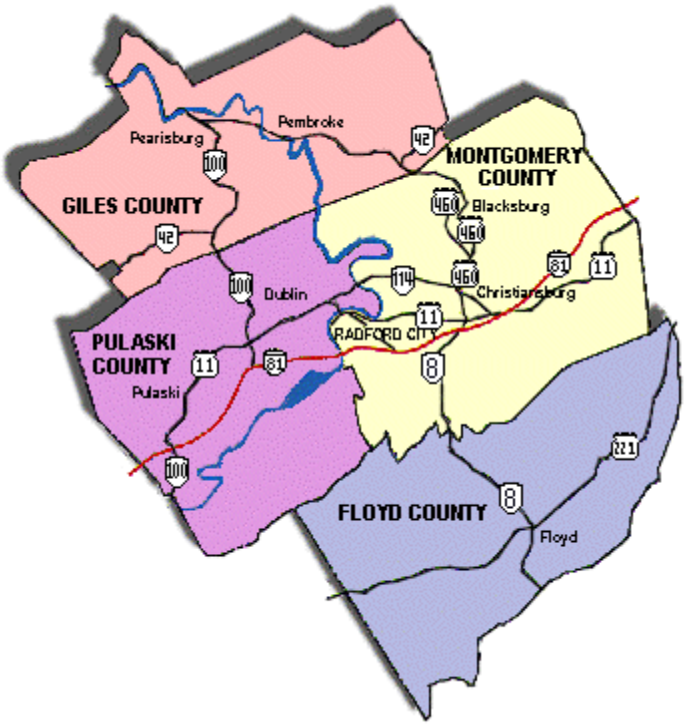
Virginia's New River Valley

Virginia's New River Valley Planning District is comprised of the Counties of Floyd, Giles, Montgomery and Pulaski, as well as the City of Radford. Additionally, there are ten towns: Floyd in Floyd County; Dublin and Pulaski in Pulaski County; Blacksburg and Christiansburg in Montgomery County; and Glen Lyn, Narrows, Pearisburg, Pembroke, and Rich Creek in Giles County. There are also two state universities, Virginia Tech and Radford University, as well as a major federal facility, the Radford Army Ammunition Plant. The following sections provide background on the NRV, concerning its physical characteristics, population, economy, and housing.

FIGURE 3
Map of the New River Valley



Natural Features

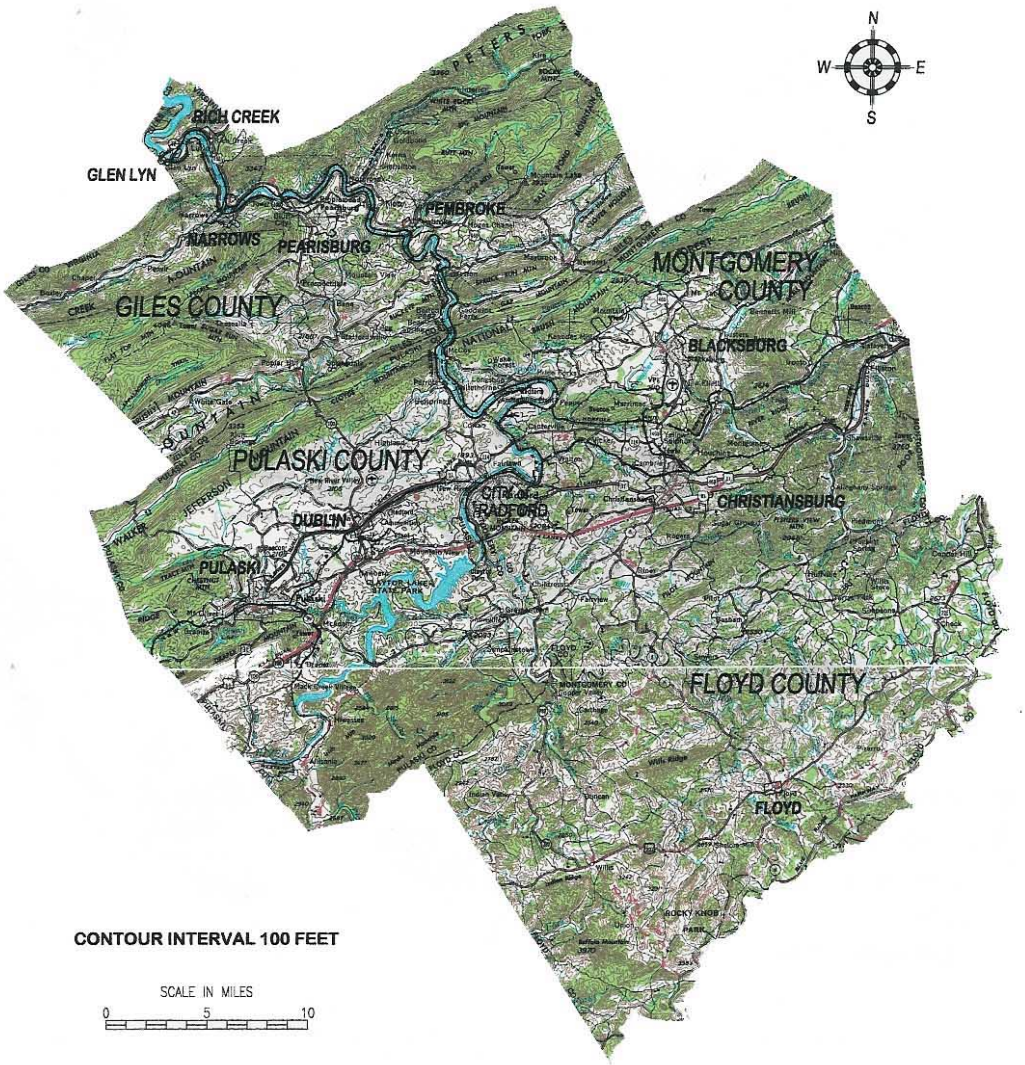
The following information was adapted from the New River Valley Regional Databook, maintained by the NRVPDC.

Physiography

The New River Valley falls within three distinct physiographic provinces: the Blue Ridge Province (Floyd County), the Valley and Ridge Province (Pulaski County, Montgomery

County, most of Giles County, and the City of Radford), and the Appalachian Plateau (in a small part of Giles County). The Blue Ridge Province is characterized by irregular topography and is generally classified as moderately sloped (i.e., slopes ranging from 5-20%). The Valley and Ridge Province exhibits parallel-running ridges with accompanying valleys and is considered to be steeply sloped (slopes greater than 20%). The small portion of Giles County lying within the Appalachian Plateau Province is also considered to be steeply sloped. Overall, the land area in the New River Valley is classified as 47.9% moderately sloped, and about 7.5% as level. Figure 4 illustrates the topography of the New River Valley.

FIGURE 4
TOPOGRAPHY



Source: USGS 1:250,000 scale topographic maps.
Prepared by the New River Valley Planning District Commission, 2000.

Geology

Each province has very different geological characteristics (see Figure 5; larger map in Appendix C). Giles, Pulaski, and Montgomery counties are mainly located in the Valley and Ridge Province which is characterized by sedimentary rocks such as limestone, shale, sandstone and dolomites (i.e. karst). Historically, limestone has been mined for agriculture use and sandstone for building purposes. Floyd County is located in the Blue Ridge Province, which is characterized by metamorphic rocks such as gneiss and schist. Metamorphic rocks are generally harder rocks and have been mined for use in road construction.

Figure 5

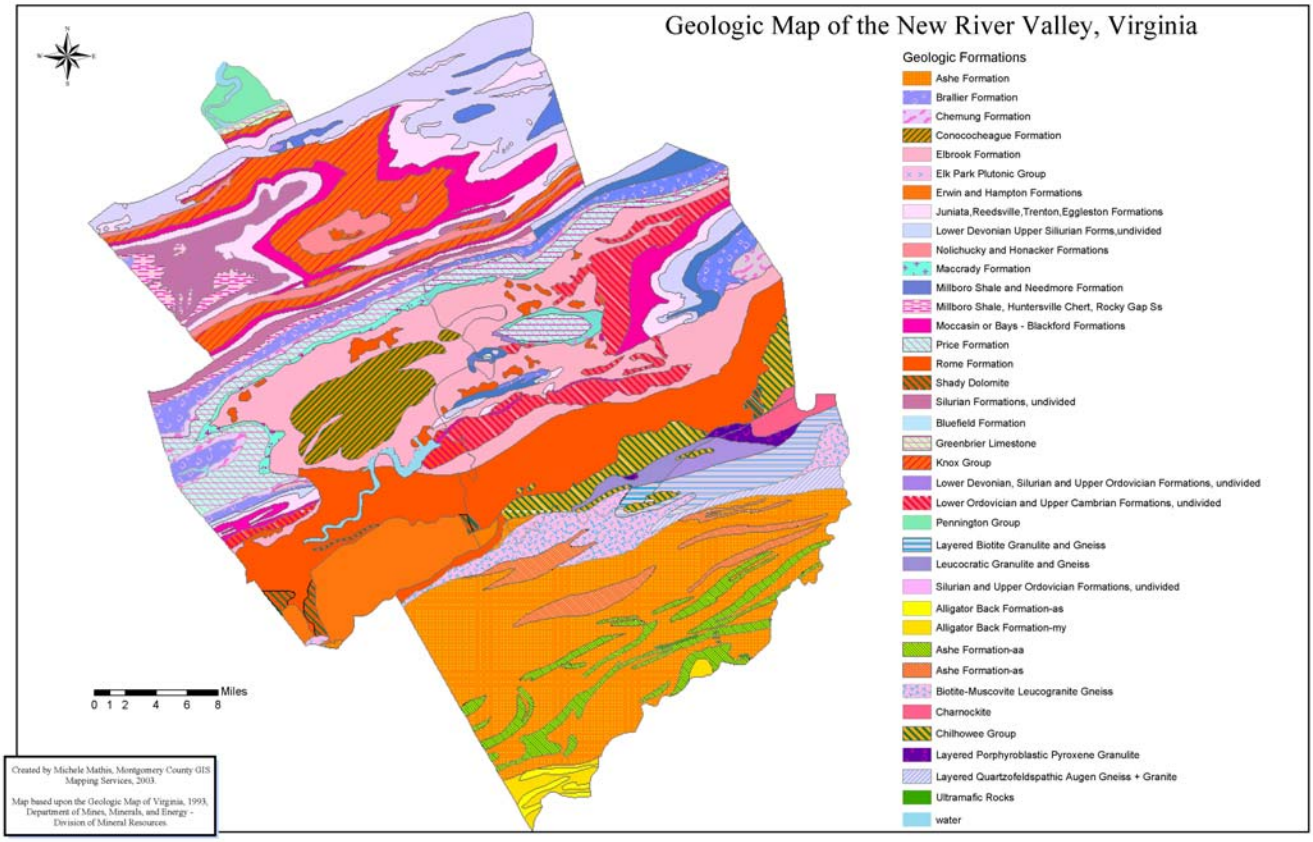
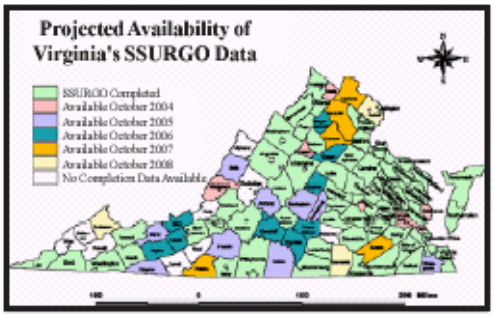


Figure 6
Soil Survey Geographic Database
Projected Availability in Virginia



Source: Virginia Geospatial Newsletter, Winter 2004.

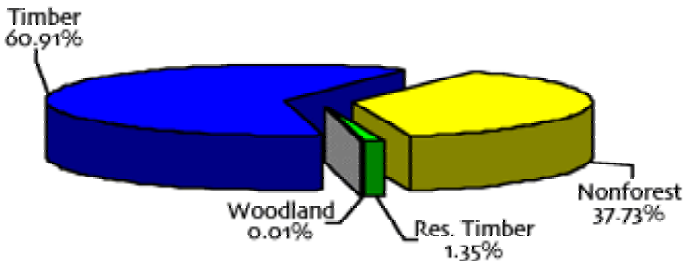
Soils

Soils in the region are generally derived from limestone and shale in many places and alluvial along the streams. Colluvial soils, formed from weathering of limestone with some shale and sandstone, are found in the foothills paralleling the Valley. Generally soils are moderately deep to very deep, with a depth of bedrock to ten feet; however, 100 feet depths have been noted. There are shrink-swell soils in the Counties of Giles, Montgomery and Pulaski. Unfortunately, digital soil information is only available for Montgomery County. Figure 6 outlines the expected timetable of the digital Soil Survey Geographic database (SSURGO) for other Virginia localities. Giles and Pulaski County are scheduled to have SSURGO in October 2006.

Forestry

All counties in the New River Valley are quite similar with regards to type of land class. The majority of land within the region is considered timberland. It covers 60.9% of all land within the New River Valley (Figure 7). The only county in the region with a different forestry profile would be Giles where 76% of the total area is considered forest land (a significant amount of which is in the Jefferson National Forest).

Figure 7
Land Classification
in the NRV



Source: New River Valley Regional Data Book

Elevation and Drainage

The average elevation of the Valley is about 2,500 feet. Elevations range from 1,470 feet above mean sea level at Glen Lyn to 4,348 feet at Bald Knob on Salt Pond Mountain in Giles County. Mountain Lake, also located on Salt Pond Mountain, is one of two natural lakes in Virginia and is reportedly the highest natural lake east of the Rocky Mountains. The New River runs through the counties of Pulaski, Montgomery, and Giles, and the City of Radford, thus giving the region its name. Little River, Peak Creek, Big Walker Creek, and Dodd's Creek are a few of the tributaries of the New River. A small portion of eastern Montgomery and Floyd Counties are in the Roanoke River basin, while the Craig Creek watershed in Montgomery County drains into the James River.

Climate

The climate of the New River Valley is classified as "moderate continental," characterized by moderately mild winters and warm summers. The average annual temperature is 54°F, with a high of 103°F and a low of -27°F. The mean annual precipitation is 39 inches. Snowfall in the Valley averages 17 inches annually, with a range of 15-20 inches. The prevailing winds are from the Southwest at an average of 10 miles an hour.

General History

Located along the "Wilderness Road" of westward expansion, the New River Valley was likely first explored by Europeans in the 1650's. Settlement began in the 1700's and by necessity it was along the New River or its tributaries. Contention over area and resources also resulted in several Indian raids in the late 1700's. Later efforts to control waterways and transportation routes brought several Civil War battles to the New River Valley.

Man-made, intentional flooding is prominent in New River Valley history. The first area settled in the NRV was settled by German "Dunkards," and so the area in Pulaski County became known as "Dunkards Bottom[land]." That land was later permanently inundated following the construction of Claytor Lake by Appalachian Power Company.

Population and Economy

The New River Valley's population was 165,145 in 2000, an 8.2% increase from 1990. Rapid population growth is occurring in the Counties of Floyd and Montgomery. The highest population densities are in the City of Radford, and the Counties of Montgomery and Pulaski.

TABLE 4: Population for NRV Localities, 2000 Census				
	Population 1990	2000	Numeric Change	Percent Change 1990-2000
Virginia	6,189,197	7,078,515	889,318	14.4%
Floyd County	11,965	13,874	1,909	16.0%
Floyd Town	396	432	36	9.1%
Giles County	16,366	16,657	291	1.8%
Glen Lyn	170	151	-19	-11.2%
Narrows	2,082	2,111	29	1.4%
Pearisburg	2,064	2,729	665	32.2%
Pembroke	1,064	1,134	70	6.6%
Rich Creek	670	665	-5	-0.7%
Montgomery County	73,913	83,629	9,716	13.1%
Blacksburg	34,590	39,573	4,983	14.4%
Christiansburg	15,004	16,947	1,943	12.9%
Elliston-Lafayette CDP*	1,243	1,241	-2	-0.2%
Merrimac CDP	1,713	1,751	38	2.2%
Shawsville CDP	1,260	1,029	-231	-18.3%
Pulaski County	34,496	35,127	631	1.8%
Dublin	2,012	2,288	276	13.7%
Fairlawn CDP	2,399	2,211	-188	-7.8%
Pulaski	9,985	9,473	-512	-5.1%
Radford City	15,940	15,859	-81	-0.5%
New River Valley Planning District	152,680	165,146	12,466	8.2%
Sources: U.S. Census Bureau and Weldon Cooper Center for Public Service.				
*Note: "CDP" is Census Designated Place.				

The New River Valley is a dynamic area of industry and trade, due in part to its location within a day's drive to approximately three-quarters of the nation's major markets. The scenic vistas, historical and cultural attractions, education centers, transportation access and other qualities inherent to the area are drawing tourists and businesses to this steadily growing Valley. The growth and interconnectivity were confirmed in June 2003 by the designation of the Blacksburg-Christiansburg-Radford area as a Metropolitan Statistical Area.

Despite economic growth, the NRV residents' incomes still lag substantially behind the Virginia average. Moreover, the NRV economy is especially vulnerable to global pressures, given the NRV's continuing dependence on traditional manufacturing jobs. Traditionally, NRV unemployment rates are higher than the state average as well. See Table 5 for a summary of key economic data.

TABLE 5

JURISDICTION	2000 MEDIAN HOUSEHOLD INCOME	2000 PER CAPITA INCOME	2000 POVERTY RATE	DEC. 2002 UNEMPLOY. RATE	*1999/00 FISCAL STRESS
Floyd County	$31,585	$16,345	8.5	3.3%	86
Giles County	34,927	18,396	6.6	5.9%	69
Montgomery County	32,330	17,077	8.8	2.2%	74
Pulaski County	33,873	18,973	10.6	4.3%	67
City of Radford	24,654	14,289	6.9	4.1%	28
New River Valley	N/A	17,284	N/A	3.3%	N/A
Virginia	$46,677	$23,975	7.0	3.6%	N/A

Sources: U.S. Census Bureau, Virginia Employment Commission, Federal Deposit Insurance, 2003, Virginia Department of Taxation. Report on the Comparative Revenue Capacity, Revenue Effort, and Fiscal Stress of Virginia's Counties and Cities 1999/2000, Commission on Local Government, 2002. * 1 = Highest Stress; 135 = Lowest Stress.

Housing

The New River Valley has about 70,000 housing units. The vast majority of these units are owner-occupied except for college housing around Virginia Tech and Radford University. Median rent varies from about $375 in Giles County to $535 in Montgomery County (Table 6).

TABLE 6
2000 GENERAL HOUSING CHARACTERISTICS

CHARACTERISTIC	FLOYD COUNTY	GILES COUNTY	MONTGOMERY COUNTY	PULASKI COUNTY	CITY OF RADFORD	NRV
Occupied Housing Units	5,791	6,994	30,997	14,643	5,809	64,234
Owner	4,738	5,526	17,093	10,780	2,585	40,722
Renter	1,053	1,468	13,904	3,863	3,224	23,512
Median Value Owner	$79,700	$69,200	$114,600	$80,000	$95,100	$93,981
Median Value Renter	$407	$375	$535	$382	$437	$478
Vacancy Rate						
Owner	1.0%	1.3%	1.2%	1.2%	1.0%	**
Renter	6.1%	6.7%	3.8%	7.3%	5.2%	**

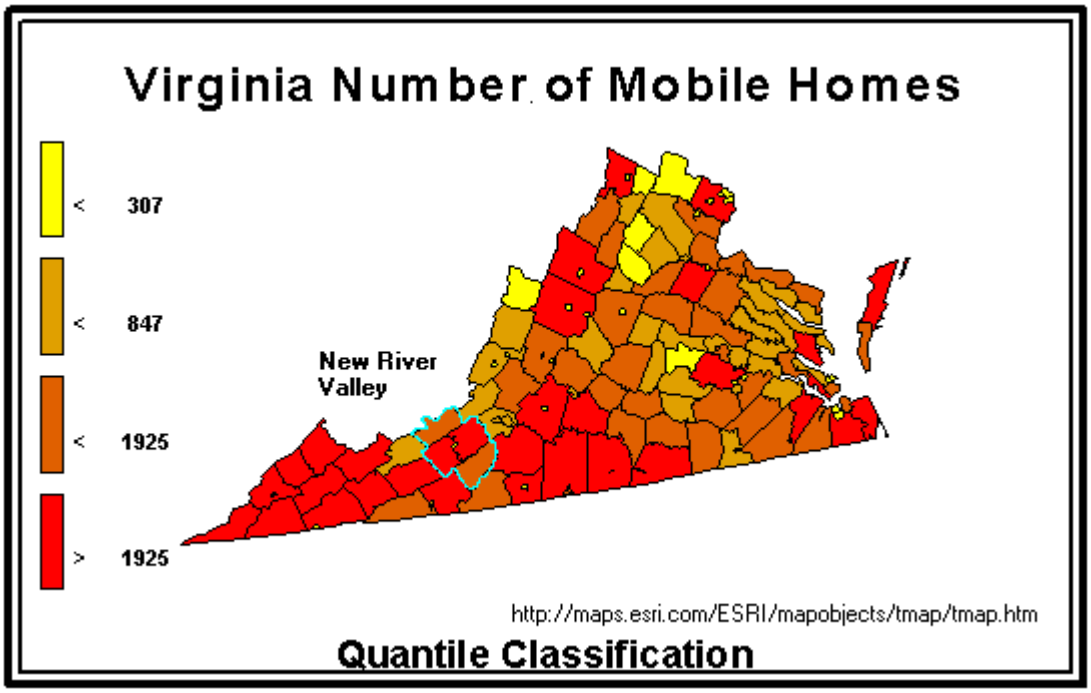
Source: U.S. Census Bureau.
** Information not available

About 13 percent of the NRV housing units are mobile homes, some of which tend to be clustered in floodplains. For example, the Shawsville-Elliston-Lafayette area, much of which is prone to flooding, has the fourth highest concentration of mobile homes in Virginia (see Figure 8).

TABLE 7
HOUSING UNITS BY JURISDICTION, 2000

	# of Housing Units	Mobile Homes	% Mobile Homes
Counties and City			
Floyd County	6763	1370	20.3%
Giles County	7732	1236	16.0%
Montgomery County	32527	4281	13.2%
Elliston-Lafayette CDP	560	248	44.3%
Shawsville CDP	460	217	47.2%
Pulaski County	16325	1980	12.1%
City of Radford	6137	172	2.8%
NRV	**70504**	**9504**	**13.5%**
Virginia	*2904192*	*185282*	*6.4%*
Towns			
Blacksburg	13635	522	3.8%
Christiansburg	7093	741	10.4%
Dublin	970	14	1.4%
Floyd	257	21	8.2%
Glen Lyn	57	0	0.0%
Narrows	970	22	2.3%
Pearisburg	1284	85	6.6%
Pembroke	498	90	18.1%
Pulaski	4547	205	4.5%
Rich Creek	319	3	0.9%

FIGURE 8



As highlighted in Table 8 below, many of the homes in the NRV were built prior to the original flood mapping by the National Flood Insurance Program in the 1970's.

TABLE 8
When Housing Units Were Built (%) by Jurisdiction: City and Counties

Year Structure Built	% in City of Radford	% in Floyd Co	% in Giles Co	% in Montgomery Co	% in Pulaski Co	% in Virginia
1999 to March 2000	0.3%	3.8%	2.5%	2.6%	1.7%	2.5%
1995 to 1998	4.3%	8.2%	4.8%	9.8%	6.5%	8.1%
1990 to 1994	10.0%	10.5%	6.6%	10.1%	4.9%	9.4%
1980 to 1989	19.6%	14.8%	12.6%	22.1%	12.5%	19.6%
1970 to 1979	16.8%	18.9%	17.9%	25.3%	24.0%	19.6%
1960 to 1969	15.3%	13.0%	11.7%	11.5%	14.9%	13.9%
1940 to 1959	21.4%	11.8%	29.2%	11.9%	22.7%	17.7%
1939 or earlier	12.3%	19.0%	14.8%	6.8%	12.8%	9.1%
subtotal 1979 or earlier	**65.8%**	**62.7%**	**73.6%**	**55.5%**	**74.4%**	**60.3%**

Critical Infrastructure

Critical infrastructure in the New River Valley includes:

- ✓ Major transportation routes (interstates, primary roads, airports, and rail)
- ✓ Schools (including daycare/preschool, k-12, the New River Community College, Radford University and Virginia Tech)
- ✓ Emergency and Public Service facilities (hospitals, nursing homes, physicians offices, fire and rescue buildings, public administration buildings)
- ✓ Utilities (water and wastewater plants, transmission lines for electric, gas and telecommunications)
- ✓ Major employers and/or Hazardous Materials Facilities (Radford Army Ammunition Plant, Volvo, Hoechst-Celanese, Echo-Star, Federal-Mogul, etc.)

As the present time, localities in the NRV have not generated lists of public infrastructure and its value. New Government Accounting Standards (#34) will require this in the near future. It is recommended that the infrastructure located in the high hazard areas also be identified at that time. In general, the greatest natural hazard threats to interstates and primary roads tend to be severe winter weather, earthquakes (especially bridges) and rockslides (often a secondary effect of flooding or earthquake.) Natural hazards affecting schools varies with location, but include flooding, severe winter weather, and earthquakes. Water and wastewater systems are most vulnerable to flooding hazards, since the tend to be located near water sources. Hospitals, rescue buildings, and gas pipelines tend to be most sensitive to earthquakes, due to the delicate nature of equipment and sensitivity to movement. Also, at least two major employers, Radford Army Ammunition Plant (Alliant-Tech) and Hoechst-Celanese, have some property in the floodplain.

Other important, though less vital facilities, include historic properties such as Smithfield Plantation, Glencoe Museum, and Camp Powhatan, one the of the largest Boy Scout reserves in America. Key natural areas include the Jefferson National Forest, Mountain

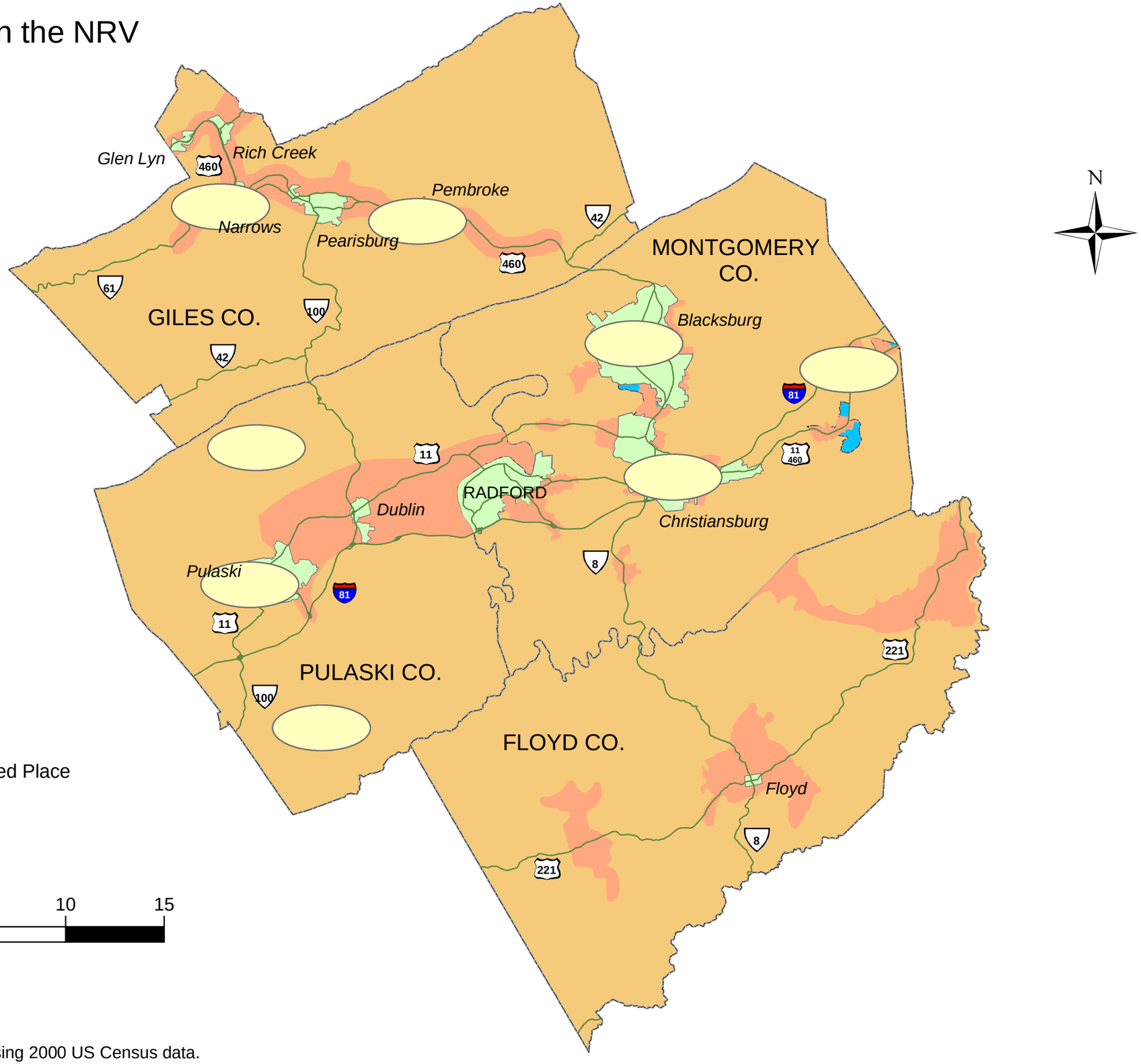
Lake, Claytor Lake, Whitt-Riverbend Park, Blue Ridge Parkway, Appalachian Trail, Buffalo Mountain preserve, as well as Nature Conservancy and lands in trust.

Future Growth Areas

In their Comprehensive Plans, all four counties in the NRV have identified areas for higher density development in the future, or "growth areas." Figure 9 is a schematic of these areas, as well as the urban areas and "villages." In principal, these areas have or will have significant infrastructure, including roads, water and wastewater service to support this growth. A larger image is available in the Large Map Supplement (separate document). Also, existing land use and future land use maps for the five major jurisdictions are included in the Large Map Supplement.

Future Growth Areas in the NRV

Figure 9



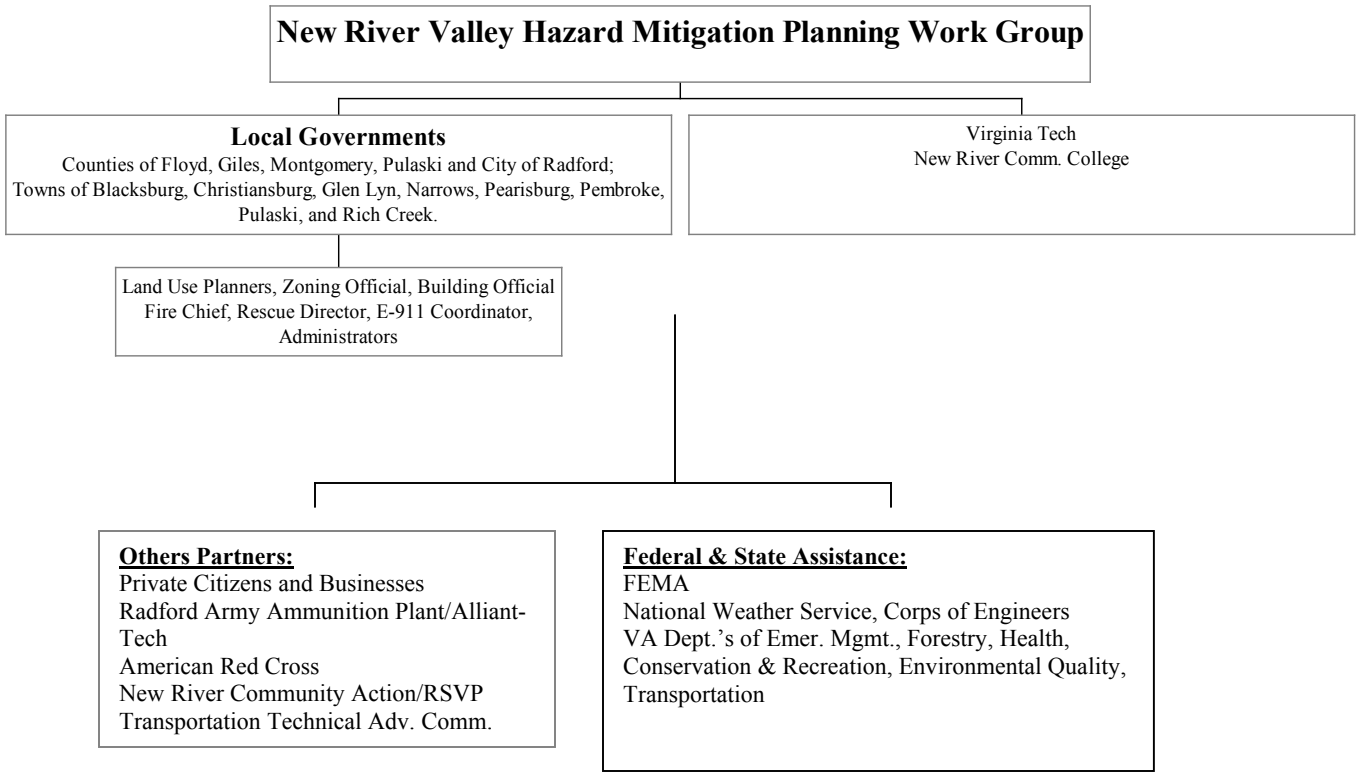
Map produced by the NRVPDC, 2004, using 2000 US Census data.

In recognizing some of the NRV's natural hazards and risks, partners from around the region came together with the simple mission of learning how to minimize the loss of life and property to natural hazards. Through a regional planning process, this work has yielded several specific goals. Moreover, assessment of individual hazard events, past mitigation efforts, and high-risk areas has yielded useful history and proposals for the future. Lastly, practical links between hazard mitigation and overall livability, sustainability and long-term planning are identified.

The Planning Process

This planning process was driven by multiple jurisdictions and informed by input from numerous state and federal entities, as well as private citizens. Regional meetings were held monthly to assess specific hazards, risks and mitigation measures. Guest speakers included professors from Virginia Tech, and state and federal agency representatives (see next page for detail). The process was promoted through local and regional media, and all meetings were open to the public. Information and meeting invitations were shared with neighboring planning districts. Also, two special community input meetings were held in high-risk communities, and two central community input meetings were held to review the findings, priorities, and final plan. During this review process, a regional forum for planners and local government managers' meeting were held. On the next two pages the partners and process are diagrammed.

Figure 10. Planning Partners



Note that Alliant-Tech, the Army contractor at the Radford Army Ammunition Plant, and a major NRV employer participated in this process. Other private employers participated in community meetings in Pulaski and Pembroke (downtown business owners), and were invited to participate in the central meetings, but declined. Also note that the other towns in the region and Radford University were invited to attend and participate, but did not. Sign-in sheets for each meeting are included in Appendix D.

Additionally, the neighboring planning districts (3 and 5, Mount Rogers and Roanoke-Allegheny, respectively) were kept abreast of planning activities through newsletters and a draft plan. They were also invited to participate once they began their hazard mitigation planning activities. Similarly, the involvement of state and federal agencies helped assure that concerns beyond the NRV boundaries were considered.

TABLE 9
NRV Hazard Mitigation Planning Process Timeline

Date	*Meeting Level*	*Topic/Speaker(s)*
June, 2002	Regional	Introduction/Background on Hazards; PDC staff
June, 2002	Pulaski Town	Public Input/Pulaski Committee; Committee & staff
July, 2002	Regional	Flood Mitigation/Pulaski Plan; Town & PDC staff
August, 2002	Regional	Flood Mitigation/Pembroke Flood; Town & PDC
September, 2002	Regional	Wildfire Hazards & Mitigation; VA Forester & PDC
October, 2002	Regional	Drought Hazards & Mitigation; DCR stormwater rep, private Rainwater Catchment consultant & PDC
October, 2002	Pembroke	Public Input/Pembroke Planning Commission; staff
November, 2002	Regional	Karst & Sinkholes; DCR Karst rep & J. Richardson, Jr., Land Use Law professor from VT
January, 2003	Regional	Severe Weather; National Weather Service Mitigation Resources; PDC staff
January, 2003	Regional	Land Use Disturbance Permitting workshop; DEQ, DCR and US Army Corps of Engineers
February, 2003	Regional	Earthquakes; Martin Chapman, seismologist from VT
April, 2003	Regional	Summary to-date and Review; PDC staff
May, 2003	Regional	Public Input session of info to-date
May, 2003	Regional	Regional Planners meeting; PDC staff
June-July, 2003	Regional	Two interns from the Water Center at Virginia Tech assisted in risk assessment and mapping.
June/July/August/Sept	Regional	Swift Water Rescue meetings; PDC staff
October, 2003	Regional	County Administrators & Town managers; staff
November, 2003	Regional	NRV Hazard Mitigation presentation at GIS-World Planning Day conference with attendees from surrounding regions; PDC staff.
February, 2004	Regional	Central public input session; advertised in Roanoke Times.
March-April, 2004	Local	Separate presentations to Blacksburg Town Council, and the following local planning commissions: Giles County, Montgomery County, Blacksburg, Christiansburg, Floyd-Floyd County, and Town of Pulaski; staff

NOTE: APPENDIX D contains newspaper articles and sign-in sheets for meetings.

Goals

The NRV Hazard Mitigation planning task force focused on developing practical, realistic goals in relation to the overarching mission. The mission and goals are stated below.

Mission: **Minimize the loss of life and property caused by natural hazards by focusing on likely events, high-risk areas, and cost-effective mitigation opportunities.**

Regional goals:

- ⇒ Minimize flood losses to existing and future structures, especially critical facilities and repetitive loss properties.
- ⇒ Minimize wildfire losses in the "urban wildland interface" areas.
- ⇒ Minimize economic losses and health risks during drought.
- ⇒ Minimize structural damage due to landslides.
- ⇒ Recognize that earthquakes, new sinkholes, and severe winds are possible in the NRV.
- ⇒ Encourage personal safety given that severe winter weather, lightning and large hail are relatively frequent occurrences in the NRV.
- ⇒ Capitalize on available mitigation information, services and funding from various local, regional, state, federal and non-profit agencies for mitigation planning and implementation.
- ⇒ Use regional coordination and cooperation, as needed, to enhance mitigation activities.
- ⇒ Develop more information related to hazards and damages.
- ⇒ Weigh the interactions of all natural hazards before acting to address one.
- ⇒ Give highest priority to projects which achieve multiple goals.

The information and analysis that generated these goals as well as more specific strategies follow. This plan then includes a more comprehensive Goals, Objectives and Strategies section, and specific local plans with prioritized strategies or projects.