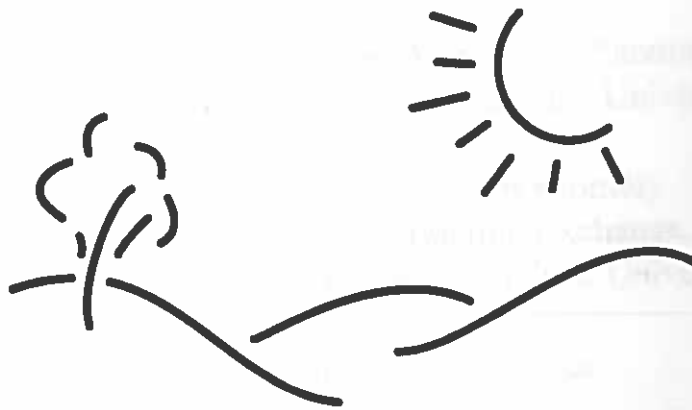


ROANOKE VALLEY OPEN SPACE STUDY



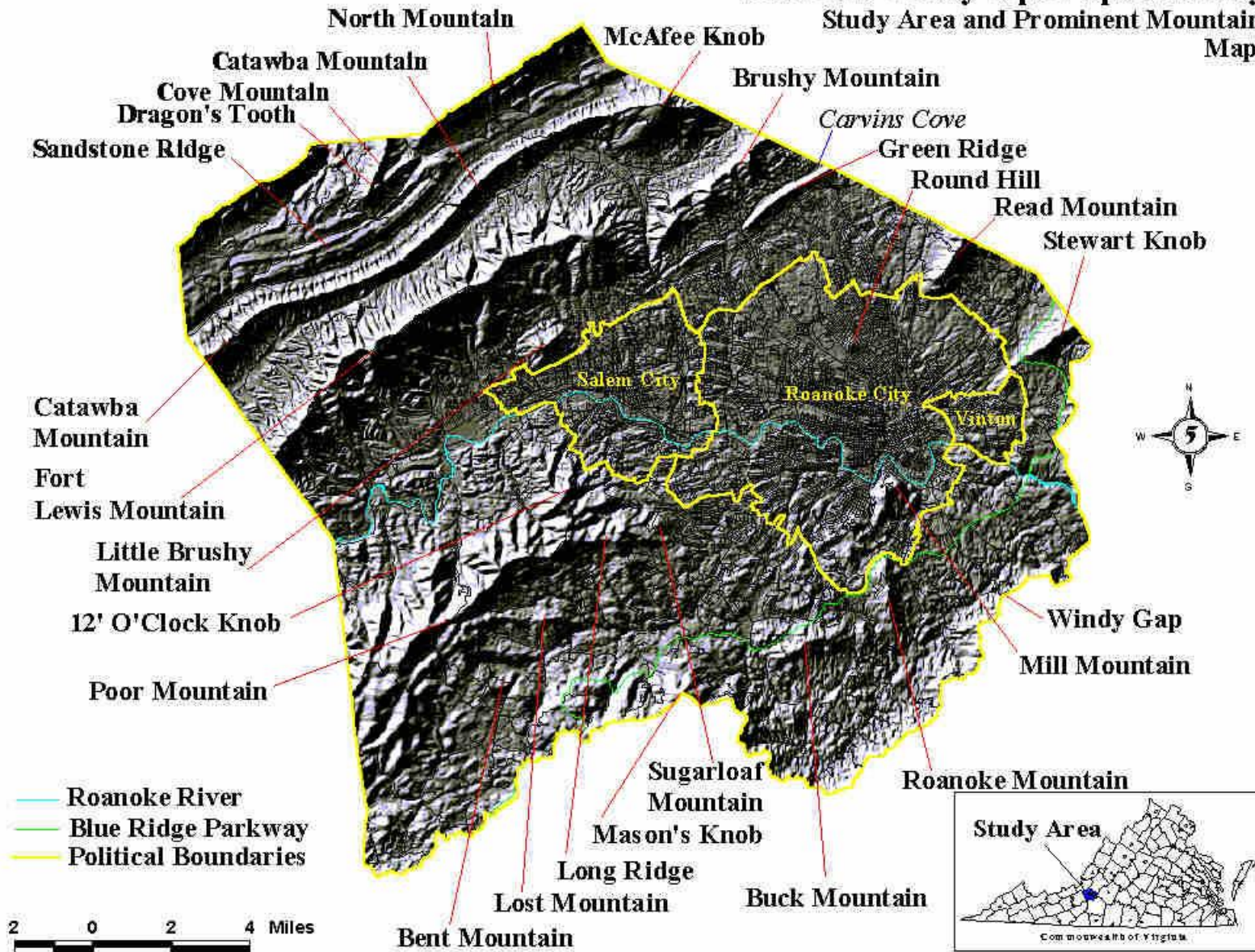
June, 1999

Prepared by the Fifth Planning District Commission,
with assistance from the planning staffs of
Roanoke City, Roanoke County,
Salem City, & the Town of Vinton, Virginia

Roanoke Valley Open Space Study

Study Area and Prominent Mountains

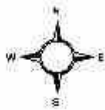
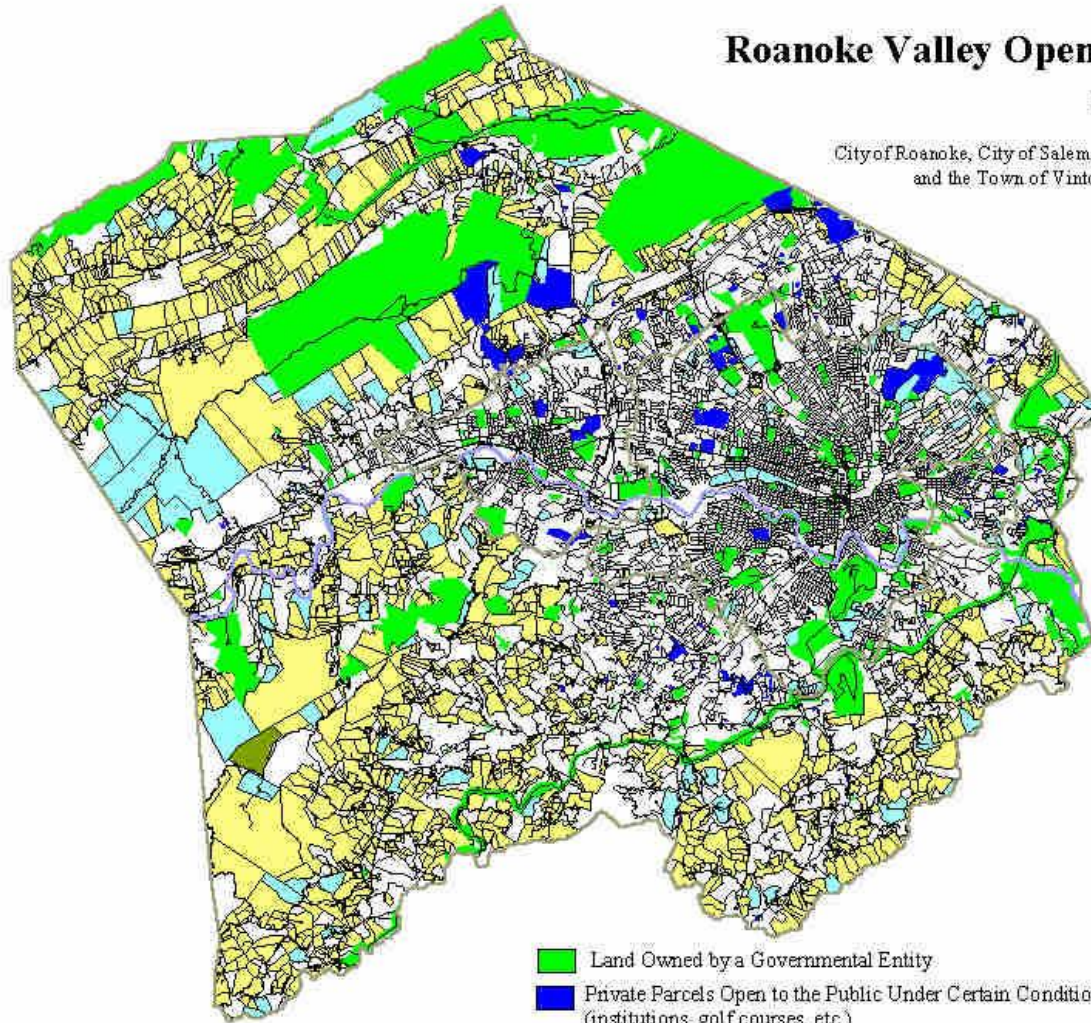
Map 1









Roanoke Valley Open Space Study

Land Inventory

City of Roanoke, City of Salem, County of Roanoke
and the Town of Vinton, Virginia



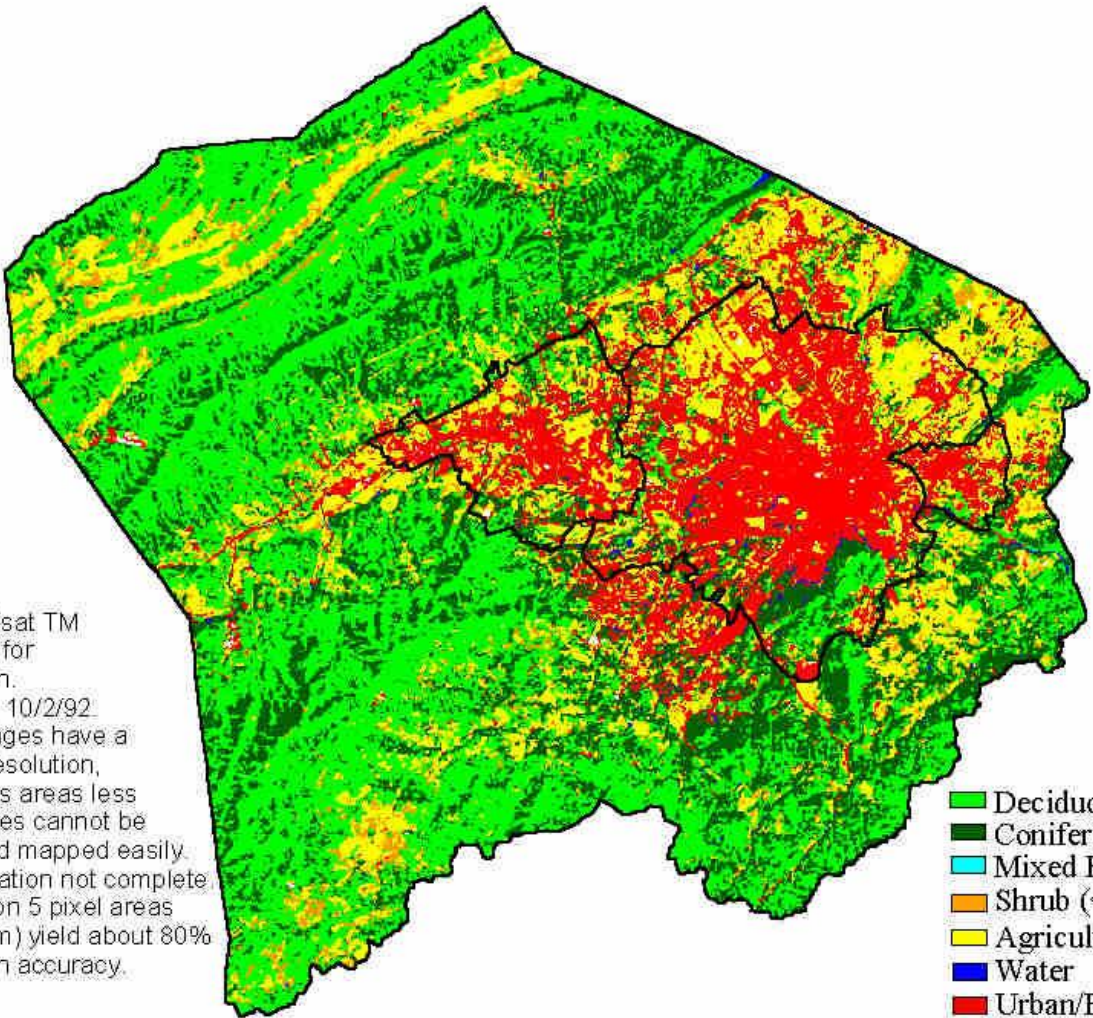
2 0 2 4 Miles

-  Land Owned by a Governmental Entity
-  Private Parcels Open to the Public Under Certain Conditions (institutions, golf courses, etc.)
-  Private Parcels with Conservation Easements
-  Private Parcels in Agricultural/Forestry Districts for Use Value Taxation Purposes
-  Other Private Undeveloped or Residential Parcels (in cities and town ≥ 10 acres, in the county ≥ 50 acres)
-  All Other Private Parcels Not Included

Sources: 1992 TIGER line files, Participating local governments.
Prepared by the Fifth Planning District Commission, 1999.

Map 2

Roanoke Valley Open Space Study Land Cover Map 3



Notes: Landsat TM image used for classification.
Image date: 10/2/92.
Landsat images have a 30m x 30m resolution, which means areas less than .22 acres cannot be resolved and mapped easily.
Field Verification not complete.
Initial tests on 5 pixel areas (150m x 150m) yield about 80% classification accuracy.

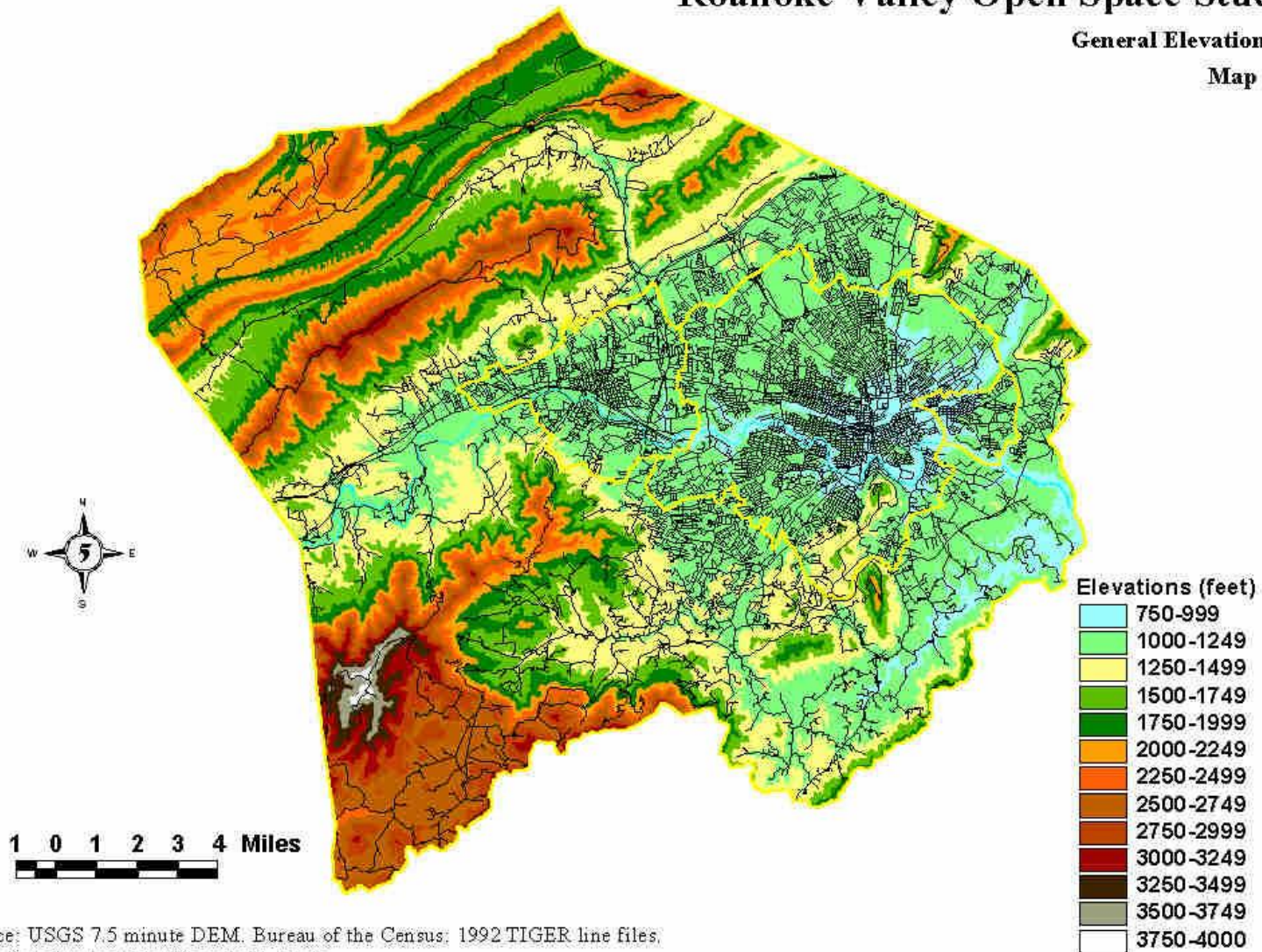
Source: National Gap Analysis, Fish and Wildlife Information Exchange, Virginia Tech, 1998
Morton, David Dean, Land Cover of Virginia from Landsat Thematic Mapper Imagery, 1998
Printed by: Fifth Planning District Commission, 1998

- Deciduous Forest (>70%)
- Coniferous Forest (>70%)
- Mixed Forest
- Shrub (<3m tall)
- Agriculture/Fields
- Water
- Urban/Exposed Soil and Rock
- Wetland
- Unclassified

Roanoke Valley Open Space Study

General Elevations

Map 4

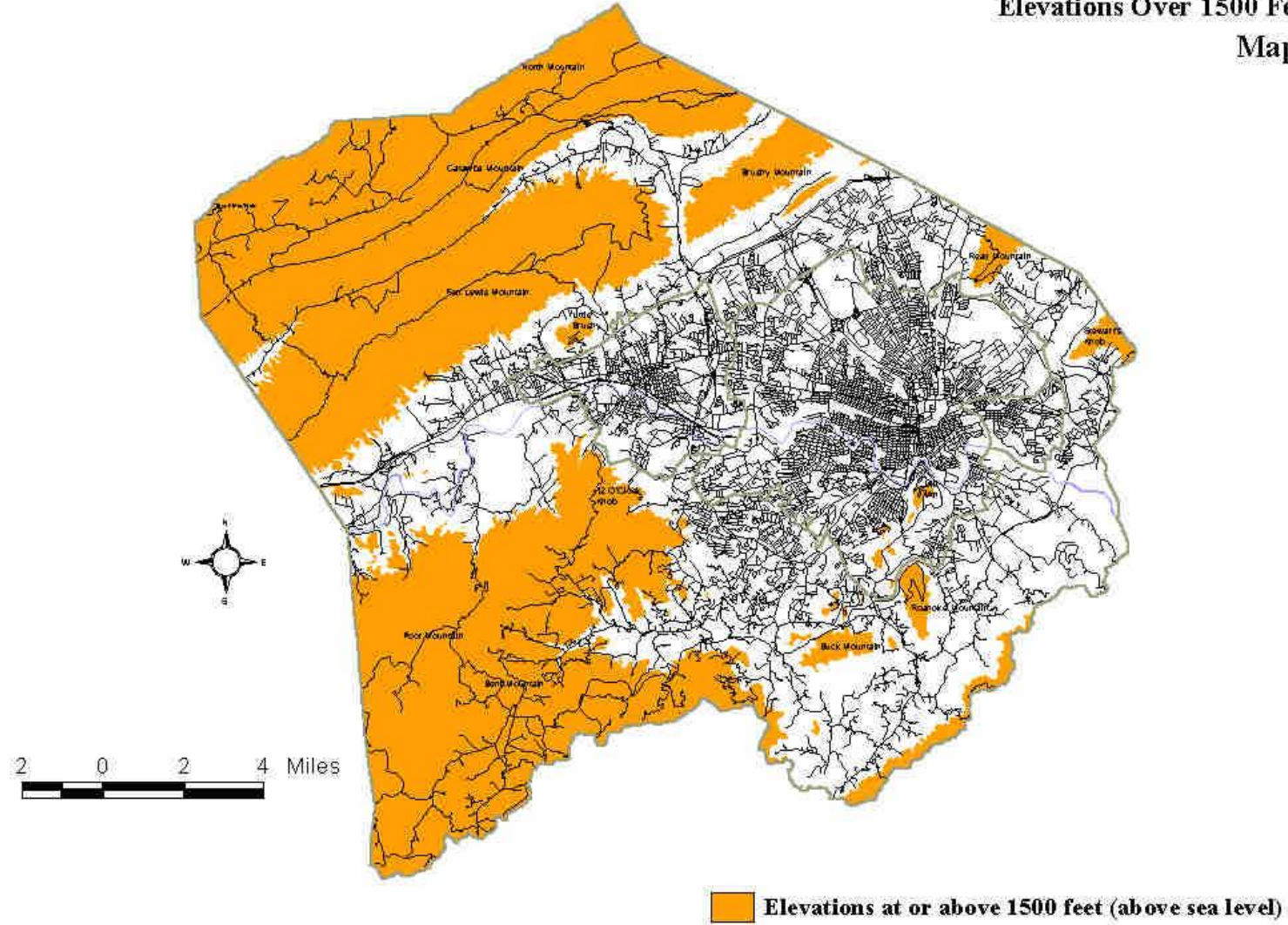


Source: USGS 7.5 minute DEM, Bureau of the Census, 1992 TIGER line files.

Note: Banding is evident in several quads.

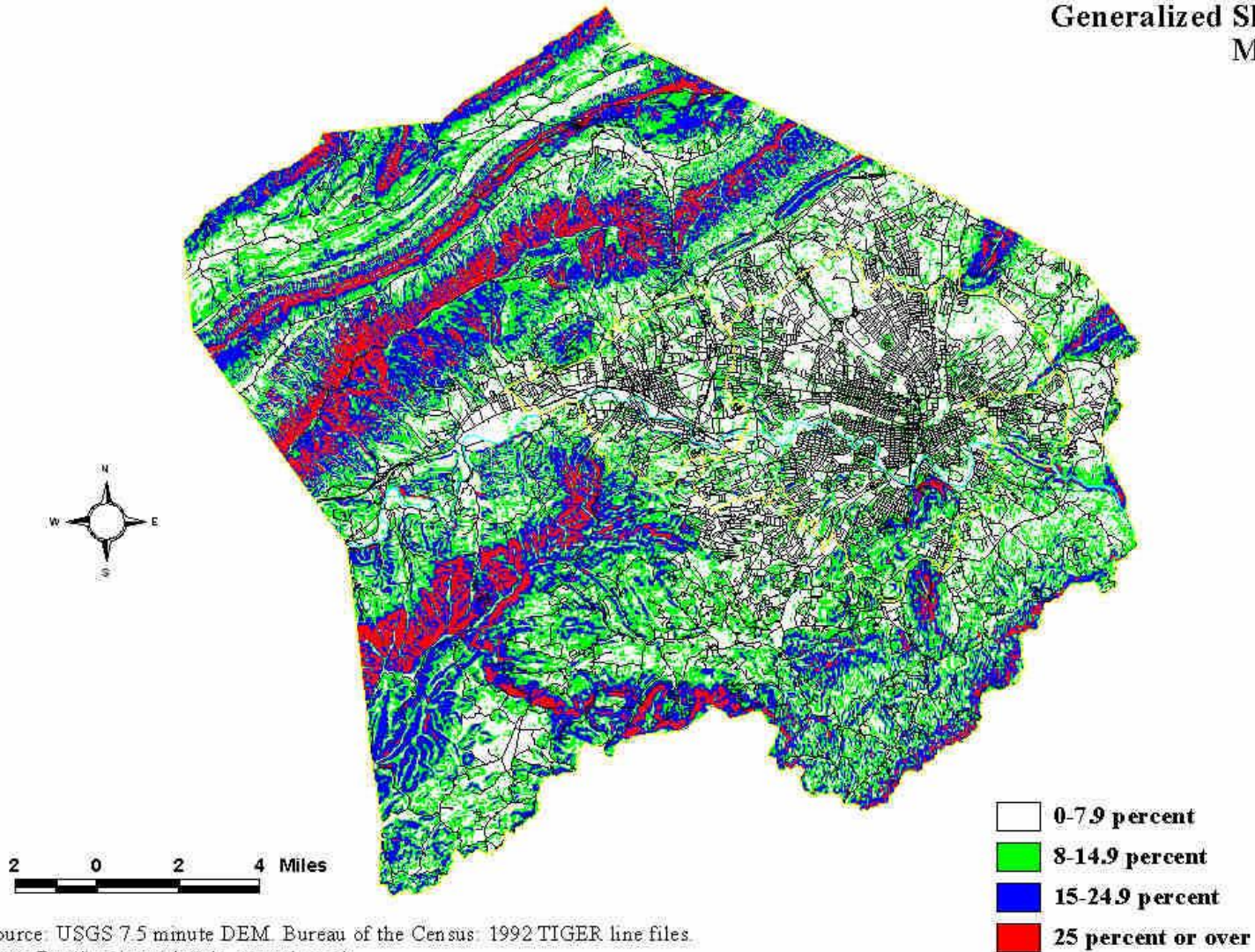
Prepared by the Fifth Planning District Commission, 1999.

Roanoke Valley Open Space Study
Elevations Over 1500 Feet
Map 5



Prepared by the Fifth Planning District Commission, 1999.
Sources: USGS 1:250,000 DEM, 1992 TIGER line files.

Roanoke Valley Open Space Study Generalized Slopes Map 6

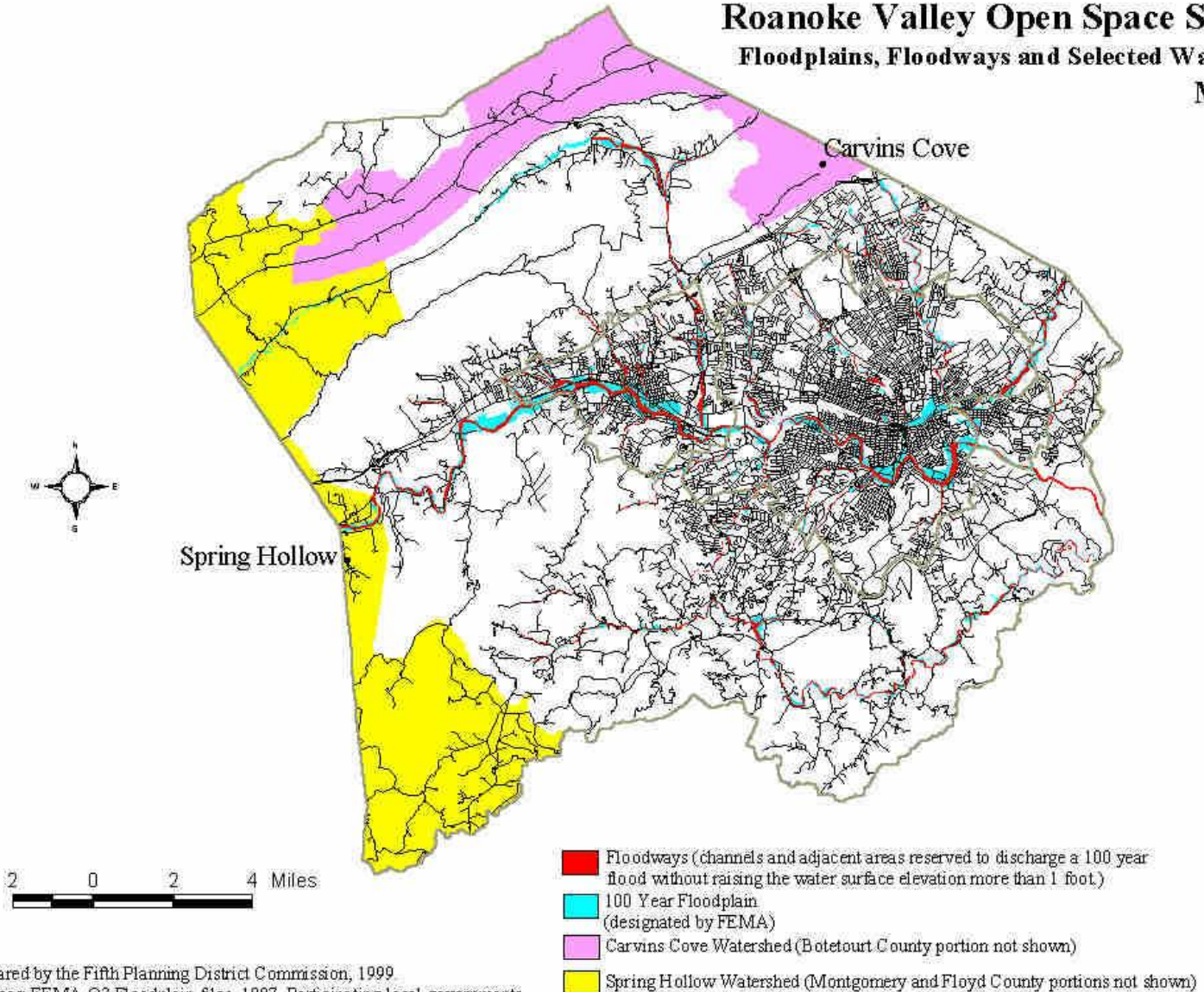


Source: USGS 7.5 minute DEM, Bureau of the Census, 1992 TIGER line files.
Note: Banding is evident in several quads.
Prepared by the Fifth Planning District Commission, 1999.

Roanoke Valley Open Space Study

Floodplains, Floodways and Selected Watershed

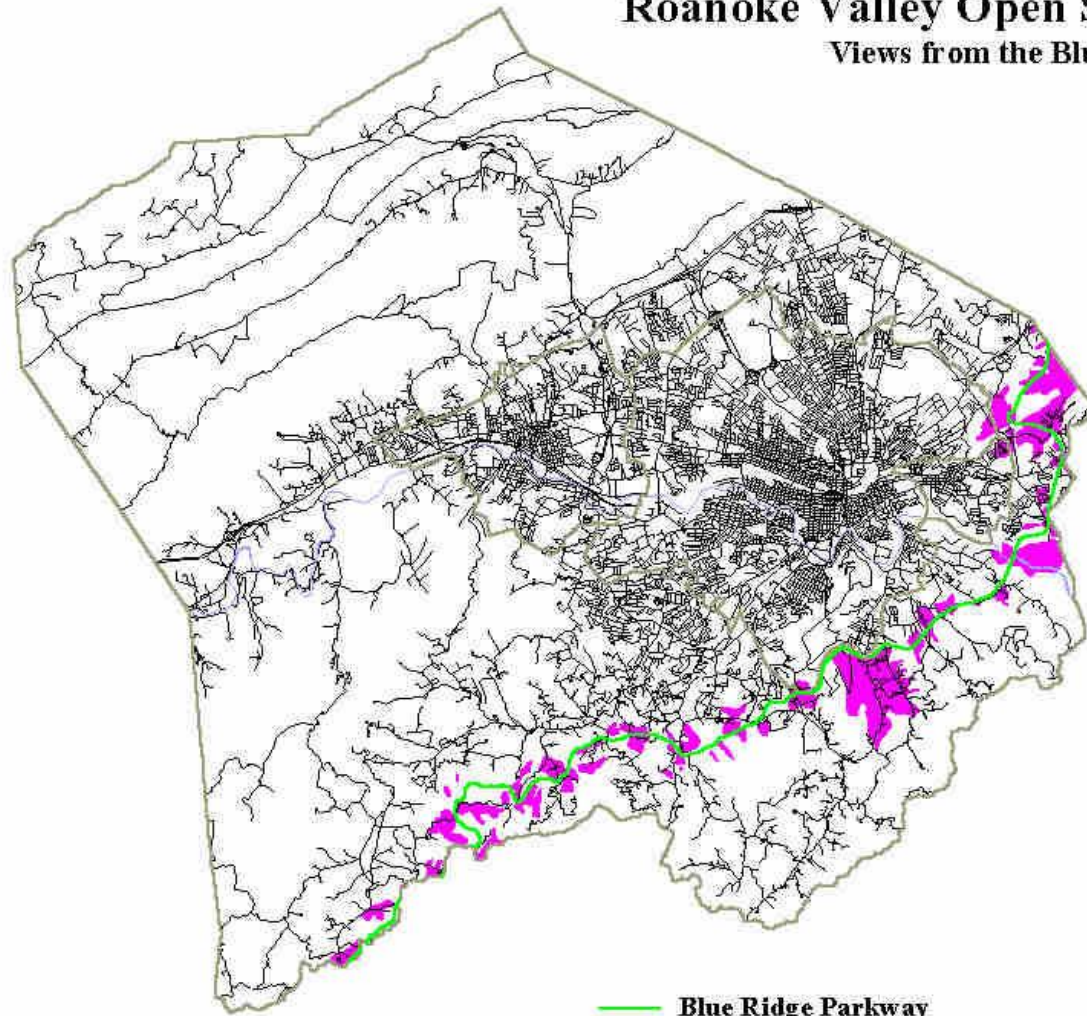
Map 7



Roanoke Valley Open Space Study

Views from the Blue Ridge Parkway

Map 8



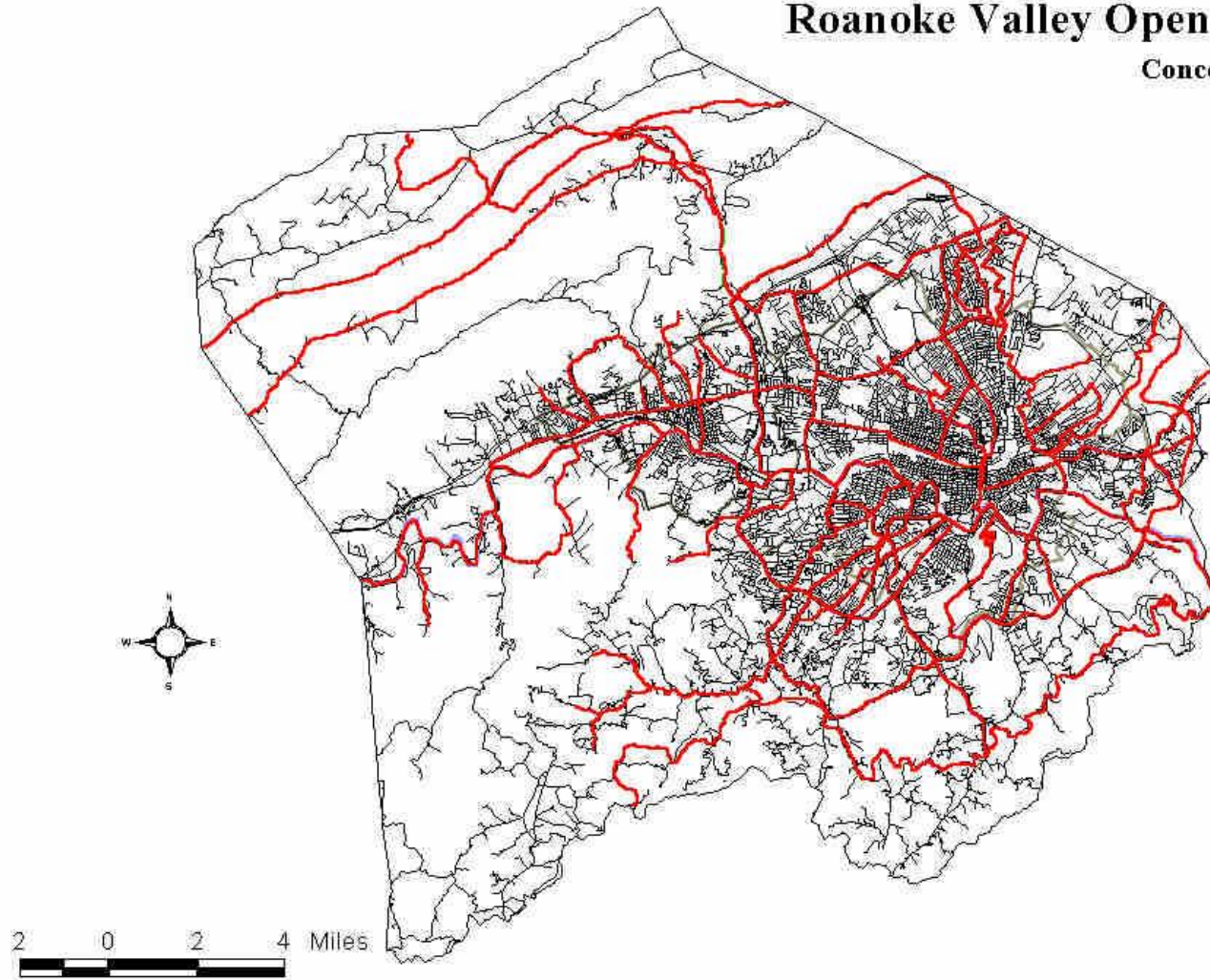
2 0 2 4 Miles

- Blue Ridge Parkway
- Views from the Blue Ridge Parkway
(Foreground Views (<1/2 mile) from the Parkway)

Prepared by the Fifth Planning District Commission, 1999.
Sources: 1992 TIGER line files. Roanoke County 1998.

Roanoke Valley Open Space Study

Conceptual Greenways Map 9



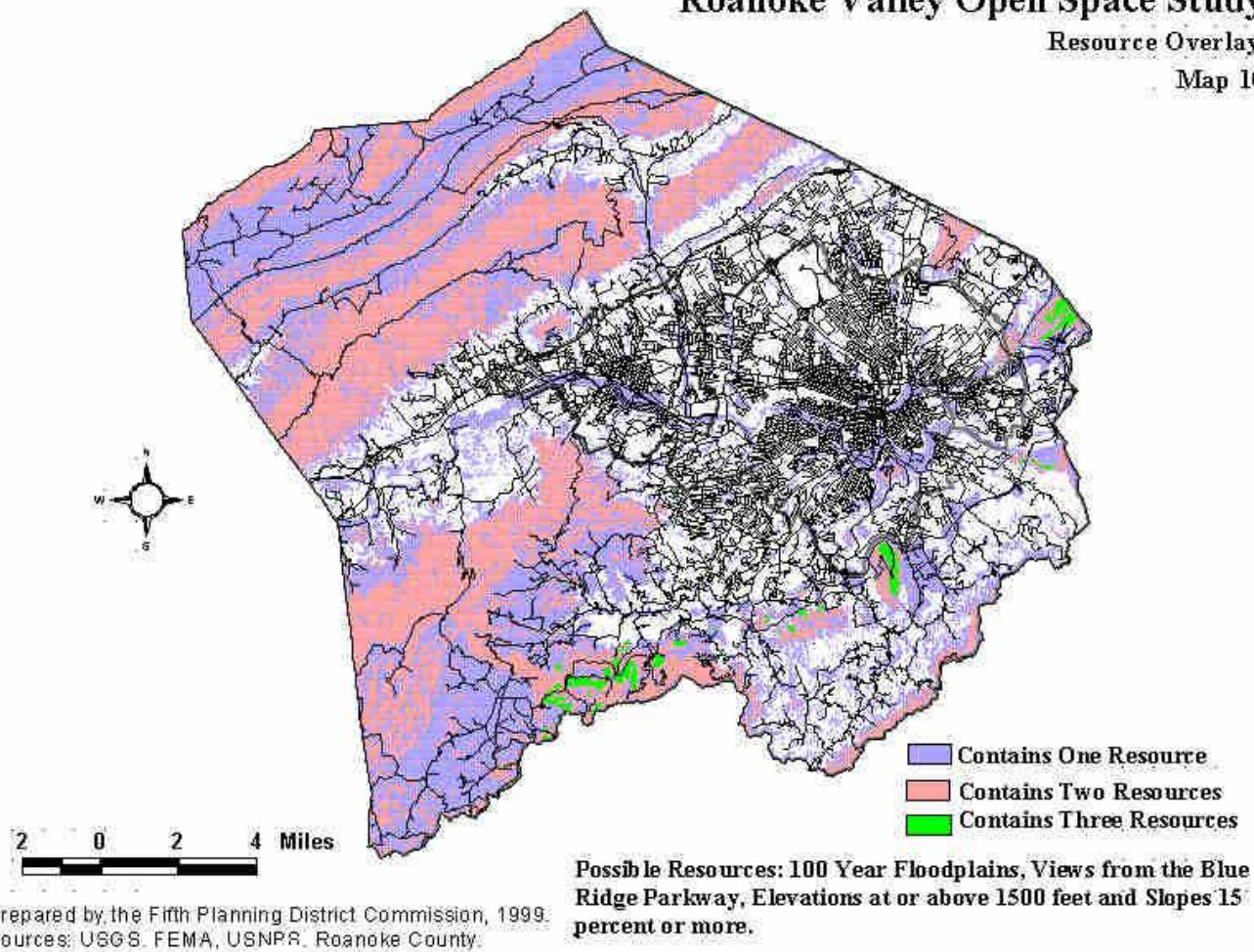
Prepared by the Fifth Planning District Commission, 1999.
Sources: 1992 TIGER line files, 1995 Roanoke Valley Conceptual Greenway Plan

— Conceptual Greenway Corridor

Roanoke Valley Open Space Study

Resource Overlay

Map 10



EXECUTIVE SUMMARY

This study was prepared by the Fifth Planning District Commission (PDC) for the four localities in the study area (Roanoke County, Roanoke City, Salem City, and the Town of Vinton, Virginia). The purpose of this study is to (1) prepare an inventory of open space and significant natural resources in the Roanoke Valley, and (2) provide information on the voluntary and regulatory tools that the community can use to preserve, protect, and manage open space areas. It is hoped that local governments in the study area will use this information to move forward in the open space planning process. A few examples of future open space planning that could occur at the local level are ridgeline protection ordinances, cluster zoning, public education, and voluntary donation of conservation easements to a land trust.

During the preparation of this study, two focus group sessions were held to sample public opinion on open space issues. Of those present, there seemed to be a very high level of interest in the Roanoke Valley's streams, forests, and mountains. There was a request that localities encourage "better planning and development practices" so that needed development can occur without unnecessary disruption of valuable open space. There were also reminders from some participants that much of the Valley's open space is privately owned and that local governments should respect the rights of individuals to utilize their property.

A Citizen Review Committee was also established, and although it was not originally asked to make policy recommendations, some members asked for the opportunity to do so. Additional members of the general public asked to comment also. These comments have been published separately as a supplement to this report. Although these individual comments are not intended to represent a consensus of the members of that committee, they may be helpful to localities in future decision-making.

The study includes maps of: the study area and prominent mountains; land inventory; land cover; general elevations; elevations over 1500 feet; generalized slopes; floodplains, floodways, and selected watersheds; views from the Blue Ridge Parkway; and conceptual greenways. The final map is an overlay of several of these resources. In addition, the study includes descriptions of 29 alternatives for preserving, protecting, and managing open spaces. These include voluntary methods, such as conservation easements; regulatory alternatives, such as watershed zoning overlays; and other alternatives such as the Virginia Scenic Rivers Program and Land Use Assessment and Taxation. More information on each alternative is available at the PDC.

In order to continue the open space planning process, the community must decide which of the open space resources it values most (i.e., set priorities), determine how it would like to manage those resources, and decide how open space programs should fit in with other local programs and priorities. Each of these steps will require significant citizen input. More information on these steps is included in the CONCLUSIONS section of this report. Following these steps could help the Roanoke Valley move toward a unified community vision regarding its valuable open spaces.

INTRODUCTION

This study examines open space resources in the Roanoke Valley and gives information on the alternatives a community might utilize in preserving, protecting, or managing its open space. As shown on Map 1, the study area consists of Roanoke County, Roanoke City, Salem City, and the Town of Vinton, Virginia.

Background

In the fall of 1994, the Fifth Planning District Commission (PDC) began work on an open space study for the Roanoke Valley. A technical advisory committee with representatives from the planning departments of the Roanoke Valley's four local governments met to define the scope of work for the study. It quickly became apparent that there was a strong citizen interest in planning for a greenway system as a first step in open space planning. Therefore, in early 1995, the committee decided to study the potential for greenways in the Roanoke Valley before completing a comprehensive open space study.

In the study of greenways for the Roanoke Valley, an advisory body was formed with government-appointed representatives from the four local governments, with staff assistance from the localities and the PDC. In its first year, the Roanoke Valley Greenways Steering Committee oversaw the preparation of a conceptual greenway plan. The committee hired a full-time coordinator in August 1996 using local government contributions. During the coordinator's first year, the committee organized into two formal groups - the Roanoke Valley Greenway Commission and Pathfinders for Greenways. With the coordinator's help, each of the four local governments has made significant progress toward designing, funding, and constructing an initial greenway in each locality as first steps toward a valleywide greenway system.

With the greenway effort well underway, the PDC and local planners were able to once again concentrate on the other aspects of open space planning. The technical committee of planners from each locality resumed the study of open space in the Roanoke Valley in order to (1) prepare an inventory of natural and open space resources and (2) explain the available alternatives for preserving, protecting, and managing open space. This report is the result of those efforts.

Although this study contains information on open space alternatives, it does not make recommendations on which specific alternatives should be utilized. That decision is left to the localities because their specific needs and conditions (i.e., slope, existing development, and other characteristics) vary. This report is seen as a step in the overall open space planning process, designed to give the information needed for the community to take the next step as it chooses. For example, the community may choose to undertake the preparation of a ridgeline protection ordinance or a tax incentive program to encourage donation of easements. A variety of options are available, as explained herein.

Map 1

Study Goal, Objectives, and Strategies

The Open Space Technical Advisory Committee's goal, objectives, and strategies for the study's planning process are as follows.

GOAL: To prepare, with citizen involvement, an open space inventory and to identify the tools necessary to help the Roanoke Valley localities preserve, protect, and manage significant open space areas, which could enhance the Valley's economy, environment, and community resources.

Objective 1. Identify watercourses, critical environmental lands, and natural resources defined as open space.

Strategy 1. Define open space.

Strategy 2. Map open space.

Objective 2. Identify and describe methods of preserving, protecting, and managing open space resources.

Strategy 1. Voluntary methods.

Strategy 2. Regulatory methods.

Objective 3. Prepare conclusions that can be used by localities to further plan for open space resource management.

Strategy 1. Complete and present plan to each locality.

Strategy 2. Increase awareness and encourage voluntary actions for the region as a whole.

Definition of Open Space

A community can form its own definition of “open space” but it typically means different things to different people. Appendix I gives the results of a survey by the Virginia Department of Conservation and Recreation which, among other questions, asked respondents what they considered to be open space. Natural areas (63.2%), park areas (57.7%), scenic areas (55.3%), agricultural land (45.1%), and floodplains (39.3%) topped the list. (VDCR, 1992 Virginia Outdoors Survey, pages 35-36)

Appendix II describes the types of land considered to be open space under the Virginia Land Use Assessment Law. These include land used or preserved for (1) park or recreational purposes, (2) conservation of land or other natural resources, (3) floodways, (4) wetlands, (5) riparian buffers,

(6) historic or scenic purposes, and (7) assisting in the shaping of the character, direction, and timing of community development or for the public interest.

Rather than strictly define open space, this study maps open space resources according to ownership category and the existence of specific natural characteristics. These maps and the natural resources or other characteristics they display are discussed at length in this document.



Edge Sports Complex

in Southwest Roanoke City

Entrance to Rivers

RESULTS OF THE PUBLIC REVIEW PROCESS

The purpose of the citizen involvement process in this study was to (1) sample public opinion on open space issues, so that localities will be aware of the types of issues that will come up in future open space planning, and (2) solicit input on whether or not the study format and mapping are easy to understand and accurately reflect current conditions in the Roanoke Valley. It is noted that more extensive citizen involvement will be needed before open space resources can be prioritized and specific management alternatives selected.

Focus Group Meetings

In order to achieve the first objective, the study team held two focus group meetings in August of 1998 at the Vinton War Memorial, assisted by two professors from Virginia Polytechnic Institute and State University as facilitators. A variety of people were invited, but it is estimated that there were more pro-open space participants than other participants. For that reason, readers are reminded that the following comments may not represent the opinion of all Roanoke Valley residents.

At the focus group meetings, participants were divided into groups and asked a series of questions about the open space resources they most value and about their visions for the future. The groups then used a mapping exercise to indicate the location of valued resources. There seemed to be a consensus among those present as to what is important in the Roanoke Valley, with mountains, streams, forests, farm land, and scenic views on almost everyone's list. Some summary results of the survey and mapping exercises include the following.

- * The higher mountains and ridges were identified by all groups as important open spaces. Lower hills were considered to be important also, especially where development on those hills is highly visible.
- * Forested mountains ranked high, as did forest land in general.
- * "Urban forests" were identified as important also. Urban forests might be described as any concentration of trees in an urban or suburban area, including street trees. Both the environmental and aesthetic values of urban trees were emphasized.
- * There was unanimous agreement about the importance of the Roanoke River, and specific tributaries were mentioned by residents living near them or by residents that fish, hike, or otherwise utilize land near tributaries.
- * Greenways were favored on the survey, and several participants provided ideas for locations of future greenways.
- * The Blue Ridge Parkway and Appalachian Trail were considered to be important open space resources by all groups.

- * Farm land was considered important by the groups, and in the mapping exercise, Poage's Mill Farm and farms in the Catawba Valley were emphasized.
- * Scenic views and vistas were considered to be important. While the mapping exercise revealed that there are a number of favorite views (such as views of Mill Mountain), most view preferences were subjective judgments, and opinions varied.
- * Some participants included "special places" such as historic sites in their list of open space resources, but a comprehensive list of special places was not completed at the meetings.

As for the preferred *Vision of the Future*, some of the open space advocates present at the meeting were interested in the absolute preservation of major open space resources. Several members noted the need to preserve continuous corridors of open space as wildlife habitat, especially habitat for threatened or endangered species. Fragmentation of forests was a concern because large parcels of forest land that are broken up by development result in forest fragments that are hard to manage. Several people suggested that a valleywide authority be established for preservation and management of open space. The need to respect the rights of property owners to utilize their land as they see fit was discussed, as was the "right to practice forestry" bill passed by the Virginia General Assembly.

Other attendees asked for "better planning and development practices" so that needed development can occur without unnecessary disruption of valuable open spaces. Ideas for "better planning and development practices" included use of conservation easements (dedicated to a land trust); public education; more citizen involvement in selection of routes for public highways and interstates; environmentally friendly (or "green") development practices; increased usage of transportation alternatives such as greenways or mass transit; control of cellular towers; use of "traditional neighborhood design" in new subdivisions; and more flexibility in local zoning and subdivision regulations so that innovative development can occur. There was favorable mention of increased public involvement in current planning activities, including new plans for the Roanoke park system, Carvins Cove, and Mill Mountain; strategies for protection of views from the Blue Ridge Parkway and Appalachian Trail; and consideration of a cluster housing ordinance.

Citizen Review Committee

The participants of the focus group sessions described above were invited to continue their participation in the open space planning process by serving on a *Citizen Review Committee*. That committee was established for the second of the two purposes noted above, i.e., to provide input on whether or not the study format and mapping are easy to understand and accurately reflect current conditions in the Roanoke Valley. This role was an *objective* one and it helped the study team make sure the report would be useful to the community when it decides to take the next step, one which would involve *subjective* judgments. The next step, prioritizing open spaces and selecting management alternatives, will require community involvement that is more extensive than the process used for this study.

It is important that a distinction be made between two common types of citizen study committees. A *Citizen Advisory Committee* would typically be used to solicit information on community opinions and values, while the role of a *Citizen Review Committee* might be limited to a review of the technical (objective) material prepared by the study team. The *Citizen Review Committee* for the open space study provided important objective information on the location and nature of existing open space resources and how to best show resources on the maps. This assistance was essential to the preparation of the report.

View from Mill Mountain

Although the role of the *Citizen Review Committee* organized for this study did not involve open



space prioritization or selection of alternatives, it became evident at the meetings that those very things were foremost in the minds of many of the committee members. Because of the nature of the report, the study team was not able to use the committee's input on policy issues at that time but did not want to lose the opportunity to record the committee's ideas on these issues. Comments made by individual members of the *Citizen Review Committee* and other members of the general public have been published separately as a supplement to this report.

REGIONAL STATISTICS ON CHANGES IN FARM LAND AND FORESTS

Several groups have recently reported on changes in the region's forests and farms. The amount of farm land in the Roanoke Valley is decreasing, and there is a corresponding decrease in the market value of agricultural products sold. Although the mature forest cover increased from 1984 to 1992, there has been a 44% increase in timber harvesting in the Roanoke Valley/New River Valley/Alleghany Highlands region between 1990 and 1997. Changes in farm and forest land are described in detail below.

Farm Land

The following table gives agricultural statistics from the U.S. Census of Agriculture for the region for the years 1982, 1987, 1992, and 1997. Of the counties shown, only Pulaski had an increase between 1982 and 1997 in the amount of land devoted to agriculture.

Roanoke County's agricultural acreage decreased from 20.5% of the county in 1982 to 16.6% in 1997. Going back to the 1960s and 1970s, Roanoke County's agricultural acreage was far larger. In the years 1964 and 1974, the percentages of land in Roanoke County in agricultural use were 39.9% and 29.9% respectively. This represents a faster rate of change than adjacent counties such as Botetourt, where agriculture represented 35.6% of the county in 1964 and 26.0% in 1997.



Poage's Mill Farm in Southwest Roanoke County

COMPARATIVE AGRICULTURAL LAND STATISTICS

<u>Locality</u>	<u>Size of Co. (acres)</u>	<u>Percent of Land in Locality Used for Agriculture</u>			
		<u>1982</u>	<u>1987</u>	<u>1992</u>	<u>1997</u>
Alleghany Co.	285,440	11.9%	9.9%	9.0%	10.9%
Bland Co.	229,760	37.9%	35.0%	35.6%	36.3%
Botetourt Co.	347,520	28.2%	28.1%	27.9%	26.0%
Craig Co.	211,200	26.5%	23.8%	21.5%	21.6%
Floyd Co.	244,480	54.0%	48.3%	47.7%	50.2%
Franklin Co.	442,880	43.6%	40.7%	37.6%	35.8%
Giles Co.	229,120	34.0%	31.2%	31.9%	29.3%
Montgomery Co.	248,320	41.1%	39.2%	39.8%	37.5%
Pulaski Co.	205,440	37.5%	38.2%	35.0%	39.1%
Roanoke Co.	160,640	20.5%	18.5%	15.5%	16.6%
Wythe Co.	296,320	54.7%	48.4%	44.3%	47.1%
New Century Region	2,901,120	36.3%	33.6%	32.2%	32.4%
Virginia	25,408,000	37.1%	34.1%	32.7%	32.4%

Note: Agricultural land is defined as “any place from which \$1000 or more of agricultural products were produced and sold or normally have been sold during the census year.”

Source: U.S. Census of Agriculture.

A “Roanoke County Agriculture Profile” (produced by the U. S. Department of Agriculture, Virginia Agricultural Statistics Service) notes major changes in the market value of products from Roanoke County’s farms between 1992 and 1997.

* “Market value of agricultural products sold” decreased 61% to \$5,042,000 in 1997. Crop sales accounted for 51% of the market value. Livestock sales accounted for 49% of the market value.

* “Market value of agricultural products sold, average per farm” decreased 61% from \$47,327 in 1992 to \$18,470 in 1997.

These decreases are quite different from the market value changes for Virginia between 1992 and 1997. The state had a 14% increase in “market value of agricultural products sold” and a 17% increase in “market value of agricultural products sold, average per farm.”

Forest Land

In a November 1998 series on logging, The Roanoke Times notes that timber harvesting in Virginia increased over 28% from 1990 to 1997. During that period, timber harvesting increased over 44% in the Roanoke Valley/New River Valley/Alleghany Highlands Region. This is an increase from 54.9 to 79.3 million cubic feet. (Roanoke Times, 11-22-98, page A6)

The overall amount of mature forest cover increased in the Roanoke Valley between 1984 and 1992. "Mature forest" comprised 51.7% of Roanoke County in 1984 and 56.1% in 1992. Comparative statistics are shown below. These represent the net amount of mature forest cover, which is affected both by timber harvesting and reforestation. In its report, the New Century Council Community Indicators Committee used statistics provided by the U.S. Forest Service from its public and private forest land inventory (Forest Inventory and Analysis).

COMPARATIVE FOREST LAND STATISTICS

<u>Locality</u>	<u>Percent of Locality in Mature Forest Cover</u>	
	<u>1984</u>	<u>1992</u>
Alleghany County	86.6%	87.5%
Bland County	77.6%	78.2%
Botetourt County	70.3%	72.9%
Craig County	83.0%	84.9%
Floyd County	55.0%	59.0%
Franklin County	65.6%	65.0%
Giles County	76.0%	76.3%
Montgomery County	57.5%	57.3%
Pulaski County	57.5%	58.4%
Roanoke County	51.7%	56.1%
Wythe County	48.9%	48.5%
New Century Region	66.5%	67.6%
Virginia	62.8%	63.1%

Source: New Century Council Community Indicators Committee, Vital Signs: Community Indicators for the New Century Region, 1998, page 71 and Appendix.

In Virginia, fragmentation of forest land has been studied by the Virginia Department of Forestry (VDOP). Fragmentation can be described as the partial development of forested land, whereby a large contiguous parcel is split by development into smaller forested parcels, thereby reducing its overall commercial value as timberland. VDOP's 1997 report, entitled Virginia Forest Land Assessment, explains the impact of fragmentation.

Since 1976, the amount of forested land in Virginia has been relatively stable. However, with population growth, urban and suburban sprawl, and changes in forest ownership, the forested landscape has become increasingly fragmented and less available for commercial forest management. A geographic information system (GIS) analysis has shown that 3.1 million acres of the 15.4 million acres classed as commercial timberland can no longer be considered rural enough to allow sustainable management for forest products. (VDOF, pages 17-18)

Although reforestation may help keep the amount of total forest land stable in Virginia, as much as 100 acres of forest is lost every day in high growth areas of the state, such as northern Virginia and Richmond, due to suburban development. (Virginia Forests, “Forest Fragmentation,” p. 7)



Shadeland Site off 10th Street in Northwest Roanoke City (near the future Lick Run Greenway)

Urban trees (i.e., trees located in cities or suburbs) are a valued resource also. A 1996 report of the Lincoln Institute of Land Policy quotes American Forestry Association statistics on the annual value provided by an average 50 year old urban tree. In 1985 dollars, these annual values are: air conditioning, \$73; soil erosion and stormwater control, \$75; wildlife shelter, \$75; and air pollution control, \$50. (Fausold and Lilieholm for Lincoln Institute of Land Policy, The Economic Value of Open Space: A Review and Synthesis, page 11)

American Forests is conducting a CITYgreen analysis for the Roanoke Valley with funding from the U.S. Forest Service and the Virginia Department of Forestry and technical assistance from the Roanoke Valley Urban Forestry Council. It is expected that the report will include information on the value of trees in the Roanoke Valley similar to the above statistics.

DESCRIPTION OF THE MAPPED RESOURCE INVENTORY

In preparing an inventory of resources for this study, different types of land and resources have been identified and mapped. The **Land Inventory Map** (Map 2) shows land ownership and/or use patterns. Maps 3 through 8 show specific natural resources to be considered in open space planning. Map 9, the **Conceptual Greenway Map**, is taken from an existing plan for greenways in the Roanoke Valley. It is included here because greenways are a form of open space and because many of the previously identified greenways coincide with features on the other maps. The next chapter discusses Map 10, which is an overlay of four of the natural resources maps, showing how natural resources can occur in clusters.

Map 2 - Land Inventory (Current Ownership/Use Characteristics)

For a base map, specific parcels or pieces of land have been categorized using five ownership patterns. For mapping and analysis purposes, Map 2 (**Land Inventory**) shows individual parcels of land as identified on local tax maps. Many of the parcels defined as open space in this study may contain a few buildings or other structures on part of the parcel. It was not technically feasible in the mapping of this inventory to separate the portion of these tax parcels that is open space from the portion with buildings. The following describes the land ownership categories analyzed for this study. (This map does not show fully developed private land and “other” private parcels under a certain size, as defined in section (e) below.)

a. Land Owned by a Governmental Entity

This category includes property owned by the local, state, or federal government. Buildings are located on some of these properties, while other parcels might be vacant, or open space, land. Some properties owned by the government will house only a few buildings (mainly service buildings), covering an area that is minimal in comparison to the size of the entire property. Examples of public open space include the Havens Wildlife Management Area, Virginia’s Explore Park, Blue Ridge Parkway, Mill Mountain, Carvins Cove Reservoir, and others.

In addition, the inventory shows a large number of other public parcels throughout the Roanoke Valley. Examples include the Veterans Administration (hospital and grounds), the Roanoke Regional Airport, parks, and schools, among others. Some of these public properties are fully developed, while others retain open space buffers around the major buildings on the site. Some undeveloped land is held by local governments for future use.

b. Private Parcels Open to the Public Under Certain Conditions (institutions, golf courses, etc.)

This category includes land that is privately owned, with potential for use by the public under certain conditions, such as on a membership or fee basis. This

MAP 2

includes sites such as golf courses, country clubs, institutions, private schools, and similar land uses.

As with the public lands, the amount of actual open space on each of these sites will vary. For example, at golf courses, almost all of the site is open land. Some semi-public sites will consist of one or more buildings surrounded by open space. Other sites might be land held by private institutions or landowners for future semi-public uses or other uses.

Because the open space at a cemetery represents a significant visual break in an otherwise developed urban environment, they are included in this category for Roanoke City, Salem, and Vinton. For the less urban part of the study area (i.e., Roanoke County), cemeteries are not shown on the map. Only two of the area's church properties are included on this map - Lynn Haven Baptist Church in Vinton (next to a greenway corridor) and the Church of God property beside and partially covering Green Ridge in Roanoke County (almost 78 acres of land).

c. Private Parcels with Conservation Easements

The Nature Conservancy holds a conservation easement on one property in the study area. The easement is on land that is privately owned. It is 920 acres and is located on the western slope of Poor Mountain in Roanoke County. The easement applies to all but a small portion of the site.

d. Private Parcels in Agricultural/Forestral Districts for Use Value Taxation Purposes

The Virginia Land Use Taxation Act allows localities to adopt a property taxation system that assesses agricultural or forestal land based on its current use rather than its potential use. This law encourages the preservation of open land by helping these landowners avoid the development pressure that comes with higher tax levels. For example, farmland would be taxed at a lower level than would a parcel of equal size that is vacant and awaiting development. When the farm is subdivided, rezoned to a more intensive use, or otherwise changed to a non-qualifying use, a tax "rollback" would occur. The rollback provision would bring the owner's taxes back to the fair market value for that year and the five preceding years.

As an example, there were 621 acres of land (21 owners) with agricultural or forestal use value taxation in Roanoke City in 1996-97. The true value of these parcels totaled over \$9 million, but the use value taxation was under \$700,000. The open space inventory revealed 1,577 parcels of land (63,001 acres) in this category in Roanoke County and Vinton in 1997. No parcels with this classification are located in Salem.

- e. Other Private Undeveloped or Residential Parcels (greater than or equal to 10 acres in cities or towns; greater than or equal to 50 acres in counties)

"Other private parcels" have been identified on the base map; as private parcels, these are typically not open for public or semi-public use. To be included in this category of the inventory, the majority of the land area of each parcel must be undeveloped. In addition, only parcels of a certain size have been included in this category. In Roanoke County, only parcels 50 acres or larger are included; within Roanoke City, Salem, and Vinton, only parcels 10 acres or larger are included.

Some of the parcels contain homes surrounded by land that the owner has purposefully left undeveloped as a buffer around the home. Owners of other parcels may hope to develop their land in the future for residential subdivisions or commercial/industrial purposes. The majority of parcels in the "other private land" category are located in Roanoke County, although parcels of this type still exist in the urban part of the study area also.

Maps 3 through 8 - Natural Resources

Maps 3 through 8 show several natural resources that are important to the community. There may be a need to consider other types of natural resources, such as soil types, when further open space planning is done in the future.

In contrast to the **Land Inventory Map**, the natural resource overlays are not based on tax parcel boundaries. Maps 3 through 8 represent the approximate location of specific natural resources.

Map 3 - Land Cover

The **Land Cover Map** was prepared from a Landsat (remote sensing satellite) image taken on 10-2-92. Where the term "tree canopy" is used, it refers to the view of trees as seen from above. When the tree canopy is thick, smaller vegetation under the trees cannot be seen from the satellite. Because this is a satellite image, the minimum mapping area is approximately .22 acres. This means that a pond, grove of trees, or other natural feature smaller than .22 acres would not show up separately from the land surrounding it.

- a. Deciduous Forest (greater than 70%)

Deciduous trees are ones which lose their leaves during the winter. For an area of land to be included in the "deciduous forest" category on this map, at least 70% of it must be covered by deciduous tree canopy.

A large part of Roanoke County is covered with deciduous forest. Sections of Roanoke, Salem, and Vinton have deciduous tree canopy also.

Map 3

b. Coniferous Forest (greater than 70%)

Coniferous trees (or evergreens) are ones with green leaves year-round. Where the map shows “coniferous forest,” this means that at least 70% of that area would have coniferous tree canopy.

The map indicates that coniferous tree cover is scattered throughout Roanoke County. Concentrations of these trees are found at scattered locations in the urban area also.

c. Mixed Forest

This is defined as areas with a mixture of deciduous and coniferous tree canopy, with neither type of tree constituting 70% or more of the area.

The satellite image failed to identify “mixed forest” in the study area, indicating that clumps of forest land in the Roanoke Valley are either predominately deciduous or predominately coniferous rather than equally mixed.

d. Shrub (less than 3 meters tall)

This is woody vegetation less than 3 meters (9.8 feet) tall. It might occur as pastureland or as the transitional land between forest and agricultural fields.

The small amounts of shrub land identified by the satellite image are spread throughout the Roanoke Valley, primarily between sections of forest land and agriculture/fields. Some shrub land in the cities is adjacent to land classified as “urban/exposed soil and rock.” Shrub land beside the Roanoke Regional Airport’s landing area is an example.

e. Agriculture/Fields

This would include crop land, vineyards, ornamental horticulture, pasture, fallow fields, rangeland, and agricultural land. Recent clear cuts and other forest openings would be included. Golf courses and large lawns would be included also.

Parts of the Catawba Valley and Bent Mountain are shown as agriculture/fields on this map. Other pieces of land that fall within this category are more likely to be uses such as the parks, golf courses, or open fields that exist within the urban area. Many of these are also shown as open space on Map 2, which describes ownership and land use characteristics.

f. Water

Open water such as reservoirs or large rivers would be shown in this category. As noted above, the satellite image cannot show smaller areas such as ponds or streams. As a result, the Roanoke River is difficult to find on this map. The tip of Carvins Cove Reservoir in north Roanoke County is visible. The remainder of the reservoir is in Botetourt County. Spring Hollow Reservoir in western Roanoke County was constructed after the satellite image was taken and does not appear on Map 3.



Suburban Development - Route 419 Near
Tanglewood Mall in Roanoke County

g. Urban/Exposed Soil and Rock (non-vegetated)

This category includes land that has been developed (such as buildings, subdivisions, parking lots, etc.), land that has been disturbed (such as quarries or landfills), and land that is naturally barren (such as large areas of bare rock).

Where this designation is found in the outlying parts of Roanoke County, it is more likely to be either barren land or exposed soil/rock than a large developed area. An example is the Regional Landfill off Bradshaw Road near the Montgomery/Roanoke County line in western Roanoke County. Where this designation is found closer to the center of the Roanoke Valley, it would indicate

developed land. As would be expected, the largest concentration is located in and around the center of Roanoke.

h. Wetland

With a minimum mapping area of .22 acres, no wetlands show up in the satellite image of the Roanoke Valley.

i. Unclassified

This category represents parts of the satellite image that cannot be classified for reasons such as cloud cover, shadows, or other factors.

American Forests' CITYgreen analysis of the Roanoke Valley will be available later this year. It has been funded by the U.S. Forest Service and the Virginia Department of Forestry, with technical assistance from the Roanoke Valley Urban Forestry Council. It is anticipated that this analysis will provide information on changes in land cover over time. Although not available for inclusion herein, the CITYgreen information may supplement the information and analysis in this study.

Map 4 - General Elevations

The **General Elevation Map** uses thirteen categories to display the elevations in the study area. The categories range from a low of 750 to 999 feet above sea level to a high of 3,750 to 3,999 feet above sea level. A large part of the center of Roanoke City is within the lowest elevation category, although part of the southern section of the City is of a higher elevation. All of Vinton's and almost all of Salem's land area is in the lower two elevation categories. This same elevation extends into parts of Roanoke County. Elevations rise to the higher categories in northwest and southwest Roanoke County. Map 5 also shows these higher elevations, which are further explained below.

Map 5 - Elevations Over 1500 Feet

Elevations at or above 1500 feet over sea level were selected for Map 5 solely to demonstrate that the study area is a valley surrounded by mountains (i.e., there is no other significance to the 1500 elevation mark). The lowest elevations in the valley are between 750 and 999 feet above sea level and are found in Roanoke City. Elevations in most of Roanoke City and Salem are between 1000 and 1249 feet. Moving out from the center of the valley, elevations rise to the 3250 to 3499 ft. range.

The highest point in the study area is Poor Mountain in southwest Roanoke County, at an elevation above 3500 feet. High elevations are also found in northwest Roanoke County. A significant high point in Roanoke City is Mill Mountain, with an elevation of 1747 feet.

Map 4

Map 5

Map 6 - Generalized Slopes

Slopes in the study area show a pattern similar to the elevations. Four slope categories have been mapped for the study: 0 to 7.9% slope; 8 to 14.9%; 15 to 24.9%; and 25% and over. The older developed areas in the cities of Roanoke and Salem are the flatter areas, with some periodic variations. Outside the core of the valley, steeper slopes cover much of the landscape. Comparing this map to the elevation maps reveals the existence of high level areas such as the southwest tip of Roanoke County (on top of Bent Mountain), where the slope is less than 8% and the elevation is over 2,500 feet.



View of Fort Lewis Mountain from Lewis-Gale Clinic in Salem

Map 7 - Floodplains, Floodways, and Selected Watersheds

Map 7 shows two types of flood boundaries in the study area. The 100-year floodplain is “the flood having a one percent chance of being equalled or exceeded in magnitude in any given year.” The floodway is defined as “channels and adjacent areas reserved to discharge a 100-year flood without raising the water surface elevation more than one foot.” The floodfringe is the portion of the floodplain outside the floodway. Together the floodway and floodfringe comprise the floodplain.

MAP 6

MAP 7

The Federal Emergency Management Agency (FEMA) designates 100-year floodplain areas, and local governments are responsible for regulating development within those floodplains. In the study area, floodplains primarily follow the Roanoke River and its tributaries. Some older buildings were constructed within the 100-year floodplain before more restrictive regulations became effective, but much of the floodplain is still vacant.



Roanoke River Beside Victory Stadium in Roanoke City

This map also shows the boundaries of the watersheds for Carvins Cove and Spring Hollow Reservoirs. A watershed is the area that drains to a waterbody (i.e., rain that falls on land within the Carvins Cove watershed eventually drains to Carvins Cove unless it is diverted or seeps into the ground). Only the Roanoke County section of the Carvins Cove watershed is shown on this map; the remainder is in Botetourt County. The Carvins Cove Reservoir also takes water via underground tunnels from two creeks that do not naturally drain to the reservoir. The watersheds of these creeks (Catawba Creek and Tinker Creek) are shown as part of the Carvins Cove watershed on this map. Because the Spring Hollow Reservoir pumps water from the Roanoke River, the map shows its watershed as all of the river's watershed above the reservoir. (The portions of the Roanoke River watershed above the Roanoke County boundary are not shown). This map shows that a significant part of Roanoke County is in a "public drinking water supply" watershed.

Map 8 - Views from the Blue Ridge Parkway

A previous assessment of views from the Blue Ridge Parkway in Roanoke County outlined the “foreground” views from the parkway (i.e., views up to 1/2 mile from the parkway, where the viewer is able to distinguish the individual species of trees). Because this information is readily available, it is included in the Open Space Study. Unfortunately, many other important views exist within the study area that have not been mapped at this time.



Blue Ridge Parkway in Roanoke County

The prior assessment of scenic views from the Blue Ridge Parkway notes the location and description of the views. Examples include the view from the parkway bridge over the Roanoke River at Niagara Dam, views of farms along the parkway, and views of the nearer mountains such as Mason's Knob.

Some of the other significant views mentioned by the public during the preparation of this study have been photographed and included in this document. They have not been prioritized and are included only to give the reader an idea of the variety of scenic views in the Roanoke Valley. The fact that they have not been mapped, while the parkway views have been mapped, does not imply that any one view is valued over another. The planning process did not include the citizen input needed to evaluate the quality and value of scenic views to local residents.

MAP 8

Map 9 - Conceptual Greenways

The **Conceptual Greenway Map** differs from the previous types of maps in this study because it represents a plan for how future land might be used for greenways. The other maps in this study show existing land use patterns and natural resources. Because greenways are a form of open space and the proposed corridors coincide with many of the natural resources mapped herein, the map is included for informational purposes in this report.



Entering Smith Park in Roanoke City (site of proposed greenway)

Map 9 is taken from the 1995 Roanoke Valley Greenway Conceptual Plan, which identifies over 50 potential greenway corridors within the Roanoke Valley. Many of the potential corridors parallel the Roanoke River and streams that flow into the river. Other corridors connect key points of interest, such as schools, libraries, shopping centers, and major employment areas. All corridor locations are approximations. The plan is a conceptual one, and it is anticipated that the Roanoke Valley Greenway Commission and local governments will conduct feasibility studies on the individual corridors as implementation of the plan continues. These feasibility studies should include evaluations of existing land use (i.e., how much of the corridor is vacant land, etc.). Because many of the potential corridors are along streams, it is possible that most of each corridor's land area is still open space.

Map 9

SUMMARY OF THE RESOURCE INVENTORY

Map 10 is the **Resource Overlay Map**, and it demonstrates that it is possible for one piece of land to contain more than one special resource. The four resource layers that were combined in the geographic information system (GIS) to prepare this map are 100-year floodplains, views from the Blue Ridge Parkway, elevations 1500 feet and above, and slopes 15% and above. The result of combining these four resource layers is a map that shows where they overlap, i.e., where a concentration of special resources exists.

A large part of northwest Roanoke County has two of the special resources mapped for this study - elevations at and above 1500 feet and slopes 15% or more. The same is true of a large part of southwest Roanoke County. Many sites along the Blue Ridge Parkway have three resources - elevations at or above 1500 feet, slopes 15% or more, and views from the Blue Ridge Parkway. If the study had included an inventory of views other than the “foreground” views from the parkway, more of the study area would show a combination of resources. This would also be true if the “public drinking water supply” watersheds from Map 7 were shown on Map 10.

Roanoke River Parkway



Because a GIS was used to map the resource inventory, the maps can be combined in any number of ways. A wide variety of map overlays were shown to the *Citizen Review Committee* when the study team was trying to decide which overlays to include in the final document. There was a consensus that the mapping in the document should be easy to read and use, even if it does not include all the detailed data in the GIS database. The detailed database still exists for use by

localities as they proceed with open space planning in the future. In addition, local planning departments will have large versions of the plan's maps, along with some map overlays that are not duplicated in the document. These are also available for public review at the Fifth Planning District Commission.

The point of showing an overlay for four of the resources on Map 10 is to emphasize that special resources can come in clusters. In addition to considering single resources, communities may want to consider clusters of resources when setting priorities for open space protection, preservation, and management.

Map 10

ALTERNATIVES FOR PRESERVING, PROTECTING, AND MANAGING RESOURCES

This chapter describes alternatives for preserving, protecting, and managing open space resources. Voluntary and regulatory alternatives are discussed in an effort to provide citizens and local governments a variety of options for review. A description and reference to an example ordinance or document is included in the discussion of each alternative where applicable. Specific purpose and policy statements are shown for several of the alternatives.

Comprehensive Plan

Local and regional comprehensive planning is one of the most important elements in the implementation of a land use and management program. It allows the public and private sector to work together to provide recreational opportunities while protecting critical open space resources. The Code of Virginia (§15.2-2223) requires that every local government "prepare and recommend a comprehensive plan for the physical development of the territory within its jurisdiction." The comprehensive plan serves as a planning tool rather than a regulatory device directed at open space preservation. Local governments can encourage and support the donation of conservation easements by delineating the location of open space land and other lands for preservation.

Although the statutory requirement for a local comprehensive plan identifies necessary planning for a variety of natural, historic, and cultural resources, it does not describe elements needed to identify, protect, or manage these resources. Guidance for incorporating open space preservation into the comprehensive plan process can be found in publications such as Preparing a Sensitive Areas Element for the Comprehensive Plan by the Maryland Office of Planning and Growing Greener: A Conservation Planning Workbook for Municipal Officials in Pennsylvania prepared by the National Lands Trust.

This level of planning detail can also be accommodated in a specific open space plan. The open space plan should identify the elements contained in the Standards for Classification of Real Estate as related to open space use under the Virginia Land Use Assessment and Taxation Law which requires consistency with the locality's adopted land use plan. In this statute, "land" includes water, submerged land, wetlands, marshes, and similar properties.

Including these resources in the comprehensive plan or a specific open space and recreation plan identifies the significant resources that make up the natural and open space resource base of a community. It also will allow local governments to maximize the use of the special use tax provisions of the Code of Virginia, Article 4 of Chapter 32, Title 58.1. Intent of this statute is to provide for the classification and permit the assessment and taxation of such real estate in a manner that will promote the preservation of it for the long-term public benefit.

(Examples: Preparing a Sensitive Areas Element for the Comprehensive Plan, Maryland Office of Planning; Growing Greener: A Conservation Planning Workbook for Municipal Officials in Pennsylvania, National Lands Trust; Open Space Handbook, Community Design Assistance Center, Virginia Tech.)

Zoning

State law enables localities to use their zoning authority to protect open spaces and to provide for the preservation of "lands of significance for the protection of the natural environment." State law also cites conservation of natural resources as one of the matters to be considered in drawing and applying zoning ordinances and districts. (See Code of Virginia, §15.2-2280 to 15.2-2284.)

Conservation, floodplain, and agricultural zoning classifications have long protected open space amenities, primarily as a by-product of their primary purposes. Controls such as density, setbacks, and allowable uses all affect a locality's ability to preserve and manage open space resources. In several counties, overlay zoning for special resources (i.e., Scenic Rivers, and Virginia Byways) provides additional protection to the traditional zoning categories. Inclusion of special districts and regulations in the zoning ordinance gives local governments a strong legal tool for protecting and managing open space.

(Example: Growing Greener: A Conservation Planning Workbook for Municipal Officials in Pennsylvania, National Lands Trust.)

Conditional Zoning

Conditional zoning is a procedure that allows localities to accept conditions proffered by a rezoning applicant. The purpose of conditional zoning is to add flexibility to the way zoning is practiced. It allows applicants to proffer conditions that make the proposed rezoning more acceptable to the community. The state enabling legislation for conditional zoning (Code of Virginia, §15.2-2296) requires that proffers relate to the rezoning and conform with the comprehensive plan. Upon approval, conditions become legally binding on the property and are enforced by the zoning administrator.

Proffered conditions are commitments, not required by the zoning ordinance, to limit how the property is used or to provide facilities to meet the needs of the area being rezoned. For example, under conditional zoning, developers could proffer to leave important natural areas undeveloped and ensure the protection and management of those areas. Other proffers might include the provision of open space or recreational facilities.

(Example: Zoning Ordinance, Roanoke County, Virginia.)

Cluster Zoning

Cluster zoning, also called lot averaging, density averaging, and conservation subdivision development, allows growth to occur while focusing development in specific areas and protecting natural resources and open space.

Cluster zoning sets a maximum density for an area and then allows the developer to alter the lot size for each house as long as the agreed upon limit is not exceeded. Developments can be designed so that only a small part of the site is disturbed while the remainder is preserved as open space. Cluster development can differ from conventional subdivision design in many ways. The

amount of land used for streets and rights of way may be reduced, stormwater management design can take advantage of natural systems, lot sizes can be reduced, a broader mix of housing can be built, and a greater percentage of the site can remain as open space.

Purpose/Policy

Cluster new lots in an arrangement which minimizes adverse impacts on the functioning of the preserved area.

Minimize disturbance of existing farm or forestry activities.

Avoid the need for removal of existing vegetation.

Maximize the frontage of lots onto internal roads and minimize the frontage on state roads classified as minor collectors or higher.

Create buffers in cases where lots back onto public roads.

Preserve the rural and scenic quality of the existing landscape.

Preserve contiguous tracts of open space.

Provide a method for connecting tracts of open space through creation of greenways and preservation of riparian (streambank) corridors.

(Example: Cluster Subdivision Ordinance, Gloucester County, Virginia.)

Planned Unit Developments

Planned Unit Developments (PUD) are a form of clustering, generally on a large scale, and can include non-residential land uses. Planned unit development regulations set an average development density for large tracts and then permit higher density and cluster development on selected portions of the tract. The more intensely developed areas are offset by areas with little or no development. Clustering of both residential and non-residential uses can be done within a PUD, thus yielding benefits to the developer while conserving open space and natural areas. Many PUD regulations appear as floating zones not designated on a zoning map. This allows the community the flexibility to reserve judgment on placement of such large developments until a request is received.

Purpose/Policy

Encourage better design and management of open space by creating more functional active and passive open space areas in new developments.

Promote innovative design in development by providing for flexibility in site design that permits a mix of housing types combined with neighborhood commercial and office uses.

Retain natural features such as floodplains or steep slopes, and encourage developments that will be compatible with environmentally sensitive areas.

Facilitate more affordable housing by providing possibilities for savings in infrastructure and building materials through clustering.

Encourage the efficient use and design of the transportation system in new developments.

Encourage pedestrian circulation within and adjacent to new development through clustering, preservation of open space, and pedestrian scale designs.

(Example: Planned Unit Development Standards, Asheville, North Carolina.)

Density Bonuses

Density bonuses are used to encourage developers to incorporate certain desired features or designs by allowing them to use higher densities than normally allowed. For example, if a developer commits a certain percent of his land to open space, he will be allowed to construct homes at a higher density on the remaining portion of the site. Other desired features include the provision of recreational areas and preservation of wooded areas. Density bonuses can be used in conjunction with cluster development.

Density bonuses may assist developers in implementation of cluster developments. When open space is set aside, the developer is given the right to subdivide his land into more home lots than would have been permitted through the base zoning. For example, a developer subdividing a 100 acre farm could be allowed up to 10 lots if the lots are clustered on 50 acres and the remaining 50 acres are preserved for open space. The allowance could increase the number of lots up to 20 if the lots are clustered on 30 acres with the remaining 70 acres preserved as open space. Large density incentives have a greater likelihood of enticing developers to change their traditional subdivision plans.

(Example: Planned Unit Development Overlay District, Asheville, North Carolina.)

Overlay Zones

Overlay zones are special districts that overlap portions of other conventional zoning districts. The underlying zone is typically called the base zone. Overlay zones increase or reduce requirements on base zones for land areas such as floodplains, or they may trigger a requirement if

a certain threshold is met such as steep slope or traffic count. Used in conjunction with existing zoning such as commercial or agricultural, an overlay provides additional specific regulations that govern the use and development of the critical area within the existing zone.

Overlay zones can be used to outline natural areas or lands designated for open space use and to protect the underlying resource. Within this zone, developments may be required to provide a certain amount of open space or meet certain design standards which increase the viability of natural areas. Overlay zones also can include provisions for density bonuses for clustering development and preserving open space.

In addition, overlays can be combined to identify the most critical areas and/or constraints to development in the locality. This information provides a basis for determining compatible uses, implementing protection measures, guiding where development will occur, indicating what type of development can occur or what uses can be made of the area, enacting relevant ordinances and regulations, identifying many of the important open space resources in the locality, creating performance standards, and guiding zoning measures or regulations.

An example is the Rural Cluster District in Howard County, Maryland. Howard County established three new rural cluster districts in 1992 for the rural western portion of the county with three main goals: (1) to preserve agricultural land in large blocks; (2) to direct rural residential development to locations that will minimize conflicts between agricultural and residential uses; and (3) to cluster residential development so as to protect agricultural, environmental, and scenic features.

(Examples: “Rural Cluster District,” Zoning Ordinance, Howard County, Maryland; “Land Preservation District,” Zoning Ordinance, Montgomery County, Maryland.)

Waterbody Overlay Zones

Waterbody overlay zone boundaries are mapped as buffer areas of specific width from the shoreline or as a regulatory contour or elevation above the surface of the water. A riparian corridor along the length of a stream maintained in a natural state will help to drain flood waters, protect water quality, contribute to fish and wildlife habitat, reduce erosion and sedimentation and can be used as a method for linking other open space properties. Through the use of a streambank setback, streams within a community could be protected through an established buffer strip. In the simplest form, the buffer would be uniform on all streams. Stream setback requirements may be established within the subdivision ordinance or as an overlay zone. Establishment through the subdivision ordinance does not provide the authority to control the use of the corridor and may have less protection than an overlay zone.

(Example: Roanoke River Corridor: Managing a Strategic Resource, Roanoke River Corridor Study Policy, Technical and Citizen Advisory Committees; Guidebook For Riparian Corridor Preservation, Montgomery County, Pennsylvania.)

Watershed Protection Overlays

Watershed protection overlays are created for the purpose of promoting the public health, safety, and welfare through the protection of public water supplies from the danger of water pollution. Regulations within such districts are established to prevent water quality degradation due to pollution loadings within the watersheds of public water supply reservoirs. Regulations within such a district are intended to provide a means for specific review and approval of residential, commercial, industrial, and other development proposals that may have adverse water quality impacts; to encourage land uses and activities that will be compatible with water quality protection; and to ensure that structures and uses within such overlay districts will be developed in a manner that will serve the objectives of preserving the environmental integrity of public water supply reservoirs.

Watershed and water supply protection zones sometimes include aquifer and groundwater recharge zones where certain measures must be taken to protect those waters from pollution and to reduce the percentage of impervious surfaces to optimize recharge, reduce erosion and sedimentation, and slow stormwater runoff. Protection areas such as this usually restrict septic systems and hazardous and toxic materials storage.

(Example: Reservoir Protection Ordinance, Newport News, Virginia.)

Scenic Highway Corridor Overlays

Localities create Scenic Highway Corridor Overlay Districts to coordinate land development along primary and secondary highways. The overlay provides a means to reduce the incidence of strip commercial development, plan for central access points, assure adequate area for highway and/or interchange improvements and construction, reduce visual distractions for motorists, conserve environmental and open space resources, and lessen noise and other health impacts on persons within highway corridors. The primary effect of the district is to modify the building setback and screening required by the base district.

Highway corridor overlays can also conserve those elements of the locality's scenic beauty that are located along scenic highways and scenic waterways. The overlay may be applied over any base zone or other overlay district. These overlays are often effective when applied along local or state designated scenic highways or scenic rivers. Albemarle County's Entrance Corridor Overlay District has been implemented through the use of Section 15.1-503.2 of the Code of Virginia which allows the establishment of an Architectural Review Board. The Entrance Corridor Overlay includes all the major arterial routes in the county and was enacted in 1990.

(Example: "Scenic Areas Overlay," Zoning Ordinance, Albemarle County, Virginia.)



View from Mill Mountain

Viewshed Overlays

Viewshed overlays are used to preserve scenic overlooks and focal points where an unobstructed view of buildings, mountains, landmarks and other scenic objects is desired. Viewsheds and key observation points must be mapped and designated by the local governing body and incorporated into the local comprehensive plan prior to inclusion in the zoning ordinance.

Typically, structure height controls are used in viewshed overlays, but communities are also using tools with other objectives such as environmental protection when combined with steep slope or hillside protection ordinances. Viewshed overlays can be combined with elements of highway corridor overlays to create gateway, boulevard, or parkway scenic zones where special setbacks are imposed, signs are restricted, uniformity of street trees is required, and extensive landscaping is encouraged to enhance the setting along the street.

(Examples: Hillside Area Development Standards, Asheville, North Carolina; “Scenic Areas Overlay,” Zoning Ordinance, Albemarle County, Virginia.)

Subdivision Ordinance

Subdivision ordinances determine how a parcel of land will be subdivided and developed. Consequently, subdivision provisions or ordinances influence open space and recreation resources either directly or indirectly.

Local subdivision ordinances affect open space by controlling how a development is laid out and the percentage of the site to remain as open space. Regulations set standards such as lot size, utilities, streets, and open space. Communities can use the subdivision process to influence the design and reduce environmental impact of developments.

(Example: Growing Greener: A Conservation Planning Workbook for Municipal Officials in Pennsylvania, National Lands Trust.)

Stormwater Management Regulations

Virginia's Erosion and Sediment Control Law governs the quantity and quality of stormwater runoff for new developments stating that "properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity, and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with ... standards and criteria." Local governments are given the responsibility of enforcing these regulations and may enact stricter standards than those in the state regulations.

In order to assist localities in the enforcement and implementation of Erosion and Sediment Control regulations, the Virginia Department of Conservation and Recreation has developed a Model Stormwater Management Ordinance for Localities.

Policies

Stripping of vegetation, grading, or other soil disturbance shall be done in a manner which will minimize soil erosion.

Whenever feasible, natural vegetation shall be retained and protected.

The extent of the disturbed area and the duration of its exposure shall be kept within practical limits.

Either temporary seeding, mulching, or other suitable stabilization measures shall be used to protect exposed critical areas during construction or other land disturbance.

Drainage provisions shall accommodate increased runoff resulting from modified soil and surface conditions, during and after development or disturbance. Such provisions shall be in addition to all existing requirements.

Water runoff shall be minimized and retained onsite whenever possible to facilitate groundwater recharge.

Sediment shall be retained on site.

Diversions, sediment basins, and similar required structures shall be installed prior to any on-site grading or disturbance.

(Example: "Model Stormwater Management Ordinance," Roanoke Valley Regional Stormwater Management Plan, CH2M HILL.)

Floodplain Management

Open space and recreational uses in the floodplain are often highly compatible with flood loss reduction strategies. Overlay zoning is the approach localities most often use to regulate floodplains. The concept should be considered as part of the comprehensive plan, and the regulations should be included in the locality's zoning ordinance.

Floodplain zones are divided into floodway and flood fringe zones. Floodway zones contain the watercourse where water flows downstream during a flood and the fringe is the area where back-up of excess water is stored temporarily during the flood event. Boundaries of these zones are mapped by the Federal Emergency Management Agency (FEMA).

The Code of Virginia, Section 10.1-602, authorizes localities to participate in the National Flood Insurance Program (NFIP) and designates the Virginia Department of Conservation and Recreation (VDNR) as the coordinating agency for flood protection in the state. Local floodplain ordinances regulate new development and new construction in the floodplain. All NFIP participating communities also regulate use in the floodway portion of the floodplain to prohibit uses which would cause an increase in flood height.

Section 60.3 (d)(3) of the National Flood Insurance Program Regulations states that a community shall "prohibit encroachments, including fill, new construction, substantial improvements, and other development within the regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during occurrence of the base (100-year) flood discharge." As a result, many floodways remain open space.

Although FEMA sets minimum standards for floodplain regulations, many communities have chosen to pass ordinances that exceed the minimum. Examples are Henrico County, Loudon County, Henry County, and Roanoke County.



Tubing on the Roanoke River

The Virginia Floodplain Management Plan written by the Virginia Department of Conservation and Recreation can assist localities with managing floodplains. The plan represents basic floodplain management concepts, provides for a floodplain database, describes public and private programs important to floodplain management, and identifies short-term programs and long-term goals for a comprehensive state program.

Purposes of a Flood Zone Ordinance

Reduce the potential for fraud and victimization (fraudulent claims to insurance agencies and/or the sale of property without disclosure of floodplain status).

Reduce risks to the residents of the locality from threats to health or safety or from economic loss due to flooding.

Preserve fish and wildlife habitats.

Prevent erosion of streambanks.

Prevent siltation of stream waters.

Promote the most appropriate use of land throughout the locality.

Protect, conserve, and promote the orderly and efficient development of water and land use resources.

Minimize dangers to public health and safety from malfunctioning water supply and waste disposal systems in flood hazard areas.

Provide for the protection, preservation, proper maintenance, and use of local watercourses and wetlands in order to minimize disturbance to them and to prevent damage from erosion, turbidity, or siltation; a loss of fish or other beneficial aquatic organisms; a loss of wildlife and vegetation; and/or the destruction of the natural habitat thereof.

Reduce financial burdens imposed both on the community and the individuals therein by frequent floods and overflow of water on lands.

Permit and encourage land uses compatible with the preservation of natural vegetation and wetlands, which are a principal factor in the maintenance of constant rates of water flow through the year and which sustain many species of wildlife and plants.

Avoid high velocity runoff of surface waters from developed areas to prevent pollution materials from being carried directly into the nearest natural stream, lake, or other public waters.

Provide sufficient land area to carry abnormal flows of stormwater in periods of heavy precipitation and prevent needless expenditures of public funds for storm sewers and flood protection devices which proper planning could have avoided.

Prevent the development of structures in areas unfit for human usage by reason of danger from flooding, unsanitary conditions, or other hazards.

Prevent the placement of artificial obstructions which restrict the right of public passage and use of the bed, bank, and water of any creeks, wetlands, or watercourses within the locality.

(Example: “Flood Hazard Overlay District,” Zoning Ordinance, Prince William County, Virginia.)

Ridgeline and Slope Regulations

Grading ordinances served as an early form of ridgeline and slope regulations in many areas, and they are now used throughout the nation. The Building Officials and Code Administrators and Southern Building Code Congress both have model grading ordinances for use by localities. Grading ordinances are closely related to erosion and sediment control ordinances and are

administered by building or engineering departments. Grading regulations stipulate standards for access, slope, drainage, and setbacks for cut and fill areas in order to create a stable building pad.

Guidelines for construction on hillsides have been developed more recently and tend to focus on methods for minimizing grading on slopes and prohibiting development on steep slopes. Grading ordinances supplement hillside and steep slope ordinances by ensuring that lots are developed as safely as possible. Grading controls may be found within ridgeline and slope ordinances or as supplemental subdivision or zoning regulations.

If grading controls are included in a hillside ordinance, the maximum amount of grading for any parcel can be set beforehand. This approach is generally tied to slope density provisions so that steep slope areas are subject to less grading than gentle slopes. Most localities require a permit before any grading is allowed. To be considered for a grading permit, the application must be accompanied by a grading plan that includes information concerning the existing physical characteristics of the area and any anticipated changes as a result of the proposed grading.

Ridgeline and steep slope zones are mapped by the locality as an overlay zone, and specific properties within the overlay zone are subject to special development standards whenever the average slope exceeds certain grades. Many localities limit certain building activities on steep slopes (15 percent or higher), with provisions regulating the types of construction on steep slopes that might cause erosion and sedimentation, contribute to water pollution, or affect views of ridgelines. Factors such as soil type, vegetation, and geology are used to determine the type of development appropriate for slopes.

The City of Asheville, North Carolina, has adopted a Hillside Area Development Standards Ordinance. The regulations are established to recognize that development in hilly or mountainous areas involves special considerations and creates unique situations that result from the topography of the land. Residential developments which meet the ordinance's definition of hillside area are also regulated with regard to the permitted density and extent of grading on the site.

Hillside regulations are classified into three categories in the American Planning Association's Planning Advisory Service Report 307/308 Performance Controls for Sensitive Lands:

1. Slope/Density Provisions. These reduce allowable densities on hillsides, i.e., the steeper the slope, the less the allowable density. This can be accomplished by establishing minimum lot sizes for steep slopes, specifying a percentage of each hillside site to be retained in its natural state, or reducing the number of allowable dwelling units on steep slopes.
2. Soil Overlays. These provisions tie development regulations to soil type, based on maps by the Soil Conservation Service.
3. Guiding Principals Approach. This approach creates hillside overlay districts to cover all hillside lands in a jurisdiction. A set of guiding principles is applied to all proposed development in these areas. These regulations are usually flexible,

allowing for tailoring of development to the characteristics of each site and encouraging innovative approaches to attain the desired ends.

Mason's Knob (taken from Route 221)



Slope/density regulations are the most common of the three. This approach is taken where communities have decided that steeply sloped hillsides are unsuitable for development for reasons such as public safety, erosion, aesthetics, or general environmental protection.

In Planning for Hillside Development (Planning Advisory Service Report 466, 1996), the author studied ordinances of 190 jurisdictions and found that the purposes of regulating hillside development include: health, safety, and general welfare; avoiding geologic hazards; fire protection; natural resource protection; natural phenomena protection; aesthetics; and access. The document also points out that the most common purposes were protection of aesthetics and protection of natural phenomena such as river corridors, habitat, soils, and vegetation. The study found that nearly 90 percent of the jurisdictions restricted site design in hillside areas and nearly 90 percent offered or required unique project approvals in hillside areas.

The most frequently cited strategies in the study were: grading controls (72%), mandated replacement or planting of vegetation (65%), requirements for technical studies by professionals (59%), limits on vegetation removal (57%), building setbacks (56%), restrictions on type or design of building (53%), and restrictions on maximum land use intensity (47%).

The Zoning Report, Vol. 10, Nos. 6-8, cites three types of hillside zoning controls: the base zone district, overlay zones, and areas that qualify by definition of a minimal steepness of slope. Each control has advantages and disadvantages. Base or overlay zones are most useful in areas with geographically concentrated foothills, hills and mountains that are distinct from flatland areas.

Purpose

Promote safety of the design and construction of development.

Minimize flooding and ponding, landslides, and mudslides.

Minimize soil erosion, instability, and downstream siltation.

Provide for safe vehicular and pedestrian circulation.

Protect rare and critical environments.

Preserve the scenic character of hillside areas.

Plan development to fit the topography and other existing site conditions.

Minimize grading, clearing, and other site preparation work.

Minimize the scarring effects of hillside street development.

Provide development sites suitable for construction based on soils, geology, and hydrology.

Preserve and enhance the existing natural beauty of the landscape.

Prevent flooding and deterioration of water quality.

Policies

Encourage only minimal grading which (1) relates to the natural contour of the land, (2) will round off in a neutral manner any sharp angles at the top ends of cut and fill slopes, and (3) does not result in a staircase effect.

Require retention of trees and other types of vegetation which stabilize steep hillsides, retain moisture, prevent erosion, enhance the natural scenic view, and where necessary, require additional landscaping to enhance the scenic and safety qualities of the hillside.

Require immediate planting wherever appropriate to maintain necessary cut and fill slopes, to stabilize them with plant roots, to conceal the raw soil from view, and to minimize erosion.

Preserve natural drainage channels.

Encourage retention of natural landmarks and prominent natural features, wildlife habitat, and open space.

Preserve and enhance the visual and environmental quality through the use of natural vegetation and prohibition of excessive excavation and terracing.

Protect the public from natural hazards of stormwater runoff and erosion by drainage facilities.

Provide for fire safety to reduce the spread of wildfire and reduce opportunity of ignition, by providing fire lanes, fuel breaks, and non-combustible roofs and building materials and spark arrestors; by clearing of underbrush and excess vegetation near dwellings and by use of fire-resistant local plant species.

Adapt the density of development to the terrain as hillside slope increases, dwelling density decreases, and as lot area increases the percentage area of the lot that can be graded for development decreases.

Encourage regard for the view *of* the mountains as well as the view *from* the mountains.

(*Examples: Proposed Mountain Protection Plan, Albemarle County, Virginia; Hillside Area Development Standards, Asheville, North Carolina.)*

(See also "What You Need To Know About Hillside Development Regulations," The Zoning Report, Vol. 10, Nos. 6-8.)

Transfer of Development Rights

Transfer of development rights (TDR) programs allow the sale of development rights without the actual transfer of land ownership. TDR programs are designed to transfer development from lands to be protected to areas that have been designated for growth. The right to develop land is thus treated as a commodity that is separate from the land itself.

In order to implement a TDR program, a locality must establish areas to be protected, known as sending areas, and areas for growth, known as receiving areas. Land owners in the sending area are permitted to sell their development rights to landowners in the receiving district who can use these rights to build at a greater density than would have been allowed by the base zoning.

A TDR program can be either mandatory or voluntary. In a voluntary program, existing zoning in the sending area remains until a TDR sale or transaction occurs, in which case the land is downzoned. In a mandatory program, all land in the sending area is downzoned and a receiving area is designated.

A market for development rights must be established if a TDR program is to succeed. A locality should undertake an analysis of market conditions prior to designating receiving areas. In addition, the sending and receiving areas should be consistent with the comprehensive plan and land use plan.

In Zoning and Subdivision Law in Virginia by Stephen Robin, it is noted that several legal questions surround the use of TDRs in Virginia. For example, the state enabling legislation for zoning appears to support the goals of TDR, however such regulations are not traditional Euclidian Zoning and localities do not have the explicit statutory authority to implement a TDR program. There are also questions about “takings” of private property and compensation for property owners in sending areas. The TDR program may be subject to legal action if properties in the sending area are downzoned and there is no market for the development rights. Property owners may need to be given the opportunity to recoup any loss in revenue caused by being placed in a sending zone.

Guiding Growth in Virginia, by the Environmental Law Institute, cites the following as components of successful TDR programs: conformance with existing local regulations, financial institutions to facilitate transactions, and effective state enabling legislation.

(Example: “Transfer of Development Rights,” Zoning Ordinance, Collier County, Florida, 1982.)

(Also see Transferable Development Rights Programs, American Planning Association, Planning Advisory Service Report 401.)

Purchase of Development Rights

Purchase of Development Rights (PDR) programs are established to protect high quality farmland from conversion to non-agricultural land by using public funds to purchase the development rights from private owners. The landowner voluntarily sells development rights and receives compensation for the development restrictions placed on the land. The owner retains title to the land and can sell or pass the land along to others; however, the land is limited in that it can only be used for specified uses. The restrictions run with the land either for a set time period or in perpetuity.

In Virginia, local governments are authorized to create Service Districts to purchase development rights that are then dedicated as easements for conservation or open space (Code of Virginia §15.2-2403, “Powers of Service Districts”). Such Service Districts allow the locality to impose special assessments on a specific area in its jurisdiction for the purpose of acquiring development rights that may be beneficial to the area.

Several advantages and disadvantages of PDR programs are listed in the Chesapeake Bay Program's Beyond Sprawl: Land Management Techniques to Protect the Chesapeake Bay. Advantages of PDR programs include: fairness in treatment to property owners; an assurance of land protection that is greater than can be provided by zoning; the possible reduction in property and estate taxes; the ability to turn a fixed asset into a liquid asset which can be reinvested in the

farm to pay debt; and a greater level of acceptance by landowners of a voluntary, rather than regulatory, program.

Disadvantages of PDR programs include: the program may not achieve a critical mass of farmland due to its voluntary nature; it is not based on the unique financial situation of particular landowners; development rights may cost over 50 percent of the fair market value of the land or even exceed the value of the land as farmland or open space; compensation may be paid for value that was created by public investment such as roads and utilities; and landowners may refuse to participate due to concern that the program administration is too cumbersome or that sale of rights eliminates future options to transfer development rights or sell at full market value.

The City of Virginia Beach Agricultural Reserve Program is an example of a successful PDR program. The Agricultural Preserve Program was enacted in 1995 as the first PDR farmland preservation program in Virginia. The Agricultural Reserve Program is a non-development option available on a voluntary basis to property owners in the designated rural area. It works by purchasing development rights from property owners at fair market value.

The Virginia Beach program has several dedicated funding sources: a dedicated \$0.015 property tax; partial revenues from a local cellular phone tax; and a payment in lieu of taxes from the U.S. Fish and Wildlife Service. Landowners participating in the program are paid through an installment purchase agreement of twenty-five years maturity. The city purchases Treasury strips, at a fraction of face value, which mature in twenty-five years. In the interim, the city pays the property owner a semi-annual payment equal to the yield of the note. The interest payment is tax-free, and the landowner may sell the note after one year. Unfortunately, the obligation counts against the city's debt limitation, making many localities reluctant to use the option in spite of the fact that the installment purchase agreements leverage local resources.

(Example: Agricultural Reserve Program, City of Virginia Beach, Virginia.)

Taxation

Land owners in Virginia that make a commitment to preserve open space, agricultural or forest land may be eligible for tax incentives offered by federal, state, and local governments. Federal tax laws allow corporations and individuals to take deductions on income, property, and estate taxes for fee simple donations and easement donations to qualified nonprofit and governmental agencies. Examples of such programs are discussed below.

Land Use Assessment and Taxation

Land use assessment and taxation is an incentive which allows properties to be taxed based on existing use instead of market value. The objective is to decrease the tax burden on owners who are using land for agriculture, forestry, horticulture, or open space. By utilizing the use value taxation option, property taxes may be substantially reduced, which would encourage owners not to convert land to a higher density use such as residential or commercial. A “rollback” tax program is often coupled with the land use tax incentive. A rollback tax, which applies when the property is developed, is based on the difference a property owner would have paid based on fair market value for a specified number of past years, plus an interest penalty.

Any county, city, or town which has adopted a land use plan may adopt an ordinance to provide for use value assessment and taxation, in accord with the provisions of the law. (See “Real Estate Classification” in the Code of Virginia §58.1-3230.) The Virginia Land Use Assessment Law establishes four special classifications of real estate use: (1) agricultural use, (2) horticultural use, (3) forest use, and (4) open space use. Appendix II outlines the seven major open space categories specified in this law. Including these lands in the comprehensive plan or a specific open space and recreation plan identifies the significant resources that make up the natural and open space resource base of a community.

To grant the special use assessment, localities must have an adopted land use plan and pass an ordinance providing for use value assessment and taxation. The ordinance must be filed with the State Land Evaluation Advisory Council . A city also may adopt such an ordinance for newly annexed areas. The lands must be compatible with the locality's comprehensive plan and land use plan, and the landowner must agree in writing as to the land's use. After the prerequisite ordinance is in place, a landowner may apply for the use value assessment. In order for a landowner to participate, use of the land must meet certain standards.

Each type of land use - agriculture, forest, horticulture and open space - must meet certain standards before property can be considered for the tax benefit. The Virginia Department of Conservation and Recreation's Director establishes standards for open space, the Director of the Virginia Department of Forestry establishes standards for forestry, and the Virginia Department of Agriculture and Consumer Services Commissioner establishes those for agriculture and horticulture.

Because of its inclusive nature, the open space component of the statute provides latitude to communities, which can tailor it to their areas and needs. For example, the specific standards for open space include: park or recreation use, conservation of land or other natural resources, floodways, historic or scenic areas, wetlands, riparian buffers, and “lands necessary for the shaping of the character, direction, and timing of community development, or for the public interest.”

Landowners and localities benefit from the special use assessment. From a locality's perspective, the program manages land use and enhances protection of open space. The landowner receives a benefit through a tax reduction for open space protection. A third beneficiary of the special assessment is the community in general as a result of the protection of open space.

Several sources of information are available on the special use assessment. The Manual of the State Land Evaluation Advisory Council includes such information as the law and a general synopsis of the related code sections, standards used to determine whether a property qualifies for the assessment, a model ordinance, and an application form for taxation on the basis of land use assessment. This publication can be obtained from Virginia's Department of Taxation. Another source is the 1993 Local Implementation of the Open Space Land Act, developed by the Virginia Outdoors Foundation. The manual focuses on methods of acquiring and maintaining open space that can be used by local governments in Virginia.

(Example: Virginia localities that have adopted special open space tax incentives include Albemarle County, Chesterfield County, Hanover County, Henrico County, Loudon County, and Prince William County.)

Agricultural and Forestal Districts

The Agricultural and Forestal Districts Act of 1977 (Code of Virginia §15.2-4400) establishes a procedure for landowners to have their local governing body designate their properties as agricultural or forestal districts. While the program is governed by state law, specific procedures for forming a district are established by the locality.

Landowners wishing to manage their property for agricultural or forestal uses recognize several benefits from the Act including: use-value taxation and freedom from special assessments levied to support non-farm development, exemption from nuisance ordinances, protection from government actions having a deleterious effect on the district, and protection from many eminent domain situations.

Certain benefits also are recognized by the locality by creation of agricultural and forestal districts, such as having a land use management tool for development. Further, prime agricultural and forest land can be protected from potential loss through development, and the pastoral character of an area can be protected.

Acquisition

Acquisition of land is one of the most effective means of providing open space and recreational opportunities, especially when done by a public entity. Acquisition may occur in fee simple purchase, land exchange, tax foreclosure, or donation. Each of these acquisition techniques has its advantages and disadvantages. Ownership allows management plans, control of use and access, implementation of necessary protection measures, and assurance that use of the property is congruent with the owner's vision and mission. One of the drawbacks to acquisition is the potential high cost. Public agencies and nonprofit organizations generally have limited financial resources and must target acquisitions for the most significant pieces of open space.

Opening Day at Roanoke County's Garst Mill Park Greenway



Easements

Rather than buy a specific piece of property, a governmental or nonprofit entity may choose to acquire an easement to the property through purchase or donation. An easement is a legal agreement entered into by a property owner, who grants certain rights in the property to the holder of the easement. Often it is done for the purpose of preserving the property's character. Easements (such as conservation, open space, scenic, or historic) are an effective way to protect important open space resources.

While easement donors may receive certain tax benefits, the primary motivation for granting the easement is usually to protect the cultural or natural resource value of the property. An advantage of easements is that the property remains on the tax rolls and under private management while ensuring that underlying natural, open space, recreational, historic and/or community values will be protected. The recipient of the easement has the advantage of protecting the land without having to own it, and easements can be tailored to the character of the land they are designed to protect. Easements come with responsibilities for the recipient which include monitoring of the easement to ensure that terms of the easement are being met, reviewing any proposed improvements or changes to property to ensure they are compatible with the easement, and being prepared to enforce, in court if necessary, an easement's terms.

A variety of public agencies, governmental units, and nonprofit organizations can hold easements. The Virginia Conservation Easement Act (Code of Virginia, §10.1-1009) allows 501(c)(3)

conservation organizations to acquire easements on real property for the purpose of retaining or protecting scenic, natural, or open space values. Terms of the easement provide a direction for use of the property during the life of the easement, which in many cases is perpetual.

State entities capable of holding conservation/open space easements include the Virginia Department of Conservation and Recreation, Virginia Outdoors Foundation, Virginia Department of Game and Inland Fisheries, University of Virginia, and the Virginia Department of Historic Resources. Local governments and Soil and Water Conservation Districts may also hold easements. Albemarle County, Loudon County, Fauquier County, and Virginia Beach are examples of localities that hold easements. Nonprofit organizations (such as the Western Virginia Land Trust, the Trust for Appalachian Trail Lands, or the Nature Conservancy) can hold easements provided that they fit the criteria noted in Sections 10.1-1009 and 10.1-1010 of the Code of Virginia. Federal land management agencies such as the National Park Service and the U. S. Fish and Wildlife Service also may hold easements.

Fee Simple Purchase and Lease Back

The fee simple purchase and lease back process involves the purchase of land that is then managed by another party. An entity purchases the land then leases it to another with restrictive measures that protect the open space or other resource. An example would be a local conservation organization purchasing a large tract of forest land and leasing it to the local government for passive recreation activities such as hiking or nature study.

Open Space Lands Preservation Trust Fund

The Open Space Lands Preservation Trust Fund was established by the Virginia General Assembly to aid persons conveying conservation easements with the costs associated with such conveyance, such as legal or appraisal costs. The Virginia Outdoors Foundation (VOF) has been given the responsibility of establishing, administering, and making expenditures and allocations from a special non-reverting fund in the state treasury. The VOF uses the fund to provide grants to persons conveying conservation easements on agricultural, forestal, or other open space land pursuant to the Open Space Land Act (Code of Virginia §10.1-1700) and the Virginia Conservation Easement Act (Code of Virginia §10.1-1009).

To be eligible for a grant award, the conservation easement must be perpetual in duration and conveyed to the Virginia Outdoors Foundation and a local co-holder. Local co-holders can be a local government body, public recreation facilities authority, soil and water conservation district, or other local entity authorized by statute to hold open space preservation easements.

Management/Cooperative Agreements

A management or cooperative agreement is a contract between a landowner and a conservation agency to achieve specific objectives. The agreement should clearly state the conservation intent for the site, roles and responsibilities, and the duration of the agreement. Management agreements may be reached between public and private entities and between public agencies. Agreements may be adopted to protect natural heritage resources, allow public access to private lands for recreational purposes, or increase access to Virginia's waters, among other purposes. Groups such as the Nature Conservancy, Appalachian Trail Conference, and Virginia Division of Natural Heritage use management agreements to assist in the preservation of natural resources.

Land Trusts

Land Trusts typically are tax exempt organizations dedicated to the preservation of natural resources through planning, acquisition, and public outreach efforts. Trusts sometimes maintain a revolving fund to be used for the quick purchase of land which may be in jeopardy of being converted to a different land use. The land acquired by a land trust is often resold with restrictive covenants. Other lands may be protected by outright purchase, management agreements, or conservation easements in which property owners voluntarily agree to protect the land. Examples of the trusts that could be utilized in the Roanoke Valley include:

Nature Conservancy, which holds an easement on land in Roanoke County in addition to its holdings in other parts of Virginia.

National Trust for Historic Preservation, which addresses architectural and landscape elements in historically significant areas.

Western Virginia Land Trust, a member-supported nonprofit organization that works with public and private landowners of 23 counties in western Virginia to preserve significant resources.

Trust for Public Land, a national center for assisting land trusts to undertake rural landscape protection transactions.

Land Trust Exchange, which acts as an umbrella organization and information source for hundreds of land trusts throughout the country.

American Farmland Trust, a group that gathers and presents information on the state of the rural landscape, in addition to responding legislatively to rural landscape issues.

(See “A Guide to the Use of Conservation Easements in Western Virginia” by Lief Horwitz for the Western Virginia Land Trust.)

Non-Binding Agreements

There are several programs which provide varying means of protection for open space through the use of non-binding agreements. Many of these methods provide only limited protection because there are few regulatory requirements for the designated properties and no assurance that the quality of the open space will be maintained. Some examples of non-binding agreements are: Bicentennial Farm Program, National Register of Historic Places, and the Virginia Natural Areas Registry.

Virginia Scenic Highways Program

The Commonwealth Transportation Board is authorized by §33.1-62 of the Code of Virginia to designate certain outstanding roads as Virginia Byways or Scenic Highways. A "Virginia Byway" is defined as a road, designated by the Commonwealth Transportation Board, having relatively high aesthetic or cultural value, leading to or within an area of historic, natural, or recreational significance. In selecting a Virginia Byway, the Commonwealth Transportation Board and the Director of the Virginia Department of Conservation and Recreation are required to give preference to corridors controlled by zoning (or other means) so as to reasonably protect the aesthetic or cultural value of the highway.

Designation does not place restrictions or regulations upon the land adjacent to these highways. The state obtains no land use controls through the process, and the operating procedures of the Virginia Department of Transportation in regard to the highway remain unchanged. Designation does provide two types of protection: prohibition of certain advertising structures, and authority for the Commonwealth Transportation Board to purchase land adjacent to the highway for "the preservation of natural beauty adjacent to scenic highways." (See Code of Virginia §33.1-66.)

Virginia Scenic Rivers Program

The Scenic Rivers Act was passed in 1970 to protect and preserve rivers possessing natural or pastoral beauty. Including a river in the scenic rivers system provides a framework whereby the preservation of that river is encouraged. Virginia's scenic rivers are listed in the Virginia Outdoors Plan. None are in the Roanoke Valley.

The Virginia Scenic Rivers Program provides the following for designated rivers: creates an advisory committee comprised of local citizens appointed by the Governor to provide local governments a greater voice in federal or state projects which may impact the designated river; allows riparian (riverside) landowners to continue using their land as they did before designation; provides an opportunity to consider scenic and other values of the river in the comprehensive planning process; and provides a multi-purpose planning document used by the Federal Energy Commission in its consideration of the potential impacts of proposed hydropower or related projects.

The Virginia Scenic Rivers Program does not: affect a riparian landowner's right to use the river and its banks; impose any federal controls, rules, or regulations; impose any land use controls or regulations; authorize state agencies to condemn land; allow the general public the right to use privately owned riparian lands; promote an increase in the recreational use of the river; affect tributary streams or branches; or imply or have any direct bearing on other state water quality programs, such as the Tier III Exceptional Waters designation or the establishment of Surface Water Management Areas.

Summary of Alternatives

More information on these alternatives is available at the Fifth Planning District Commission. In addition, several publications are available comparing the advantages and disadvantages of alternatives. An excellent example is the 1987 publication of Population-Environment Balance, Inc., entitled Community Responses to Population Growth and Environmental Stress: A National Inventory of Local Growth Management Strategies.

CONCLUSIONS

This study was initiated because of a high level of local interest in the concept of open space planning. The resource inventory prepared for the study shows that important natural resources do exist in the Roanoke Valley, and as confirmed during the study's citizen participation element, public interest in those resources is very strong. Many options for preserving, protecting, and managing the resources have been identified. It is recommended that localities consider those options and continue the open space planning process.

How to Continue the Open Space Planning Process

As noted throughout the document, this open space study is just one step in the overall open space planning process; it is designed to give local governments the information they need in order to continue the process. The following is a suggestion of steps that can be taken by localities toward that end.

Step One: Utilize the Study's Resource Database

This document contains a mapped inventory of natural resources (Maps 3 through 8), a version of the conceptual greenway corridor map (Map 9), and a map that shows five categories of ownership of open land (Map 2). These maps were created by the Fifth Planning District Commission using a Geographic Information System (GIS). Because the database is contained in a GIS, the information can be mapped in different ways, or several resources can be shown together on one map. For example, Map 10 shows how four natural resources overlap. Although not shown herein because of the complexity of detail at this scale, it is interesting to compare the land ownership map to any of the natural resource maps. This tells us whether or not special resources such as ridgelines are privately owned. This information will be needed as the localities move forward with the open space planning process. It will continue to be available in the Fifth Planning District Commission's GIS database for future use.

Large versions of the maps in this study will be kept at the local planning departments and are available for public review at the Fifth Planning District Commission.

Step Two: Prioritize Open Space Resources and Set Goals

A prioritization process needs to be utilized by the localities in the Roanoke Valley in order for the open space planning process to continue. This process would allow citizens and jurisdictions to decide which open spaces are *most important* to them. The method used to solicit this extensive citizen participation could be similar to the processes already used by the planning departments of each locality in their comprehensive, land use, or neighborhood plans. The assistance of the Fifth Planning District Commission or nearby universities could be utilized. Prioritization of open space also could include information being collected by the Western Virginia Land Trust (using a Virginia Environmental Endowment grant) on critical private lands.

By necessity, a prioritization process involves the setting of goals. Step Three explains how open space goals and recommendations must be balanced with other community goals.

Step Three: Balance Open Space Goals with Other Community Needs

In an open space planning process, citizens are likely to express concerns for protecting the environment, maintaining rural character, conserving important historic resources, and preserving scenic views. It is just as likely that citizens will be concerned about an open space program's effect on the tax base, landowner rights, and the availability of land for development. This was found to be true at the two focus group sessions conducted for this study. This is described in detail in the second section of this report, entitled Results of the Public Review Process. Appendix III shows the revenue to cost ratio of various types of land uses as compared to open space.

As with other planning efforts, the open space planning process must balance a variety of needs and concerns so that a consensus can be reached. In order for an open space program to be successful, it must be *compatible with overall community goals*.

It is fortunate that in many situations open space goals and activities will overlap with other community goals. For example, preserving open space along rivers helps prevent flood damage and helps protect water quality (a potential stormwater management program goal). Open space programs blend naturally with recreation plans and are especially useful for creating outdoor classrooms for the school system's nature study program. An overlapping of goals will become evident during the community planning process.

Step Four: Evaluate the Vulnerability of Resources

After the community decides which open spaces it values the most, it needs to think about how *vulnerable* those lands are. For the community to effectively examine the *vulnerability* of its open spaces, it should look at each section of open space separately and ask itself this question - **“If we don't act now, what is the chance we'll lose the opportunity to influence the future use of this property?”**

Answering this question helps the community decide when action is needed in regard to specific priority sections of open space. For example, a *vulnerability* analysis might reveal that while wilderness areas in National Forests are highly prized by the majority of the population, they are also strongly protected by the federal government. It is extremely unlikely that those areas will be developed, so action is probably not needed. Aside from keeping an eye on potential changes in federal policy regarding National Forest land, the community can focus on other priority lands first.

As another example, a *vulnerability* analysis might show that a certain piece of land could be an important addition to an open space network, but it is privately owned and zoned for commercial use. In this theoretical example, the local water and sewer plan calls for extension of utilities to that section of the county within the next five years. This makes the site attractive to developers, so the community needs to decide if it should purchase the property while it is still open land.

For the purposes of this study, *vulnerability* is defined by three factors - (1) whether or not a piece of land has natural resources of special significance in the community and/or natural resources that can be easily harmed during the development process, (2) whether the land is in public or private ownership, and (3) the presence of conditions influencing the likelihood that this land will be developed in the future. Several aspects of these vulnerability factors are discussed below.

Existence of Special Natural Resources

The **significance** of a specific site is best decided by the community itself. Sites may be significant because they are rare, distinctive, or an integral part of the community. An example is Mill Mountain which sits in the middle of the City of Roanoke and is visible from much of the valley.

The Natural Resources Maps included in this study show general elevations; elevations at or above 1500 feet; generalized slopes; floodplains, floodways, and selected watersheds; and views from the Blue Ridge Parkway. Unless these and other resources are given special consideration during the planning and/or development process, it is possible that they could be harmed or permanently changed. Their **sensitivity** is an important consideration in open space planning.

Another map included in this study shows conceptual greenway corridors. These have been identified by the community as land to be evaluated in the future for use as greenways. This is an indication of the importance of that land. While it may turn out that some of the potential corridors are not feasible, their **designation in an adopted plan** means they need to be examined in any open space planning undertaken by the community.

As an additional consideration, specific natural resources can occur separately or in combination. For example, the maps in this study indicate that at least three resources overlap at several points along the Blue Ridge Parkway - high elevations, steep slopes, and scenic views. Map 10 shows that **special resources are sometimes found in clusters**.

Ownership Patterns

The **ownership patterns** examined in this study include five categories - public, semi-public, private, agricultural/forestral districts, and land with conservation easements. Property ownership is one of the factors to be considered in examining vulnerability.

The type and use of public land, along with local government plans for future use of the land, will determine if it is likely to be developed in the future. Public plans for use of public land can vary greatly. Examples of the two ends of the continuum in this regard are the Blue Ridge Parkway and the Appalachian Trail (both permanently protected by Acts of Congress) and land held by a locality for future use as an industrial park.

The future use of private parcels is dependent on the **intentions of the property owners**, in combination with the existing zoning, market conditions, and similar factors. While land in agricultural/forestral districts is preserved as such with special tax status, this can be changed

whenever the owner is willing to accept regular tax status (and pay "rollback" taxes for the previous five years). Land with conservation easements will remain undeveloped as long as the legal constraints of the easement continue to be met.

Development Considerations

Relative location (such as a potential subdivision site in a popular part of the community) can make a piece of property valuable to a developer. On the other hand, relative location is important in designing an open space network also. For example, a small piece of open space may be especially significant because it is adjacent to another open space. It could be a vital linkage between two open spaces or between a recreation area and a populated section of the community.

Development pressure characterizes high growth areas, and it can occur where there are few remaining developable parcels of land. A good example of this are the steep slopes in the Roanoke Valley. For years, they were undisturbed because it was easier to build on the flatter parcels in the valley. Now that the majority of the easy sites have been taken, builders are looking for ways to build on the remainder of the land, which is likely to be steep. This study has examined elevations at or above 1500 feet, which is a high elevation but one that has seen increased development in recent years.

Another factor is **ease of development**, which is related to the availability of **infrastructure**, such as water, sewer, and roads. These things make vacant land much more attractive because their existence at a specific location reduces the cost of building there. If these sites are already **zoned** for development, they may be considered "ready to go" in the developer's eyes.

Step Five: Select One or More Methods of Preserving, Protecting, and Managing Open Space

This document gives a detailed listing of alternatives for preserving, protecting, and managing open space. With such a wide variety of options to choose from, each locality should study the alternatives and decide which ones meet local needs and are acceptable to citizens. They should be especially careful to consider how the chosen alternative will affect other aspects of land development, growth, and quality of life.

In deciding which alternatives meet a locality's needs, consideration must be given to factors such as the area's topography, rate of growth, and development patterns, in addition to the type of open space resources it contains. For example, while some steep land exists in the cities, it is far more likely that Roanoke County will experience pressure for development on steep slopes, and thereby choose to address that issue first. As another example, because the cities have limited vacant land, city officials may decide to emphasize conservation easement programs first, or acquisition, or one of the many other options.

A variety of voluntary and regulatory programs should be considered, and the community might decide on a combination of different options, phased in over time. For communities that are considering a public open space acquisition program, Appendix IV gives an example of a

prioritization methodology taken from the City of Greenville (N.C.) Greenway Comprehensive Plan.

In addition, localities may want to consider providing use value taxation for private open spaces that are placed under conservation easements. This is allowable by law for localities that enact ordinances to that effect. (See Appendix II.)

Each local government will need to find out how its citizens feel about the various options for preserving, protecting, and managing open space. Planners should be prepared to explain open space options in some detail to the public, and serious consideration should be paid to each alternative. This may not be an easy process. A statewide public opinion survey on open space (see Appendix I) found that only a small percentage of respondents disagreed with using zoning, easements, and purchase programs to protect open space, but a large percentage were undecided or unsure of how to protect open space.

A Final Comment on Future Open Space Planning

Communities throughout the state and nation have studied open space issues and opportunities. In more congested areas, this is being done to help stem the “urban sprawl” that residents of those areas have long lamented. Citizens in the Roanoke Valley have started to use the word “sprawl” also, but there is still time for the Valley to make informed decisions on how it wants to grow. It would be timely for local governments to continue the open space planning process using either the steps outlined above or an alternate process. Citizens appear to be ready to seriously consider the issues and options.

APPENDIX I:

STATEWIDE PUBLIC OPINION SURVEYS ON OPEN SPACE

Virginia Outdoors Survey/Virginia Outdoors Plan

In 1992, the Virginia Department of Conservation and Recreation conducted a survey of 4,760 households to determine “use of and attitude about the Commonwealth’s natural and outdoor recreational resources.” The report shows the survey results by region of the state, i.e., Piedmont, Chesapeake, Urban Crescent, and Mountain. The latter is comprised of the 31 counties and 13 cities along the western edge of the state, including the Roanoke Valley. For the survey’s seven questions related to open space, the results are noted below.

RESPONSES TO QUESTIONS ON OPEN SPACE IN VDCR’S 1992 VIRGINIA OUTDOORS SURVEY

<u>Questions and Possible Responses</u>	<u>Responses (by %)</u>	
	<u>Statewide</u>	<u>Mountain Region</u>
<i>Question - What Is Open Space?</i>		
1. Park Areas	57.7%	45.6%
2. Natural Areas	63.2%	59.9%
3. Agricultural	45.1%	46.1%
4. Scenic Areas	55.3%	55.2%
5. Historic Resources	21.0%	21.9%
6. Floodplains	39.3%	38.2%
7. Other	03.6%	02.4%
8. Unsure meaning	15.9%	18.3%
<i>Question - Is It Important To Protect Open Space?</i>		
1. Not Important	00.9%	01.5%
2. Somewhat Important	12.1%	12.4%
3. Very Important	76.7%	77.8%
4. Don’t Know	10.2%	08.2%
<i>Question - Is It Adequately Protected?</i>		
1. No	40.1%	35.9%
2. Yes	18.8%	23.7%
3. Don’t Know	41.1%	40.4%

<u>Questions and Possible Responses</u>	<u>Responses (by %)</u>	
	<u>Statewide</u>	<u>Mountain Region</u>

Question - How Acceptable Are These Ways Of Protecting Open Space?

Zoning Ordinance

1. Not Acceptable	05.8%	06.0%
2. Acceptable	35.4%	31.0%
3. Very Acceptable	24.4%	20.4%
4. Don't Know	34.4%	42.6%

Easement

1. Not Acceptable	07.8%	07.5%
2. Acceptable	32.8%	30.0%
3. Very Acceptable	14.6%	10.8%
4. Don't Know	44.8%	51.7%

Purchase

1. Not Acceptable	04.6%	06.2%
2. Acceptable	31.3%	27.5%
3. Very Acceptable	27.0%	22.2%
4. Don't Know	37.1%	44.1%

Question - How Should We Pay For Recreation And Open Space?

1. Taxes	19.5%	16.0%
2. User Fees	56.3%	59.5%
3. Other	04.4%	04.2%
4. Unwilling to Pay	05.4%	04.9%
5. Don't Know	14.4%	15.5%

Question - Would You Give Up Some Use Of Property To Protect Open Space?

1. Not Willing	24.6%	22.9%
2. Somewhat Willing	29.0%	26.4%
3. Willing	16.1%	15.2%
4. Very Willing	05.8%	04.0%
5. Don't Know	24.6%	31.5%

Source: Virginia Department of Conservation and Recreation, 1992 Virginia Outdoors Survey, 1992, pages 35-36.

Responses in the Mountain Region were generally similar to the statewide results. **The protection of open space was considered to be very important by 77.8% of the Mountain Region respondents. Many of those answering the survey (40.4%) were not sure if open space is adequately protected, while 35.9% stated that it is not.** Only a small percentage of respondents disagreed with using zoning, easements, and purchase programs to protect open space, but a large percentage were undecided or unsure of how to protect open space. The majority felt that user fees were a good way to pay for recreation and open space. Less than half were willing to give up some use of property to protect open space.

The 1996 Virginia Outdoors Plan was prepared by the Virginia Department of Conservation and Recreation as "a plan for meeting Virginia's outdoor recreational needs and conserving the environment." A significant part of the report is its inventory of recreational resources within the state. Partially due to the large amount of National Forest land within the Fifth Planning District (the counties of Alleghany, Botetourt, Craig, and Roanoke; and the cities of Roanoke, Salem, Clifton Forge, and Covington), the region as a whole has a large supply of hunting acreage and horseback and hiking trails. The vast majority of National Forest land within the Fifth Planning District is outside the Roanoke Valley. Within the Roanoke Valley, Carvins Cove Reservoir and its surrounding land account for a large part of the recreational land inventory. However, recreation is limited in 75% of the Carvins Cove area. **The Virginia Outdoors Plan notes that, within the Fifth Planning District, the Roanoke Valley has the most acute shortages of supply of outdoor recreational opportunities. It further states that the greatest need is for "close-to-home" recreational areas.**

In regard to federally-owned natural resources, the Virginia Outdoors Plan recommends that the planning districts and localities along the Blue Ridge Parkway develop a comprehensive protection plan for the parkway corridor. It also recommends consideration of a scenic overlay zone for land within the parkway's viewshed. The plan includes recommendations for development of recreational resources at sites such as Carvins Cove Reservoir, Mowles Spring Park, and Explore Park, among others; as well as a new regional park in the vicinity of Poor Mountain and Bent Mountain, southwest of the Roanoke/Salem area.

The Virginia Department of Conservation and Recreation recommends that each locality develop a trail and greenway plan as part of its comprehensive plan and that localities work with the Virginia Department of Transportation to develop appropriate bicycle routes. The plan recommends that each local government prepare its own open space and recreation plan. A major theme of the state plan is the need for public-private partnerships in meeting local recreation and open space needs.

1998 Advisory Commission on Intergovernmental Relations Report

The Virginia Advisory Commission on Intergovernmental Relations (ACIR) has studied state and local efforts to preserve and enhance the Commonwealth's visual resources, partially as a result of House Joint Resolution 447 passed by the General Assembly in 1997. ACIR's 1998 Report to the Governor and General Assembly is entitled The Impact of Aesthetics on the Economy and Quality of Life in Virginia and its Localities. Parties testified before ACIR as to the value of the visual environment, the fragility of the physical environment, and the detrimental effect of chaotic

unplanned growth. It was noted that businesses look for a high quality environment in selecting sites. An obvious economic benefit of a healthy environment is a healthy tourism industry.

The report mentions a **1997 quality-of-life poll** sponsored by the Virginia Environmental Endowment (conducted by Peter D. Hart Research and Public Opinion Strategies). Among those polled, **“having access to places of natural beauty, such as mountains or rivers” was the most frequently cited reason for enjoying life in Virginia.** A **1990 poll** sponsored by the Piedmont Environmental Council (conducted by Mason Dixon Opinion Research, Inc.) found that **the majority of respondents ranked “preserving the historical, rural, and natural beauty of Virginia” as an extremely important concern, second only to education.** (ACIR, page 7)

ACIR notes that the preservation of open space is a major concern to rapidly growing communities, especially where citizens want to prevent the loss of natural beauty, rural landscapes or small town character. In its report, ACIR defines open space as “all undeveloped natural areas such as parks, farms, riverfront buffers, or forests.” It states that “such space offers a wide range of benefits from greater aesthetic and recreational opportunities to increased property values for adjacent land and tax benefits for localities.” (page 24)

The study concludes that:

Without question, Virginia has a well deserved reputation for beauty. It is equally clear that the state’s quality visual environment plays a key role in both state and local economies. Innovative state and local programs have already made dramatic progress in preserving and enhancing the visual environment throughout the state. But more can and should be done. To fail to promote and protect Virginia’s stunning physical environment to the best of our ability would be a betrayal of the public trust. (page 35)

APPENDIX II:

DEFINITION OF OPEN SPACE UNDER THE VIRGINIA LAND USE ASSESSMENT LAW

The Virginia Land Use Assessment Law identifies the types of land that qualify as open space for tax assessment purposes. This law gives localities the ability to assess or tax real estate on its actual use rather than its highest use. The most recent Virginia Outdoors Plan (page 24) describes the five types of land that were included in the definition in 1996.

- * Parks and recreation use lands
May include public, semi-public or privately-owned parks, playgrounds, or similar recreational areas operated for public or community use. Examples: parks, athletic fields, botanical gardens, fishing ponds, golf clubs, etc. Excluded are facilities operated for profit.
- * Conservation or other natural resource lands
Lands protected for the preservation of forest and wildlife resources, watersheds, nature preserves, arboretums, marshes, swamps, and similar natural areas.
- * Floodways
Lands providing for the passage or containment of waters including the floodplains or valleys and side slopes of streams that may be subject to periodic or occasional overflow. These also may include adjacent lands that should be reserved as additional channels for future floods. The U.S. Army Corps of Engineers and the Virginia Department of Conservation and Recreation are sources of specific floodplain and floodway information.
- * Historic or scenic areas
Includes properties on the Virginia Landmarks Register or the National Register of Historic Places, properties protected by *scenic* or open space easements, sites designated or recommended as scenic by the Departments of Conservation and Recreation, Historic Resources, Transportation, or some other state or local agency.
- * Lands necessary for the shaping of the character, direction, and timing of community development, or for the public interest
Lands officially designated by the local governing body to be left in a relatively natural and undeveloped state. Examples: greenways, parkways, trails, stream valleys, forests and farmland, hilltops or hillsides, mountaintops and mountainsides, and scenic vistas.

The Virginia General Assembly added two types of land under the category of open space after 1996. These are defined below.

* Wetlands

An area that is inundated or saturated by surface or ground water at a frequency or duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, and that is subject to a perpetual easement permitting inundation by water.

* Riparian Buffers

An area of trees, shrubs, or other vegetation, subject to a perpetual easement permitting inundation by water that is (i) at least 35 feet in width, (ii) adjacent to a body of water, and (iii) managed to maintain the integrity of stream channels and shorelines and reduce the effects of upland sources of pollution by trapping, filtering, and converting sediments, nutrients, and other chemicals.

APPENDIX III:

OPEN SPACE AND DEVELOPMENT COST RATIOS

CH2M HILL Report for Chesapeake Bay Program

In the early 1990s, the Chesapeake Bay Program's Subcommittee on Population Growth and Development retained the consulting firm of CH2M HILL to perform a comprehensive review of the literature on the capital cost of providing services and infrastructure to different types of residential development. The 1993 study, entitled Cost of Providing Government Services to Alternative Residential Patterns, looks at the development pattern that is generally called "sprawl." For the purposes of that study, sprawl is defined as "residential development at a density of less than 3 dwelling units per acre, which does not have a locational component. That is, sprawl can occur either as leapfrog development located outside of existing service areas or as a development located in or adjacent to existing service areas." (CH2M HILL, page ES-1)

The study found that "the most expensive residential land use pattern in capital costs per dwelling unit consists of scattered, noncontiguous neighborhoods and subdivisions, which results in low service area gross density." Furthermore, "locating new residential development at the edge of existing service areas decreases the capital and annual costs of providing interneighborhood services." (page ES-14)

Among the studies reviewed in the CH2M HILL report is one prepared by the American Farmland Trust in 1992. **It found that residential services consistently exceeded the revenues they generated, in sharp contrast to the ratios found for commercial, industrial, farm land, and open land.** These ratios represent findings for three towns in Connecticut. The American Farmland Trust reports that similar results were found in a 1986 study of Loudon County, Virginia. The following table shows the contributions of various land uses (1) to the revenues collected by local government and (2) to the costs incurred by government to provide public services.

MEDIAN RATIOS OF REVENUES TO PUBLIC SERVICE COSTS - BY TYPE OF LAND USE

<u>LAND USE</u>	<u>REVENUES/EXPENDITURES</u>
Residential	\$1/1.15
Commercial/Industrial	\$1/0.38
Farm and Open Lands	\$1/0.29

Source: CH2M HILL, for Chesapeake Bay Program's Subcommittee on Population Growth and Development, Cost of Providing Government Services to Alternative Residential Patterns, 1993, page B-3.

Sierra Club Report

A 1997 Sierra Club publication, entitled Sprawl Cost Us All - A Guide to the Costs of Suburban Sprawl and How to Create Livable Communities in Virginia, gives the same type of statistic for a variety of Virginia communities. Several state averages are given also. These figures are consistent with the findings of studies by the American Farmland Trust.

RATIOS OF REVENUES TO PUBLIC SERVICE COSTS - COMPARISON OF SEVERAL STATES BY TYPE OF LAND USE

<u>LOCATION</u>	<u>RESIDENTIAL</u>	<u>COMMERCIAL</u>	<u>FARMS, FOREST, AND OPEN SPACE</u>
<u>Virginia</u>			
Augusta County	1/1.22	1/0.20	1/0.80
Culpeper County	1/1.25	1/0.19	1/0.19
Fauquier County	1/1.18	1/0.15	1/0.15
Loudoun County	1/1.55	1/0.38	1/0.50
Rappahannock Co.	1/1.20	1/0.53	1/0.17
Virginia Beach	1/1.30	N/A	1/0.30
<u>State Averages</u>			
Virginia	1/1.33	1/0.29	1/0.35
Connecticut	1/1.06	1/0.47	1/0.43
Massachusetts	1/1.12	1/0.42	1/0.33
New York	1/1.24	1/0.24	1/0.35
Minnesota	1/1.04	1/0.39	1/0.50
Ohio	1/1.41	1/0.23	1/0.30

Source: Sierra Club, Sprawl Costs Us All - A Guide to the Costs of Suburban Sprawl and How to Create Livable Communities in Virginia, 1997, page 5.

The report goes on to discuss three types of residential development and the capital cost of services for a single family dwelling unit in each type. In 1987 dollars, these costs were \$18,000 for a single dwelling unit in a “smart growth (mix of housing types) development pattern,” \$35,000 in a “low density sprawl development pattern,” and \$48,000 in “low density sprawl, 10 miles from existing development.” (Sierra Club, page 5)

APPENDIX IV:

QUALITATIVE AND QUANTITATIVE CRITERIA FOR PUBLIC ACQUISITION OF OPEN SPACE

Prioritization is especially important when a locality chooses to purchase open space. An example of a prioritization methodology for a public open space acquisition program is found in the City of Greenville (N.C.) Greenway Comprehensive Plan.

The Greenville Plan outlines a Land Acquisition Evaluation Criteria System which has both qualitative and quantitative elements. The former uses a point system with individual parcels of land rated according to seven criteria. Each category has five options, which are assigned points from 1 to 5. For example, under the Threat of Loss category, a piece of property would get 1 point if it is already protected by a deed restriction, easement, or established regulatory authority. A parcel would get 5 points if it is slated for immediate development and there is no regulatory authority existing to protect the property in its natural condition. The points in each category are totaled and parcels with higher totals are considered higher priority for purchase and inclusion in the public open space system.

Greenville's seven *qualitative* criteria are:

Location - where the property is located in the community.

Proximity - where the parcel of land is located in terms of proximity to surrounding existing public/private open space parcels and facilities.

Accessibility - the relationship of the property to transportation routes.

Aesthetic Quality - the property's scenic qualities or outstanding physical characteristics, such as (1) significant geologic formation or unique vegetation, (2) outstanding views of surrounding landscape from the property, or (3) other significance due to the composition of its natural resources.

Use/Utility - the property's ability to accept a number of specific uses for active or passive recreation, utility or infrastructure, scientific or educational purpose.

Threat of Loss - the current land use and the pace of urban/suburban growth.

Rarity - an evaluation of the property has revealed that it (1) contains rare species of vegetation, (2) supports a habitat for wildlife which is rapidly disappearing within the locality, region, or state, or (3) is regarded as a property which possesses significant natural composition.

Greenville also considers two *quantitative* criteria in considering if specific parcels should be purchased by the city. These are:

Cost - a financial evaluation of the property to determine (1) its appraised value, (2) the likelihood that it will be donated to the locality or sold for less than fair market value, (3) the amount of tax revenues the locality will lose if the property is taken out of private ownership, and (4) the availability of funds for the locality to purchase the property.

Manageability - an evaluation of the parcel based upon the ability of a public or private agency to effectively manage the land so that it does not become a nuisance to the community.

BIBLIOGRAPHY

- Albemarle County, Virginia, Proposed Mountain Protection Plan, 1996. (804-296-5823)
- Albemarle County, Virginia, “Scenic Areas Overlay,” Zoning Ordinance, 1980. (804-296-5823)
- American Planning Association, Performance Controls for Sensitive Lands, Planning Advisory Service Report 307/308, 1975. (312-431-9100)
- American Planning Association, Planning for Hillside Development, Planning Advisory Service Report No. 466, 1996. (312-431-9100)
- American Planning Association, Transferable Development Rights Programs, Planning Advisory Service Report No. 401, 1987. (312-431-9100)
- Asheville, North Carolina, Hillside Area Development Standards, [date] . (704-259-5830)
- Asheville, North Carolina, “Planned Unit Development Overlay District,” Zoning Ordinance, [date]. (703-259-5830)
- CH2M HILL, for Chesapeake Bay Program’s Subcommittee on Population Growth and Development, Cost of Providing Government Services to Alternative Residential Patterns, 1993. (703-471-1441)
- CH2M HILL, “Model Stormwater Management Ordinance,” Roanoke Valley Regional Stormwater Management Plan, 1998. (703-471-1441)
- Chesapeake Bay Program, Beyond Sprawl: Land Management Techniques to Protect the Chesapeake Bay, 1997. (1-800-YOUR BAY)
- Community Design Assistance Center, Virginia Tech, Open Space Handbook, 1994. (540-231-5644)
- City of Greenville, N.C., City of Greenville Greenway Comprehensive Plan, Appendix A, 1992.
- Environmental Law Institute, Guiding Growth in Virginia: Local Incentives for Revitalization and Preservation, 1998. (202-939-3800)
- Fausold, Charles J. and Robert J. Lillholm, for Lincoln Institute of Land Policy, The Economic Value of Open Space: A Review and Synthesis, 1996. (617-661-3016)
- Gloucester County, Virginia, “Cluster Provisions,” Subdivision Ordinance, [date]. (804-693-4040)

Horwitz, Lief, for the Western Virginia Land Trust, "A Guide to the Use of Conservation Easements in Western Virginia," 1998. (540-985-0000)

Howard County, Maryland, "Rural Cluster District," Zoning Ordinance, 1992. (410-313-4302)

Hudson, Mike and Ron Nixon, "Will Forests Survive the New Timber Rush?" The Roanoke Times, 11-22-98. (540-981-3100)

Maryland Office of Planning, Preparing a Sensitive Areas Element for the Comprehensive Plan, 1993. (410-225-4500)

Montgomery County, Pennsylvania, Guidebook For Riparian Corridor Preservation, 1996. (610-278-3745)

Montgomery County, Pennsylvania, "Land Preservation District," Model Zoning Provisions, 1992. (610-278-3745)

National Lands Trust, Growing Greener: A Conservation Planning Workbook for Municipal Officials in Pennsylvania, 1998. (610-535-5587)

New Century Council Community Indicators Committee, Vital Signs: Community Indicators for the New Century Region, 1998. (540-362-6426)

Newport News, Virginia, Reservoir Protection Ordinance, 1997. (757-926-8428)

Prince William County, Virginia, "Flood Hazard Overlay District," Zoning Ordinance, 1998. (703-792-6830)

Roanoke County, Virginia, "Conditional Zoning," Zoning Ordinance, 1995. (540-772-2068)

Roanoke River Corridor Study Policy, Technical and Citizen Advisory Committees, Roanoke River Corridor: Managing a Strategic Resource, 1993. (540-343-4417)

Robin, Stephen P., Zoning and Subdivision Law in Virginia: A Handbook, Center for Public Service, University of Virginia, 1993. (804-982-5522)

Ruane, Eugene T. and Robert J. Gray, for Population Environment Balance, Inc., Community Responses to Population Growth and Environmental Stress: A National Inventory of Local Growth Management Strategies, 1987. (202-879-3000)

Sierra Club, Sprawl Costs Us All: A Guide to the Costs of Suburban Sprawl and How to Create Livable Communities in Virginia. 1997. (410-268-7411)

State Land Evaluation Advisory Council, Commonwealth of Virginia, Manual of the State Land Evaluation Advisory Council, 1992. (804-367-8020)

The Zoning Report, "What You Need To Know About Hillside Development Regulations," Vol. 10, Nos. 6-8, 1992. (P.O. Box 6529, Margate, FL 33063)

U.S. Census of Agriculture, 1982, 1987, 1992, and 1997. (1-800-523-3215)

U.S. Department of Agriculture, Virginia Agricultural Statistics Service, 1997 Census of Agriculture State and County Profiles, 1997. (202-720-2791)

Virginia Advisory Commission on Intergovernmental Relations, Report to the Governor and General Assembly - The Impact of Aesthetics on the Economy and Quality of Life in Virginia and its Localities, 1998. 804-786-6508)

Virginia Beach, Virginia, Agricultural Reserve Program, 1995. (757-426-5775)

Virginia Department of Conservation and Recreation, Virginia Floodplain Management Plan, [date]. (804-786-1712)

Virginia Department of Conservation and Recreation, Virginia Outdoors Plan, 1996. (804-786-1712)

Virginia Department of Conservation and Recreation, Virginia Outdoors Survey, 1992. (804-786-1712)

Virginia Department of Forestry, Virginia Forest Land Assessment, 1997. (804-977-6555)

Virginia Forests, "Forest Fragmentation," Winter 1998, pages 7-12. (804-741-0836)

Virginia Outdoors Foundation, Local Implementation of the Open Space Land Act, 1993. (804-225-2147)

Wallace, Larry, for the Western Virginia Land Trust, "How to Inventory Private Lands for a Land Trust Action Plan," 1999. (540-985-0000)

The Fifth Planning District Commission would like to thank the following for assistance in the preparation of this report:

Planning Departments of Roanoke County, Roanoke City,
Salem City, and the Town of Vinton, Virginia

Dr. R. Michael Chandler, Agriculture and Applied Economics,
Virginia Polytechnic Institute and State University

Dr. Diane Zahm, Urban Affairs and Planning,
Virginia Polytechnic Institute and State University

Jefferson Waldon and Scott Klopfer,
Fish and Wildlife Information Exchange,
Virginia Polytechnic Institute and State University

United States Forest Service

Virginia Department of Forestry

Roanoke Valley Urban Forestry Council

Participants in the July 1998 Open Space Focus Group Sessions

Members of the Citizen Review Committee

*The photos for this report were taken by the Fifth Planning District Commission
and the Roanoke Valley Greenway Commission.*

Fifth Planning District Commission
313 Luck Avenue, SW
P.O. Box 2569
Roanoke, Virginia 24010
Ph: (540)343-4417 Fax: (540)343-4416

<http://www/roanoke.infi.net/~planfive>