

Shenandoah County

Comprehensive Plan 1990

ABSTRACT

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Shenandoah County, Virginia

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Division of State Planning and Community Affairs
Local and Regional Planning Section

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ABSTRACT: This publication contains the Shenandoah County Planning Commission's recommendations for the physical development of the County to 1990. Also included in this report are methods of implementing the plan proposals in accordance with the Code of Virginia.

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Adopted by the Shenandoah County Board of Supervisors
November 13, 1973

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PURPOSE OF THE PLAN

This plan is a general guide for the orderly development of Shenandoah County. It indicates in a general way how the people of Shenandoah County want the County to develop by 1990. Specifically, this plan is designed:

- to inventory and analyze factors affecting the future development of land, including topography, population, economy, natural resources, public facilities, and present land development pattern;
- to develop goals, objectives and policies for guiding the future private and public development decisions;
- to recommend areas suitable for residential, commercial, industrial, agricultural, conservation, and public and semi-public uses;
- to recommend a system of major thoroughfares for accommodating the orderly development of land; and
- to recommend methods needed for the effectuation of the plan proposals.

AUTHORITY FOR THE PLAN

Under Title 15.1, Chapter 11, Article 4, Code of Virginia, the County of Shenandoah is authorized to prepare a comprehensive plan for the physical development of the territory within its jurisdiction. Specifically, the Code of Virginia states:

"Section 15.1-446 Comprehensive plan to be prepared; scope and purpose. The local commission shall prepare and recommend a comprehensive plan for the physical development of the territory within its jurisdiction. Such plan, with the accompanying maps, plats, charts, and descriptive matter, shall show the commission's long range recommendations for the general development of the territory covered by the plan. It may include, but need not be limited to,

1. the designation of areas for various types of public and private development and use, such as different kinds of residential, commercial, industrial, agricultural, conservation, recreation, public service, flood plain and drainage, and other areas, which part of the plan may be known as a Land Use Plan;
2. the designation of a comprehensive system of transportation facilities such as streets, roads, highways, parkways, railways, bridges, viaducts, waterways, airports, ports, terminals, and other like facilities;
3. the designation of a system of community service facilities such as parks, forests, schools, playgrounds, public buildings and institutions, hospitals, community centers, waterworks, sewage disposal or waste disposal areas, and the like; and
4. the designation of areas for urban renewal or other treatment."

SHENANDOAH COUNTY, VIRGINIA

Shenandoah County, formed in 1722 from Frederick County, was originally named Dunmore County, in honor of Governor Dunmore. In 1778 the name was changed to Shenandoah, after the Shenandoah River; an Indian name meaning "Beautiful Daughter of the Stars."

Shenandoah County, with a land area of 507 square miles or 324,480 acres, is located in the extreme northwestern portion of Virginia's Shenandoah Valley. It is bounded by Frederick County on the north; by Rockingham and Page Counties on the south; by Page and Warren Counties on the east; and by Hardy County, West Virginia on the west. Major cities lying within 150 miles from the County include Washington, D. C.; Richmond, Virginia; Baltimore, Maryland; Harrisburg, Pennsylvania; and Martinsburg, West Virginia.

Many of the earliest settlers were Scotch, Irish and German who moved to the County from Pennsylvania. The Town of Woodstock, formed in 1752, was selected as the County seat in 1772. The County is noted for its many historic sites and structures, such as the New Market Battlefield Park, the Henkel Press Publishing House, and the Confederate Hospital.

The County has a very active planning commission and has enacted subdivision regulations. The Board of Supervisors consists of six supervisors elected from three election districts for a term of four years each. In addition, the County is a member of the Lord Fairfax Planning District Commission and has participated in the preparation of many regional planning studies.

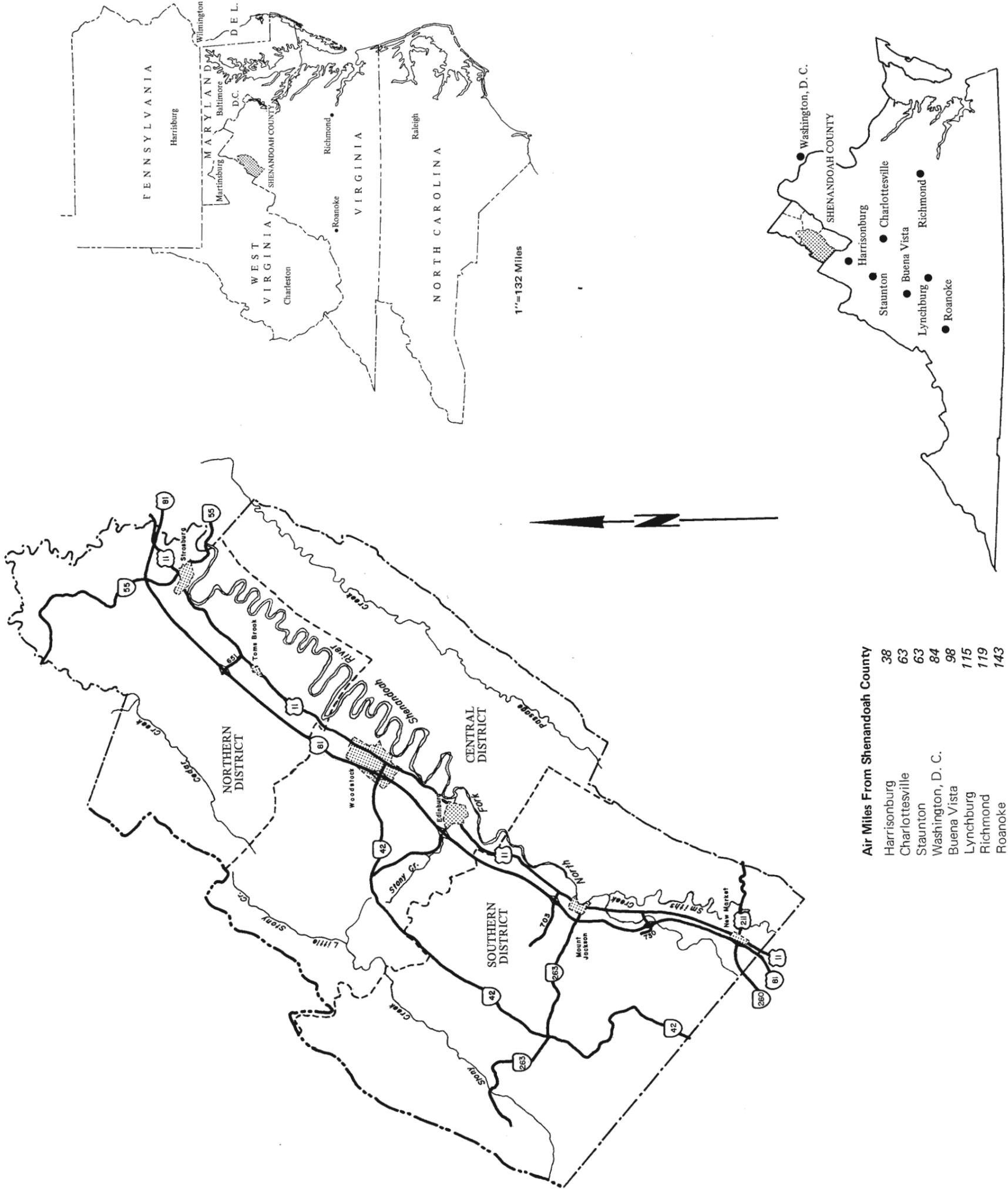
Shenandoah County

Virginia

1974



Division of State Planning and Community Affairs



Air Miles From Shenandoah County

Harrisonburg	38
Charlottesville	63
Staunton	63
Washington, D. C.	84
Buena Vista	98
Lynchburg	115
Richmond	119
Roanoke	143

RURAL or MUNICIPALITY	1970 CENSUS POPULATION	1970 CENSUS SQ. MILES
RURAL	15,660	501.29
EDINBURG	766	0.73
MOUNT JACKSON	681	0.77
NEW MARKET	718	1.46
STRASBURG	2,431	0.70
TOMS BROOK	258	0.25
WOODSTOCK	2,338	1.80
TOTAL	22,862	507.00

Map 1
LOCATION

**PART ONE
INVENTORY AND ANALYSIS**

**SECTION ONE
POPULATION AND ECONOMY**

The study of population and economy is essential to the development of a comprehensive plan because it will enable the locality to estimate the amount of land and extent of public services for accommodating the future growth.

Population Growth Trends

The population of Shenandoah County showed a constant growth between 1940 and 1970. The County's total population was 20,898 in 1940 and in 1970 it increased to 22,852. Much of the population growth occurred in and around the larger towns, while several magisterial districts remained stable or lost population.

**TABLE 1
POPULATION GROWTH TRENDS, 1940, 1950, 1960, and 1970
SHENANDOAH COUNTY, VIRGINIA**

	1940	1950	1960	1970
Ashby District ^(a)	3,865	4,047	3,829	3,820
Mt. Jackson Town	(562)	(732)	(722)	(681)
Davis District ^(a)	4,772	4,927	5,314	5,582
Strasburg Town	(1,968)	(2,022)	(2,428)	(2,431)
Johnston District ^(a)	2,397	2,373	2,429	2,486
Toms Brook Town (Part)	(137)	(137)	(137)	(132)
Woodstock Town (Part)	(564)	(620)	(649)	(699)
Lee District ^(a)	2,922	2,791	3,005	3,045
New Market Town	(629)	(701)	(783)	(718)
Madison District ^(a)	3,246	3,163	3,206	3,416
Edinburg Town	(565)	(533)	(517)	(766)
Stonewall District ^(a)	3,696	3,868	4,042	4,503
Toms Brook Town (Part)	(82)	(119)	(107)	(126)
Woodstock Town (Part)	(982)	(1,196)	(1,434)	(1,639)
Total County	20,898	21,169	21,825	22,852

^(a) District population figures include population figures in parentheses.

Source: U.S. Bureau of the Census, Census of Population, 1940, 1950, 1960, and 1970.

Population By Age and Sex

Shenandoah County had an increase of over 600 persons in the 20-64 age group between 1960 and 1970, while 0-5 and 6-19 age groups decreased approximately 80 persons. The 65 and over age groups, however, increased from 2,576 persons to 3,048 persons during the same period. This trend could be the result of an influx of retired people in the County's growing resort communities.

Median age for Shenandoah County also decreased slightly from 31.9 in 1960 to 31.4 in 1970, which coincides with the increased number of persons in the 6-19 and 20-64 age groups.

**TABLE 2
POPULATION BY AGE AND SEX, 1960 and 1970
SHENANDOAH COUNTY, VIRGINIA**

Age Groups	1960			1970		
	Male	Female	Total	Male	Female	Total
Under 5	1,066	993	2,059	837	878	1,715
5-19	3,029	2,910	5,939	3,114	3,082	6,196
20-64	5,473	5,779	11,251	5,730	6,163	11,893
65 and over	1,126	1,450	2,576	1,320	1,728	3,048
Total	10,694	11,131	21,826	11,001	11,851	22,852
Median Age	30.8	33.0	31.9	30.5	32.4	31.4

Source: U.S. Bureau of the Census, Census of Population, 1960 and 1970.

Educational Attainment

More people of 25 years old and over in Shenandoah County completed either high school or college education in 1970 than in 1960. Concurrently, the number of persons with no education or below high school level decreased from 222 in 1960 to 173 in 1970. Also evident is that females achieved a higher level of education than males in both 1960 and 1970.

**TABLE 3
EDUCATIONAL ATTAINMENT, 1960 and 1970
SHENANDOAH COUNTY, VIRGINIA**

Years of School Completed Number of Persons 25 Years Old and Over with	1960			1970		
	Male	Female	Total	Male	Female	Total
Number School Years Completed Elementary:	103	119	222	115	58	173
1 to 4 years	609	420	1,029	471	292	763
5 and 7 years	2,444	2,415	4,859	1,956	2,024	3,980
8 years	528	527	1,055	569	470	1,093
High School:						
1 to 3 years	926	969	1,895	1,182	1,380	2,562
4 years	921	1,395	2,316	1,480	1,877	3,357
College:						
1 to 3 years	326	499	825	317	643	960
4 years or more	285	208	493	333	359	693
Total Number of Persons (25 Years Old and Over)	6,142	6,552	12,694	6,423	7,103	13,526

Source: U.S. Bureau of the Census, Census of Population, 1960 and 1970.

Migration

The County had a net out-migration of 1,374 persons between 1950 and 1960, which was undesirable and had impaired the population growth rate. However, this trend was improved between 1960 and 1970 when out-migration totaled only 147 persons. This indicates that the healthy economy of Shenandoah has made out-migration less attractive.

TABLE 4
POPULATION CHANGE FACTORS, 1950, 1960, and 1970
SHENANDOAH COUNTY, VIRGINIA

Part A: 1950-1960		Part B: 1960-1970	
Population		Population	
April 1, 1960	21,825	April 1, 1970	22,852
April 1, 1950	21,169	April 1, 1960	21,825
Net Change	656	Net Change	1,027
Rate	3.1%	Rate	4.7%
Components of change		Components of change	
Births	4,480	Births	3,797
Deaths	2,450	Deaths	2,623
Natural increase ^{a/}	2,030	Natural increase ^{a/}	1,174
Rate	9.6%	Rate	5.4%
Net migration	-1,374	Estimated net-migration	- 147
Rate	- 6.5%	(including military)	
Net civilian migration	-1,238	Rate	- 0.7%
Rate	- 5.8%		

^{a/} Births minus deaths.

Source: U.S. Bureau of the Census, Census of Population, 1950, 1960, and 1970.

Personal Income

The County's per capita income was \$2,293 in 1970, which represented approximately 75 percent of the State average of \$3,013 and was slightly lower than the 78 percent it represented in 1960. This trend indicates that Shenandoah County's per capita income has grown slightly slower than it has in the State during the past decade.

Retail Trade

Shenandoah County's retail sales were \$27,566,000 in 1967, representing an increase of \$4,055,000 from 1963 sales figure of \$23,511,000. During the same period, the County's per capita retail sales figure also increased from \$1,054 to \$1,206. Tourist trade and recreation resorts have caused the growth of retail sales.

TABLE 5
MEASURES OF RETAIL TRADE, 1963 and 1967
SHENANDOAH COUNTY, VIRGINIA

Item	1963	1967
Number of establishments	379	315
Sales:		
Total sales	\$23,511,000	\$27,566,000
Per capita sales	\$ 1,054	\$ 1,206
Total payroll	\$ 1,995,000	\$ 2,977,000

Source: U.S. Bureau of the Census, Census of Business, 1963 and 1967.

Selected Services Trade

Selected services trade displayed a continued growth in the number of paid employees and total sales between 1963 and 1967, except for the number of establishments. The per capita receipt also increased from \$126 to \$165 in the same period, which conforms with the County's population and income growth.

TABLE 6
MEASURES OF SELECTED SERVICES TRADE, 1963 and 1967
SHENANDOAH COUNTY, VIRGINIA

Item	1963	1967
Number of establishments	182	174
Number of paid employees	171	272
Receipts:		
Total receipts	\$2,751,000	\$3,779,000
Per capita receipts ^{a/}	\$ 126	\$ 165
Total payroll	\$ 583,000	\$ 940,000

^{a/} The population figures used in determining per capita receipts for 1963 and 1967 are the 1960 and 1970 Census of Population figures. Source: U.S. Bureau of the Census, Census of Business, 1963 and 1967.

Wholesale Trade

Shenandoah County had 21 wholesale trade establishments in 1963, which increased to 23 by 1967. Growth was also noted in the total sales, total payroll, and total number of paid employees during the same period. This trend indicates the County's wholesale trade is growing.

TABLE 7
MEASURES OF WHOLESALE TRADE, 1963 and 1967
SHENANDOAH COUNTY, VIRGINIA

Item	1963	1967
Number of establishments	21	23
Total sales	\$9,424,000	\$17,498,000
Total payroll	\$ 436,000	\$ 1,076,000
Total number of paid employees	117	224

Source: U.S. Bureau of the Census, Census of Business, 1963 and 1967.

Tourist Trade

Indispensable to the economy of Shenandoah County is the tourist trade. Such sites as the George Washington National Forest, the Civil War Battlefields and Monuments, the many scenic mountain drives, the natural caverns, the increasing number of mountain resorts, the two prep-schools, and hunting and fishing spots are important attractions for tourists. With the completion of Interstate 81 the County has enjoyed a greater volume of tourist business over the past years. Tourist trade employment grew by 2.9 percent annually from 1960 to 1966. Employment in the tourist trade sector is expected to receive a boost from the opening of Interstate 66 which will extend from Washington, D.C. to a connection with Interstate 81 just north of Strasburg.

Employment Distribution

The County's important employment base is manufacturing, which accounted for approximately one-third of the total employment in 1970. The manufacturing sector is characterized by apparel and food and kindred industries which are subject to seasonal fluctuations. Such fluctuations occur in

apple products firms, with the peak reached in the late fall months and the low points in the spring and early summer months. The magnitude of the employment variation is around 300 workers from the low point to the peak.

The non-manufacturing employment, consisting of contract construction, trade, finance, insurance and real estate, services, and local government, made up a high proportion of total employment in 1970. Non-manufacturing employment increased from 2,682 persons in 1960 to 3,784 persons in 1970.

Approximately 890 persons were employed in agricultural jobs in Shenandoah County in 1970, representing a decline of over 600 persons from the 1960 agricultural employment of 1,520 persons. Although its agricultural employment has been declining since 1950, Shenandoah County is one of the leading agricultural counties in Virginia. For example, the County ranked 8th in overall farm products sales among all counties in 1969. Other major employers in Shenandoah County include Massanutten Military Academy, Shenandoah Valley Academy, and mining and quarrying industries.

TABLE 8
EMPLOYMENT DISTRIBUTION (a) 1960 and 1970
SHENANDOAH COUNTY, VIRGINIA

Item	1960	1970	Percent Change 1960-1970
Agricultural	1,520	892	-41
Manufacturing	1,848	3,452	87
Non-Manufacturing:			
Contract construction	183	192	5
Transportation & public facilities	414	433	5
Wholesale & retail trade	829	1,387	67
Finance, insurance & real estate	118	185	57
Service	531	767	44
Government	570	767	35
Other non-manufacturing	37	53	43
All other non-agricultural ^(b)	1,201	1,259	5
Total Employed	7,251	9,387	30

(a) Employment data are based on place of work rather than place of residence.

(b) Includes self-employed, unpaid family workers, and domestic workers in private households.

Source: Virginia Employment Commission, Division of Research, Information and Statistics, 1960 and 1970.

Labor Force

Labor force is that portion of the population which is gainfully employed or seeking employment. According to the Virginia Employment Commission's 1972 estimates, an additional labor supply of 1,260 is available within a 20-mile radius of Woodstock. The Virginia Employment Commission considered the terrain and highways in the area when the estimates were made. The area includes all parts of Shenandoah County, eighty (80) percent of Warren County, sixty (60) percent of Page County, fifteen (15) percent of Frederick County, and forty (40) percent of Hardy County, West Virginia. The source of this potential labor supply comprises commuters from other counties, farmers free from agricultural jobs, unemployed, and annual new entrants.

The U.S. Census of Population figures show Shenandoah County to be one of the localities in Virginia having a decline of unemployment rates. This favorable economic sign is a reflection of Shenandoah's general prosperity. In 1960 the County's unemployment rate was 6.7 percent and it was decreased to 4.2 percent in 1970.

**TABLE 9
ESTIMATED LABOR SUPPLY, 1972
SHENANDOAH COUNTY, VIRGINIA**

Source of Supply	Total	Male		Female	
		White	Nonwhite	White	Nonwhite
Total	1,260	630	20	600	10
Outside Labor Force	270	-	-	270	0
From Agriculture	130	130	0	-	-
Unemployed	420	220	10	180	10
Annual New Entrants	440	280	10	150	0

Source: Virginia Employment Commission, Division of Research, Information and Statistics, 1972.

DEFINITIONS OF SOURCES OF SUPPLY

Outside Labor Force: The number of women ages 25-44 inclusive who are not currently in the labor force but could be drawn into it provided the right job opportunities existed. Women 18-21 years of age are included in annual new entrants. Those 22-24 years old are not generally considered as potential, due to family obligations.

From Agriculture: The number of men (farmers and farm hands) in agriculture, ages 26 to 44 inclusive, who would be expected to take industrial jobs if such became available. Many of these would be marginal farmers.

Unemployed: All persons 16 years of age or older who are currently available for work and are actively seeking a job providing they are not persons "with a job but not at work" (such as on strike, ill, and on vacation). Also included are persons waiting to start a new job within 30 days or awaiting recall from layoff.

Annual New Entrants: The total number of young men ages 18-25 inclusive and young women 18-21 inclusive who will enter the labor force during the next twelve months and seek employment.

Worker Commuting Patterns

An analysis of 1970 commuting patterns shows that approximately 18 percent of the County resident workers were employed outside of Shenandoah County. The majority of the 1,567 out-commuters were employed in Warren County, Winchester-Frederick Area and Harrisonburg-Rockingham Area. The County's 1,567 out-commuters were partially offset by 782 in-commuters to jobs in Shenandoah County so that the total net out-commuters totaled 785. The largest group of in-commuters came from Rockingham County and Frederick County. Out-commuting is less significant now than in 1960, mainly because of the improved job opportunities in Shenandoah County. The opening of new commercial and industrial establishments in the County has made commuting to jobs outside of the County less attractive.

**TABLE 10
WORK RESIDENCE INFORMATION, 1970
SHENANDOAH COUNTY, VIRGINIA**

	Number	Percent of Total
Total resident workers reporting a place of work ^{a/}	8,653	100
Places of work reported:		
Shenandoah County	7,086	82

Out-Commuters from Shenandoah County

Warren County	414	5
Harrisonburg-Rockingham Area	315	4
Winchester-Frederick Area	411	5
Other Virginia Counties and Cities ^{b/}	151	2
Elsewhere	276	3
Total	1,567	18

In-Commuters to Shenandoah County

Frederick County	105	13
Page County	67	7
Rappahannock County	7	1
Rockingham County	371	47
Warren County	99	13
Harrisonburg City	53	7
Winchester City	29	3
Hampshire County, West Virginia	14	2
Hardy County, West Virginia	39	5
Pendleton County, West Virginia	8	1
Total	782	100
Total Out-Commuters =	1,567	
Total In-Commuters =	782	
Net Out-Commuters =	785	

Note: Details may not add to totals due to rounding.

^{a/} Resident workers not reporting a place of work totaled 705.

^{b/} Includes Page County, Clarke County, Fauquier County, and the Virginia portion of Washington, D. C., Standard Metropolitan Statistical Area.

Source: U.S. Bureau of the Census, Census of Population, 1970.

Future Population

The projected population for Shenandoah County from 1970 to 1990 is given in Table 11. These projections are based on past trends and an expected moderate increase in employment opportunities within the County. These projections are conservative and will require periodic adjustments to reflect economic changes.

The population of Shenandoah County is expected to grow by 0.5 percent annually from 1971 to 1980 and 0.6 percent a year from 1980 to 1990. As a result, Shenandoah's population should reach 24,000 by 1980 and 25,400 by 1990.

Employment Outlook

Textiles and apparel are expected to continue as the leading employers, although they are not expected to grow as rapidly as in the past. Modest growth is projected for each of the other manufacturing industries. The projected manufacturing growth will serve to lower a proportion of female employment in the manufacturing sector because the greater portion of the new jobs projected will be in such industries as primary metals and transportation equipment which employ males.

The Virginia Division of State Planning and Community Affairs projects that manufacturing employment will grow by 2 percent annually from 1971 to 1980 and 1.8 percent a year from 1980 to 1990.

Farm employment, as mentioned previously, declined in great numbers between 1950 and 1960. A further decline, at about the same rate as anticipated for the State, is projected at 3 percent annually from 1971 to 1980 and 2 percent a year from 1980 to 1990.

Employment in travel trade is projected to grow by 1 percent to 1.5 percent a year to 1990, although it could receive a boost from the opening of Interstate 66 and from the development of more resort communities in the County.

Supporting employment is composed of contract construction, wholesale and retail trade, finance, insurance and real estate, and other services. Based on an expected increase in manufacturing jobs locally, employment in this sector is expected to grow by 2 percent annually from 1970 to 1990 and 1.6 percent a year from 1980 to 1990.

**TABLE 11
POPULATION AND EMPLOYMENT PROJECTIONS, 1971-1980-1990
SHENANDOAH COUNTY, VIRGINIA**

	1971	1980	1990	1971-80	1980-90
Population	22,877	24,000	25,400	0.5	0.6
Labor force, by place of work	9,563	11,197	12,850	1.7	1.4
Unemployment	381	400	450	0.5	1.1
Employment, by place of work	9,182	10,797	12,400	1.8	1.4
Basic employment	4,498	5,197	5,850	1.6	1.2
Agriculture	862	650	530	-3.0	-2.0
Prep schools	92	102	155	j	1.2
Travel trade	175	220	255	1.0	1.5
Mining-quarrying
Manufacturing	3,368	4,225	4,950	2.0	1.8
Food and kindred products	526	700	800	3.2	1.3
Textiles	1,047	1,250	1,400	1.9	1.1
Apparel	1,179	1,400	1,700	2.0	1.9
Stone, clay and glass products	116	125	150	0.8	1.8
Other manufacturing	500	750	900	4.6	1.8
Supporting employment	4,684	5,600	6,550	2.0	1.6
Percent of total employment basic	49.0	48.0	47.0
Labor force as a percent of population	42.0	47.0	50.0

Source: Virginia Division of State Planning and Community Affairs, Economic Research Section, Economic Base Analysis for Shenandoah County, 1972. Table 8, p. 27.

SECTION TWO NATURAL RESOURCES

Topography

Lying in the Valley and Ridge Physiographic Province of Virginia, the County's topography is steep to gently rolling and well drained. Elevations in the County vary from 1,200 feet above the sea level in the valley to approximately 2,500 feet along the Massanutten Mountains on the east and the North Mountains on the west. Intersected by narrow valleys in a northeast to southwest direction, these mountains comprise one-half of the County's land area. The central portion of the County is the valley

proper which is level and extends in a north-south direction. Meandering through the valley proper is the North Fork of the Shenandoah River, a major tributary of the Potomac River. Other major watersheds include Cedar Creek, Passage Creek, Stony Creek, and Smith Creek.

Climatology

Shenandoah County enjoys temperate climate with temperatures averaging 32.5 degrees in February and 73 degrees in July. The average precipitation is approximately 32.8 inches annually. Winters are generally cold, but not severe, with heaviest snows during February and March.

Minerals

The County is underlain by sedimentary rocks. Limestone is quarried by the Chemstone Corporation near the Town of Strasburg. The stone is calcined to produce hydrated and pebble lime for industrial use. Similar operations were conducted by the Virginia Asphalt Paving Company and C.S.M. Mundy Quarries near Strasburg and Forestville for roadstone, concrete aggregate, agricultural and local use.

In the past, clay materials near Strasburg and Woodstock were used to make pottery products, bricks and drain tile. Other minerals, including sand and gravel, manganese, iron, zinc and lead, have been mined or prospected at numerous sites throughout the County.

Soils

A detailed soil survey for Shenandoah County is not available; however, there are three major divisions of soils by parent material in Shenandoah County. These major divisions are the Shenandoah Mountains, the limestone and shale, and the Massanutten Mountains. Most of the limestone and shale soils which are found in the central portion of the County have high productive potential for volume crops and livestock farming. The Shenandoah and Massanutten Mountains soils are of little or no value for agricultural purposes.

To provide a general guide for planning purposes, the general location and ratings of the soils for Shenandoah County are shown on Map 2.

Hydrology

Hydrology is affected by the geological formations. The County, a part of the Valley and Ridge Province, is underlain by limestone, sandstone and shale formations. These rocks are inclined either to the northwest or southeast and are exposed on the surface as narrow belts that cross the County in a northeasterly direction. A veneer or alluvium overlies the bedrock along the major streams and at the base of the mountains.

Ground water is plentiful and of good quality, except in the area between Interstate 81 and the Massanutten Mountains where objectionable amounts of iron and sulfur are present.

The quality of surface water varies from stream to stream. Surface water is soft in small streams whereas the moderately hard water is found in the big streams. Information concerning the available water resources is obtainable from several stream gaging stations in the County.

Forests

The County abounds with forests. Of the County's land area of 324,480 acres, approximately 168,386 acres are commercial forestland and 17,800 acres are non-commercial forestland. Major forest types are pine and oak-hickory. Markets exist for most types of forest products; however, the number of sawmills operating in the County continues to decrease.

SECTION THREE EXISTING LAND USE

The pattern that Shenandoah County has developed is important to its future development. Only through the analysis of existing land use patterns can the County recognize the positive or negative effects which have resulted from the public and private decisions on land utilization. By recognizing these effects, the County will then be able to rectify the negative effects and to plan its future land development.

The staff of the Virginia Division of State Planning and Community Affairs conducted a land use survey in January, 1973 to obtain information on the existing land use pattern. For planning purposes, existing land uses were recorded and classified into major land use categories, such as residential, commercial, industrial, and public and semi-public uses. The general location of land uses in Shenandoah County is shown on Map 3.

Residential

Residential uses, including single-family dwellings, multi-family dwellings and mobile homes, are the predominately developed land use in Shenandoah County. Many of these residential uses are located in or near the incorporated towns and rural villages, with a few residences scattered along major and secondary highways.

There were 4,665 single-family residences, 4 multi-family residences, 263 mobile homes, and 6 mobile home parks in the unincorporated portions of the County in January, 1973. Accessibility and availability of community services are believed to be the factors influencing the location of residential use. These factors are expected to continue dominating the residential development. Multi-family residential development is largely confined within the vicinity of incorporated towns where public water and sewer services are available. Another type of residential development which has been increasing is the planned resort community. If properly planned and developed, it can enhance the County's tax base as well as create more job opportunities for its residents. Bryce's Mountain Resort and Mountain Run Resort are two examples of this kind.

Commercial Use

In 1973 there were 170 commercial units in the unincorporated portion of Shenandoah County, including truck stops, country stores, gas stations, and motels. The pattern of commercial development displays two apparent forms - general and highway commercial uses are primarily located near major interchanges of Interstate 81 and/or along U.S. Highway 11, while local commercial uses serve as the centers of those rural villages. However, planned commercial areas (shopping centers) are being added to the County's incorporated places. As the County grows, this type of commercial development will continue to emerge.

Industrial Use

Industrial use, totaling 118 units, is composed of manufacturing plants, auto junk yards, and public utilities. Most of these uses are located at random along railroads and major highways. The principal shortcoming of several industrial locations is the lack of concern for surrounding land uses. An example of this is an industrial plant located adjacent to a school just north of New Market. Wherever possible, industrial and non-industrial land uses should have a landscaped zone in between them.

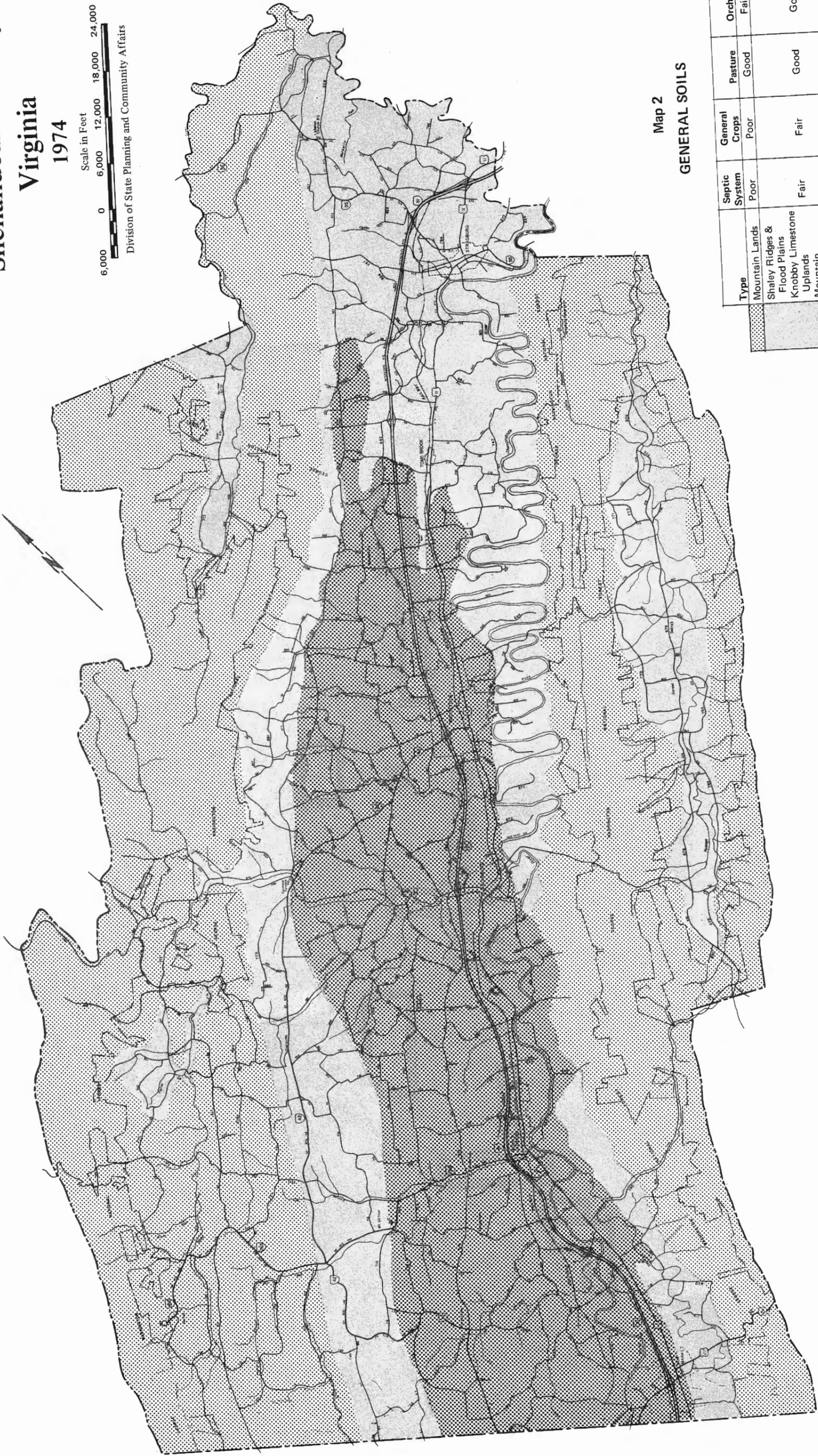
Public and Semi-Public Use

Public and semi-public use contains schools, governmental buildings, county homes, fire stations, airports, churches, cemeteries, parks and playgrounds, and water and sewer. These facilities are

Shenandoah County Virginia 1974

Scale in Feet
6,000 0 6,000 12,000 18,000 24,000

Division of State Planning and Community Affairs



Map 2
GENERAL SOILS

Type	Septic System	General Crops	Pasture	Orchard
Mountain Lands	Poor	Poor	Good	Fair
Shaley Ridges & Flood Plains				
Knobby Limestone Uplands	Fair	Fair	Good	Good
Mountain Colluvium Limestone Uplands, Shallow				
River Alluvium & Limestone Uplands	Good	Good	Good	Good
Limestone Uplands				

scattered throughout the County. In most cases, they have influenced the development of rural villages. Residential dwellings developed around churches or rural post offices are evidences of this kind. Shenandoah County, as of 1973, has approximately 164 units of public and semi-public uses.

TABLE 12
EXISTING LAND USE (a)
SHENANDOAH COUNTY, VIRGINIA

Type of Use	Number of Units	Percent of Total Units (b)
Residential:		
Single-family	4,665	87
Multi-Family	4	1
Mobile Home	263	5
Mobile Home Park	6	1
Commercial:		
Local Commercial	70	1
General Commercial	84	1
Highway Commercial	16	1
Industrial:		
Light Industry	55	1
Heavy Industry	11	1
Junk Yards	39	1
Public Utilities	13	1
Public & Semi-Public:		
Public & Semi-Public Buildings	128	2
Public & Semi-Public Parks	8	1
Cemetery	28	1
TOTAL	5,390	100

(a) This table covers only the unincorporated portions of Shenandoah County.

(b) Figures may not add to total due to rounding.

Source: Virginia Division of State Planning and Community Affairs, Shenandoah County Existing Land Use Survey, February, 1973.

SECTION FOUR

PUBLIC SERVICES AND FACILITIES

TRANSPORTATION FACILITIES

Shenandoah County is served by a network of transportation facilities, including highways, railroads, bus, trucking and airports.

Highways

U.S. Highway 11, connecting the County with points north and south, runs through the valley and the incorporated towns. Interstate 81, paralleling U.S. Highway 11, serves the County with seven interchanges. Interstate 64 will intersect Interstate 81 just north of Strasburg. U.S. Highway 211, coming from Washington, D. C., enters the County at the southeastern corner and links with U.S. Highway 11 at New Market. Other major highways include State Routes 55, 42, and 263 which interconnect larger towns and villages of the County.

Bus and Trucking

Motor freight transportation is available through nine interstate freight lines with connections to all sections of the State and nation. Greyhound Bus Lines along with a charter bus company in Woodstock provide the County with passenger and freight services.

Railroads

The Southern Railway offers daily freight service at points near each of the County's larger towns and the Baltimore and Ohio Railroad also serves the Town of Strasburg. These railroads do not provide passenger train service to and from the County.

Airports

There are several small airfields in Shenandoah County, including the Mount Jackson Airport at the Town of Mount Jackson with a sod runway of 2,400 feet and the Bryce's Airport near Bayse containing a hard surfaced runway of 2,400 feet. The nearest airports offering commercial airline service are the Shenandoah Valley Airport near Weyers Cave in Augusta County and the Dulles International Airport in the eastern part of Loudoun County. Small airports in adjacent counties include Aspen Hill Farms Airport and Stokes Field in Warren County, and Winchester Municipal Airport in Frederick County.

PUBLIC FACILITIES

Public facilities, including schools, libraries, parks and playgrounds, water and sewer, police and fire protection, and public utilities, are essential to the proper functioning of a locality. These facilities should not be considered as extravagant items because they reflect the quality of life in a locality and are amenities necessary to the general welfare, health, and safety of the residents.

Medical Facilities

The Shenandoah County Memorial Hospital, located in Woodstock, offers health care to the County residents. Equipped with 97 beds and staffed by 52 full-time medical professionals, it has gone through an expansion program to better serve the County. The hospital also operates a practical nursing school in cooperation with the Triplett Technical School.

The Shenandoah County Health Department, staffed by a director and public health nurses, is located in Woodstock and offers regular clinics to supplement health services of the Shenandoah County Memorial Hospital.

Police Protection

The County Sheriff and his deputies along with the police forces of the incorporated towns provide police protection for the County. They are assisted by troopers of the State Police in the investigation of all criminal activities and in patrolling the highways.

The Lord Fairfax Planning District Commission, since its inception, has conducted a series of training sessions to strengthen the quality of police protection throughout the district. Being a member of the Lord Fairfax Planning District, Shenandoah County will undoubtedly continue to receive fine assistance in the future years.

Fire Protection

Fire protection is provided the residents of Shenandoah County by nine volunteer fire departments throughout the County. Six of the departments are in the incorporated towns. The other three are located at Fort Valley, Conicville, and Orkney Springs. These fire fighting facilities are augmented by services of State and Federal Forest agencies, fire departments in the neighboring localities, and well trained auxiliary personnel. The facilities at each fire department are given in Table 13.

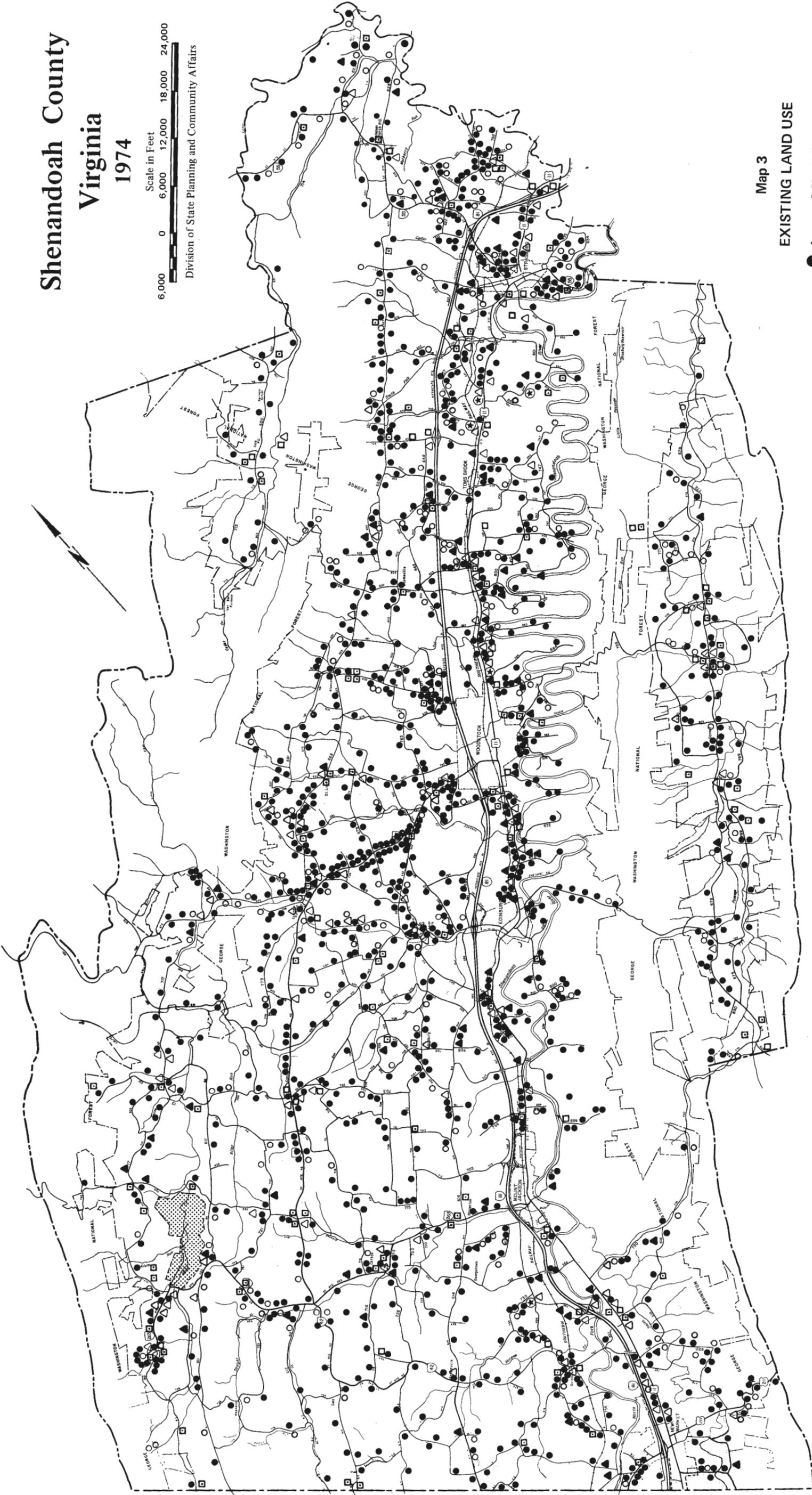
Shenandoah County

Virginia

1974

Scale in Feet
6,000 0 6,000 12,000 18,000 24,000

Division of State Planning and Community Affairs



Map 3

EXISTING LAND USE

- Approx. 3 Single Family Units
- Trailer
- ⊕ Trailer Court
- ◻ Semipublic
- ◻ Public
- △ Commercial
- ▲ Industrial
- ▣ Bryce Mountain Resort (approx. area)

According to the standards suggested by the National Board of Fire Underwriters, the desirable service radius of a rural fire station should be limited to five miles. Based on the service radius for each of the existing fire stations (see Map 4), the existing and designated primary growth areas are well protected. However, new fire stations may be needed in the future in those rural villages to give better geographic coverage. Financial assistance designed to help establish fire stations in rural areas may be available under the newly enacted federal Rural Area Development Act.

**TABLE 13
FIRE PROTECTION FACILITIES
SHENANDOAH COUNTY, VIRGINIA**

Fire Service District or Station	Personnel	Equipment (Type or Use)	Capacity
Strasburg	65 Volunteer	2 pumpers 1 tanker	1,250 G.P.M. (a)
Toms Brook	26 Volunteer	1 high pressure unit 1 tanker	N.A. (b)
Woodstock	50 Volunteer	3 pumpers 1 tanker	2,250 G.P.M. 300 G.P.M.
Edinburg	40 Volunteer	1 pumper 2 high pressure units	500 G.P.M. N.A.
Mt. Jackson	24 Volunteer	2 pumpers 1 tanker	1,250 G.P.M. 300 G.P.M.
New Market	40 Volunteer	2 pumpers 1 high pressure unit 1 tanker	1,500 G.P.M. 300 G.P.M. 300 G.P.M.
Fort Valley	31 Volunteer	1 pumper 1 tanker	750 G.P.M. N.A.
Conicville	27 Volunteer	2 high pressure units	N.A.
Orkney Springs	20 Volunteer	1 pumper 2 tankers	750 G.P.M. N.A.

(a) G.P.M. = Gallons Per Minute

(b) N.A. = Not Available

Source: Shenandoah County Sheriff's Department, February, 1973.

Sanitary Landfill

To bring the County into conformity with rules and regulations prescribed by the State Department of Health under the authority of legislation adopted in 1970, the County has established a sanitary landfill operation at a 26-acre site located on the west side of U.S. Highway 11 and the Southern Railroad, approximately 1¼ miles north of Edinburg. The site has been approved by the State Department of Health and is expected to meet the projected needs for twenty years.

Open Space and Recreation

Organized recreational programs and recreation areas are presently provided by the towns and religious and civic organizations. Residents of the County can enjoy a wide variety of recreational activities at these areas. The natural assets of Shenandoah County also make possible many types of outdoor recreation spots. The George Washington National Forest, together with many privately operated resorts and parks, offers scenic drives, hiking, boating, picnicing, hunting, fishing, golfing, and camping. In addition, two of the famous limestone caverns of Virginia Battlefield crystal caverns near Strasburg and Shenandoah Caverns north of New Market, lie within the County.

To assess the adequacy of recreational facilities, the Virginia Commission of Outdoor Recreation has recommended that an area standard of ten acres per one thousand population be adopted for every locality. Based on a projected population of 26,000 for Shenandoah County by 1990, it would require a total of 260 acres of county-owned open space and recreation land. Because of various local factors, such as the accessibility to federal and state facilities, sparsely developed land pattern, population density, and cost of land, the Commission also pointed out that the adherence to this standard may be unrealistic.

After considering these factors, the Shenandoah County Planning Commission has concluded that the County will have no immediate need for additional open space and recreation land, except for the designated permanent open space and those that have been either planned or considered as potential sites by governmental agencies.

County Courthouse

The Shenandoah County Courthouse, built in three sections, was started in 1795. Serving as administrative headquarters of the County, it houses such county offices as the Clerk of the Court, Commissioner of Revenue, the County Court, County Treasurer, and Commonwealth's Attorney. Through the years, additions were built and office space has been rented in the vicinity of the Courthouse to accommodate the increased space needs. For example, a new jail building was constructed across the street from the Courthouse.

In light of the shortage of sufficient space, plans are being made to construct a new Courthouse near the jail building. In addition, the First Virginia Bank Building which has been donated to the County should adequately serve the future space needs.

Public Utilities

Electricity is provided the County by two (2) privately-owned companies and one (1) rural electric cooperative. The largest electric utility company is the Virginia Electric and Power Company, which serves five of the six incorporated towns and almost half of Shenandoah County. The Potomac Edison Power Company renders service to the northern part of the County and the Town of Strasburg. The Shenandoah Valley Electric Cooperative, receiving power from VEPCO's transmission system, services the remaining portion of the County.

In addition to the above electric power supplies, two 26-inch natural gas transmission pipelines of the Atlantic Seaboard Corporation pass through the center of Shenandoah County and another 24-inch transmission line of this same corporation crosses the southwestern corner. The County is within the franchise area of the Shenandoah Gas Company which provides natural gas distribution to the Town of Strasburg as well as to industries and homes within the County.

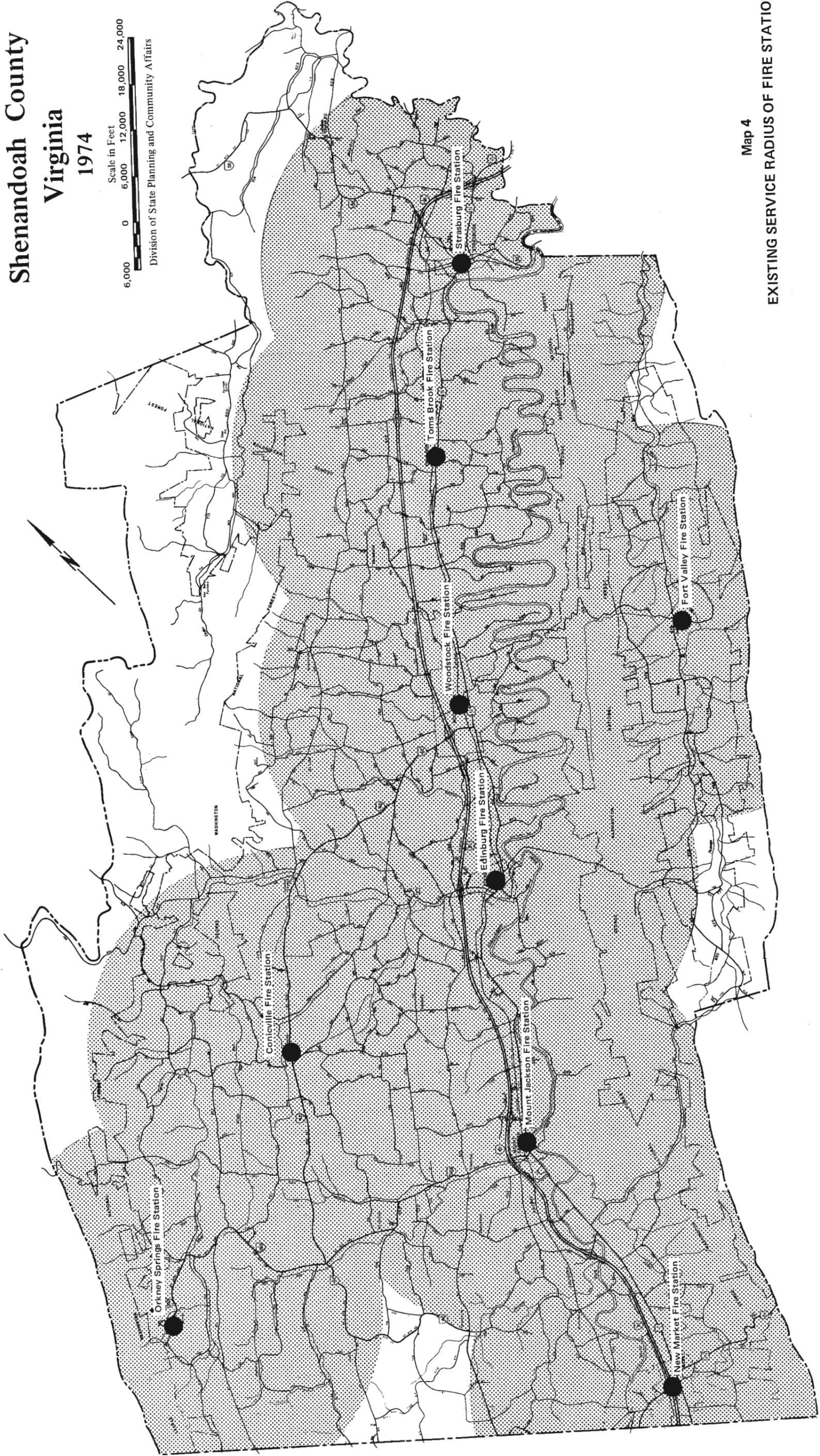
Library Service

The library service is offered to the residents of Shenandoah County by three small public libraries. The Strasburg Public Library, containing approximately 3,300 volumes, has an annual circulation of 2,000 volumes. Located in the Town of Woodstock is the Woodstock Public Library which contains 8,000 volumes and has an annual circulation of 7,250 volumes. The Mount Jackson Public Library, established in 1968, has a collection of 1,000 volumes. In addition to the above libraries, the Shenandoah County Public School libraries also provide limited service to the general public.

In view of the projected population increase in the next twenty years, the demand for a county-wide library service can be expected. To meet this demand, Shenandoah County should work closely with other localities in the Lord Fairfax Planning District to explore the possibility of forming a regional library system or of seeking technical and financial assistance from the Virginia State Library to establish a library system of its own.

Shenandoah County Virginia 1974

Scale in Feet
6,000 0 6,000 12,000 18,000 24,000
Division of State Planning and Community Affairs



Map 4

EXISTING SERVICE RADIUS OF FIRE STATIONS



Service Radius For Existing Fire Station

Water and Sewer

Water and sewer are two of the important factors affecting the rate and pattern of land development in a locality. An area with water and sewer is going to grow faster than an area without such services. Equally important is the fact that water and sewer are essential to the maintenance of a quality living environment.

Shenandoah County provides neither public water nor public sewer to its residents because of the sparsely developed land uses which make the installation of public water and sewer uneconomical. However, the incorporated towns in the County, except the Toms Brook-Maurertown area which has a recently completed water supply system, are served by both public water and sewer. There is also a privately-owned central water supply system available to residents of the Bayce Mountain area.

Educational Facilities

Educational facilities, consisting of public, vocational and private schools, are important community assets because adequate educational facilities will produce a better educated population and, in turn, skilled workers.

Public school education in the County is administered by the Shenandoah County School Board. Under the authority of the local school board, there are three high schools, one technical school and eight elementary schools. Detailed statistics pertaining to the County's public schools are in Table 14. In addition, there are two privately operated schools in the County--Shenandoah Valley Academy near New Market and Massanutten Military Academy in Woodstock.

Although there are no higher educational institutions in Shenandoah County, several nearby facilities for higher education are available to its residents. The Lord Fairfax Community College, located about eight miles north of Strasburg in Frederick County, serves the County with a number of technical courses and two-year courses in which an associate degree may be earned. In adjoining Rockingham County there are three four-year colleges: Madison College, Eastern Mennonite College, and Bridgewater College.

In recognition of the fact that the planning of new public school plants and updating of existing public school plants demands detailed study, the Shenandoah County School Board requested the State Department of Education to study the school building needs in February, 1973. As a result, recommendations were submitted to the County School Board for consideration.

**TABLE 14
PUBLIC SCHOOL DATA
SHENANDOAH COUNTY, VIRGINIA**

School	Site Size	Year Built	Grades Taught	Operating Capacity	Enrollment	Auxiliary Spaces ^(b)
Strasburg High School	23	1959	(a) 8-12	635	600	L.G.T.C.M.
Central High School	20	1959	(a) 8-12	735	812	L.G.T.C.2M.
Stonewall Jackson High School	19	1959	(a) 8-12	635	628	L.G.T.C.2M.
Triplett Technical	15	1966	Vocational Education	240	N.A.	N.A.
New Market Elementary School	5	1938	(a) 1-7	450	377	L.G.T.C.M.
Triplett Elementary School	5	1925	(a) 1-7	615	512	L.G.T.C.M.
Edinburg Elementary School	17	1931	(a) 1-7	420	409	L.G.T.C.M.
Toms Brook Elementary School	7	1935	(a) 1-7	280	242	L.G.T.C.

TABLE 14 (Continued)

Fort Valley Elementary School	5	1958	1-6	80	48	L.MP.
Strasburg Intermediate School	10	1920	(a) 5-7	710	359	L.GT.C.2M.
Woodstock Elementary School	17	1934	(a) 1-7	665	740	L.GT.C.2M.
Sandy Hook Elementary School	25	1971	1-4	575	446	L.GT.C.

(a) denotes additions since date of erection.

(b) L-Library; C-Cafeteria; G-Gymnasium; A-Auditorium; CT-Cafetorium; GT-Gymnasium; MP-Multipurpose Room; M-Mobile Classroom.

Source: The Office of the Superintendent, Shenandoah County Public Schools, March 1973.

SECTION FIVE HOUSING

Housing is the physical demonstration of the quality of life and environment in a locality. Substandard housing has lasting negative influences on those living in it and on the environment. Conversely, sound housing units help enhance the quality of life and environment. If a locality is to grow in an orderly manner, an examination of certain housing characteristics is warranted.

During the past decade Shenandoah County's housing pattern has experienced numerous changes. The total number of housing units increased from 7,208 in 1960 to 8,686 in 1970 and the median value of dwellings increased from \$8,000 to \$12,600 during the same period. Concurrently, the median number of persons per housing unit decreased from 3.1 in 1960 to 2.6 in 1970, indicating a less densely occupied housing situation.

Another indicator of housing conditions is the plumbing facilities because a housing unit without plumbing facilities is faced with serious sanitation problems. Between 1960 and 1970, the number of housing units with all plumbing facilities increased from 3,816 to 6,167, while those units lacking some or all plumbing facilities decreased from 3,392 to 2,519. This has been rather a tremendous improvement.

**TABLE 15
SELECTED HOUSING CHARACTERISTICS, 1960 and 1970
SHENANDOAH COUNTY, VIRGINIA**

	1960	1970
All housing units (year round)	7,208	8,686
Occupied	6,507	7,512
Owner occupied	4,608	5,454
Renter occupied	1,899	2,058
Vacant	701	1,174
With all plumbing facilities	3,816	6,167
Lacking some or all plumbing facilities	3,392	2,519
Median number of persons per housing unit	3.1	2.6
Median value of dwellings	\$8,000	\$12,600

Source: U.S. Bureau of the Census, Census of Housing, 1960 and 1970.

In addition, a comparison of the percentage of housing units in various selected substandard classifications in Shenandoah County and the percentage of those units in Virginia and United States is presented in Table 16. Housing conditions in Shenandoah, although improved remarkably during the 1960-1970 period, are still less desirable than those in the state and nation.

To determine the approximate location of substandard housing units, the staff of the Division of State Planning and Community Affairs conducted an "exterior structural" survey in January, 1973. Consequently, concentration of substandard housing was not found in Shenandoah County except in scattered locations. Most of the substandard housing units are associated with undesirable environmental factors, such as unpaved roads, discarded automobiles, poor access, and unauthorized garbage dumps.

**TABLE 16
COMPARISON OF THE PERCENTAGE OF SUBSTANDARD
HOUSING IN SHENANDOAH COUNTY WITH THE PERCENTAGE
IN VIRGINIA AND THE UNITED STATES, 1970**

	United States	Virginia	Shenandoah County
Total occupied and vacant year-round housing units:	67,656,566	1,483,026	8,686
Percent of total occupied and vacant year-round units which:			
Lack complete plumbing	7	13	29
Lack complete toilet facilities	5	11	27
Lack complete kitchen facilities	5	9	18

Source: U.S. Bureau of the Census, Census of Housing, 1970.

**PART TWO
POLICIES AND PLANS**

**SECTION ONE
GOALS AND OBJECTIVES**

The primary goal of Shenandoah County is to improve public health, safety, convenience, and welfare, and to plan for the future development of the County. The following objectives are intended to achieve this goal:

General Objectives

1. To provide a framework for the orderly growth of the County, wherein the demands for residential, commercial, public and other land uses can be accommodated in a harmonious manner.
2. To provide a basis for designing and programming new public facilities.
3. To encourage economic development: agriculture, industry, public facilities, and services.
4. To provide a beginning for a continuing planning process, wherein the needs and desires of the citizenry will be constantly reflected and realized.
5. To provide a highway network designed to meet the future needs and demands of the County.
6. To coordinate planning with the Lord Fairfax Planning District Commission to insure that the County plan is consistent with regional development goals.

Agricultural Objectives

1. To protect existing farming operations from permature or speculative industrial, residential or commercial development.

2. To designate areas for agricultural use for the purpose of facilitating conservation of water and other natural resources, reducing soil erosion, protecting watersheds and reducing flood and fire hazards.
3. To provide for the orderly expansion of urban development into territory surrounding incorporated areas within the County while discouraging the scattering of residential, commercial, and industrial uses into the agricultural areas.
4. To promote the development of commercial activities, such as the general country store, at concentrated locations in agricultural areas.

Residential Objectives

1. To discourage residential development in areas having:
 - a. a conservational value;
 - b. economic deposits of extractive resources;
 - c. excessive slopes or floodplain conditions;
 - d. proximity to surface water supplies; and
 - e. hazards other than flooding, such as heavy industrial use, airport, and poor soil conditions.
2. To encourage residential development in proximity to good transportation access; near the major retail shopping areas and major employment centers; and in areas with public services such as water and sewer, fire, and police protection.
3. To establish adequate buffer zones between residential and commercial and industrial areas to maintain property values and physical attractiveness.
4. To protect single-family residential areas from through-traffic and incompatible uses (such as, industrial and commercial uses).
5. To allow farm-related residential use in agricultural areas, medium residential density in certain marginal agricultural areas as well as certain waterfront areas, and high residential density in areas where public or central water and sewer facilities are present or planned.

Commercial Objectives

1. To prevent strip commercial development along the major transportation routes.
2. To promote commercial development in planned commercial areas which are the equivalent to the central business district found in the towns.
3. To group highway commercial services in selected locations.
4. To preserve areas near existing commercial areas for future expansion.
5. To provide adequate parking facilities and controlled access for all commercial developments.

Industrial Objectives

1. To encourage light industry that will benefit the economy of the County.
2. To designate industrial sites based on the criteria of land availability, current land use, proximity to service facilities, topography and proximity to land and air transportation access.
3. To promote industrial uses in "park" settings with adequate distance and aesthetic qualities in relation to neighboring uses and highways.
4. To isolate obnoxious, nuisance-type industries from residential and commercial districts.

Open Space and Recreation Objectives

1. To utilize existing or potential water reservoirs in the County for planned recreational uses.
2. To preserve the George Washington National Forest and the Shenandoah River as prime conservation and recreation areas for residents of the County as well as visitors.
3. To establish conservation and/or wildlife preservation areas in areas of major watersheds, bottomlands, and floodplains.
4. To acquire land through dedication or advance acquisition in areas where population density is expected to increase in future years.
5. To preserve well-identified scenic and historic sites in the County.
6. To promote private recreational facilities and planned resort communities which will enlarge the job opportunities for the residents of the County.

Major Highway Objectives

1. To develop a highway system which will accommodate safe and efficient movement of people and goods.
2. To design a highway system in coordination with future land use pattern for preserving the quality of the physical environment.
3. To establish a coordinated planning process to insure that the future County highway plan is consistent with regional and state plans.

SECTION TWO THE ESTIMATION OF FUTURE SPACE NEEDS

The comprehensive plan for a locality should establish a basis for scaling the amount of land needed for future growth. For Shenandoah County, population and economic growth projections were used as a measurement for probable future space needs. As a result, an estimate of the land required for each major land use category is given in Table 17.

- It will increase the costs for providing community services, including water, sewer, police protection, refuse collection, and fire protection.
- It will hamper the traffic movement if the strip development were permitted to continue.
- It will encourage strip commercial development along the frontage of all major highways.

2. Corridor Pattern

The arrangement of this pattern is based on a linear relationship to the two major traffic arteries in Shenandoah County - U.S. Highway 11 and Interstate 81. In this pattern, the existing towns will serve as the primary growth centers and areas along these two major routes will be designated and developed for urban uses.

Advantages

- It will provide rapid access to the primary growth centers.
- It will confine urban developments in well defined corridors separate from the rural portions of the County.

Disadvantages

- This pattern is also handicapped with the disadvantages of Alternative 1 regarding the provisions of community services and traffic movement.
- This pattern will also remove the identity of each of the six existing towns.

3. Multiple-Centers Pattern

This scheme is a group of primary (urban) growth centers and secondary (rural) growth centers, which in total make up the county's future development pattern. The primary (urban) growth centers surrounded by open space and/or agricultural lands will become centralized service centers, while the secondary (rural) growth centers will become rural service centers offering convenience type shopping facilities and limited governmental services.

Advantages

- It will encourage urban uses to locate in and around the primary growth centers (existing towns) where community services and shopping facilities are readily available.
- It will enable urban uses to be more economically developed and serviced in areas (primary growth centers) of relatively high population density and good physical characteristics.
- It will maintain the physical identity of each primary growth center (existing town).
- It will reduce the cost for providing public services by confining new development in primary and secondary growth centers.
- It will break up strip pattern of developments associated with Alternatives 1 and 2.

Disadvantages

- It will encounter some public opposition because this pattern will control the development of new land uses.

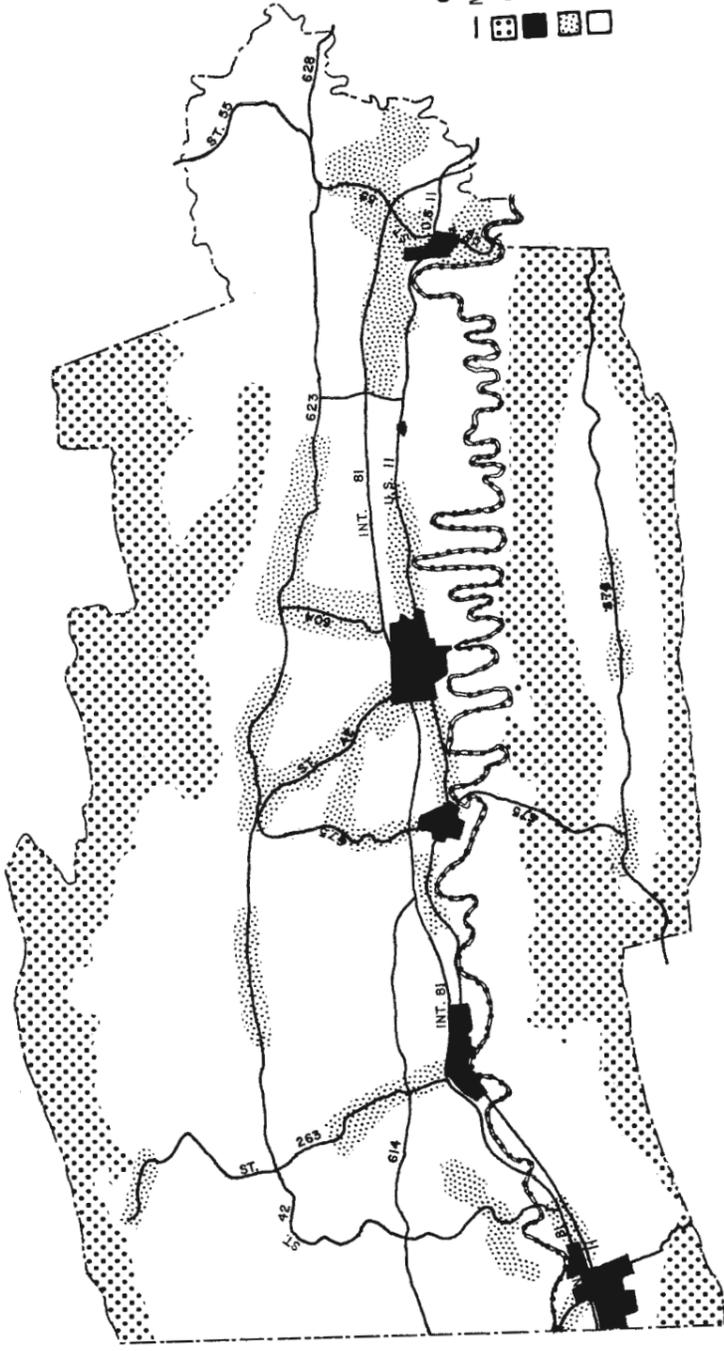
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Map 5

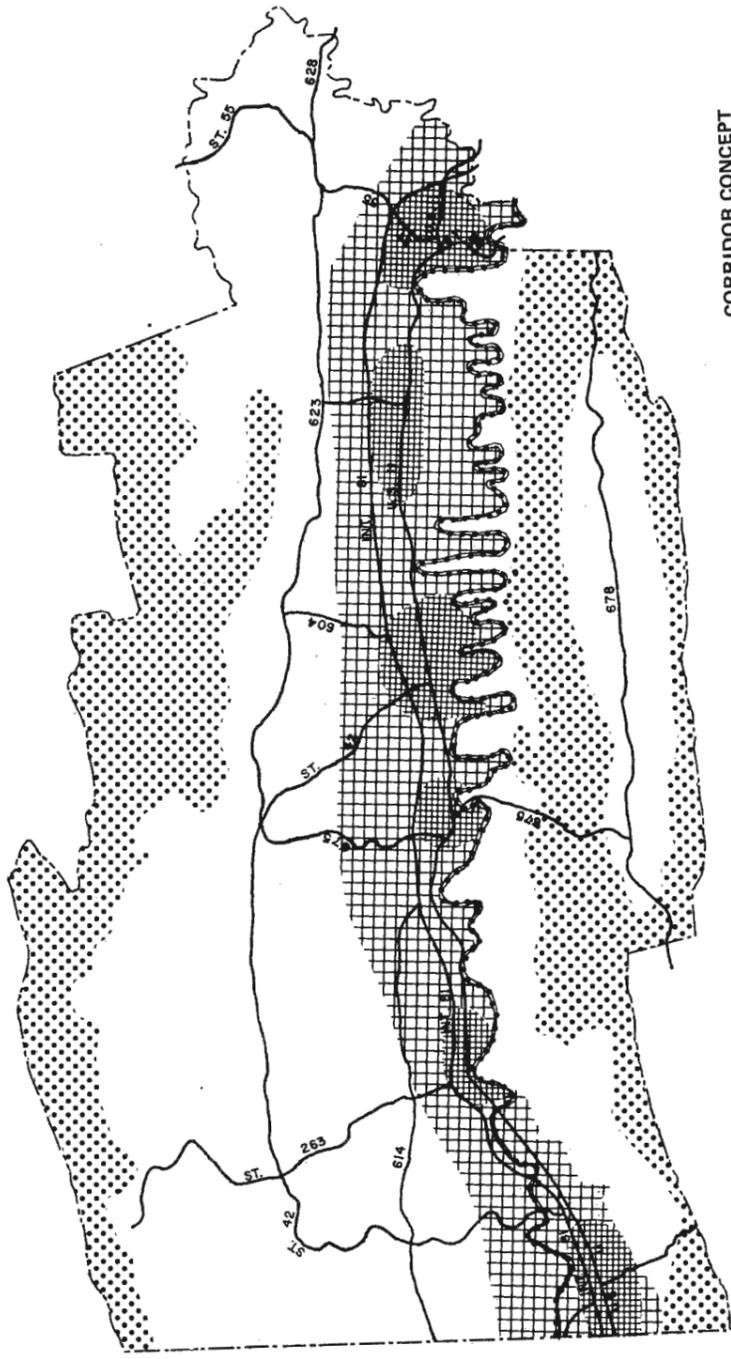
CONTINUATION OF EXISTING DEVELOPMENT TRENDS

- Major Highways
- ▣ Conservation & Open Space
- ▣ Existing Towns
- ▣ Urban Development
- ▣ Agricultural



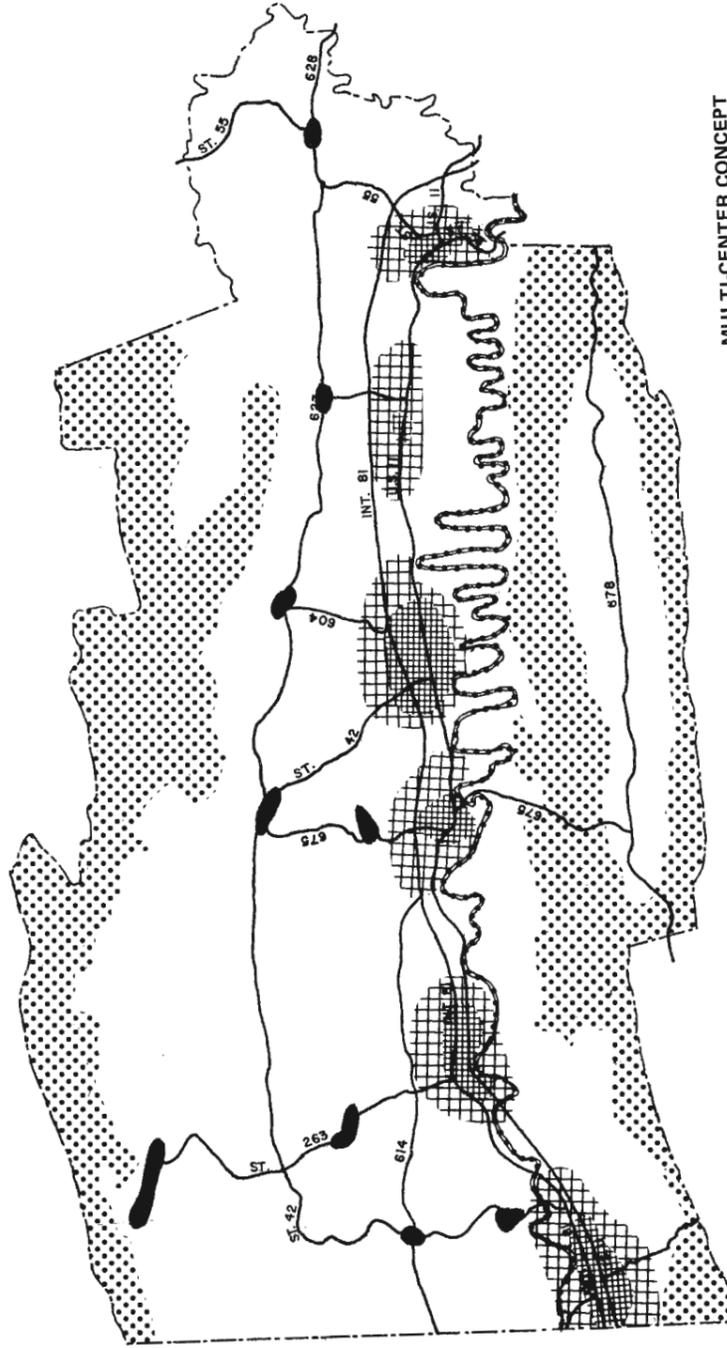
ALTERNATIVE DEVELOPMENT CONCEPTS

- ### CORRIDOR CONCEPT
- Major Highways
 - ▣ Conservation & Open Space
 - ▣ Primary Growth Center
 - ▣ Secondary Growth Area
 - ▣ Agricultural



MULTI-CENTER CONCEPT

- Major Highways
- ▣ Conservation & Open Space
- ▣ Secondary Growth Center
- ▣ Secondary Growth Area
- ▣ Primary Growth Center
- ▣ Agricultural



Conclusions

Based on the advantages and disadvantages of each alternative development concept, the County has selected the multiple centers concept as the optimum development guide. This concept will establish an orientation and character for the future growth of Shenandoah by confining urban developments in and around six urban growth centers and twelve rural development centers, rather than allowing growth to sprawl along primary and secondary roads.

SECTION FOUR THE PLAN

LAND USE PROPOSALS

The primary purpose of the land use proposals is to direct the future use of land in close relation to the development goals and objectives, future space requirements, economic prospects, physical characteristics, and existing development pattern. The County has also considered appropriate location and design standards to arrive at the land use proposals.

The land use proposals are a set of inter related proposals designed to promote the selected development concept of multiple centers. Through development controls and community cooperation, this concept will help the County to provide services for its residents more economically and to maintain an environment of conserved open space and agricultural lands.

A detailed description of each of the land use proposals indicated on the Plan Map is as follows:

Urban Growth Centers

Urban growth centers, designed to offer a full range of services and facilities, are to be formed by the existing towns. Based on the past and present development trends, Strasburg, Woodstock, Mt. Jackson and New Market will play a major role in terms of providing urban services to their surrounding areas, while Edinburg and Toms Brook will serve the County in a secondary capacity.

This plan will not describe the detailed land use arrangement within these growth centers since most of them have either adopted comprehensive plans or contemplate preparing one in the near future. However, each of these towns by virtue of its designated function will contain the following characteristics:

- a variety of residential densities depending on the capacity of its public water and sewer.
- a central business district offering diversified shopping goods and services.
- an adequate system of parks and recreational facilities.
- an array of governmental services, including police and fire protection, public utilities, schools, medical facilities, and water and sewer.
- a strong employment base providing adequate job opportunities.
- an identifiable development pattern that is planned congruously with the natural environment.
- a network of streets meeting the present and future circulation needs.

These six urban growth centers should be kept as separate identities, each with a low to medium density residential area around it for people desiring suburban living. Substantial benefits may accrue from clustering urban and suburban growth in selected areas, allowing other areas of the County for agricultural uses. In this way, better planned subdivisions and lower development costs will be made possible.

Rural Development Centers

The Planning Commission proposes twelve (12) rural development centers in selected areas of the County, most of which are established rural villages with approximately fifty to one hundred residential homes and local business stores. The development of these centers will prevent scattered residential and commercial developments in the rural areas from encroaching upon fertile agricultural lands. By concentrating development, large savings will be realized in the cost of providing services, including schools, roads, water and sewer, refuse collection and disposal, light and power, and telephones.

The rural development centers include the following locations: Lebanon Church, Mt. Olive, Alonzaville, Detrick, Lantz Mills, Hamburg, Columbia Furnance, Coinsville, Forestville, Quicksburg, Mt. Clifton, and Orkney Springs-Bayse. When developed, each of these centers will contain the following features:

- a desirable residential density of 1 to 2 dwelling units per acre depending upon the availability of
- public or central water and sewer.
- a probable population of 500 to 1,000.
- "package" type water and sewer treatment systems.
- a service center consisting of convenience commercial stores, branch police and fire stations, health center, and post office.

Residential

The Planning Commission advocates the neighborhood unit principle by recommending low to medium density residential clusters located in and around each growth center and serviced by schools, shopping facilities and free from heavy through traffic.

The area bounded roughly by Woodstock, Edinburg, State Routes 675 and 42, and the Shenandoah River is expected to accommodate the largest percentage of the residential growth in Shenandoah County. Ultimately this "golden triangle" will become the center of urban growth, containing a series of residential clusters.

These designated residential areas will have a density of about 1 to 2 dwelling units per acre; a higher density may be permitted when they are served by public or central water and sewer. The residential areas shown on the Plan map contain sufficient acreages for the projected residential growth in Shenandoah.

Commercial

The existing commercial development pattern in Shenandoah County is spreading along transportation routes from the towns. If this trend were allowed to continue, typical "strip" commercial will occur and hamper the traffic movement, not to mention the aesthetic loss resulting from huge signs, flapping pennants, and other gaudy devices. To correct this undesirable development pattern, the Planning Commission proposes three kinds of commercial areas, giving special attention to their designated functions.

The first type of these planned commercial areas is the interchange commercial area. The completion of Interstate 81 has provided the County with eight interchanges, and these interchanges can give the County most desirable commercial locations. To realize the full economic benefits of these areas, it is necessary to guide and control the development around these interchanges so that the highest quality development, in terms of economic returns to the County, will result.

Five interchange commercial areas are proposed at locations near Strasburg, Toms Brook, Edinburg, Mt. Jackson, and Shenandoah Caverns. Each of these areas is envisioned to contain such commercial uses as motels, restaurants, office parks, and gas stations. To safeguard the usefulness of these interchanges, the County must review the site design of commercial uses along approach highways so that they will not choke off the traffic movement.

The second type is the general commercial area. Designed to serve a much wider trade area, it will serve as the suburban equivalent of the existing central business district in the towns of the County. It will contain, in addition to the stores normally found in the local commercial area, a wide variety of shopping goods, home furnishing, automobile dealerships, and service establishments of all kinds.

The third type is the local commercial area which is proposed at each of the designated rural development centers. The local commercial area will contain stores to facilitate such convenience needs as gasoline, groceries, and sundry items.

In developing these proposed commercial areas, the County should enforce the following site design criteria:

- groups of adjacent and/or similar facilities should relate through vehicular and/or pedestrian travelways.
- development should blend with the natural landscape.
- pedestrian movement should not compete with vehicular movement.
- commercial areas should have controlled access.
- signs should communicate only goods sold and services provided.
- parking areas should contain landscaped walkways, relating pedestrians directly to the stores.
- service entrance to the stores should separate from the shoppers.

Industrial

The results of the migration of industrial plants from urban area to modern one-floor facilities in rural areas have brought additional economic gains to rural localities. The employment rate is steadily climbing, tax base is strengthening, and population is increasing. However, this rapid industrialization of the rural areas will cause undesirable effects if the industrial plants are not located and developed properly.

To enable Shenandoah County to benefit from this industrial decentralization trend, the County should promote light industries in industrial parks located adjacent to the County's airports or major transportation routes. The development of quality, non-polluting industrial parks will be consistent with the goals and objectives of Shenandoah County.

The Plan map indicates seven industrial areas which are occupied by existing industries or have been selected by the Virginia Electric and Power Company as good industrial sites. These sites have good access to transportation networks and are good sites with regard to the terrains, soil characteristics and the absence of flooding conditions. In all instances, their locations are related properly to the centers of population.

In developing these industrial sites, the County should require:

- a well landscaped and pleasing site design.
- adequate distance between industrial sites and adjoining uses.
- direct industrial access road to and from major transportation routes.
- adequate utilities and related services including water and sewer.
- a desirable density of 15 to 16 workers per acre.

Public and Semi-Public

The Plan map depicts the existing as well as those committed future public and semi-public uses that are of importance to the development of Shenandoah County. The reason for a lack of detailed projection of future sites is that the size of the County makes it neither feasible nor desirable. To make such choice with regard to public facilities sites will require a large sum of County funds and could cause land speculation. For example, the construction of a park will make the surrounding area more attractive and valuable for residential development.

In the designated residential areas, the Planning Commission has indicated that the County's subdivision regulations will be instrumental in securing dedications of public facilities sites as an integral part of a residential development. Furthermore, different types of future developments may require different public facility needs and affect the selection of detailed sites. For example, the development of a seasonal resort community will reduce the school needs, while a permanent residential area will increase the school needs. The Planning Commission, therefore, proposes that sites for future public and semi-public facilities be made flexible, so they can be developed harmoniously with the new development.

Agricultural

A large portion of the County is designated as being agricultural, which is not expected to develop as urban uses by 1990. Except for farming operations and agricultural related uses, intensive and premature urban developments should be discouraged to afford maximum protection to the fertile, productive agricultural lands.

Permanent Open Space

The areas designated as permanent open space are those of mixed alluvial soils adjacent to the North Fork of the Shenandoah River and other major streams which are occasionally flooded. For this reason they are not suited for urban developments. In the future, water impoundments could be built at sites which have potential for storage of water for flood control, recreation, and water supply.

Conservation

The areas shown on the Plan map as conservation are delineated on the basis of unfavorable topography, undesirable soils, and public forestlands. They play an important role in the preservation of Shenandoah's natural resources, and should remain in their natural state to avoid abusive and hazardous development. However, the County should permit the proper development and management of these areas for recreation uses, such as camping sites, lakes, ski resorts, and parks. The County should review the proposed recreational developments by following local, state and federal development control measures, including federal Interstate Land Sales Act, state water pollution control standards, soil erosion and sediment control ordinance, and local subdivision and zoning ordinances.

MAJOR HIGHWAYS PROPOSALS

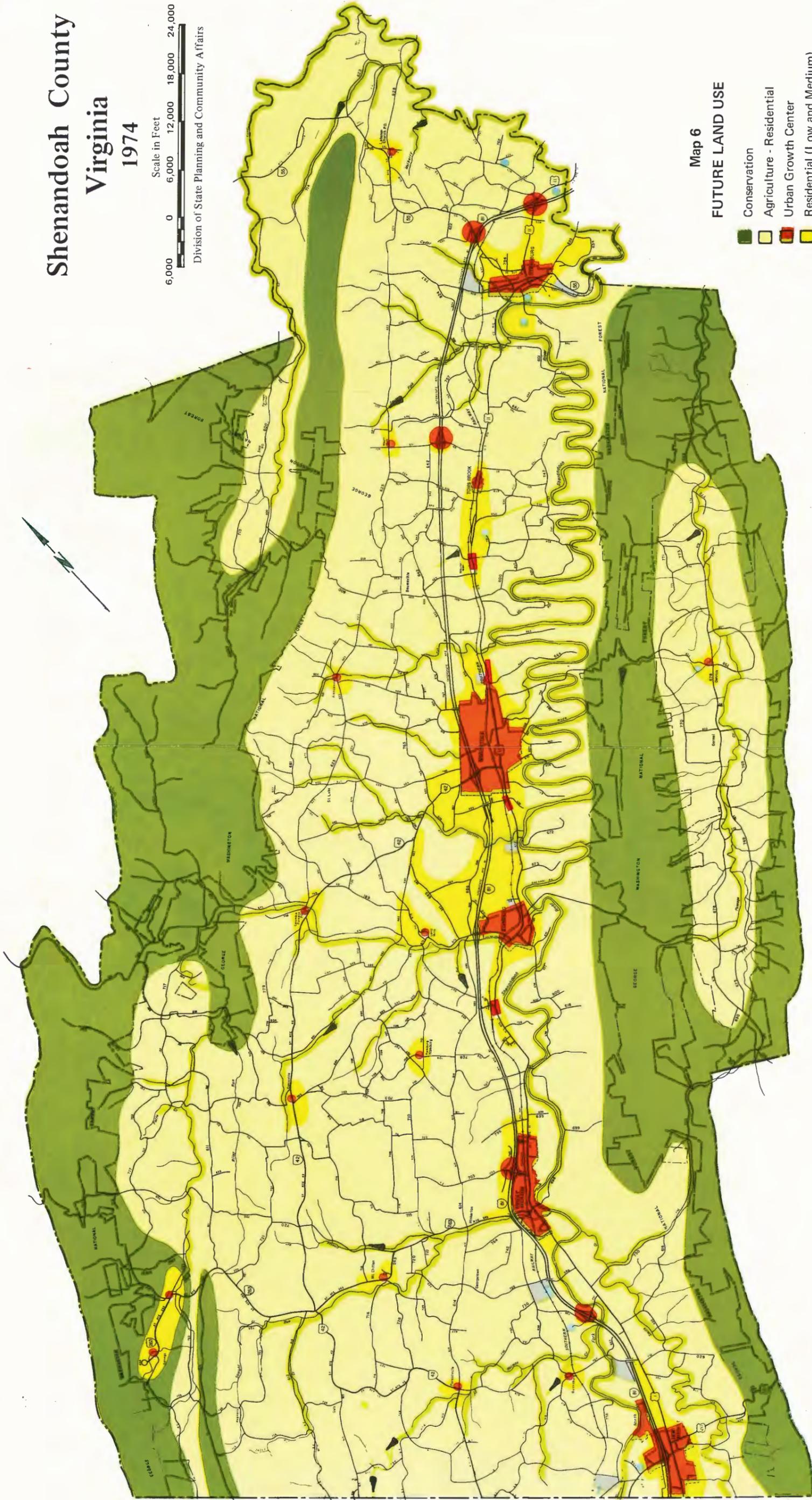
The growth and development of Shenandoah County is and will be influenced by the establishment of a system of major highways. This system is composed of interstate highways, arterials, collectors and local access roads which are interrelated, each affecting the level of service provided by the other. As an area grows in population and number of vehicles, the movement of people and goods will become a more complex and difficult problem.

Shenandoah County Virginia

1974

Scale in Feet
6,000 0 6,000 12,000 18,000 24,000

Division of State Planning and Community Affairs



Map 6

FUTURE LAND USE

- Conservation
- Agriculture - Residential
- Urban Growth Center
- Residential (Low and Medium)
- Interchange Commercial
- General Commercial
- Local Commercial
- Industrial (Light)
- Public and Semi-Public
- Permanent Open Space
- Potential Impoundment Sites

The purpose of this section is to develop a feasible system for the movement of people and goods, and to insure that this proposed highway plan is compatible and complementary to the land use plan. Traffic volume, classification of highways, existing and future development patterns, and contemplated highway improvements are major factors used to arrive at major highway proposals adequate to serve the present and future needs of the County.

Existing Highway Network

Shenandoah County has a highway network varying from unpaved country roads to a four-lane divided interstate highway. Of the total 800 miles of highways in the County, 628.56 miles are secondary routes, 126.61 miles are primary routes, and 44 miles are interstate highways. Except for some 70 miles of unpaved and light surfaced secondary routes, all of the remaining mileages are either hard surfaced or all weather surfaced. In addition, there are many forest roads which are built and maintained by the U.S. National Forest Service.

The right-of-way width of the State maintained highways varies from 300 feet for interstate routes to 30 feet for secondary routes. The interstate and primary highways in Shenandoah County are adequate in terms of their rights-of-way,, but secondary routes are generally in need of future improvements.

TABLE 18
SELECTED AVERAGE DAILY TRAFFIC VOLUMES ON
INTERSTATE AND PRIMARY HIGHWAYS, 1962, 1970 and 1972
SHENANDOAH COUNTY, VIRGINIA

Route	From	To	Average Daily Traffic Volumes		
			1962 ^(a)	1970	1972
U.S. 11	Interstate 81	Strasburg	5,400	3,695	4,160
	Strasburg	Woodstock	7,105	4,105	4,300
	Woodstock	Mt. Jackson	6,010	3,710	4,075
	Mt. Jackson	Rt. 767 north of New Market	5,415	2,115	2,290
	Rt. 767 north of New Market	New Market	5,535	2,240	2,370
Interstate 81	Rt. 211-260 of New Market	Rt. 703 Shenandoah Caverns	N.A.	7,740	9,660
	Rt. 703 Shenandoah Caverns	Rt. 703 north of Mt. Jackson	N.A.	7,655	9,370
	Rt. 703 north of Mt. Jackson	Rt. 614 Bowmans N.A.	N.A.	7,840	9,370
	Rt. 614 Bowmans	Rt. 675 Edinburg	N.A.	7,700	9,370
	Rt. 675 Edinburg	Rt. 42 Woodstock	N.A.	7,380	9,045
	Rt. 42 Woodstock	Rt. 651 Toms Brook	N.A.	7,395	9,210
	Rt. 651 Toms Brook	Rt. 55 Strasburg	N.A.	7,425	8,480
	Rt. 55 Strasburg	Rt. 11 Strasburg	N.A.	6,915	8,755
State Route 42	Woodstock	Calvary	1,915	2,725	3,115
	Calvary	Columbia Furnace	1,040	2,330	2,560
	Columbia Furnace	Mill	230	250	300
	Mill	Forestville	350	305	415
	Forestville	Timberville	590	665	780

TABLE 18 (Continued)

State Route 55	Riverton	Strasburg	2,255	3,620	3,200
	Strasburg	Lebanon Church	795	1,150	1,230
	Lebanon Church	Star Tannery	420	750	720
	Star Tannery	State Line	370	630	590
U.S. 211	Luray	New Market	2,140	3,425	3,760
State Route 260	New Market	County Line	1,930	2,820	4,210
State Route 263	Mt. Jackson	Mill	445	875	1,375
	Mill	Bayse	440	835	1,115
	Bayse	Orkney Springs	425	595	690

(a) Interstate 81 was not open in 1962.

Source: Virginia Department of Highways, Traffic and Safety Division, 1962, 1970 and 1972.

Based on the traffic counts provided by the Virginia Department of Highways, Interstate 81 is the most heavily travelled highway which carries around 9,000 vehicles a day in 1972. U.S. Highway 11, formerly a principal arterial, has turned into a major collector and experienced a decrease in traffic volumes because of the completion of Interstate 81. Other than the aforementioned routes, Routes 211, 42, and 263 have also had a gradual increase of traffic. The selected average daily traffic volumes on Shenandoah's interstate and primary routes are given in Table 18. Since the majority of Shenandoah's major roads are two-lane roadways and could handle a designed capacity of 500 to 1,000 vehicles per hour, none of them have exceeded their designed capacities.

Classification of Highways

Based on the U.S. Department of Transportation National Highway Functional Classification Study, the Virginia Department of Highways has classified the highways of Shenandoah County into six categories: interstate, principal arterial, minor arterial, major collector, minor collector, and local access road. They are shown on the Major Highways Plan map and are discussed as follows:

(1) Interstate Highways

Interstate highways are designed to serve safely and efficiently the traffic between all cities of 50,000 or more population. These divided highways are developed as two separate one-way roads to take advantage of terrain and other conditions for safe and relaxed driving, economy, and pleasing appearance. Interstate 81 is the only designated interstate highway serving Shenandoah County.

(2) Principal Arterials

The rural principal arterials contain routes which will serve projected corridor movements having trip length and travel density characteristics indicative of substantial travel. These routes are primarily four-lane in width, with only Routes 211 and 55 falling within this category in the County.

(3) Minor Arterials

The rural minor arterials should, in conjunction with principal arterials, form a rural highway network having the following characteristics:

- a. Link large towns and other traffic generators, such as major resort areas that are capable of attracting travel over similar long distances, and form an integrated network providing interstate and intercounty services.

- b. Be spaced at such intervals, consistent with population density, so that all developed areas of the region are within a reasonable distance of an arterial.
- c. Provide services to corridors with trip lengths and travel density greater than those predominantly served by rural collectors or local access roads.

Minor arterials, therefore, constitute routes whose design should be expected to provide for relatively high travel speeds, with minimum interference to through movement. Routes 260 and 55 (between Interstate 81 and Cedar Creek) are included within this category for the purpose of this Plan.

(4) Major Collectors

These routes, as shown, should:

- a. Provide service to any county seat not on an arterial, to the larger towns not directly served by an interstate or arterial, to other traffic generators of intracounty importance;
- b. Link these traffic generators with nearby towns or with interstate or arterials; and
- c. Serve the more important intracounty travel corridors.

Routes that fall into this category include sections of Routes 11, 675, 678, 42, 767, 263, 623, 651, 604, 683, 614, and 675.

(5) Minor Collectors

Minor collectors, as designated, should have the following characteristics:

- a. Collect traffic from local access roads and bring all developed areas within a short distance of a major collector.
- b. Provide service to the rural villages.
- c. Link the locally important traffic generators with their rural hinterland.

Minor collectors in Shenandoah County contain portions of Routes 622, 629, 638, 601, 600, 675, 717, 710, 703, 617, 616, 698, 730, 682, and 654.

(6) Local Access Roads

The local access roads are designed primarily to provide access to adjacent land and to facilitate short distance travel. Local access roads, of course, constitute the roads not classified as interstate, arterials, or collector routes.

In addition, the recommended design standards for pavement and right-of-way widths are included in the appendices of this report as guides for future highway improvements. They are given as examples, and will be subject to modifications as determined by traffic demands and preliminary engineering design in a particular location.

Recommended Highway Improvements

The Major Highways Plan is of little value unless improved. In selecting highways for improvements or realignments, the County has considered the travel requirements as well as the existing and future land

use patterns. The future land use plan is based on the multi-centers development concept where urban developments are to be developed in clusters, with a system of highways providing linkage between each of these designated growth areas. To achieve this desired growth pattern, the County in conjunction with the State Highway Department should make the following highway improvements:

1. Maintain a continuing improvement program for U.S. Highway 11, placing emphasis on the conversion of the section between Interstate 81 and Strasburg to a four-lane roadway. Such an improvement will provide easy access for the Town of Strasburg as well as provide reserved capacity for future traffic growth.
2. Improve State Routes 42, 682, and 675 as a circumferential route to serve the existing and proposed developments in the "golden triangle" area of Shenandoah County. This improvement will be necessary if the cluster development is to be realized.
3. Continue the improvement program for U.S. Highway 211 from Interstate 81 to the County line to a four-lane facility. This improvement will provide easy access for the Town of New Market as well as greatly alleviate the traffic generated by the New Market Battlefield Park.
4. Improve Routes 617 and 698 to a two-lane industrial access road with at least 24-foot pavement. These two improvements, when completed, will provide improved access to the Mt. Jackson and New Market airports and to the industrial parks which are to be developed adjacent to these airports.
5. Improve all primary and secondary roads between designated growth areas to eliminate such deficiencies as sharp curves, steep grades, narrow bridges, and inadequate pavement width.

Implementing the Recommended Major Highway Improvements

The preceding section contains the recommended highway improvements for Shenandoah County, varying in importance and character. The improvements cannot be undertaken by the State Highway Department simultaneously due to the limited highway funds available annually. However, there are methods that can be utilized by the County to help implement the Major Highways Plan. Among these methods are:

1. The County should require the dedication of adequate rights-of-way for the improvements of existing highways or the construction of new highways as a part of the subdivision control program.
2. The County should submit to the State Highway Department yearly a list of highway improvements that the County considers of high priority. This list should be accompanied by written statements describing how these improvements will relate to the development of Shenandoah County.
3. The County should require the developers to observe best planning standards aimed at eradicating such traffic hazards as inadequate off-street parking, poor visibility at intersections, improper ingress and egress, and inadequate building setback through zoning control (site plan review requirement in particular).

COMMUNITY FACILITIES PROPOSALS

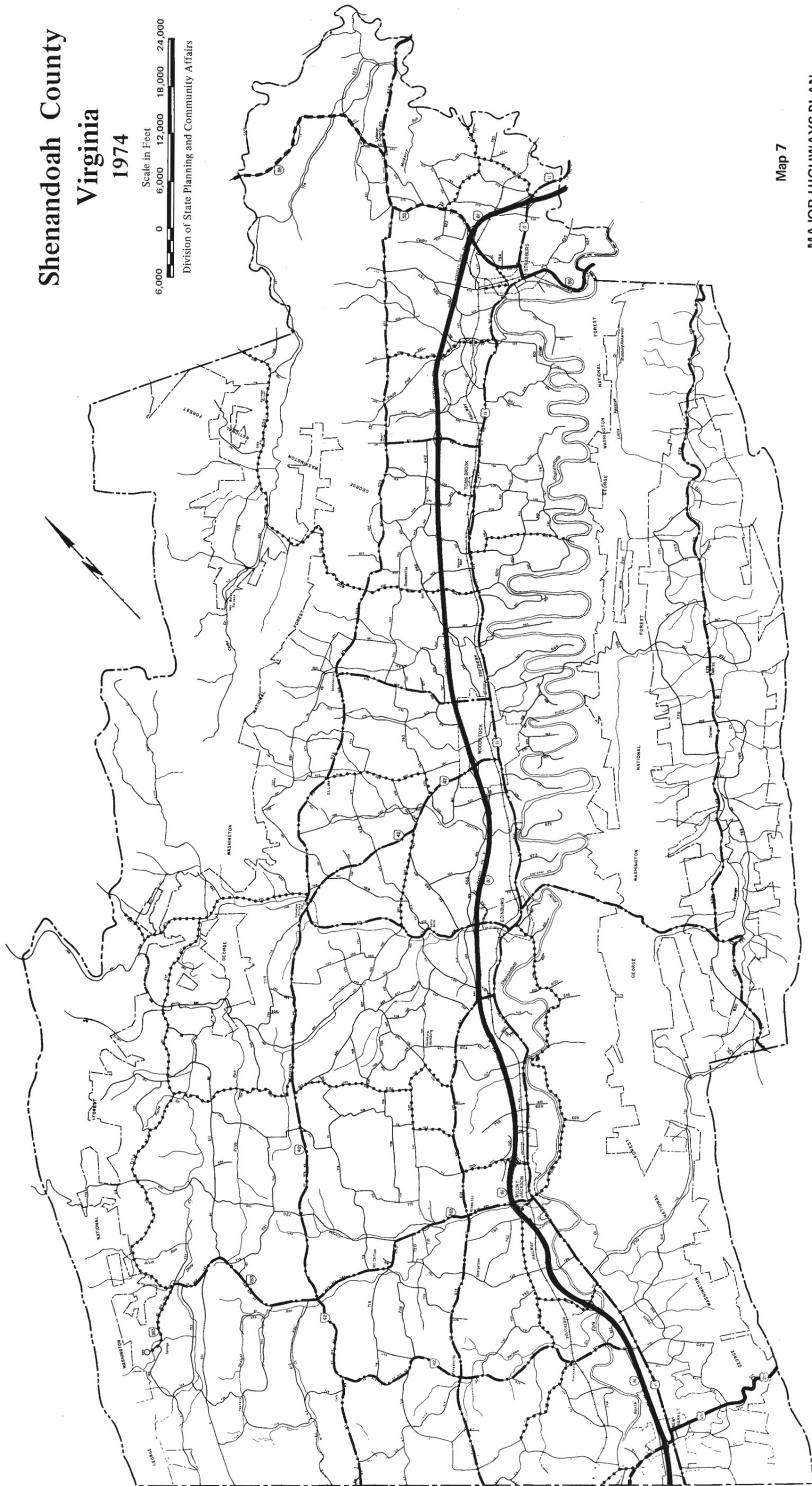
The following describes community facilities proposals that should be undertaken by the County:

Water and Sewer

The County will have to encourage the development of adequate water and sewer services for accommodating the future growth of Shenandoah. In 1970 the County employed Charles F. Hurt

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Scale in Feet
6,000 0 6,000 12,000 18,000 24,000
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Map 7

MAJOR HIGHWAYS PLAN National Highway Functional Classification

- Interstate
- Principal Arterials
- Minor Arterials
- - - Major Collector
- Minor Collector
- Local

and Associates to prepare a Comprehensive Water and Sewer Plan for those areas of the County having existing and/or future needs. Major recommendations that have been made by the Consultants and were incorporated into the Lord Fairfax Planning District Water Quality Management Plan are:

- Each of the existing municipal water supply systems should extend its service distribution lines into the suburbs where the need for water exists.
- By 1990 the County should provide a public water supply system for serving the portions of Shenandoah where it is economically feasible.
- The Shenandoah County Service Authority, when established, should construct and operate the public water distribution system.
- The County should encourage the towns to construct additional primary and secondary sewerage treatment facilities for all the designated urban growth centers.

Open Space and Recreation

- Help develop a state park near the Cedar Creek Battlefield north of Strasburg.
- Develop Route 678 running through the Fort Valley Area as a scenic highway.
- Develop the Cedar Creek as a scenic river.
- Preserve the Cedar Creek Battlefield as a historic site in connection with the proposed state park.
- Develop the Massanutten Mountain and the North Fork of the Shenandoah River as planned recreation areas due to their recreation potential and importance.

Fire Protection

- Establish new fire station at each designated rural development center when funds are available under the Federal Rural Area Development Act.

HOUSING PROPOSALS

Proposals that will help Shenandoah County improve its existing housing problems and meet the future need for adequate housing include:

- The County should consider the formation of a housing development authority to coordinate housing production, management, and demand through such federal and state agencies as the Federal Housing Administration, the Farmers Home Administration, and the Virginia Housing Development Authority.
- The County should work with other localities in the Lord Fairfax Planning District in improving the housing problems on a regional basis. This could include the formation of a non-profit regional housing development corporation.
- The County should cooperate with the representative of the Farmers Home Administration in Shenandoah County to provide information on the federal rural housing programs.
- The County should coordinate state and federal programs in the rehabilitation of existing substandard housing units.
- The County should adopt and enforce land use regulatory measures, including zoning, subdivision regulation, and housing code, to improve the undesirable environmental conditions associated with substandard housing.

SECTION FIVE PLAN IMPLEMENTATION

The Comprehensive Plan for Shenandoah County represents a development proposal which, if properly implemented, can fulfill the goals and objectives set forth in the report. It embodies the best thinking of the County at a given point in time, and should provide a frame of reference to the future public and private development that will affect the growth of Shenandoah County.

The County should consider this plan as the beginning of a continuing planning program. It will require a number of plan implementation measures to permit development to occur in the desirable manner proposed.

Plan implementation measures which are available to implement the plan in accordance with the Virginia legislative and constitutional provisions are as follows:

1. Official Adoption of the Plan

Official adoption of the Plan by the Shenandoah County Board of Supervisors is the first step in carrying out the plan. The County should distribute copies of this plan to the public and conduct public hearings to solicit comments from the citizenry prior to the adoption of this plan. After its official adoption, the plan will serve as the official development guide for the County and shall control the general or approximate location, character and extent of each feature shown on the Plan Map.

2. Zoning Control

Zoning is a method of dividing the territory of a political subdivision into different use districts in accord with the local development policies. By setting up use and dimensional regulations, it will insure that the future use of land or structures will be in conformity with the local official comprehensive plan. The authority to zone is based on the police power, which is delegated to the locality. The County has taken steps to prepare a zoning ordinance which will help implement the comprehensive plan. The Planning Commission and the Board of Supervisors should review and adopt it immediately.

3. Subdivision Control

Subdivision control is essential to the sound development of a locality in that minimum site improvement standards as well as park and school sites can be regulated, reserved, and built with great savings in public funds. The County has enacted a subdivision ordinance and is in the process of updating it for the purpose of guiding the development of future residential areas more effectively.

4. Capital Improvements Programming

Capital Improvements Programming (CIP) is another valuable plan implementation tool which has been widely accepted and used by localities throughout the state as well as the nation. It is a detailed and reasoned schedule for constructing and financing major public improvements over a period of five years based on a comprehensive plan. The CIP process should operate on a annual cycle, and should be updated and extended one more year into the future. To a certain degree the implementation of the County's comprehensive plan is hinged on the timely improvements, such as parks and recreation areas, new schools, public water and sewer, and major highway improvements. The Office of the County Administrator should, therefore, work closely with other local and state agencies in preparing a sound Capital Improvements Programming for Shenandoah County.

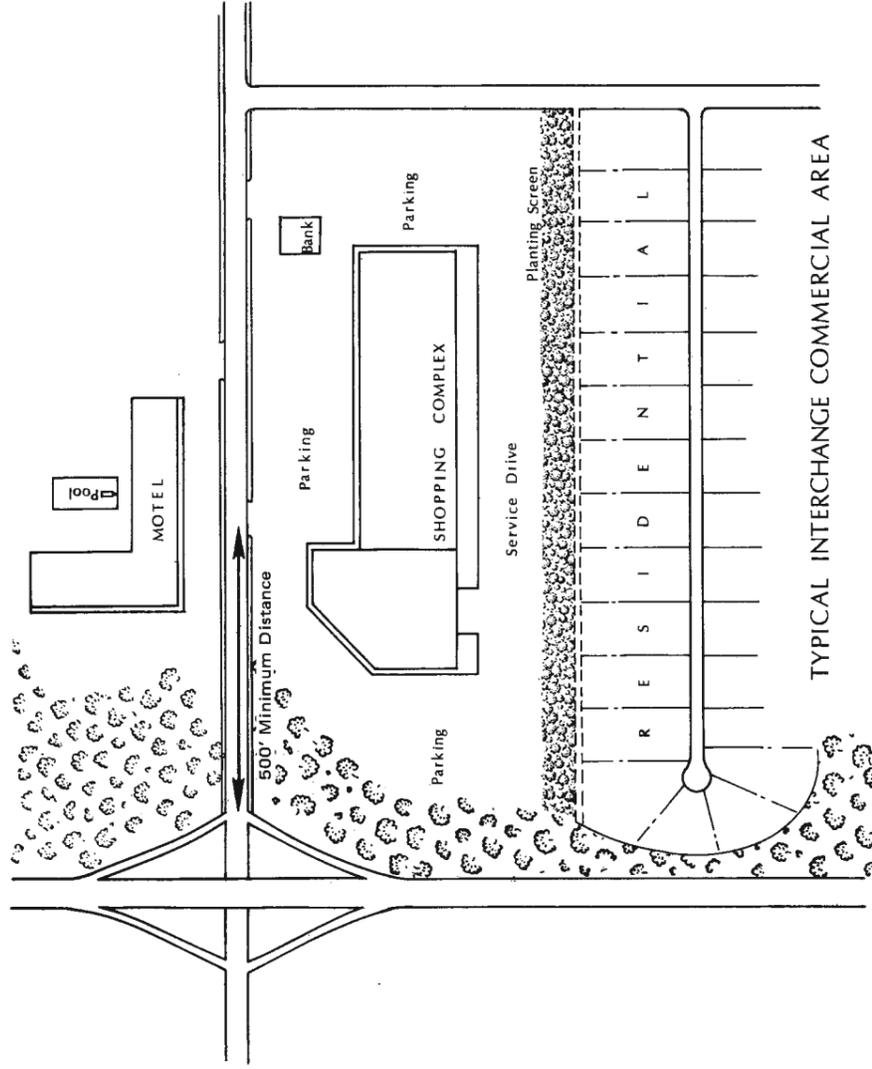
5. Periodic Review

The one inevitable characteristic of all localities is change. Even in the most static communities some form of change will occur; therefore, the completion of this plan does not mean the end of planning in Shenandoah County because periodic review of this plan is needed to reflect unforeseeable social and economic changes. The Code of Virginia states that "the comprehensive plan, or the completed parts of it, shall be reviewed at least once every five years by the local planning commission to determine whether it is advisable to amend the plan." (a)

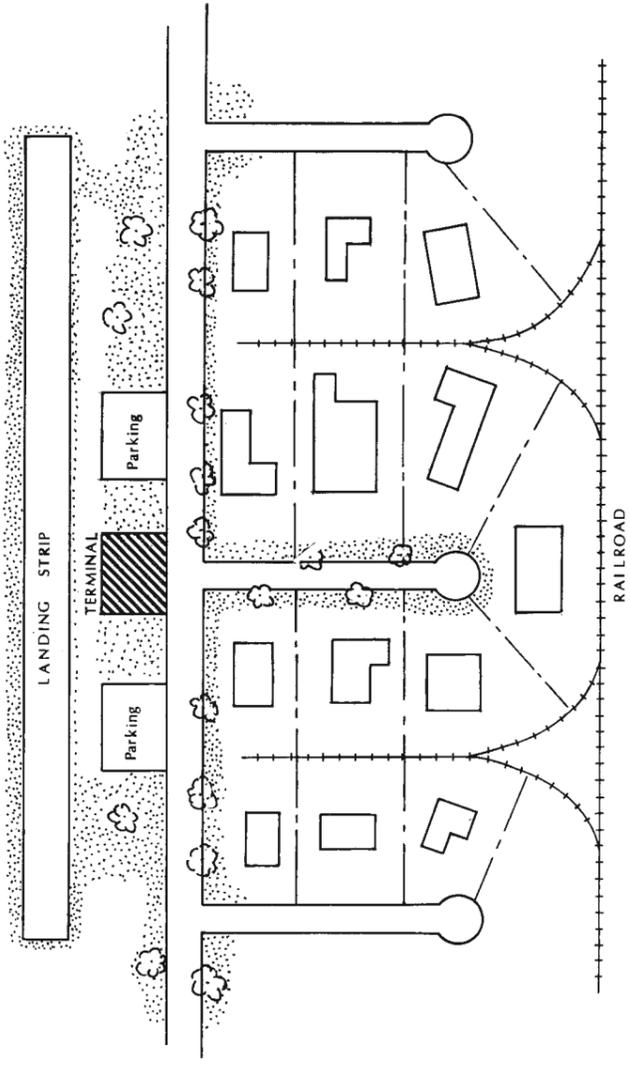
(a) See Section 15.1-454, the Code of Virginia, 1950, as amended.

Other legal codes, including building code, housing code, and sanitary code, all play a part in carrying out the County's plan. They should not be ignored as supplementary methods of plan implementation.

Appendix B: Recommended Design For Interchange Commercial Area



Appendix C: Recommended Design for Airport - Industrial Park

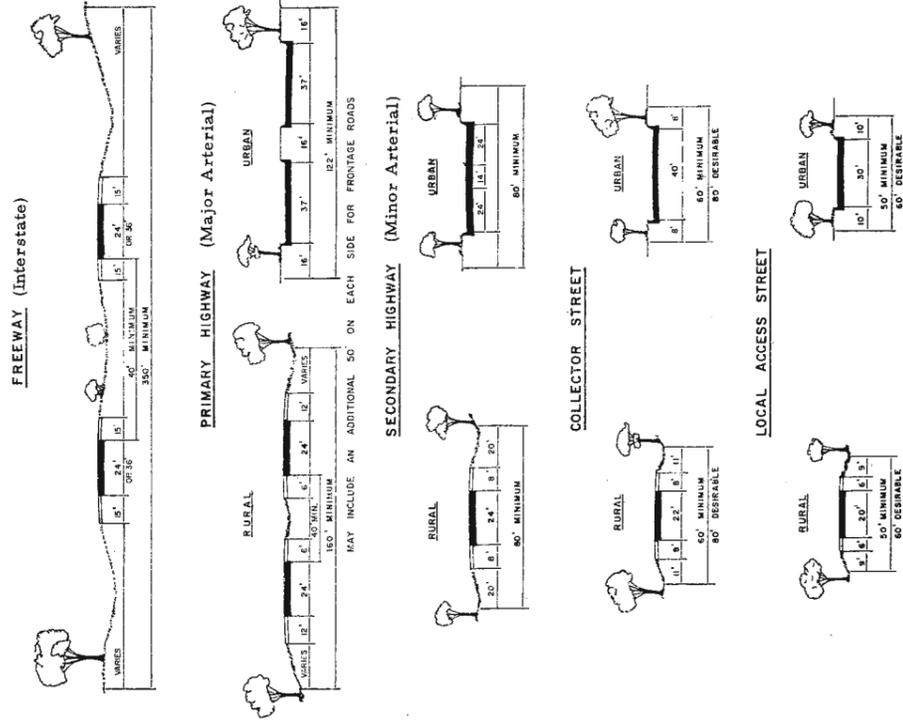


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Appendix A: Recommended Design Standards for Highways

RECOMMENDED DESIGN STANDARDS For Highway Pavement and Right-of-Way Widths



Source: American Association of State Highway Officials, and National Committee on Urban Transportation, A Policy on Arterial Highways in Urban and Rural Areas, Washington, D. C., 1967, as amended.