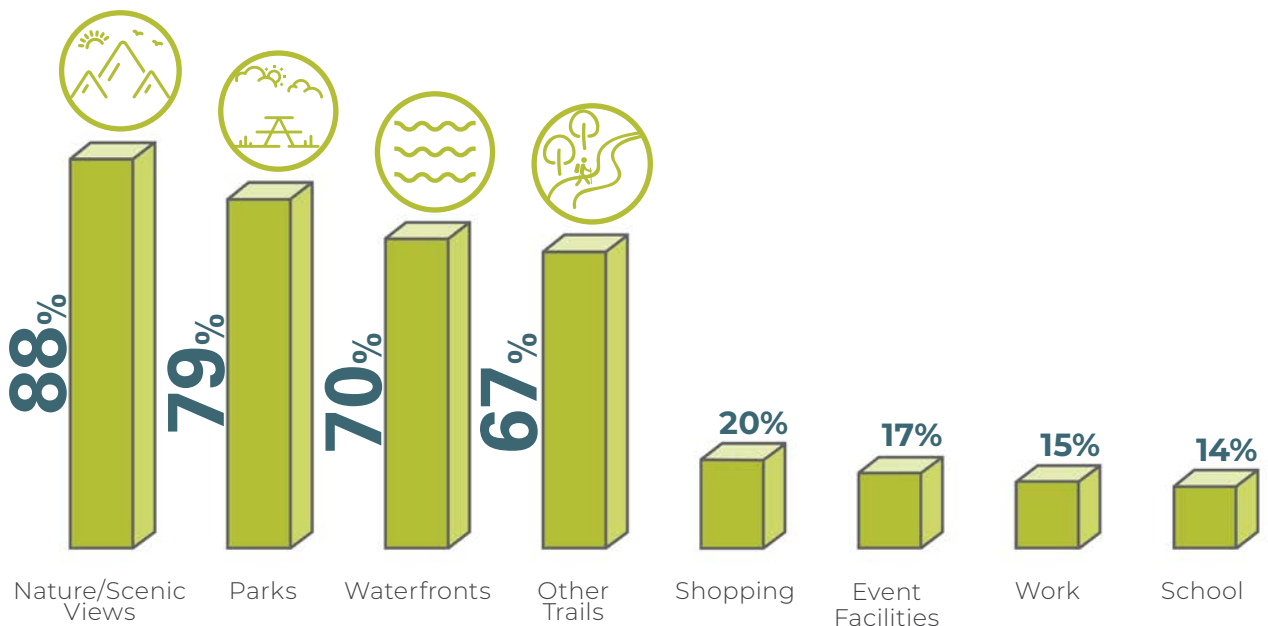
## SURVEY NO. 2 — EXISTING & FUTURE SYSTEM USE

Survey 2 results offered insight into residents' existing and desired future use of Loudoun County's linear parks, trails and blueways.

### KEY TAKEAWAYS

- » Results again emphasized the importance of systemwide interconnectivity and access.
  - » While most County residents have access to a car, respondents would prefer to access linear parks and trails by walking or biking rather than driving to trailheads or parks.
  - » Current barriers to linear park and trail use include insufficient number and proximity of trails, insufficient parking, lack of available trail information, and lack of trail connections to local and regional destinations.
- » The primary barrier to blueway trail use is lack of access to a canoe or kayak.
  - » Respondents were willing to travel further for linear parks and trails in high-quality protected natural areas; these experiences and blueway trails are seen as destinations unto themselves.
  - » People want closer-to-home access to some of the more everyday natural surface trails and loops, which ideally can also help users to connect to those special natural-area destinations.
  - » Equestrian trails and mountain biking trails were less broadly popular, but respondents who wanted access to those facilities were willing to travel a greater distance to reach them, suggesting a need to provide high-quality parking and trailhead areas designed for those users.

## WHAT TYPES OF DESTINATIONS WOULD YOU LIKE TO ACCESS BY WAY OF LOUDOUN COUNTY'S PUBLIC TRAILS?



## SURVEY NO. 3 — FRAMEWORK PLAN FEEDBACK

Survey 3 invited the public to provide open-ended feedback on the draft Linear Parks and Trails Framework Plans for Eastern and Rural Loudoun.

### KEY TAKEAWAYS FOR EASTERN LOUDOUN FRAMEWORK PLAN

- » **Responses to the Eastern Loudoun Framework Plan echoed support for connections to larger trail networks such as the Potomac Heritage National Scenic Trail and the need for trails to fill gaps between communities and area parks.**
- » Respondents also expressed support for:
  - **Growth of the system to match the current and future demand of Eastern Loudoun’s growing population.**
  - **Linear parks and trails that support nodes of neighborhood economic activity.**
  - **Linear parks and trails with a variety of loop sizes to accommodate different users.**
  - **Allowing certain HOA lands to remain as dedicated open space for habitat protection.**
  - **The potential for the linear park and trail system to improve pedestrian safety in Eastern Loudoun, and the importance of safe bicycle and pedestrian connections.**

### RECOMMENDATIONS

- “Interconnected trails are important to enable safe, non-motorized travel, commuting, and recreational activities. It’s a huge positive.”
- “It is very important for our health and for the wildlife to keep some green areas as nature preserves. Forests are necessary for clean air, and clean water, and as home for wildlife.”
- “Adding missing trail connections between the various HOA community owned trails is desirable.”

### KEY TAKEAWAYS FOR RURAL LOUDOUN FRAMEWORK PLAN

- » **Rural Loudoun Framework Plan responses also expressed support for strong system connections to existing trail networks, parks, natural areas and tourism destinations.**
- » Respondents also expressed support for:
  - **Adequate trailhead parking to ensure all County residents can travel to and enjoy linear parks and trails in rural Loudoun.**
  - **Economic development benefits that result from increased connectivity, diversified industry and tourism.**
  - **Broader access for equestrians.**

### RECOMMENDATIONS

- “The LPAT [system] should go near sites of interest, wineries, towns, etc.”

SURVEY 3

272

RESPONDENTS  
AS OF JUNE 202195% confidence level  
3% margin of error

### SURVEY 4

# 143

RESPONDENTS  
AS OF JUNE 2021

95% confidence level  
8% margin of error

- “Trailhead parking lots and restrooms are desirable for trails in rural parts of the county. This will allow access to the rural trails by individuals who live beyond walking distance to the trails.”
- “Parking for horse trailer access is key to preserving the equestrian heritage of Loudoun County.”

## SURVEY NO. 4 — HOMEOWNERS ASSOCIATIONS & PUBLIC TRAIL INTEREST

Survey 4 focused on outreach to homeowners associations (HOAs) to gauge residents’ interest in, or opposition to, the future provision of publicly accessible linear parks and trails on private HOA land.

### KEY TAKEAWAYS

- » **Most respondents expressed strong support for connections between HOA trails and the linear park and trail system.**
- » **Most respondents are open to negotiating public access to trails on private HOA land.**
- » Respondents expressed the importance of linear park and trail design processes and public access negotiations that:
  - **Honor the wishes and rights of private property owners.**
  - **Preserve and enhance wildlife habitat and water quality.**
  - **Consider public support for the long-term maintenance of public linear parks and trails on private HOA land.**

### RECOMMENDATIONS

- “Nature preserves are key to avoid disappearing endangered plants and animals. The animals are now looking for a refuge in our home backyards because of overdevelopment in the Loudoun area. Please consider a place for wildlife too.”
- “Really excited about having a more connected trail system. We have some great trails already and hope that we can persevere with additional trails and connections. Especially interested in connections between W&OD and (the) metro.”
- “Please respect the wishes of private property owners. Both for those who support public access to their property and those who do not.”

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## FOCUS GROUP DISCUSSIONS

After compiling an extensive list of countywide stakeholders 10 discussions were facilitated with 8 Focus Groups. The stakeholder discussions focused on natural resources, culture and history, economic development, equity and community, blue trails, equestrians, runners, hikers, walkers, nature enthusiasts and cyclists of Loudoun.

These insightful discussions provided the design team with new resources to utilize in the facilitation of planning the linear parks and trails plan. Additionally,

user-based feedback on specific trail experiences, best practices and material details provided a metric for analyzing preliminary trail guidelines which were revised based on Focus Group evaluations.

## NATURAL RESOURCES

This Focus Group found it particularly critical that the future system protect and prepare trail adjacent lands through invasive species removal and management and by providing a substantial buffer between blueways and trails. It was also expressed that the plan and its implementation can serve as an opportunity to bolster wildlife protection throughout the county. Takeaways included:

- Invasive species removal and management, increased buffers between blueways and trails, and determination of protection zones are key priorities
- The implementation of language that suggest regulations to afford protection for water quality and provide guidance for tiered habitats is recommended
- Bolstered wildlife protection is a potential benefit of the provision of guidelines and utilizing recommended natural resources specialists in planning the system

## CULTURE & HISTORY

These stakeholders identified historical sites and figures that are not highlighted in the county's current recreational or educational infrastructure. Incorporating these untapped stories and sites into the plan for Loudoun's linear parks and trails will broaden the historical narrative of the county making it relatable and accessible between demographics. Takeaways included:

- Utilization of the county's active easement land holding organizations can help facilitate the planning process
- "Freedom seeking" stories from the villages of Belmont and Lansdowne are examples of the many untapped stories that can be included in planning trail infrastructure, signage and programming

## ECONOMIC DEVELOPMENT

This Focus Group highlighted the success of Visit Loudoun in creating a network of highly utilized cultural and natural destinations. The need for resources and tool that will enable residents and visitors to understand their proximity to rural businesses, events, farm tours, and wineries while using trails within existing corridors was also acknowledged. Takeaways included:

- The county's clustering of wineries can be utilized as a

## PUBLIC PROCESS

resource for branding precedent and when determining trail destinations

- Very few businesses exist to support equestrians making it an underutilized industry sector
- Residents and visiting trail users need wayfinding via handheld devices as digital gateways of connectivity
- The need to continue to expand broadband in rural Loudoun is a barrier to information on trail access

## EQUITY & COMMUNITY

These stakeholders explained the linear parks and trails plan must work to establish an inclusive trail design and planning process. This process can begin by meeting service level goals especially in communities historically excluded from such planning. Priority should be given to communities without existing trail access. Participants focused on the need for strategies to prevent displacement and creation of resources to support education on historic communities and archeological sites that will lead to increased maintenance and protection for at-risk areas. Takeaways included:

- User opportunities should be provided for those less physically inclined to the ultra-athletic
- There are concerns for increased costs to HOA members due to new

potential connections and public use of private facilities of HOA trails

- Households with transportation limitations, children, seniors, disabilities, and incomes below the poverty level are priority groups when considering an equitable system
- Renter occupied housing and neighborhoods with home-based daycare clusters are also priority groups when developing an equitable system

## BLUEWAY TRAILS

This Focus Group provided insight to obstacles currently faced which negatively impact blueway trail use. Obstacles include the need for improved navigation around dams, and the need for tools to notify users of upstream and downstream destinations and rapids conditions. Takeaways included:

- Access points for several major blueways are via private property and prove prohibitive for some users
- The creation of a multidisciplinary group working with the county to advise and make blueway recommendations can support the need for access rights negotiations between the county and private property owners
- Increased cross-county connectivity can also support cross-state blueway trail connectivity

- There is a strong desire to highlight blueways that are historic destinations
- Additional Potomac access points along the Virginia shoreline will provide a necessary balance between the number of access points along the Maryland boundary
- Blueway trail users have interest in the development of nodes that allow for leaving the path/waterway to participate in camping, grilling, natural viewing
- The formation of new tools and resources for disbursement of blueway trail information will increase blueway activity and levels of safety

## EQUESTRIANS

These stakeholders provided feedback on the specific access and amenity needs for supporting multi-use trails that embrace the equestrian community of Loudoun. Presently, this user group is underserved when measuring equestrian-friendly trail and free, public access points and conditions. Not only will infrastructure supporting equestrian use produce a more equitable distribution of multi-use trails, but it will also contribute to a variety of economic development opportunities for the county. Takeaways included:

- The provision of increased trail mileage by way of long-distance

trails that support endurance riding and follow or connect to multiple tourism corridors is of high priority for equestrians

- Equestrians desire adequate and/or separate parking areas for horse trailers for a less restrictive trail access experience
- The provision of underground connections such as tunnels at intersections are crucial to the safety of equestrians, their horses, and the public
- There is a strong desire for spurs that diverge from main trails for equestrians that connect again at varying points
- Surface type standards must be established when trail planning to ensure the safety and well-being of equestrians, their horses, and others
- Equestrians expressed the county must be proactive with easement language to prevent private property owners from blocking trails with fencing

## RUNNERS, HIKERS & WALKERS

This Focus Group presented a variety of desires for trail experiences across the county including areas designed for natural viewing and access to listings of scenic view locations, connector trails to recreational and heritage tourism, reasonably sized loop trails, incorporation of historical elements on trails, and amenities to attract and engage

## PUBLIC PROCESS

younger generations. Like most county residents this group needs neighborhood trail connections. Additionally, these stakeholders examined existing invisible barriers and discussed how the plan can provide a welcoming environment for all users. Takeaways included:

- Direct access from residential communities, lack of trail operation hours and conditions information, conflicts between user types, safety and visibility are current obstacles to access
- Working with non-profit organizations, the creation of new foundations and securing the investment of volunteers who support the plan will aid in its progression
- The plan should remain aware of the impacts of expanded multi-use trail footprints on natural scenery

## CYCLISTS

These stakeholders shared that knowledge, resources, and support is to be found in existing “Friends of” organizations throughout the county. These types of organizations who value trails as amenities can serve an integral role in the recruitment and mobilization of volunteers who are excited to bring trails to Loudoun. Trail and park volunteers will contribute to the long-term scenic quality and sustainability of the natural surface, multi-use public rails of the linear

parks and trails plan. Takeaways included:

- Cyclists are interested in a system that highlights the evolution of trails from deer paths to exploration trails that have evolved to main trails over time
- Cyclists seek a complete inventory of trails and user experiences
- Tourism organizations with connections to local communities will increase revenue in rural areas
- Digital markers informing users of the number of other individuals from varying user groups that are accessing a trail at any given moment will help them identify ideal times for trail use
- The provision of amenities is most important in eastern Loudoun while potential economic benefits are most important in western Loudoun





# 06 CURRENT STATE OF LINEAR PARKS AND TRAILS

**TRAIL PROFILES**

**USER SNAPSHOTS**

**GAPS & OPPORTUNITIES**

### TRAIL PROFILES

#### LOCAL TRAILS

Local trails within Loudoun County are located on publicly accessible lands — such as parks, conservation lands and preserves — and are defined as having a natural surface. They serve multiple user types and are primarily concentrated in the urban, transitional and mountain areas of Loudoun County.

These local trails are typically self-contained loops without connections to other linear parks or trails, resulting in an existing trail system that is scattered rather than interconnected.

#### REGIONAL TRAILS

Three major cross-county trails connect Loudoun County to neighboring jurisdictions: the Potomac Heritage National Scenic Trail, the Washington and Old Dominion Trail (W&OD), and the Appalachian Trail.

These three trails vary in length and have distinct trail experiences.

- » The Potomac Heritage is the primary regional trail in the eastern half of the County and stitches together multiple communities, trail types and public lands along the river and beyond.
- » The Appalachian Trail along the County's western edge is the premier wilderness trail for hikers and campers.
- » The W&OD serves both sides of the County by carving an active, multi-surface thoroughfare for

all user types from Purcellville to Arlington.

#### PRIVATE TRAILS

Loudoun's private hunting clubs, private landowners, residential communities and HOAs extend the network of connectivity throughout the County. While some of these trails are open to the public, many are reserved for private members, landowners or approved guests.

### LINEAR PARKS AND TRAILS DATABASE

Volunteer data collection efforts during the planning process helped expand the County's existing GIS database with qualitative trail information through recordings of observed trail characteristics.

Loudoun County's Department of Parks, Recreation and Community Services (PRCS) has followed the U.S. Forest Service (USFS) Trail Classifications to describe and categorize trails in the county parks system. These classifications describe the general development scale and intended design, use and management of the trail.

Volunteers used the framework of the PRCS Trails Classification system (see Appendix) to catalog unmapped trails, user type information, trail access information, trail conditions assessment, wayfinding and other experiential data, such as safety and sounds heard. The volunteer exercise

## CURRENT STATE OF LINEAR PARKS & TRAILS

helped to identify over 225 miles of public trails, including publicly accessible trails on privately owned land.

**Table 15: Summary of Average or Typical Trail Conditions**

TRAIL CONDITIONS	
Average Width	3-6ft
Average Segment Length	0.2-0.5 mi
Typical Surface Type	Mulch, Soil, Sand or Organic Debris
Average Tread Conditions	Good
Typical Structures or Obstacle Present	Bridges, Water Crossings
Average Level of Use	Moderately Trafficked

Source: Loudoun County, LPAT Volunteer Data

**Table 16: Summary of Average Trail Experience**

TRAIL EXPERIENCE	
Average Difficulty	Easy
Typical Feeling of Safety	Feels Safe
Sounds Frequently Heard	Planes, Traffic, Birdsong
Average Planning Area Location	Transitional Area

Source: Loudoun County, LPAT Volunteer Data

**Table 17: Summary of Publicly Accessible Trail Mileage/Ownership**

OWNER	COUNTY TOTALS (MI)	% OF TOTAL TRAIL MILEAGE
Loudoun County BOS	80	40%
Loudoun Water	14	7%
Loudoun County School Board	6	3%
Municipalities	14	7%
NOVA Parks	46	23%
State	10	5%
Federal	2	1%
Private Foundations	24	12%
Other Private Entities	3	1%

Source: Loudoun County

## CURRENT STATE OF LINEAR PARKS & TRAILS

### LINEAR PARKS & TRAILS VOLUNTEER TRAIL ASSESSMENT

#### VOLUNTEER PHOTOS

Volunteers spent a total of 42 days hiking, horseback riding, walking and cycling on Loudoun County's trails to collect location and condition data.

Geolocated photos from these efforts informed the planning team's understanding of trail conditions, existing trail design and user experience across the County.



**Figure 22:** Obstacles and water crossings



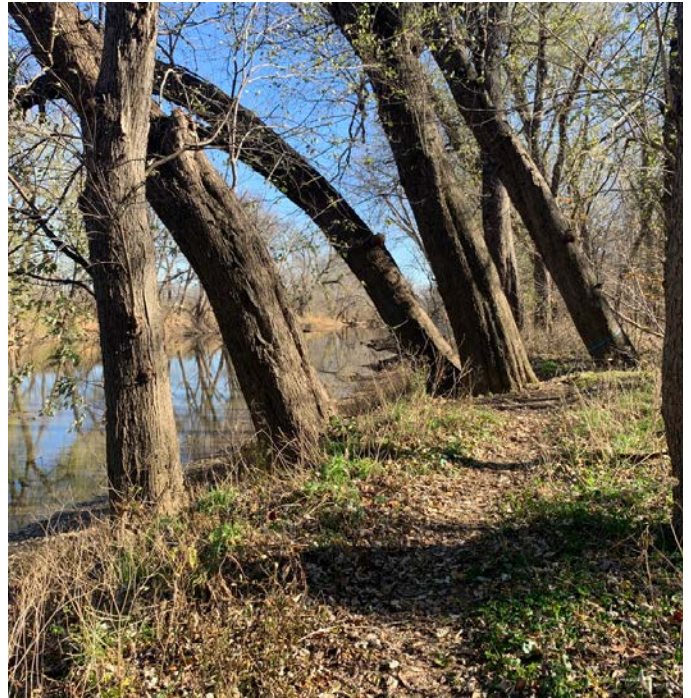
**Figure 23:** Trail surface conditions and utility right-of-way use at Beaverdam Reservoir



**Figure 24:** Appalachian Trail



**Figure 25:** Historic routes and road crossings



**Figure 26:** Trails in riparian corridors



**Figure 27:** Vegetation, line of sight and natural areas



**Figure 28:** Trail wayfinding and signage

## CURRENT STATE OF LINEAR PARKS & TRAILS

### USER SNAPSHOTS

Respondents to Survey No. 2 indicated that walking/hiking (90% of respondents), cycling (41%), running/jogging (41%), dog walking (37%), viewing birds or nature (37%), and traveling to parks or natural areas (32%) were the activities in which they participated most frequently during the previous 12 months by way of linear parks and trails in Loudoun County. Table 4 shows which County trails are used most often by survey respondents, along with each trail's managed use type according to the volunteer trail assessment.

### HIKERS, WALKERS, JOGGERS AND NATURE ENTHUSIASTS

Many of the existing trails in Loudoun County cater to hikers, walkers, and joggers visiting the County's parks or nature preserves.

Feedback from focus group interviews with hiking/walking/jogging interest groups and organizations indicated desire for additional historical and cultural context along trails, connectivity to natural areas/destinations, reasonable lengths of looped trails for multiple generations of users and dog-walkers, and increased connectivity to scenic, cultural and historical resources in the County.

**Associated organizations and interest groups:** Northern Virginia Regional Park Authority (NOVA), Potomac Heritage Trail Association,

Friends of Adaptive Recreation, Harpers Ferry Adventure Center, Front Royal, Outdoors Shenandoah, Partnership for the National Trails System, Northern Virginia Hiking Club (NVHC), Isaacs Walton League of Loudoun County, Loudoun Walking Club, Special Olympics Virginia, Potomac Appalachian Trail Club, and the Appalachian Trail Conservancy.

### BICYCLE USERS

Loudoun County's historic routes, gravel roads, existing multi-use trails (such as the W&OD) and rolling, scenic terrain make it a destination for all bicycle user types, including mountain bikers and road and gravel cyclists.

Feedback from focus group interviews with bicycling interest groups and organizations included support for utilization of the County's gravel roads, varied surface trails with elevation changes and bike trail features, considerations for safety, and increased connectivity to scenic, cultural and historical resources in the County.

### Associated organizations and interest groups:

VeloPigs, Potomac Pedalers, Greater Loudoun Bicycling Meetup, Bike Loudoun, FoWOD (Friends of the Washington and Old Dominion Trail), Mid-Atlantic Off-Road Enthusiasts, Maverick Bikes, ECHO Ride, (Re)Cyclery, Bicycles and Coffee, MTB LOCO, NOVA cycling,

EX2 Adventures, and America's Routes.

### **EQUESTRIANS AND HORSEBACK RIDERS**

Horseback riding has been a historic passion in Loudoun County, with pastoral trails and facilities for equestrian athletes, horse-drawn carriages and carts, avid horseback trail riders, and casual tour riding by visitors all over the world.

Feedback from focus group interviews with equestrian interest groups and organizations included support of multi-use trails with emphasis on successful existing trail etiquette among all user types, support for equestrian trails in all possible environments, connections between destinations via horseback, carriage, or cart, and increased connectivity to scenic, cultural and historical resources in the County.

**Associated organizations and interest groups:** Loudoun County Equine Alliance, Morven Park International, Tristate Riding Club, United States Trail Ride, Inc., and hunt clubs.

### **BLUEWAY TRAIL USERS**

Loudoun County's scenic rivers provide paddling, fishing and other non-motorized water activity in both the more urban eastern and more rural western portions of the County.

Feedback from focus group interviews with blueway interest groups and organizations included suggestions for increased wayfinding for navigation and support for fishing activities, cross-county paddling trails, safety considerations and increased access for non-motorized boats and water activity.

**Associated organizations and interest groups:** American Rivers, Potomac Riverkeepers, The Downstream Project, Front Royal, Water Rights Owners, Virginia Aquatic Resources Trust Fund, Wetland Banking, Loudoun Watershed Watch. Canoe Cruisers Association. Goose Creek Association, Goose Creek Scenic River Advisory Committee, American Whitewater, and Catoclin Creek Scenic River Advisory Committee.

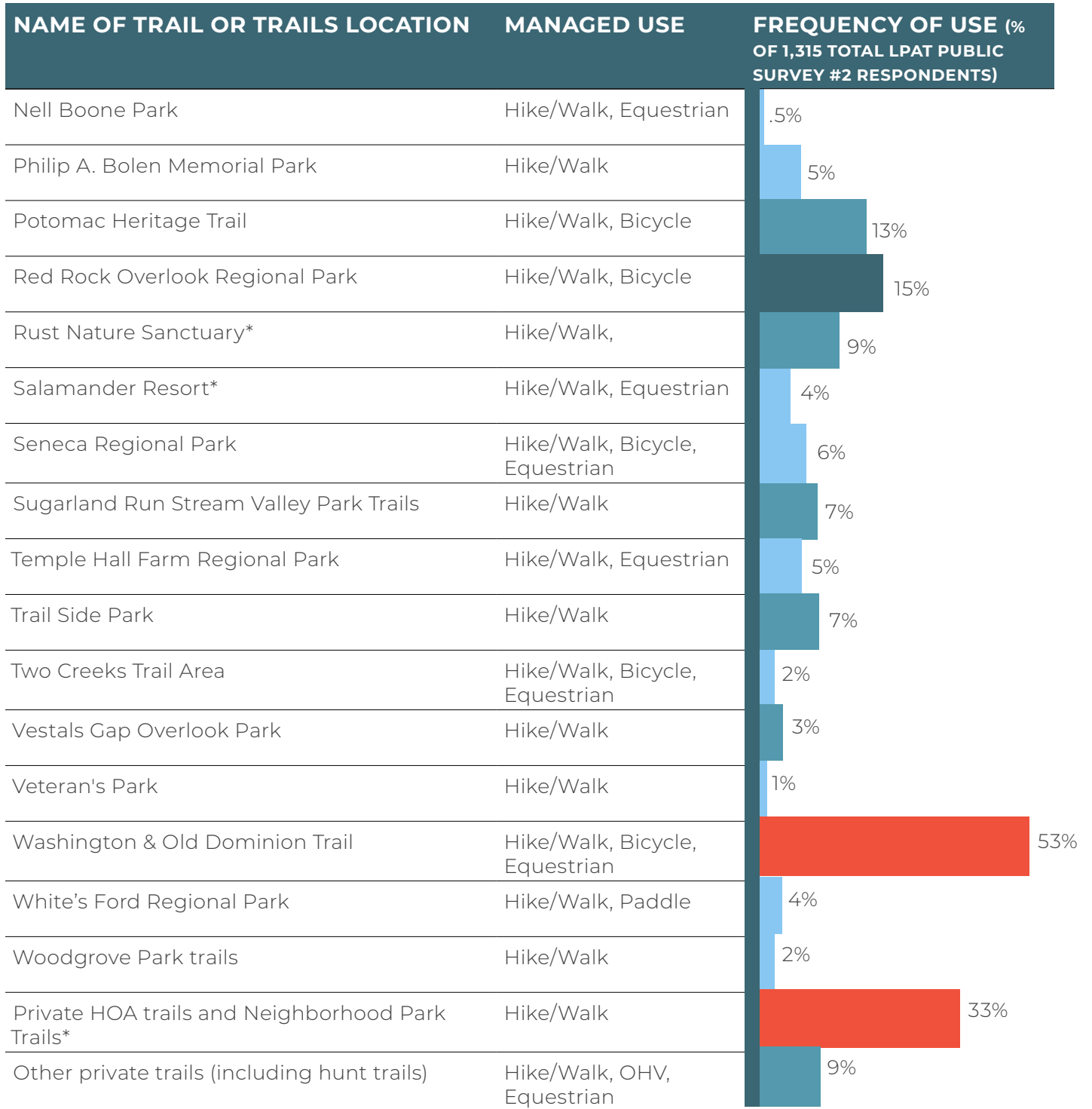


## CURRENT STATE OF LINEAR PARKS & TRAILS

Table 18: Existing Trails in Loudoun County

NAME OF TRAIL OR TRAILS LOCATION	MANAGED USE	FREQUENCY OF USE (% OF 1,315 TOTAL LPAT PUBLIC SURVEY #2 RESPONDENTS)
Algonkian Regional Park	Hike/Walk, Bicycle, Paddle, Equestrian	1%
Appalachian Trail	Hike/Walk	30%
Ashburn Park Trails and Shale Ridge	Hike/Walk	7%
Ball's Bluff Regional Park	Hike/Walk, Equestrian	25%
Banshee Reeks Nature Preserve	Hike/Walk	18%
Bear's Den Park Overlook Trail	Hike/Walk	27%
Beaverdam Reservoir Trails	Hike/Walk, Bicycle, Paddle	19%
Blue Ridge Center for Environmental Stewardship	Hike/Walk, Equestrian	11%
Bles Park Trails	Hike/Walk	6%
Brambleton Community Park	Hike/Walk	12%
Camp High Road Trails*	Hike/Walk, Equestrian	4%
Claude Moore Park	Hike/Walk	21%
East Gate Park	Hike/Walk	
Edwards Landing Park	Hike/Walk	4%
Elizabeth Mills Riverfront Park	Hike/Walk, Bicycle	8%
Evergreen Mills Equestrian & Hiking Trail (Closed)	Hike/Walk, Equestrian	4%
Franklin Park	Hike/Walk, Equestrian	19%
Gilbert's Corner Regional Park	Hike/Walk	6%
Ida Lee Park	Hike/Walk	20%
Lucketts Community Park	Hike/Walk	2%
Leesburg Town Paths and Connector Trails	Hike/Walk	13%
Morven Park*	Hike/Walk, Equestrian	20%

## CURRENT STATE OF LINEAR PARKS & TRAILS



Source: Loudoun County, LPAT Volunteer Data, LPAT Public Survey #2

\* Denotes trails that are privately owned yet publicly accessible. In the instance of Private HOA trails and Neighborhood Park Trails, not all trails are open to the public, but all are privately owned.

## CURRENT STATE OF LINEAR PARKS & TRAILS

### STRAVA DATA FOR CORRIDOR USE ANALYSIS

In order to further verify trail use and mobility patterns in Loudoun County, the County became a Strava Metro Partner in 2021, granting the planning team access to a living virtual dashboard of limited county-wide trail use activity.

Strava aggregates this dataset based on the geolocated activity of people who use the Strava mobile app while walking or hiking on foot or riding a bike.

#### **LOUDOUN COUNTY'S RECORD-HIGH ACTIVITY**

Highlights from 2020 data suggest that the COVID-19 pandemic brought about a sharp increase in app user outdoor activity on trails and corridors by cyclists, walkers and joggers. Activity logged during 2020 hit a record high compared to all available data since 2016, with activity on a similar trajectory in 2021. In 2020, there were approximately 129.4k total bicycle trips made by 12.8k people in the County, 8k of which were visitors. Trips made on foot for this same time period totalled 267.8k by 13.3k people, 7.6k of which were visitors.

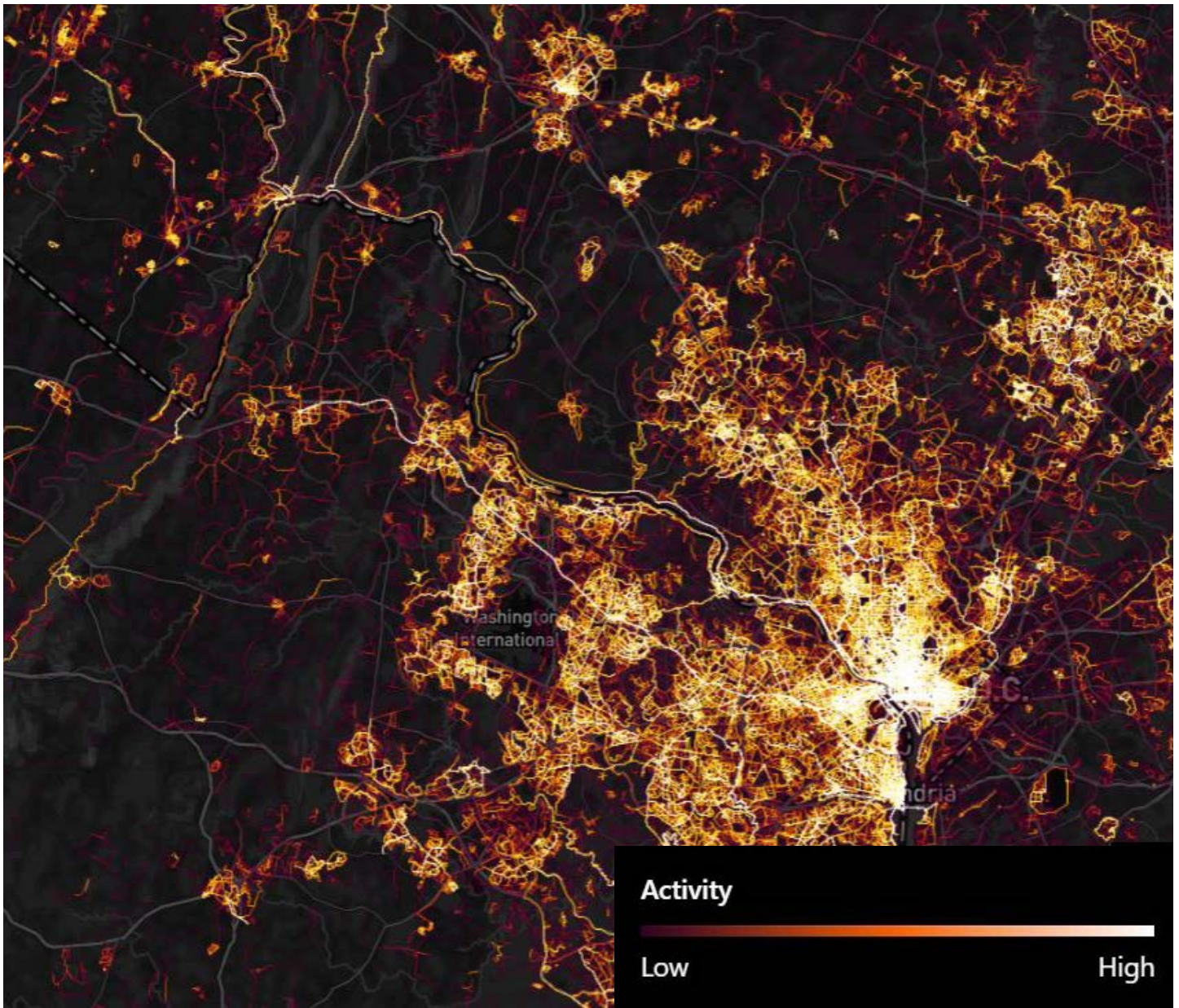
According to this data, larger, cross-county regional trails (such as the Appalachian Trail, Washington and Old Dominion Trail and Potomac Heritage Trail), HOA and

neighborhood trails, larger public trail and park systems (such as Banshee Reeks and Beaverdam Reservoir), and urban paths continue to be the most heavily trafficked corridors in both the County and region. Clusters of activity can be seen in Map 4, a heat map visual of Strava app use from May 2019 to May 2021.

The following pages contain charts that illustrate a comparison of app user data during the same time period.

#### **LIMITATIONS**

Strava data provides a useful but limited snapshot of linear park and trail use in Loudoun County. For an evolving understanding of system needs and community priorities, the County should continue to seek existing and emerging means for tracking linear park and trail use — for example, by pursuing access to user data from the Equilib mobile app, which serves equestrian trail users.

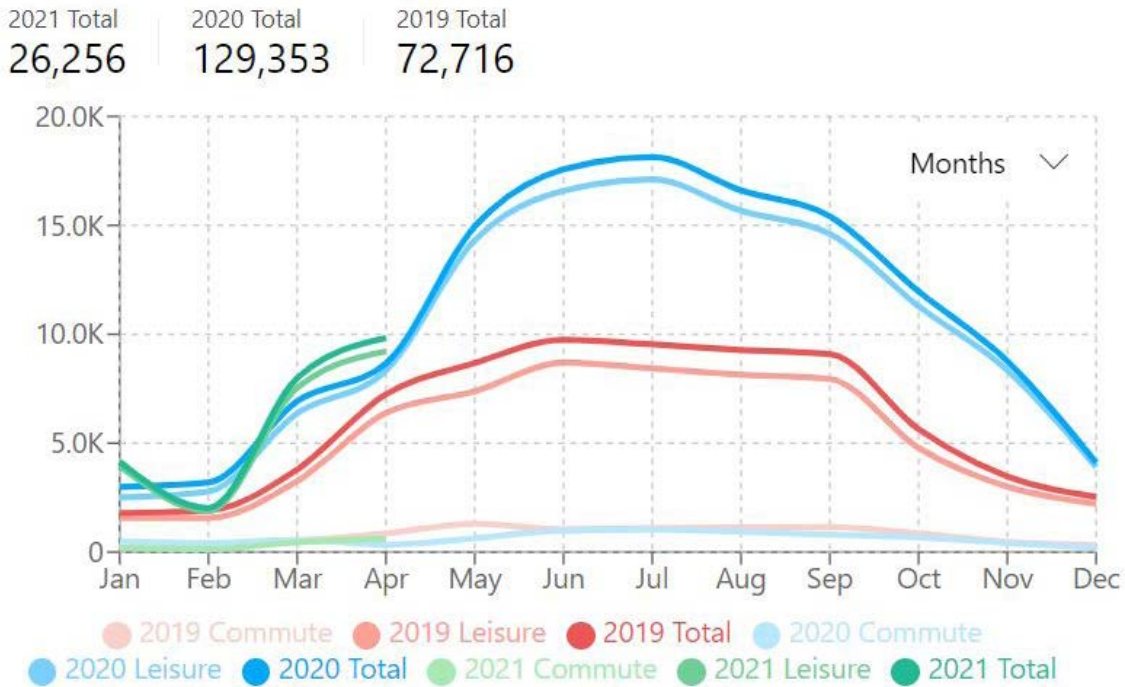


### **REGIONAL BICYCLE AND WALKING/HIKING/ JOGGING ACTIVITY**

The heat map of trail use by Strava app users can help the County understand the level of use and demands for the linear park and trail system. The above map shows Strava app use from Loudoun County to the Washington, D.C. area.

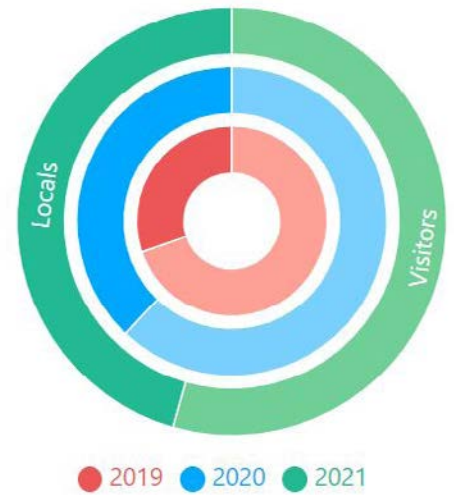
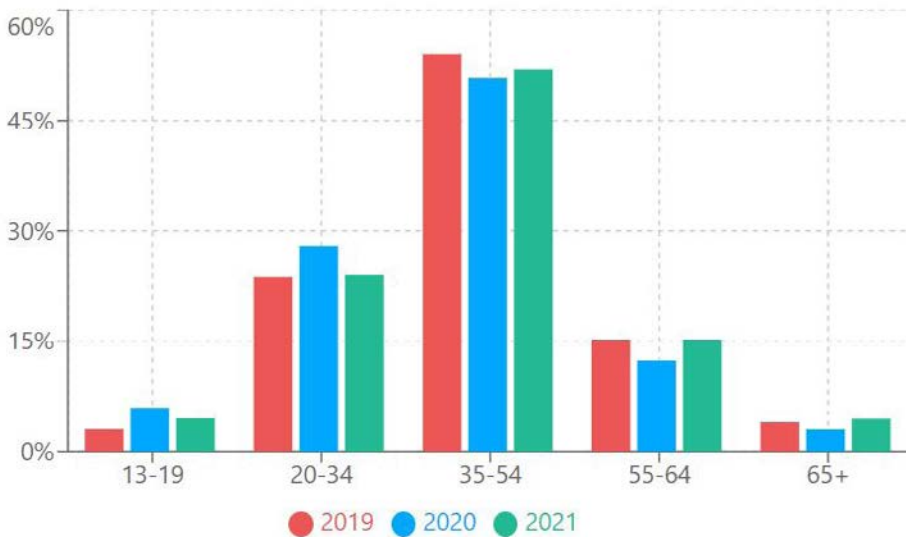
## CURRENT STATE OF LINEAR PARKS & TRAILS

### BICYCLE TRIPS IN LOUDOUN COUNTY



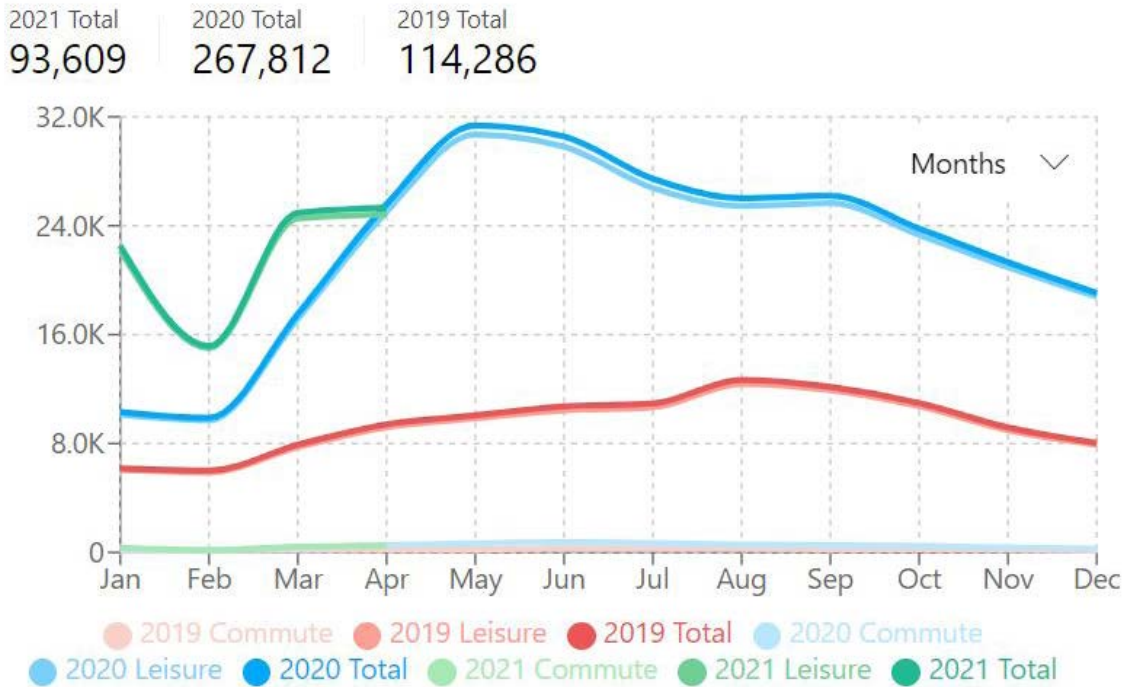
Strava data

### BICYCLE TRIP DEMOGRAPHICS & TOURISM



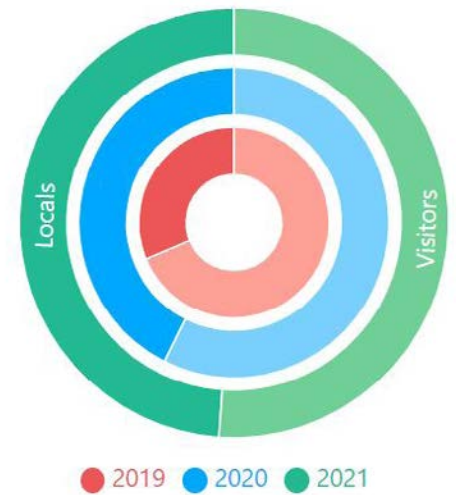
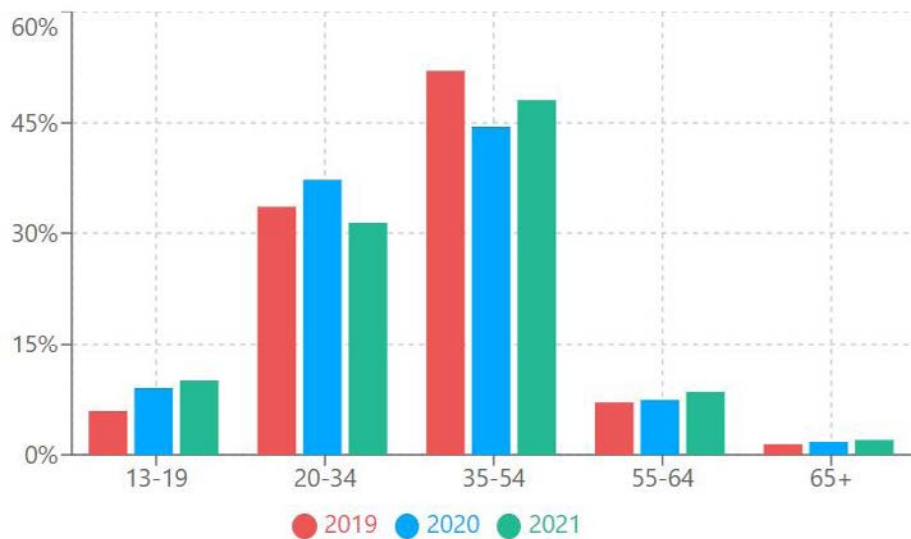
Strava data

## TRIPS BY FOOT IN LOUDOUN COUNTY



Strava data

## TRIPS BY FOOT DEMOGRAPHICS & TOURISM



Strava data

### GAPS & OPPORTUNITIES

Gaps in a linear park and trail system include areas where two portions of a trail are disconnected, or where segments of an existing trail represent “weak links” because they cause user stress or discomfort.

Identification of gaps can help to inform planning of a connected linear park and trail system. Gaps are identified by evaluating holes in the overall system, in addition to the evaluation of missing connections to important destinations, neighboring trail systems, future growth areas, and areas that would provide an in-demand linear park and trail experience.

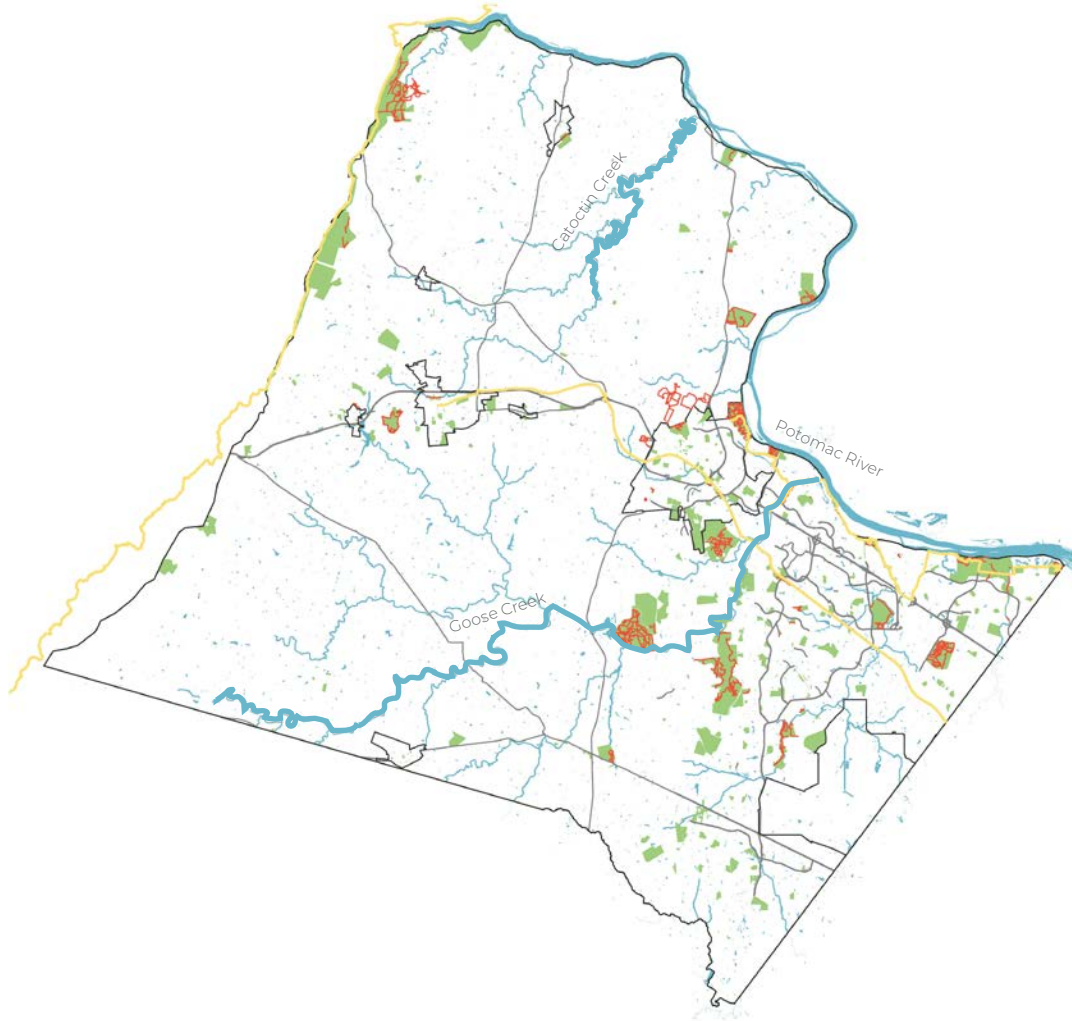
Map 10 shows the existing Loudoun County trail system and the gaps that are distinct to Eastern and Rural Loudoun.

The primary trail gaps in the East are between the County’s park and trail “islands,” where the County’s public lands and existing trails, though highly used, lack connections to one another. Though the rural area of the County borders a wealth of natural areas and cultural landscapes, it has fewer trails due to private land ownership and less dense development.

Map 12 shows the County’s commercial, recreational, cultural and historical destinations as

inventoried by Visit Loudoun. This map offers a quick glimpse of how the County’s linear park and trail system has the opportunity to create stronger cross-county connections to communities and places — including the natural areas, parks, waterfronts, trail connections, town centers, cultural sites, vineyards and breweries that more than half of survey respondents said they would like to be able to access by way of the County’s future linear park and trail system.

# MAP 10: EXISTING TRAILS



## LEGEND

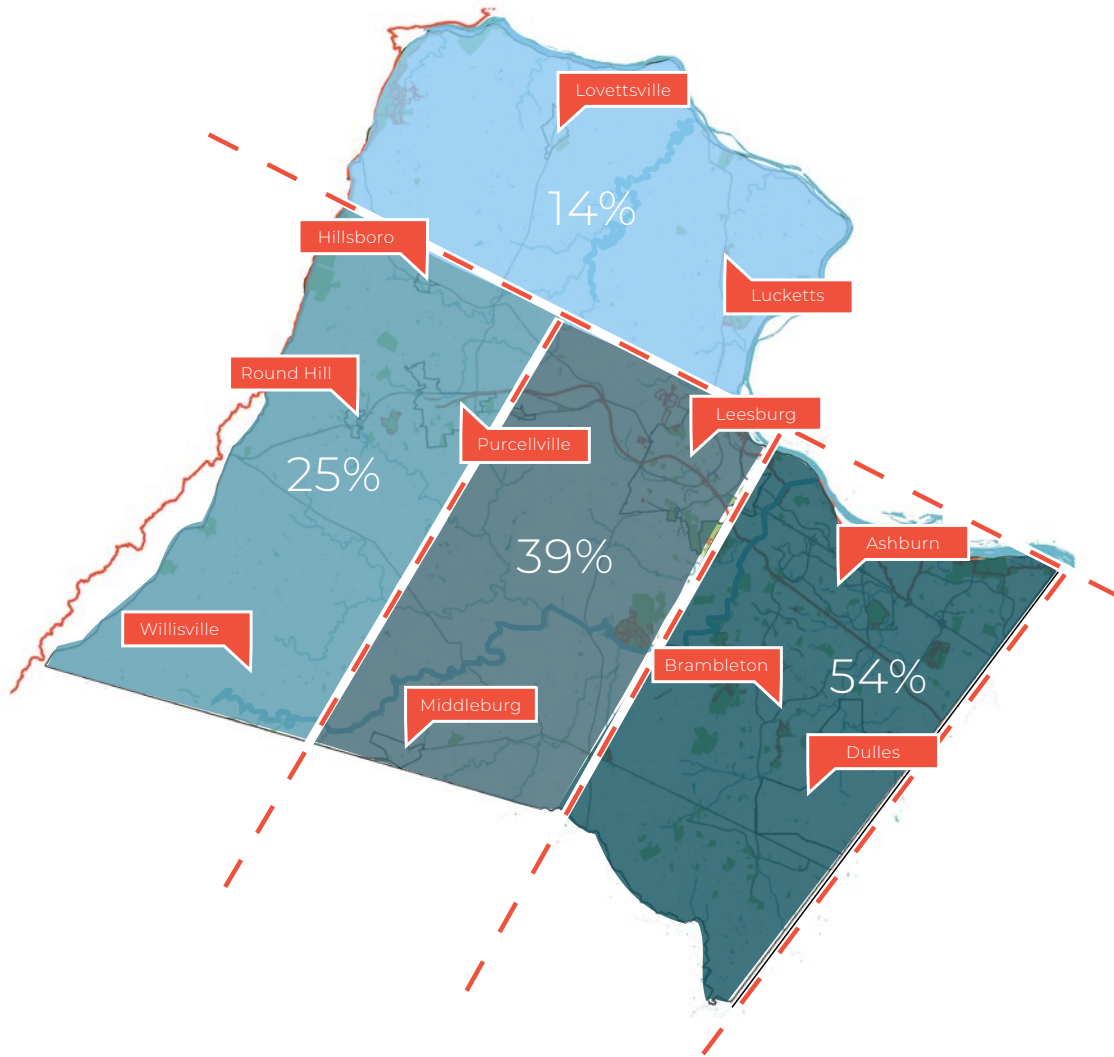
-  Existing Public Trails
-  Existing Regional Trails
-  Existing Blueways
-  Public Lands

## EXISTING PUBLIC TRAIL SYSTEM

Trails provide recreation, transportation, health, and quality of life benefits associated with walking, hiking, biking, nonmotorized boating, water activities and horseback riding throughout the County's varied landscapes. Refer to Table 3 for a summary of publicly accessible trail mileage and ownership, and Table 4 for a full list of Loudoun County's trails and their managed use.

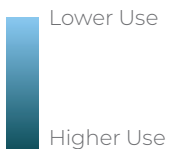


# MAP 11: PRIMARY AREAS OF TRAIL USE



## LEGEND

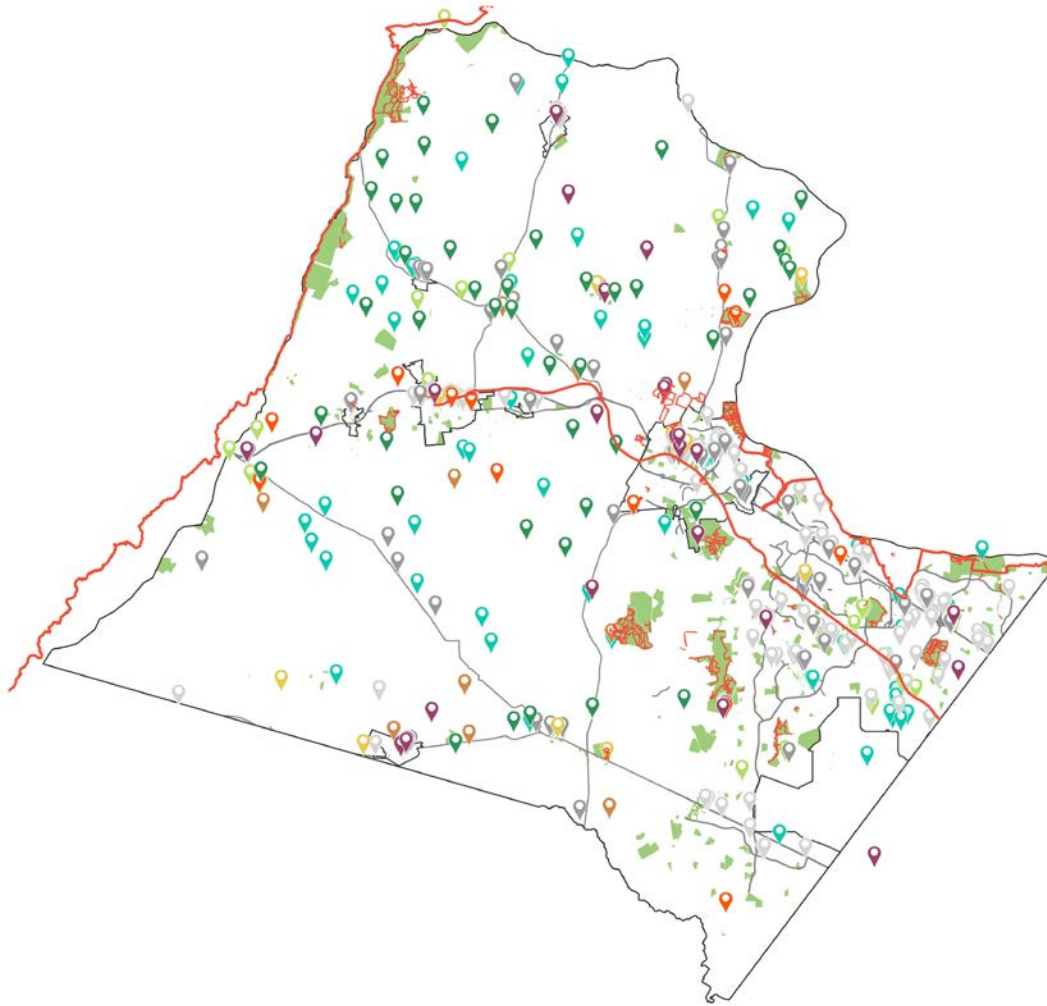
 Existing Public Trails




## PRIMARY AREAS OF TRAIL USE

Over half of 1,320 total respondents to Survey No. 2 indicated that Eastern Loudoun County’s transitional and urban areas are the areas of highest trail use. This is expected given the greater density of population and existing trails in Eastern Loudoun. Percentages on this map illustrate the percentage of respondents who indicated they primarily recreate in each quadrant.










## MAP 12: EXISTING TRAILS AND DESTINATIONS



### LEGEND

-  Existing Public Trails
-  Public Lands

#### Visit Loudoun Tourism Destinations

-  Hotels and Accommodations
-  Brewery or Cidery
-  Dining
-  Shopping
-  Equestrian Facilities
-  Farms and Farmers Markets
-  Historic Sites
-  Museums / Visual and Performing Arts
-  Winery

### EXISTING TRAILS AND DESTINATIONS

This map illustrates existing trails plus key destinations inventoried by Visit Loudoun at a County level.



# 07 FRAMEWORK PLAN

**INTRODUCTION**

**PRINCIPLES, OBJECTIVES & STRATEGIES**

**LINEAR PARKS & TRAILS FRAMEWORK PLAN**

**SIGNATURE PROJECT CASE STUDY**

## FRAMEWORK PLAN INTRODUCTION

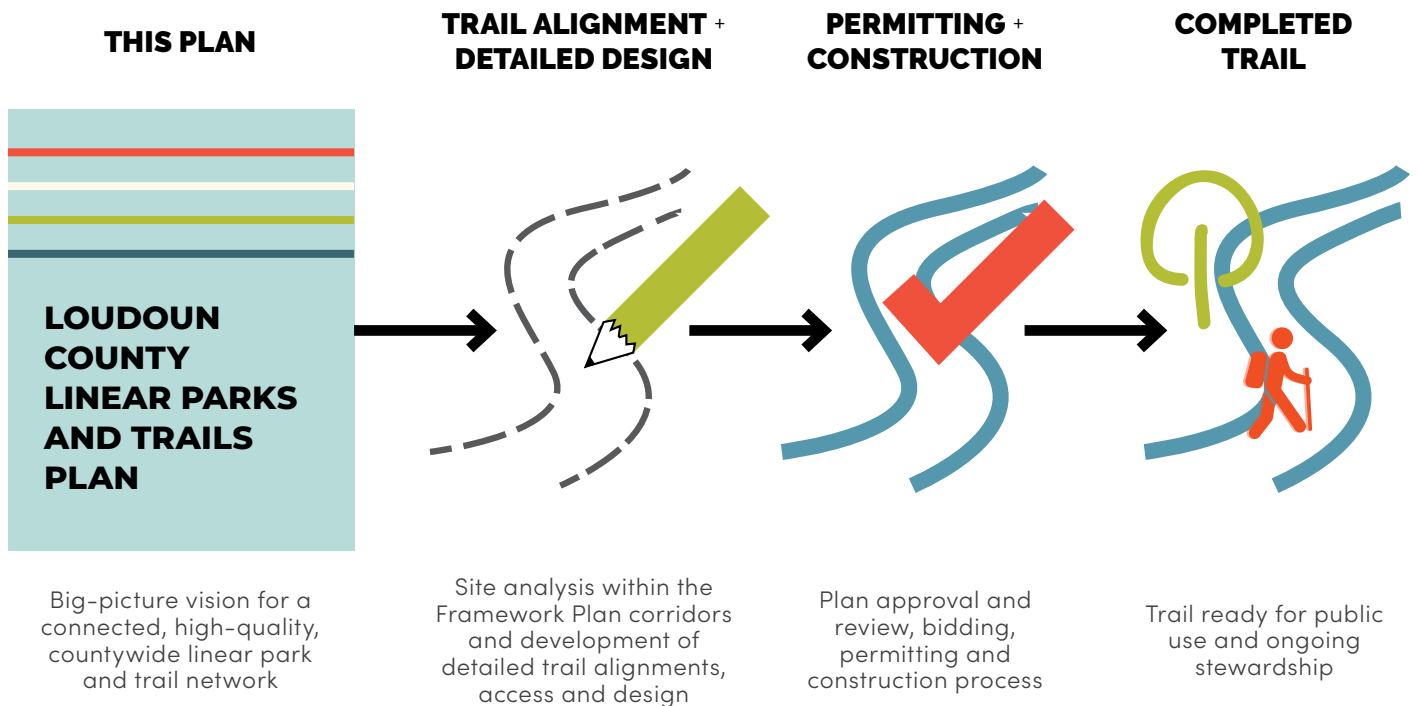
### ABOUT THE FRAMEWORK PLAN

The Loudoun County Linear Parks and Trails Framework Plan is the County’s vision for an interconnected system of multi-use linear parks, trails and blueways with multiple benefits for community connectivity, health and wellness, natural and cultural resource protection, and economic development.

The Framework Plan lays out the process for identifying gaps and opportunities for linear parks and trails. Then it builds on those observations to propose a backbone of the countywide linear park and trail network that will be built out over time.

The Framework Plan does not recommend specific trail alignments or designs. Rather, it identifies broad corridors within which the County and its partners—through future phases of work—will pursue detailed trail alignments, access, design and construction.

The Linear Parks and Trails Plan offers a high-level analysis and vision for countywide connectivity. It establishes shared goals and principles that are informed by a public process. It acts as a reference to aid internal and external coordination of linear park and trail projects. And it helps the County allocate the resources needed to pursue future phases of analysis and implementation.



**Figure 31:** Next steps to implement the Countywide Linear Parks and Trails Plan



**Figure 32:** Layered open space, recreational and educational benefits of the “corridor”

## CORRIDOR APPROACH

Wherever possible, the Linear Parks and Trails Framework Plan follows open space corridors in stream valleys, along ridges, or through rural farmland and prioritizes land that is easiest to implement. This approach reflects the County’s goal to align its linear park and trail system with its preserved natural and cultural landscapes, resulting in layered recreational, ecological and cultural benefits.

This Plan’s use of the term “corridor” is important for several reasons:

- » It emphasizes the powerful connection between the County’s future linear park and trail system and its critical riparian and wildlife corridors, which are healthiest when they are part of extensive, contiguous networks of protected open space.
- » It reflects the importance of a multi-pronged and flexible approach to identifying partnership and land acquisition opportunities in order to form continuous linear park and trail

corridors across many individual parcels. This approach for identifying “resource corridors” is described later in this chapter.

- » It differentiates between the high-level recommendations of this Plan and more detailed trail alignments. The Framework Plan corridors are broad strokes that are not parcel-specific. They provide a shared vision to align the work of the County and its partners, while offering the flexibility needed to respond to gaps and opportunities.

The Framework Plan corridors are the backbone of Loudoun County’s linear park and trail system. They can also be seen as the “hub” within a “hub-and-spoke” model of linear parks and trails, with future secondary and spur connections built over time to expand the system’s connectivity and diversity of experiences for hikers, bikers, nature enthusiasts, equestrians and paddlers.



**Who Can You Spot?**

Here in the bird blind, you are an undercover bird watcher. Over 100 different bird species can be found in the park. Who can you spot today?

Please remember to stay on the path and do not feed the birds. If you see a bird, please take a photo or sketch it. We would love to see your work!





# PRINCIPLES, OBJECTIVES & RECOMMENDATIONS





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### INTRODUCTION

These overarching principles, objectives and strategies will help to guide implementation of the Linear Parks and Trails Framework Plan as the system is designed and built out over time by Loudoun County and its public and private partners.

The plan's primary principles are derived from the public planning process and reflect the linear park and trail priorities of County residents and public officials. The principles are listed below, and their supporting objectives and

strategies are detailed on the following pages.

### LINEAR PARK AND TRAIL PLAN PRINCIPLES

1. Connect communities and destinations across Loudoun County's 500 square miles.
2. Provide safe, equitable and inclusive access to linear parks and trails.
3. Provide a high-quality linear park and trail experience.
4. Protect natural resources and enhance the ecological value of linear park and trail corridors.
5. Promote economic development and tourism.
6. Ensure the plan is implemented.

## 01 – CONNECT COMMUNITIES AND DESTINATIONS ACROSS LOUDOUN COUNTY’S 500 SQUARE MILES.

### Enhance regional trail connections.

1. Prioritize corridors that have the least amount of barriers for implementation (public land, utility right of ways, supportive private land owners, etc.)
2. Close gaps in existing regional trail corridors.
3. Identify opportunities for external public and private funding partnerships.
4. Include the closing of regional trail gaps among the linear park and trail project prioritization criteria.
5. Create new multi-use connections between existing regional trail corridors.
6. Build on existing regional and local trail corridors and create new connections between communities across the County.
7. Work with utilities to create and plan for multi-use trails along easements and utility lines where appropriate.
8. Ensure that public access is maintained when County roads are removed from the Virginia Department of Transportation system of secondary roadways.
9. Coordinate with adjacent counties and states to create or enhance connections to neighboring trail networks beyond the Loudoun County boundary.

### Enhance local trail connections.

10. Work with County and municipal partners to improve active transportation connections—such as multi-use paved trails and sidewalks—between local communities and linear park and trail corridors.
11. Work with local communities and public officials to prioritize local trail connections based on resident needs and preferences.
12. Continue to encourage the development of privately owned, privately accessible and maintained feeder trails that connect to the LPAT primary trails —such as those maintained and controlled by Homeowners’ Associations (HOAs)—in lieu of public trail easements through private property in areas with significant residential population but limited potential to serve the larger community .
13. Enhance trail connections to local and regional destinations with communities that support these public connections.
14. Identify opportunities to create linear park and trail connections between communities and schools and jobs.
15. Avoid park and recreation “islands.” Where possible, ensure that individual public parks and linear park and trail systems are connected within a larger system.

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## **02 – PROVIDE SAFE, EQUITABLE AND INCLUSIVE ACCESS TO LINEAR PARKS AND TRAILS.**

### **Identify and remove potential barriers to linear park and trail use.**

16. Design primary trails as multi-use trails for hikers, bikers, walkers, equestrians, and blueway users.
17. Provide universal access where possible through the careful design of access point locations, wayfinding, outdoor ADA compliance, lighting, marketing and programming.
18. Consider community context—such as population density and existing access to nature—when determining the accessibility and priority of potential access point locations.
19. Maintain dialogue with community stakeholders to ensure potential barriers are identified and addressed in the future.

### **Ensure equitable linear park and trail access within vulnerable or historically marginalized communities.**

20. Identify vulnerable or historically marginalized communities using a methodology developed with input from local stakeholders, to include demographic data that identifies car ownership rates, median household income, people of color, seniors, children, and people with disabilities.
21. Establish Level of Service standards that ensure high-quality linear park and trail access is provided in these communities.
22. Establish prioritization criteria that ensure short-term implementation projects are built in these communities.
23. Work with community organizations and the public to ensure that linear park and trail alignments, amenities and programming serve the needs of these communities.

## **03 – PROVIDE A HIGH-QUALITY LINEAR PARK AND TRAIL EXPERIENCE.**

### **Design linear parks and trails for comfort and accessibility.**

24. Improve existing trails for comfort and accessibility for multiple user groups wherever possible.
25. Provide opportunities for shade, sitting and respite
26. Create grade separated crossings at roads and railroads where possible and provide tunnel/ below grade crossings at major roads that can accommodate equestrians.
27. Where linear park and trail connections must be made within road corridors, enhance trail user comfort levels by providing shade, reducing vehicle speeds, and/or placing trails away from the edge of roadways.
28. Create looped trail systems of varying mileage and trail spurs to certain destinations in order to accommodate a variety of linear park and trail activities – such as hiking, cycling, horseback riding, fishing, paddling and school field trips.
29. Utilize technology such as mobile phone apps to enhance the user experience for wayfinding, information about destination locations and offerings, real-time trail conditions, interpretation, connecting with user groups, etc.
30. Identify areas with little or no cell service, and prioritize extra physical signage and wayfinding in these areas until cell service is expanded.

### **Design unique and context-specific trail experiences.**

31. Develop trail and amenity design standards that reflect and celebrate the County's different ecological and built contexts.
32. In natural resource corridors, site trails to take advantage of views and natural assets while protecting sensitive environments.
33. Where public access points are located in or near residential neighborhoods, utilize design standards, signage and enforcement to minimize impacts to neighborhoods.

### **Design linear parks and trails to meet and balance the needs of multiple users.**

34. Provide a diversity of trail types and linkages.
35. Provide parallel trails or separate tread for different user groups where possible.
36. Encourage the use of trail loops and design standards such as site distances and grade reversals to manage user conflicts on trails. Educate users about trail etiquette to ensure positive interactions across user groups.
37. Be clear in marketing materials about the different age groups, modes of travel, and ability levels appropriate for each trail loop.
38. Provide staging and parking areas that are appropriate for all users, including horse trailers.
39. Promote trail etiquette rules.

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## **04 – PROTECT NATURAL RESOURCES AND ENHANCE THE ECOLOGICAL VALUE OF LINEAR PARK AND TRAIL CORRIDORS.**

### **Align linear park and trail planning with the protection of countywide natural heritage resources.**

40. Prioritize linear park and trail corridor acquisition within areas of natural biodiversity and habitat value, for multiple recreational and environmental benefits.
41. Within these corridors, locate trails or design trails to not compromise the integrity of these resources.
42. Prioritize linear park and trail alignments on protected open space within or immediately adjacent to River and Stream Corridor Resource buffers and the no-build buffers of public water supply reservoirs, Scenic Rivers, the Potomac River and the Bull Run.
43. Take advantage of opportunities to secure linear park and trail access on individual parcels, to gradually work toward full connectivity and system buildout. But wherever possible, prioritize large contiguous linear park and trail corridors over corridors with smaller or piecemeal connections.
44. Design trail alignments to protect sensitive environments and cause minimal site disturbance. Protect water quality, nesting sites, rare plant communities and species of concern for Virginia. Use seasonal trail closures if necessary.
45. Establish context-specific linear park and trail maintenance regimes that protect and enhance the surrounding natural environment and native plant communities, including through the protection and enhancement of impaired streams and their tributaries. Install native plants for pollinators, and control invasive species.
46. Promote tree planting and preservation within linear park and trail corridors to promote cooling/shading, manage stormwater runoff, and improve water quality, air quality and wildlife habitat.

### **Design immersive linear park and trail experiences that connect users to their natural environment.**

47. Design trail alignments that protect sensitive environments while exposing users to the unique natural and scenic qualities of the County's forests, woodlands, wetlands, floodplains, streams, and rivers.
48. Provide educational signage and programming that highlight the diverse ecological communities of Loudoun County.

## 05 – PROMOTE ECONOMIC DEVELOPMENT AND TOURISM.

### **Connect linear parks and trails to local and regional destinations.**

- 49. Align linear parks and trails so that residents and visitors can utilize the system to reach cultural and tourism destinations, throughout the County.
- 50. Establish community nodes as linear park and trail system destinations.
- 51. Work with Visit Loudoun, local businesses and economic development organizations to promote the linear park and trail system and to improve its ability to connect users to points of interest.

### **Design linear parks and trails that are destinations unto themselves.**

- 52. Offer a diversity of linear park and trail experiences that spotlight the rural, natural, cultural and historical resources of Loudoun County.
- 53. Consider public-private partnerships to develop passive trail programming events, such as bioblitzes or educational walking tours.

### **Develop a cohesive brand and marketing materials.**

- 54. Work with Visit Loudoun to create branding materials that are seamless with the County and Visit Loudoun.
- 55. Create and maintain marketing materials and strategies to create public support for the Plan and educate residents about the value of the LPAT system
- 56. Coordinate with other signage programs in the County to create a signage and wayfinding program that is cohesive and reflective of Loudoun County’s unique resources.

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## 06 – ENSURE THE PLAN IS IMPLEMENTED.

### **Coordinate across plans.**

57. Incorporate the goal for a countywide linear park and trail system into other County planning documents—particularly the General Plan, the Parks, Recreation and Community Services Master Plan, and the Countywide Transportation Plan—to facilitate funding, partnerships and development.
58. Incorporate linear park and trail standards into the County’s updated zoning ordinances.
59. Develop and maintain an up-to-date regional GIS database of existing and proposed trails, for use by partner agencies and trails advocacy groups.

### **Develop partnerships and work with landowners.**

60. Collaborate with local, regional, state and federal coalitions, agencies and organizations to facilitate and coordinate linear park and trail development across the county.
61. Maintain an updated map of existing and proposed countywide linear parks and trails and provide clear guidelines, best practices and design standards in order to streamline collaboration and the approval and construction of specific projects.
62. Work with trail advocacy organizations, volunteers, and friends’ groups to coordinate long-term trail development and management.
63. Strengthen incentive programs to encourage the donation of land or easements by private landowners to preserve rural and natural areas and close gaps in the countywide linear parks and trails system. Create educational materials to promote the benefits of granting easements and address potential concerns, such as privacy and liability.
64. Work with local, regional, state and federal public landowners to improve and expand trail access on public lands.
65. Work with private tax-exempt landowners—including HOAs, utilities, and conservation-oriented nonprofits—to explore opportunities for public trail access and management partnerships on private land where desired by the community.
66. Establish shared-use agreement templates and educational materials to share with private institutional landowners in pursuit of public access to existing private linear parks and trails.
67. Consider incentivizing public trail easements on private property, including support for maintenance, and recognizing private land owners through an award or recognition program.

### **Pursue diverse strategies for fundraising and financing.**

68. Commit to implementation and maintenance of the system through increased staffing and dedicated County funding.
69. Explore establishment of a Loudoun County parks foundation as a separate but affiliated, private, non-profit entity to pursue grants, donations and easements on behalf of the County and in support of the Linear Parks and Trails Framework Plan.

## **07 – BUILD BROAD COMMUNITY SUPPORT FOR THE LINEAR PARKS AND TRAILS SYSTEM.**

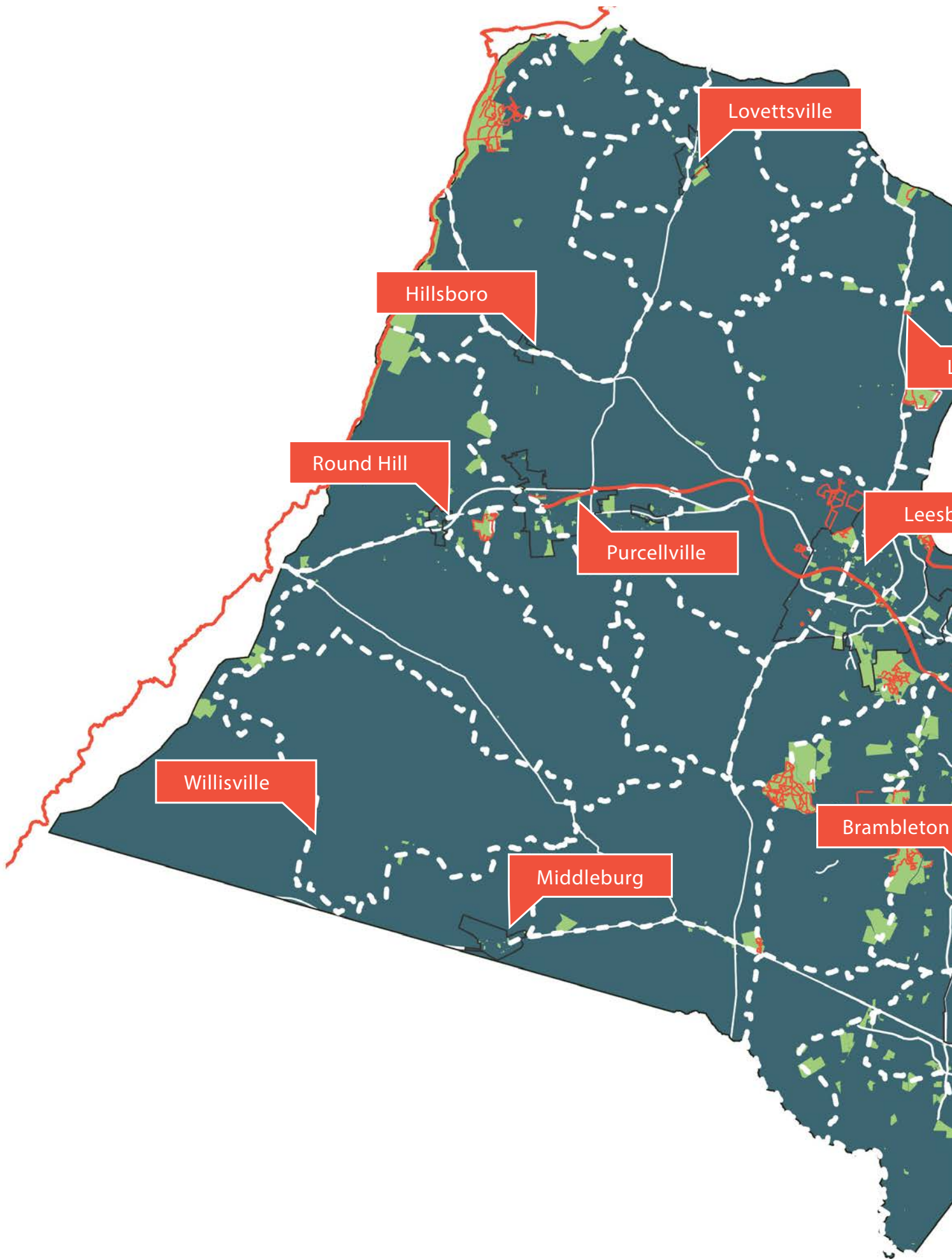
### **Develop marketing materials that promote awareness and facilitate use.**

70. Develop branding guidelines to create consistent and recognizable materials for signage, wayfinding, and printed and online linear park and trail maps.
71. Develop and regularly update a countywide printed map of linear parks, trails, blueways and open space.
72. Develop and regularly update a County website with interactive linear park and trail maps and up-to-date information about access, trail information and events. Include blueway trails and up-to-date information about water levels, access and appropriate skill levels.
73. Work with trail advocacy partners to provide updated linear park and trail information through a mobile mapping application. This could entail development of a new County-specific app or coordination with existing and heavily used applications.
74. Maintain an up-to-date website with information about in-progress and in-the-pipeline linear park and trail projects, prioritization criteria, and funding sources and partnerships.
75. Educate users about “Leave No Trace” principles and trail etiquette. Cater marketing materials to specific user audiences.

### **Explore opportunities for partnership and stewardship.**

76. Maintain open and transparent dialogue with the public and community organizations about linear park and trail projects and community needs.
77. Establish a community process for each linear park and trail construction project. This will help ensure community needs and wants are addressed and will promote local buy-in and long-term stewardship.
78. Create online, app-based and phone systems to allow trail users to report maintenance issues or ideas for improvements.
79. Actively pursue agreements with nonprofit organizations for long-term stewardship of new and existing linear parks and trails. Develop clear trail management standards that can be used by volunteers. Consider implementation of an Adopt-a-Trail program, whereby organizations could support linear parks and trails through volunteer management or funded sponsorships.
80. For all of the above principles and objectives, work to identify opportunities for public-private partnerships.





# LINEAR PARKS & TRAILS FRAMEWORK PLAN

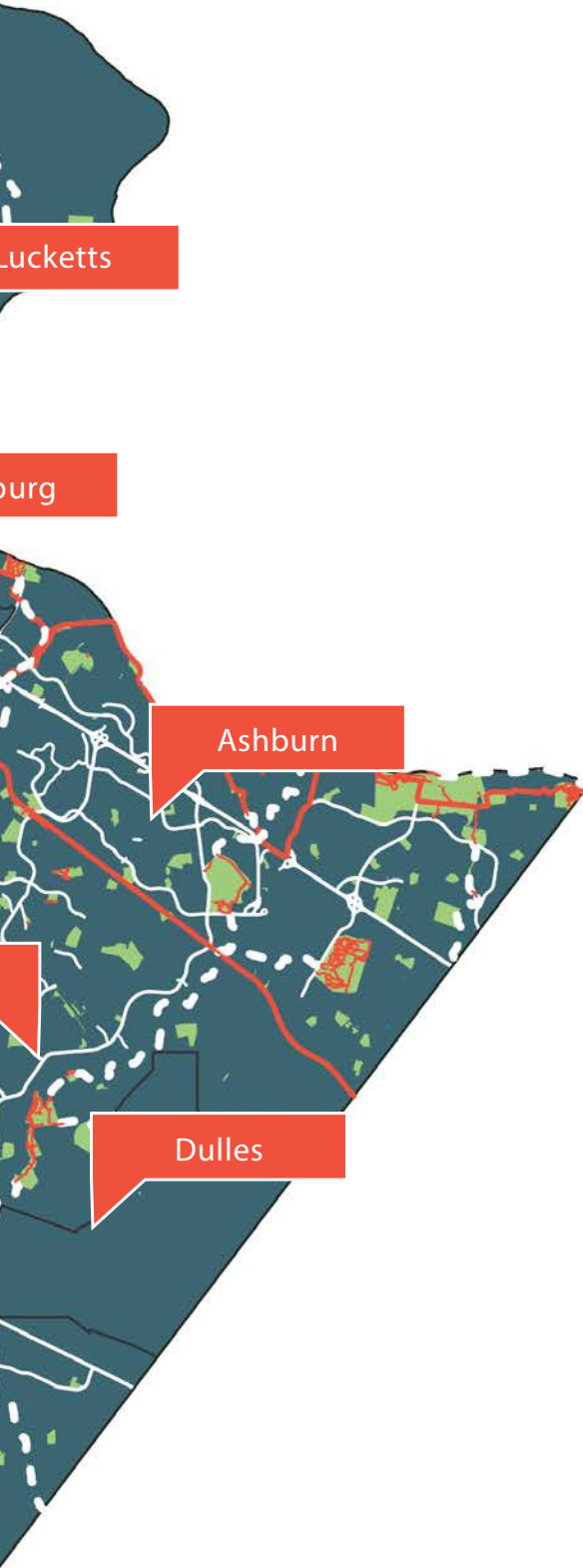
PLANNING APPROACH

RURAL LOUDOUN COUNTY

EASTERN LOUDOUN COUNTY

CORRIDOR FEATURES

ACCESS AND LEVEL OF SERVICE



### PLANNING APPROACH

The planning team identified different types of land that represent the greatest opportunities for stitching together a high-quality and continuous linear park and trail system throughout Loudoun County's 500 square miles.

This "low-hanging fruit" for potential new linear park and trail alignments includes primary resource corridors, plus additional and often overlapping private land opportunities, all of which are listed in Table 1.

Resource corridors include public lands and natural and cultural landscapes with experience and preservation opportunities that align with the goals and principles of the Linear Parks and Trails Plan. These lands often are already protected, either due to public ownership or environmental regulations.

Private land opportunities include privately owned lands that might be considered a relatively good fit for public linear park and trail access because of the nature of their ownership, likelihood for future development, or existing easement protections. Identification of diverse private land opportunities is important—the more avenues the County has to partner with private landowners, the better the prospect of identifying interconnected public

trail alignments that serve the entire county.

Following identification of these resource corridors and private land opportunities, the framework planning process evaluated linear park and trail opportunities using two different methodologies—one that is specific to the historical rural character of Rural Loudoun County, and another tailored to the higher-density character of Eastern Loudoun County. Both methods analyzed the same data, but with different emphasis given the different goals of the linear park and trail systems for western and eastern Loudoun County.

The Rural Loudoun County process began by building on existing public facilities and previous trail plans with the goal of protecting rural character while connecting diverse trail users to natural, historical and cultural destinations in the west.

The Eastern Loudoun County process began by identifying natural resource corridors for protection as linear parks, with the goal of using future development projects to build out a connected trail system that allows urban and suburban residents to connect to nature.

# LINEAR PARKS AND TRAILS FRAMEWORK PLAN

Table 19: Resource Corridors and Private Land Opportunities

RESOURCE CORRIDOR	PROS	CONS
<b>Publicly Owned or Publicly Accessible Land</b>	Minimal barrier to securing public trail access where existing or future use allows. High potential for flexibility in design of linear park and trail features and alignment.	Other land uses might not be compatible with linear parks and trails.
<b>Protected Hydrological Systems (Stream and River Corridors, Floodplains and Wetlands)</b>	Opportunity to align linear park and trail goals with natural resource and water quality protection goals, on land not suitable for other uses.	Need to design trails and amenities to minimize impact to sensitive environments. Public access agreement must be secured for privately owned land.
<b>Non-Riparian Habitat Corridors</b>	Opportunity to align linear park and trail goals with natural resource and critical habitat protection goals.	Need to design trails and amenities to minimize impact to sensitive environments. Public access agreement must be secured for privately owned land.
<b>Scenic Byways and Historic Gravel Roads</b>	Opportunity to align linear park and trail goals with cultural landscape protection goals. Public access ensured within public right-of-way.	Need to design trails for safety and high-quality experience within roadways. Careful coordination required with VDOT.
PRIVATE LAND OPPORTUNITY	PROS	CONS
<b>Utility Easements</b>	Land already protected from other uses, with easement held by potential institutional partner.	Public access must be negotiated. Trail experience in cleared, straight-line utility easements might not align with natural and cultural experience goals for linear parks and trails.
<b>Privately Owned Land with Existing Conservation Easement</b>	Land already protected from other uses, with easement held by potential institutional partner. Land type often aligns with the natural and cultural landscape emphasis of the linear parks and trails plan.	Public access must be negotiated.
<b>Privately Owned Vacant Land with Residential, Commercial or Industrial Zoning</b>	Opportunity for future site development to include open space protection and public trail development through proffer or zoning ordinance.	Timing and outcome uncertain and relies on future development.
<b>HOA Open Space Land</b>	Land is already protected from development and adjacent to residential communities that can be served by the countywide linear park and trail system.	Potential HOA partner might not desire public access to the land, though it could still serve as an access point for HOA members only to the broader system.

### RURAL LOUDOUN COUNTY

Rural Loudoun County, in the foothills of the Blue Ridge mountains, is home to working farms, historic sites and routes, scenic roads and byways, and wineries and breweries. There is a growing urgency to preserve the rural character of western Loudoun County and to protect its open space for farming, rural tourism, outdoor recreation, and ecosystem services including water quality and wildlife habitat.

#### CHALLENGES

- » Growth pressure and loss of rural character and quality of life
- » Loss of critical habitat and water quality from development and agricultural runoff
- » Connections between and preservation of cultural and historic resources
- » Connected public recreational opportunities for hikers, walkers, bikers and horseback riders, particularly in the Mountains and foothills
- » Balancing individual landowners' rights, incentives for conservation or development, and public interest
- » Protection, access and maintenance of scenic resources

It is a challenge to identify trail alignments in western Loudoun County given the individual private ownership of rural parcels.

The linear park and trail framework planning approach for Rural Loudoun County begins by building

on previous trail plans and publicly owned lands. It seeks to follow protected open space and riparian corridors and to incorporate where possible the scenery unique to rural Loudoun County—for example, by following historic and scenic routes. And it identifies private parcels that represent the greatest opportunity for future trail corridors—including vacant parcels, parcels with existing open space or conservation easements, and likely future development sites.

#### OPPORTUNITIES

- » Design trail alignments and typologies to preserve and celebrate rural character.
- » Designate historic routes and scenic buffers for multi-use facilities.
- » Plan for Trail-Oriented Development in future residential communities or developing areas.
- » Encourage cluster or conservation developments, whereby new development is clustered at a higher density, allowing large tracts of open space to be set aside for permanent protection and linear park and trail access.
- » Link trails to destinations, community nodes, and cultural and historic resources, such as wineries/ breweries, historic sites, historic towns/villages, historic routes, and scenic routes.
- » Connect the W&OD trail to the Appalachian Trail, completing an East-West Cross-County Trail for Loudoun County.
- » Propose a North-South Cross-County Trail for Loudoun County, connecting from the Potomac

RURAL LOUDOUN COUNTY PROCESS

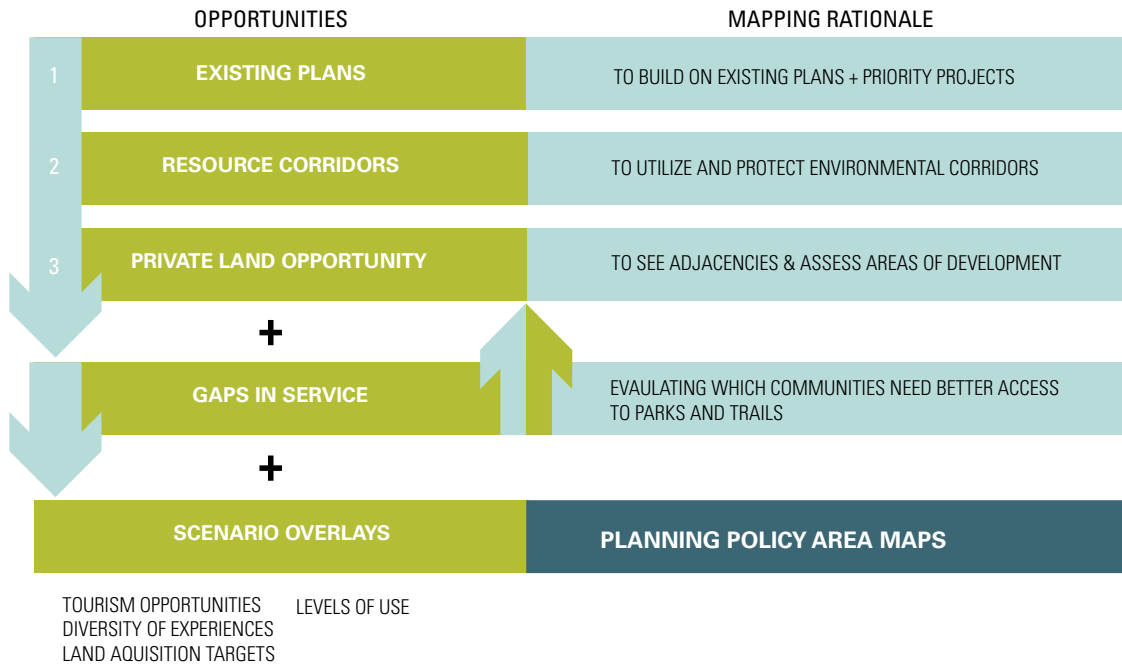


Figure 33: Trail connection mapping process for rural Loudoun County

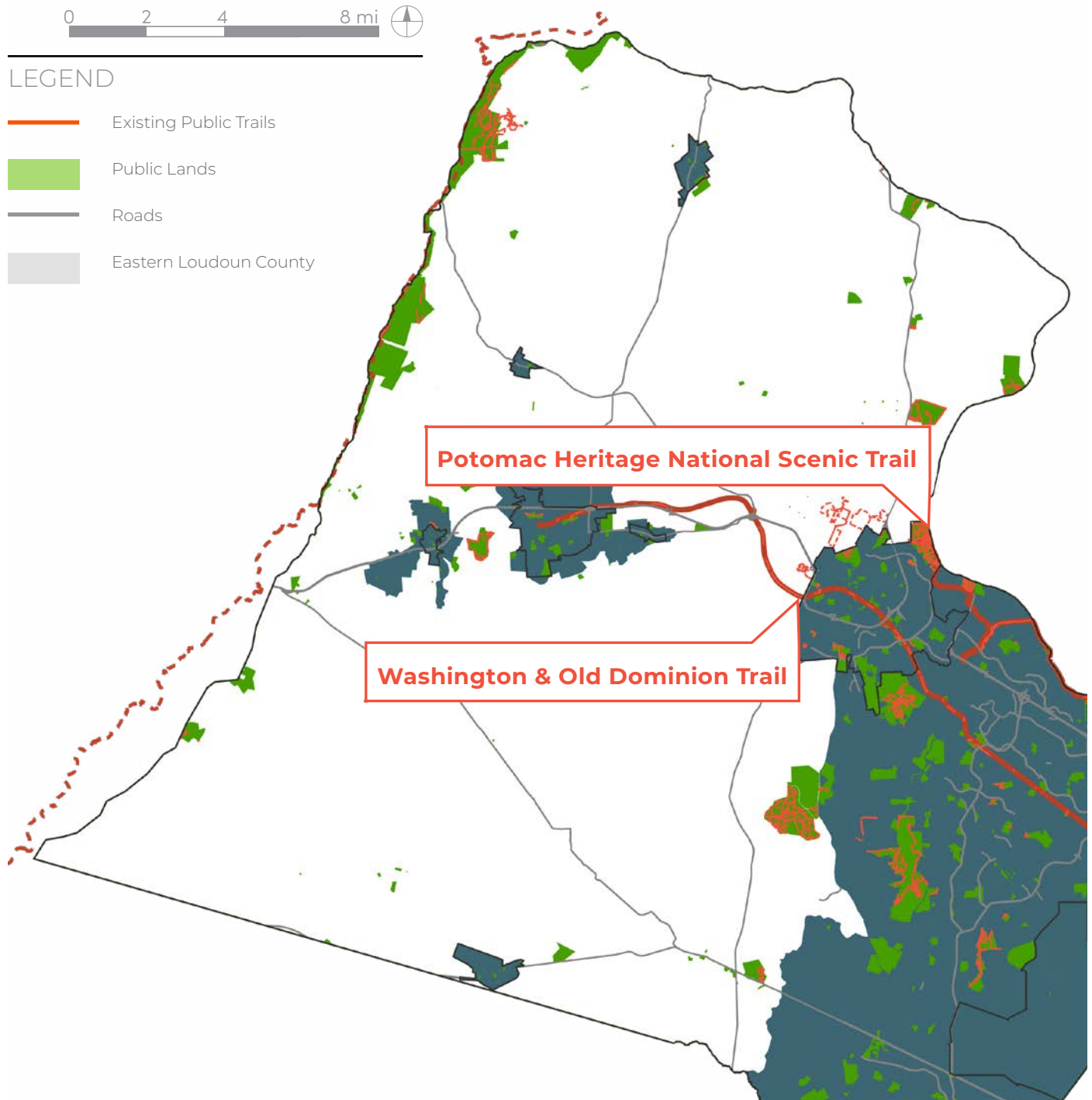
- » River to Prince William and Fauquier Counties.
  - » Utilize vacant lands, partnerships with conservation easement holders and environmental/resource corridors, particularly Loudoun County’s waterways, for trails and linear park connections.
  - » Take advantage of Rural Loudoun’s greater availability of open space to pursue protected linear park and trail corridors that are wide enough to preserve high-quality wildlife habitat.
2. Utilize and protect riparian and wildlife corridors.
  3. Consider adjacencies and anticipate areas of development.
  4. Evaluate the framework plan and improve as needed to:
    - » Fill service gaps equitably.
    - » Ensure a diversity of linear park and trail experiences.
    - » Connect to tourism destinations.
    - » Coordinate the placement of access point and blueway facilities.

**FRAMEWORK MAPPING PROCESS**

The Rural Loudoun Linear Parks and Trails Framework mapping process seeks to:

1. Build on existing planned and priority projects.

## MAP 13: EXISTING TRAILS & PUBLIC LANDS – RURAL LOUDOUN

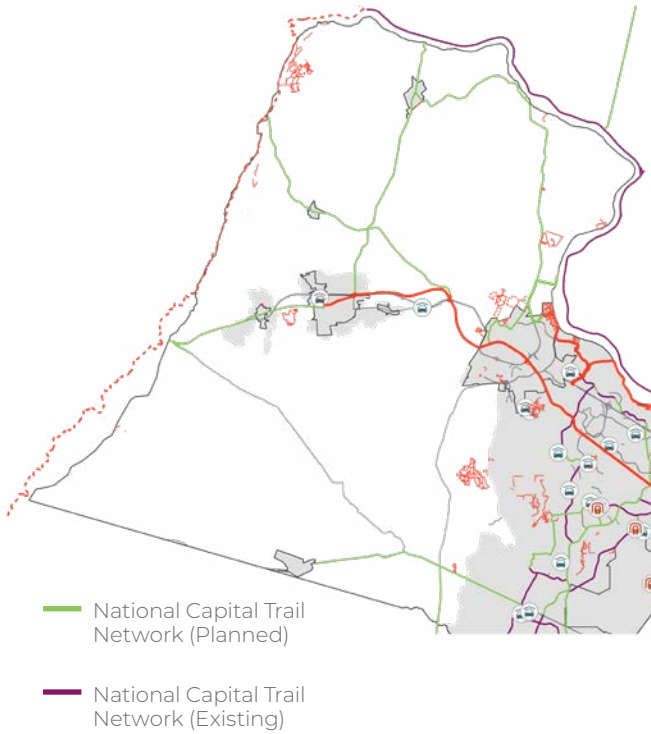


### LINEAR PARK & TRAIL CONTEXT

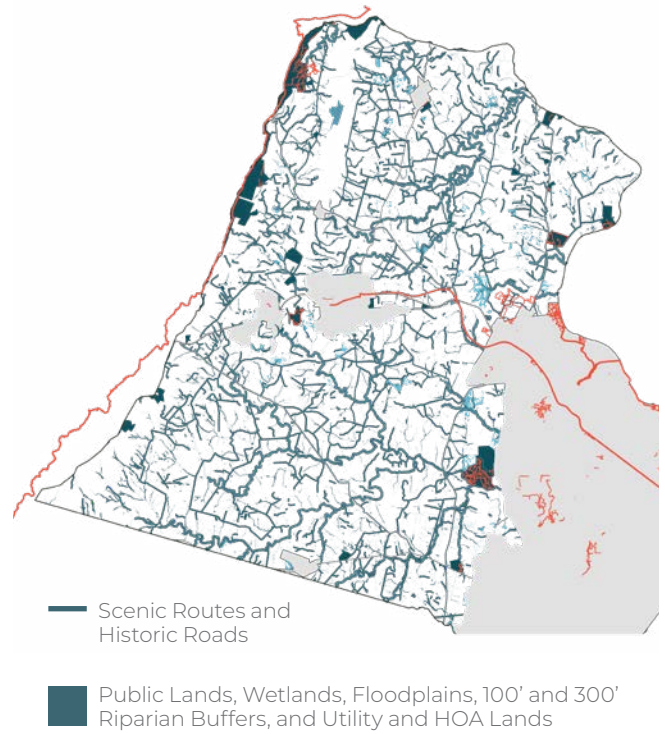
The existing network of trails in Rural Loudoun County primarily consists of park and regional trails, including future planned connections to the Washington & Old Dominion and Potomac Heritage National Scenic trails, proposed by local “Friends” groups and the National Capital Trail Network Plan.

RURAL LOUDOUN FRAMEWORK ANALYSIS: OPPORTUNITIES

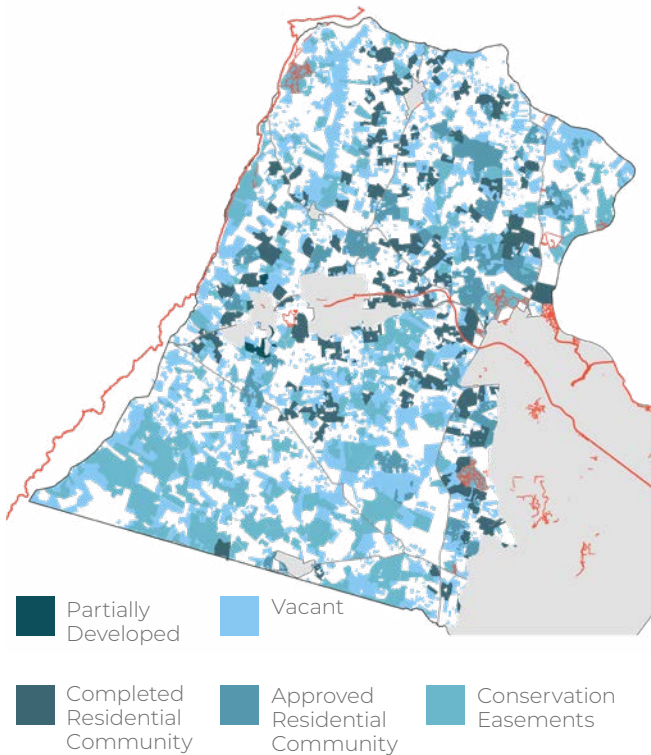
PREVIOUSLY PLANNED TRAILS



RESOURCE CORRIDORS



PRIVATE LAND OPPORTUNITIES



TOURISM DESTINATIONS

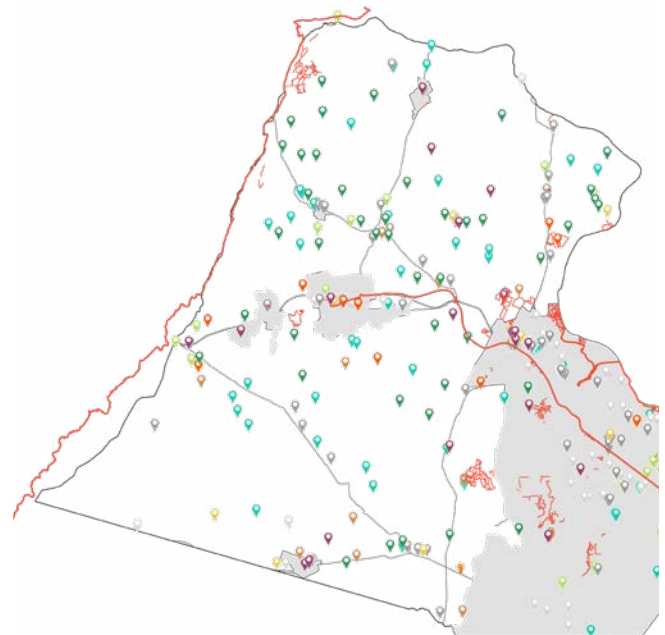
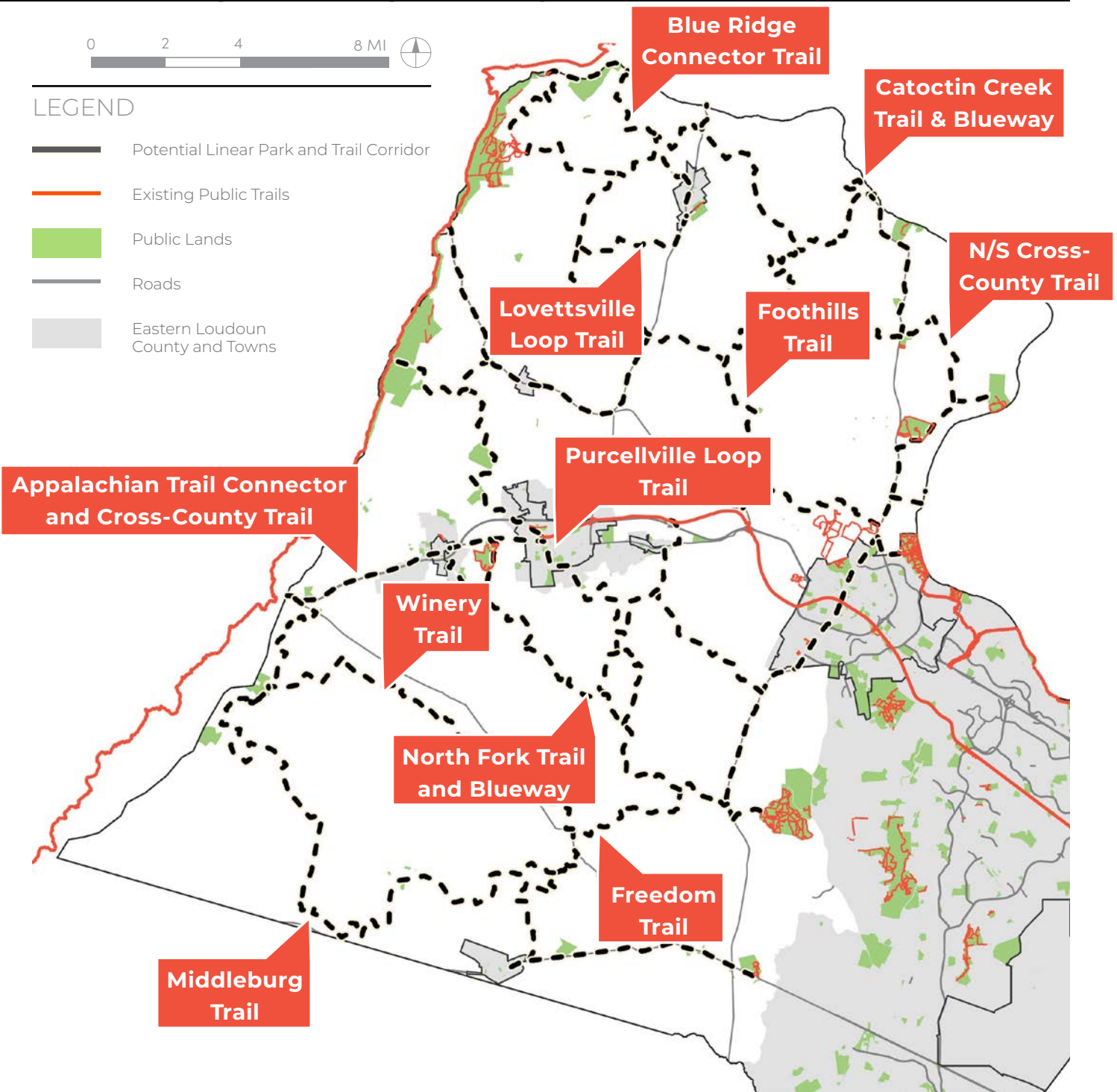


Figure 34: Framework mapping and opportunity analysis for Eastern Loudoun County



# MAP 14: LINEAR PARKS & TRAILS FRAMEWORK PLAN – RURAL LOUDOUN



## LINEAR PARKS & TRAILS FRAMEWORK PLAN

By utilizing natural resource corridors and focusing on the connections between natural and historic destinations, Rural Loudoun County can close existing gaps in access and bolster tourism opportunities.

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**FRAMEWORK TRAILS IN RURAL LOUDOUN COUNTY**

The linear park and trail corridors identified in the Framework Plan could support more than 200 miles of new trails and blueways in Rural Loudoun. About one-third of these trails would weave through stream valley corridors, with others following scenic byways, historic gravel roads, and the County’s distinctive agricultural landscapes.

The mileage figures shown in Table 1 are approximate and are based on the mileage of the Framework Plan corridors. They do not refer

to detailed trail alignments, or the ability of certain corridors to support multiple trail loops.

Frequent access points along future trails will be necessary to meet the County’s ambitious long-term Level of Service goals. The number of access points shown in Table 1 is an estimate based on the number of times each potential corridor intersects a public right-of-way or other public land where access could be provided.

**Table 20: Rural Loudoun Proposed Linear Park and Trail Corridor Summary**

<b>LINEAR PARK &amp; TRAIL CORRIDOR</b>	<b>NEW MILEAGE</b>	<b>TRAIL ACCESS POINTS</b>	<b>BLUEWAY ELEMENTS</b>	<b>CONNECTIVITY ACROSS COUNTY LINES</b>
<b>Appalachian Trail Connector and Cross-County Trail</b>	7.4 mi	8		●
<b>Blue Ridge Connector Trail</b>	18.8 mi	15	●	●
<b>Catoctin Creek Trail &amp; Blueway</b>	21.3 mi	13	●	●
<b>Freedom Trail</b>	24.4 mi	22		
<b>Foothills Trail</b>	19.7 mi	12		●
<b>Lovettsville Loop Trail</b>	12.8 mi	11		
<b>Middleburg Trail</b>	22.4 mi	13	●	
<b>N/S Cross-County Trail</b>	18.8 mi	15	●	●
<b>North Fork Trail and Blueway</b>	20.7 mi	18	●	
<b>Purcellville Loop Trail</b>	17.2 mi	16		
<b>Winery Trail</b>	24.5 mi	11		
<b>RURAL LOUDOUN TOTALS</b>	<b>208 miles</b>	<b>154</b>		

### **EASTERN LOUDOUN COUNTY**

Eastern Loudoun County is defined by its residential and mixed-use communities, and it will absorb the bulk of the County's future population growth and development. There is a growing urgency to protect Eastern Loudoun's natural resources and to expand its linear park and trail facilities to meet existing and future demand.

#### **CHALLENGES**

- » Demand for more linear park and trail facilities, which will be compounded by population growth and future development
- » Pressure to protect critical natural resources from the impacts of existing and future development
- » Difficulty of access to existing trails and natural areas, which are mostly isolated within park "islands"
- » Difficulty of acquiring land and access rights within a heavily developed area with rising land values

Given these growth and environmental pressures, the linear park and trail framework planning approach for Eastern Loudoun County begins by aligning itself with other County goals to protect natural resources, particularly the river and stream corridors that are critical to wildlife habitat, water quality and recreation. The linear park and trail vision for Eastern Loudoun County uses riparian corridors as the linear park and trail

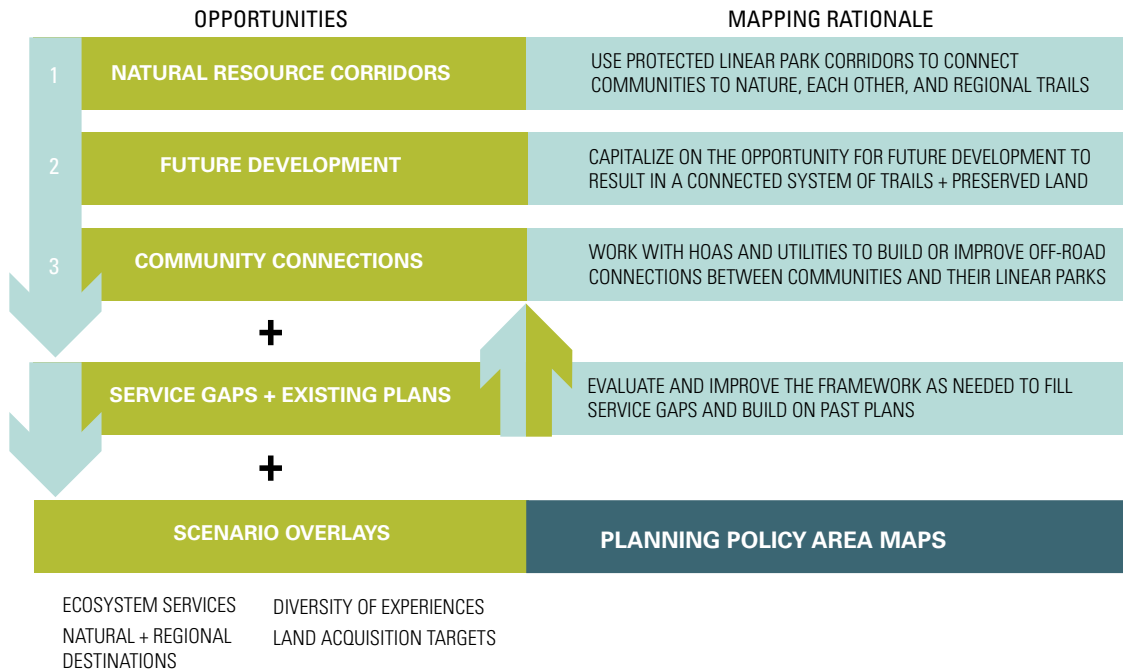
spines that reach communities throughout Eastern Loudoun and connect them to nature, to each other, and to existing parks and regional trails.

The concentration of vacant and underdeveloped land along Eastern Loudoun's riparian corridors presents an opportunity for the Linear Parks and Trails Framework Plan to support other County plans and ordinances in encouraging impact-sensitive development. By highlighting those corridors where future development must protect open space and provide essential public recreational amenities, the Plan can help to ensure that future development results in an interconnected linear park and trail system and contiguous land preservation in Eastern Loudoun.

#### **OPPORTUNITIES**

- » Use protected natural resource corridors to connect residential and mixed-use communities to each other and to nature, parks, regional trails, jobs and schools.
- » Emphasize the importance of linear parks and trails as stand-alone experiences and opportunities for natural respite and passive recreation.
- » Capitalize on the opportunity for future development to result in contiguous land preservation and an interconnected system of linear parks and trails.
- » Create blueway amenities to increase public access to Eastern Loudoun's waterbodies.
- » Work with utilities and HOAs to build future off-road trail connections between linear

**EASTERN LOUDOUN COUNTY PROCESS**



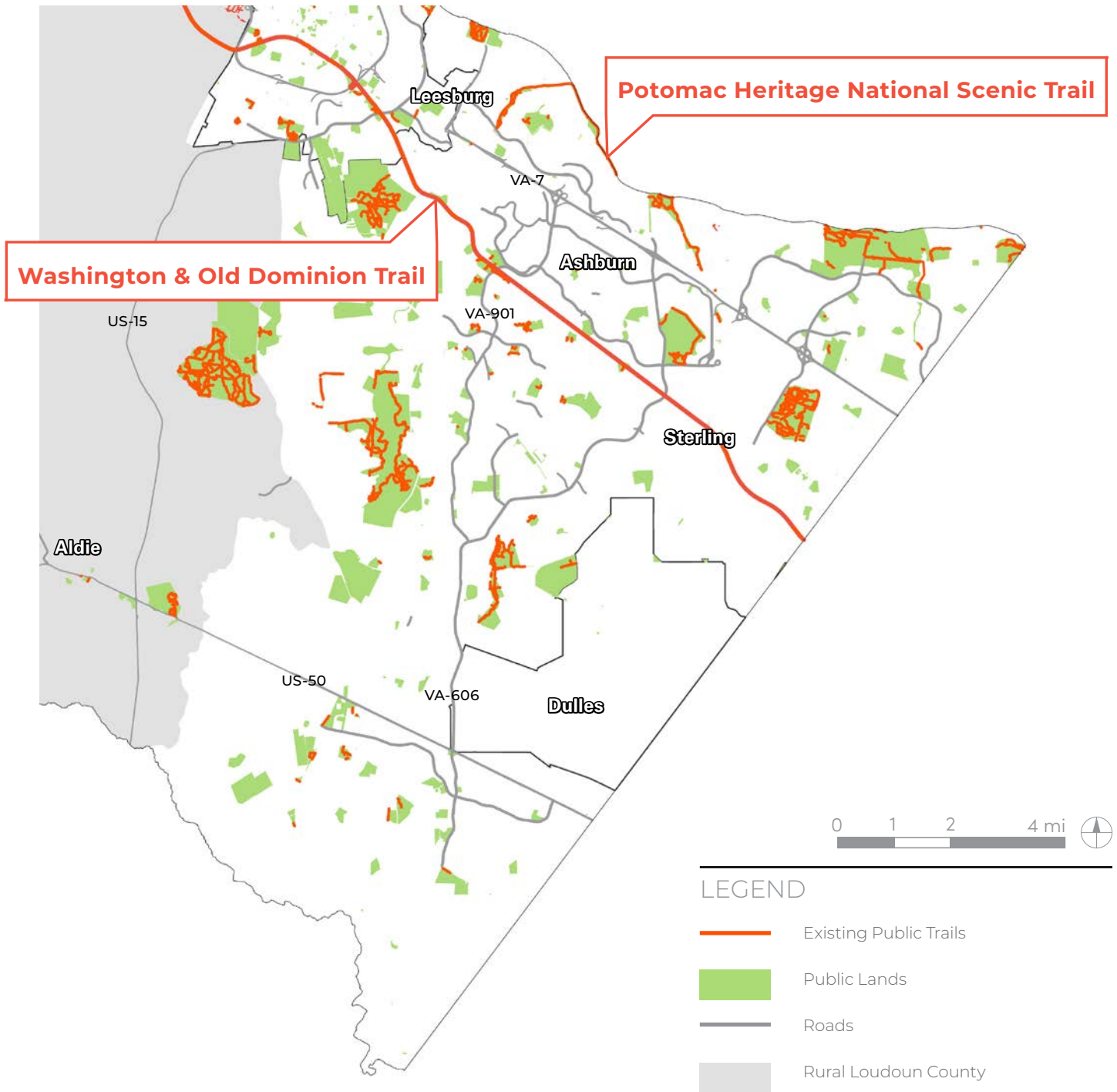
**Figure 35:** Trail connection mapping process for eastern Loudoun County

- » parks and existing and future communities.
  - » Where necessary to fill linear park and trail gaps, work with municipalities and County transportation planners to create high-quality connections within road corridors.
  - » Promote access and countywide connectivity by building strong connections between the linear park and trail system and the system of paved shared-use paths and sidewalks envisioned in the Countywide Transportation Plan.
  - » Ensure linear park and trail gaps are filled equitably across eastern Loudoun’s communities.
1. Use protected natural resource corridors as linear park spines.
  2. Identify where likely future development could support construction of public linear park, trail and blueway facilities.
  3. Identify land owned by private organizations, such as HOAs or utilities, that could support future trail spurs to communities.
  4. Evaluate the framework plan and improve as needed to:
    - » Fill service gaps equitably.
    - » Coordinate with other plans.
    - » Ensure a diversity of linear park and trail experiences.
    - » Coordinate the placement of access point and blueway facilities.

**FRAMEWORK MAPPING PROCESS**

The Eastern Loudoun Linear Parks and Trails Framework mapping process seeks to:

## MAP 15: EXISTING TRAILS & PUBLIC LANDS – EASTERN LOUDOUN



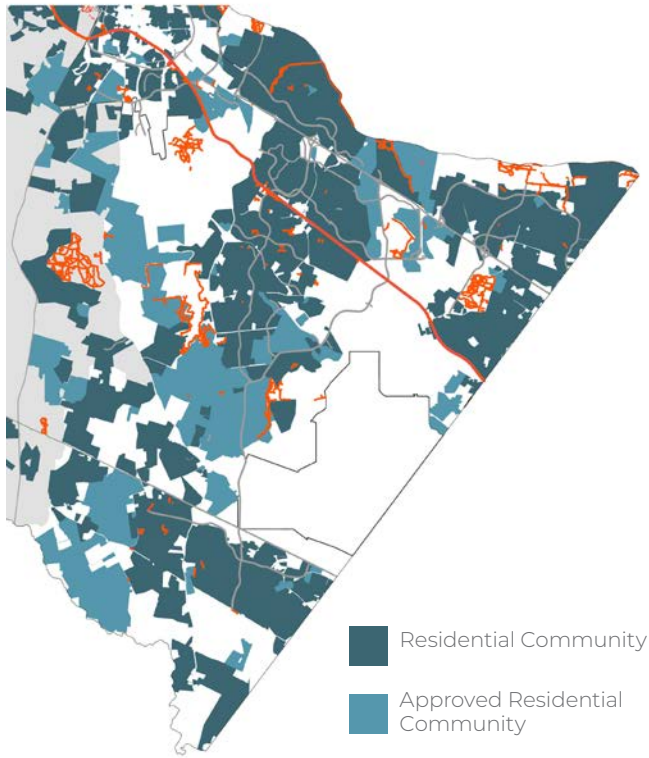
### LINEAR PARK & TRAIL CONTEXT

The existing system in Eastern Loudoun County consists primarily of isolated trail loops located within park “islands.” The Framework Plan seeks opportunities to connect these loops to one another, to communities, and to the regional Washington & Old Dominion and Potomac Heritage National Scenic trails.

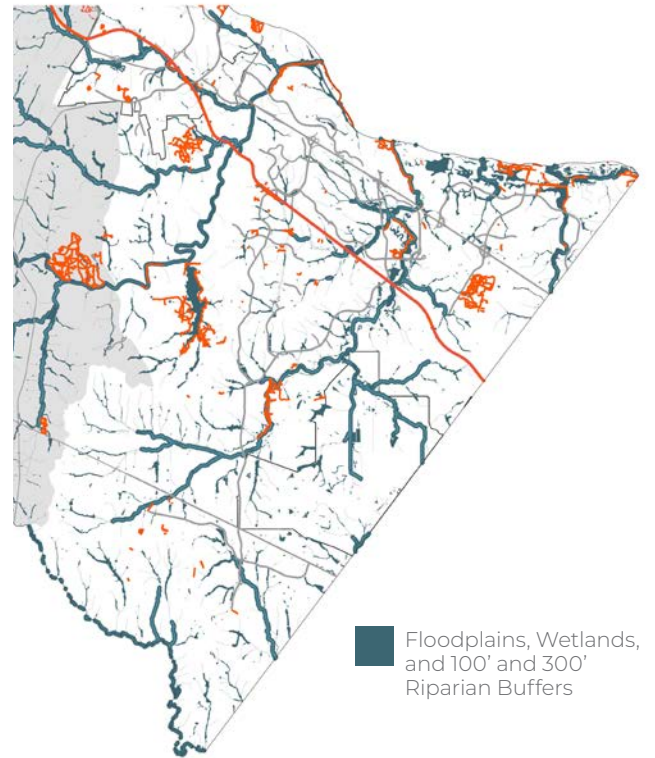
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EASTERN LOUDOUN FRAMEWORK ANALYSIS: OPPORTUNITIES

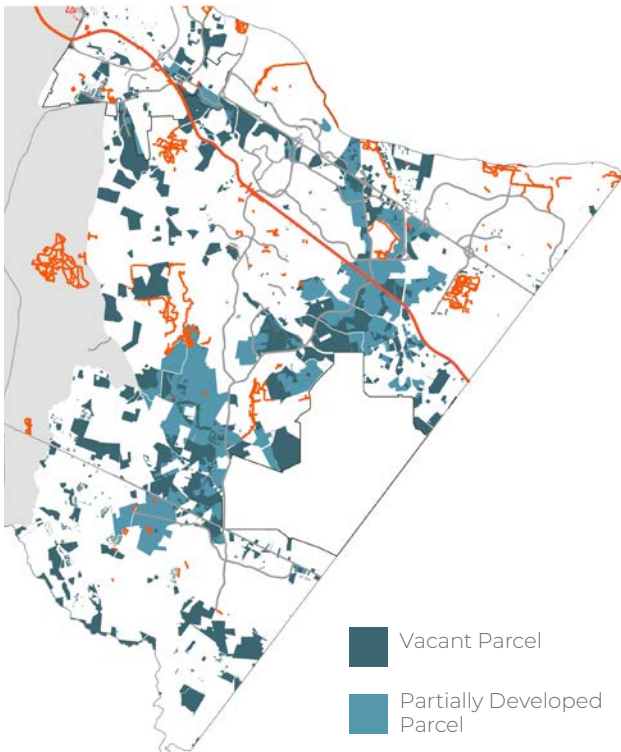
RESIDENTIAL COMMUNITIES



NATURAL RESOURCE CORRIDORS



VACANT AND PARTIALLY DEVELOPED PARCELS



HOMEOWNERS ASSOCIATION PROPERTY

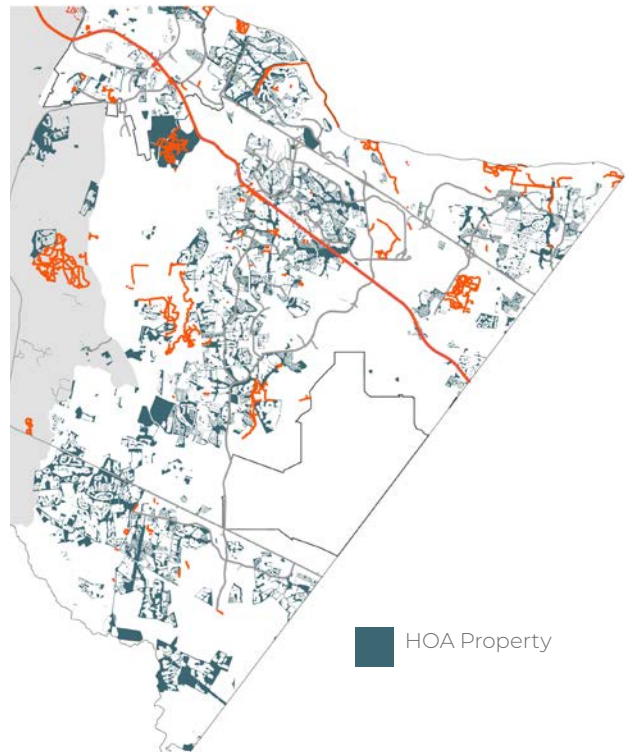
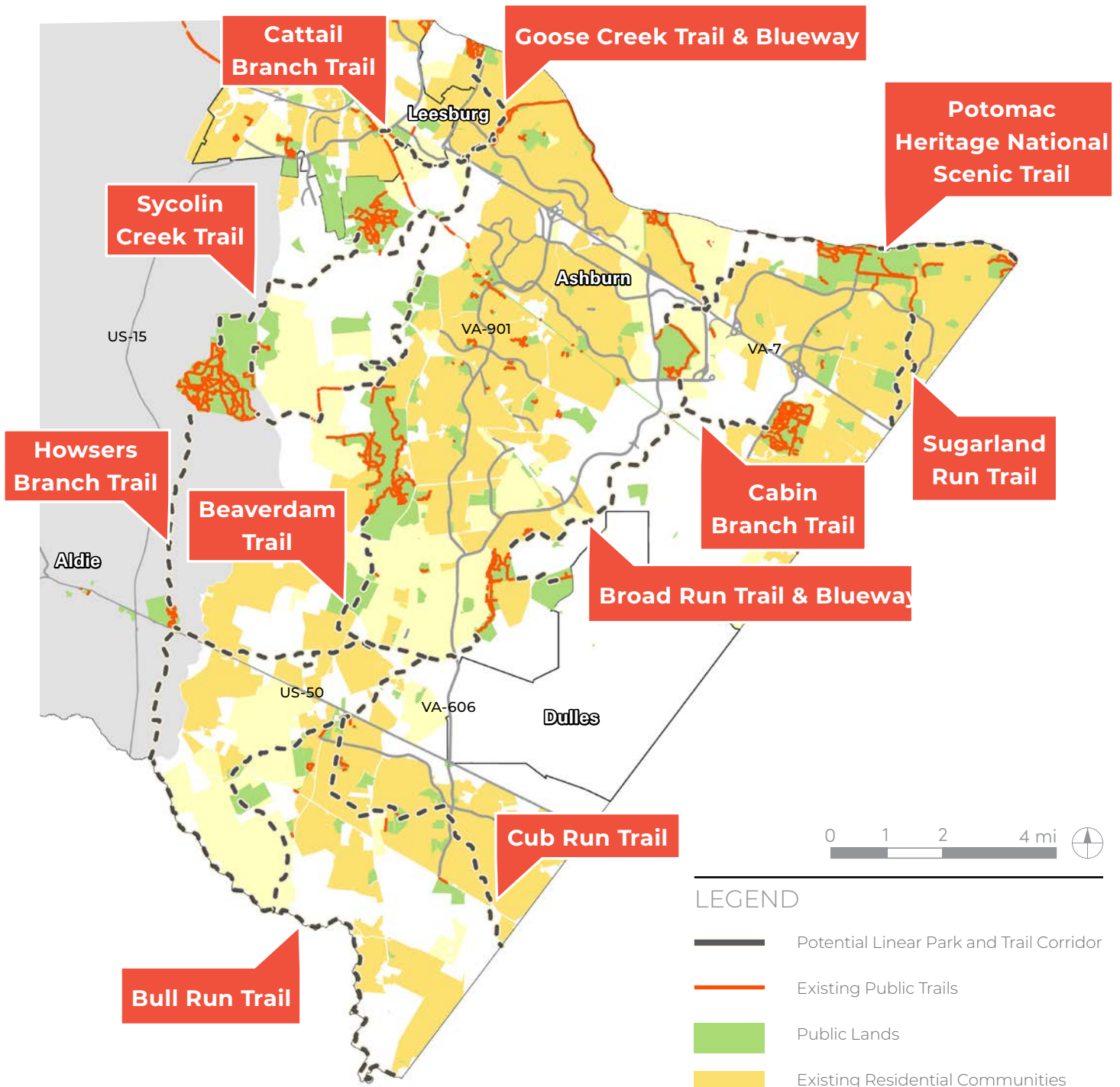


Figure 36: Framework mapping and opportunity analysis for Eastern Loudoun County








# MAP 16: LINEAR PARKS & TRAILS FRAMEWORK PLAN – EASTERN LOUDOUN



## LINEAR PARKS AND TRAILS FRAMEWORK PLAN

By following the County’s rivers and streams, new linear parks, trails and blueways would significantly expand access and create varied trail loops and experiences throughout Eastern Loudoun communities.

### LEGEND

-  Potential Linear Park and Trail Corridor
-  Existing Public Trails
-  Public Lands
-  Existing Residential Communities
-  Approved Residential Communities
-  Roads
-  Rural Loudoun County

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**FRAMEWORK TRAILS IN EASTERN LOUDOUN COUNTY**

The linear park and trail corridors identified in the Framework Plan could support 78 miles of new trails and blueways in Eastern Loudoun. Almost three-quarters of those trails will follow streams and rivers, creating significant opportunities for public nature access while allowing for the long-term protection and stewardship of critical natural resources within linear park corridors.

The mileage figures shown in Table 2 are approximate and are based on the mileage of the Framework

Plan corridors. They do not refer to detailed trail alignments, or the ability of certain corridors to support nested trail loops.

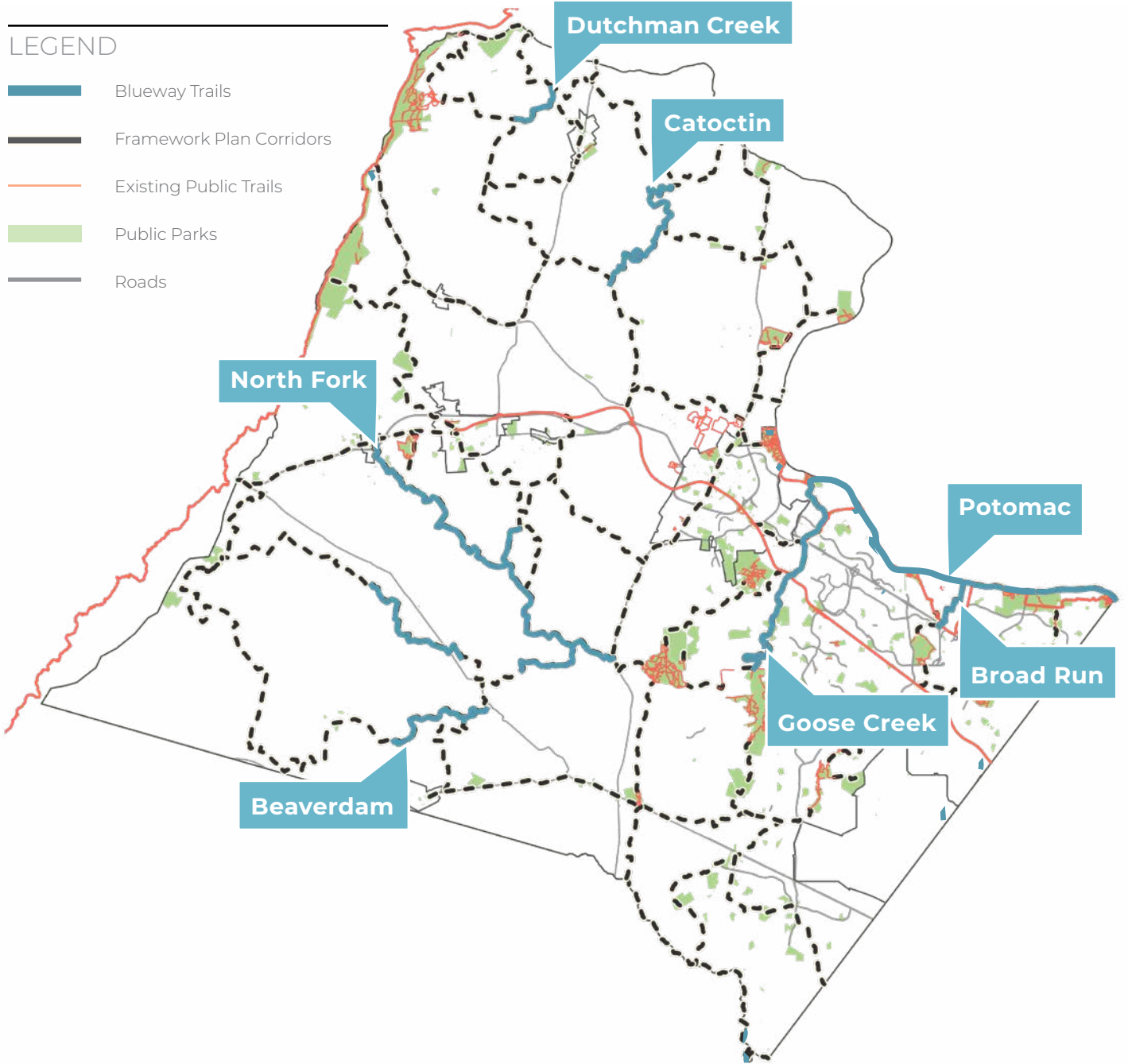
Frequent access points along future trails will be necessary to meet the County’s ambitious long-term Level of Service goals. The number of access points shown in Table 2 is an estimate based on the number of times each potential corridor intersects a public right-of-way or other public land where access could be provided.

**Table 21: Eastern Loudoun Proposed Linear Park and Trail Corridor Summary**

LINEAR PARK & TRAIL CORRIDOR	NEW MILEAGE	TRAIL ACCESS POINTS	BLUEWAY ELEMENTS	CONNECTIVITY ACROSS COUNTY LINES
Beaverdam Trail	4.7 mi	6		
Broad Run Trail	21.2 mi	35	●	
Bull Run Trail	9.9 mi	5		●
Cabin Branch Trail	2.1 mi	3		
Cattail Branch Trail	1.7 mi	3		
Cub Run Trail	6.7 mi	13		●
Goose Creek Trail	9.7 mi	17	●	
Howsers Branch Trail	6.4 mi	6		
Potomac Heritage National Scenic Trail	6.4 mi	8		●
Sugarland Run Trail	2.8 mi	3		●
Sycolin Creek Trail	6.1 mi	6		
<b>EASTERN LOUDOUN TOTALS</b>	<b>78 miles</b>	<b>105</b>		



## MAP 17: BLUEWAY TRAILS



### CORRIDOR FEATURES

Further planning and design will determine the extent, alignment, accessibility and amenities of the linear parks, trails and blueways that fall within the Framework Plan corridors. Following are important considerations for planning and

design within corridors, and more detailed standards and recommendations can be found in this document's Design Guidelines.

### MULTIPLE USERS

Wherever site context allows, each linear park and trail project should accommodate the system's

primary user types: hikers, bikers and equestrians. If corridor width and site conditions allow, separate treads with vegetated buffers should be provided to avoid user conflicts. In narrow corridors, provide shoulders to avoid user conflicts. Signage and marketing campaigns should educate users about trail etiquette, and the County should identify opportunities to bring together different user groups for linear park and trail advocacy and maintenance.

### **BLUEWAYS**

Based on stakeholder and community input, the Linear Parks and Trails Framework Plan identifies 8 corridors that can accommodate blueways, or marked paddle trails for small non-motorized boats along the County's streams and rivers. Those blueways are identified in Map 5 and will require support in the form of launch sites, parking areas, signage, education campaigns, blueway status information and boat rental.

### **EXPERIENCE**

The linear parks, trails and blueways within each Framework Plan corridor should be designed to respond to their site conditions and allow users to feel immersed in the specific natural or cultural context of the corridor.

Each corridor offers opportunities for the design of nested trail loops on adjacent publicly accessible land. These nested loops should be pursued wherever possible. Materials and amenities should reflect a sense of place and be consistent with a recognizable LPAT system brand.

### **ACCESSIBILITY**

The planning and design of linear parks and trails within each Framework Plan corridor should emphasize several forms of accessibility:

- » The ability of all users to access countywide LPAT from their communities by way of the larger linear park and trail system.
- » The ability of all users to access countywide LPAT by way of other modes of travel—including by car, transit and the County's active transportation network of shared-use paths and sidewalks. Supported by careful design of parking, placement and design of access points, and coordination with County and state transportation partners to ensure high-quality connections to active transportation networks.
- » The ability of users of all physical abilities, ages and backgrounds to enjoy the linear park and trail system. Supported by the design of ADA accessible trail loops, broad and equitable distribution of access points, informative and accessible signage, and marketing campaigns that establish the linear park and trail system as a welcoming destination for all residents.

### LEVEL OF SERVICE

Implementation of the Linear Parks and Trails Framework Plan will more than double the size of Loudoun County's trail system. To track the impact of linear park and trail improvements on measures such as overall system access and connectivity, the County will establish Level of Service (LOS) standards.

Loudoun County has established an ambitious long-term linear park and trail LOS goal of:

- » **Public access within 1/8 mile** for areas with residential unit densities greater than 3 units per acre (more urban areas)
- » **Public access within 1/2 mile** for areas with residential unit density of 3 units or fewer per acre (more rural areas)

This emphasizes the County's goal to achieve equitable countywide access to linear parks and trails, while acknowledging the substantial differences in population density in different parts of the county.

### RECOMMENDATIONS

The Framework Plan will result in extensive expansion of the County's linear park and trail system, providing a backbone trail network that reaches throughout the County. However, as illustrated in Map 5, the Framework Plan corridors alone do not satisfy the County's long-term LOS goal.

In order to reach that goal, the County must develop partnerships and identify future opportunities to build out secondary trails and spurs over time. The linear park and trail network should be evaluated alongside the Countywide Transportation Network and existing and future HOA trails to fully understand the connectivity and accessibility of the system. And because the current service gap is so extensive, the County should implement phased LOS goals for the Ten-Year Plan, to help prioritize short-term investments and gauge their impact.

### PHASED LEVEL OF SERVICE GOALS






For phased LOS goals, the County might consider using the LOS metric of facilities per capita. For example, in Prince George's County, Maryland, the Parks and Recreation department established an LOS goal of 0.4 miles of hard surface trail and 0.1 miles of natural surface trail per 1,000 residents by the year 2040. In Placer County, California, the LOS goal in the most recent parks and trails master plan calls for 1.0 mile of trail per 1,000 residents.

Map 6 and Table 4 demonstrate the impact of the Framework Plan according to the two LOS metrics, and without consideration for the County's active transportation system of sidewalks and shared-use paths. The system gaps remain sizable, pointing to the need for

# MAP 18: FRAMEWORK PLAN PRELIMINARY SERVICE GAP ANALYSIS



## LEGEND

-  Potential Linear Parks and Trails
-  Existing Public Trails
-  Trail Gap for Areas with Zoning Density Higher than 3 Units per Acre
-  Trail Gap for Areas with Zoning Density Lower Than 3 Units per Acre
-  Roads

**Table 22: Per Capita LOS for Existing and Framework Trails**

EXISTING LEVEL OF SERVICE		FRAMEWORK PLAN LEVEL OF SERVICE	
TRAIL MILEAGE	PER 1,000 RESIDENTS	TRAIL MILEAGE	PER 1,000 RESIDENTS
224	<b>0.5 mi</b>	509	<b>1.2 mi</b>

# MAP 19: SERVICE GAP ANALYSIS WITH COUNTYWIDE TRANSPORTATION PLAN



## LEGEND

- Potential Linear Parks and Trails
- Existing Public Trails
- Trail Gap for Areas with Zoning Density Higher than 3 Units per Acre
- Trail Gap for Areas with Zoning Density Lower Than 3 Units per Acre
- Roads

future secondary and tertiary trails to meet the County's long-term access goals.

Map 7 shows the same service gap analysis, but with the addition of the paved paths and sidewalks

called for in the Countywide Transportation Plan. Connections to this active transportation network will significantly increase the linear park and trail system's ability to meet countywide accessibility goals.





**SIGNATURE  
PROJECT  
CASE STUDY**

## LINEAR PARKS AND TRAILS FRAMEWORK PLAN

### SIGNATURE PROJECT CASE STUDY

The Linear Parks and Trails Signature Project was an opportunity to use a specific trail master plan to dive in to the principles and opportunities of the larger Framework Plan. More detailed recommendations are offered in the separate Signature Project Master Plan.

The Signature Project is in Eastern Loudoun County, bordered to the north by the Potomac River and Potomac Heritage National Scenic Trail, to the east by the Broad Run, to the south by the Washington &

Old Dominion Trail (W&OD), and to the west by Goose Creek.

The project is an opportunity to use two of the County's important natural resource corridors—the Goose Creek and the Broad Run—to close gaps between two of the County's important regional trails—the Potomac Heritage and the W&OD. The result will be an 18-mile linear park and trail loop with a diversity of experiences, from river and wetland overlooks, to paved and equestrian trails along an abandoned rail corridor, to historic canal ruins and a restored 18th-century stone tollhouse along the Broad Run.



**Figure 38:** Historic Broad Run Tollhouse, bridge ruins and Highway 7 overpass



**Figure 37:** Kayak put-in and picnic area along Goose Creek at Keep Loudoun Beautiful Park



# LINEAR PARKS AND TRAILS FRAMEWORK PLAN

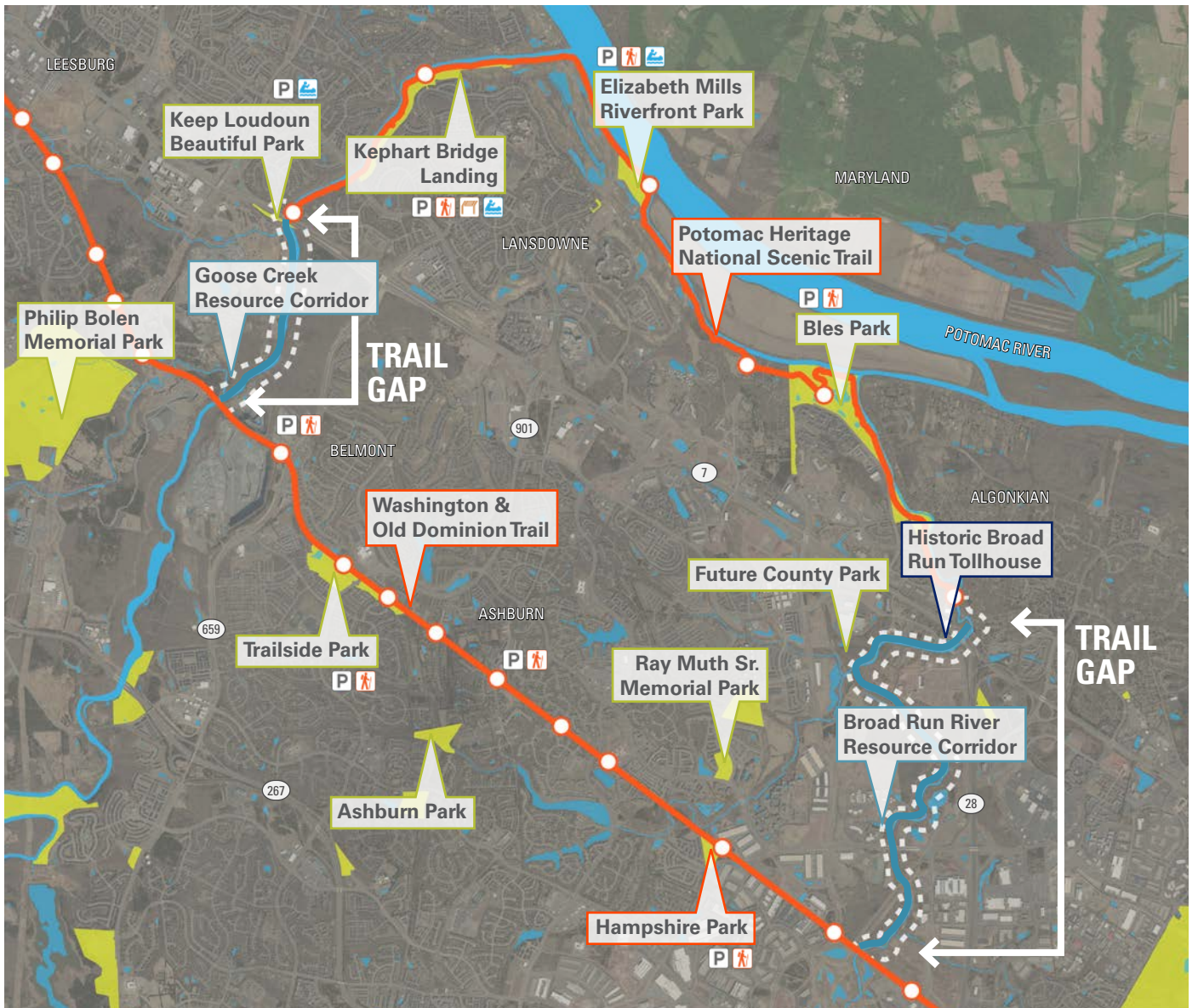
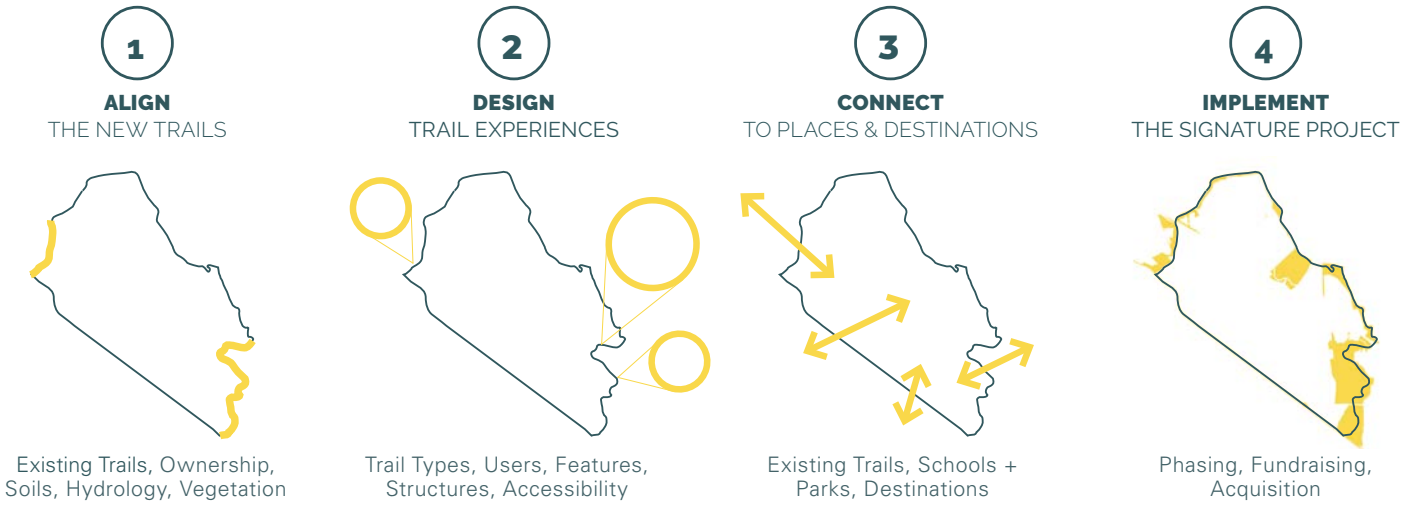


Figure 39: Signature Project process and project area

# LINEAR PARKS AND TRAILS FRAMEWORK PLAN

## OPPORTUNITIES & CHALLENGES

The goals of the Signature Project trail loop align with the goals of the larger Linear Parks and Trails Framework Plan:

- » Fill gaps and improve access, especially in communities that are underserved.
- » Protect and enhance the natural resources of the Broad Run and Goose Creek stream corridors.

- » Create new connections and educational opportunities at Loudoun County’s natural, cultural and historical destinations.

The Signature Project is an effective case study for examining opportunities and challenges that face the entire countywide linear park and trail system. For example, after the primary trail loop alignment is defined, County

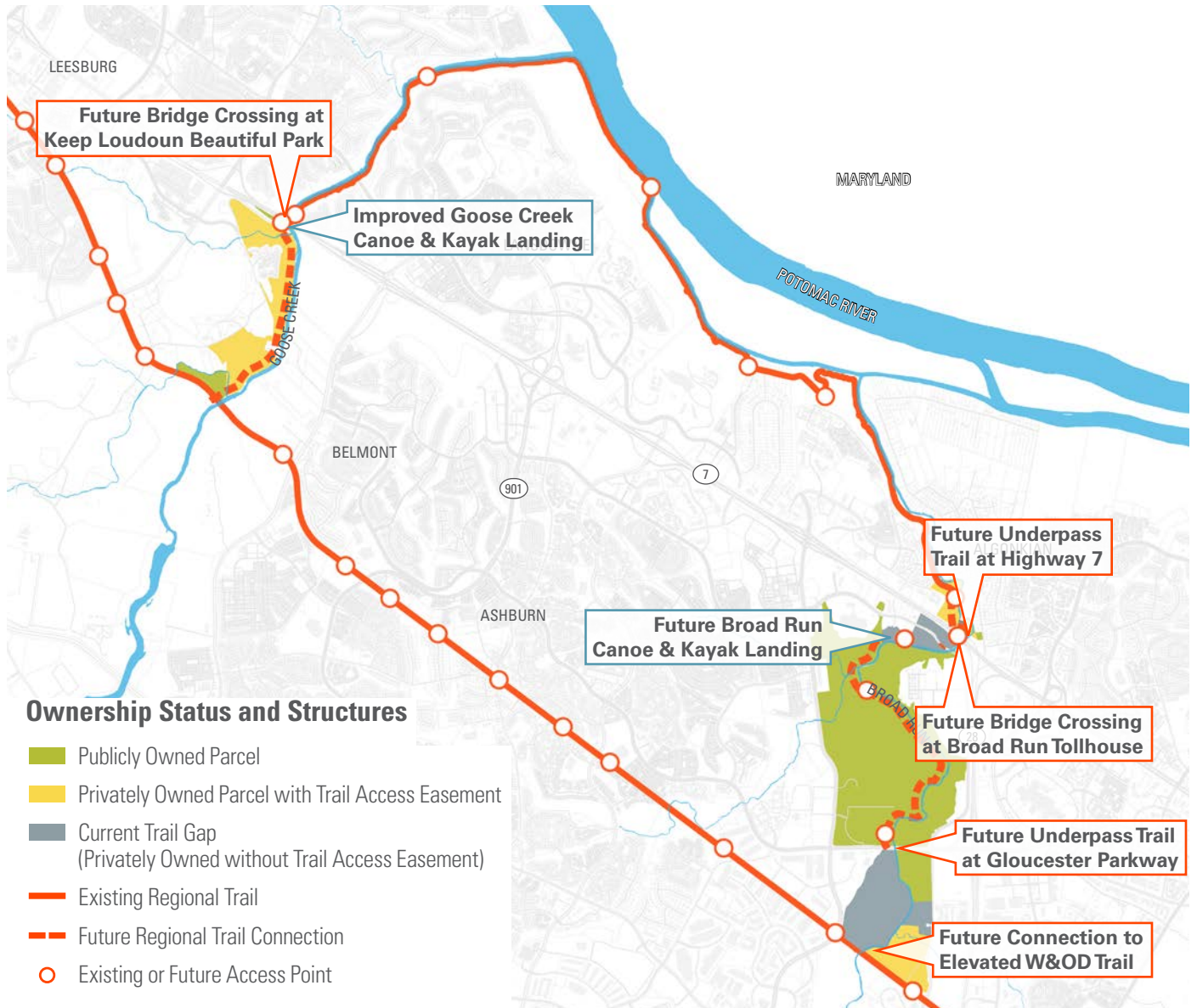


**Figure 41:** Signature Project area destinations

## LINEAR PARKS AND TRAILS FRAMEWORK PLAN

agencies must work together and with partner organizations such as schools and HOAs to develop connections between surrounding destinations and the regional Signature Project trail loop. The County will also rely on partnerships with NOVA Parks and the National Park Service to connect to and improve existing trails along the Signature Project.

The Signature Project also offers a good example of the patience and planning required to piece together trail alignments. Over the course of several years the County has secured ownership of several parcels along the future trail alignment, including large parcels secured via the proffer system. Additional conservation and trail access easements have also been



**Figure 42:** Land ownership status of Signature Project alignment and new structures needed

## LINEAR PARKS AND TRAILS FRAMEWORK PLAN

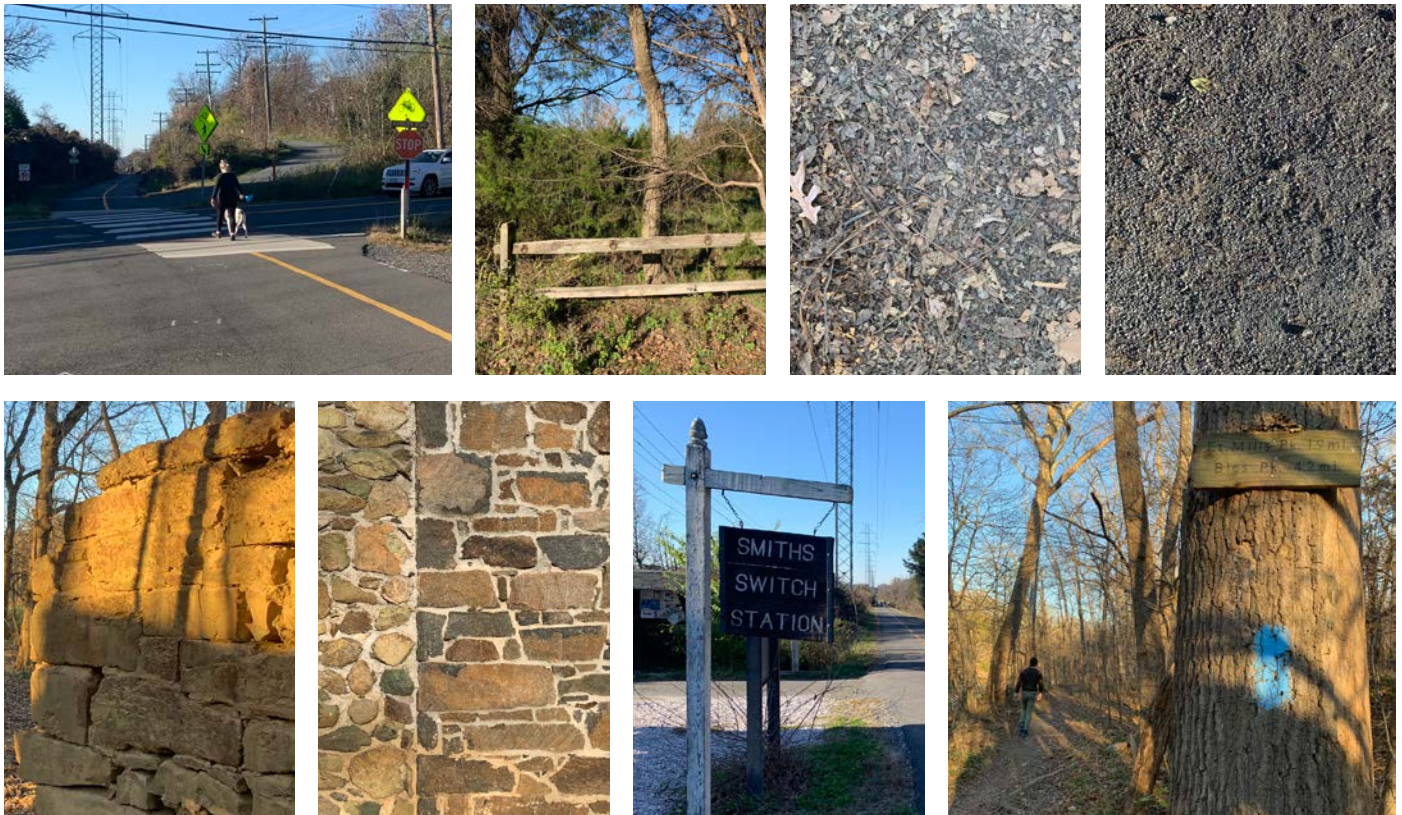
secured through development proffers. But several gaps in the alignment remain. The County will work with private landowners to negotiate trail access along its preferred alignment, while also creating alternative alignments to prepare for scenarios in which the trail must be rerouted to avoid properties where trail access is denied.

### BROAD RUN TOLLHOUSE FOCUS AREA

The potential Signature Project trail alignments and amenities around the Broad Run Tollhouse are good examples of what the Signature Project loop and the entire linear park and trail system can offer

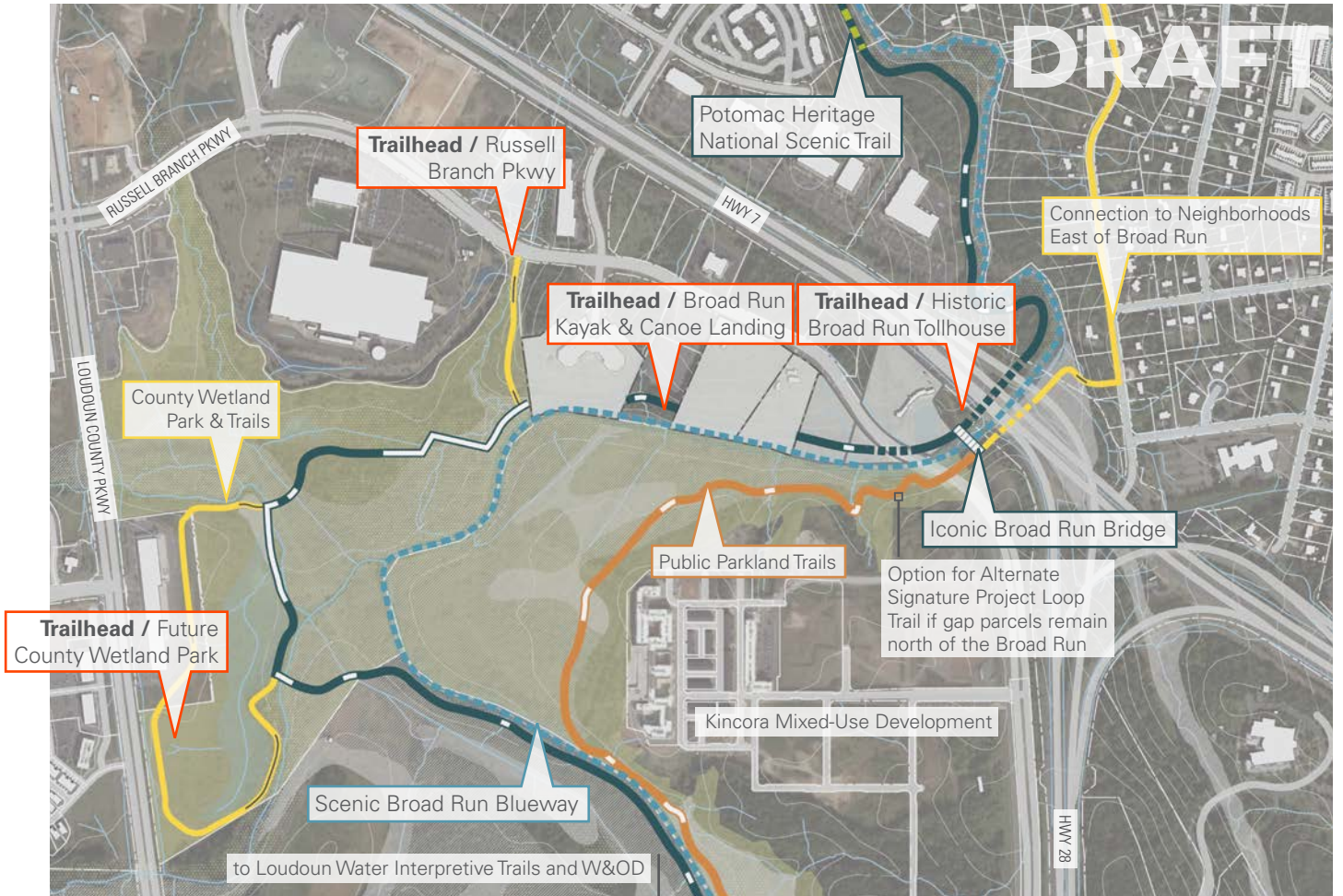
Loudoun County visitors and residents, including:

- » Connections to existing regional and local trails
- » Protection of sensitive environmental resources
- » Access to nature
- » Opportunities to highlight and provide public access to Loudoun County historic sites
- » New blueway amenities and multiple sites to access the Broad Run
- » Varied trail loops and experiences through forests and wetlands, along elevated bluffs, and against the water's edge
- » Connections to existing and future residential communities
- » Connections to existing and future public parks
- » Future connections to nearby public schools and parks



**Figure 43:** Character and experience images from existing trails of the Signature Project loop

SAMPLE FOCUS AREA / **BROAD RUN TOLLHOUSE**



**Trail Alignment Legend**

- Primary Signature Project Loop Trail
- Alternative Signature Project Loop Trail
- Secondary Trails for Mileage and Connections
- Blueway Trail
- Existing Trail
- Trail Gap Property / Currently No Public Ownership or Access Easement

**Trail Structure Legend**

- Primary Loop Trail Boardwalk
- Alternative Loop Trail Boardwalk
- Secondary Trail Boardwalk
- Bridge Crossing
- Road Underpass

**Basemap Legend**

- Stream
- Waterbody
- Predominantly Hydric Soil
- 2' Contour
- Wetland
- Significantly Hydric Soil
- Public Parkland

**Figure 44:** Enlargement of potential Signature Project trail alignment at Broad Run Tollhouse



08

# TEN-YEAR PLAN

**INTRODUCTION**

**COST SCENARIOS**

**PROJECT PRIORITIZATION**

**PROJECT PHASING**

**ACTION ITEMS**

## INTRODUCTION

The Ten-Year Plan identifies priority linear park, trail and blueway projects from within the larger Framework Plan, establishes a ten-year outlook, and recommends next steps to kickstart implementation.

The Ten-Year Plan is an important resource to help the County develop its financing, staffing and partnership approach for an expanded linear parks and trails system. It is also an important tool for engaging the public, showing progress, and demonstrating the positive impact of an expanded linear park and trail system.

## COST SCENARIOS

The Countywide Linear Parks and Trails System Plan identifies corridors within which the County and its partners will pursue the detailed alignment, design and construction of linear park, trail and blueway projects. The cost of those projects within the Framework Plan corridors will depend on a range of factors, including trail type, site conditions or uncertainty, and the nature and extent of project amenities such as signage, pavilions, parking lots and nested trail loops.

This Plan provides a range of possible costs to help the County establish funding expectations and priorities for design and build-out of the system. High-level costs are

calculated per mile of Framework Plan corridor.

## FRAMEWORK PLAN COST SCENARIOS FOR PLANNING AND CONSTRUCTION

- » This Plan prices Framework Corridor buildout at **\$350,000 to \$1,300,000 per mile**.
- » The cost ranges are based on and checked against planning and construction figures from:
  - Fairfax County Land Development Services Unit Price Schedule, 2021
  - Prince William County Implementation Plan for the Potomac Heritage National Scenic Trail, prepared by the Northern Virginia Regional Commission in 2002, with prices adjusted using the Consumer Price Index Inflation Calculator from the U.S. Bureau of Labor Statistics
  - East Coast Greenway Alliance Design Guide, 2021
- » Dollar ranges do not include potential acquisition, permitting or environmental mitigation costs or ongoing maintenance.
- » The corridor cost figures do not account for scenarios in which developers or other regional partners share trail planning and construction costs.

## SIGNATURE PROJECT EXAMPLE

The Signature Project—the proposed trail loop that utilizes the Broad Run and Goose Creek river corridors to connect existing stretches of the Potomac Heritage National Scenic Trail and the Washington & Old Dominion



# LINEAR PARKS AND TRAILS FRAMEWORK PLAN

**Table 23: Signature Project Per-Mile Cost Scenario Examples**

	LOW-END CORRIDOR	PROPOSED CORRIDOR	HIGH-END CORRIDOR
	7.35 miles of multi-user natural surface trails		Additional picnic facilities and interpretive features at the Broad Run Tollhouse trailhead
	2 primitive non-motorized boat launches (1 on Goose Creek and 1 on Broad Run)	3.5 miles of additional trail loops and extensive interpretive boardwalk trails on public access land within the primary corridors	Upgrade to ADA-accessible non-motorized boat launch on Goose Creek
	1 stream crossing and 1 underpass trail within the primary corridor alignments		
	1 stream crossing and 1 underpass trail for new connections to secondary trails outside the primary corridors		
<b>PER-MILE COST</b>	<b>\$440,000</b>	<b>\$1.1 million</b>	<b>\$1.3 million</b>
<b>TOTAL COST</b>	<b>\$3,077,346</b>	<b>\$7,816,849</b>	<b>\$9,019,442</b>

Trail—provides an example of how different approaches can yield different Framework Plan corridor implementation costs.

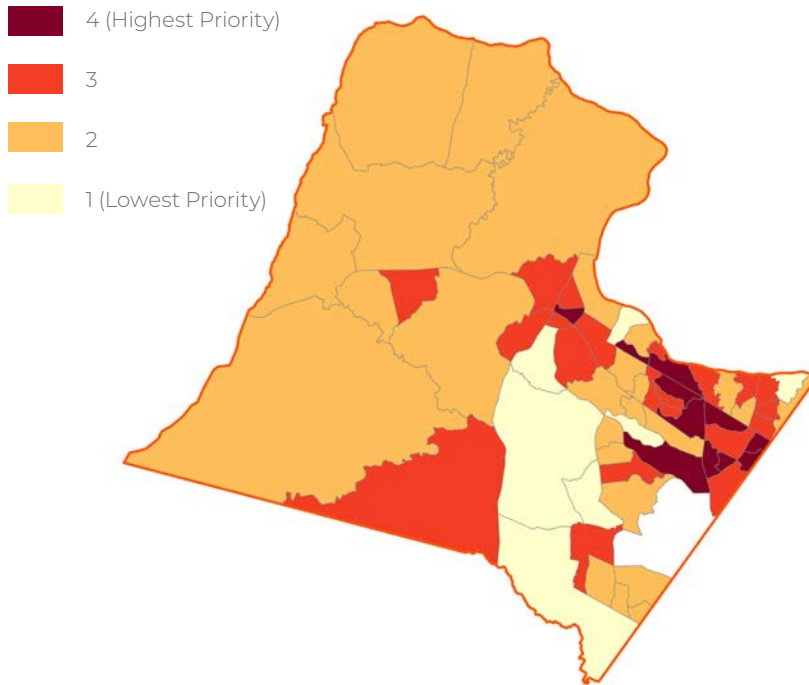
Table 4 lists possible amenities and infrastructure included under different per-mile funding scenarios for the Signature Project corridor. The total costs in the table include projected fees for planning, design, construction documentation and administration. They do not account for contingencies or escalation. Cost estimates for the Signature Project

corridors are more detailed than those provided for the Framework Plan as a whole; however, they are high-level costs based on incomplete site information and should be refined through a more detailed design process.

## PROJECT PRIORITIZATION

The Ten-Year Plan uses a prioritization model to rank the linear park and trail projects defined in the Framework Plan and

## LINEAR PARKS AND TRAILS FRAMEWORK PLAN



**Figure 45:** High-priority Loudoun County Census tracts as identified by an equity-weighted mapping methodology that considered household income, homeownership rates and tree canopy cover

to divide them into tiers. This helps the County to focus resources and first steps on those projects that are best positioned for implementation and to advance the goals of the Linear Parks and Trails Plan.

The planning team and staff researched local and national best practices, engaged local stakeholders in focus groups, and posed survey questions to the Loudoun County public to guide the organization and prioritization of linear park and trail projects.

Through this process, the team refined a set of criteria to identify the highest-priority linear park and trail projects based on a combination of factors—including

the short-term likelihood of securing necessary trail alignments and funding, the projects' impact in closing critical linear park and trail gaps, and the projects' ability to advance the County's goal of creating equitable access to the linear parks and trails system.

### SCORING AND WEIGHTING

The criteria listed in Table 6 were used to score and rank linear park and trail projects for the Ten-Year Plan. After each project was scored according to whether it met the criteria, extra weight was applied to the equity criteria to reflect the linear park and trail planning priorities expressed by County residents and public officials.

High-priority communities for equitable linear park and trail planning were identified at the Census tract level based on economic and environmental data and with input from County stakeholders. Those high-priority Census tracts are shown in Figure 14, and Appendix XX describes the mapping methodology in full.

The County should update these mapping and prioritization models regularly with stakeholder input to ensure they remain valid tools for prioritizing linear park and trail projects for future Capital Improvement Plans and as other funding and partnership opportunities become available.

# LINEAR PARKS AND TRAILS FRAMEWORK PLAN

Table 25: Loudoun County Linear Park and Trail Project Prioritization Model

PRIORITIZATION CRITERIA	SCORING DESCRIPTION	WEIGHT
<b>CONNECTIVITY</b>		
<b>Fills Regional Trail Gap</b>	New connection to an existing regional trail, such as the Appalachian, W&OD or Potomac Heritage	1
<b>Improves Weak Link</b>	New connection between two existing County trails	1
<b>Connects to Regional Destination</b>	New connection to a regional destination, such as a historic town center or important natural area	1
<b>Connects to Trail System in Neighboring Jurisdiction</b>	New connection to existing or planned trails in neighboring counties and states	1
<b>EQUITY</b>		
<b>Improves Trail Access in High-Priority Community</b>	New connections to or within Census tracts identified as high-priority from an equitable trail planning standpoint  High-priority Census tracts (Fig. 14) were identified through a weighted mapping methodology developed with stakeholder input (Appendix XX)	<b>3</b>
<b>Improves Level of Service in Underserved Community</b>	New trail within a Census tract that currently has zero trails	<b>2</b>
<b>PUBLIC INTEREST</b>		
<b>Included in Other Local, County or Regional Plans</b>	Proposed in other County or regional plans	1
<b>Protects Natural Resources</b>	Located within a protected riparian, wildlife or other natural resource corridor	1
<b>Protects Cultural Resources</b>	Promotes public access to and protection of a historic or cultural resource	1

## VIABILITY

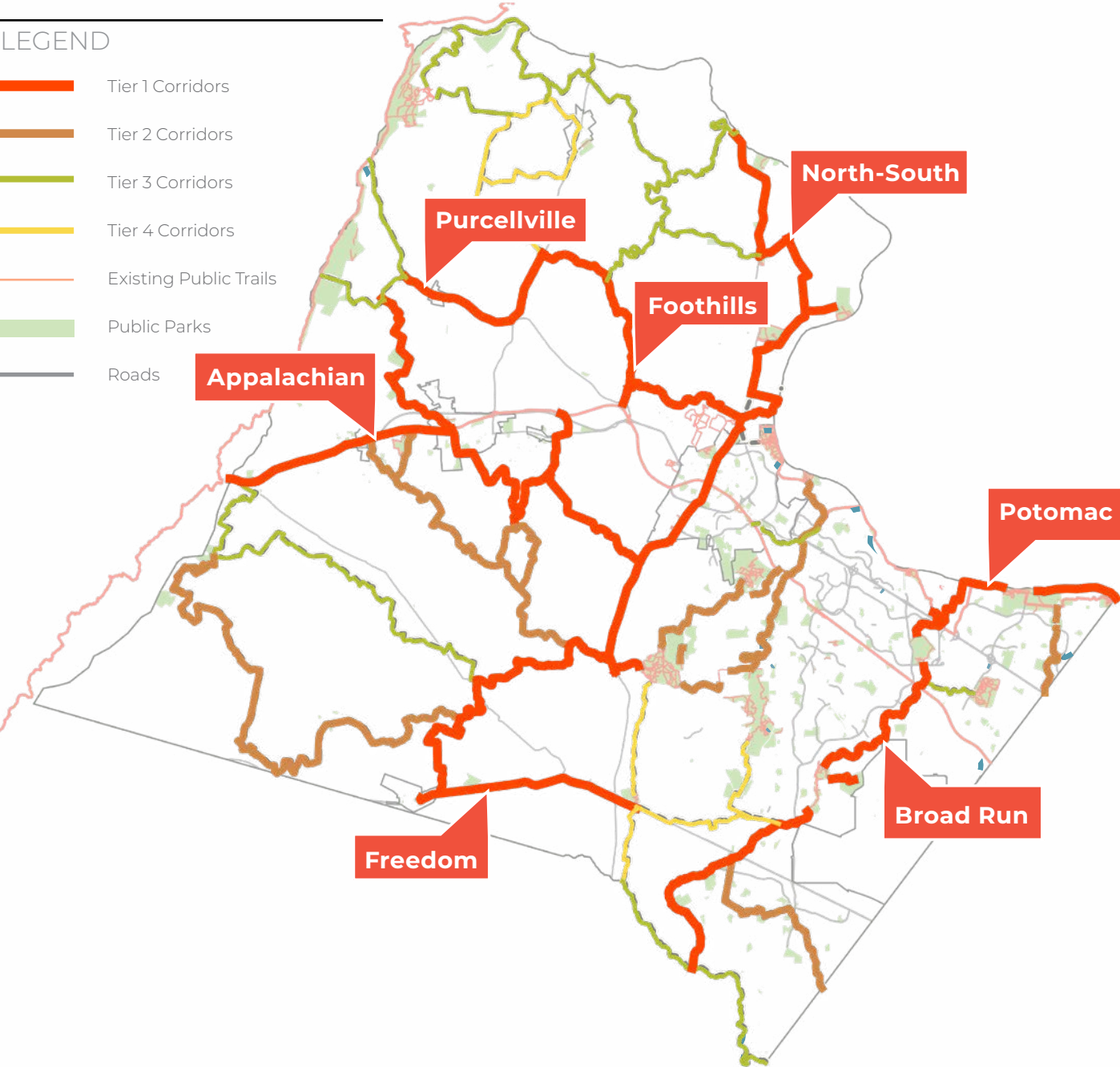
After the Table 6 criteria were used to rank linear park and trail projects and sort them into tiers, the following additional criteria were evaluated to ensure the viability of high-priority projects:

1. Public access to properties along the project alignment is secured, or there is a viable path to securing it.
2. Funding sources for construction of the project are available or identified.
3. Funding or partnerships for long-term management of the constructed project are available or identified.
4. The identified alignment presents no major technical challenges that might delay implementation.

# MAP 20: FRAMEWORK PLAN PROJECT PRIORITIZATION TIERS

## LEGEND

- Tier 1 Corridors
- Tier 2 Corridors
- Tier 3 Corridors
- Tier 4 Corridors
- Existing Public Trails
- Public Parks
- Roads



## PROJECT PHASING

The prioritization model informed the distribution of Framework Plan linear park and trail projects into tiers, with Tier 1 being the highest priority for short-term projects that promote equity in the system while building important cross-county connections.

Table 7 lists the Framework Plan projects by tier. Each project is shown with its estimated range of planning and construction costs as described in the Cost Scenarios section above.

For planning and budgeting purposes, the Ten-Year Plan recommends that the County begin

Table 26: Range of Planning and Construction Costs for the Full Linear Park and Trail Framework Plan

LINEAR PARK & TRAIL CORRIDOR		NEW MILEAGE	RANGE OF PLANNING & CONSTRUCTION COSTS
TIER ONE	Potomac Heritage National Scenic Trail	6.4 mi	\$2.2 million - \$8.3 million
	Broad Run Trail	21.2 mi	\$7.4 million - \$27.6 million
	N/S Cross-County Trail	18.8 mi	\$6.6 million - \$24.4 million
	Appalachian Connector and Cross-County Trail	7.4 mi	\$2.6 million - \$9.6 million
	Freedom Trail	24.4 mi	\$8.5 million - \$32 million
	Foothills Trail	19.7 mi	\$6.9 million - \$26 million
	Purcellville Loop Trail	17.2 mi	\$6.0 million - \$22 million
		<b>114</b>	<b>\$39.9 million - \$149 million</b>
TIER TWO	Sugarland Run Trail	2.8 mi	\$970,000 - \$3.6 million
	Middleburg Trail	22.4 mi	\$7.8 million - \$29 million
	North Fork Trail and Blueway	20.7 mi	\$7.2 million - \$27 million
	Goose Creek Trail	9.7 mi	\$3.4 million - \$12.6 million
	Cub Run Trail	6.7 mi	\$2.3 million - \$8.7 million
Sycolin Creek Trail	6.1 mi	\$2.1 million - \$7.9 million	
		<b>68.3</b>	<b>\$23.9 million - \$88.8 million</b>
TIER THREE	Blue Ridge Connector Trail	18.8 mi	\$6.6 million - \$24.4 million
	Cattail Branch Trail	1.7 mi	\$595,000 - \$2.2 million
	Cabin Branch Trail	2.1 mi	\$738,000 - \$2.7 million
	Catoctin Creek Trail & Blueway	21.3 mi	\$7.5 million - \$28 million
	Bull Run Trail	9.9 mi	\$3.5 million - \$12.8 million
Winery Trail	24.5 mi	\$8.6 million - \$32 million	
		<b>78.3</b>	<b>\$27.4 million - \$102 million</b>
TIER FOUR	Beaverdam Trail	4.7 mi	\$1.6 million - \$6 million
	Lovettsville Loop Trail	12.8 mi	\$4.5 million - \$16.6 million
	Howsers Branch Trail	6.4 mi	\$2.2 million - \$8.3 million
		<b>23.8</b>	<b>\$8.3 million - \$31.0 million</b>
<b>COUNTYWIDE TOTALS</b>		<b>285 miles</b>	<b>\$173 million - \$371 million</b>

## TEN-YEAR PLAN

Table 27: Estimated Ten-Year Costs for Loudoun County Linear Parks and Trails

PROJECT TYPE	ESTIMATED PLANNING AND CONSTRUCTION COST	ESTIMATED TEN-YEAR MAINTENANCE COST	TOTAL ESTIMATED TEN-YEAR COST
Tier 1	\$148,200,000	\$1,710,000	\$149,910,000
Tier 2	\$68,300,000	\$1,024,500	\$69,324,500
Tier 3 and 4	\$51,050,000	\$1,531,500	\$52,581,500
Existing	-	\$3,360,000	\$3,360,000
<b>TOTALS</b>	<b>\$267,550,000</b>	<b>\$7,626,000</b>	<b>\$275,176,000</b>

to pursue detailed planning and construction of the full Framework Plan system, with the following qualifications.

Full buildout of Framework Plan linear parks and trails is not realistic within a ten-year timeframe, given the complexity of securing public access for trail alignments throughout the county. But progress can be made within all corridors and opportunities identified for closing short-term gaps through public right-of-way, land leases and other measures.

Given the large scale and cost of building out the entire Framework Plan system—and the importance of implementing high-quality short-term demonstration projects—the Ten-Year Plan recommends a staggered budgeting approach whereby higher-tier projects are budgeted at a higher per-mile cost and lower-tier projects at a lower per-mile cost. The result will be an emphasis on funding high-quality linear park, trail and blueway facilities within those corridors that

are most important for building a system that serves residents equitably, while ensuring progress is made on the trail projects that are lower-priority but still critical for realizing countywide connectivity.

Recommended project funding is listed in Table 8. Projected maintenance costs are included for both existing and future trails. Trail maintenance costs vary widely by type and context; the figures in Table 8 are based on an annual maintenance cost of \$1,500 per trail, derived from a 2015 study by Rails-to-Trails Conservancy.

## ACTION ITEMS

The County should prioritize the following 15 action items to maintain the momentum of the linear park and trail planning process, work efficiently toward buildout of the Framework Plan, and position itself to take advantage of funding, acquisition and partnership opportunities when they arise.

More detailed information about funding, real estate, policy and partnership strategies follow.

### STAFFING

1. Hire a linear park and trail manager and assistant to oversee grant pursuits, internal and external committees, volunteer efforts and overall coordination of implementation efforts.
2. Hire a natural resource manager to ensure linear park and trail corridors are adequately protected for habitat protection and water quality.
3. Hire maintenance staff as needed to coordinate and supplement the linear park and trail maintenance efforts of volunteer groups.

### MARKETING

4. Hire a consultant to develop branding guidelines for the linear park and trail system signage and print and online marketing

materials. The consultant should work with the County Department of Transportation and Capital Infrastructure, towns, neighboring jurisdictions, Northern Virginia Regional Commission, NOVA Parks, Visit Loudoun and other stakeholders to develop a clear and coordinated marketing and communications strategy that promotes linear park and trail awareness, public support, and high-quality user experiences. It would be best to wait until the new zoning ordinance is implemented or closer to its implementation since it has guidance on signage for the County.

5. Pursue development of an online hub and facility tracking software to provide up-to-date public information about the state of the County's linear parks, trails and blueways while informing the ongoing efforts of County and volunteer maintenance teams.

### FUNDING

6. Coordinate across County departments to develop a funding strategy that draws from a diversity of County, state, federal and private funding streams to meet the capital and operational needs of the linear park and trail system buildout.
7. Prioritize short-term funding for items that will position the County to leverage other funds—

## TEN-YEAR PLAN

such as additional staffing to support grant and volunteer coordination; planning, design and approval processes to ensure high-priority projects are shovel-ready; and matching funds that will be required for short-term grant pursuits.

### REAL ESTATE

8. Continue to pursue land donations, easements and the construction of public linear park and trail facilities through the proffer system, with the Linear Parks and Trails Plan as a guiding document for the County and developers.
9. Build relationships with institutional partners that are well-positioned to help the County reach out to private landowners and negotiate public trail access—including non-profit easement holders, homeowners associations and utilities.
10. Develop a flexible toolkit for acquiring public trail access on private land—including fee simple acquisitions, purchase options, easements and leases. Develop marketing materials to help the County communicate to private landowners the implications and benefits of various approaches to providing public trail access.

### POLICY

11. As part of the County's zoning ordinance update, incorporate strengthened language for contiguous open space requirements, cluster developments, public linear park and trail requirements, density bonuses, and the establishment of impact fees to fund linear park and trail system buildout and meet the service demands of a growing population.
12. Pursue establishment of Transfer and Purchase of Development Rights programs to secure open space protection and linear park and trail corridors within those protected lands.

### PARTNERSHIPS

13. The Parks, Recreation and Open Space Board should consider reforming the Linear Parks and Trails Subcommittee to ensure this important group can continue to advocate for implementation. The makeup of this committee should be examined to ensure it includes the expertise and diversity of experience necessary to provide guidance and oversight.
14. Establish an internal Linear Parks and Trails Committee to oversee progress and maintain close interdepartmental coordination.
15. Continue to build partnerships with other local and regional



governments, commissions and park authorities to ensure regional connectivity and to take advantage of opportunities to share costs of system implementation and maintenance.

16. Continue to build partnerships with local and regional linear park and trail non-profits and foundations to take advantage of opportunities for collaboration through planning, grants, facility construction, maintenance, education and advocacy.

## **PARK FOUNDATION**

17. Pursue establishment of a Loudoun County Park Foundation to support implementation and awareness of the linear park and trail system and other County recreational facilities through fundraising, advocacy and volunteer coordination.

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## **FUNDING STRATEGIES**

### **BUDGET ALLOCATIONS THROUGH THE COUNTY'S GENERAL FUND**

Loudoun County may allocate a small portion of funds from the County's General Fund for linear park and trail projects. The funds may be used for the purchase of land in fee simple transactions, trail upkeep and maintenance, and/or capital projects to improve the linear park and trail system.

### **GENERAL OBLIGATION (GO) BONDS**

Debt instruments such as bonding have proven to be a valuable tool for large expenditures, such as land needed for the development of parks, trails and open space. A bond is a type of fixed income instrument that is generally issued by a corporation or government to finance large-scale projects or initiatives. Local municipalities generally have the authority to issue bonds, though if the bond is funded through tax revenue, the municipality likely requires strong community support and a vote of approval from residents. If approved, bonds can secure the long-term financing necessary for the purchase of larger properties, many of which rely on purchase payments being made over several years.

In the case of future linear park and trail development, Loudoun County will want to pursue the issuance of General Obligation (GO) Bonds. A GO bond is a type of municipal bond "backed solely by the credit and taxing power of the issuing jurisdiction rather than the revenue from a given project." Any purchase strategy involving GO bonds should be tied to a larger public engagement campaign that builds community support for leveraging tax revenue for linear park and trail development.

### **FEDERAL, STATE OR PRIVATELY FUNDED GRANT PROGRAMS**

Loudoun County should explore a variety of grant funding options. Grants for parks, open space and trail conservation/development are funded through public or private entities and are often tied to specific development or programming initiatives. Grants generally have a formal application process that requires specific submission requirements from all applicants. Additionally, grant programs often involve a reporting requirement that looks to quantify the grant's impact. Loudoun County should engage in a yearly review process of all relevant private and public grant opportunities.

The Virginia Department of Conservation and Recreation (DCR) administers several grant programs for agriculture, land preservation, open space access and historic preservation.

Listed below are grant programs that may be applicable for linear parks and trails, and Table 10 indicates which Framework Plan projects could be the strongest fit based on each program's eligibility and scoring criteria.

#### **Get Outdoors**

- Provides grants for projects that increase equitable access to safe open space in Virginia's communities. Some examples of costs that can be covered

include infrastructure, planning and capacity building.

- Administered by the Virginia Outdoors Foundation.

#### **Forest Legacy Program**

- Protects private forests by paying for their acquisition or an easement. Land must be within a designated Forest Legacy Area to qualify.
- Administered on the state level by the Virginia Department of Forestry, and funded by the Land and Water Conservation Fund.

#### **Land and Water Conservation Fund (LWCF)**

- Provides funding for the acquisition and development of public outdoor recreation areas and facilities. Priority given to projects that align with priority maps from the statewide Recreation Access Model (aquatic and terrestrial) and ConserveVirginia.
- Federal program administered on the state level by DCR.

#### **Purchase of Development Rights Program Matching Funds (PDR VDACS)**

- Provides guidance and matching funds to help localities establish PDR programs, which compensate landowners who voluntarily place an agricultural conservation easement on their property. Table 10 identifies the Framework Plan corridors with agricultural land zoning and gaps in existing conservation easements.
- Administered by the Virginia Department of Agriculture and Consumer Services (VDACS).

Table 29: Suitability of Framework Plan Corridor Projects for State and Federal Grant Opportunities

LINEAR PARK & TRAIL CORRIDOR	Get Outdoors	Forest Legacy Program	LWCF	PDR VDACS	Pres. Trust Fund	VA Rec. Trails Program
Potomac Heritage National Scenic Trail	○				○	○
Broad Run Trail	○	○			○	○
N/S Cross-County Trail	○			○	○	○
Appalachian Connector Trail	○	○		○	○	○
Freedom Trail	○		○	○	○	○
Foothills Trail	○		○	○	○	○
Purcellville Loop Trail	○		○	○	○	○
Sugarland Run Trail	○	○		○	○	
Middleburg Trail	○			○	○	
North Fork Trail	○		○		○	○
Goose Creek Trail	○		○		○	○
Cub Run Trail	○	○			○	
Sycolin Creek Trail	○		○		○	○
Blue Ridge Connector Trail		○	○	○	○	○
Cattail Branch Trail	○				○	○
Cabin Branch Trail	○				○	
Catoctin Creek Trail			○	○	○	○
Bull Run Trail		○			○	
Winery Trail		○		○	○	
Beaverdam Trail		○	○	○	○	○
Lovettsville Loop Trail					○	
Howsers Branch Trail		○		○	○	

**Virginia Open-Space Lands Preservation Trust Fund**

- Provides grants to localities or landowners for the protection of open space that offers a wide range of public benefits.
- Administered by the Virginia Outdoors Foundation.

**Virginia Recreational Trails Program**

- Provides federal funds for building and rehabilitating trails and trail-related facilities. Funds may also be used to acquire land that is part of a trail development project.
- On the state level, this federal matching reimbursement program is administered by DCR.

**Virginia Land Conservation Fund**

- Aims to conserve certain categories of land: open spaces and parks, natural areas, historic areas, farmland and forests.
- Administered by the Virginia Land Conservation Foundation.

**REAL ESTATE STRATEGIES**

Acquiring access to the land necessary to develop a linear parks and trails network is a challenge. The mix of public and private ownership along the Framework Plan corridors will require the County to have multiple tools and strategies at its disposal to best work with landowners to acquire ownership or access to land for public use. The following list of tools is meant to illustrate and inform the multiple pathways and strategies available to Loudoun County as it works to acquire ownership of, or access to, the land necessary to develop its linear parks and trails network.

**PROFFER**

A proffer is “a voluntary commitment on the part of a landowner or developer to reduce or eliminate the impact of new development on neighboring properties” or the municipality or county where the development is located.<sup>1</sup> The conditions of a proffer are established during

the rezoning process and, upon approval by the local governing body, become part of the rezoned property and pass with the ownership of the property from one party to the next.<sup>2</sup> Proffers come in the form of in-kind donations, such as land dedications or direct improvements to infrastructure, or cash payments that may be used for specific public benefits related to a new development, such as improvements to parks, public services, or infrastructure such as schools and roads.<sup>3 4</sup>

The proffer system is unique to the State of Virginia and has been widely used by municipalities, counties and developers for more than 40 years. Proffers differ from conditional zoning requirements in that proffers are a voluntary dedication, rather than a requirement of a local zoning code. Prior to 2016, a cash proffer policy was commonplace among many municipalities and counties throughout Virginia. Under this policy developers could offer cash payments to local governments to offset the “incremental effect of new residential growth, without the need to identify a specific impact that could be difficult to assess at a particular point in time.”<sup>5</sup> This system of uniform cash proffers was banned by the Virginia General

<sup>1</sup> Proffer Management | Loudoun County, VA - Official Website

<sup>2</sup> ProffersGore16.pdf (vaco.org)

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

<sup>5</sup> New proffer law creates uncertainties for developers, localities (cvillemorrow.org)

**Table 30: Benefits and Drawbacks of Typical Real Estate Tools**

TOOL	BENEFITS	DRAWBACKS
<b>Proffer</b>	Private development projects result in significant public linear park and trail benefits, often for large contiguous tracts of land. Access is granted indefinitely.	Use and success of proffers are highly dependent on the rate of new development in an area. Less feasible for rural or already developed areas.
<b>Fee Simple Acquisition</b>	Grants Loudoun County total control over linear park and trail design, development and management over time.	Loudoun County is responsible for all costs associated with upkeep and improvement of the property.
<b>Easement</b>	Allows the private owner to retain property ownership and management, while granting permanent public access for trail use, maintenance and improvements.	Easements place restrictions on an owner’s long-term use of the property, and the restrictions pass on to future property owners.
<b>Land Lease</b>	Opportunity to secure access to land without requiring the owner to give up long-term control or ownership rights.	Land leases can be terminated without reason at the expiration of the lease agreement, potentially disrupting a linear park and trail network.

Assembly in 2016 due to the perception that local governments were requiring “exorbitantly high cash proffer demands, particularly in Northern Virginia.”<sup>6</sup> Under the updated law, “any cash proffered to be used for offsite improvements must address the specific need for that improvement, in excess of the capacity of the improvement at the time of the re-zoning request.”<sup>7</sup> This requirement puts the burden on local governments to clearly illustrate and quantify the needs for offsite improvements. Additionally, municipalities can no longer request or suggest proffers, as it puts them at risk of being accused of an unreasonable proffer on the part of the developer or landowner.

**APPLICABLE SITUATION AND DURATION OF AGREEMENT**

Proffers can be particularly useful in the context of developing a linear parks and trails network as they are a common tool to acquire large portions of contiguous land in a single transaction. When the owner or developer of a large tract of land that lies between, or adjacent to, existing parks, open space or trails, requests a rezone for the purpose of development or subdivision, the County should pursue an on-site, in-kind proffer in the form of either a land donation or access easement. In cases where the County may not be able to request an in-kind proffer directly, the County should emphasize the need for additional parks and open space by referencing existing County plans – including the Linear

<sup>6</sup> *Ibid.*  
<sup>7</sup> *New proffer law creates uncertainties for developers, localities (cvilletomorrow.org)*



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Parks and Trails Plan – and specific directives related to parks and trails by the Board of Supervisors.

Under Virginia law, once a parcel of land is “proffered and accepted as part of an amendment to the zoning ordinance, such conditions shall continue in effect until a subsequent amendment changes the zoning on the property covered by such conditions.”<sup>8</sup> This includes cases in which a comprehensive rewrite of the local government’s zoning ordinance causes the property to be reclassified as a different zoning land use.

### **BENEFITS AND DRAWBACKS**

Land donations or easements through proffers are particularly useful because they clearly transfer control or ownership of a piece of property for an indefinite amount of time, allowing local governments the ability to make improvements to the land without fear of losing control of the property in the short term. Additionally, proffers allow local government to gain access to, or ownership of, large contiguous portions of land which otherwise may have taken years to assemble.

While proffers are a beneficial tool, their use and success are highly dependent on the rate of new development in an area. If land needed for linear park and trail planning is in a rural or previously

developed area of the County, then proffers are likely not an applicable tool for acquiring ownership or use of that land. Additionally, proffers can create a situation in which local governments may be waiting for land to develop to complete linear parks and trail projects.

## **FEE SIMPLE ACQUISITION**

### **SUMMARY**

A fee simple acquisition or purchase of land “transfers full ownership of the property, including the underlying title” from a landowner (seller) to a purchaser (buyer).<sup>9</sup> Once a landowner grants the sale of land, “the landowner generally retains no ownership of the property and gives up all rights.”<sup>10</sup> This allows the buyer to have the advantage of full control over the management of the property’s resources and provides the greatest flexibility for decision-making about the best ways to address visitor access, agricultural management, ecological restoration and other management issues.

The buyer, or party that holds the fee title, can take the form of a variety of entities including a “private individual, public agency, or a non-profit organization, [and] has a long-term responsibility to administer and monitor the

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<sup>8</sup> § 15.2-2303. *Conditional zoning in certain localities (virginia.gov)*

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<sup>9</sup> *Fee-Simple (uwoyo.edu)*  
<sup>10</sup> *Ibid.*

Table 31: High-Level Comparisons of Typical Real Estate Tools

TOOL	REQUIRES REZONING PROCESS	PROPERTY CAN REMAIN IN PRIVATE OWNERSHIP	OWNER RETAINS OPTION TO REVOKE ACCESS	MAXIMUM FLEXIBILITY IN TRAIL ALIGNMENT
Proffer	●	●	○	○
Fee Simple Acquisition	○	○	○	●
Easement	○	●	○	○
Land Lease	○	●	●	○

title.”<sup>11</sup> A fee simple transaction can also take the form of a bargain sale, wherein land is sold for below market value with the seller (landowner) donating a portion of the property’s value to the buyer. A bargain sale is particularly beneficial to landowners because they can receive payment for the land while “deduct[ing] the value of the gifted portion of land from their federal income taxes.”<sup>12</sup>

**APPLICABLE SITUATIONS AND DURATION OF AGREEMENT**

Fee simple transactions are best used for land acquisition in cases where you have an individual or entity with absolute ownership over a property. The owner must be willing to exchange absolute ownership and all rights to the property in exchange for monetary compensation or some other type of compensation. Prior to the sale

of any property in a fee simple transaction, it is recommended that the County (buyer) enter into an Agreement of Purchase and Sale with the landowner. The agreement “spells out the rights and obligations of both the seller and buyer of an interest in real property,” establishing that “the seller promises to transfer ownership of certain property and the buyer promises to pay the purchase price within a certain time after the contract date.”<sup>13</sup> The County will want to ensure that the agreement includes any notable disclosures about the history or physical condition of the property that may inhibit the development of parks or trails or endanger future users of the property.

If the County wishes to purchase a parcel of land in a fee simple transaction but is unable or unwilling to do so in the immediate

<sup>11</sup> Ibid.  
<sup>12</sup> Ibid.

<sup>13</sup> Purchase and Sale Agreements for Conservation Projects : ConservationTools



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term, then it is recommended the County sign a purchase option with the landowner. A purchase option “assures the option holder of the right to purchase property at a certain price within a certain time period but without an obligation to do so.” During the term of the purchase option, which is defined in the agreement and can be any duration of time, the option holder has the guarantee that the property will not be sold to another buyer or developed during the option period. The strategy of entering into one or multiple purchase options with landowners is particularly useful for linear parks and open space planning because it allows the County to secure the right to purchase land from multiple adjacent landowners without having to commit to the purchase until all landowners have agreed to make the sale. Aside from reducing risk for the County, a purchase option can also be used to “create a sense of opportunity and urgency that motivates a community and donors to act before the opportunity passes.”<sup>14</sup> Once a fee simple transaction is executed, the ownership and title of the land is indefinite and can be passed to other individuals or entities at the owner’s discretion.

### **BENEFITS AND DRAWBACKS**

Fee simple transactions are particularly beneficial because they

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<sup>14</sup> *Ibid.*

give the owner of the property total control over development and managerial issues. Additionally, they allow the owner to make improvements to the property, such as bridges, trails or shelters, without the possibility of a sunk cost due to ownership changes.

One drawback to fee simple ownership is that the owner becomes responsible for all costs associated with the upkeep and improvement of the property. Additionally, the owner becomes the legally liable party if something were to happen on the property that resulted in the injury or death of an individual.

## EASEMENT

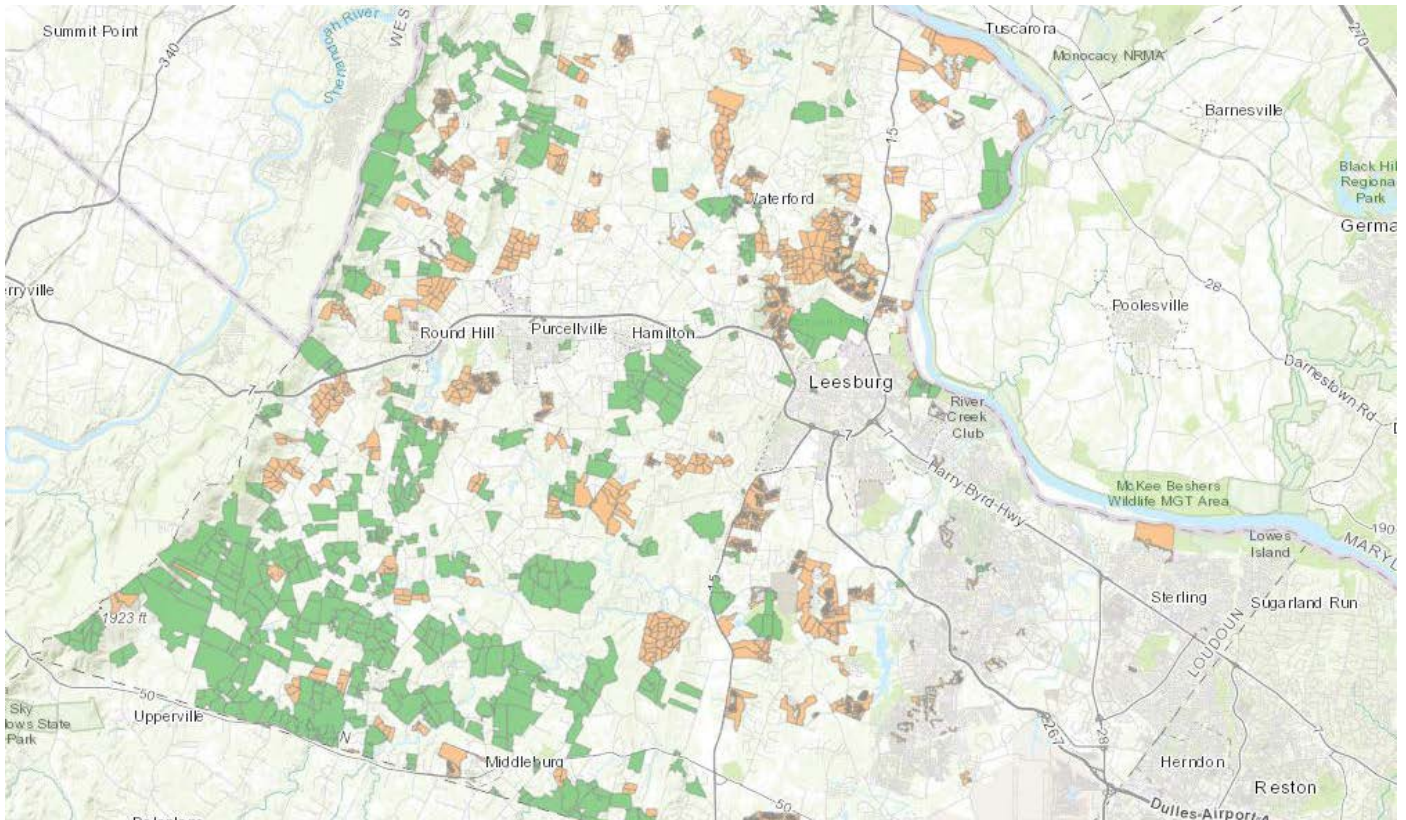
### **SUMMARY**

Easements are perhaps the most widely used tool for land conservation and public access. An easement is “the grant of a nonpossessory property interest that grants the easement holder permission to use another person’s land.”<sup>15</sup> Easements can take a variety of forms and be used for a wide range of purposes including, but not limited to, granting a public or private utility access to a property, public or private road development, land conservation, or development restriction. Open space easements or conservation easements would be the most

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<sup>15</sup> *Easement | Wex | US Law | LII / Legal Information Institute (cornell.edu)*





**Figure 46:** Existing Conservation Easements in Loudoun County (Loudoun County GIS)

appropriate type of easement for the purpose of linear park and trail development in Loudoun County.

Easements typically take the form of either an appurtenant easement or a gross easement. An appurtenant easement runs with the land and benefits a property rather than an individual or entity. Access easements, open space easements and conservation easements are typical examples of appurtenant easements. In contrast, a gross easement does not benefit a parcel of land, but rather an individual or entity. Utility easements are a typical example of a gross easement, as the power

company benefits from the agreement, but the land does not.

The Virginia Open Space Land Act defines an open space easement as “a nonpossessory interest of a public body in real property, whether easement appurtenant or in gross, acquired through gift, purchase, devise, or bequest imposing limitations or affirmative obligations, the purposes of which include retaining or protecting natural or open-space values of real property, assuring its availability for agricultural, forestal, recreational, or open-space use, protecting natural resources, maintaining or enhancing air or water quality, or preserving the historical,

architectural or archaeological aspects of real property.”<sup>16</sup> Under Virginia law, open space can be considered land that is “preserved for (i) park or recreational purposes, (ii) conservation of land or other natural resources, (iii) historic or scenic purposes, (iv) assisting in the shaping of the character, direction, and timing of community development.”<sup>17</sup> In Virginia, public bodies can take the form of municipalities, counties, state agencies, public recreational authorities, conservation districts, or community development authorities. Public bodies can hold open space easements but are not granted the authority to hold conservation easements.

The Virginia Conservation Easement Act uses the same definition for a conservation easement and an open space easement. The primary difference between the two is that conservation easements cannot be held by public bodies. Instead, conservation easements must be held by either a charitable organization or trust that is a registered 501(c)(3) and has a primary purpose that involves protecting land or natural resources, maintaining or enhancing environmental quality, or preserving historic or archeological aspects of the property.

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<sup>16</sup> Microsoft Word - VAcCode.doc (virginia.gov)  
<sup>17</sup> Ibid.

### **APPLICABLE SITUATION AND DURATION OF AGREEMENT**

Conservation and open space easements are most applicable when dealing with an individual landowner who is motivated to place permanent restrictions on their land for purpose of conservation and/or public access. These easements allow landowners and public/private bodies “to achieve specific conservation objectives on the land while keeping the land in the ownership and control of landowners for uses consistent with the conservation objectives.”<sup>18</sup> In other words, landowners can continue using the land for productive uses such as farming, equine boarding or logging, so long as those uses are not directly in contrast with the purpose of the easement. The holder of the easement, either public or private, must be willing to uphold and enforce the goals and restrictions of the easement while also often assuming maintenance and improvement costs, if necessary. It is also important to note that to be valid and enforceable, Virginia law requires both conservation and open space easements to “conform in all respects to the comprehensive plan at the time the easement is granted for the area in which the real area in which the real property is located.”<sup>19</sup>

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<sup>18</sup> Conservation Easement : ConservationTools  
<sup>19</sup> Microsoft Word - VAcCode.doc (virginia.gov)

Under Virginia law, conservation and open space easements do not automatically grant public access to property; however, landowners can request that the language of the easement allow public access and use of the property.<sup>20</sup> In order to acquire an easement from a private landowner, the landowner may request a payment in exchange for the easement. Virginia law permits public bodies to borrow funds and make expenditures in exchange for an easement. Funds can be acquired through “grants and any other assistance from the federal government and any other public or private sources,” appropriated funds from the public body’s budget, or the issuance and sale of general obligation bonds.<sup>21</sup>

While some landowners may be motivated by direct monetary compensation, there are also significant tax benefits to granting a conservation and open space easement. Depending on the situation, Virginia landowners may be entitled to estate and inheritance tax exclusion and reduction, real estate property tax reduction, federal and state income tax deduction, and/or Virginia income tax credits.<sup>22</sup> Virginia law requires that the duration of an easement be no less than five years; however, easements can and

often do exist in perpetuity and run with the land.

## **BENEFITS AND DRAWBACKS**

Conservation and open space easements are an ideal tool for linear park and trail development because they allow the owner of the property to retain the rights to possess, control and manage the property while granting legal authority to a public or private body to access, maintain and improve the land, so long as the uses and improvements are in line with the uses outlined in the language of the easement. Landowners may receive compensation for their land while also obtaining valuable tax deductions.

From the landowner’s perspective, a potential drawback to conservation easements is that they place restrictions on what a landowner can do with their property, including limiting future development and land use practices. Additionally, because the restrictions placed on the land by the easement may exist in perpetuity, the landowner’s selection of buyers may be limited if they wish to sell the property. Potential buyers may be dissuaded by the public use of the property and because they do not have total control over the use and development of the property. Lending institutions may also be wary of providing financing for properties with easements on

<sup>20</sup> *Conservation Easements (virginia.gov)*

<sup>21</sup> *Microsoft Word - VAcodes.doc (virginia.gov)*

<sup>22</sup> *Conservation Easements - Valley Conservation Council*



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them and may require costly due diligence before providing a loan to purchase or refinance the property.

From the easement holder's perspective, a potential drawback is that the easement may require that they maintain, improve and enforce the use of the property, all which can become costly endeavors depending on the size of the easement. It is recommended that before an easement agreement is reached, that the easement holder identify how it plans on funding maintenance and improvements of the property for the duration of the easement.

## LAND LEASE

### SUMMARY

A land lease, also known as a ground lease, is a type of commercial real estate lease in which a lessee is permitted to occupy, use and/or build on the rented land. Land leases can be used for a variety of situations, including commercial real estate development, property occupation by a homeowner with a mobile home, farming, or hunting and recreation. The terms of lease vary by situation, but generally establish the rights of both the landlord and tenants, the duration of the lease, use provisions, and which party owns any improvements to the property made during the lease period. Under a land lease scenario, tenants generally assume

responsibility for all land-related expenses, including "construction, repairs, renovations, improvements, taxes, insurance, and any financing costs associated with the property."<sup>23</sup>

There are two common types of land leases, subordinated and unsubordinated. In a subordinated land lease, "the landlord agrees to a lower priority of claims on the property in case the tenant defaults on the loan for improvements."<sup>24</sup> This means that the landlord allows the land itself to act as collateral toward debt financed improvements made by the tenant. In the case of default by the tenant, the sale of the land would be used to pay off the debt of the tenant. While riskier, subordinated land leases generally allow landowners to charge a higher rental rate for their property. An unsubordinated land lease, on the other hand, "lets the landlord retain the top priority of claims on the property in case the tenant defaults on the loan for improvements".<sup>25</sup> Because of the lack of collateral, lenders may be hesitant to offer financing to projects with an unsubordinated land lease. Additionally, the owner of the land may have to charge a lower rent for an unsubordinated land lease.

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<sup>23</sup> *Ground Lease Definition (investopedia.com)*

<sup>24</sup> *Ibid.*

<sup>25</sup> *Ibid.*



**Figure 47:** Chapman DeMary Trail protected by a conservation easement in Purcellville, VA

## APPLICABLE SITUATION AND DURATION OF AGREEMENT

Because of their flexibility, land leases can be an effective tool to gain access to private land for linear trail development. Under Virginia law, a public body may lease improved or unimproved land so long as that lease serves the public use.<sup>26</sup> However, in the case of park and trail development, public bodies also have the option to partner with a non-governmental organization (NGO) that pursues and holds land leases. Non-governmental organizations can take the form of a dedicated parks and trails foundation, a land

trust, or a nonprofit dedicated to a specific conservation-related function. These NGOs can act as a diplomatic entity to engage private landowners who may be opposed to providing an easement or lease to the government.

Land leases used for trail development can vary by duration and size. Typically, land leases used for trail development are focused on a small portion of a landowner's property and set specific standards for property access, upkeep and use. While U.S. law allows for a land lease term to extend beyond 99 years, landowners may prefer to keep leases short in duration to allow for termination of the

<sup>26</sup> § 15.2-1800. *Purchase, sale, use, etc., of real property* (virginia.gov)



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lease if the property is sold or they wish to discontinue access to the property. To provide the most flexibility to landowners, it is recommended that land leases used for trail development be limited to a one-year term with an optional cancellation policy so long as the cancellation request is made within a defined time frame. The lease can be renewed on a yearly basis, which also allows an opportunity for the tenant to reengage with the landowner and gather feedback on requested improvements or alterations to the lease agreement. While payment is not required, some landowners may request monetary compensation for access to their land. If the public body or NGO is unable to pay the landowner, they may offer to make limited improvements to the leased portion of the property and/or to take responsibility for trail-related maintenance.

### **BENEFITS AND DRAWBACKS**

The benefit of a land lease agreement is that it provides an opportunity to acquire access to land without the owner having to give up long-term control or ownership rights. The lease agreements provide both flexibility to the landowner and the tenant and can be used as a short-term tool to provide proof of concept to a landowner that allowing trail access to their property can improve their property's value while still allowing

the landowner to fully utilize and develop their land. Because land leases can be held by both public bodies and private organizations, Loudoun County could work in tandem with a dedicated NGO to gain access to land necessary to complete a linear trail network. If Loudoun County were to pursue this tandem approach, it is recommended that the dedicated NGO hold only lease agreements while the County holds fee simple purchase agreements and easements.

The obvious drawback to a land lease is that it can be terminated at any point without cause, potentially disrupting a linear trail network. Additionally, any improvements made by the lease holder revert to the landowner at the termination of the lease. Prior to entering into a lease agreement, it is recommended that the County discuss with the property owner their long-term plans for the property in order to gauge the level of risk associated with running a portion of a linear trail network through the property. Additionally, in situations where the County may be leasing property for a portion of a trail, it is recommended that the County proactively identify adjacent landowners that can be engaged to reroute portions of the trail, if necessary.

## DEVELOPMENT POLICIES

Especially in Eastern Loudoun County, development regulations and incentive programs offer a significant opportunity for the long-term build-out of the Linear Parks and Trails Framework Plan. The following tools should be considered as part of the County's zoning ordinance update.

### OPEN SPACE AND FACILITY REQUIREMENTS

There are several tools that allow Loudoun County to offset the impact of new development by requiring certain levels of open space protection and investments in new public facilities. These requirements are driven by the vision of the General Plan and spelled out in the County's zoning ordinance.

Open space requirements are specific to the County's Policy Areas and acknowledge the importance of preserving significant tracts of open space to offset the environmental impacts of new development. The tracts of open space protected under these requirements should be contiguous and a minimum width of 300' wherever possible in order to accommodate meaningful habitat protection along with the provision of new public linear park or trail access. The Linear Parks and Trails Framework Plan can

help the County work with private developers to identify the ideal location of protected open space and trail alignments on any given parcel, such that a connected system is built out over time.

The Loudoun County General Plan calls for new development to provide publicly accessible trails that connect to adjacent neighborhoods and to other destinations within and outside the project. As they are with active transportation facilities called out on the Countywide Transportation Plan, development plans should be required to include the public linear park and trail facilities and public access easements for corridors called out in the Linear Parks and Trails Framework Plan.

The General Plan calls for the County to seek authority from the state legislature to establish residential development impact fees, whereby developers provide a cash contribution to fund infrastructure or public facility improvements that offset the identified impact of the new development. This impact fee would apply even in areas of the County where rezonings are not anticipated or where the provision of improvements and facilities through proffers associated with rezonings is restricted. The County should use this additional measure to fund build-out of the linear park and trail system and meet the



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service demands of a growing population.

The County should also incentivize the use of cluster, or conservation, developments, whereby new development is clustered at a higher density while large areas of open space—typically at least 30% of the site and located to protect sensitive or high-quality environments—are set aside for permanent protection. Public linear park and trail facilities should be required or incentivized within the resulting open space corridors.

### **DENSITY BONUSES**

Density bonuses allow greater square footage or units to be built on a site than would otherwise be allowed through underlying zoning to encourage certain types of development activity (i.e. affordable housing, park development or open space preservation). Density bonuses are most successful in high-growth markets that have an easy-to-interpret and established bonus program. Density bonus programs should be focused on high-growth areas within Loudoun County that are currently in need of, or anticipated to need, additional parks and open space. While density bonuses are currently in place in Loudoun County to help encourage additional housing, the County should consider coordinating with local officials to develop policy that establishes bonus programs at both the county

and city level for linear park and trail development within defined areas of the County.

### **TRANSFER OF DEVELOPMENT RIGHTS**

Transfer of Development Rights (TDR) programs have been used to protect open space, agricultural land, environmentally sensitive areas, and historic landmarks. The owners of properties located within identified protection areas (known as “sending areas”) may sell the development potential of their property to owners of property located in areas more suitable for development (known as “receiving areas”). The sending area’s property owner maintains ownership of the underlying land but must agree to record a conservation easement on the property that protects the resource and restricts future development of the property. The owner of the receiving area property may then increase the permitted density on his/her property in an amount equal to what would have otherwise been built on the sending area property, resulting in the “transfer” of the development rights from the sending area to the receiving area. Transfer of development rights programs work well in areas experiencing rapid growth, as they increase the economic feasibility of projects for developers while simultaneously protecting open space. Given the availability of land



in Loudoun County a TDR program may not be feasible at this time. However, as land continues to develop and land costs continue to rise, a TDR program may become increasingly financially feasible.

## **PURCHASE OF DEVELOPMENT RIGHTS**

Purchase of Development Rights (PDR) programs are similar to TDR programs; however they do not create a marketplace to facilitate the transfer of development rights. Public bodies “preserve open space by purchasing future development rights in ecologically valuable areas and place the land in a conservation easement to preserve as open space. Property owners retain use of the land and the easements and land-use restrictions convey if the property is sold.”<sup>27</sup>

Loudoun County “operated a PDR program between 2000 and 2004, resulting in open space easements covering 42 parcels and approximately 2,600 total acres at a cost of approximately \$8.9 million.”<sup>28</sup> The program was suspended in 2004, though recently the Board of Supervisors has indicated an interest in reviving the program. If reimplemented, the PDR program could allow for the targeted preservation of greenspace within

identified linear park and trail corridors. However, the county would have to allocate a funding source to pay the purchase of development rights.

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## **PARTNERSHIPS**

To acquire the land necessary for a linear parks and trails system, Loudoun County may wish to leverage strategic partnerships with both public and private organizations. Examples of potential partners include the following entities.

## **PUBLIC/PRIVATE UTILITIES**

Coordinating trail development with public and private utility companies can be both an efficient use of space and a cost-effective way to develop a trail network. Utilities such as “water, sewer, natural gas, electric and fiber optic, can have their lines buried or encased near or beneath a trail, while telecommunications, cable and electric utilities can run above a corridor using air rights.”<sup>29</sup> This presents an opportunity to develop surface level trails without disrupting or inhibiting the utility.

In most cases, utility providers enter into a utility easement agreement with private landowners to gain access to their property. In cases where there is an established utility easement in place on a property, Loudoun County should

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<sup>27</sup> *Purchase of Development Rights — Wetlands Watch*

<sup>28</sup> *Loudoun County supervisors to consider incentivizing land preservation, conservation | News | loudountimes.com*

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<sup>29</sup> *Trails and Utilities | Rails-to-Trails Conservancy*



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engage the landowner to request an additional access easement in exchange for covering costs associated with improvements and maintenance. In addition to the landowner, the County should coordinate with the utility company holding the easement to ensure that trail development will not negatively impact or prohibit the utility.

To improve the likelihood of obtaining an access easement within a utility corridor, Loudoun County should proactively engage area utility providers to better understand the planned utility projects that require the acquisition of a utility easement from a landowner. Once identified, the County should approach the landowner in tandem with the utility company to increase the probability of successfully obtaining the access easement while coordinating and sharing improvements to the easement area with the utility provider.

### **HOMEOWNERS ASSOCIATIONS**

Loudoun County's existing and future homeowners associations own significant and often contiguous tracts of open space that surround and weave through their respective communities. These HOA lands are typically unbuildable and in riparian or drainage corridors – set aside as open space or improved with

recreational facilities, including trail systems.

Loudoun County should continue to seek partnerships with HOAs in order to:

- » Allow for public access to existing trail amenities on private HOA land, or
- » Allow for the construction of public trail facilities on private HOA land, or
- » Convince HOAs to build new trail facilities, even if restricted only to residents, in cases where those facilities would provide those community members with off-road access to the public linear park and trail system.

The County should also work to communicate to its HOA partners the benefits of having a public trail corridor in neighborhood open space—in terms of resident health and wellbeing, easy access to an interconnected countywide system of linear parks and trails, and the demonstrated impact of trails in increasing neighboring property values.

### **DEDICATED FOUNDATIONS, NON-PROFITS, AND LAND TRUSTS**

Loudoun County should build and leverage relationships with area non-governmental organizations (NGOs), such as foundations, nonprofits and land trusts. NGOs can be valuable partners in the development of a linear park and trail network by advocating for the system, helping to facilitate planning and design

efforts, coordinating volunteer trail maintenance, and educating the public about the layered benefits of linear parks and trails.

NGOs can also hold and help to negotiate lease agreements, easements and fee simple purchases, and are able to function as a diplomatic, intermediary party between the County and private landowners. NGOs are especially useful when negotiating with landowners who are willing to provide access to their property but may not be interested in working with a government entity.

NGOs may also be beneficial in scenarios where a landowner is interested in entering into a short-term lease agreement to gauge the impacts of trail use on their property. In these cases, the NGO can hold the lease agreement while developing a relationship with the landowner.

Loudoun County should continue to build its relationships with local and regional land trusts—including Land Trust of Virginia, Northern Virginia Conservation Trust, Old Dominion Land Conservancy, Piedmont Environmental Council, and Virginia Outdoors Foundation. These organizations hold conservation easements and work closely with the private landowners who choose to place their property under an easement. They are important partners in educating landowners about the potential benefits of allowing for public trail access

within the language of their parcel-specific conservation easement.

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## LINEAR PARKS & TRAILS FOUNDATION

In addition to working closely with non-profit foundations with allied missions—such as protecting open space or providing outdoor recreation opportunities—parks departments can advocate for the creation of non-profit parks foundations as private, standalone entities with an explicit mission to support public parks.

A park foundation can help to supplement limited tax dollars through grants, private fundraising, volunteer coordination, marketing efforts, advocacy and strategic tools. Since foundations are private non-profits, they are able to act outside the traditional scope of a public agency.

National Recreation and Park Association conducted a survey of both park and recreation agencies and nonprofit foundations to explore the keys to successful leadership of these organizations. They noticed that foundations were very helpful in philanthropic and fundraising support but less important for day-to-day activities.

### Some of the keys to effective foundations were:

- » **Relationships between organizations:** This study found that clarity and transparency between agencies and



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foundations is essential to an effective relationship. A key takeaway was that trust, collaboration, and clearly defined roles were essential to the success of the partnership. There must also be trust between the community and both the agency and foundations for effective results.

- » **Soft and technical skills:** Skills that agencies value in their foundation partners include leadership and decision making, professionalism, interpersonal skills, communications, goal setting, and conflict resolution. They also valued financial resource management, business acumen, marketing, and political and legislative acumen.
- » **Fundraising and advocacy capacity:** The study found that 73% of respondents viewed fundraising or philanthropic support as “extremely or very important.” The ability of foundations to advocate for the parks and recreation department was crucial as many agencies are not able to lobby. As foundations are non-government entities, they possess greater capacity to fundraise than their governmental counterparts.

### **Some of the challenges in agency-foundation relationships were:**

- » **Equity:** Foundation support may not reach areas that need it most because fundraising may be focused on more affluent areas.
- » **Organizational structure:** Sometimes there may be competition between organizations for volunteers and board members. Both organizations must coordinate and plan on organizational structure.

- » **Unproductive interpersonal relationships:** Scarce financial resources may be a challenge to receive if there is a lack of communication on who is reaching out to donors causing more than one solicitation to each donor.
- » **Public advocacy:** This study showed that only a quarter of survey respondents found their foundations to be extremely useful on this front. Clearly communicating efforts between organizations is very important to foundations’ ability to effectively advocate.

Challenges may also occur from “lack of stakeholder understanding, buy in, and awareness.”

A good example of an agency-foundation relationship is the Fairfax County Park Foundation, a 501(c)(3) not-for-profit corporation that supports the public Fairfax County Park Authority by raising private funds, pursuing grants, and creating partnerships that supplement tax dollars in order to meet community needs for parkland, facilities and services. The Park Authority receives less than 1% of the general fund from the county of Fairfax, and generates approximately 60% of its own operating expenses.

The Fairfax County Park Foundation is made up of four officers, 16 directors, two staff members, and three pro bono consultants. It received \$662,144 in total donations in 2020, and \$1,176,757 in 2019. The Park Authority’s net

cost to the County in FY 2019 was approximately \$25 million.

Funding supported Park Authority programs, community events, and park amenities. It also funded scholarship awards for low-income families and a camp for children in homeless shelters in summer of 2020. Project highlights this year include capital campaigns for a new education center, camps, entertainment events, education programs, health and wellness programs, land care and preservation, and scholarships.

Fairfax County Park Foundation raises funds primarily through:

- » Donations: Cars, stocks and bonds, IRA distribution gifts, and donor advised funds
- » Workplace contributions: Employer matching gifts and monthly donations
- » Shopping: AmazonSmile offers Fairfax County Park Foundation as an organization to donate to when customers shop there
- » Gift planning: Wills and other legacy gifting
- » Memorials: Memorial bench sponsorships and tribute and memorial cards
- » Partnerships: Opportunities for friends groups, volunteers, and individual advocates

The Park Authority funds the Foundation's staff salaries, office space and most operating expenses, allowing the Foundation to assure donors that their contributions directly support park projects and services.



# 09

# DESIGN

# GUIDELINES

**SUSTAINABLE TRAILS**

**TRAILS AND NATURAL RESOURCE PROTECTION**

**EQUITABLE TRAIL DESIGN**

**TRAIL TYPES**

**TRAIL DESIGN GUIDANCE**

**TRAILHEADS & AMENITIES**

**WAYFINDING & SIGNAGE**

**BLUEWAYS**

### INTRODUCTION

The Loudoun County LPAT system will offer a variety of experiences, with new linear parks and trails designed to suit their specific environmental, cultural and development contexts. The following design guidelines should be referenced along with Loudoun County and Parks, Recreation and Community Services construction standards to ensure consistent and sustainable trails and a high-quality system that serves multiple users.

Coordination will be needed with the County's Department of Transportation and Capital Infrastructure, NOVA Parks, municipalities, Virginia Department of Transportation, and neighboring jurisdictions to ensure consistent standards and high-quality connections across systems. In linear park and trail corridors that are good candidates for state, federal or private grant opportunities, the County should adapt standards as needed to suit funding requirements – for example, by ensuring roadway and crossings meet AASHTO and VDOT standards.

The full linear park and trail system will include a variety of primary, secondary and tertiary trails. The design guidelines address the primary trails as shown in the Framework Plan – those cross-county trail corridors to which other systems and future trails

will connect. As the prioritized Framework Plan projects are pursued, the following should guide more detailed alignment and trail design:

- » Create trails that have a diversity of scenic experiences and connect to other points of interest.
- » Foster transparency and support from local landowners during the planning process.
- » Minimize impacts in environmentally and culturally sensitive areas.
- » Connect to existing trail networks and communities.
- » Provide loop and stacked loop trails (loop trails connected to additional loop trails) and avoid dead-end trails when possible.
- » Manage water sustainably by incorporating drainage devices such as dips, grade reversals, drainage lenses, and culverts.
- » Prioritize alignments that avoid expensive infrastructure.
- » Promote best practices in avoiding user conflict, particularly with motor vehicles and roads.
- » Provide a diversity of experiences.
- » Promote trail etiquette.
- » Provide amenities, safety features and wayfinding to enhance the trail experience.
- » Strive to allow for multiple users when possible.
- » No motorized vehicles allowed except for maintenance and emergencies
- » Stabilize soil during and after construction.
- » Use plants native to the site's Level 3 ecoregion.



- » Design floodplain trails to conform with county and state requirements.

- » Form mutually beneficial partnerships to execute the plan, including public-private partnerships.

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## **SUSTAINABLE TRAILS**

The Linear Parks and Trails (LPAT) Plan presents a wonderful opportunity to embed modern, sustainable best practices to create a world-class, countywide system. A comprehensive sustainability strategy strives to integrate environmental, economic and social best practices simultaneously.

The County should consider utilizing a third-party sustainable rating system such as the Sustainable Sites Initiative (SITES) as minimal standards for the planning, design, construction and stewardship of linear parks and trails.

## **SUSTAINABLE LINEAR PARK AND TRAIL GOALS**

### **1. Environment**

- » Conserve, preserve and restore natural systems and their integrity to provide ecosystem services for the community and future generations.
- » Embed resiliency in the design of the linear parks and trails to withstand and rebound from future environmental changes and disturbances.

### **2. Economics**

- » Utilize durable and regionally-available materials.

### **3. Social**

- » Create an equitable plan that addresses all communities and their specific needs.
- » Conserve Loudoun County's unique cultural landscape and historic resources.
- » Prioritize the health, safety and well-being of all communities by providing comfortable, safe and accessible linear parks and trails for people of all ages and abilities.

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## **TRAILS AND NATURAL RESOURCE PROTECTION**

Loudoun County has abundant natural and cultural resources that are character-defining, promote a unique sense of place, and are why people choose to live, visit and do business in the county.

As a part of this planning process, 592 people were surveyed as a part of Survey 1, and when asked about their favorite thing about Loudoun County, the top three responses were quality of life, the natural environment, and the scenic qualities of the county.

Not only do these resources make the county an incredible place to live, Loudoun County's natural resources serve as critical green infrastructure by providing a myriad of ecosystem services to the region beyond the county,

## DESIGN GUIDELINES

such as cleaning water, providing shade, connecting habitats, promoting biodiversity, and regulating flooding. The more connected, continuous and wide these corridors are with protected land (known as patches in the study of landscape ecology), the more services they can offer to the county and the region.

The linear parks and trails plan is an extraordinary opportunity to protect and enhance natural and cultural resources while Loudoun continues to grow and attract new residences through:

- » **Conservation-** careful management of natural and environmental features within the built environment
- » **Preservation-** retaining and protecting natural, environmental and heritage resources
- » **Restoration-** enhancing natural, environmental and heritage resources
- » **Education-** communicating the importance of natural and heritage resources

*(From the Loudoun County 2019 General Plan)*

The natural resources that traverse the county also set the stage for a variety of experiences through the countywide linear parks and trails system, whether alongside or within a river or stream, through a forest along a mountainside, or beside a scenic pasture or historic homestead. By layering recreational and restorative uses along these

corridors throughout the county, there is also a responsibility to protect, conserve and restore these corridors in order to protect and not diminish their integrity. As such, this plan offers several recommendations to protect or enhance these critical resources.

## OVERALL NATURAL RESOURCE RECOMMENDATIONS

- » Utilize existing natural resource corridors as one of the potential resource corridors for linear parks and trail corridors, such as floodplains, riparian corridors, and ridges.
- » Linear parks and trails serve as green infrastructure corridors that connect beyond the county and thus the corridors themselves should be as wide as possible to protect environmental integrity and the scenic quality of the corridor, ideally at least 300' wide (500' ideal) or 100' on either side of the high water level line (which ever is greater), while minimizing disturbance.
- » For areas whose watershed drains 100 acres or more, the guidance for the cumulative corridor width is:
  - The 100-year floodplain, and
  - Adjacent steep slopes (>25%) starting within 50 feet of the edge of the 100-year floodplain and extending no greater than 100 horizontal feet beyond the edge of the 100-year floodplain, and
  - A 50-foot Management Buffer measured from the edge of the 100-year floodplain, or a minimum stream buffer measured as the area located within 100 feet of both sides of the stream or river, measured as a line extending



**Figure 50:** Wetland at Beaverdam Reservoir / Photo credit: Design Workshop

- perpendicularly from the stream bank of the active channel of the stream or river
- » Align trails away from sensitive environmental features, such as wetlands, wet soil, steep slopes, stream banks, and rare habitat (threatened habitat as defined by NatureServe and the International Union for the Conservation of Nature- critically endangered, endangered, vulnerable) with at least a 30' buffer. This includes buffers of high quality rivers and streams, and water supply reservoirs such as the Potomac River, Bull Run, Goose Creek, Catoclin Creek and all reservoirs for drinking water.
- » Align corridors to connect existing high integrity ecological patches such as protected land and parks.
- » Limit disturbance within the corridor as much as possible.
- » Tailor design and construction methods to the unique conditions of the site, such as Karst terrain, high shrink-swell soils and mountainside development overlay districts.

## **SITE PROTECTION AND PREPARATION**

- » Avoid disturbing tree roots. When disturbing tree roots is unavoidable, take special measures to minimize damage. Consult with a certified arborist.
- » When clearing vegetation, avoid straight lines by feathering and thinning remaining vegetation. Always minimize clearing and disturbance as much as possible

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**Figure 51:** Surface drinking water source, the Potomac River

- and consider transplanting plants and soil for reuse.
  - » Use non-invasive temporary cover crops, such as winter oats, when soil will be left bare as outlined in the regulatory requirements for erosion and sedimentation control.
  - » Remove invasive plant material within the limits of disturbance before planting. This may require two rounds of treatment to ensure species are removed. Prioritize removal of wind-dispersed species before seed set. Avoid herbicides by using suppressive mulches, physical removal, girdling, altering hydrology, prescribed burning, shading, etc.
- WATER**
- » Within the watersheds of surface drinking water sources (Hirst Reservoir, Beaverdam Reservoir and Potomac River), take great care to develop a “net-zero” water management strategy for stormwater runoff and water quality and maintain at least a 50’ buffer from the water edge/ bank full from any soil disturbance, with the exception of creation of nongraded, 4’ wide or less soil surface trail tread or invasive plant removal.
  - » Manage stormwater as close to where it falls as possible and utilize green stormwater management devices and natural materials as opposed to gray infrastructure (pipes, curbs, drains, etc.) when feasible.

- » Provide convenient disposal sites for domestic animal waste to protect water quality.
- » Provide vegetative buffers between trails and water bodies and steep slopes.
- » Partner trail design and construction with stream restoration when possible to enhance the integrity of the riparian corridors.
- » Locate blueway trail access away from high quality ecological areas.
- » Infiltrate stormwater on plateaus above steep slopes to avoid sending water down slopes.
- » Use infiltration berms, check logs, and retentive grading at the top of slopes.
- » Infiltrate stormwater as close to the sources of run-off as possible. Do not allow stormwater to flow unmanaged to wetland areas or other sensitive features.
- » Protect drainage channels with bioengineering techniques. (See Soil Stabilization.)

**SOIL AND EARTHWORK**

- » Stabilize soil and prevent erosion and sedimentation.
- » Protect soil during construction and limit compaction.
- » Prioritize corridors that protect prime farmland soil, but also minimize disturbance of the soil during construction.
- » Stabilize slopes greater than 15% with bioengineering techniques, which use plant materials and structures to stabilize slopes. Possible techniques include live stakes, live fascines, brushlayers, branchpacking, live cribwalls, vegetated rock gabions, vegetated rock walls, joint planting, and compost blankets [Refer to USDA NRCS Engineering Field Handbook

Chapter 18 (Gray, 1996) for more information].

- » Utilize small plant material (bareroot, whips, containers) on slopes for ease of installation and increased survivability.
- » Re-mediate compacted soil (soil greater than 200 PSI using a soil penetrometer) by ripping, scarifying, vertical staking, and/or incorporating organic matter.
- » Leave leaf litter in-place.
- » Incorporate diverse soil microorganisms in the soil to promote soil health by using third party-certified compost or third party-certified compost tea at least twice a year during establishment when feasible.
- » Avoid excessive cuts and fills.
- » Retain existing rock formations, vegetation, and effectively drained soils when possible.
- » Prohibit dumping or sloughing excess earth/rock on downhill slopes.
- » Use retaining walls to reduce the amount and extent of earthwork. Use culturally relevant or local, natural materials and colors for the walls.
- » Use landforms that mimic surrounding form, line, color and texture to hide disturbance.
- » Stockpile existing soil for reuse. Do not stockpile soil in mounds greater than 7 ft.
- » Do not disturb soil when it is wet.

**PLANTS**

- » Protect vegetation during construction and consider transplanting vegetation that must be disturbed during construction.
- » Linear parks and trails can be corridors that spread invasive species. Eradicate invasive species during construction and

## DESIGN GUIDELINES

- over the long term management of the corridor.
- » Utilize groundcover plants to cover bare soil.
  - » Specify dense planting and temporary cover crops in areas known to be hotspots for invasive species, such as areas near existing invasive species and sunny areas, such as south-facing edges.
  - » Specify weed-free mulch and seed mixes.
  - » Plant native plants to the region (EPA Ecoregion 3 at minimum).
  - » Do not use plants that are toxic to horses.
  - » Take into account future projections of climate change and changes in USDA hardiness zones when selecting native plant material.
  - » Choose a resilient planting strategy by using native plants that can withstand a range of conditions and occupy many layers and niches.
  - » In woodlands and forests, choose a planting palette that addresses multiple layers-ground, shrub and canopy, while keeping clear lines of sight for people and horses.
  - » Prioritize a diverse plant palette that provide food for wildlife and are larval hosts for important pollinators, particularly butterflies and moths.
  - » Remove diseased or dying or poor quality trees at the guidance of a certified arborist.
  - » Replant areas of disturbance to mimic natural plan density patterns found in the area - clumps-and-gaps- and with mix of types of plants (herbaceous plants, shrubs, trees) and sizes. Do not plant in uniform rows or with only one or two different sizes or species of plant material.
  - » Provide gradual transitions between different landscape types (wetlands, meadows, woodlands, forests).
  - » Use plants that can thrive in the existing or new environmental conditions. Choose locally grown species that are straight species (no cultivars except near buildings) and are local genotypes.
  - » Propose a mix of diverse plants: deciduous and evergreen, early-successional (majority) and late- successional (minority), and different habits and forms.
  - » Propose plants that are diverse in color, texture, type and size.
  - » Plant in densities that can out-compete invasive species, particularly adjacent to areas with invasive species and south-facing edges and slopes. Manage invasive species over the long-term to protect new plants before and after planting.
  - » When seeding, properly prepare the seedbed by decompacting the soil and ensuring good seed-to- soil contact. Consider using techniques such as land imprinting to prepare the soil and soil drills or a two- step hydroseeding/hydromulching method for seeding.
  - » Plant at the best time for each group of plants. Do not plant anything in the summer and avoid planting fall hazard trees in the fall. Use non-invasive, annual cover crops to stabilize soil in the winter.
  - » Protect plants from herbivory by deer, etc.
  - » Consider stockpiling native vegetation in areas to be graded in a temporary nursery so they can be reused on the project.

## VIEWSHEDS

- » Balance prioritizing view cones and viewsheds to high quality visual resources from trails, with protecting views



**Figure 52:** Bridge at Catoctin Creek providing scenic viewsheds

from established high visual resources outside of the LPAT corridor to the trails and to people, such as Scenic Byways and Scenic Rivers like Goose Creek and Catoctin Creek.

- » Utilize visual buffer elements to hide undesirable manmade features and infrastructure.

## **HABITAT AND WILDLIFE**

- » Utilize strategies that minimize wildlife disturbance and human-wildlife conflicts.
- » Route trails through already disturbed areas or at the edge of high quality habitat, rather than through its center.
- » Minimize the number of times prominent landscape corridors— such as riparian zones— are crossed by a trail. These corridors may serve as important conduits and habitat for wildlife.
- » For both habitat and maintenance reasons, it is better to run a trail just outside the riparian area (perhaps on a topographic bench) and bring it in at strategic places, than to keep it continuously close to a riparian area.
- » In routing a trail near a pond or lake, don't run it completely around the body of water. Instead, leave some shoreline without a trail to allow water birds the option of moving away from people to the far side of the pond.
- » Avoid crossings where two or more streams come together.

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**Figure 53:** Rill near trail at Edwards Landing Park in Leesburg / Photo credit: Design Workshop

These are particularly important nodes for wildlife.

- » Either avoid wildlife breeding areas or close trails through them at the times such wildlife are most sensitive to human disturbance.

### MANAGEMENT

- » Use adaptive management strategies and best practices in restoration ecology to manage the linear park and trail corridors.
- » Track changes in vegetation and environmental conditions on an annual basis at a minimum. Set a baseline condition and goals for the landscape at set time intervals for monitoring. Set indicators to monitor to assess whether or not the landscape is on a positive or negative

trajectory. Indicators to monitor include:

- Vegetation and litter cover
- Soil structure (compaction, crusting, aggregate size)
- Organic matter
- Infiltration, water-holding capacity of soil
- Erosion and sedimentation, gullies and rills
- Plant diversity, invasive species
- Soil biology, presence of earthworms
- Soil chemical properties (pH, salinity, CEC, etc.)
- Excessive herbivory
- » Devote resources to controlling invasive species, pests, and disease on a biannual basis at a minimum, including gypsy moths and sudden oak death.



- » Monitor the site after any disturbances in the landscape that may encourage invasive species. Opportunities in landscapes and wetlands caused by natural or man-made events (hurricanes, large storms, run-off from upland landscapes, etc.) where invasive species tend to proliferate include:
  - Canopy gaps, where trees have fallen
  - Nutrient pulses (for example, from runoff from recently fertilized adjacent site)
  - Sediment deposition and bare soil (for example, from soil erosion from an upland area where stormwater is not controlled)
- » Devote resources for supplemental planting in the event of a large disturbance. Use rhizomatous and/ or fast-growing native species with temporary cover crops on the ground layer supplemented with native trees and shrubs in order to discourage invasive species establishment.
- » Protect new plants from herbivores.

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## **EQUITABLE TRAIL DESIGN**

Equitable trail planning focuses on a fair and context-specific distribution of linear park and trail resources. An equitable trail system takes into account the varied needs of diverse users and seeks to identify and remove potential barriers to use. Barriers can be addressed through thoughtful design of trailhead location, wayfinding, trail maintenance, ADA

compliance, lighting, marketing and programming.

Planning and design of the Framework Plan linear park and trail projects should begin with an inclusive planning process that allows community members to weigh in with their needs, goals, concerns and priorities. An inclusive planning process can lay the groundwork for long-term health of the system by securing community buy-in and cultivating a sense of ownership and stewardship.

Best practices for equitable trail design include:

- » Seek the expertise and leadership of community-based organizations and stakeholders.
- » Utilize a systems approach that recognizes the interaction of the linear park and trail project within larger systems of housing, transportation and public safety.
- » Use outreach materials that are accessible to people who speak different languages or are visually impaired.
- » Within longer-term corridor project buildout, prioritize short-term implementation projects that can demonstrate progress and build trust with historically marginalized communities.
- » Work with communities to develop programming and maintenance regimens that meet local needs.

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## **TRAIL TYPES**

Loudoun County Department of Parks, Recreation and Community Services utilizes the U.S. Department of Agriculture Forest

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Service (USFS) Trail Classifications to describe and categorize the County's linear parks and trails. These classifications – and the Linear Parks and Trails Plan Design Guidelines – apply to recreational trails, as distinguished from the sidewalks and shared-use paths addressed in the Countywide Transportation Plan. The full guidelines and classification matrices can be found in Appendix D. For paved trails – which primarily are used to connect to transportation trails or on regional systems such as the Washington & Old Dominion Trail – the AASHTO Bike and Pedestrian Guides should be followed.

### TRAIL DESIGN FOR HIKERS

- » **Surfaces:** Compacted aggregate, resin stabilized aggregate, natural soil surface, wood chips
- » **Running grades:** Maximum 5% for accessibility and otherwise maximum 8-10%, with minimum running grades of 1%
- » **Cross slopes:** Minimum 1% and maximum 5%
- » **Trail tread width:** Minimum 5' for primary cross-county trails and as narrow as 1' for primitive trails
- » **Vertical clearance:** Minimum 8' from trail surface
- » **Horizontal clearance:** 2' shoulders on either side of tread
- » **Typical trail distances:** 2-4 miles for casual walkers / 4-10 miles for general hikers / 6-15 miles for fitness hikers / 3-15 miles for trail joggers

### TRAIL DESIGN FOR BIKERS

- » **Surfaces:** Compacted aggregate, resin stabilized aggregate, natural soil surface
- » **Running grades:** Vary widely, but average grades should not exceed 10% for maximum sustainability
- » **Trail tread width:** 3-4' for beginners, 2-3' intermediate, and as narrow as 6" for experts
- » **Vertical clearance:** Minimum 8' from trail surface
- » **Horizontal clearance:** 1' shoulders on either side of tread
- » **Typical trail distances:** 3-12 miles for recreational mountain bikers / 6-20 miles for advanced mountain bikers / 10-25 miles for recreational network bikers / 15-50 miles for advanced network bikers

### TRAIL DESIGN FOR EQUESTRIANS

- » **Surfaces:** Compacted aggregate, resin stabilized aggregate, natural soil surface, wood chips, sand
- » **Running grades:** Maximum 12% for backcountry trails and 5% for more developed trails, with grades greater than 20% for stretches of no more than 20' in length
- » **Sight Lines:** Maintain a minimum of 100' sightlines in high volume and speed areas where cyclists utilize the same trail
- » **Cross slopes:** maximum 2%
- » **Trail tread width:** Minimum 18", but in more developed areas, singletrack trails typically 6-8' wide and doubletrack typically 8-12' wide
- » **Vertical clearance:** Minimum 12' from trail surface, including underpasses

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- » **Horizontal clearance:** 2' shoulders on either side of tread and 3' clearance on either side of tread for obstacles
- » **Typical trail distances:**  
Provide 2-3 hours, half days, full days trail (5-6 mi per an hour) experiences- including 7-8 miles for carriage drivers, 7-10 miles for walking horseback riders, 10-25 miles for walking/trotting horseback riders

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## TRAIL DESIGN GUIDANCE

### AVOIDING TRAIL USER CONFLICTS

The Loudoun County linear park and trail system will serve hikers, bikers, walkers, blueway users and equestrians, and within those broad user categories are individuals with a variety of abilities, expectations and needs. Trail design should anticipate potential user needs and provide trails that promote safety, protect natural resources and provide high-quality experiences for all users.

Wherever the linear park and trail corridor and environmental conditions allow, the primary trails of the Loudoun County system should provide separated treads for different user types, with well-designed crossings and varied buffer widths that promote positive interactions between different users. The National Recreational Trails Advisory Committee and Federal Highway Administration provide the additional guiding principles for the planning and

design of trails that prevent user conflict:

- » Provide adequate trail mileage to reduce congestion and allow all users to feel their needs are being met.
- » Minimize the number of contacts between users, particularly in congested areas and at trailheads.
- » Engage local users in the project-specific planning and design process, to allow all voices to be heard and to ensure trail design accommodates community-specific needs.
- » Promote trail etiquette and promote responsible trail behavior through educational materials featured on trail websites and on-site signage.
- » Bring users together through efforts such as volunteer trail maintenance or advisory councils.

### ACCESSIBILITY

In order to serve the broadest possible cross-section of the Loudoun County community, the primary cross-county trails of the linear park and trail system should always seek to follow universal design principles.

Universal design for trails means that tread conditions and connections accommodate users of all ability levels through manageable slopes, firm and stable surfaces, and adequate horizontal and vertical clearances. Universal design also entails providing signage that is legible for all people and linear park and trail amenities – such as parking, picnic tables and

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drinking fountains – that can be used by all visitors.

Accessible trails will not be feasible in all contexts. The County will determine on a project-by-project basis whether environmental conditions allow for accessible design. The U.S. Access Board defines the following limiting factors to help identify conditions in which accessible trails might not be feasible:

4. Trail grades or cross slopes exceed 40% for 20' or more.
5. The trail surface is not firm and stable for 45' or more.
6. The tread width is less than 12" for 20' or more.
7. Obstacles of 30" or higher are present across the full width of the trail.

If any of those limiting factors are present, the County and its trail design team should evaluate whether accessibility is practical and how to balance the system's universal design and natural resource protection goals.

Where accessible trail design is pursued, the following minimum standards should apply:

- » Choose a trail route that is relatively level; can be modified to allow two users to pass; and does not have excessively steep slopes, drop-offs or tight turns.
- » Routes should be at least 36" wide for single users and 60" to allow for passing. Minimum vertical clearance of 80" should be maintained except where prevented by natural intrusions such as tree limbs. Constructed

objects such as signs should not protrude into the minimum 36" wide by 80" high clearance space.

- » Running slopes should not exceed 10%. Slopes over 5% should not exceed 50' in length, and slopes over 8% should not exceed 30' in length. Target slopes should be 5% or less.
- » Cross slopes should not exceed 3%. Target cross slopes should be between 1% and 2%.
- » Trail surfacing should be firm and stable and can include compacted aggregate, resin stabilized aggregate, boardwalk and compacted native soil. Soil hardeners or resin binders can be utilized where site soil cannot be suitably compacted to become firm and stable.
- » Accessible trails should have trailheads with accessible parking and signage that clearly describes the trail conditions and difficulty – including description of trail length, surface type, typical and minimum tread width, and typical and maximum running and cross slopes.

The County and its partners should be aware of whether funding sources for individual projects require certain accessibility standards – for example, the U.S. Access Board's Accessibility Guidelines for Outdoor Developed Areas or the USFS Outdoor Recreation Accessibility Guidelines.

### NATURAL SURFACE TRAILS

The majority of Loudoun County's recreational trails are unpaved and fall within natural or cultural heritage resource corridors, such as stream valleys or protected rural

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open space. Natural surface trails are well-suited for hiking, mountain biking and horseback riding and support the recreation- and natural resource-oriented goals of the County's linear park and trail system. Trail surfaces should comply with county and state guidelines, including limitations within floodplain.

Natural surface trails include trails with the following surface materials:

- » Native soil
- » Wood chips
- » Compacted aggregate
- » Resin stabilized aggregate
- » Sand

## ROLLING CONTOUR TRAIL DESIGN

USFS trail design standards emphasize the importance of careful planning and trail design for establishing new natural surface trails. By following the contours of the land and the "rolling contour trail" approach, Loudoun County can ensure the longevity, safety and low maintenance of its natural surface trail system.

Rolling contour trail design calls for:

- » Full-bench construction. This means routing a trail along the contours of a sideslope and relying solely on cut, rather than a mixture of cut and fill, to create a solid and stable trail tread. Full-bench construction requires more excavation but results in a lower-maintenance, more durable trail.

- » Outsloped tread. The trail's cross-slope should be at least 5% to maintain positive drainage across, rather than down the length of, the trail.
- » Sustainable grades. When planning trails on a map, the USFS-recommended rule of thumb is to keep the grade of each uphill and downhill section less than 10 percent. Route modifications can be made in the field to fine-tune the grading, and the 10-percent guideline helps to ensure the feasibility of the planned route. Another USFS rule of thumb for sustainable trail grades is the "half rule," which says that the grade of a trail running along a sideslope should be no more than half the grade of the sideslope. For example, a trail running alongside a 12% hill should have a longitudinal slope of no more than 6%, to ensure that runoff continues down the slope of the hill and not down the trail, which can cause surface erosion and ruts.
- » Frequent grade reversals, also called grade dips or swales. In grade reversals, the grade of the trail is reversed for 10 to 15 feet, ideally taking advantage of natural dips in the terrain. Grade reversals should be placed every 20 to 50 feet along a trail. This creates a varied user experience and prevents runoff from gathering speed and washing away the trail surface.

## ROAD CROSSINGS

### AT-GRADE CROSSINGS

Wherever existing or proposed linear parks and trails must cross a roadway, County parks and transportation staff should

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collaborate to create a safe and high-quality crossing experience.

The County should refer to the latest guidance from VDOT and AASHTO for determining minimum standards for pedestrian and bicycle crossing accommodations. For multi-lane roads, crossings should include a median pedestrian refuge.

For equestrian trails, trails must meet roadways at a right angle and include minimum waiting areas, on either side of the road and in potential median refuges, that are each 15' deep and 25' wide to accommodate waiting horses and riders.

Signalization is strongly recommended for at-grade crossings with heavy traffic or high speed traffic and signalization should be accessible to the height of cyclists, pedestrians and equestrians.

### SEPARATED CROSSINGS

Trail bridges or underpasses allow trail users to avoid crossing lanes of traffic but can add significant expense and grading challenges to trail systems and are preferred in contrast to at-grade crossings. Underpass crossings are recommended where trails follow a stream corridor or other feature that crosses underneath an existing roadway bridge and are preferred by equestrians. In these scenarios,

trails should be at least 14' wide where possible, with at least 10' minimum vertical clearance for hikers and bikers and 12' minimum vertical clearance for equestrians. Underpass crossings should be well-lit with vandal-proof light fixtures.

### TRAILS ALONG ROADWAYS

Wherever trail gaps mandate that alignments must follow roadways for a certain distance, trails should be set back at least 8' from the roadway, in keeping with County standards for shared-use paths. Where such roadside trails accommodate equestrians, the roadside buffer should also include a vertical obstacle at least 60" in height.

### STREAM CROSSINGS

Stream crossings should be avoided wherever possible to maximize trail safety and minimize environmental impacts. Wherever stream crossings are essential for system connectivity and access, options include:

- » Fair weather crossing structures where streams are relatively shallow, water volume is light, and banks are gently sloped. Fair weather crossings allow water to flow over a concrete pad, with cylindrical concrete stepping stones elevated above water level to allow hikers and dismounted bikers and equestrians to cross.

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- » Bridges where water volume is high, stream banks are steep, and the level of trail use justifies the expense. When the expense is justified, bridge designs offer a unique opportunity to reinforce the branding and identity of the linear park and trail system.

## TRAIL EXPERIENCES

The linear park and trail system should offer a variety of trail experiences that reflect a sense of place and the diversity of Loudoun County's cultural and natural landscapes.

Each individual trail project should be designed with user experience in mind, with alignments that create and sustain interest and spotlight special features in the landscape. By following the contours of the land, weaving through different environments and taking advantage of subtle changes in topography and viewshed, trails can be designed to give their users a sense that there is always something ahead to be discovered.

Designers of Loudoun County's linear park and trail projects should follow these general principles of trail design.

- » **Trail shape:** In determining alignments, use trail shapes that suit their context. For example, straight or constant-radius curved trails often suit urban or dense suburban areas because they are responding to the built rather than natural environment. Incorporating arbitrary irregular curves in an urban environment

feels unnatural and is not good trail design. In natural areas, on the other hand, trail alignments should feature irregular curves that respond to the landscape.

- » **Anchors:** Identify anchors, or points of interest that draw the eye, along the trail corridor. Align the trail to respond to these anchors – for example, by wrapping the trail around the anchor, or by aligning the trail so that it approaches and then turns away from the anchor, positioning the anchor in the user's sightline.
- » **Edges:** The same principle holds for how trails should interact with edges, such as transition areas between different habitat types, waterbodies or ridgelines. Trails should either follow and wrap the edgeline, or position the edge in the sightline of the trail user. For transitional areas between different environments, it can be effective to generally follow the edgeline within one zone and then occasionally weave the trail into the neighboring zone and back out.
- » **Gateways:** Trail alignments should seek out natural gateways, or framing devices such as arching tree branches that give the impression of compressing an open space. Gateways can also be created – for example, through structures that frame entrances to boardwalks or at trailheads.

Material and planting palettes are another opportunity to reinforce sense of place and high-quality trail experiences. For example, trails that cross through or near historic towns that include an aggregate tread could feature flush cobble or brick edging, while a coarse local

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aggregate shoulder would be more harmonious within a natural setting.

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### TRAILHEADS & AMENITIES

Trailheads are the public access points for the linear park and trail system. Primary trailheads provide parking and a kiosk or signage with trail information; they can also offer restrooms, picnic shelters and other amenities. Secondary trailheads provide trail access with limited signage and might or might not provide parking or other amenities.

Primary trailheads should be located as needed in urban and suburban areas, with easy access to residential areas, public roads and transit stops. The County should take advantage of opportunities to colocate trailheads with public parks, schools and community centers and to share parking and restroom facilities.

In rural areas, primary trailheads should be spaced every 5 miles for heavily used trails and every 10 miles for lesser used trails.

Secondary trailheads should be pursued wherever practicable, such as where trail alignments cross public land or rights-of-way, in order to maximize the accessibility of the linear park and trail system.

The following amenities should be provided at primary trailheads:

- » Parking lots
- » Restrooms

- » Seating
- » Interpretive and directional signage
- » Litter receptacles
- » Bike racks and repair stations
- » Pet waste containers
- » Lighting
- » Kiosks
- » For equestrian trailheads:
  - Fresh Water Access
  - Separate trailer parking and road dimensions to support trailer movement (18-28' wide, 55-78' long)
  - Trailer dropoff

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### WAYFINDING & SIGNAGE

#### BRANDING

Loudoun County should develop branding and signage guidelines that are specific to the Loudoun County linear park and trail system and that reflect the unique natural and cultural character of the system. Given the importance of connectivity to and within other trail systems, the County should coordinate these guidelines with partners including NOVA Parks, the Northern Virginia Regional Commission, municipalities, and the County Department of Transportation and Capital Infrastructure.

County-specific branding and signage should incorporate well-designed and complimentary colors, fonts, materials, iconography and legibility. Consistent and recognizable wayfinding elements



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**Figure 54:** Example of educational signage along the Dulles Greenway Wetlands Project / Photo credit: Creative Commons

will help to orient trail users and facilitate connections across different regional trail systems. It will also strengthen the public's awareness of and support for Countywide linear parks and trails.

### SIGNAGE

Legible and consistent signage helps to orient, prepare and educate linear park and trail users. Below are the types of signs that will be used throughout the system.

» **Regulatory signs:** These signs share information about requirements for speed, stop and yield locations, usage rules, and other safety-related messages. Certain regulatory

signs are required by state and federal funding agencies, and those standards rely on the Manual on Uniform Traffic Control Devices by the Federal Highway Administration. Regulatory signs should be posted at trailheads and wherever required by local or state law.

» **Warning signs:** These signs alert trail users to be aware of their surroundings – for example, to point out the potential for falling rocks, high water, narrowed tread or steep slopes. Warning signs should be placed wherever needed to alert trail users.

» **Informational signs:** These signs share information that helps trail users learn about the trail and plan their trip. Information might include

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trail difficulty, length, trailhead locations, emergency contact information, and the locations of nearby attractions and boat ramps. Kiosks, panel signs and milemarkers are all examples of informational signs. Informational signs should be placed at trailheads, to mark trail destinations, and ideally every half-mile for milemarkers.

- » **Educational or interpretive signs:** These signs teach trail users about the natural, historical or cultural features of the trail and help forge connections between trail users and their environment. Interpretive signs should be placed at trailheads and along the trail as needed to call out special features and learning opportunities.
- » **Bridge, “Banner” or “Billboard” signs:** Large, visually appealing signs that are cohesive with the county’s branding and the branding of the Linear Parks and Trails system can be used to indicate publicly accessible destinations or trail experiences along corridors and at major corridor access points.

Civil War history, agricultural and settlement history, and natural history. Opportunities for learning about history and nature can be integrated into interpretive wayfinding and signage along trails via a mobile app, QR code readers, or digital navigation/mapping applications. The app can also provide information about outfitters or cultural destinations along the corridor, as well as educational opportunities for all ages.

### MOBILE OR WEB-BASED APPS AND DIGITAL GUIDES

Linear Parks and Trails users can benefit from a digital guide that follows their journey throughout the corridors, identifies key destinations or stopping points, interprets the historic, cultural and natural landscapes, and provides current information and alerts related to maintenance, accessibility, and use. The proposed corridors from the Framework Plan are rich in Native American history, Revolutionary War and

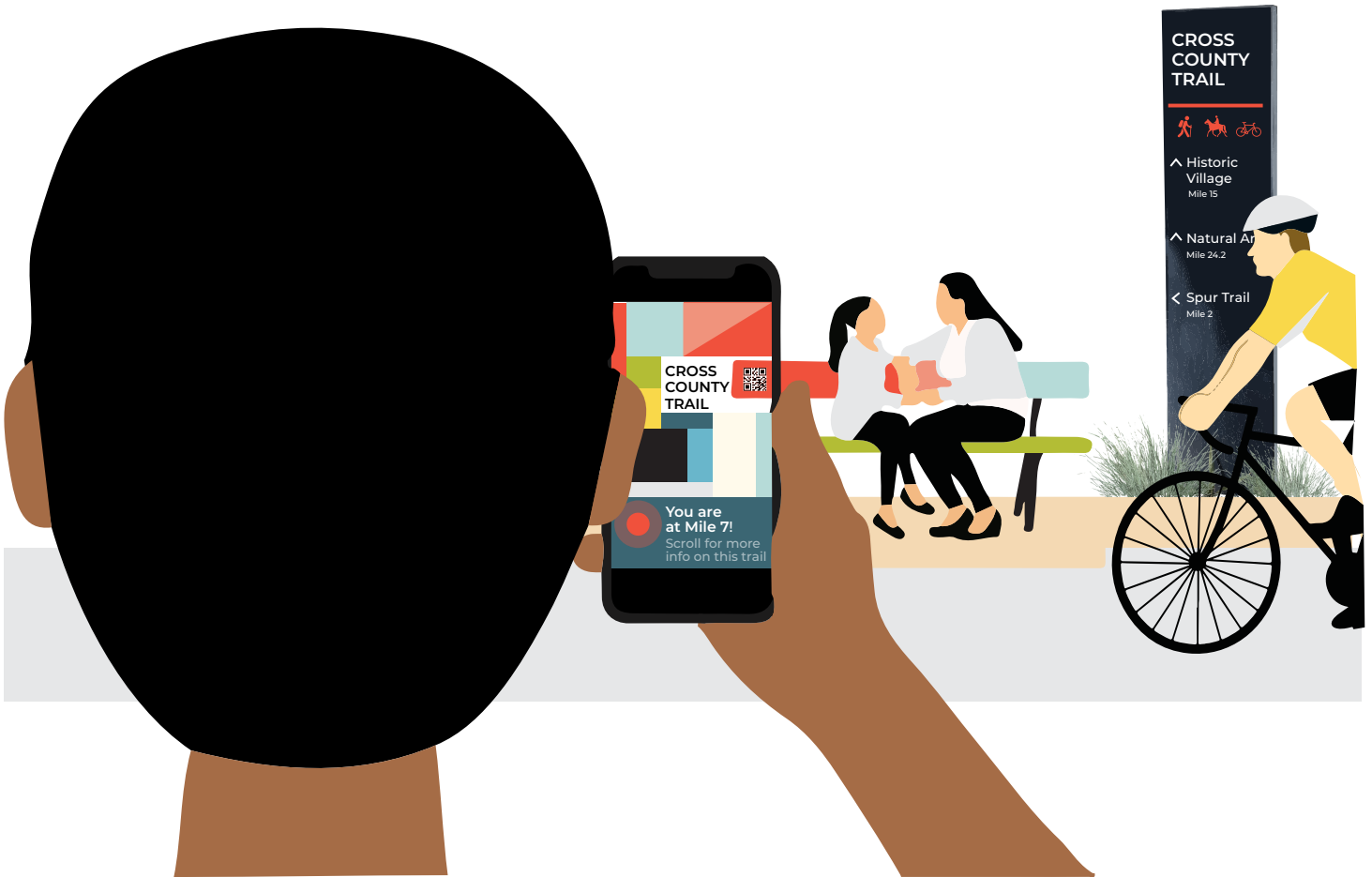
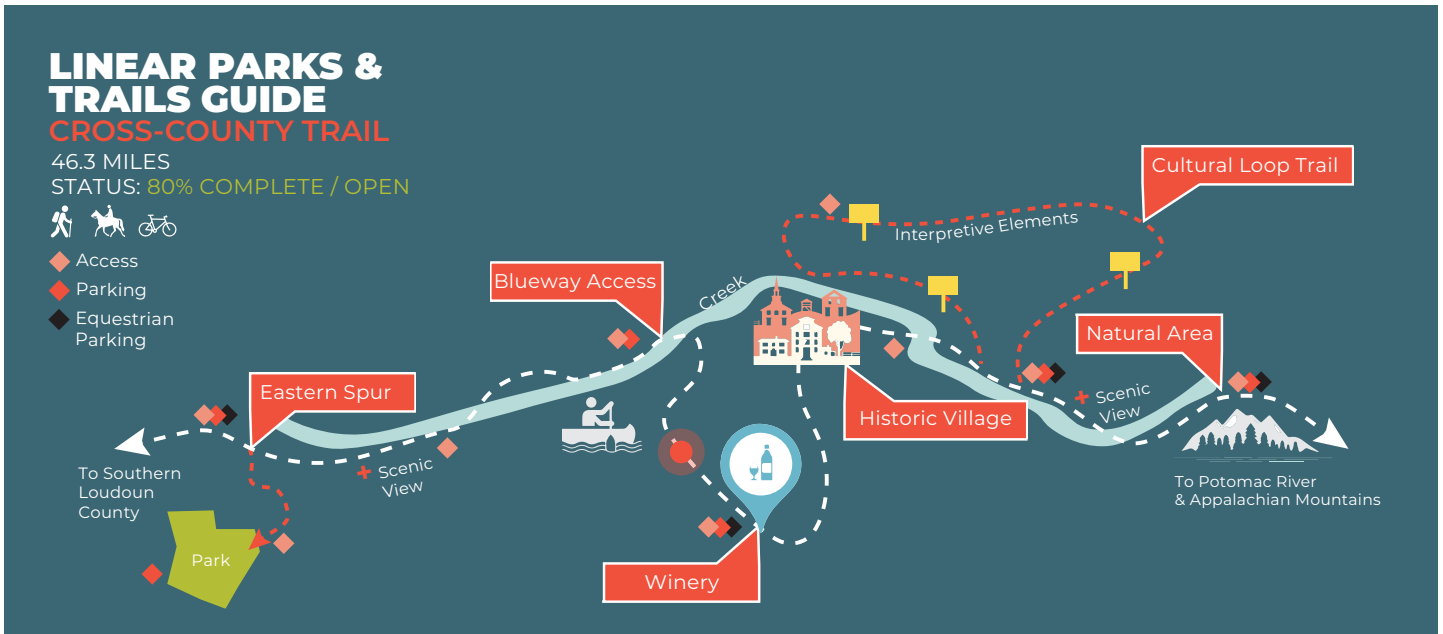


Figure 55: Example of digital guide materials for a proposed North/South trail corridor

### BLUEWAYS

Blueways are designated routes along waterbodies that can be used by non-motorized watercraft such as kayaks, canoes and paddleboards. Blueway facilities are valuable recreational and economic assets and create important connections between the public and the County's waterways.

Due to Loudoun County's frontage on the Potomac River, proximity to the Shenandoah River, scenic rivers within the county and extensive hydrological network, blueways are a natural fit for tourism, enjoyment of the outdoors and regional economic development.

In Virginia, the growth in kayaking, fishing and nonmotorized water activities continues to create a demand for destination water trails. Valued for recreation, economic and tourism opportunities, and education, Virginia's water trails most often are locally or regionally managed.

The VA Department of Conservation and Recreation (VA DCR) states that the necessary components for a successful water trail are public access points at suitable distances, adequate parking at those access areas and rest stops with sanitation facilities. Longer trips may require canoe-in campsites, drinking water, food and other supplies.

Blueway planners can practice sensitivity to the concerns of

property owners by understanding regional and federal water rights and limiting trespassing on private lands. VA DCR also recommends the needs and safety of paddlers should be addressed at appropriate intervals along a water trail. Refer to the Design Guidelines in the following chapter for additional recommendations on Blueway access and trail design.

Loudoun County has two Virginia-designated scenic rivers - Catoctin Creek from Waterford to the confluence of the Potomac, and Goose Creek from the confluence of the north and south prongs near Linden to the confluence of the Potomac. Local water resources monitoring and advocacy groups such as Loudoun Watershed Watch and Scenic Creek Valley Buffers help to preserve environmental character and water quality by establishing setbacks of at least 150-250 feet, creating ideal trail and blueway connection conditions.<sup>1</sup>

Respondents from LPAT Public Survey #2 indicated additional waterways as popular undesignated blueway trails and paddling destinations in the county, including Beaverdam Reservoir, Little River, and Sleeter Lake. Frequently used cross- county blueway connections indicated by respondents included the Potomac River at Algonkian Park and the Shenandoah River.

<sup>1</sup> Section 5-900 of Revised 1993 Zoning Ordinance (as amended through June 2, 2020) | (Loudoun.gov)



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## DESIGN GUIDELINES

### TRAILHEADS

Access points for blueways should be clearly advertised and located on public land or on properties where public access has been negotiated.

Primary blueway trailheads should include:

- » Parking
- » Signage
- » Canoe and kayak storage lockers or racks
- » Restrooms
- » Picnic tables

Other put-in and take-out sites with fewer amenities will be located along the blueway for additional access and resting points.

Some Loudoun County residents who wish to use the public blueway system will not have access to a kayak, canoe or paddleboard. The County should offer rentals of non-motorized watercraft and should clearly advertise those blueway trailheads where free or low-cost rentals are available.

### BLUEWAY FACILITIES

- » Typical launches will be boat ramps with grades between 5% and 15%, located in areas protected from the wind, without underwater obstructions and in waters deep enough to be navigable by kayaks and canoes. Where feasible and environmentally sound, the County should offer ADA-accessible boat docks.
- » Rest stops should be located every two to three hours along a blueway.

- » Blueway signs should be located close to the shoreline and should extend 6' above the water.
- » Construction materials should be water-resistant and can include marine plywood, cedar, enameled aluminum or plastic.
- » In places where blueway users must carry their craft over land to avoid certain water conditions or hazards, those portage areas should be designated on public land or on land where public access has been negotiated.

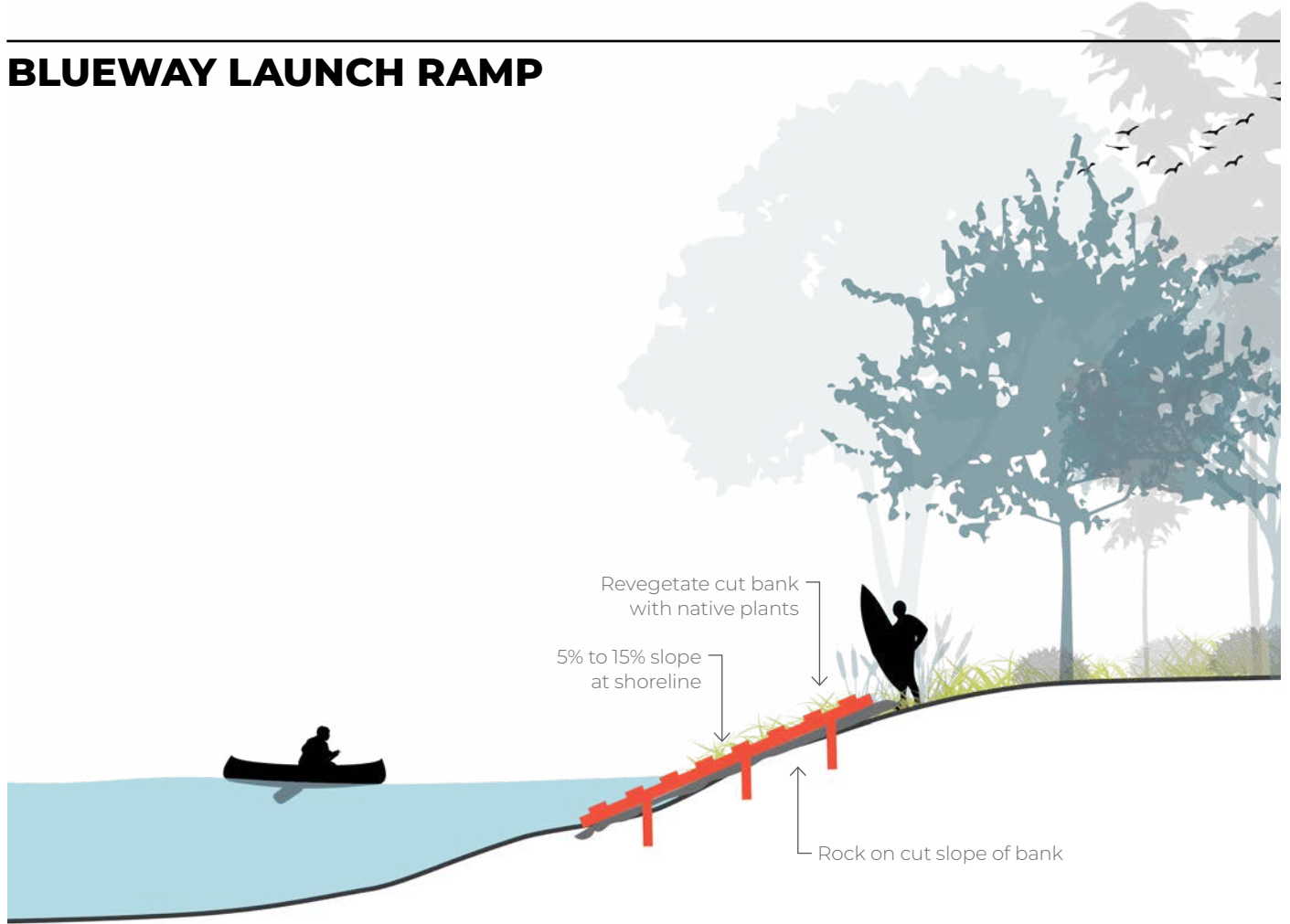
### SAFETY CONSIDERATIONS

Loudoun County should work closely with local paddle organizations and the state departments of Conservation and Recreation, Environmental Quality, and Wildlife Resources to develop blueway trail alignments that protect water quality, critical habitat and user safety.

Water trail signage and online information should alert users to possible hazards. The County website and printed blueway materials and signage should direct blueway users to websites where they can find current water levels and other information that will help them prepare for their visit and determine whether conditions are appropriate for paddling.

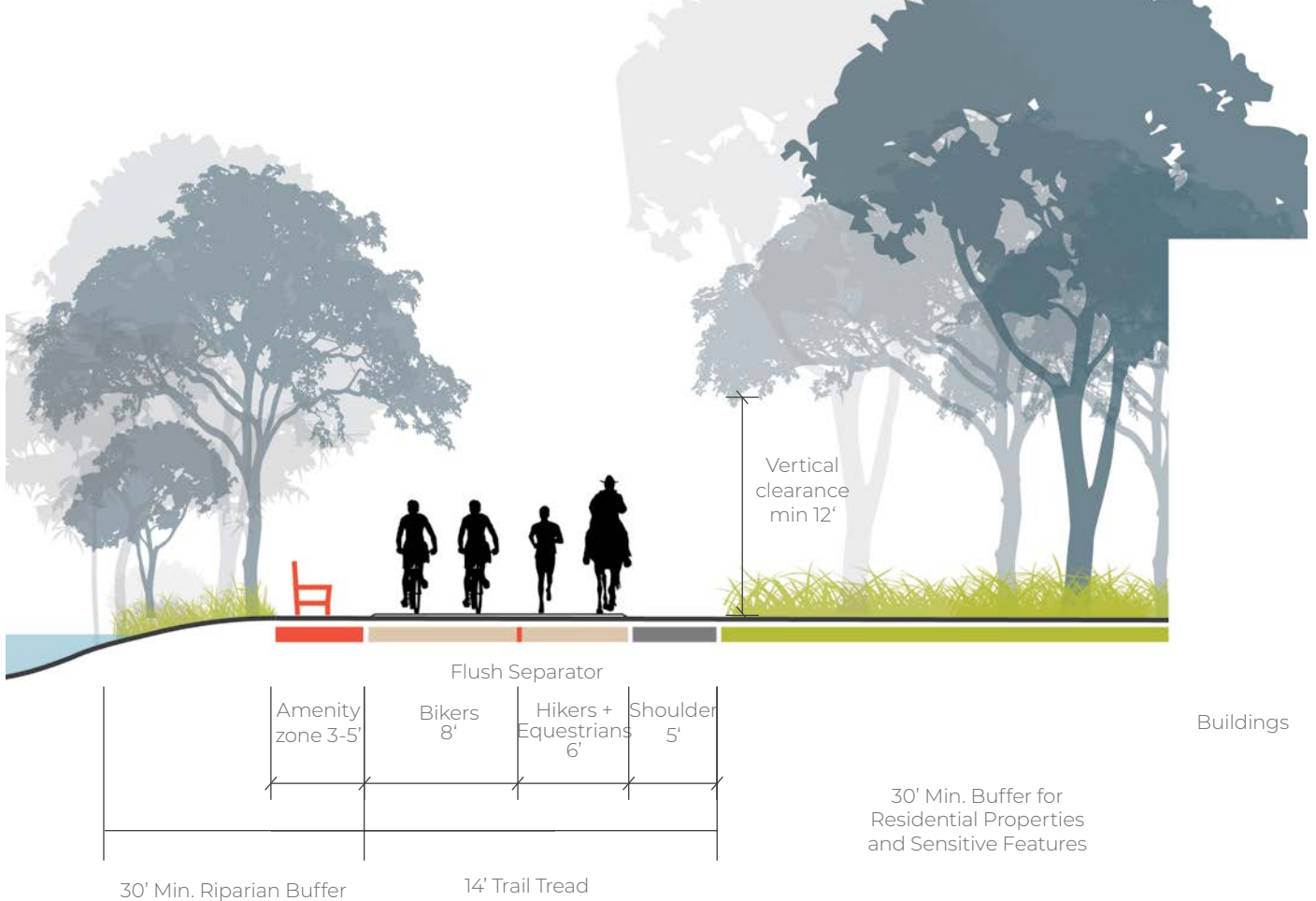
Blueway facilities and routes should be monitored and assessed regularly by the County and local paddling organizations. Water-level monitoring devices can be installed

## BLUEWAY LAUNCH RAMP



and connected to online platforms  
so users can

**PRIMARY TRAIL TYPE A- EAST LOUDOUN, WIDE CORRIDOR**

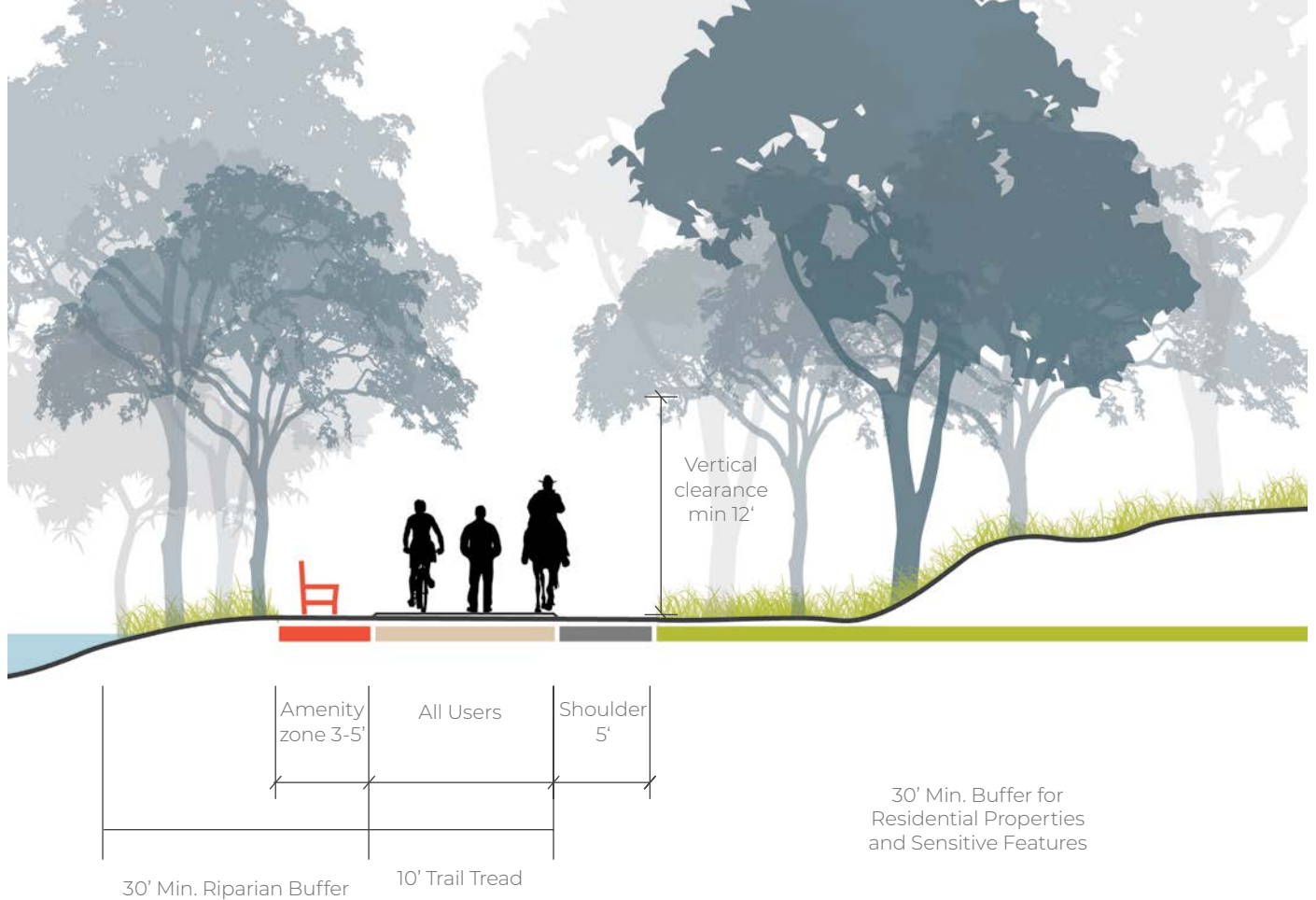


**Table 32: Primary Multi-Use and Equestrian Cross-County Trail Conditions- A**

<b>Users</b>	Hikers, all bikers, equestrians
<b>Contexts</b>	Town, suburban, urban, high traffic areas
<b>PRCS Trail Classes</b>	3 and 4
<b>Typical Tread Widths</b>	14'
<b>Materials</b>	Compacted aggregate (prohibited in floodplain), resin stabilized aggregate (prohibited in floodplain), natural soil surface, wood mulch, sand
<b>Maintenance</b>	Every 5 to 10 years
<b>Slopes</b>	Target 5% or less for ADA paths / Cross slope 2% max
<b>Buffers and Clearance</b>	Min 8' from roadways
<b>Amenities, Safety and Other Design Features</b>	Railing or fence 54" tall when adjacent to a drop-off of 1' or greater / Resting places every 200' for slopes less than 8.33%, every 30' for slopes 8.33% to 10%, and every 10' for slopes greater than 10%



# PRIMARY TRAIL TYPE B- WEST LOUDOUN, WIDE CORRIDOR

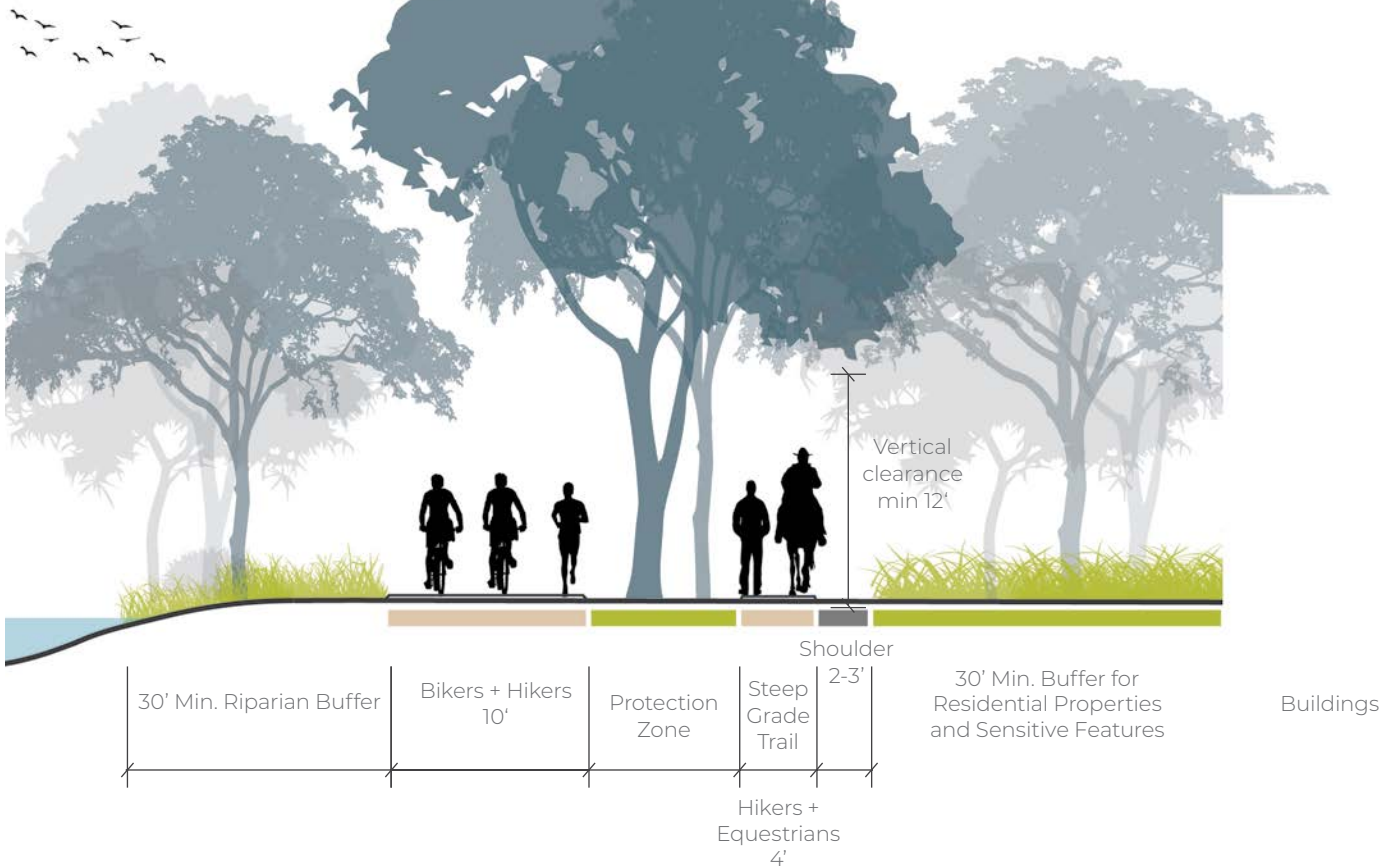


**Table 33: Primary Multi-Use and Equestrian Cross-County Trail Conditions- B**

<b>Users</b>	Hikers, all bikers, equestrians
<b>Contexts</b>	Rural, town, suburban, ridges, stream valleys, utility ROW, road ROW
<b>PRCS Trail Classes</b>	3 and 4
<b>Typical Tread Widths</b>	10'
<b>Materials</b>	Compacted aggregate (prohibited in floodplain), resin stabilized aggregate (prohibited in floodplain), natural soil surface, wood mulch, sand
<b>Maintenance</b>	Every 5 to 10 years
<b>Slopes</b>	Target 5% or less for ADA paths / Cross slope 2% max
<b>Buffers and Clearance</b>	Min 8' from roadways
<b>Amenities, Safety and Other Design Features</b>	Railing or fence 54" tall when adjacent to a drop-off of 1' or greater / Resting places every 200' for slopes less than 8.33%, every 30' for slopes 8.33% to 10%, and every 10' for slopes greater than 10%

## DESIGN GUIDELINES

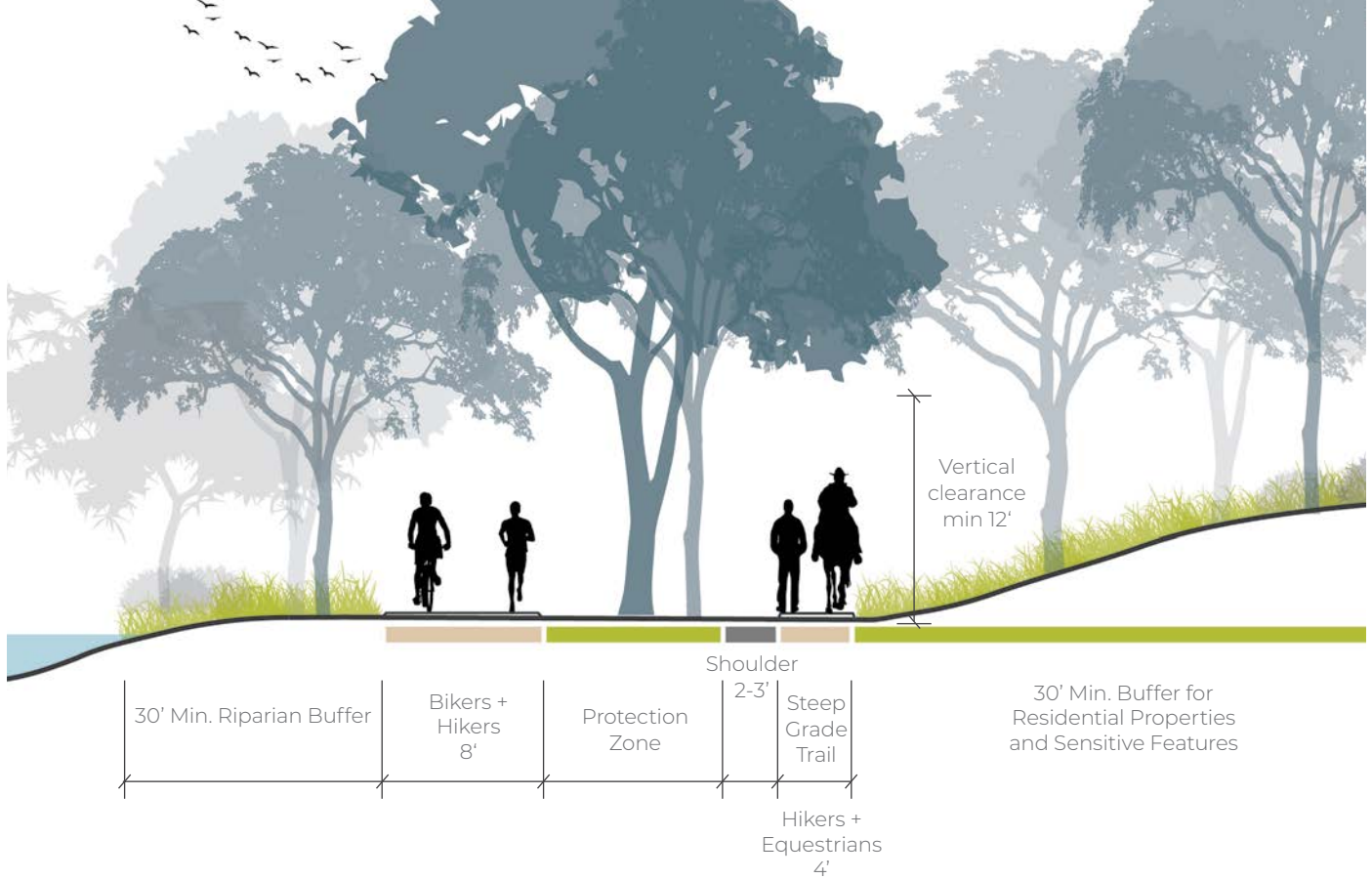
# PRIMARY TRAIL TYPE C- EAST LOUDOUN, SENSITIVE LAND OR STEEP GRADES



**Table 35: Primary Multi-Use and Equestrian Cross-County Trail Conditions- C**

<b>Users</b>	Hikers, bikers, equestrians
<b>Contexts</b>	Town, suburban, urban, high traffic areas
<b>PRCS Trail Classes</b>	3 and 4
<b>Typical Tread Widths</b>	4-10'
<b>Materials</b>	Compacted aggregate (prohibited in floodplain), resin stabilized aggregate (prohibited in floodplain), natural soil surface, wood mulch, sand
<b>Maintenance</b>	Every 5 to 10 years
<b>Slopes</b>	Up to 10% for Bikers + Hikers Trail, Up to 20% for Equestrians + Hikers Trail / Cross slope 3.5% max
<b>Buffers and Clearance</b>	Locate primary trails outside riparian or habitat corridors, with spur access provided at strategic locations
<b>Amenities, Safety and Other Design Features</b>	Railing or fence 54" tall when adjacent to a drop-off of 1' or greater / Resting places every 200' for slopes less than 8.33%, every 30' for slopes 8.33% to 10%, and every 10' for slopes greater than 10%

# PRIMARY TRAIL TYPE D- WEST LOUDOUN, SENSITIVE LAND OR STEEP GRADES



**Table 36: Primary Multi-Use and Equestrian Cross-County Trail Conditions- D**

<b>Users</b>	Hikers, all bikers, equestrians
<b>Contexts</b>	Rural, town, suburban, ridges, stream valleys, utility ROW, road ROW
<b>PRCS Trail Classes</b>	3 and 4
<b>Typical Tread Widths</b>	4-8'
<b>Materials</b>	Compacted aggregate (prohibited in floodplain), resin stabilized aggregate (prohibited in floodplain), natural soil surface, wood mulch, sand
<b>Maintenance</b>	Every 5 to 10 years
<b>Slopes</b>	Up to 10% for Bikers + Hikers Trail, Up to 20% for Equestrians + Hikers Trail / Cross slope 3.5% max
<b>Buffers and Clearance</b>	Locate primary trails outside riparian or habitat corridors, with spur access provided at strategic locations
<b>Amenities, Safety and Other Design Features</b>	Railing or fence 54" tall when adjacent to a drop-off of 1' or greater / Resting places every 200' for slopes less than 8.33%, every 30' for slopes 8.33% to 10%, and every 10' for slopes greater than 10%

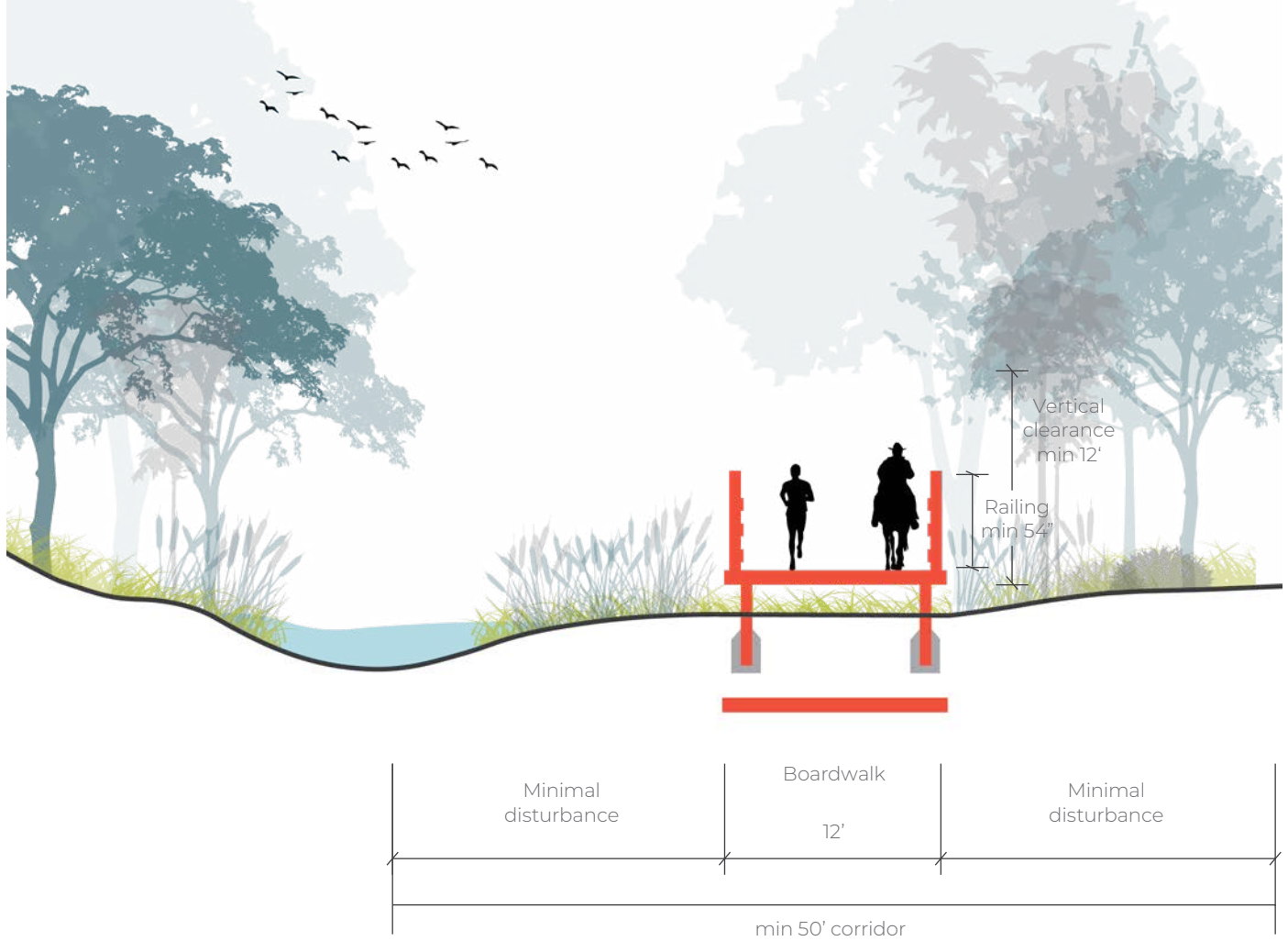
**PRIMARY TRAIL TYPE E- ALL LOUDOUN, NARROW CORRIDOR**



**Table 37: Primary Multi-Use Cross-County Trail Conditions- E**

<b>Users</b>	Hikers, all bikers, equestrians
<b>Contexts</b>	Rural, town, suburban, urban, ridges, stream valleys, utility ROW, road ROW
<b>PRCS Trail Classes</b>	3 and 4
<b>Typical Tread Widths</b>	10'
<b>Materials</b>	Compacted aggregate (prohibited in floodplain), resin stabilized aggregate (prohibited in floodplain), natural soil surface, wood mulch, sand
<b>Maintenance</b>	Every 5 to 10 years
<b>Slopes</b>	Target 5% or less for ADA paths / Cross slope 2% max
<b>Buffers and Clearance</b>	Min 8' from roadways
<b>Amenities, Safety and Other Design Features</b>	Railing or fence 54" tall when adjacent to a drop-off of 1' or greater / Resting places every 200' for slopes less than 8.33%, every 30' for slopes 8.33% to 10%, and every 10' for slopes greater than 10%

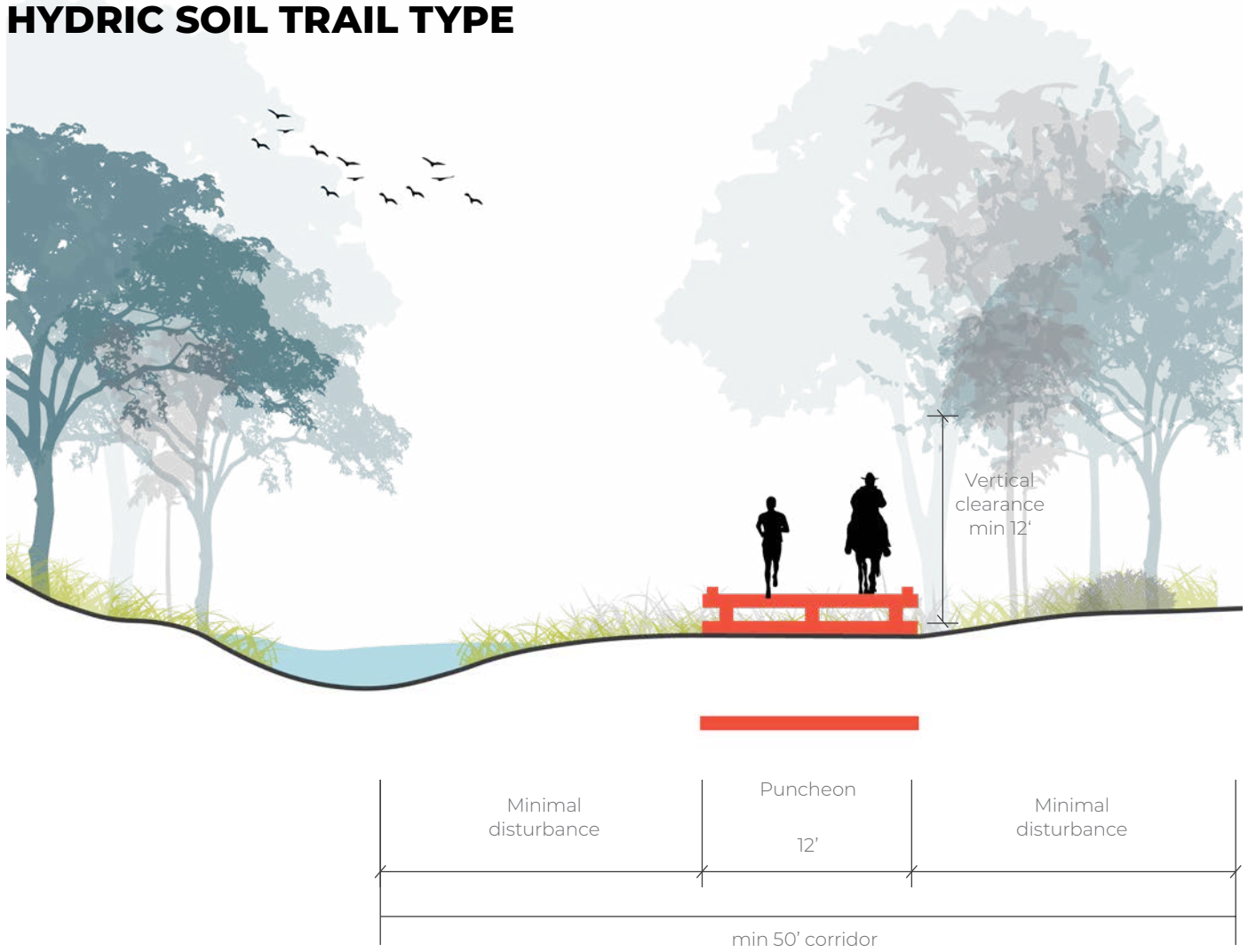
## INTERPRETIVE FLOODPLAIN TRAIL TYPE



**Table 38: Interpretive Floodplain Multi-Use and Equestrian Cross-County Trail Conditions**

<b>Users</b>	Hikers, all bikers, equestrians
<b>Contexts</b>	Floodplains
<b>PRCS Trail Classes</b>	3 and 4
<b>Typical Tread Widths</b>	10', max 14'
<b>Materials</b>	Wood, reinforced precast concrete
<b>Maintenance</b>	Every 15 years for wood, every 50 to 75 years for concrete
<b>Slopes</b>	
<b>Buffers and Clearance</b>	Min 15' from stream corridor/top of bank
<b>Amenities, Safety and Other Design Features</b>	54" railing when surface is 30" above grade / 6" curb when surface is less than 30" above grade / Surface 12" above 10-year storm elevation

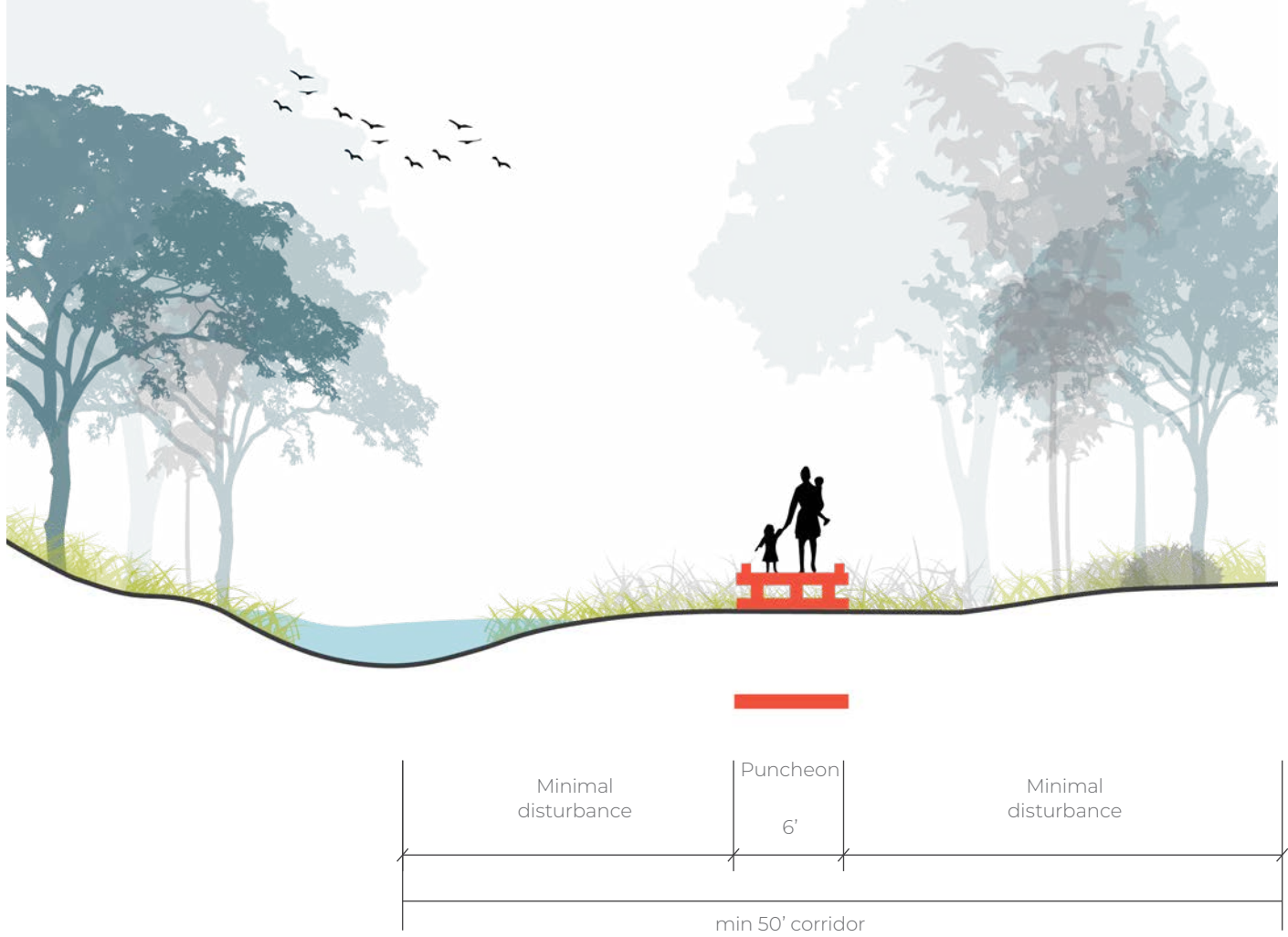
## HYDRIC SOIL TRAIL TYPE



**Table 39: Hydric Soil Multi-Use and Equestrian Cross-County Trail Conditions**

<b>Users</b>	Hikers, all bikers, equestrians
<b>Contexts</b>	Wetlands
<b>PRCS Trail Classes</b>	3 and 4
<b>Typical Tread Widths</b>	10', max 14'
<b>Materials</b>	Wood
<b>Maintenance</b>	Every 15 years
<b>Slopes</b>	
<b>Buffers and Clearance</b>	Min 15' from stream corridor/top of bank
<b>Amenities, Safety and Other Design Features</b>	6" curb at trail edges

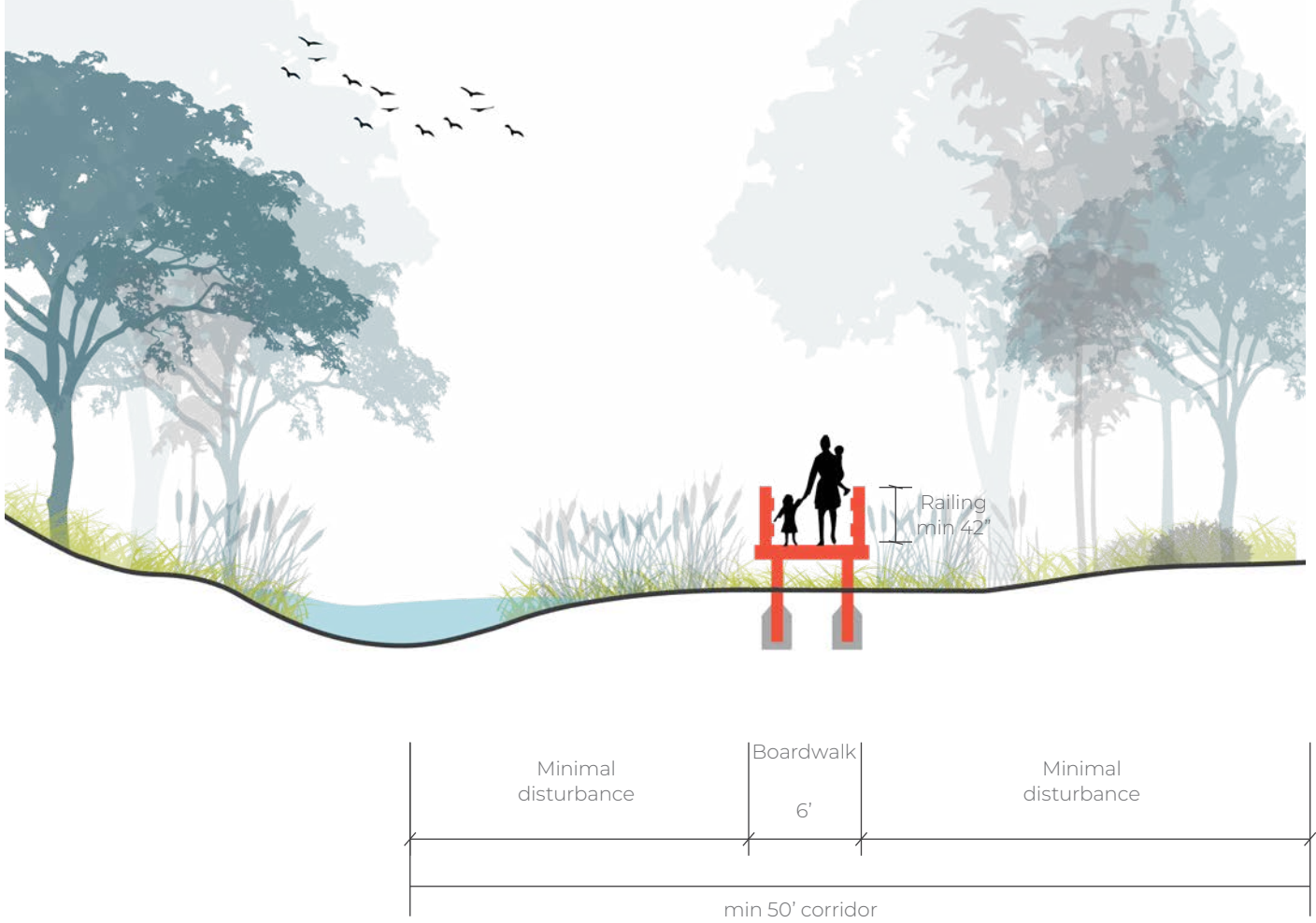
## HYDRIC SOIL TRAIL TYPE- OVERLOOKS/ SHORT SPURS



**Table 40: Hydric Soil Multi-Use Cross-County Trail Conditions**

<b>Users</b>	Hikers, bikers
<b>Contexts</b>	Wetlands
<b>PRCS Trail Classes</b>	3 and 4
<b>Typical Tread Widths</b>	6', max 8'
<b>Materials</b>	Wood
<b>Maintenance</b>	Every 15 years
<b>Slopes</b>	
<b>Buffers and Clearance</b>	Min 15' from stream corridor/top of bank
<b>Amenities, Safety and Other Design Features</b>	6" curb at trail edges

# INTERPRETIVE FLOODPLAIN TRAIL TYPE- OVERLOOKS/ SHORT SPURS

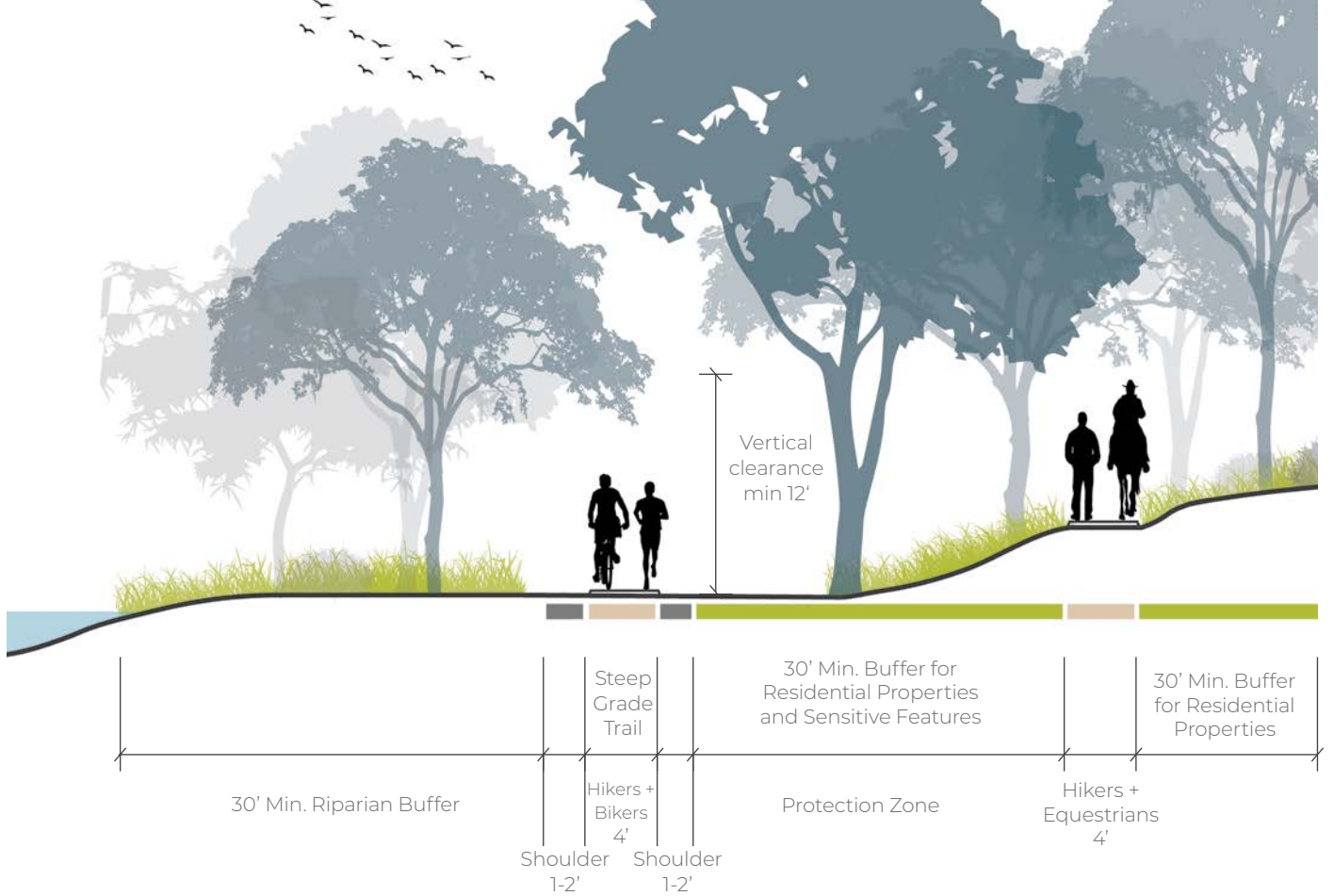


**Table 41: Interpretive Floodplain Multi-Use Cross-County Trail Conditions**

<b>Users</b>	Hikers, bikers
<b>Contexts</b>	Floodplains
<b>PRCS Trail Classes</b>	3 and 4
<b>Typical Tread Widths</b>	6', max 8'
<b>Materials</b>	Wood, reinforced precast concrete
<b>Maintenance</b>	Every 15 years for wood, every 50 to 75 years for concrete
<b>Slopes</b>	
<b>Buffers and Clearance</b>	Min 15' from stream corridor/top of bank
<b>Amenities, Safety and Other Design Features</b>	54" railing when surface is 30" above grade / 6" curb when surface is less than 30" above grade / Surface 12" above 10-year storm elevation



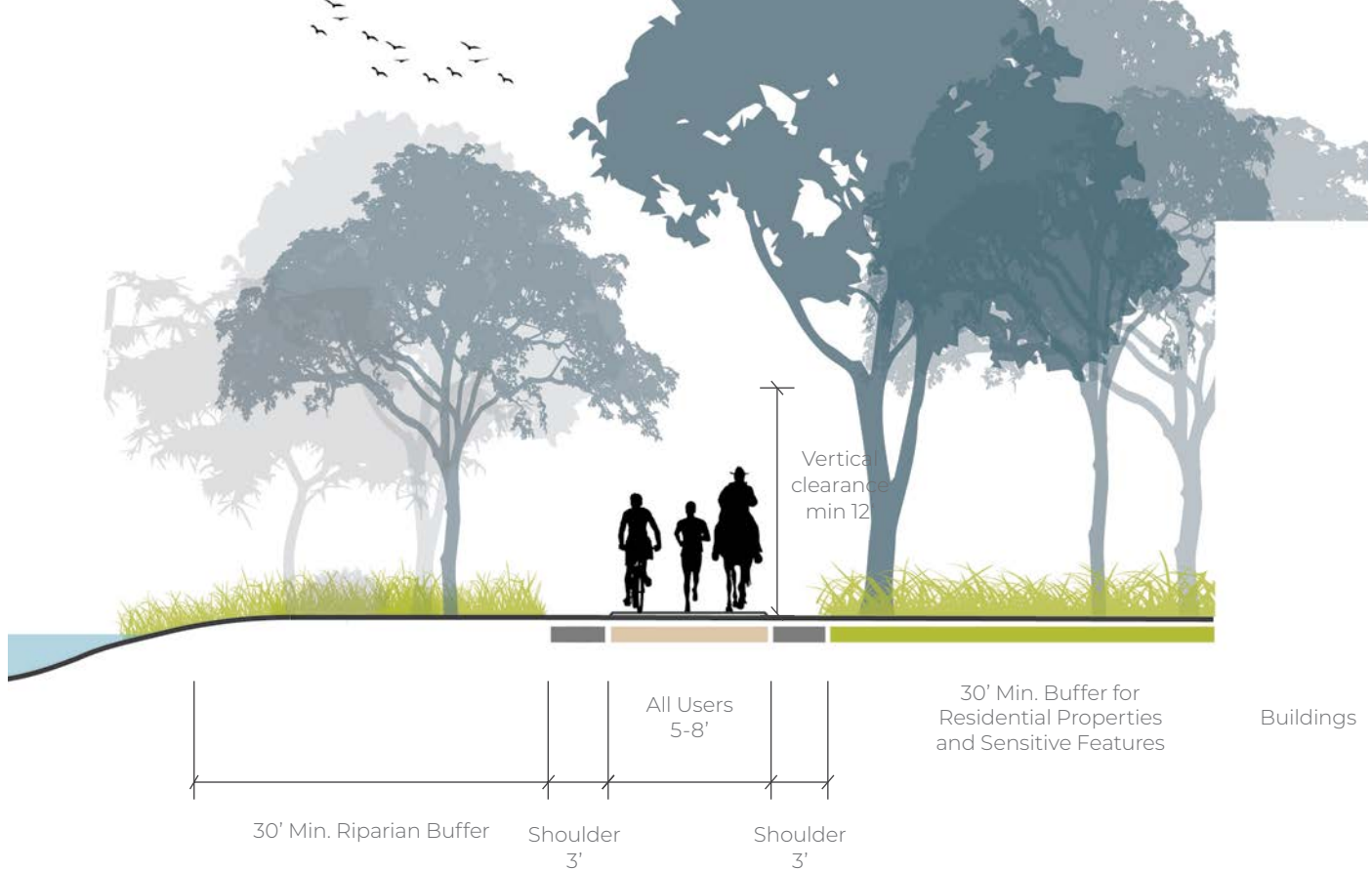
# SECONDARY TRAIL- ALL LOUDOUN STEEP SLOPES OR WITH PROTECTION ZONES



**Table 42: Secondary Multi-Use and Equestrian Cross-County Trail Conditions**

<b>Users</b>	Hikers, all bikers, equestrians
<b>Contexts</b>	Rural, town, suburban, ridges, stream valleys, utility ROW, road ROW
<b>PRCS Trail Classes</b>	3 and 4
<b>Typical Tread Widths</b>	4'
<b>Materials</b>	Compacted aggregate (prohibited in floodplain), resin stabilized aggregate (prohibited in floodplain), natural soil surface, wood mulch, sand
<b>Maintenance</b>	Every 5 to 10 years
<b>Slopes</b>	Up to 10% for Bikers + Hikers Trail, Up to 20% for Equestrians + Hikers Trail / Cross slope 3.5% max
<b>Buffers and Clearance</b>	Locate primary trails outside riparian or habitat corridors, with spur access provided at strategic locations

## SECONDARY TRAIL: ALL LOUDOUN STEEP SLOPES OR WITH PROTECTION ZONES



**Table 43: Secondary Multi-Use and Equestrian Cross-County Trail Conditions**

<b>Users</b>	Hikers, all bikers, equestrians
<b>Contexts</b>	Rural, town, suburban, ridges, stream valleys, utility ROW, road ROW
<b>PRCS Trail Classes</b>	3 and 4
<b>Typical Tread Widths</b>	5-8'
<b>Materials</b>	Compacted aggregate (prohibited in floodplain), resin stabilized aggregate (prohibited in floodplain), natural soil surface, wood mulch, sand
<b>Maintenance</b>	Every 5 to 10 years
<b>Slopes</b>	Up to 10% for Bikers + Hikers Trail, Up to 20% for Equestrians + Hikers Trail / Cross slope 3.5% max
<b>Buffers and Clearance</b>	Locate primary trails outside riparian or habitat corridors, with spur access provided at strategic locations

# TERTIARY TRAILS: ALL LOUDOUN STEEP SLOPES OR WITH PROTECTION ZONES



**Table 44: Tertiary Multi-Use and Equestrian Cross-County Trail Conditions**

<b>Users</b>	Hikers, all bikers, equestrians
<b>Contexts</b>	Rural, town, suburban, ridges, stream valleys, utility ROW, road ROW
<b>PRCS Trail Classes</b>	3 and 4
<b>Typical Tread Widths</b>	4'
<b>Materials</b>	Compacted aggregate (prohibited in floodplain), resin stabilized aggregate (prohibited in floodplain), natural soil surface, wood mulch, sand
<b>Maintenance</b>	Every 5 to 10 years
<b>Slopes</b>	Up to 10% for Bikers + Hikers Trail, Up to 20% for Equestrians + Hikers Trail / Cross slope 3.5% max
<b>Buffers and Clearance</b>	Locate primary trails outside riparian or habitat corridors, with spur access provided at strategic locations