Conservation Corridor Planning in Northern Virginia

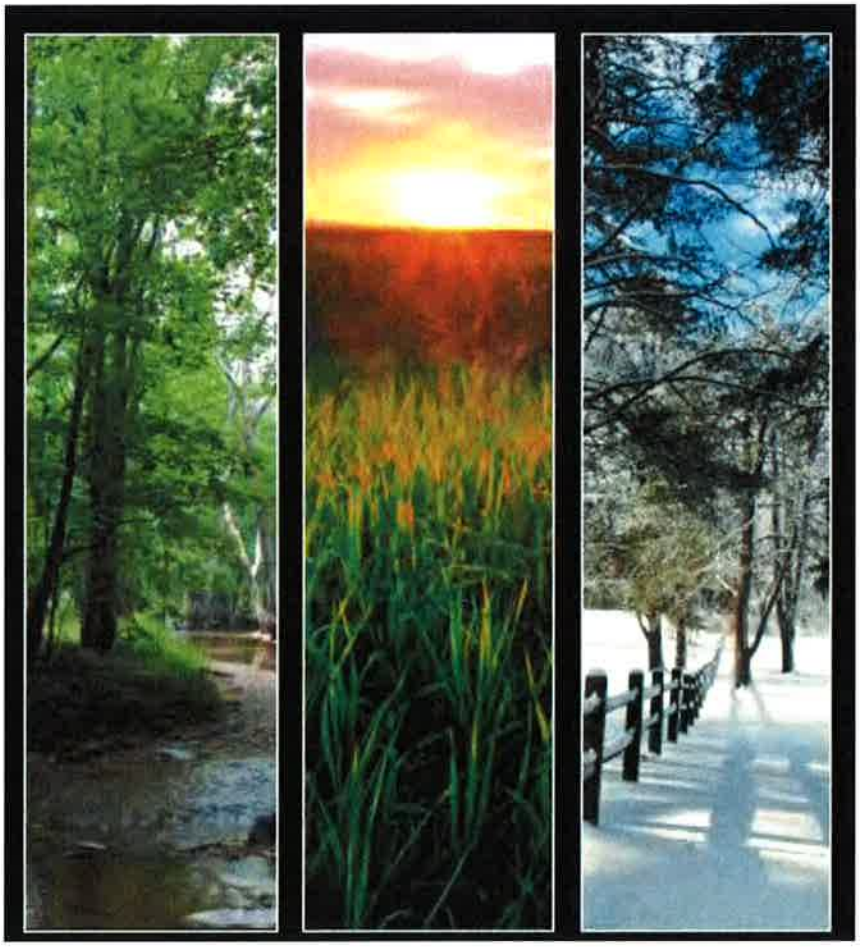
www.novaregion.org/conservation

NOAA Grant #NA10NOS4190205

FY10, Task 97.02

Northern Virginia Regional Commission

March 2013



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PRIORITY CORRIDORS IN NORTHERN VIRGINIA & CONSERVATION STRATEGIES

Introduction

Northern Virginia is rich in sensitive ecological areas, important drinking water sources, unique wildlife habitat, globally-rare forest communities, and nature-based recreation opportunities.

Through the Conservation Corridors Planning Project, the Northern Virginia Regional Commission (NVRC) and its partners are identifying and prioritizing regionally significant natural areas. These "green infrastructure" assets provide ecological, recreational, and economic benefits in our communities.

The goal of the project is to help area governments and their constituents identify local and regional opportunities to manage, restore, and enhance Northern Virginia's natural resources, thereby strengthening the region's health, economy, and overall quality of life.

This report satisfies the deliverable requirements set forth for Task 97.02 of Grant #NA10NOS4190205, which are included as the following attached appendices:

A. PHNST Pilot Study Report
B. Summit Summary and Marketing Strategy
C. Local Analysis Report and Maps

These products reflect an extensive amount of work conducted by NVRC staff and its partners, the Northern Virginia Conservation Trust, the Green Infrastructure Center, and Skeo Solutions, based in Charlottesville, VA. Additionally, it reflects the input and contributions from the project's multi-disciplined advisory group of planners, natural resource manager, ecologists and others from local governments and conservation organizations in the Northern Virginia region. Advisory group members represented the following organizations:

Arlington County
Fairfax County
Loudoun County
Prince William County
Northern Virginia Conservation Trust
Northern Virginia Regional Park Authority
Prince William Conservation Alliance
Northern Virginia Urban Forestry Roundtable
Metropolitan Washington Council of Governments
Virginia Department of Conservation and Recreation
Virginia Department of Forestry
Maryland Department of Natural Resources
U.S. National Park Service
U.S. Bureau of Land Management
U.S. Fish and Wildlife Service

Representatives contributed their time, expertise, resources, and support, which resulted in the final products of this grant.

Summary

This section provides a brief summary of the project deliverables and the effort involved in their development.

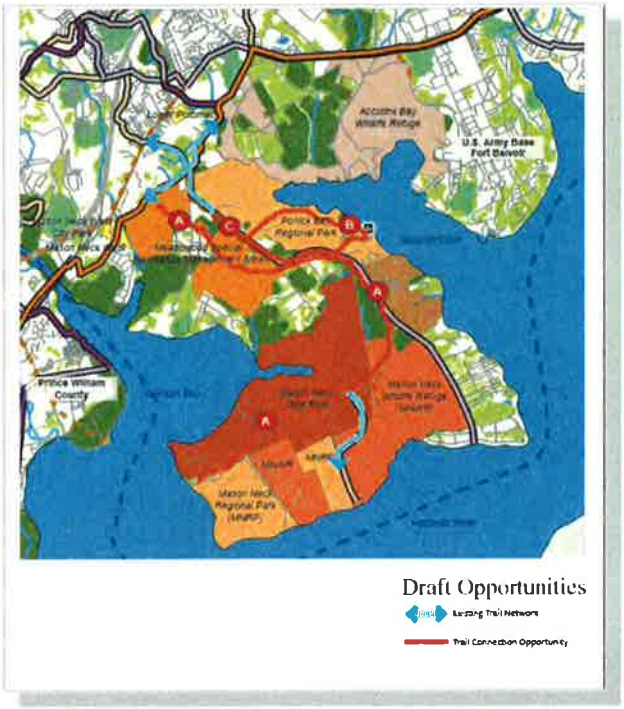
PHNST Pilot Study Report

The purpose of this pilot study is to explore the application of data developed through the Conservation Corridor Planning Assessment for use at a smaller scale.

A significant portion of the Potomac Heritage National Scenic Trail (PHNST) crosses through the Northern Virginia Region's rich historical areas. The U.S. National Park Services manages this project with local support from the Northern Virginia Regional Commission, which facilitates the Northern Virginia's Local Land Managers, who are responsible for coordinating portions of the trail throughout their jurisdictions.

In 2011, NVRC with support from the Land Managers released a corridor analysis of the trail, which identifies gaps and opportunities to complete the trail through the region. Through this gap analysis, the Mason Neck peninsula is identified as an important spur to the trail, linking trail-goers with a wide variety of recreational amenities. Mason Neck was selected as a target location for the pilot study due to the interest by the Potomac Heritage National Scenic Trails Land Managers in exploring opportunities for trail corridor connections among the various public land holders. Additionally, Mason Neck is located within one of the five regional conservation corridors identified in the Conservation Corridor Planning Assessment.

Discussions during regularly scheduled Land Managers meetings resulted in the development of maps featuring resources of interest along Mason Neck, the identification of three draft trail opportunities that improve connections between public lands, and a loop trail spur for the PHNST. The utilization of the conservation corridors base map and resource information assisted the managers in identifying routes that maintain the intact nature of identified natural assets.



The pilot study reveals there is great value in utilizing the information developed through the assessment at a smaller scale. However, Land Managers discussed that additional Geographic Information System (GIS) datasets are necessary to take the results of the pilot from concept to plan, including

information on:

- Local trails
- Informal trails
- Additional recreational amenities

The Land Managers will continue discussions regarding the recommendations for Mason Neck in order to refine routes further and to coordinate implementation between the several major land management agencies.

Summit Summary and Marketing Strategy

As part of enlarging the participatory process of the project, NVRC and its partners hosted a public summit on June 14, 2011 titled: *Northern Virginia's Common Wealth: Recognizing Our Region's Treasured Landscapes*.

The goal of the summit was to educate Northern Virginia residents on the project and engage them in providing input on areas of special concern to them in the areas of water quality, historic and cultural resources, nature-based recreational resources, and general treasured places. Approximately 35 Northern Virginia residents attended and members of the project's advisory group participated as facilitators and recorders at four breakout stations.

Information collected at the summit supported the identification of the priority regional conservation corridors highlighted in the Assessment Report. Materials developed for the summit were integrated as part of a marketing strategy or communication's toolkit for further promotion of the Conservation Corridors Planning in Northern Virginia project.

The strategy includes efforts for wider promotion to the public and to elected officials. During the course of the project elements of the strategy took place, including presentations and work sessions with planning commissions in Prince William County, the Northern Virginia Conservation Trust, and the Northern Virginia Regional Park Authority. These sessions and presentations resulted in the integration of conservation policies in the county's comprehensive plan and actions integrated into the trust's annual strategic plan. The integration of common strategies and policies in government and non-government plan reflect the shared recognition

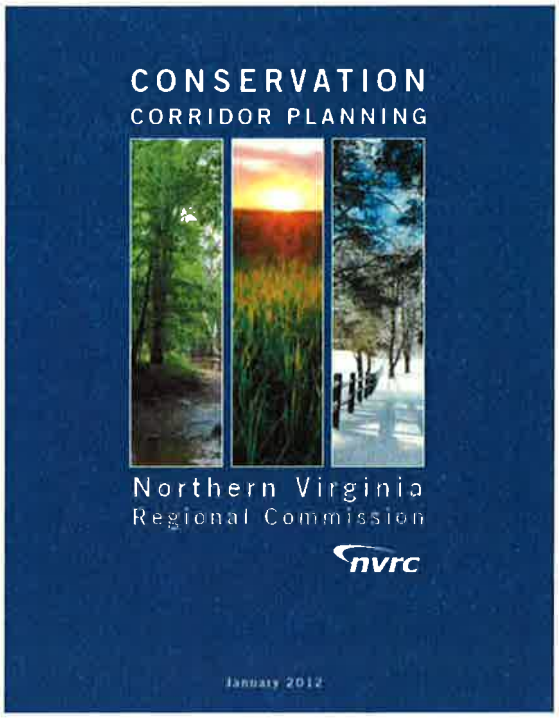
that these organizations have and can promote in maintaining the natural characteristics that define the region. Since the release of the Assessment Report additional jurisdictions have contacted NVRC in pursuing a refined analysis and policy recommendations in anticipation of updating their local comprehensive plans.

Local Analysis Report and Maps (Assessment Report)

This effort was morphed into the development of the Conservation Corridors Planning in Northern Virginia Assessment report, as it was of interest to the localities to take on the planning for their individual jurisdictions separately. Therefore, the GIS data will be made available to them for integration into their regular planning efforts.

The Assessment Report focuses on the application of the regional information and provides an essential framework by identifying regional priority conservation corridors, conservation strategies, and a method for quantifying the benefits of the region's resources for the natural eco-services they provide. In all, this report and accompanying data serve as resources for Northern Virginia's jurisdictions and conservation organizations in strategically protecting, enhancing, and restoring connections across the landscape.

The maps developed as part of this assessment were utilized in the aforementioned pilot study on Mason Neck and were refined based on feedback from the public summit, which greatly improved the readability and use of the maps.



On February 23, 2012, a presentation on the report was made to the Board members of the Northern Virginia Regional Commission, which represent elected officials from across the region. On March 22, 2012, the NVRC adopted the Conservation Corridor Planning in Northern Virginia Assessment Report authorizing staff to move forward on the next steps identified in the document, including the establishment of a stakeholder workgroup to implement the five regional conservation corridors identified in the report.

Commissioners discussed the value that the assessment provides in identifying the region's resources and placed a strong emphasis on the voluntary efforts that residents, businesses, and others may apply to protect, enhance, and restore the region's assets. Additionally, a work session with the City of Fairfax's Planning Commission is scheduled for fall 2012 to determine strategic conservation policy options for the City as part of their comprehensive plan update.

Appendix A

PHNST PILOT STUDY REPORT – MASON NECK STATE PARK

CONSERVATION
CORRIDOR PLANNING

Pilot Study: Mason Neck Connections

About the Study

The purpose of this pilot project is to explore the application of data developed through the Conservation Corridor Planning Assessment for use at a smaller scale.

Mason Neck was selected as a target location due to the interest by the Potomac Heritage National Scenic Trails Land Managers in exploring opportunities for trail corridor connections among the various public land holders. Additionally, Mason Neck is located within one of the five regional conservation corridors identified in the Assessment.

The goals of this effort, include:

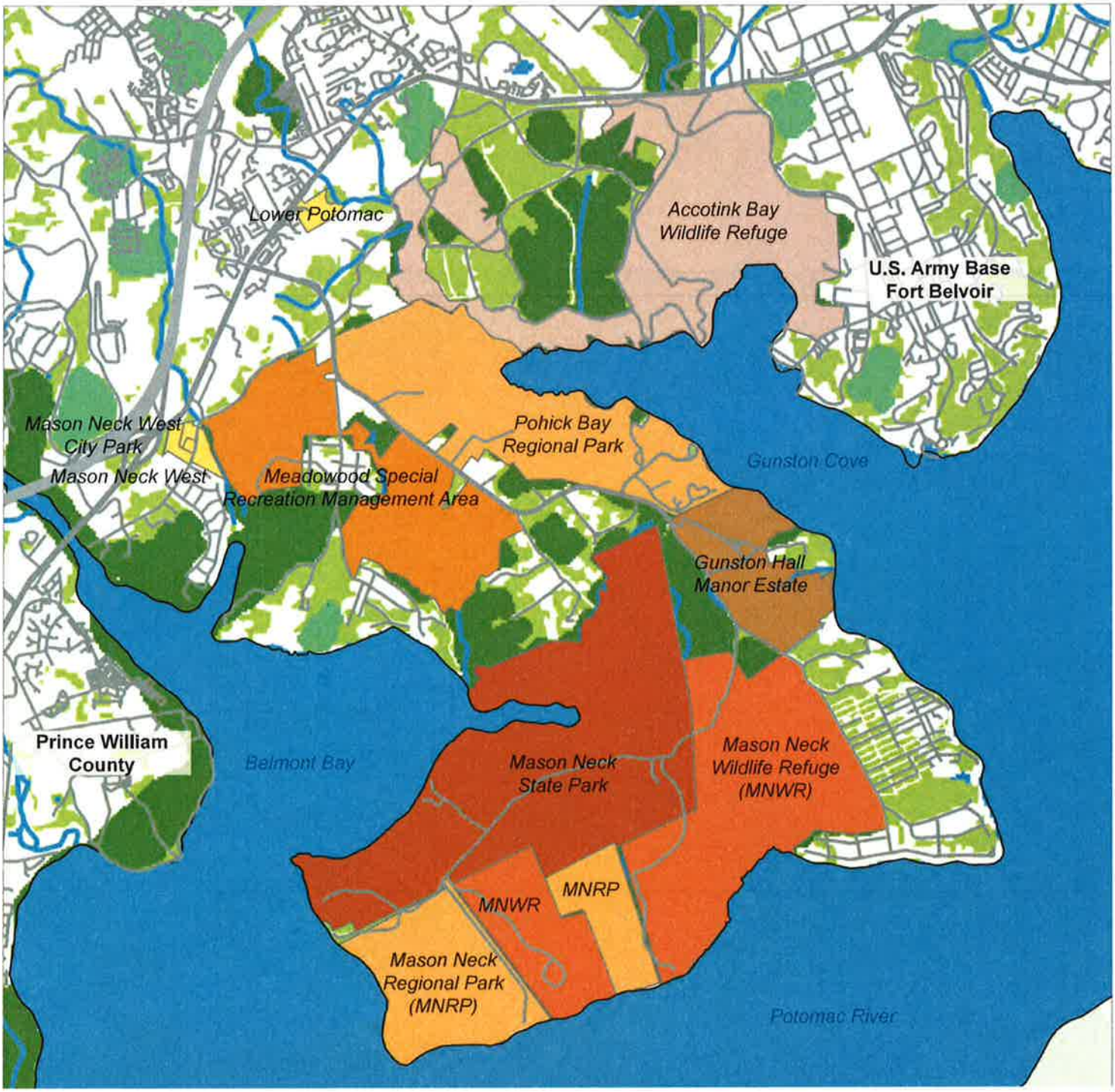
- Develop maps of resources of interest along Mason Neck
- Identify opportunities for improved connection between public lands
- Highlight loop trail spur for PHNST

The majority of the land along the Mason Neck peninsula is managed for natural resources protection and nature-based recreation activities, such as birdwatching, horseback riding, and hiking, which are dependent upon the surrounding natural landscape.

The Potomac Heritage National Scenic Trail extends from the mouth of the Potomac River in Virginia to the Alleghany highlands of Pennsylvania. It serves as a network of locally-managed trails that spans 830 miles to explore the origins and evolution of our nation. For more information about the trail visit: www.nps.gov/pohe.

Critical Habitat Corridors on Mason Neck

- High Value Cores
- Contributing Landscapes
- Intact Tree Cover (greater than 1/4 acre)



Public Lands

Land Management Agencies on Mason Neck

- Commonwealth of Virginia
- Fairfax County Park Authority
- Northern Virginia Regional Park Auth
- US Bureau of Land Management
- US Department of the Army
- US Fish and Wildlife
- VA Dept of Conservation and Recreation

Mason Neck is home to federal, state, regional, and local landholdings. In all, seven public agencies manage some of the highest quality environmental assets in the Northern Virginia region, located in and around the peninsula. Therefore, coordination is crucial in order to maintain habitat connectivity across the landscape, to encourage a diverse array of recreational options, and to avoid potential conflicting land uses.

Although the existing segments of the Potomac Heritage National Scenic Trail do not extend onto Mason Neck, other existing regional trails serve as important spurs, leading hikers to recreational amenities, such as campgrounds and to other nature-based opportunities.

Regional Trail Network

Trail Connection Opportunities

The promenance of public lands along the Mason Neck peninsula presents a myriad of choices for these agencies to work together on connections. The following three opportunities were identified as possible trails that would connect the PHNST and other significant routes with the recreational amenities on Mason Neck. It should be noted that a more robust analysis could take place if trail data was available for each of the management areas.

A

MASON NECK SPUR

This route connects the Washington Rochambeau Revolutionary Route and PHNST with the amenities along Mason Neck. It includes a mixture of trail types from unpaved and wooded to paved, along a roadway. This is the longest route identified.

B

POHICK BAY LOOP

Pohick Bay Regional Park already has a trail network that runs through it. There are opportunities to connect the existing trail network with a trail along Gunston Road, which could provide access to the Mason Neck Spur and to an existing trail to the PHNST. This loop is mostly unpaved and wooded and provides a direct link to the many hiking, boating, and camping amenities at Pohick Bay Regional Park.

C

GUNSTON ROAD SPUR

The portion of Gunston Road between Route 1 and Pohick Bay Regional Park is designated as an existing regional trail. However, a trail does not currently exist along this busy roadway. Adding a paved or unpaved walkway along the roadside would provide safe access for hikers, walkers, bikers, and horseback riders to access other trail networks on Mason Neck. Additionally, this spur would provide a link to planned segements of the PHNST.

Several route opportunities for a connecting trail network are possible on the Mason Neck peninsula. A more robust analysis using detailed trail data for each management area is recommended. It was not available at the time that this project took place. That said, the existing regional trail network provides a good starting point for the identification of linkages between these major public landholdings.

Draft Opportunities

Existing Trail Network

Trail Connection Opportunity

For more information about the Conservation Corridors Planning in Northern Virginia project, visit: www.novaregion.org or contact info@novaregion.org; 703-642-0700.

This pilot study was funded, in part, by the Virginia Coastal Zone Management Program at the Department of Environmental Quality through Grant #NA10NOS4190205, Task 97.02, of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended.

Appendix B

SUMMIT SUMMARY AND MARKETING STRATEGY

Summit Summary and Marketing Strategy

SUMMIT SUMMARY

Introduction:

Over the last 30 years, Northern Virginia experienced an average population increase of 30,000 new residents a year (Billingsley, 2011). Population forecasters expect this trend to continue over the next several decades resulting in a need for additional human habitat and resources, such as homes, work space, transportation routes, and commercial areas. These needs place increased pressure on developing the remaining natural and cultural resources in the region. However, there is an opportunity to plan for these competing needs in a manner that balances the needs of future residents while also protecting the region's valuable resources.

The coordination of the Conservation Corridors in Northern Virginia Planning project serves as a turning point as local governments meet regularly to discuss the challenges their localities are facing.

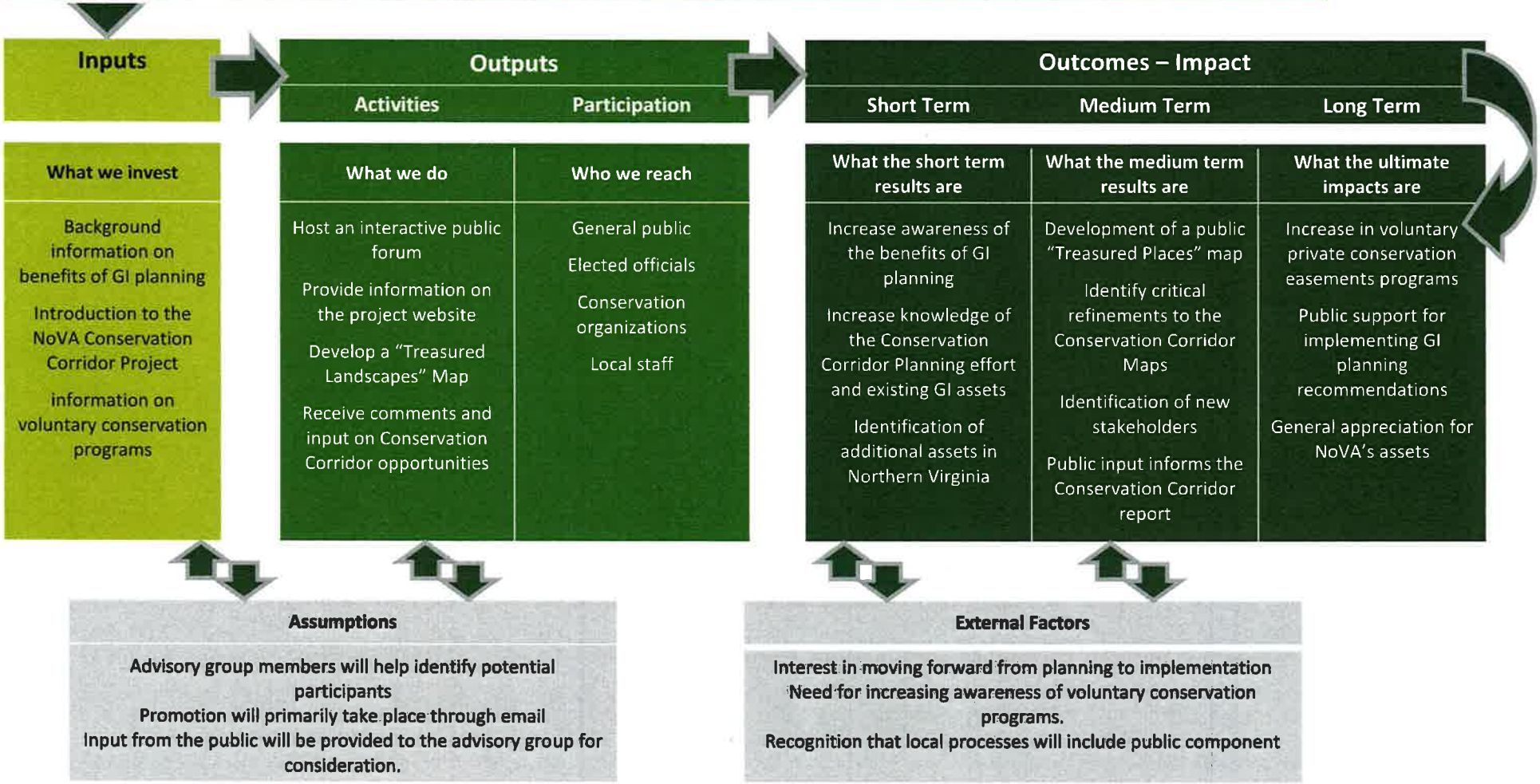
To enlarge the public participation process and to ensure the accuracy of maps and representative information, a public forum was held on June 15, 2011 with three anticipated project-related outcomes:

1. Ensuring the accuracy of maps and representative information;
2. Getting additional information on natural and cultural features in Northern Virginia that are landscape dependent; and
3. Increasing awareness and pride in Northern Virginia's natural and cultural resources.

Project partners developed the following logic model to support in explaining the objectives and anticipated short to long-term outcomes of the summit, along with helping to target particular audiences.

Name: Northern Virginia's Common Wealth – *Recognizing the Region's Treasured Landscapes*

Objectives: Provide a public forum to inform Northern Virginia residents and organizations regarding the benefits of green infrastructure planning and the efforts of the Northern Virginia Conservation Corridor Planning Project; to collect feedback on the maps and understand additional areas that are considered locally important by residents; and to provide information on voluntary conservation programs.



Northern Virginia's Common Wealth Public Summit Format:

The program began with informational presentations, and then got the participants out of their chairs to spend 15-20 minutes looking, touching, reflecting, and commenting on draft conservation corridor maps at four different stations. Participants rotated every 15-20 minutes, until they had an opportunity to comment on each map. The agenda was as follows:

Northern Virginia Conservation Corridors

Northern Virginia's Common Wealth

Recognizing our Region's Treasured Landscapes

Wednesday, June 15, 2011

6:30pm - 8:30pm

Objective: To provide a public forum to inform Northern Virginia residents and organizations regarding the benefits of green infrastructure planning and the efforts of the Northern Virginia Conservation Corridor Planning Project; to collect feedback on the maps and understand additional areas that are considered locally important by residents; and to provide information on voluntary conservation programs.

6:30pm **Registration**

6:40pm **Welcome:**
Mark Gibb, Executive Director, Northern Virginia Regional Commission

6:45 - 7:25pm **Presentations:**

- **Background on Green Infrastructure & Conservation Corridor Project**
  Karen Firehock, Executive Director, Green Infrastructure Center
  Laura Grape, Sr. Environmental Planner, NVRC
- **Voluntary Conservation Opportunities**
  Mike Nardolilli, President, Northern Virginia Conservation Trust

7:25 - 8:30pm **Breakout Stations:**
Participants will have 20 minutes at each station to review the maps, provide comments, and make suggestions

- *Water Resources*
- *Nat-based Recreation*
- *Known Cultural Resources*
- *Favorite Places Station*

Meeting presentations and materials will be available at www.novaregion.org/conservation

This summit is part of the Northern Virginia Conservation Corridor Planning Project supported by a committee representing local governments and conservation organizations in the Northern Virginia region.

nvrc NVCT Virginia Coastal Zone

Summit Participation:

Thirty-five people participated in the summit, representing a wide-variety of interests from general natural resource management and conservation to cultural and recreational. Participants included:

Glenda Booth
Brittany Baker
Rebecca Super
Elizabeth Hudson
Robin Fitch
Jan Meyer
Andy Galusha
Harry Glasgow
Dana Stewart
Laura Wagner
Kimberly Winter
Jim McGlone
Heather Schinkel
Alisa Hefner
Joe Gorney
Mike Nardolilli
Sam Kinzer
Jenny Biche
Patricia Murer
Marilyn Schroeder
Pat Coady
Gina Claeys
Gaylan Meyer
Michael Cook
Cliff Fairweather
Aftab Hussain
Beth Polak
Alexandra Thompson
Diane Probus
Charles Smith
Noel Kaplan
Karen Firehock
Erik Oberg
Debbie Spiliotopolous
Bill Ference

Results from the Charettes:

Participants offered a significant amount of information regarding the locations of possible projects and areas they deemed important. It became clear through a review of these areas, that the participants truly value and appreciate areas that are conserved and provide for public access. Many of these comments were integrated into the final maps for the Assessment Report. The following pages provide a list of these suggestions.

Northern Virginia's Common Wealth - Flip Chart Notes

Table Legend
1, 2, 3 – Corresponds to a geographic location, sticker on a map
- Corresponds to a geographic location, but not identified on map
M – overarching map change comment
P- Policy related comment
→ - Corridor identified

Favorite Places

1	Potomac Gorge	Globally Rare Biodiversity
2	Huntley Meadows	Non-tidal wetlands
3	Sully Woodlands	
4	Banshee Reeks Nature Preserve	
5	Fountainhead Regional Park	
6	Quantico Marine Base	
7	W&OD Trail	
8	Ft. Belvoir Forest and Corridor	
9	Manassas National Battlefield	
10	Prince William Forest Park	
11	Magnolia Bog Barcroft Park Arl. Co	
12	Mason Neck	
13	Burke Lake Ffx Co.	
14	Roach's Run (near National Airport)	
15	Annandale Community Park Hidden Oaks	
16	Journey Through Hallowed Ground	
17	Balls Bluff Regional Park	
18	Alexandria Waterfront	
19	Laurel Hill Ffx Co.	
20	Harpers Ferry Viewshed	
21	Riverbend	
22	Colvin Run Mill	
23	Winkler Botanical Preserve	
24	BRAC Mitigation Park (proposed in Alexandria)	
25	Claremont Cove (Alexandria)	
26	Fairfax Villa	
27	Willston Center (7 Corners) – Soccer Field	Low Income Area
28	Fairfax County Cross County Trail	South County Component
29	Wilson Boulevard McLean Mansion Property and House	
30	Nike Missle/Cold War Museum Site	
31	Scott's Run Nature Preserve (Upstream Connections)	
32	Merrimac Farm	
33	Bull Run Mountain Conservancy Preserve	
34	Silverlake Regional Park	
35	Bristol Station Battlefield Park	
36	Conway Robinson State Forest	
37	Bull Run/Occoquan Corridor	
38	Potomac River Wildlife Refuge	

Cultural Resources

1	Cabell's Mill	
2	Colvin Run Historic Site	On 4 Different Registries Only functioning food mill
3	Fairfax Villa (59ac) High Value Forest "Pre-historic hardware store" -	Connects to CCT
M	Label Scenic Roads	
+	Web Accessible Maps with Road Overlay	
5	Laurel Hill – Local interest in beautification/connection	
6	Green corridor with cultural resource proximity	Identified corridor
7	York Field –	Public Housing Connection to Nature Opportunities
8	Opportunity for a rt. 15 Hiking Trail	(Nature Based)
9	*Identify this feature*	
10	Little River Turnpike	Historic Road
11	Carolina Road	Oldest Colonial Road
12	Highlight Dranesville Tavern	
13	Vestils Gap Road (28)	Historic Road
14	River Farm	Champion Trees (Which map should this be noted on?)
15	Gilbert's Corner (Battlefield Area)	Next to Zion Church/Part of Carolina Road
16	Aldie Mill	
16+15+8 →	Crossroads a cultural "hub"	Identified Corridor
17	Clifton – Label -Clifton Rd State Scenic Byway	Historic Homes, tourist attraction, nature based recreation
19 →	Regional Connection Opportunity	Identified Corridor
20	Connection opportunity to Buckland Farms/Vint Hill Rd	Identified Corridor
21 →	Improve Connection and Walkability –Arlington	
16+18+15 → 20+11+9	U- shaped connection	Identified Corridor
22	Freed Slaves site	
23 →	Frying Pan Park to Sully to Herndon	Restoration Opportunity to connect features and/or improve context
24	Orange-Alexandria Railway (recreation and cultural asset)	Main trail aligns with historic trail bed –supply Route during Civil War

Water Resources

M	Make County Boundaries more visible and major highways	
1	Four Mile Run - Arlington	
2	Difficult Run – Colvin Mill	High Value Cores connects restoration Opportunities
3	Goose Creek	Private Property Land Owner Conservation
P	Loudoun Co. Adopt RPAs	
P	Protect land around water intakes	
+	Future Tasks – flag new areas of drinking water resources	
5	Occoquan	restoration opportunities
6	Heritage Trail –	preserve and restore green infrastructure PHNST restore – 2 for 1
7	Lake Manassas – filling in area with green	
8	Headwaters of Catoctin Creek –	needs more green connector space
9	Could we connect green spaces better	
10	Holmes Run –	Opportunities to connect parks and water resources
#	Hooes Creek Rd – Look for reservoir and add to map	
11	Elk Lick Run	
12	Piney Run – restoration	High quality water to protect in the future regionally significant – lots of wood turtles
13	Magnolia Bog – Franconia Park – behind Washington and Lee	Significant because rare for No.V.
14	Barcroft Magnolia Bog	Restoration opportunity See Cliff Fairweather
15	Bull Run Headwaters (Loudoun and PW) important for Occoquan restoration not currently heavily developed but at risk	
16 →	Huntley Meadows Park + corridor significant wetlands +corridor into Fort Belvoir –	regionally significant
17	Powells Creek Watershed (PW) VIMS –said one of the best in our region rich diversity biologically diverse and fish diversity intake ecosystem	
18	Cherry Mill – was set for development, developers went under – PW Kim Hosen PW Trust	Potential for restoration
19	Broad Run – significant water resource, recreation corridor, Potomac AH, PCBs restoration	

Nature Based Recreation

1	Occoquan Put ins below Lake Jackson – Rippon VRE Connection	
#	Overlay Occoquan W. Supply	
2	Featherstone Refuge	Land acquisition PWC
3	Iris Garden – Herndon/OxRoad Reston Status	
#	Cross County Trail fill gats +improve	Does this mean gaps on the map, or physical gaps in the trail system (policy or mapping comment?)
#	Fountainhead kayaking opportunity Bull Run to Fountainhead – reasonable options	Reasonable options for what?
# P?	Maintain wooded area Hidden Oaks – methods for preserving small wooded + streams neighborhood parks, Beltway and Annandale	
#	Laurel Hill Assn in Lorton – rain gardens, Lorton Art Center – retention, Ponds and rain gardens great potential	
4	Limiting mountain bike use Lake Fairfax multi-use trail – damage to vernal pools	
P	Concept of mtn bike and other problems w/ trail placements not optimal habitats – Education and outreach –mid atlantic off road enthusiasts	
5	AT 5? Near Harpers Ferry well used	
6	Missing Broad Run Trail	PHNST connector
7	Difficult Run – very bad shape, sewer overflows? Water safety, trail in poor condition (mtn bikers?)	
8	Rocky Run – new overpass, need to protect trail 7100+66	
9	Boat Access Arl to Potomac – close options	
#	WO+D Trails used – invasive plant infestation	
#	Holmes Run	
#	Washington Rochambeau	
11	Huntley Meadows bird watching and hiking Social trail use beyond HM boundaries	Needs connections Ca Station?
12	Rec: Show highly developed areas on map: neighborhoods, city centers, commercial to show trail-people connections	
13	Fairfax Villa 58 Acres Natural and cultural site, currently protected as county park, walking distance from Fairfax city – good resource for introducing new hikers to GI – build out	
14	Grand Crescent trail in Alexandria	
15	Bull Run Gap +	
M	Add roads for reference	
16	North Tract Park – connector to Mt. Vernon trail	
17	Gulf Branch Donaldson Run Pimmit Run – poor condition need better protection and trail improvements	give to NVCT?
+ 18	Adding more green space buffers to parks we already have (example: Fairfax Villa adjacent land owned by GMU candidate area for preservation)	
19	PHNST – close gaps in Ffx along water	Physical gaps or map gaps?
20	Overgrown BMPs for stormwater – good wildlife opportunity – very nice as is – protect? Make recreational	

MARKETING STRATEGY

Materials developed for the *Northern Virginia's Common Wealth: Recognizing the Region's Treasured Landscapes* summit, revised slightly with updated information, serve as models for follow up presentations to a wide-variety of audiences.

NVRC and its project partners identified the following strategies for continuing to move forward with fostering support for the Conservation Corridors Planning in Northern Virginia project, enlarging participation, and increasing awareness of the region's natural resources:

Short-Term

1. Finalize regional maps *(complete, January 2012)*

Mid-Term

2. Develop short Assessment Report *(complete, January 2012)*
3. Present to and request endorsement from the following organizations:
    a. Local land conservation organizations, in particular PEC, Potomac Conservancy, The Conservation Fund, and The Nature Conservancy *(ongoing; anticipated completion fall 2012)*
    b. Northern Virginia Conservation Trust Board *(complete, February 2012)*
    c. Northern Virginia Regional Park Authority *(complete, January 2012)*
    d. Northern Virginia Regional Commission Board *(complete, March 2012)*

Long-Term

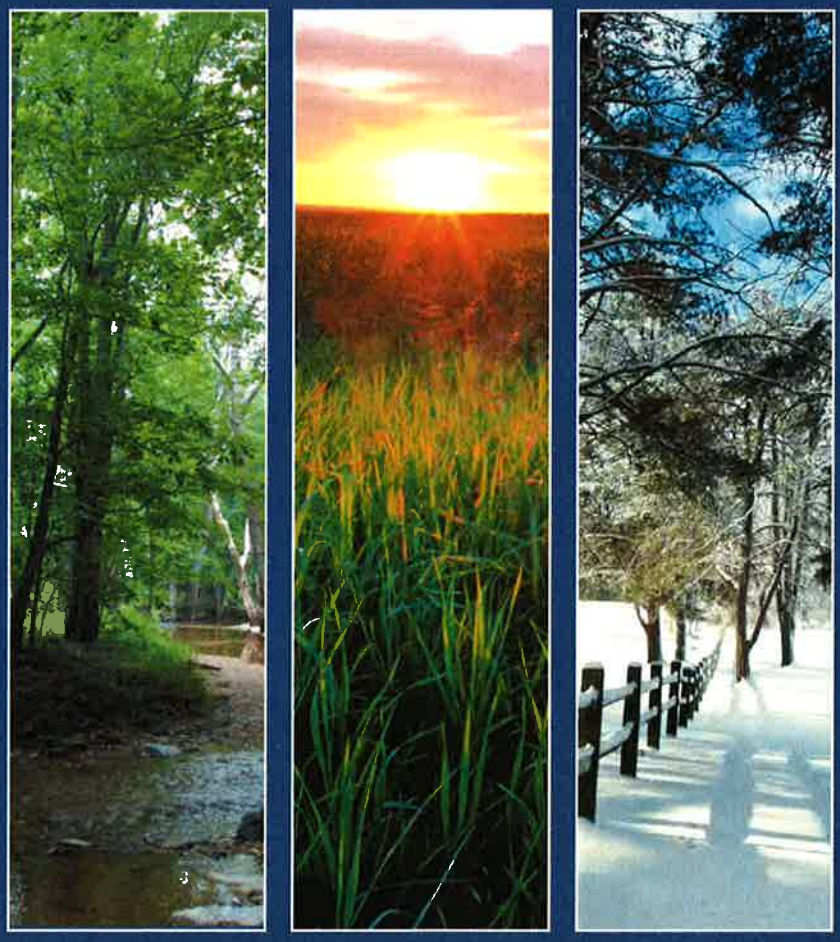
4. Convene an ongoing stakeholder-based working group to oversee the implementation of priority regional conservation corridors *(Approved by NVRC Board on March 22, 2012, anticipated to begin in fall 2012)*

The logic model developed for the public summit has legitimacy for explaining the overall effort and anticipated outcomes, as well.

Appendix C

LOCAL ANALYSIS REPORT AND MAPS (ASSESSMENT REPORT)

CONSERVATION
CORRIDOR PLANNING



Northern Virginia
Regional Commission

nvrc

January 2012

Image Credit:
Green Infrastructure Center

Regional Green Infrastructure

The Northern Virginia Regional Commission (NVRC)'s Conservation Corridor Planning Project is a regional effort to help area governments and their constituents integrate green infrastructure planning as part of their civic toolkit. By working regionally, we can identify new opportunities to collaboratively plan for the connection, restoration and enhancement of Northern Virginia's natural resource assets, strengthening public health, local quality of life and the region's economy.

This assessment presents a snapshot of the region's high-value natural resources, along with potential multi-jurisdictional applications and recommended next steps.

Project Goals

- Refine state-level analyses for local applications using local data and priorities.
- Identify and map high-value habitat cores and corridors across the region.
- Highlight opportunities for regional connections.
- Quantify the benefits of these areas.
- Collaborate on cross-jurisdictional efforts to pursue these regional opportunities.

Project Approach

NVRC and its partners worked with the Conservation Corridor Workgroup, a multi-disciplinary advisory group of long-range and environmental planners, natural resource managers, ecologists and others from local governments and conservation organizations in Northern Virginia.

Asset Mapping: State and local data guided identification of natural, cultural, historical and recreational assets, which are viewable at a regional scale. The state's Virginia Natural Landscape Assessment was a key model used in evaluating the highest-value natural resource assets in Northern Virginia.

Opportunity Identification: The project team analyzed assets that cross jurisdictional boundaries and would benefit from collaborative opportunities.

Implementation (ongoing): Project information and data are available to interested parties who want to work on conserving local and regional connections. Project maps will require regular updates with current data.

Regional Base Map

The map on page 3 highlights the network of lands, waterways and corridors in Northern Virginia that provide the greatest green infrastructure benefits integral to the region's quality of life, public health and economy. The regional-scale map illustrates how Northern Virginia's natural resources intertwine through wide-ranging development patterns, from urban growth areas around Washington, D.C. to more suburban and rural development to the south, west and northwest.

The base map displays areas of regional significance that provide benefits for more than one jurisdiction. Due to the regional scale of the project, not all locally significant resources are visible on the map. Effective green infrastructure planning in Northern Virginia will require tailoring goals, strategies and progress measurement to varied settings and scales, as well as regional coordination among area localities to maintain connections.

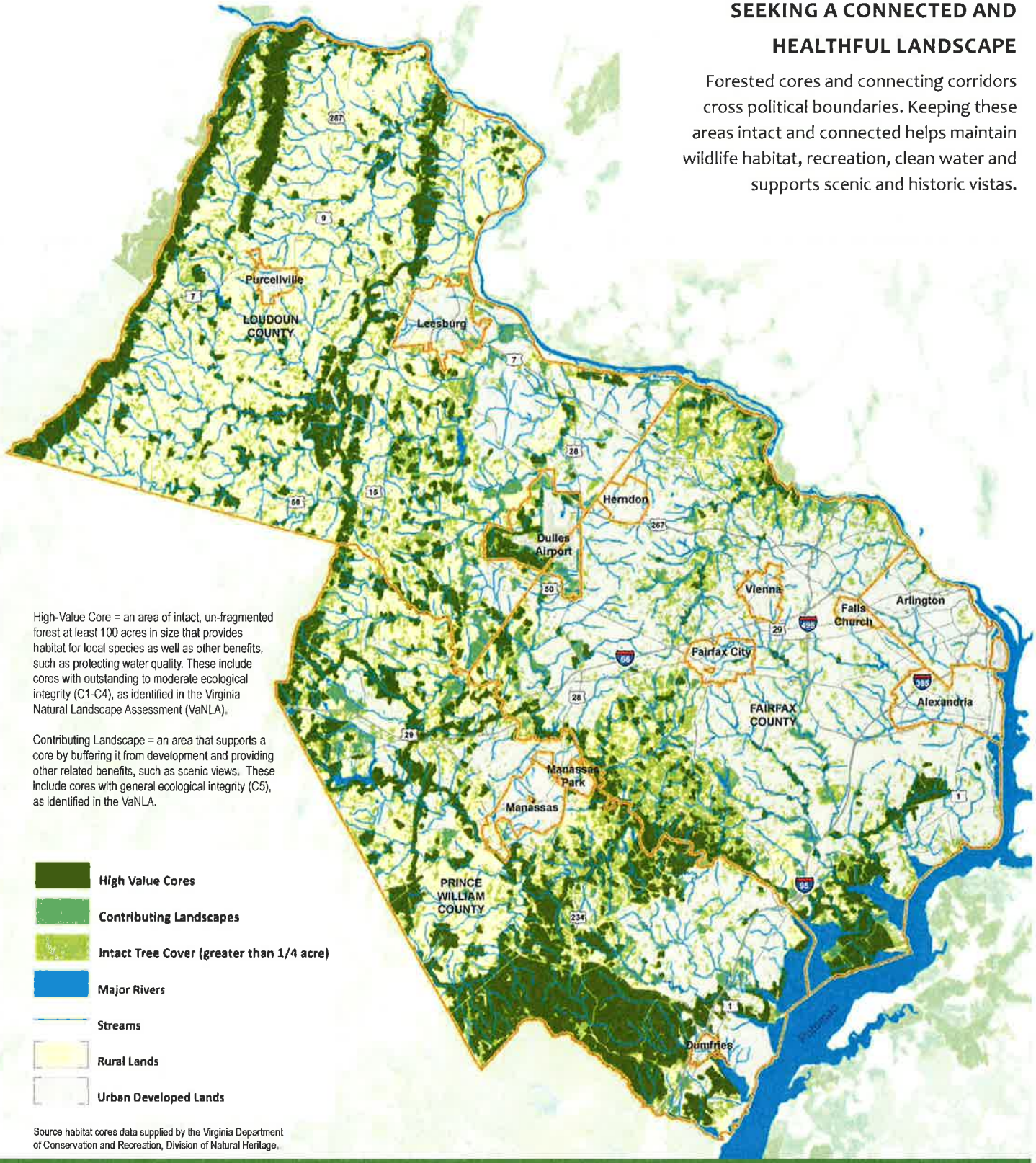
Green Infrastructure Planning: An Overview

Green infrastructure planning connects intact habitat areas (cores) through a network of multi-purpose corridors that provide for wildlife movement and trails as well as pathways for pollinators. Maintaining intact, connected natural landscapes and areas that serve as stepping stones is essential for basic ecosystem and watershed services, such as clean air and water. Mapping the region's key green infrastructure assets, such as forests and waterways, allows for better decision-making regarding the location and design of grey infrastructure, such as roads and utilities, which support development.

Who Uses Cores and Corridors?

SEEKING A CONNECTED AND HEALTHFUL LANDSCAPE

Forested cores and connecting corridors cross political boundaries. Keeping these areas intact and connected helps maintain wildlife habitat, recreation, clean water and supports scenic and historic vistas.



Conservation Corridor Regional Base Map

Planning for the Future: Conserving and Enhancing the Region's Green Infrastructure

Green Infrastructure Services

Trees filter air pollutants while also taking up stormwater, filtering runoff, cooling urban areas, and making streets, neighborhoods and commercial districts more attractive.

Intact forests provide benefits for wildlife, people and pollinators. Breaking up forests into smaller and smaller pieces results in fragmentation of Northern Virginia's forests. The loss of intact forests results in a loss of wildlife habitat, natural areas and ecosystem services, such as clean air and water, raw materials, recreation opportunities and natural hazard mitigation.

Northern Virginia's communities are closely linked economically and through traditional "grey" infrastructure including road networks, mass transit and airports. The region's significant natural resources – its green infrastructure – are no different. Forests, waterways and wildlife habitat all cross jurisdictional boundaries, providing regional ecosystem and watershed services, which are expensive to replicate if lost. Additionally, these resources enhance quality of life for Northern Virginia's residents, providing clean water, agricultural soils and public parks and trails.

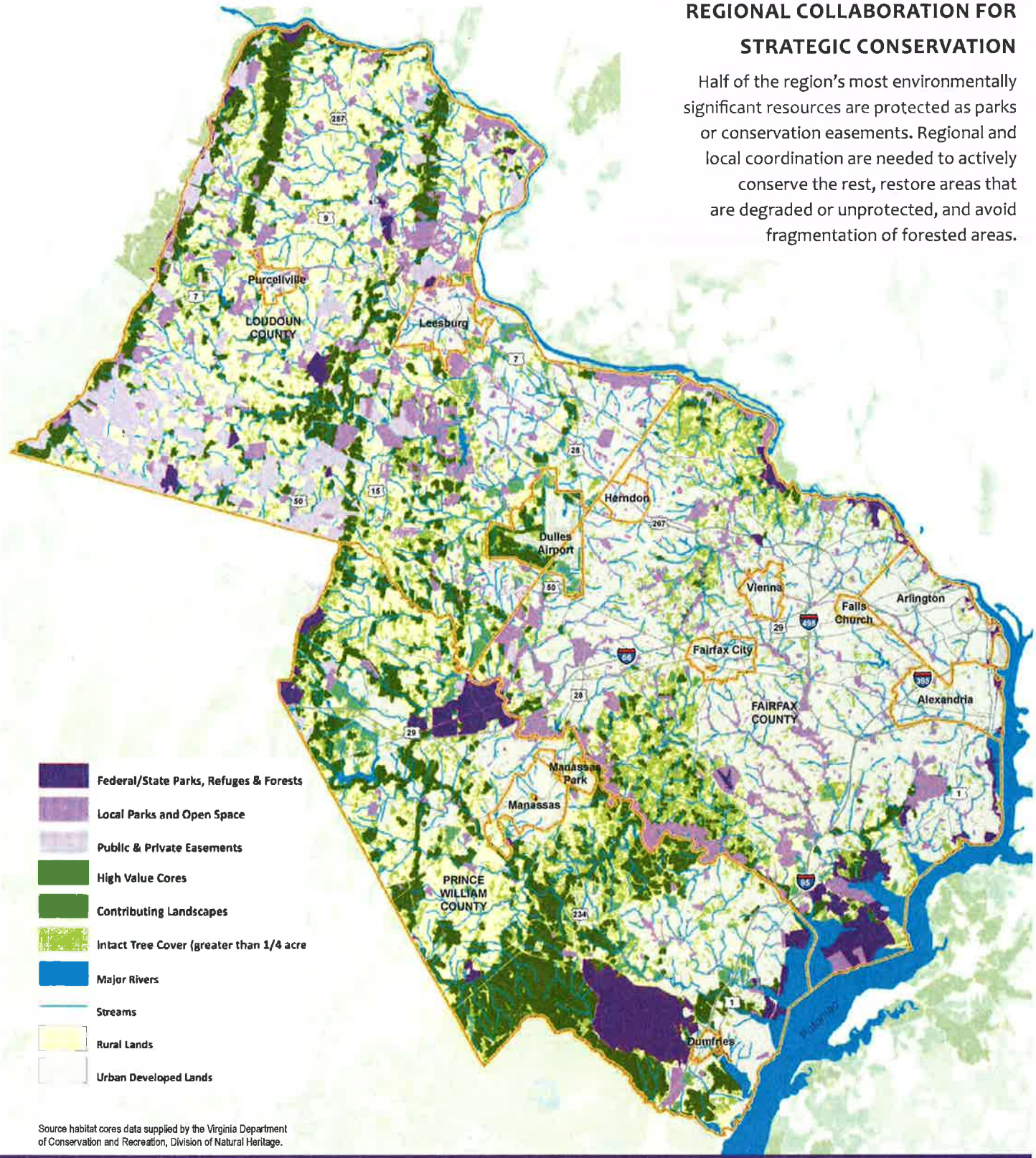
Northern Virginia has been growing by about 35-38,000 people per year, on average, for more than 30 years. By 2020, the area will be home to an estimated 2.5 million residents. The population equivalent of a new Loudoun County – about 300,000 people – joins the region about every eight years. In turn, this results in a need for additional homes, roads, buildings and other grey infrastructure.

To help plan for and guide Northern Virginia's future growth, effective local and regional green infrastructure planning is essential. Our remaining forests, farms, parks and wetlands protect public health, ensure the quality of our water and air, sustain recreation opportunities and the area's heritage, and provide direct economic benefits. Just as our highways and utilities require planning and maintenance, our natural resources also require careful attention and effective management over time.

The map on page 5 illustrates conserved lands across the region and remaining significant environmental resources that are currently unprotected and vulnerable to disturbance. Northern Virginia's localities and conservation organizations can work locally and across jurisdictional boundaries to conserve, maintain and restore these resources.

REGIONAL COLLABORATION FOR STRATEGIC CONSERVATION

Half of the region's most environmentally significant resources are protected as parks or conservation easements. Regional and local coordination are needed to actively conserve the rest, restore areas that are degraded or unprotected, and avoid fragmentation of forested areas.



Source habitat cores data supplied by the Virginia Department of Conservation and Recreation, Division of Natural Heritage.

Conserved Lands

Connecting People and Landscapes

Northern Virginia's Inter-Community Connections

The region's communities rely heavily on each other's historic resources, recreation areas and working landscapes. Urban and suburban residents visit pick-your-own farms and enjoy wineries in rural areas while rural residents provide locally made and grown products to the region's farmers markets and stores.

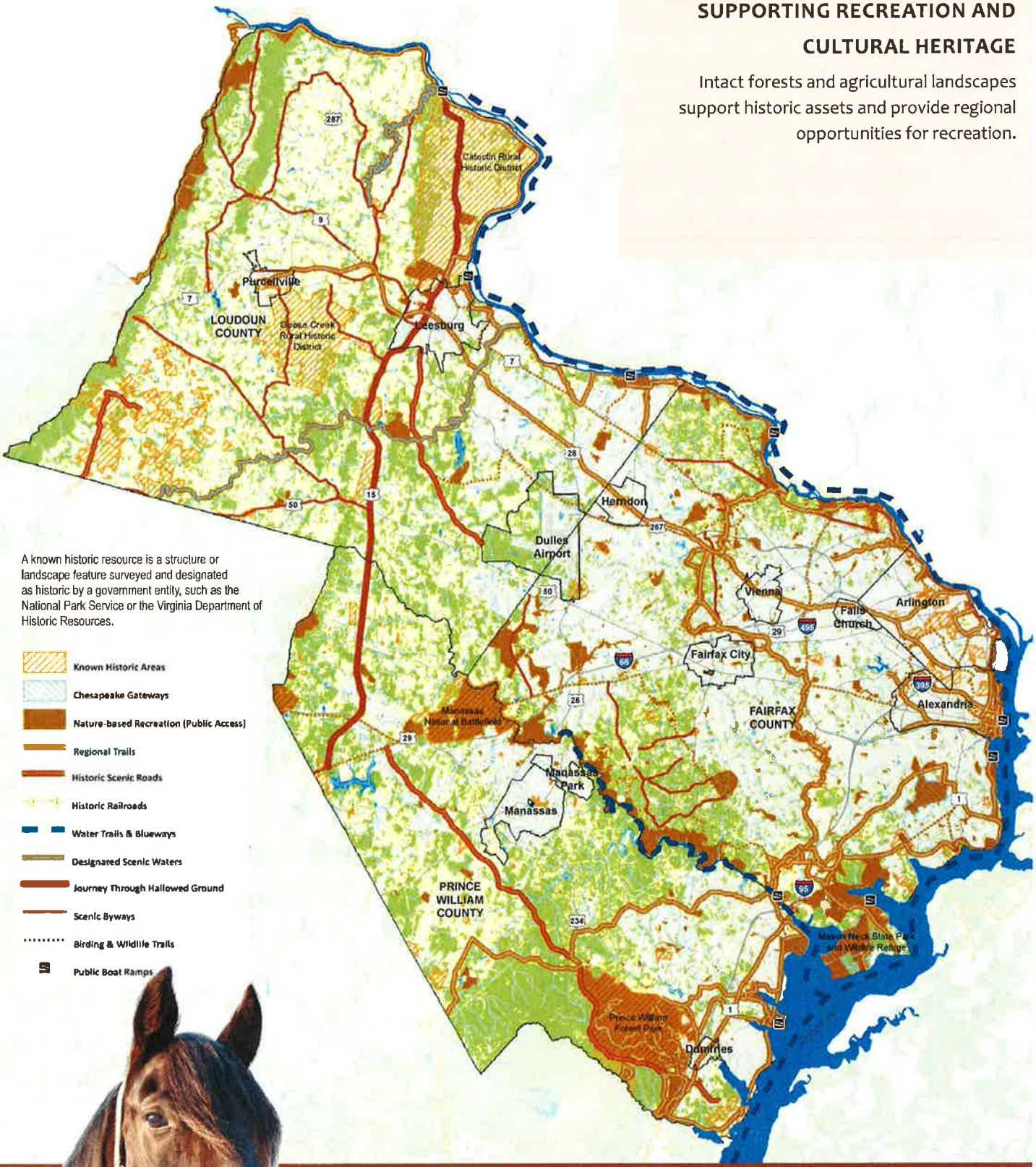
Northern Virginia is a special place. Home to one of the country's most vibrant economies and more than 2.2 million residents, the area enjoys a rich history, hosts diverse cultures, and benefits from recreation areas and working landscapes – forests and farms – vital to our economy and quality of life. These resources are closely linked with Northern Virginia's natural resources, as highlighted by the map on page 7. Effective green infrastructure planning supports history, culture, recreation areas and working landscapes.

Northern Virginia's natural resources provide vital landscape context for its historic assets. For example, natural areas around Mount Vernon and Manassas National Battlefield Park provide the setting within which visitors explore and learn about these national treasures. The map on page 7 also illustrates how the region's nature-based recreation resources – areas such as Algonquian Regional Park and the Meadowood Special Management Recreation Area – provide opportunities to connect the natural corridors critical to protecting water quality and maintaining connections between key habitat areas. The nature-based recreation features highlighted on the map are regionally significant areas. The recreation opportunities in these areas are dependent upon a natural setting.

NVRC member governments can use the Cultural Heritage and Recreation Map to explore cultural, historical, agricultural and recreational interconnections with the area's green infrastructure network. The map can be further refined to reflect specific community goals and priorities, as well as to identify and inform planning strategies requiring an inter-jurisdictional approach.

SUPPORTING RECREATION AND CULTURAL HERITAGE

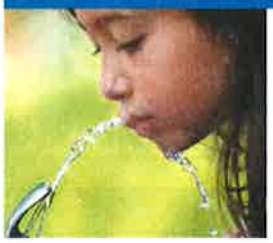
Intact forests and agricultural landscapes support historic assets and provide regional opportunities for recreation.



A known historic resource is a structure or landscape feature surveyed and designated as historic by a government entity, such as the National Park Service or the Virginia Department of Historic Resources.

Cultural Heritage and Recreation

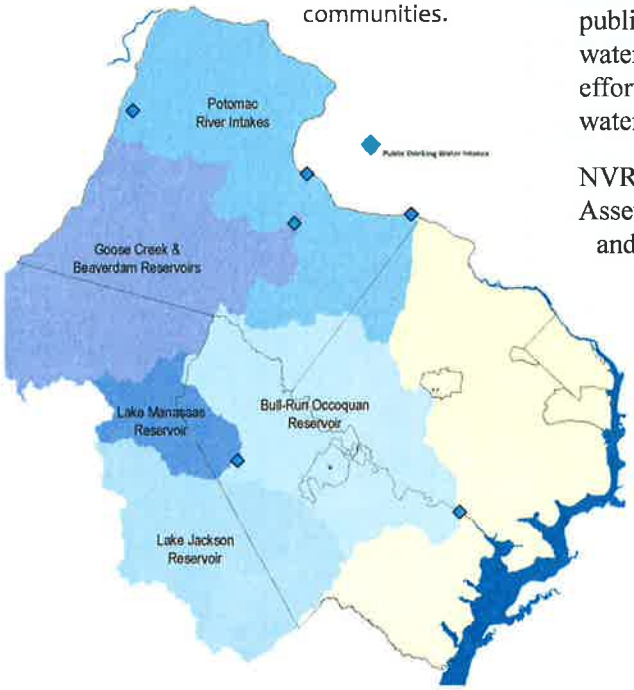
Ensuring Water Quality and Supporting Public Health



Linking Land Use and Water Quality

Three-quarters of the region's watersheds drain into public water supply intakes (see map below). Underground aquifers and community wells supply drinking water to areas not connected to public water systems. Land uses in our watersheds directly affect the quality of local and regional drinking water.

Stormwater management, agricultural best management practices, wetlands restoration, and public outreach and education are some of the ways we can maintain the quality of our public water supplies, helping ensure the long-term health of our communities.



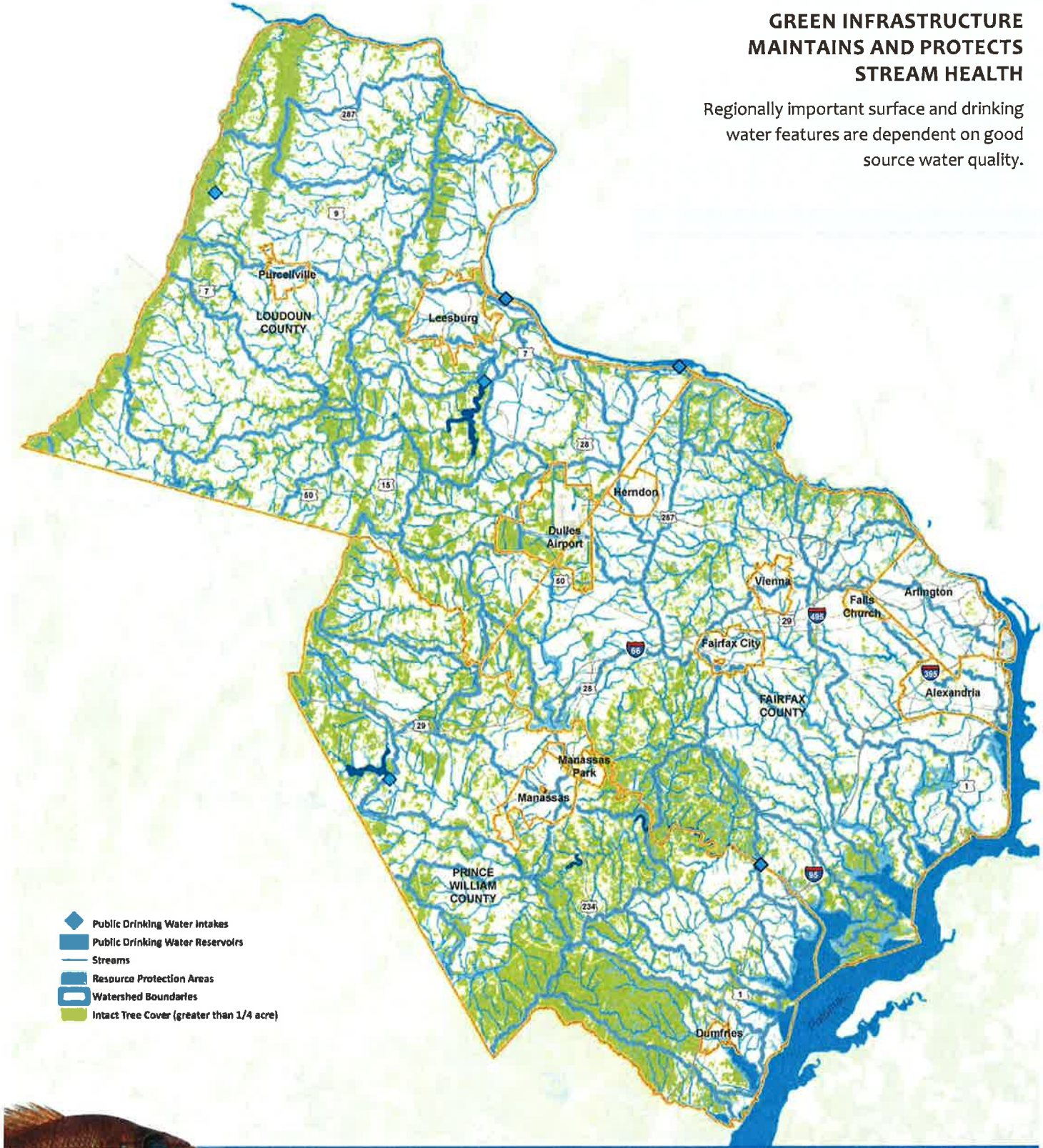
The map on page 9 highlights the relationship between Northern Virginia's abundant water resources and its forested areas. Important regional waterways, such as Goose Creek, Bull Run, the Potomac River and Occoquan Reservoir thrive because they are shaded by trees and vegetation that filter stormwater, prevent erosion, facilitate ground water recharge and moderate temperatures. Green infrastructure planning ensures these vegetated areas along waterways – also called forested buffers – are maintained and enhanced over time, protecting public health and water quality.

The map illustrates that the extent of forested buffers near the region's waterways varies substantially, ranging from less extensive in urban, suburban and agricultural areas to more extensive in non-agricultural rural areas. Maintaining and enhancing forested buffers near Northern Virginia's waterways requires tailoring tools and approaches to these varied settings. Localities with extensive buffer areas may focus on how to maintain and protect these resources, for example. Localities with less extensive buffers may identify locations such as parks, schools and other public areas that provide opportunities for buffer restoration and expansion. For watersheds that cross jurisdictional boundaries, multiple localities may coordinate efforts to maintain or enhance their buffers for shared benefit, such as drinking water protection.

NVRC member governments and other organizations can use the Water Resources Asset Map to review the characteristics of local waterways, identify the extent and location of forested buffers, and analyze the relationship between local land uses and area waterways. The map can be further refined to reflect specific community goals and priorities, as well as to identify and inform planning strategies requiring an inter-jurisdictional approach.

GREEN INFRASTRUCTURE MAINTAINS AND PROTECTS STREAM HEALTH

Regionally important surface and drinking water features are dependent on good source water quality.

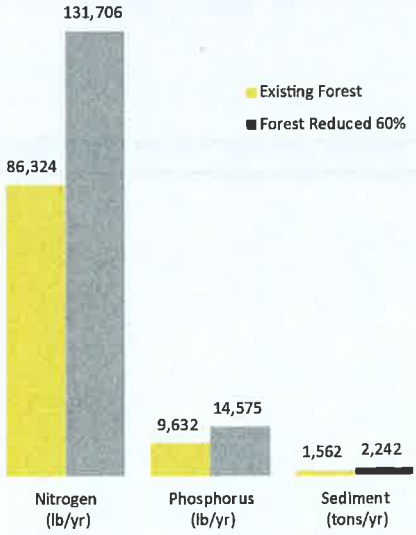


Water Resource Assets

The Value of Regional Collaboration

Waterway impairments such as excess sediment can limit opportunities for fishing and recreation and affect the quality of our water supplies. For example, a typical urban watershed in Northern Virginia is approximately 40 percent forested. Analysis using the Virginia Department of Forestry's InFOREST nutrient and sediment runoff calculator indicates that developing 60 percent of that forested land could result in a roughly 50 percent increase in the amount of nitrogen, phosphorus and sediment entering the region's waterways and, ultimately, the Chesapeake Bay each year. U.S. EPA has identified nitrogen, phosphorus and sediment as the three primary pollutants that must be reduced to restore the health of the Chesapeake Bay and its tributaries. A wide range of approaches can address these impairments, including reducing runoff and restoring stream banks and buffer areas.

Looking to the future, preventing water quality impairments and ensuring adequate water flows are vital to ensuring safe water supplies, recreation opportunities and the ecological integrity of the region. Coordination and collaboration among Northern Virginia's towns, cities and counties is needed to make this possible.



Cross-Jurisdiction Coordination

Two highlighted areas illustrate a cross-jurisdiction opportunity to maintain high-value natural resources.

The high-value area, a forested core located along Elklick Branch and shared by Loudoun and Fairfax Counties, is 845 acres in size and includes 206 acres of priority habitat. Each year, this core removes 74,416 pounds of air pollutants, a savings of $199,246, stores 31,790 tons of carbon and saves $29 million in stormwater management costs that would be incurred if the trees were not uptaking this stormwater.

The high-value core spanning the Occoquan Reservoir and shared by Prince William and Fairfax Counties, is 5,434 acres in size and includes 646 acres of priority habitat. Each year, this core removes 306,573 pounds of air pollutants, a savings of $820,840, stores 130,968 tons of carbon and saves $166 million in stormwater management costs.

Annual estimates are based on an analysis using CITYgreen software, a GIS-based application to calculate the benefits of trees, which correlates to the savings noted above.

Case Study Examples

Within the region's urban areas, there are several ongoing efforts to maintain and restore green infrastructure assets.

Four Mile Run Restoration

Since the early 2000s, the City of Alexandria and Arlington County have worked toward the restoration of the Four Mile Run stream valley corridor to form an "emerald spine in an urban corridor." In turn, improving the environmental integrity of the waterway improves the surrounding landscape and quality of life for residents in both jurisdictions. For more information, visit www.novaregion.org/fourmilerun.

Tysons Corner Green Network

The revitalization of Tysons Corner includes a conscious effort to create a "Green Network" by maintaining environmentally sensitive areas and enhancing park space and connections through a "greenway." Fairfax County developed innovative urban parkland standards to accommodate recreation and leisure interests of residents and workers in the area. For more information, visit www.fairfaxcounty.gov/tysons.

BENEFITS OF CONSERVING NATURAL ASSETS

The environmental benefits provided by Northern Virginia's natural resources, such as clean air and water, are significant. Often referred to as "ecosystem services," these environmental functions help make the region a thriving and resilient area. Equally important, these resources provide benefits vital to public health, quality of life and economic growth in Northern Virginia. Examples of these diverse benefits are discussed below.

Public Health: Forest cover reduces surface temperatures, keeping cities cooler and more livable. Forested and natural areas also help with attention deficit hyperactivity disorder (ADHD). A study of children who moved closer to green areas found they tended to have the highest levels of improved cognitive functioning following the relocation, regardless of the level of affluence (Wells, 2000). Green outdoor settings appear to reduce ADHD symptoms in children across a wide range of individual, residential and case characteristics (Kou and Taylor, 2003).

Land values: A study by the National Association of Realtors found that 57 percent of voters are more likely to purchase a home near green space and 50 percent are willing to pay 10 percent more for a home located near a park or other protected area. A similar study (Correll et al., 1978) found that the value of homes adjacent to green space in Boulder, Colorado, were 32 percent higher than those 3,200 feet distant. In the country's current difficult economy, maintaining property values ensures stable tax revenues for localities and enables homeowners to maintain the investment value of their properties.

Jobs: Preserving open space helps to attract companies with good jobs. Small companies, especially those that are have a well-paid and skilled workforce, place a strong importance on local environmental assets (Crompton, Love and Moore, 1997). The creative class – artists, media, lawyers and analysts – make up 30 percent of the U.S. workforce and they place a premium on outdoor recreation and access to nature (Florida, 2002).

Regulatory Requirements: Cleaning up polluted water and reducing flooding is an example of an ecosystem service provided best by forested land cover. Forested lands can significantly reduce runoff of nitrogen, phosphorus and sediment, the three pollutants identified for reduction as part of the mandatory federal plan to clean up the Chesapeake Bay.

Cost Savings: A survey by the American Water Works Association found that a 10 percent increase in forest cover reduced chemical and treatment costs of drinking water by 20 percent (Barten and Ernst, 2004). Since much of Northern Virginia depends on surface water for drinking, reducing treatment costs benefits more than half of the region. For those who depend on well water, forests help recharge the aquifers that supply the wells by holding water, filtering it and allowing the water to slowly infiltrate into ground water. The longer a well can remain in service, the lower the costs, since the well will not need to be relocated or redrilled to reach lowered water tables. American Forests has estimated that the value of urban tree cover in reducing stormwater problems in the nation's cities is more than $400 billion.

For more information on the benefits of green infrastructure and full citations for the articles referenced above, visit www.gicinc.org.

Regional Opportunities and their Significance

The assessment identified five priority regional conservation corridors in Northern Virginia. The assessment prioritized these corridors based on the vital role they play in defining the region's natural characteristics, providing water quality benefits, supporting cultural heritage and nature-based recreation opportunities, and contributing to the region's overall quality of life.

A

POTOMAC RIVER CORRIDOR

The Potomac River may be one of Northern Virginia's most recognized natural features.

- The river provides drinking water for residents across the Washington metropolitan area.
- The Potomac Gorge is home to the river and a tidally influenced estuary, one of the most complex ecosystems in the United States.
- Much of Northern Virginia's tidal shorelines are public areas managed by local, regional, state and federal agencies; these areas provide ready access to a range of nature-based recreation options. These areas also provide habitat for migratory birds and many threatened and endangered species, such as Bald Eagles.

B

POTOMAC GORGE – QUANTICO CORRIDOR

This suburban corridor, also known as the Northern Virginia Greenbelt, provides public access to significant nature-based recreation opportunities.

- The area includes stream valley parks and large tracts of undeveloped private lands.
- The area connects Prince William National Forest Park with Manassas National Battlefield Park and provides a larger north-south regional connection linking Northern Virginia's green infrastructure with Maryland's natural resources.

C

BULL RUN – OCCOQUAN CORRIDOR

Beginning at the Bull Run Mountains and heading east to the confluence of the Occoquan River with Belmont Bay, this corridor is rich in environmental and cultural assets both modern and old.

- Over one million Northern Virginia residents receive their drinking water from the Occoquan Reservoir, one of the country's first water reclamation facilities. The reservoir also provides popular flat-water recreation options.
- The western portion of the area is part of the Culpeper Basin Important Birding Area.
- Significant historic resources are also present, including several Civil War battlefields, historic railroads, scenic byways and prehistoric routes.

D

BULL RUN MOUNTAIN – CATOCTIN MOUNTAIN CORRIDOR

This north-south corridor connects the culturally and naturally rich foothills of the Blue Ridge Mountains in Northern Virginia.

- The corridor provides significant intact habitat for Northern Virginia wildlife.
- North of Leesburg, the corridor is underlain by limestone, providing a large area for ground water recharge.
- The Journey through Hallowed Ground (Route 15) runs through the corridor, connecting the region's Civil War legacy with other significant battlefields and historic sites across the mid-Atlantic.

E

BLUE RIDGE – SHORT HILL CORRIDOR

The western edge of Loudoun County includes part of the Blue Ridge Mountain range and its significant natural and recreational resources.

- The area's steep slopes make development difficult. However, the slopes provide a significant backdrop and viewshed for western Loudoun County's rural and agricultural heritage.
- The Appalachian Trail and associated facilities are located along the length of the corridor, providing a significant recreation resource for hikers and visitors.
- The underlying geology of the region transitions here from the Piedmont to the Blue Ridge physiographic province, providing distinctive vegetation and habitat for larger mammals, such as bears.

CONSERVATION STRATEGIES

1. Protect the highest quality habitat cores first.
2. Preserve corridors or stepping stones that provide multiple benefits.
3. Enhance ecosystem functions of cores with good management.
4. Restore degraded or missing connections.
5. Recreate ecosystem functions in developed areas.

Regional Opportunities

Applications

The results of the Conservation Corridor Planning Project serve as a guide for conserving the region's most significant resources for their forest and wildlife habitat, recreation, cultural heritage, and water quality values. The project's green infrastructure maps, data and analyses are resources made available to NVRC member governments and constituents as they consider ways to integrate green infrastructure planning as part of their planning activities.

These regional maps are suited for regional and cross-jurisdictional planning. Further refinement of the maps and data will help ensure important local features and additional intact habitat areas and corridors are included in future planning efforts and initiatives at the local and regional level. Diverse users can use project information for a variety of purposes.

- **Mapping:** Users can graphically layer information on project maps to identify particular local and regional green infrastructure planning opportunities. For example, identifying areas with minimal tree canopy and impaired waterways that drain into public water supply intakes could lead to targeted tree and habitat restoration programs. Similarly, identifying vacant lands could lead to revitalization opportunities that emphasize habitat and water quality improvements.

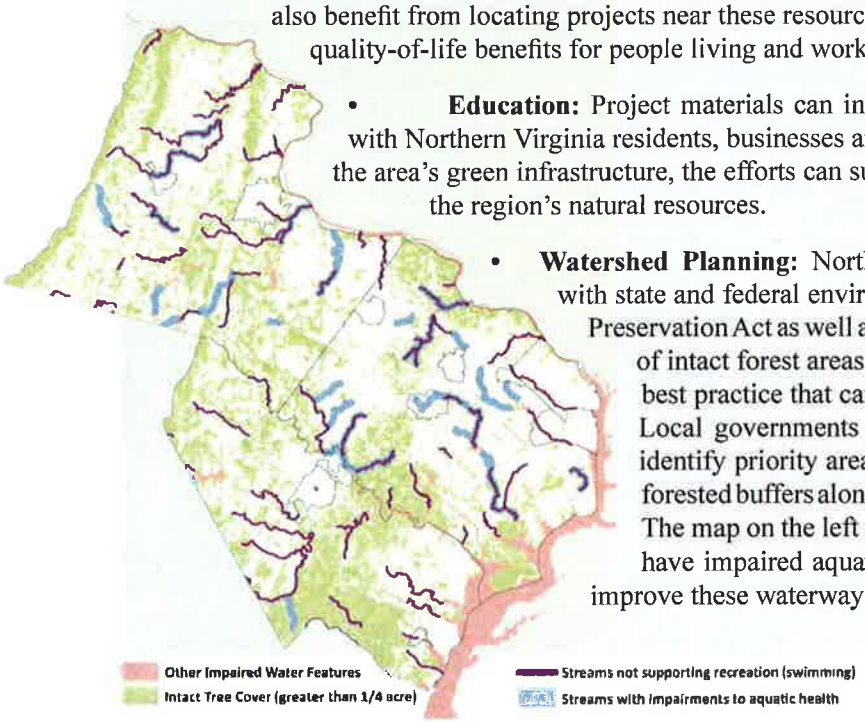
- **Plan Review:** Local governments can use project information as part of the development plan review process, ensuring plans meet local natural resource management goals, such as tree canopy coverage and conserved open space.

- **Strategic Conservation:** Land trusts and other conservation organizations can use project information to inform land acquisition and conservation strategies that focus on high-value natural resource areas providing multiple benefits, including vital regional connections. The organizations can also incorporate project materials as part of their proposals for land acquisition and conservation project funding.

- **Strategic Development:** Developers can use project information to prioritize project designs, such as clustering, to avoid impacts to the region's high-value natural resources and regional corridors. They can also benefit from locating projects near these resources, resulting in higher property values and providing quality-of-life benefits for people living and working nearby.

- **Education:** Project materials can inform environmental education and outreach efforts with Northern Virginia residents, businesses and organizations. In addition to raising awareness of the area's green infrastructure, the efforts can support individual and community efforts to conserve the region's natural resources.

- **Watershed Planning:** Northern Virginia's towns, cities and counties comply with state and federal environmental regulations including the Chesapeake Bay Preservation Act as well as voluntary initiatives. The protection and restoration of intact forest areas and waterway buffers is a commonly recommended best practice that can help localities meet these regulatory requirements. Local governments can use project information and regional maps to identify priority areas for action. For example, conserving and restoring forested buffers along streams can effectively address certain impairments. The map on the left shows streams that cannot support swimming or that have impaired aquatic health. A green infrastructure approach can help improve these waterways and meet regulatory requirements.



Planning at Different Scales

Planning approaches for protecting or restoring conservation corridors and natural assets vary depending on the scale of the assessment. For example, at the regional scale across Northern Virginia, consistent and comprehensive GIS datasets are important to avoid misrepresentation of existing resources that cross jurisdictional boundaries. At the county, city and neighborhood scale, more detailed GIS datasets featuring important local assets should be included in the analysis. Following are examples of possible follow-on planning efforts, with key datasets at each scale.

County Scale: Planning approaches at this scale should include elements from the regional scale assessment and local features. These features would include local waterways (e.g. headwaters and smaller tributary streams), smaller local parks, tree canopy, important agricultural soils in rural areas, smaller Civil War encampments or locally designated historic districts for which landscape context is important, and county trails. At the county or city scale, overlay maps can be added to show local zoning and land use designations such as agricultural and forestal districts as well as local areas protected by tools such as conservation easements. These maps can also support the identification of local priority conservation areas in locations that may change.

City or Town Scale: In addition to considering similar elements to the county-scale planning mentioned above, smaller-scale features such as individual street trees or pocket parks can be included at this urban scale. Planners may also want to consider where resources can be restored, such as by inventorying vacant lots to identify areas that could be restored to provide new or connected natural areas. A series of vacant lots can be restored and connected to create a wildlife corridor or an urban trail, for example. Similarly, brownfields restoration – cleaning up a contaminated site and replanting the area with native plants and trees – can help to increase natural areas within developed areas and support efforts to revitalize downtown districts or older industrial areas in transition.

Neighborhood Scale: Neighborhoods and subdivisions may wish to focus on the management of community open spaces, common areas and parks. Establishing no-mow zones along creeks, planting native trees and shrubs, and establishing small habitat areas such as brush piles for birds or butterfly gardens are examples of neighborhood-scale activities that can provide significant benefits. These smaller-scale projects can be even more effective when open spaces and parks are joined together to create larger conservation corridors used by native wildlife, birds, butterflies and pollinators. For more ideas, visit: www.dgif.virginia.gov/habitat.

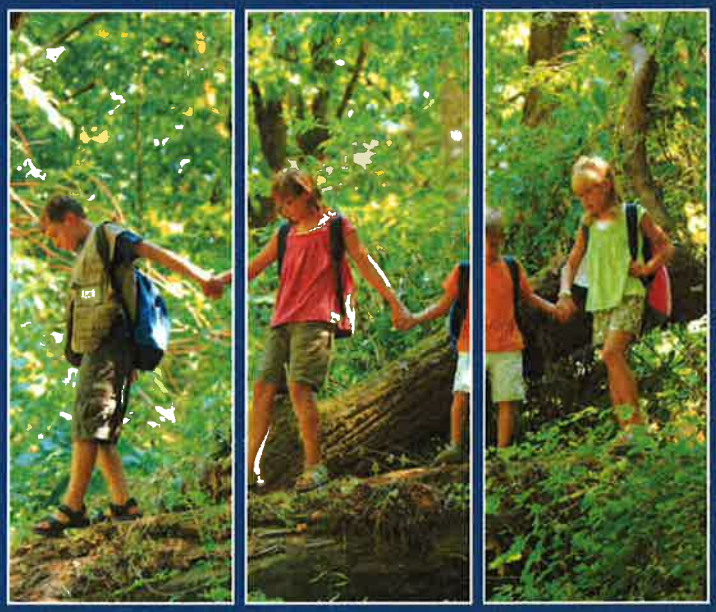
Next Steps for Conservation Corridors in Northern Virginia

The Conservation Corridor Planning Project supports many local conservation and open space planning efforts that are already underway. Possible additional next steps include:

- Continued collaboration through a workgroup to focus on the implementation of the five regional conservation corridor opportunities described on pages 12 and 13 of the assessment report.
- Outreach and education to landowners, homeowners and community associations on stewardship practices.
- Local-scale analyses to identify high-value natural assets at risk from future development or other factors.

High-resolution copies of this report and the project's regional maps are available online at www.novaregion.org/conservation. The project's GIS data are available to area governments and their constituents by contacting NVRC at 703-642-0700 or info@novaregion.org.

CONSERVATION CORRIDOR PLANNING



Northern Virginia is rich in sensitive ecological areas, important drinking water sources, unique wildlife habitat, globally-rare forest communities, and nature-based recreational opportunities.

Through the Conservation Corridor Planning Project, NVRC and its partners are identifying and prioritizing regionally significant natural areas. These "green infrastructure" assets provide significant ecological, recreational and economic benefits in our communities.

The goal of the project is to help area governments and their constituents identify local and regional opportunities to manage, restore and enhance Northern Virginia's natural resources, thereby strengthening the region's health, economy and quality of life.

For more information, please visit:
www.novaregion.org/conservation

NVRC and its partners would like to thank the project's Conservation Corridor Workgroup. This multi-disciplinary advisory group of planners, natural resource managers, ecologists and others from local governments and conservation organizations in Northern Virginia contributed their time, expertise, resources and support. The project would not have been possible without their assistance and dedication.

nvrc
Northern Virginia Regional Commission

Project Partners

NVCT Saving Nearby Nature

Green Infrastructure Center

skeo SOLUTIONS

List of Participating Organizations

Arlington County
Fairfax County
Loudoun County
Prince William County
Northern Virginia Conservation Trust
Northern Virginia Regional Park Authority
Prince William Conservation Alliance
Northern Virginia Urban Forestry Roundtable
Metropolitan Washington Council of Governments
Virginia Department of Conservation and Recreation
Virginia Department of Forestry
Maryland Department of Natural Resources
U.S. National Park Service
U.S. Bureau of Land Management
U.S. Fish and Wildlife Service

Project Funding

Virginia Coastal Zone MANAGEMENT PROGRAM

NOAA

VIRGINIA DEPARTMENT OF FORESTRY

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

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Appendix D

CASE STUDIES HIGHLIGHTING ECOLOGIC, ECONOMIC, AND REGULATORY BENEFITS OF THE FOUR MILE RUN RESTORATION & THE TYSONS CORNER GREEN NETWORK

Four Mile Run
Stream Restoration Project

Through an exciting partnership and coincidence of efforts and funds, citizens and staff from Arlington County and the City of Alexandria, the Northern Virginia Regional Commission, the US Environmental Protection Agency, the US Army Corps of Engineers, and Congressman Jim Moran's office have been working collaboratively since the early 2000's toward the restoration of the Four Mile Run Stream Valley corridor to form an "emerald spine in an urban corridor." In turn, improving the environmental integrity of the waterway will improve the surrounding landscape and quality of life for residents in both jurisdictions.

The first seeds of the Four Mile Run Restoration Project were planted when the Arlington County Board initiated a study of development options for the Arlington County portion of Potomac Yard, known as the "South Tract." In the process of sharing ideas and information about the stream's potential, the leaders were emboldened by data suggesting that physical, ecological and aesthetic improvements to the stream corridor need not compromise the level of flood protection called for as part of the flood control project implemented in the 1970s. At that point, Arlington and Alexandria residents joined together and, through the interest and support of Congressman James Moran, the U.S. Environmental Protection Agency awarded a $1 million grant to conduct a joint Arlington-Alexandria study of the corridor, resulting in the development of the Four Mile Run Restoration Master Plan.

A citizen-led Joint Task Force (JTF), with representatives appointed by the chief administrative officers of each jurisdiction, examined project alternatives, gathered public input, and provided recommendations to the project's Agency Coordination Group (ACG). The Four Mile Run Agency Coordination Group (ACG) is a multi-disciplined team representing Arlington County, the City of Alexandria, the Northern Virginia Regional Commission, the U.S. Army Corps of Engineers, and the two co-chairs of the citizen Joint Task Force. The ACG guides the planning and implementation of restoration projects along the lower Four Mile Run corridor.

Four Mile Run Restoration Master Plan

The Master Plan envisions that the Four Mile Run corridor will become a model of urban ecological restoration. Through the sensitive and sustainable integration of natural areas with active urban nodes,

Four Mile Run Restoration Master Plan

the Four Mile Run corridor will be a place along which the communities of Arlington County and the City of Alexandria can gather, recreate and celebrate a shared waterfront legacy. Four Mile Run Restoration Master Plan Guiding Principles:

- Flood Protection
- Environment
- Aesthetics and Design
- Recreation and Urban Life
- Integration and Balance
- Access and Connectivity
- Education and Interaction
- Planning Horizon

Why Restore the Run? Economic Benefits emerge

A river or a stream is often considered a treasured feature of a community or a focal point uniting neighborhoods. This is not the case with the Four Mile Run levee corridor, which profoundly demarks the separation between the City of Alexandria and Arlington County, with its arrow straight, 250-feet wide channel. The concept that the stream is something to ignore as merely a drainage ditch that carries flood waters away from the urban areas is evident as development along this corridor face away from the stream.

Arlington County and the City of Alexandria are looking to breathe new life into this neglected waterway and its surrounding community. With the enhancements of the channel, and the desire to make this run a Front Door to the communities, economic benefits will emerge as the emphasis becomes engaging the green corridor with recreational activities and urban waterfront opportunities. The March 2006 Master Plan chisels out a locally defined vision, striking a balance between meeting the needs of the urban community and environmental goals.

Historical Challenges become Regulatory Benefits

Along this stretch of Four Mile Run are neighborhoods, commercial districts and a few industrial facilities, including the Arlington County Water Pollution Control Plant. Because of the highly urbanized nature of the Four Mile Run watershed, the neighborhoods and businesses adjacent to this portion of the run were subjected to repeat flooding beginning in the 1940's.

In response to this flooding, the municipalities forged a partnership with the US Army Corps of Engineers to build a flood control channel in the lower portion of Four Mile Run. Construction of the channel took place during the 1970's and early 1980's. Since its completion, the channel has safely conveyed the high storm flows through the two jurisdictions and prevented the floods so common in earlier years. The sole objective of the channelization project is flood protection. In this regard, it has been a success; no floods have occurred in the 2.3 mile channel since construction. However, the waterway lacks aesthetic and environmental attributes. The resulting environmental degradation by this nearly uniform trapezoidal shape of the channel does not offer the riffles, pools, and shady areas needed to sustain much of the aquatic life once found in Four Mile Run. The restored run will provide the regulatory benefits to meet the requirements of the USACE, EPA and DEQ as the reintroduction of wetlands and living shorelines replaces the concrete, gabion clad banks.

Ecologic Benefits

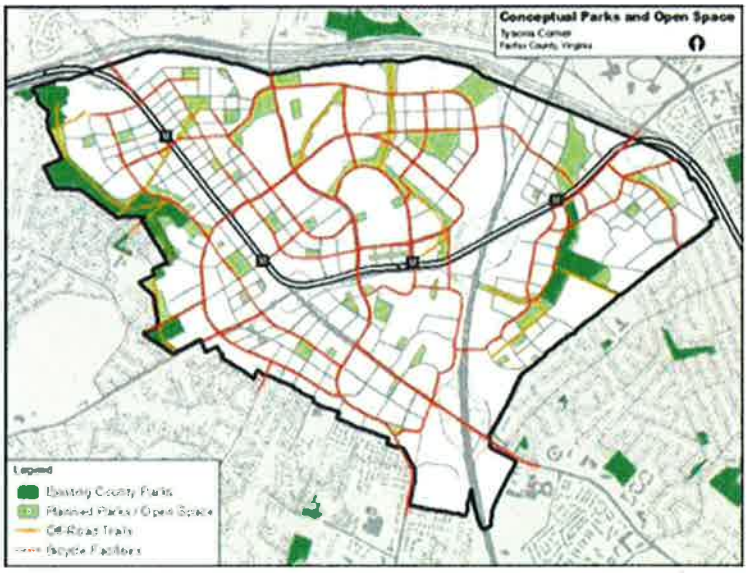
The Four Mile Run Restoration Project emphasizes the "greening" of the Four Mile Run corridor. It envisions restoring the balance between nature and people, ecology and urban places. Flood protection remains the paramount concern, but this time with nature and people in mind. The stream shoreline no longer serves as a barrier, but now invites visitors down to the water's edge. Where a straightened and channelized stream once rushed along concrete flumes and gabions, the restored stream will meander gracefully around bar of wetlands and past green and stabilized stream banks. The litter and debris that once collected along the stream is now collected through innovative litter gates and integrated mechanisms before it reaches the run. The fragments of existing wetlands will be reconnected and enhance to form a healthy and better functioning ecological system. Tributaries will be reconnected and redirected through the wetlands to cleanse the water, providing much needed improvement in water quality. The banks will be lined with native vegetation, and blocked fish passages will be removed.

In this vision of the future, now underway, the communities can find something to celebrate at Four Mile Run: the wonders of water, ecological renewal and the respite that nature provides.

For more information, visit www.novaregion.org/fourmilerun

Tysons Corner Green Network

The revitalization of Tysons Corner includes a conscious effort to create a "Green Network" by maintaining environmentally sensitive areas and enhancing park space and connections through a greenway. Fairfax County has developed new urban parkland standards to accommodate recreation and leisure interests of residents and workers in the area.



"By 2050, Tysons will be transformed into a walkable, sustainable, urban center that will be home to up to 100,000 residents and 200,000 jobs. Tysons is envisioned to become a 24-hour urban center where people live, work and play; where people are engaged with their surroundings; and, where people want to be". ~*From Transforming Tysons*

With a vision as large as Tysons, it is necessary to have a green network in place, to balance the live, work and play of the future citizens of Tysons Corner. Parks, open spaces and places for recreation are critical to Tysons. A comprehensive urban park system supports a high quality of life for residents and provides social, economic and health benefits. These spaces are even more critical in the high-density, urban neighborhoods planned for Tysons, as private yards or recreation facilities may not be available for many residents.

Enhancing the Green Network becomes Economically Beneficial

As new development occurs, a variety of urban parks, plazas, open spaces and recreational facilities will be created in Tysons. These will be connected by a "greenway," a network of trails for pedestrians and bicyclists. This new green infrastructure will enhance the economic benefits of the area, incorporating new recreational venues for the community

The major elements of the park system would include the overarching Conceptual Park Network that weaves a series of large recreational spaces, a central signature park, smaller urban pocket parks and stream valley parks and trails, together to create the green network. The concept also calls for major multipurpose facilities to accommodate the needs of the citizens well into the future

This unique network is envisioned to be connected throughout Tysons' eight districts via greenways, landscaped streets and trails. The network will integrate new large and small urban parks with existing environmentally sensitive areas and other built elements to create safe pedestrian and bicycle-friendly pathways throughout all neighborhoods. These pathways will link to transit stations, pedestrian ways, bike trails, shopping and entertainment areas, offices and residential areas.

The Green Network strives to transform Tysons into a place that is sustainable and livable, two qualities that do not exist today. Transit-oriented development, the "live work play" concept will reduce automobile driving, resulting in fewer greenhouse gas emissions. Tysons' compact development pattern is also more energy-efficient than low density, suburban style development.

The Plan calls for all new residential buildings to achieve LEED (Leadership in Energy and Environmental Design) certification, or an equivalent Green Building standard. Office and other nonresidential buildings are expected to achieve the higher standard of LEED Silver.

Tysons will strive to be in the forefront of innovative sustainable green architecture.

Meeting Ecologic and Regulatory Benefits

Through this innovative visionary plan, Tysons has a unique opportunity to become a leader in environmental stewardship through protecting and improving the existing man-made and natural environments. Improvement through enhanced stormwater management and promotion of green buildings, and a green network of parks and open spaces will all contribute to this stewardship.

The Urban Stormwater Concepts for Tysons Corner provide the developers with an overview of the stormwater goals for Tysons and urban best management practices that can be used to implement the County of Fairfax's Comprehensive Plan vision for stormwater reuse, infiltration, and runoff reduction.

Within the Urban Stormwater Concepts, methods for on-site stormwater infiltration, the reuse of rain water in buildings and onsite, and the use of green roofs to achieve reductions in stormwater runoff create a backbone for the green/gray water infrastructure needed with the vision.

"Stormwater management and water quality controls for redevelopment should be designed to return water into the ground where soils are suitable or reuse it, where allowed, to the extent practicable. Reduction of stormwater runoff volume is the single most important stormwater design objective for Tysons". *~From Tysons Corner, Virginia Urban Stormwater Concepts, County of Fairfax, Virginia, Department of Public Works and Environmental Services*

As the network of parks and open space at Tysons is developed, and the Green Network becomes a reality, with it the existing Scotts Run and Old Courthouse Spring Branch will be restored and enhanced. Combining restoration and innovative stormwater solutions, the revitalized Tysons will lead in maintaining and restoring green infrastructure in one of Northern Virginia's most urban areas.

For more information, visit www.fairfaxcounty.gov/tysons