



# Healthy Watersheds, Healthy Communities

*The Nelson County Policy Guide:  
Green Infrastructure & Local Planning*





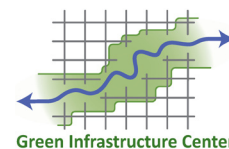


## PROJECT BACKGROUND

Between fall 2010 and summer 2011, Nelson County, Virginia, Skeo Solutions, the Green Infrastructure Center and the University of Virginia undertook a collaborative project to map and analyze Nelson County's natural resources and identify policies and strategies to help protect, maintain and restore local water quality and healthy watersheds.

The Nelson County Healthy Watershed Project included information gathering, community meetings, volunteer work by graduate students at the University of Virginia and additional research and mapping by Skeo Solutions.

## PROJECT PARTNERS



## PROJECT SPONSORS



# Introduction



## Overview

This Policy Guide outlines recommendations for including green infrastructure policies in the current update of Nelson County's Comprehensive Plan (CP). The recommendations include:

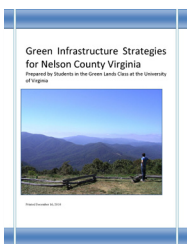
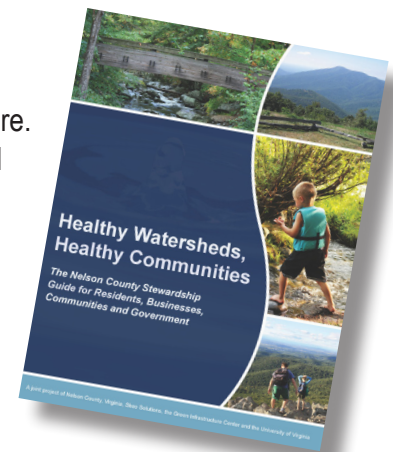
1. Description of the county's natural resources, which could be included in Chapter One – Portrait of Nelson County (2002 CP, pages 1-3).
2. Key principles, objectives and actions related to green infrastructure and watershed health for potential inclusion in Chapter Three – Goals and Principles (2002 CP, pages 5-15).
3. Green infrastructure asset maps illustrating areas of key significance for wildlife, forestland conservation, water resource protection and recreational and cultural resources.

This Policy Guide summarizes and integrates key information gathered during the project, including:

- Work done by graduate students at the University of Virginia in fall 2010.<sup>1</sup>
- Feedback from an April 2011 focus group held by Nelson County to test citizens' responses to land planning and conservation approaches.
- Community input from public meetings and interviews.

This document accompanies the Nelson County Watershed Stewardship Guide, which more broadly describes how individuals and local organizations can maintain, protect and restore Nelson County's natural resources to promote watershed health and support green infrastructure. Information in the Stewardship Guide can also be adapted for inclusion in the county's updated Comprehensive Plan, as needed.

All spatial data used in project analysis and mapping will be provided to Nelson County government. County staff will be able to update the maps in the future and incorporate the information into the county's Comprehensive Plan or other planning initiatives over time.



<sup>1</sup> In fall 2010, graduate students in the University of Virginia's Green Lands Class developed a set of green infrastructure asset maps with guidance from the Green Infrastructure Center (GIC) and Skeo Solutions. These maps, as well as recommended policies and strategies, were provided for Nelson County's consideration in the December 2010 report *Green Infrastructure Strategies for Nelson County Virginia*. The report is available online at <http://www.gicinc.org/projectsnelson.htm>.

The 99-page report also includes additional background information and references. Those who would like more information are encouraged to consult the longer report.

## Green Infrastructure Maps

Several green infrastructure maps illustrating areas of key significance for wildlife, forestland conservation, water resource protection and recreational and cultural resources are included in the Recommendations section. The maps were developed using spatial data from various sources. The Virginia Department of Conservation and Recreation's Natural Heritage Program developed the Virginia Natural Landscape Assessment (VaNLA) for identifying, prioritizing and linking natural resource areas in Virginia. Combined with local information, these areas of highest ecological integrity form the basis for mapping green infrastructure resources in Nelson County. Other primary data sources include Nelson County GIS, the Virginia Department of Environmental Quality, the Virginia Department of Forestry and the Virginia Department of Historic Resources. All spatial data used in project analysis and mapping will be provided to Nelson County government.

These maps and the data used to create them can be integrated into the county's updated Comprehensive Plan to support existing goals and recommendations outlined in this document.

## Natural Resource Significance

Chapter One (Portrait of Nelson County, 2002 CP, pages 1-3) of the current Comprehensive Plan provides an opportunity to highlight the significance of the county's natural resources and to create a strong link with related goals and principles. The companion document, the Stewardship Guide presents key facts about the county's natural resources (p. 2) and describes the related benefits provided by these natural resources (p. 8). Both sections are grouped by the same focus areas: forests, water, soils and agriculture, and heritage and recreation. Integrating text from these sections into Chapter 1 of the Comprehensive Plan update could help articulate the county's vision and goals for natural resource management. An example of text from the guide is provided to the right.

## Goals, Principles, Objectives and Actions

Chapter Three of Nelson County's 2002 Comprehensive Plan includes goals and principles across eight key areas. Green infrastructure-related principles, objectives and actions are provided in the Recommendations section for consideration during the county's Comprehensive Plan update. The recommendations are organized by their corresponding section and goal in the current Comprehensive Plan and include specific actions as well as principles and objectives to allow the county to measure how and whether related Comprehensive Plan goals have been achieved over time.

### **EXAMPLE TEXT\*** **FORESTS**

Nelson County has more large, intact areas of forest than most counties in the Virginia Piedmont. Forested land constitutes 80 percent of its land area. More than 249,000 of these acres are ranked by the Virginia Department of Conservation and Recreation as "outstanding to very high quality" for wildlife and water quality protection. Nelson County's forests contribute \$3 million annually to the local economy.

### **PROTECT HIGH-QUALITY FORESTS**

High-quality forests support diverse plant and animal species, replenish drinking water resources through enhanced water infiltration, recharge ground water, abate stormwater runoff in more developed areas and enable a healthy, long-term forest economy. Forest fragmentation – caused by roads, infrastructure and development – limits the capacity of forests to provide ecological and economic benefits and contribute to clean water and healthy watersheds. Development, particularly in the northern part of the Nelson County, can impact the county's extensive and high-quality forest cover. To ensure that local forests continue to provide these benefits, the county's highest-value forest areas – both larger intact parcels and the connections between them – need to be protected and restored.

*\*Excerpt from Stewardship Guide (pages 2 and 8)*



# Recommendations



## Green Infrastructure (wildlife habitat and biodiversity)

These new principles and related actions could support the existing goal under the Natural, and Scenic, and Historic Resources section (2002 CP, page 10):

*“Recognize that the natural environment is an important facet of our quality of life and efforts should be made to support and enhance that environment.”*

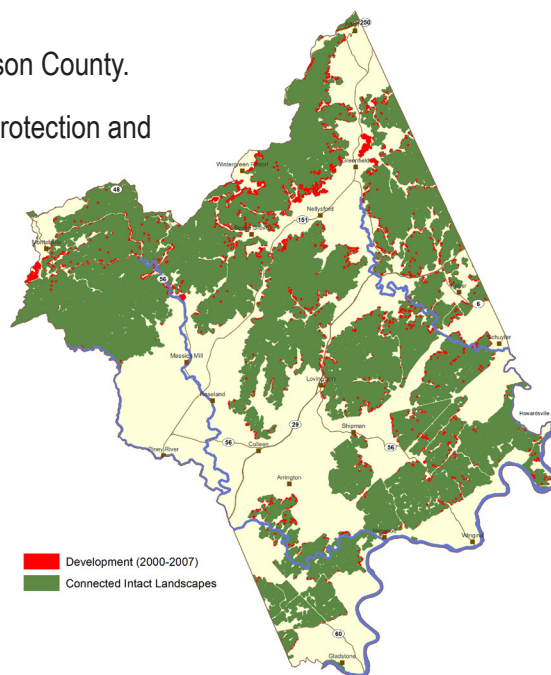
### Principle – Conserve and enhance wildlife habitats and biodiversity in Nelson County.

Objective: Prioritize cores within the Green Infrastructure Network for protection and restoration.<sup>2</sup>

Action 1) Target cores within the Green Infrastructure Network for the voluntary dedication of easements.

Action 2) Adopt a clustering ordinance that requires development within or near the Green Infrastructure Network to be oriented away from the identified cores.<sup>3</sup>

Action 3) Work with the Virginia Department of Forestry to target tracts within the Green Infrastructure Network for forest stewardship plans.



### Principle – Protect and restore corridor opportunities within the Green Infrastructure Network to a target of 300-meter widths.

Objective: Facilitate movement of wildlife and protect biodiversity.

Action 1) Work to ensure that large corridors of forested land are maintained across the county to facilitate wildlife movement.<sup>4</sup>

*Forest fragmentation – caused by roads, infrastructure and development – limits the capacity of forests to provide ecological and economic benefits and contribute to clean water and healthy watersheds.*

<sup>2</sup> Nelson County's Green Infrastructure Map on page 4 (and on page 7 of the Stewardship Guide) depicts the green infrastructure network, existing conservation lands (including existing easements) and key corridors.

<sup>3</sup> See page 10 for more information on clustering ordinance.

<sup>4</sup> Nelson County's Green Infrastructure Map on page 4 highlights key corridors in Nelson County.



# Recommendations

## Nelson County's Key Connected Forests

### Green Infrastructure Network

- Key Landscape Connections or Corridors
- Large, Connected Intact Forests
- Forest Canopy
- Open Lands (such as fields and yards)
- Conservation Lands (such as easements, state forests)
- Streams
- Roads

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

0 1.25 2.5 5 Miles





# Recommendations



## Watershed Health

The first principle under the Natural, and Scenic, and Historic Resources section of the 2002 Comp Plan recognizes the importance of protecting Nelson County's water resources. Consider promoting this concept as a new goal under this section (as indicated below) or adapting the information below to support the existing principle.

*Goal – Improve and preserve water quality in Nelson County.*

**Principle** – Restore (or conserve) the riparian buffer in urban areas including Wintergreen, Nellysford, Lovingston, and Schuyler with native trees at a width of 35 feet along the Rockfish and Tye Rivers and Piney and Rucker Run.

**Principle** – Adopt Low Impact Development (LID) standards for all new development and redevelopment.

Action 1) Establish separate best management practices (BMPs) most appropriate for Nelson County's urban and rural areas.

Action 2) Develop a list of desired LID proffers to be made available to developers.

**Principle** – Concentrate replanting and stream bank restoration projects along impaired waterways that lack adjacent forest cover.

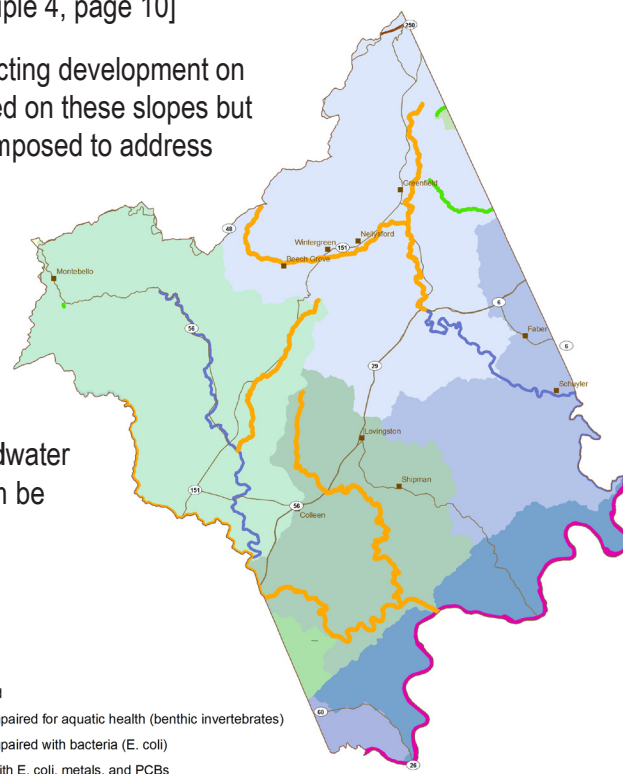
Action 1) Organize volunteer projects and donation opportunities.

**Principle** – Protect steep slopes from development. [See 2002 CP Principle 4, page 10]

Action 1) Adopt a hillside-grading (steep slope) ordinance restricting development on slopes greater than 20 percent. Development can still be allowed on these slopes but additional conditions and best management practices may be imposed to address the increased erosion potential.

**Principle** – Protect headwater streams from development.

Action 1) Develop and adopt a Riparian Overlay District which would apply to sensitive headwater areas in the county. A Riparian Overlay District would restrict development in areas immediately adjacent to headwater streams (e.g. 100-foot horizontal setback). Additionally, these regions can be designated as C.1 Conservation Zoning Districts.





# Recommendations

## Working Lands (agricultural and forestal lands)

These new principles and related actions could supplement the existing goal under the Economic Development section (2002 CP, pages 5-6):

*“Goal – Recognize the importance of the county’s agricultural economy as an integral part of Nelson’s economic heritage and as an important part of the current economy.”*

**Principle** – Enhance the county’s agricultural economy by continuing to support local food initiatives. [Modification of first principle, 2002 CP, page 6]

Objective: Encourage county departments, restaurants, grocery stores, and the Wintergreen Resort to source food locally whenever possible.

Action 1) Write a local food purchase policy giving preference to locally produced food when a county department serves food in the usual course of business.<sup>5</sup>

Action 2) Encourage restaurants, grocery stores, and the Wintergreen Resort to collaborate with the local food hub and other local vendors through volunteers with the Local Food Systems group.<sup>6</sup>

Action 3) Develop a local food label specifying that the product came from Nelson County to encourage the “buy local” approach through the Virginia Department of Tourism and Economic Development. An intern could create the label and a plan for distribution and use of the label working with local vendors to include the label on their signage and food labels.

**Principle** – Encourage businesses and industries that support and strengthen the county’s agricultural economy [existing principle, 2002 CP, page 6]

Objective: Remove barriers in Nelson County’s zoning ordinance and other county policies for agriculture-related enterprises to allow farmers to enhance farm-based income.

Action 1) Allow and encourage agricultural uses such as dairy processing, canneries, and farm worker housing within agricultural zoning. (This could either be allowed by-right or through special use, but fees and requirements should not be too burdensome.)

Action 2) Make the distinction between on-site farm sales and retail stores in the county’s zoning ordinance. Allow on-site farm sales through by-right zoning. Farm sales should have limited sale items, operating hours and smaller building size.<sup>7</sup>

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<sup>5</sup> Example of local food purchase policy from Woodbury County, IL: *Woodbury County shall purchase, by or through its food service contractor, locally produced organic food when a department of Woodbury County serves food in the usual course of business. The Woodbury County Jail, Work Release Center, and Juvenile Detention facilities are presently serving food in their usual course of business. The contractor may cover for unavailable local organic supply through its current procurement practices with preference to be given local non-organic food products. An arbitration board shall be established to assure fair value to Woodbury County. A single-point-of-contact broker, located in Woodbury County, shall interact with food service contractor, for availability, price, quality, presentation and delivery terms of all locally produced organic food. The current food service contract shall be modified to carry out the intent of this policy. Purchases under this policy shall begin June 1, 2006.*

For full ordinance language see: <http://www.agobservatory.org/library.cfm?refID=96615>

<sup>6</sup> Local Food Hub is a nonprofit working to connect families, farms and food grown close to home. For more information: <http://localfoodhub.org/>

<sup>7</sup> Draft ordinance definitions for by-right farm uses:

*Farm stores* – A single store, the total floor area of which is two thousand five hundred (2,500) square feet or less and which offers for sale only the following articles: agricultural items produced on site or from other county farms. Operating hours should be limited to between 8:00AM and 8:00PM.

*Wayside stand* – A single stand which is five hundred (500) square feet or less which offers for sale seasonal agricultural items produced on site or from other county farms. Operating hours should be limited to between 8:00AM and 8:00PM.



# Recommendations



## Working Lands (agricultural and forestal lands) - continued

**Principle** – In order to maintain the rural character and the viability of an agricultural economy, protect productive agricultural and forestal land.

Objective: Continue to provide incentives to working farms (defined as farms with more than \$1,000 in yearly revenues).

Action 1) Continue land use taxation as an incentive for continued agricultural productivity, increasing the size of parcels eligible from five to 10 acres, and limiting the tax benefit to those working farms which produce at least \$2,500 in annual revenues (Hoppe: 2010).

**Principle** – Rezone high-quality farmland to protect remaining undeveloped lands with prime soils along the James River and south of Arrington.

Action 1) Revise the agricultural zoning category. Place lands with plentiful prime soils and large parcel sizes, in a new agricultural zoning category with a 20-acre minimum lot size. The remainder of the land currently zoned as A1 should become a new “Rural” zoning category, which can maintain the existing zoning characteristics of the current A1 category.

Action 2) Implement a proffer policy that requests applicants who apply for a waiver or special use permit to convert agricultural land to development that for each acre converted from agricultural use (for development), an equivalent acre of agricultural land is protected (contributing a cash donation to the county’s purchase of development rights program or paying an in lieu fee) – dedicating the funding to the PDR program.



**Principle** – Direct development into designated development areas by downzoning agricultural areas.

Action 1) Reevaluate agricultural zoning requirements to discourage sprawl pattern development. Consider a larger minimum lot size (20+ acres) or an open space requirement to encourage open space preservation and clustering of development (85 percent open space minimum).<sup>8</sup>

<sup>8</sup> See page 8 for examples of a clustering ordinance.

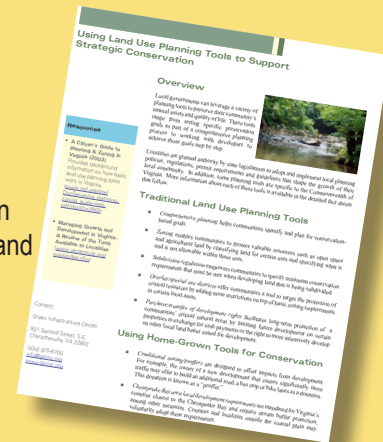
# Recommendations

## Planning Tools

### *Using Land Use Planning Tools to Support Strategic Conservation*

This fact sheet developed by the Green Infrastructure Center provides an overview of planning tools in Virginia that can be used to support strategic conservation, including comprehensive planning, zoning, subdivision regulations, and overlay districts. The section on subdivision regulations shows how clustering can be used to help protect forest cores and corridors.

Green Infrastructure Center: <http://www.gicinc.org/resourcesonlinelit.htm>.



## Cluster Ordinance Examples

### *Excerpt from Accomack County, Virginia Code of Ordinances, Chapter 106 – Zoning*

#### Agricultural District

##### Sec. 106-55. Area and density regulations.

- (a) The minimum lot area in the district shall be five acres, unless the cluster option is used, as set forth in subsection 106-55(b). Tidal wetlands and non-tidal wetlands shall not be counted toward the calculation of minimum lot area for the purpose of meeting the minimum lot area and density requirements set forth herein.
- (b) Cluster option: Lots may be clustered at an overall base site density of one lot per five acres.
  - (1) The minimum lot area for a cluster lot shall be 30,000 square feet and the maximum lot area for a cluster lot shall be three acres. Cluster lots larger than 30,000 square feet in area may include additional area, up to a total lot area of three acres, that includes tidal wetlands, non-tidal wetlands, resource protection area, velocity flood zones, and slopes 25 percent or greater.
  - (2) If lots are clustered, two additional bonus lots shall be allowed for the parent tract, provided that the remainder lot shall be greater than one acre.
  - (3) Bonus lots are allowed for parent tracts of less than five acres if the minimum lot sizes are met in accordance with the clustering provisions in subsections 106-55 (b)(1) and (2).
  - (4) The remainder lot shall not be further divided.
  - (5) One cluster lot, with a minimum area of 30,000 square feet and a maximum area of three acres, may be divided from a parent parcel without submitting a subdivision application. The lot created shall be counted toward any future subdivision of the parent parcel. A deed notice shall be recorded to indicate that a cluster lot has been divided from the parent parcel.

#### Rural Residential District

##### Sec. 106-505. Area and density regulations.

- (d) Cluster option: Lots may be clustered at a maximum density of one lot per two acres. A 50-foot vegetative buffer, consisting of existing woods, hedgerows, or fields, shall be provided abutting all existing public roads. Any existing indigenous woody vegetation within this buffer must be preserved.
  - (1) Cluster lots. A maximum of forty percent (40%) of the total initial tract area may be established as cluster lots, as defined herein, including all internal roads, streets and alleys. The minimum lot area for each cluster lot is 20,000 square feet. The maximum lot area for each cluster lot is two (2) acres.
  - (2) Conservation Lots. A minimum of sixty percent (60%) of the initial tract area must be established as one or more conservation lots, as defined herein. The minimum lot area for a conservation lot is ten (10) acres. At least eighty (80) percent of the existing public road frontage of the initial tract must be fronted by one or more conservation lots. The maximum length/width ratio of a conservation lot is 5:1, as measured by the average length and average width of the lot. The 5:1 length/width ratio shall not apply to the part of a conservation lot that is required as a vegetative buffer along an existing public road, is tidal wetlands or non-tidal wetlands, or is resource protection area.
- (e) Cluster lots adjacent to Resource Protection Area (RPA) shall have a minimum of 30,000 square feet outside of the RPA.
- (f) Notwithstanding the foregoing provisions, the minimum lot area for any lot created pursuant to a family subdivision under section 78-12 of the Subdivision Ordinance shall be 30,000 square feet.



# Recommendations



## Nature-based Recreation

The following principles could be considered for inclusion as part of recreation goal on page 12 of the 2002 Comp Plan:

*“Goal – Promote a diversity of recreational opportunities for Nelson’s citizens and those who visit the county as tourists.”*

**Principle** – Conserve and promote Nelson County’s natural resources for nature-based recreation.

Objective: Establish Entrance Corridor overlay zone and standards along scenic byways.<sup>10</sup>

Objective: Establish trail design standards to ensure trail quality, prevent erosion and service for multiple user groups. If necessary, establish a hierarchy of trail types to provide for divergent user needs.

Action 1) Seek internal leadership for volunteer trail maintenance through trail building workshops.

**Principle** – Develop recreation resources to improve recreation opportunities for existing population centers, such as Nellysford, and the Lovington, Shipman and Colleen planned development areas.

Objective: Actively pursue the local greenway plan and connect to regional greenways where feasible connections exist.<sup>11</sup>

Objective: Establish pocket parks in existing population centers and planned development areas and connect them to the larger green infrastructure network.<sup>12</sup> [Modified from existing CP Principle, page 12, 2002]

Action 1) Situate parks in centrally located neighborhoods to increase visibility, safety, and use by residents.

Action 2) Connect parks to local greenways, trails, stream corridors, and/or bike paths. These contiguous connections increase visibility and park usage.

Objective: Implement bike lanes in higher density population areas that also incorporate cultural and recreation resources.

Action 1) Compile a benefit-cost analysis of various bike facilities to establish critical dimensions and markings.<sup>13</sup>

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<sup>10</sup> Entrance Corridor standards enabled under state code provide authority to control signage, building design, and massing that is not afforded under the state scenic byway legislation. The Nelson County Comprehensive Plan identifies five scenic vistas: Afton Overlook at the Blue Ridge Parkway, Route 6 at the county boundary, Route 635 at the confluence of Tyler and Perry Creeks, Hubbard Hill on route 56, and Mountain Top Church on Blue Ridge Parkway (CP: 38). At a public meeting held by UVa students, the community identified several additional viewsheds as valuable for preserving the character of Nelson County including: scenic Arrington, Roseland area, and Cliffs of Lovington, which provide the backdrop for the town.

Designating entrance corridor zoning along roads that are already scenic byways can also protect viewsheds by promoting a less intrusive built environment and preserving the natural landscape. The following features can be potentially regulated: building height and mass, building materials, parking, signs/ billboards and telecommunication towers, outdoor lighting, landscaping and grading, as well as trees and woodland conservation. For more information: <http://www.transportation-landuse.org/pages/tools/scenic.htm>

<sup>11</sup> See map on page 10 for existing and potential trails.

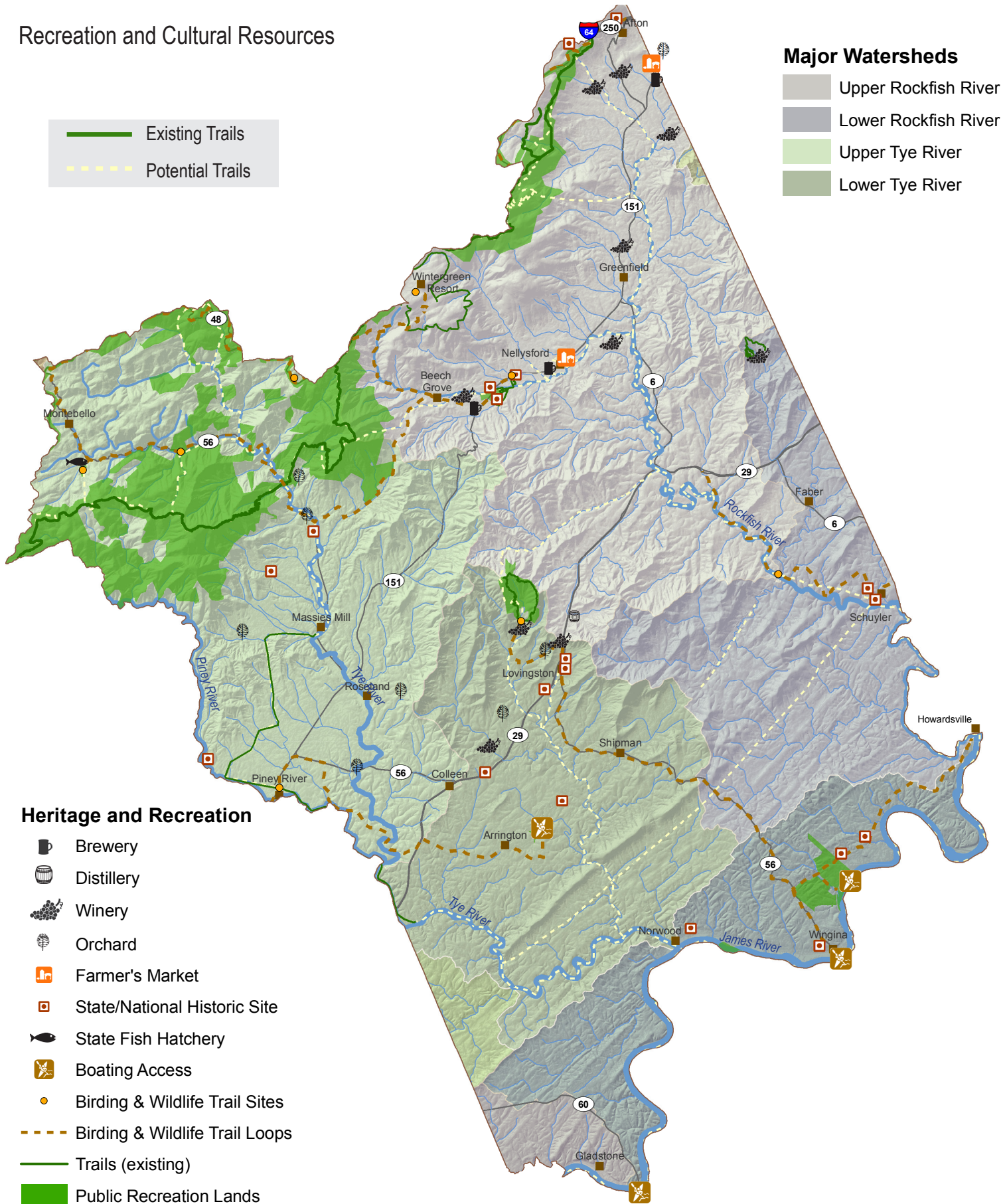
<sup>12</sup> Pocket Parks by Allison Blake: While pocket parks are usually in urban areas, small-scale parks are feasible in any location that has a minimum population density. These parks tend to be scattered because of poor planning, but should ideally be connected and placed along greenways or bike paths. Patterns noted by People Places are that “few minipark users will walk more than four blocks, and most will come from one-to-two block radius.” For more information: [http://depts.washington.edu/open2100/pdf/2\\_OpenSpaceTypes/Open\\_Space\\_Types/pocket\\_parks.pdf](http://depts.washington.edu/open2100/pdf/2_OpenSpaceTypes/Open_Space_Types/pocket_parks.pdf)

<sup>13</sup> Design Guidance Accommodating Bicycle and Pedestrian Travel: A Recommended Approach: This policy statement was adopted by the United States Department of Transportation in hopes that the user groups adopt the statement as a way of committing themselves to integrating bicycling and walking into the transportation system. The call for more walkable, livable, and accessible communities, has seen bicycling and walking emerge as “indicator species” for the health and well-being of the community. Policy statement included advice specifically for rural communities, in which is states, “paved shoulders should be included in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day.” Paved shoulders have safety and operational advantages for all road users in addition to providing a place for bicyclists and pedestrians to operate. Funding can come from government funding sources, such as SAFE-TEA-LU funding bill, transportation enhancements. Additionally, local organizations, land trusts, businesses and creative fundraising can help in this endeavor. For more information: <http://www.fhwa.dot.gov/environment/bikeped/design.htm>



# Recommendations

## Recreation and Cultural Resources





# Recommendations



## **Tourism** (related to Economic Development)

Recreation and heritage resources are linked to economic development through tourism. The following principles could be considered for inclusion as part of the tourism-related goal under the Economic Development key area (2002 CP, page 6):

*“Goal – Support and encourage tourism as a viable means to diversify the local economy.”*

**Principle** – Inform the public about the county’s cultural assets through the creation and placement of way finding signage.

Action 1) Designate way finding signage to identify cultural assets: wineries, breweries, historic sites, farmer’s markets, orchards, and distilleries.

**Principle** – Publicize Nelson County-sanctioned heritage trails that connect cultural assets to each other.

Action 1) Create a series of printed maps identifying scenic routes to related cultural sites (i.e., winery trails, orchard trails, heritage trails). The maps should include the new Artisan Trail. Distribute maps at Nelson County’s Visitor Center and make them available online on the Nelson County website.<sup>14</sup>

Action 2) Nelson County Department of Tourism & Economic Development currently has the Growler passport and t-shirt in support of the Brew Ridge Trail. Consider expanding the incentive program, or create a parallel program, for frequent visitors to Nelson County tourist attractions (i.e., a frequent visitor “passport” that includes wineries, orchards, historic sites, and other attractions and provides rewards for completing all stops).

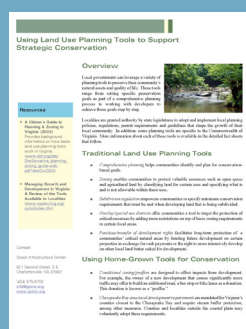
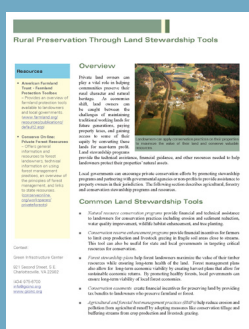
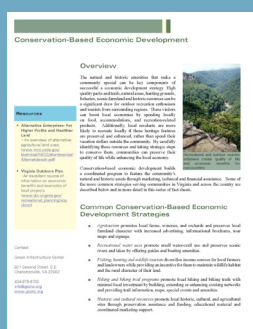
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<sup>15</sup> The map on page 10 illustrates key natural and heritage resources in the county and provides a foundation for additional printed maps and reference materials to support tourism.

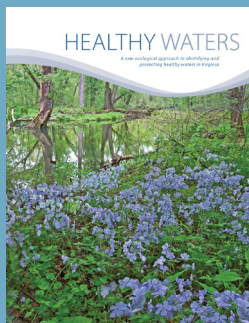
# The Nelson County Policy Guide

## Recommendations from the Nelson County Healthy Watershed Demonstration Project

For more information on the project, the concepts presented in this guide or to access larger maps, please visit the Nelson County project page at [www.gicinc.org/projectsnelson.htm](http://www.gicinc.org/projectsnelson.htm). The maps and data used to create these maps have also been provided to Nelson County. For more information, please contact Fred Boger, the Director of Nelson County's Department of Planning and Zoning, at [fboger@nelsoncounty.org](mailto:fboger@nelsoncounty.org) or (434) 263-7091.



Fact Sheets:  
[www.gicinc.org/resources.htm](http://www.gicinc.org/resources.htm)



EPA Healthy Watershed Initiative:  
<http://water.epa.gov/polwaste/nps/watershed/index.cfm>

VA DCR Healthy Waters:  
[www.dcr.virginia.gov](http://www.dcr.virginia.gov)

## Project Partners



## Project Sponsors

