PENNINGTON COUNTY

COMPREHENSIVE PLAN

PENNINGTON COUNTY

"PRIDE IN THE PAST; FAITH IN THE FUTURE"

AUGUST 2003

Pennington County
Comprehensive Plan

County Commission

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The Planning Commission conducted a public hearing on this plan on July 28, 2003, and voted to present the plan to the Board of County Commissioners with a recommendation for adoption. Following a public hearing, the plan was adopted by ordinance of the Board of County Commissioners on August 12, 2003.

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Pennington County Comprehensive Plan

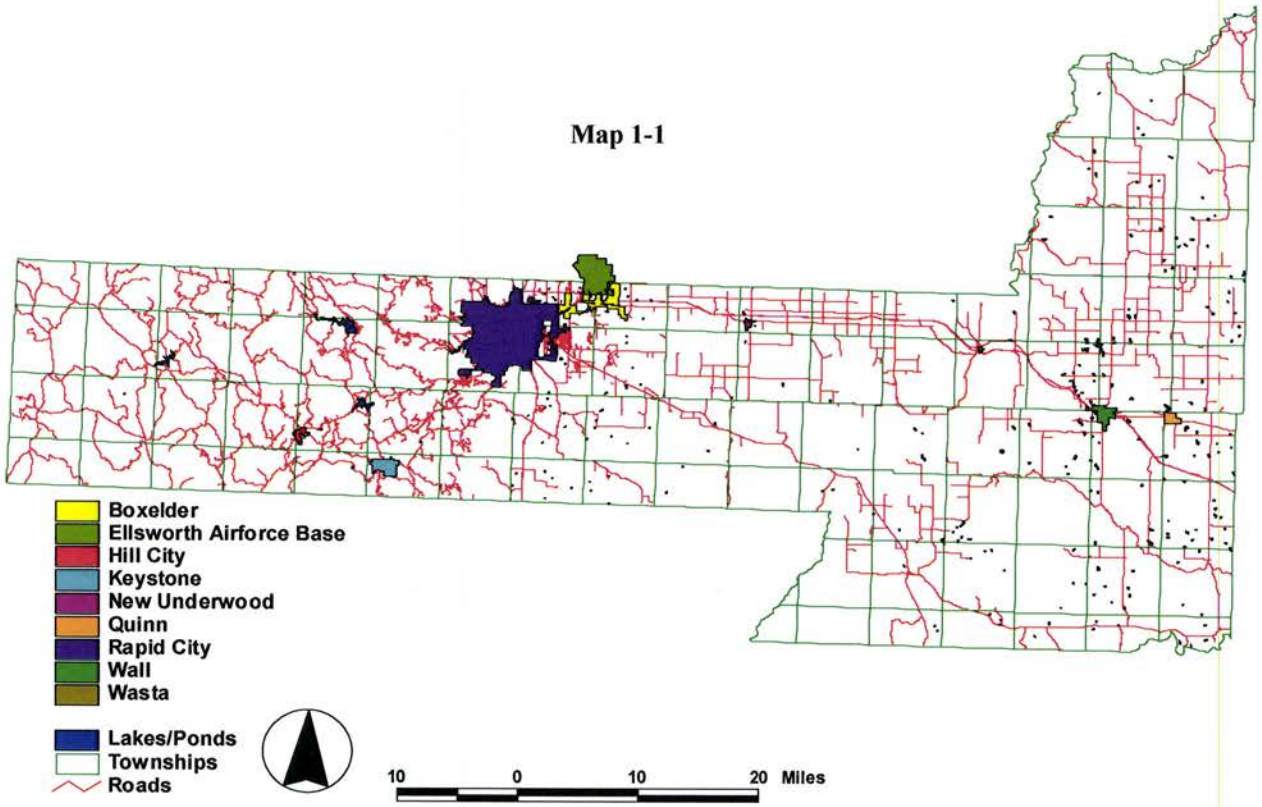
Chapter One
1.0 INTRODUCTION

1.1 Setting and Location

Pennington County is located in the western portion of South Dakota. The terrain of the County varies considerably depending on location. The western portion of Pennington County consists of the Black Hills. The highest point in South Dakota, Harney Peak, with an elevation of 7298 feet above mean sea level, is located in Pennington County. The eastern portion of the County consists of rolling prairie, the Badlands, and major wooded river draws. Pennington County has an area of approximately 2,775 square miles or 1,776,000 acres.

There are eight (8) incorporated municipalities located within Pennington County. They are Rapid City, Box Elder, Wall, New Underwood, Wasta, Hill City, Keystone and Quinn. A map showing the location of each municipality has been provided. In addition to these incorporated towns and municipalities, there are other unincorporated urban areas, such as Rapid Valley, Rockerville and Hisega. All unincorporated areas fall under the jurisdiction of Pennington County. The estimated 2000 population of Pennington County was 88,565.

Map 1-1



1.2 Local Planning History

Pennington County began land use planning in 1967. As a result of a legal challenge in 1994, the South Dakota Supreme Court ruled that the Pennington County Comprehensive Plan had not been adopted properly and was invalid. On February 1, 1994, Pennington County adopted temporary zoning control and, subsequently, on February 1, 1996, adopted a new, abbreviated Comprehensive Plan and Zoning Ordinance. As a result, all existing uses, which did not comply with the Zoning Ordinance as adopted in 1994, are considered legal nonconforming uses. The relatively short existence of the Zoning Ordinance has resulted in a significant number of legal nonconforming uses and previously approved actions by the Planning Commission, County Board, and Zoning Board of Adjustment, which are no longer effective.

1.3 Purpose and Meaning of Comprehensive Planning

A comprehensive plan is a document adopted by the Planning Commission and County Board of Commissioners that outlines a general approach for the development of the County. This comprehensive plan will examine a number of concerns that affect the quality of life, current development and future growth of Pennington County. This comprehensive plan will examine the history and demographics of the area, economic factors, geographic descriptions, transportation issues, a drainage plan will be identified and current Flood Plain Management policies examined, and finally, a future land-use section will guide future growth and development in Pennington County. A set of goals and policies will be provided for each section of the plan. A comprehensive plan can provide valuable information and guidance to those making important economic decisions such as local officials, land developers, existing and prospective residents, employees and business owners and operators.

A comprehensive plan is a general guideline used by the County in decision-making. It also serves as a source of public information. A comprehensive plan looks beyond today into issues and opportunities for the future. A comprehensive plan should be used as a technical guide by staff, local appointed and elected officials in making land use decisions. A comprehensive plan serves as an instrument that establishes long-range policies, which can be referred to in the decision-making process.

A comprehensive plan is not set in stone. It should serve as a fluid document, which outlines the general planning intent for the County. Other documents such as the Zoning Ordinance, Subdivision Regulations, and Flood Damage Prevention Ordinance are specific documents that are intended to implement a unified land-use policy for the County and are adopted as adjuncts to the Comprehensive Plan.

Chapter Two
2.0 HISTORY

The history of Pennington County is long and varied. Prior to the arrival of white explorers and later settlers, the indigenous Native Americans held the land which now constitutes Pennington County as sacred. Mountain men, trappers and explorers began to visit the area in the mid-1800s. Pennington County was later created in 1875 by an act of the Dakota Territorial Legislature. From 1875 to 1897 the County boundaries changed. In 1897, the County boundaries were set, as we know them today.

The County was named in honor of John L. Pennington, the fifth governor of Dakota Territory. Sheridan was selected as the first County seat. In 1878, the first Federal Court west of the Missouri River was held in Sheridan in a log building. Shortly thereafter, Sheridan lost the County seat to Rapid City, which was booming on the edge of the Black Hills. As the placer mines around Sheridan dwindled, it became a ghost town. In 1939, an artificial lake was constructed. Today Sheridan Lake covers the site of the ghost town of Sheridan. In 1882, the first courthouse was erected in Rapid City at a cost of $12,000, where the County administration offices remain today.

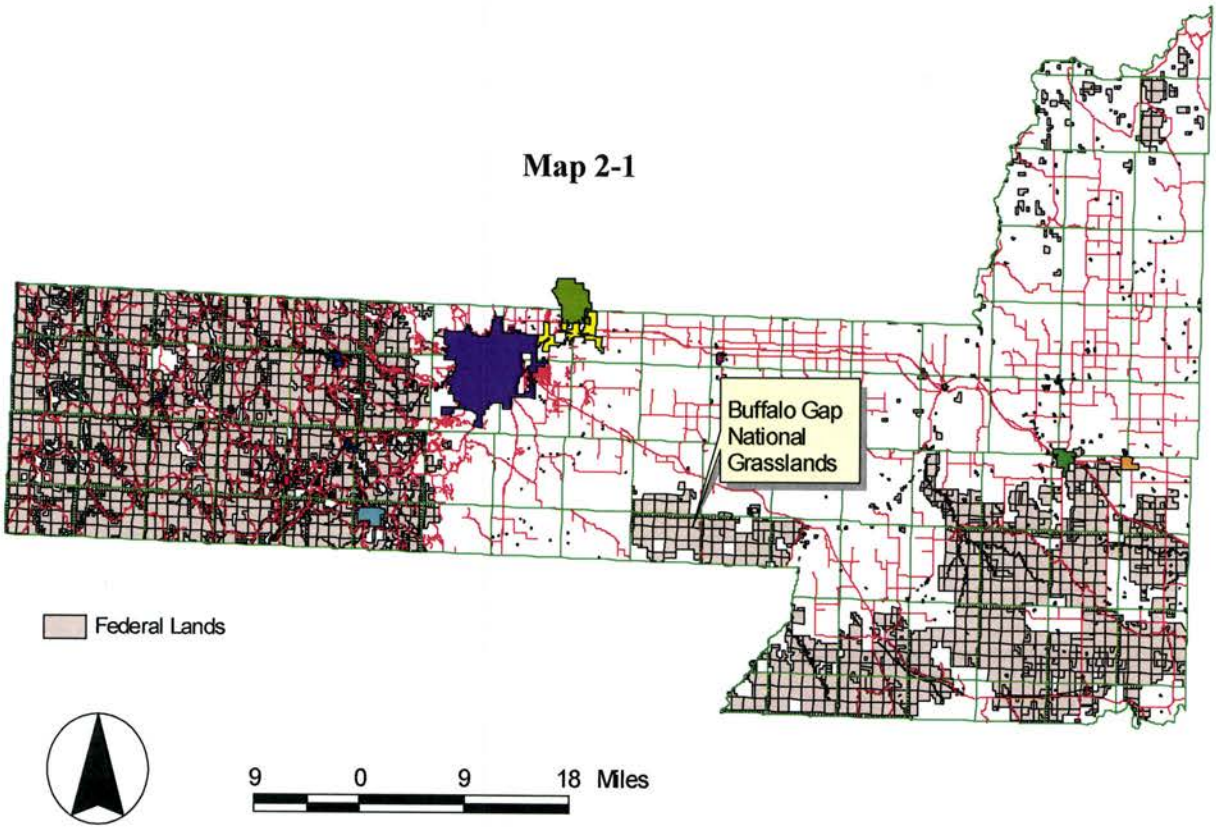
Many of the towns and cities in Pennington County were established as a result of mining activities in the Black Hills. Some of the towns, such as Rapid City, Wall, Keystone, and Hill City continued to grow while others declined and ultimately disappeared. In 1886, the first railroad reached Rapid City from Nebraska. Prior to this, means of transportation was overland. Additional rail service was added in 1907 when the Northwestern and Milwaukee Railroads extended their lines across the Missouri River into Rapid City. Originally, the Black Hill National Forest started as a forest reserve in 1897 by order of President Grover Cleveland. Later in 1905, the forest reserve was transferred to the Department of Agriculture, and in 1907, was renamed as the Black Hills National Forest. The Black Hills National Forest encompasses 1,246,966 acres of which 394,820 acres are located within Pennington County. The Department of Agriculture also manages the Buffalo Gap National Grassland in eastern Pennington County, which contain 199,410 acres. A map indicating the location of both the Black Hills National Forest and Buffalo Gap National Grassland is shown as Map 2-1 on the following page.

During World War II, a large airbase was constructed near Box Elder. This base was selected as a permanent airbase after the war. Today Ellsworth Air Force Base is the only large military installation in South Dakota. A map of the area occupied by the Ellsworth Air Force Base is attached.

The history of Pennington County is important as it has and continues to have a direct impact on land use issues. The eastern part of Pennington County has primarily been developed as a result of homesteads. The western part of Pennington County, located in the Black Hills, has existing land use patterns reflecting the hundreds of mining surveys and patents that were issued from 1876 to 1900. Pennington County continues to deal with private lands that were once established mines or had the potential to be mined. The

location and size of these mining surveys have posed a particular set of elements to consider when reviewing planning and development projects. Many of the mining claims have legal access and floodplain issues.

Map 2-1



Early in the 20th century, the Black Hills began to emerge as a tourist destination. In 1942 (?), the carving of Mt. Rushmore was completed. Later, Mt. Rushmore was declared a National Monument. In addition, the Badlands National Park, Wall Drug and other nearby attractions, such as Custer State Park, Jewel and Wind Caves, and Crazy Horse Monument have all brought ever-increasing numbers of tourists to Pennington County. Today Rapid City, Hill City, Keystone and Wall all rely on tourism as a major element of their economy. Elements of the local economy focusing on tourism also impacts land use. Pennington County has a significant number of land uses that cater to tourism, such as bed and breakfast establishments, temporary campgrounds, commercial campgrounds, hotels, and restaurants. Seasonal tourism means peaks demand for services in the summer.

Chapter Three
3.0 POPULATION

GOAL: To use population data to understand how past population trends have affected existing land use within Pennington County and to determine how future trends may affect future land use patterns.

POLICIES:

1. To incorporate potential population trends into Pennington County's future Land Use Plan.

2. To use existing demographic information to demonstrate the areas of residential growth.

3.1 Introduction

The examination of population trends is vital to the understanding of the overall nature of an area. Past, current and future trends all effect how a city or county should plan for the future. No municipality or county is a stand-alone entity. All are connected to larger regions. Regional trends can result in dramatic changes in population. Pennington County's population growth is linked to that of the Black Hills region. Changes in the region have a corresponding effect within Pennington County. By comprehending the population changes taking place, more accurate predictions of future population changes can be made. With accurate future population predictions made, better planning decisions can be rendered.

3.2 Population Trends

Pennington County represents one of the more culturally diverse counties in South Dakota. The majority of residents are white, however, there are significant minority populations to be found in the County. According to the 2000 census, there are 7,162 Native Americans or approximately 8% of the entire County population. The total Native American population in South Dakota is 62,283. Pennington County's Native Americans represent over 11% of the state's native population. The next largest minority groups found in Pennington County are the Hispanics or Latinos. The 2000 census indicated that 2,341 Hispanics or Latinos reside in Pennington County, making up approximately 2.6% of the population, but over 25% of the state's Hispanic and Latino population. The Afro-American and Asian populations are nearly equal, 755 and 776, respectfully.

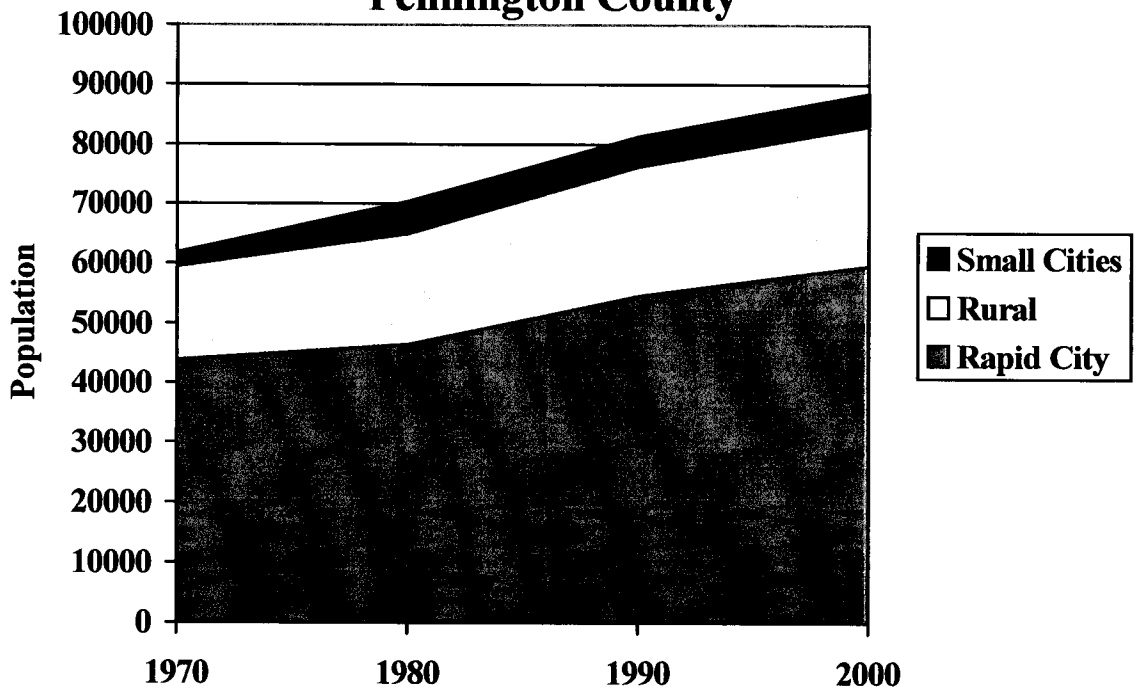
During the last decade, Pennington County witnessed a growth rate of nearly 9%. The 2000 U.S. Census indicated that Pennington County grew by 7,222 people to a total population of 88,565. The majority of growth occurred in Rapid City and western Pennington County. Approximately 30% of the increase in population in the last decade was located outside of any town or municipality. Table 1 shows the population changes of all the organized town and cities in Pennington County from 1970 to 2000.

Table 3-1
Population Changes 1970-2000
Pennington County & Incorporated Towns and Municipalities

	1970	1980	1990	2000
Pennington County	59,349	70,361	81,343	88,565
Box Elder	607	3,186	2,680	2,841
Hill City	389	535	650	780
Keystone	***	295	232	311
New Underwood	416	517	553	616
Quinn	105	80	72	44
Rapid City	43,836	46,492	54,523	59,607
Wall	786	770	834	818
Wasta	127	99	82	75

While towns and cities in western Pennington County grew, the towns in eastern Pennington County lost population. This characteristic represents an overall trend for South Dakota. The more rural, agriculturally based populations in South Dakota have been declining since 1970. Pennington County's overall population has increased, due in part to the location of a metropolitan area and unique physical characteristics. Western Pennington County has seen growth in the tourist, service and manufacturing industries and an influx of retirees to the Black Hills.

Table 3-2
Population Trends 1970 - 2000
Pennington County



3.3 Housing Trends

The total number of housing units in Pennington County total nearly 37,249 in 2000. Rapid City accounted for 67.4 percent of all housing units located in Pennington County, approximately 25,106 housing units. The rural area and smaller towns represent the balance of the housing units.

The 2000 housing vacancy rate was 7%, which comprised 2,608 households. All structures under construction, but not yet inhabited, are considered by the U.S. Census Bureau to be vacant.

In 2000, the household size in Pennington County was 2.49 persons, a decline from the typical household size of 3.02 in 1970 and 2.61 in 1990.

The following chart indicated the number of building permits issued for both new stick-built single-family residences and new mobile or manufactured homes. An overall trend is immediate. The valuation of new construction rose between 1990 and 2000 by over 400%. Likewise number of permits issued for both stick built and manufactured/mobile homes increase by nearly 300%. This trend illustrates the need for continued sound planning principals.

Table 3-3
Building Permit Numbers and Values
By year from 1990 to 2001

Year	SFR Quantity	SFR Amount	MH Quantity	MH Amount
1990	88	$4,799,900	79	$1,322,067
1991	92	$6,192,990	87	$1,479,074
1992	148	$10,360,504	49	$1,397,347
1993	151	$12,213,911	50	$1,321,840
1994	127	$10,113,265	80	$2,338,000
1995	139	$14,795,350	71	$1,955,900
1996	148	$18,701,864	116	$3,329,104
1997	166	$16,394,576	149	$5,853,387
1998	140	$18,045,400	139	$4,779,170
1999	207	$25,380,765	207	$6,744,375
2000	258	$24,574,377	175	$6,597,206
2001	174	$15,189,939	109	$4,540,710
2002	269	$27,592,180	163	$6,749,161

3.4 Future Population and Employment

Upon examination of past populations, an increase in the overall population in Pennington County is projected. Expansion to the retail business activity in and around Rapid City and the Black Hills will result in an increase in the County's population base.

Based on the population growth over the last 20 years, an 8.915% growth rate can be expected. Using a projected 8.915% growth rate, by the year 2020, Pennington County's population is projected to grow to 105,059, nearly 29% greater than 1990.

Rapid City represents the largest portion of all future growth in Pennington County. The Rapid City Planning Department projects that by 2025 Rapid City will have a population of 103,000. Over 75% of all future population increases are anticipated to live within the corporate limits of Rapid City. Some of Rapid City's future growth will result from the annexation of existing residential developments on the outskirts of the city. Rapid City has expressed interest in pursuing an annexation program. Future residential growth in the Rapid Valley area and forested areas to the south and west of Rapid City will represent additional population growth.

The rural farm and ranch population is expected to decline further. In part, this decrease will be due to continued farm and ranch consolidation and declining employment. The continuing trend of smaller families will also impact rural populations in eastern Pennington County.

Table 4 projects the number of new housing units to be constructed in rural Pennington County over the next 20 years. Using past new housing starts, the Planning Departments project that 151 new stick-built residences and 109 new manufactured housing units will be added to the housing stock each year. After the year 2006, housing construction is expected to decline gradually. This decrease is anticipated as existing subdivisions build out and as Rapid City annexes in the Rapid Valley area and areas to the south and west. It should be noted that the figures represented in Table 4 reflect only new housing starts and new manufactured homes located outside of any incorporated town or municipality.

Table 3-4
Rural Pennington County
Project Housing Construction
5-year periods

	New Stick-built SFR	New Manufactured Housing Units
2001-2006	755	545
2006-2011	500	400
2011-2016	450	350
2016-2021	450	350
Total	**2,155**	**1,645**

Expansion of employment opportunities should continue based on several factors. South Dakota offers a favorable tax climate which prospective employers will find attractive. The Black Hills will continue to offer a high quality of life with people that have a sound work ethic. The community's position as a regional health care, educational and retail center will also contribute to expansion of service related employment. Regional air and

surface transportation systems will support further economic development. Employment in the service industry should continue to show gains. The Black Hills regions will continue to be attractive as a retirement destination.

Pennington County residents will continue to be able to choose from a variety of lifestyles ranging from an urban setting, small town or rural lifestyle. The level of growth in Pennington County is dependent on several factors, such as the continuing operation of Ellsworth Air Force Base, the economic climate of Rapid City, and continuing expansion of tourism in the Black Hills. Future transportation costs, commuting times and rural density standards will all play a role in the distribution of all future population growth. Proper planning will ensure that new residential, commercial and industrial construction can be accommodated within the framework of the County's zoning standards.

Chapter Four
4.0 ENVIRONMENTAL RESOURCES

GOAL: To ensure a continued high quality environment for residents of Pennington County and seasonal tourists through the preservation and conservation of all of the County's natural resources.

POLICIES:

1. Retain runoff with open natural drainage systems.

2. Carefully review development on steep slopes, any slopes exceeding 15% grade.

3. Limit development in areas with poor soils and high water table.

4. Protect areas of special flood hazards along creeks, rivers, ponds and lakes.

5. Carefully review development over the Madison Aquifer area to determine that soils are adequate for on-site wastewater disposal systems.

6. Design subdivisions and other improvements around significant wetlands.

7. Promote greenways and linear open spaces within floodplain areas.

8. Protect water quality and ensure an adequate quantity for existing and future development.

9. Support local initiatives for fire control and prevention, establish fire prevention requirements and standards for development within forested areas.

10. Encourage wise forest management to protect the forest from insect, disease, wildfire and noxious weeds.

11. Protect wildlife corridors and habitat areas.

4.1 Introduction

The natural environment of Pennington County consists of over 2,700 square miles of land and water surfaces and provides residents and visitors opportunities for open space enjoyment and a scenic back drop in which to live or visit. The natural environment must be considered when developing and managing land. As natural resources become more scarce and endangered, it is critical that environmental issues be addressed in the land use decision-making process to ensure that even greater problems and costs are not passed on to succeeding generations. Management of ground and surface waters, wastewater,

wetlands, and storm water runoff should be important considerations in the development review process.

Determining resource availability varies with the resource. Timber, for example, is a natural resource that can be seen. We know how much is there, the approximate quantity of board feet. Proper resource management includes thinning to provide for better growth and fire protection. The abundance of mineral resources, on the other hand, cannot be as readily determined. Exact quantities available are not known. Water resources change periodically with weather patterns. Times of severe drought can change the availability of ground water.

In the past, poor or no planning has lead to significant environmental problems, such as drainage issues in the Rapid Valley area. For example, Pennington County has invested considerable time and resources attempting to correct and manage drainage issues in the Rapid Valley area. The quality of the environment can be eroded in many ways including the destruction of natural features such as drainage ways and wetlands during development, runoff of chemicals and fertilizers from farms and residential homes into lakes and streams, and improper treatment of human and animal wastes. The potential for hazardous waste spills and leaks exists and could cause extensive damage to Pennington County's natural resources. The general public has recognized the importance of the benefits of clean water and air, access to outdoor recreational opportunities and the cost saving measures that avoid mitigation of environmental impacts, such as flooding.

4.2 Water Resources

Available sources of water are derived from two basic categories, groundwater and surface supply. Groundwater supplies are those obtained from subsurface bedrock formation. Surface supplies include rivers, tributaries, streams, lakes and artificial reservoirs.

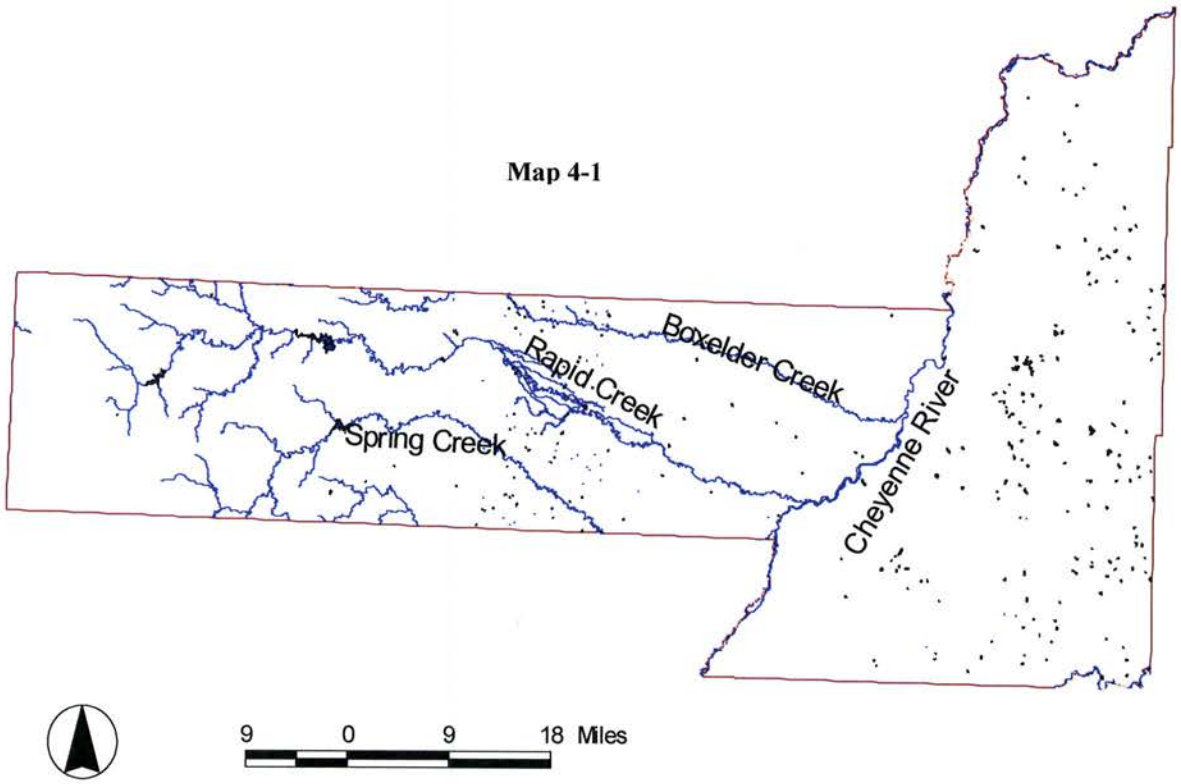
Pennington County is drained by the Cheyenne River and its tributaries: Spring Creek, Rapid Creek, Box Elder Creek and Battle Creek. The Cheyenne River begins in Wyoming, flows around the southern Black Hills and then turns and flows toward the northeast where it empties into the Missouri River north of Pierre. The Cheyenne River has a highly variable stream flow, regulated by Angostura Reservoir, with an average discharge of 267,000 acre-feet per year near Wasta.

Most of the creeks and small streams which drain the Black Hills and surrounding prairie flow in direct response to rainfall with many of their channels running intermittently throughout the year. Though the streams of the Black Hills have less variation than the prairie streams, both flows follow the rain pattern with greatest runoff during April, May and June.

There are three major reservoirs located in Pennington County. Pactola, Deerfield and Sheridan Reservoirs were all formed of earth and rock filled dams in the Black Hills and

have a combined surface area of 1,669 acre with a total capacity of 83,610 acre-feet. The primary purpose of these reservoirs is for flood control; however, they also provide recreational opportunities, irrigation and municipal water supplies. The prairie areas east of the Black Hills are dotted with hundreds of small reservoirs that provide water for livestock, fish and wildlife.

Map 4-1



Groundwater constitutes a large and reliable source of water for domestic, stock and municipal use in the County. Depths of wells range from 100 feet to over 2000 feet. Most of Pennington County is underlain with one or more aquifers yielding various amounts of water of varying quality. While not all of the rock formations discussed here may be major water suppliers for the County, each produces a certain amount of water and must be considered a source. There are several aquifers within Pennington County that are capable of supplying sufficient quantities of water that could support municipal and industrial growth. These are the Deadwood, Madison, Minnelusa, Minnekahta, and Inyan Kara aquifers. The Precambrian rocks can also provide water under local conditions due to secondary porosity brought on by weathering and fracture systems.

The underlying Precambrian rocks, often referred to as the Precambrian basement, have low permeability and serve as the confining layer for the overlying sedimentary aquifers. Localized wells within the Precambrian rocks vary in depth from about 5 m (18 ft) to about 265 m (870 ft). The water levels vary from less than 0.6 m (2 ft.) to over 149 m

(488 ft) below the surface[1]. Above the Precambrian basement lays the Deadwood aquifer, which is made up of sands, gravels, shales, and conglomerates. This aquifer serves domestic and municipal uses near the outcrop area. In localized areas there may be connections between the Deadwood aquifer and the Precambrian rocks, however this is generally not the case. Above the Deadwood Formation is the Whitewood and Winnipeg Formations. They can also have connection in local areas with the Deadwood aquifer, and can therefore produce sufficient water to local areas. Although these formations can produce water locally they are not considered aquifers regionally. They generally act as a semi-confining layer for the Deadwood aquifer. The Englewood Formation can be in contact with the Deadwood aquifer when the Whitewood and Winnipeg Formations are not present. Many geologist include the Englewood Formation as the lower part of the Madison aquifer.

The Madison aquifer is mostly contained within the upper karstic portion of the Madison (Pahasapa) Limestone, but generally also includes the underlying Englewood Formation. The Madison aquifer consists of a massive dolomitic limestone and the base is a lavender limestone created by the Englewood Formation. Caverns, sinkholes, and fracture sets consistent with karst solution features provide extensive secondary porosity, which is the primary recharge mechanism for the Madison Aquifer. The overlying Minnelusa Aquifer is generally in contact with the Madison Aquifer, however where shales and evaporites are present the Minnelusa Formation acts as a confining layer over the Madison Aquifer. The Minnelusa is diverse in the type of rocks that make up the formation. It consists of sandstones, dolomite, gypsum and shales. The Opeche shale lies on top of the Minnelusa Formation and acts as a confining layer between the Minnelusa and Minnekahta aquifers.

The Minnekahta Formation is a thin-layered limestone that varies in thickness from area to area. This variation in thickness affects the water that can be yielded from the aquifer. Mostly the aquifer provides water for domestic use in areas where the formation is thicker. The confining layer for the Minnekahta Formation is the Spearfish Formation, which separates the Minnekahta Aquifer from aquifers contained within the Inyan Kara Group. Aquifers within the sandstones of the Inyan Kara Group are used extensively, where aquifers in other parts of the formation are generally limited to local regions.

Most sedimentary layers within the Black Hills area serve as whole or in part as groundwater aquifers. They gain the largest percent of their recharge from precipitation and stream flow over the outcrop areas. They may also gain recharge from hydraulic connections with other aquifers to a lesser extent. Aquifers within Pennington County and the Black Hills area are extremely sensitive to human influences, which include mining, ranching, septic systems, forestry practices, residential growth, and industrial development. Human influences have been directly linked to increased nutrients, phosphates, and sediment loading that have changed the water quality within the Black Hills Region. Metal concentrations are higher in the northern and central portions of the Black Hills. Dissolved-constituents in the ground water that is used for drinking water

[1] Hydrology of the Black Hills 2000.

remains within EPA contaminant and secondary contaminant levels, however sulfates within the water have exceeded these levels.

Water Protection

The quality of water, either ground or surface, depends upon several factors such as dissolved solids, sediment and pollution. Both dissolved solids and sediment are influenced by climate, stream flow, geology and topography. With these variables, surface water is highly responsive to change. Typically the surface water in the Black Hills is subject to less sedimentation as this area is composed of granite and metamorphic rock, which is resistant to erosion. In the area east of the Black Hills, most sediment is transported during spring and summer thunderstorms.

Other pollution such as domestic, municipal and industrial waste can severely lower water quality in the County. With the exception of headwaters, nearly every stream is affected by pollution. Increased pollution may be noted as a stream passes a community or dense rural development where it is used as a drain for the sewage system. The aquifers and streams are at risk of contamination by a variety of sources – inadequate wastewater treatment and disposal attributed to both on-site and municipal sources, mismanagement of waste from agricultural facilities, overuse of fertilizers and pesticides, and solid waste sites.

Aquifers and shallow ground waters are easily polluted by many sources and must be considered in any water pollution control program. Preventive measures are most essential in preserving groundwater since an aquifer does not recover for many years from pollutions due to the slow movement of waters underground. During 2001 and 2002, Pennington County has investigated implementing a ground water protection ordinance. The proposed ordinance was not adopted.

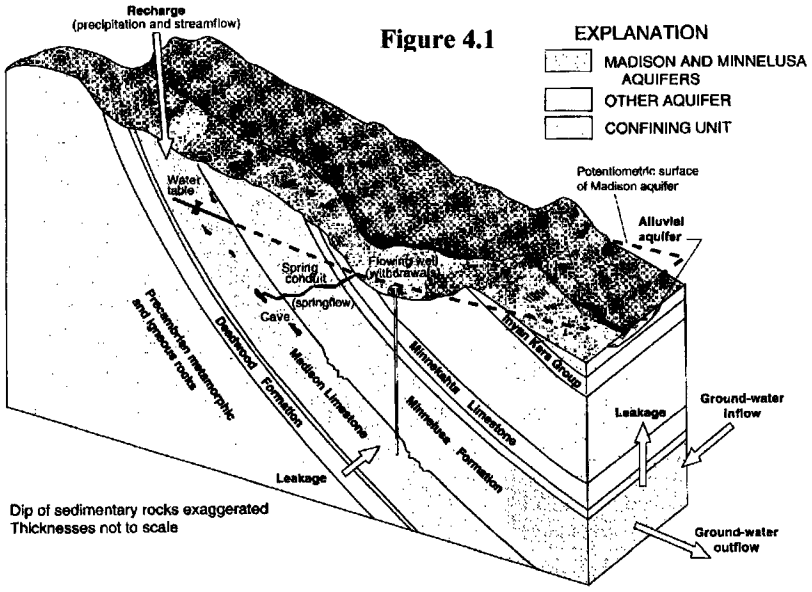


Figure 4.1

4.3 Flood Plain Areas

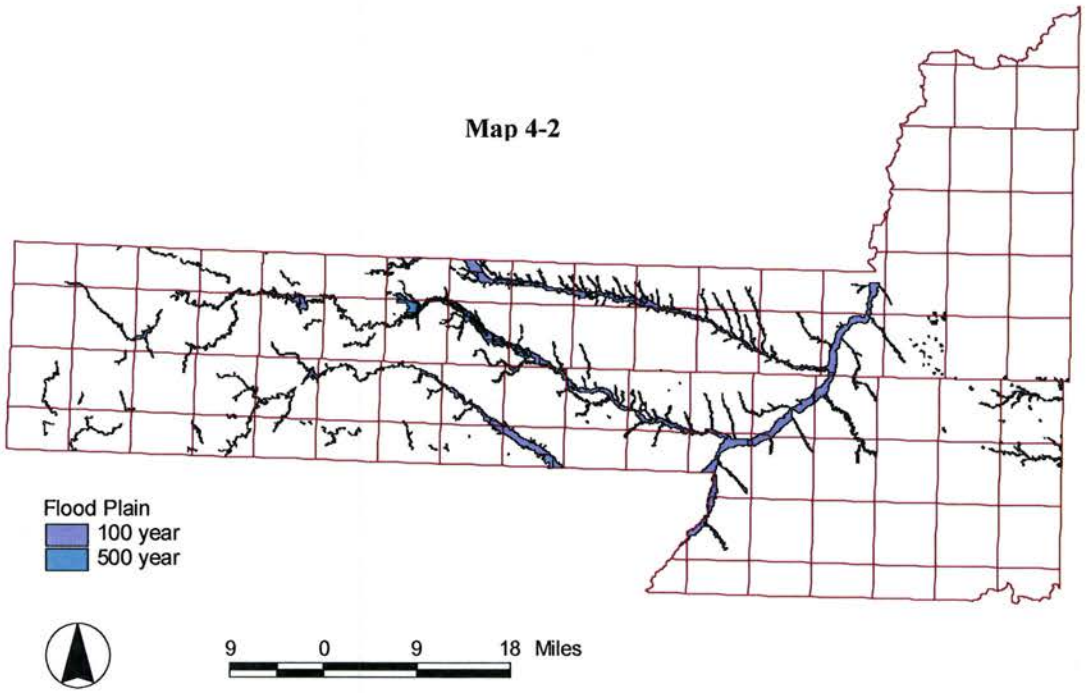
Pennington County has significant areas of flood hazard. The 1972 Flood serves as a poignant example of the danger flooding poses to the public. The steep and varied terrain in Pennington County has the potential to cause significant damage during storm water runoff. As a result new and existing development needs to consider the overall effects of storm water runoff both on site and downstream of the specific site.

Flood plains are lowlands adjacent to the channel of rivers, streams and other watercourses where inundation periodically occurs due to extreme natural events. Unaltered flood plain systems reduce flood velocities and flood peaks by providing space for the dispersal and temporary storage of flood waters until natural drainage can carry away the water. One acre of flood plain inundated to a depth of one foot can store approximately 325,000 gallons of water.

Aquifers underlie many of the flood plains in Pennington County. These aquifers benefit from the natural infiltration, purification and groundwater recharge. Flood plains have been historically tied to the settlement of the Black Hills for it was within the many creeks that gold was first discovered. Flood plains also offer varied landscapes, productive wetlands, fertile soils, wildlife habitat, and valuable historic features in the County. Settlement patterns have historically been influenced by rivers and creeks, which provided transportation, drinking water and commerce. Encroachments into the flood plain, however, threatened life and property and often waterways became disposal system for human and industrial waste.

The Federal Emergency Management Agency (FEMA) has development maps which indicate areas of specific flood hazard. These maps represent some of the main creeks, rivers and drainages than can produce flooding conditions under certain storm and runoff conditions. While these maps are not perfect, they do serve as a general guide to the areas of flood hazard found within Pennington County. While it is not possible to include the 80 plus maps with this Comprehensive Plan, a map showing the general location of the areas of flood hazard has been included.

Map 4-2



Pennington County maintains eligibility in FEMA's National Flood Insurance program by enforcing the Flood Damage Prevention Ordinance. Participation in the program enables residents of flood plain areas to purchase special insurance at subsidized rates. The ordinance requires the lowest floor of residential structures to be constructed to the base flood elevation. Construction, which includes fill, is prohibited unless engineering certification demonstrates that the activity will not result in an increase of flood levels.

4.4 Soil Resources

Soils are often not considered a resource, however once depleted, they can not easily be replaced. To prevent the loss of soil resources, proper planning to promote land use patterns that conform to modern soil conservation practices should be considered. The selection of sites for various uses such as residential development, agricultural uses and commercial or industrial uses all should consider soil properties and tendencies.

With a county as large as Pennington County, there are many variations of soils. The following is a description of the major soil types located in Pennington County. The attached exhibit shows the general location of the major soil groups in Pennington County. In addition a brief description of each soil follows.

In describing the soils, several symbols are used that need some explanation. ML refers to silty soils with low water content; ML-Cl to Cl refers to soils that are silty-clay to clay soil with low water content; SM refers to sandy silty soils; CH refers to clay soils with a high water content; and CL is a clay soil with a low water content.

Rough Mountainous Land

Most of the area would be ML in the Unified Classification Scheme for soil materials. The limestone areas are possibly ML-CL to CL. There are local areas of SM where soil materials are from sandstones and the more sandy schists. On-site wastewater disposal systems may be suitable in most valleys and on the lower valley side slopes where soils are formed in loose stony detritus. The rocky ridges and points are severely limiting because of topography and the shallow depth to hard rock. The recharge rate into shallow groundwater in the core of the Hills is relatively rapid and contamination of groundwater is quite possible. Permeable soil materials limit suitability for lagoon systems.

Haverson Association

These are alluvial soils subject to flooding. Shallow water tables are found in portions of Rapid Valley. The alluvial soils range from loamy sand along the Cheyenne River to clays. On-site wastewater disposal systems may be suitable in loam to loamy sand areas, but shallow groundwater could be contaminated. Clay alluviums in some areas are suitable for lagoons.

Pierre Samsil Association

Shallow to deep clays mostly with CH and some CL. The slow permeability and depth to shales less than six feet in most areas severely limits on-site wastewater disposal systems. Slight to moderate limitations for lagoons; unstable fill material.

Caputa-Farmingdale Association

Loamy to clay-type soils formed in ancient alluvium of varying thickness, mostly more than six feet over shale. This soil type has moderate to severe limitations for on-site wastewater disposal systems, but more favorable than the Pierre-Samsil association. Slight to moderate limitations for lagoons, moderate permeability.

Ree Association

Loamy soils formed in old alluvium over sand and gravel mostly at depths of three feet or more. Near Scenic there are some areas of SM in upper three feet. There are only slight limitations for septic tank fields with some chance of polluting shallow groundwater. Lagoon suitability ranges from not suitable to materials requiring a seal blanket.

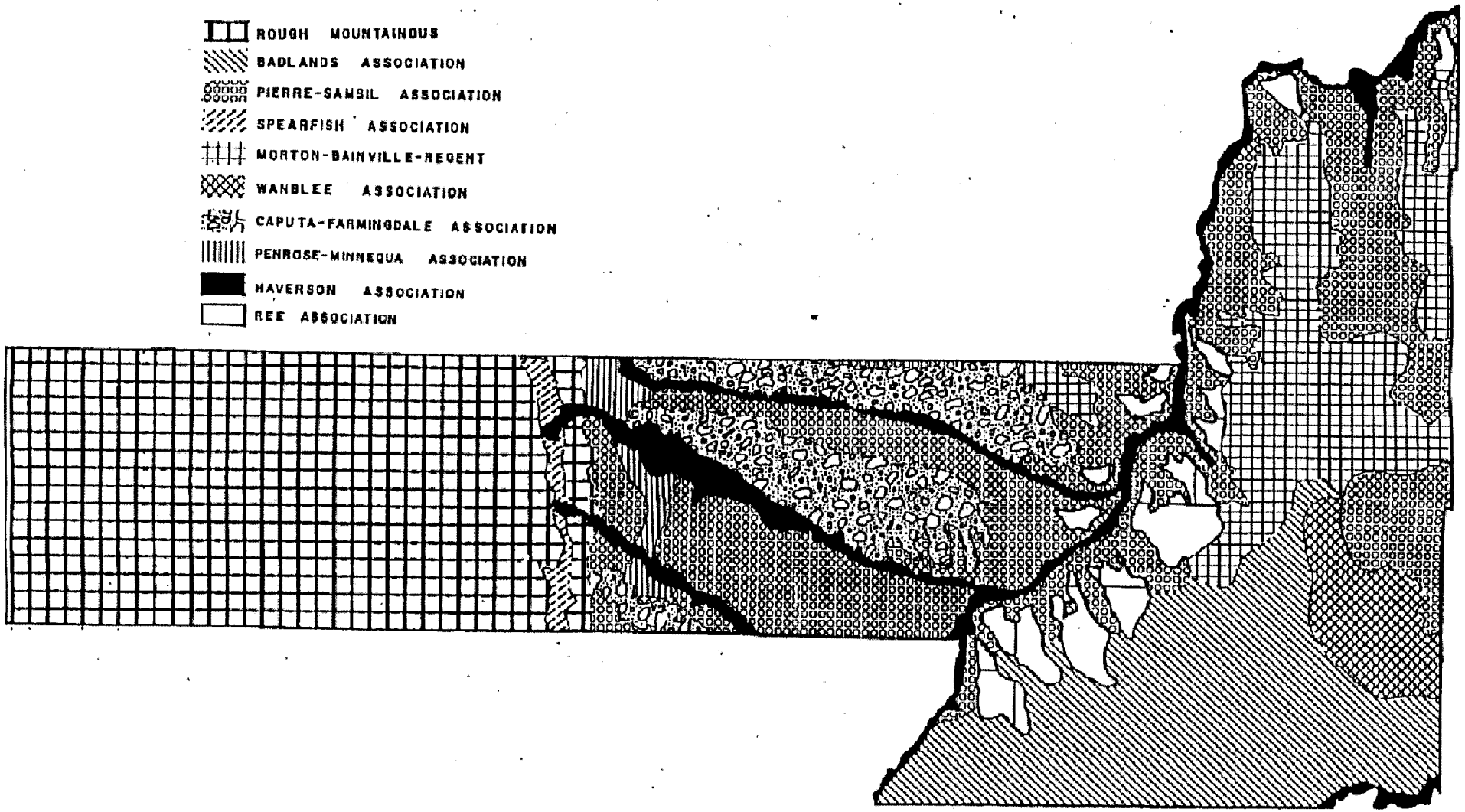
Morton-Bainville-Regent Association

This soil type poses moderate limitations for on-site wastewater disposal systems and lagoons with variable depths to underlying loamy to clayey fields. Seal blanket needed in most areas for lagoons.

Penrose – Menniqua Association

This soil type has moderate to severe limitations for on-site wastewater disposal systems. There are slight to moderate limitations for lagoons.

SOILS OF PENNINGTON COUNTY



Samsil-Pierre Association

The slow permeability, shallow depth to clay shale, and rough broken topography severely limits suitability for on-site wastewater disposal systems and lagoons. Generally these soils are not satisfactory for on-site wastewater disposal systems

Badlands Association

Except for a few sandy to loamy mesas, these soils are not suitable for on-site wastewater disposal systems. Clay filled badland basins in places is satisfactory for lagoons.

Wanblee Association

Slow permeability severely limits on-site wastewater disposal systems. Nearly level clay pan and clayey flats may be suitable for lagoons.

The variety of soils in Pennington County, except for the mountainous and forested areas, generally lend themselves to agricultural uses. As noted, there are several areas that severely limit the installation of individual on-site wastewater disposal systems. For this reason, land use controls and subdivision regulations may require soil testing and regulation of lot sizes and on-site wastewater disposal systems to prevent ground water pollution.

4.5 Slope And Topography

The steepness of slopes or the location of such physical features as mountains and valleys is an important factor in determining the land use potential of an area. While the tops of mountains might provide the best views of the Black Hills or out onto the prairie, the placement of infrastructure to those areas becomes difficult. Several problems arise when considering any development on steep slopes. Road construction and maintenance is foremost. The Pennington County Subdivision Regulations precludes almost all roads exceeding 15% grade.

The influence of landforms on development is readily apparent in the alignment of highways that follow valley floors rather than attempt the crossing of large hills. When looking at a topographic map, it also becomes evident that the physical pattern of development in urban areas is somewhat influenced by the location of hills and valleys. Pennington County will continue to see development requests that involve road construction into steep and rugged terrain.

In order to determine the effect which slopes and land forms have, or will have on the utilization and development of land in Pennington County, it is necessary to identify significant topographic features and then to apply standards of degree of slopes which will give a relationship between land use and slope.

The following slope standard can be used as a guide in reviewing future development requests. For the purpose of analyzing the relationship between degree of slope and land use, a three-category system can be utilized.

Low	0-10% Slope. Suitable for all uses; however, caution should be exercised in the location of commercial, industrial and institutional uses on slopes between 5 and 10 percent.
Moderate	10-20% Slope. Suited for low density residential use, limited agriculture and recreation.
Extreme	Over 20% Slope. Suited only for open space, limited recreational use and grazing purposes.

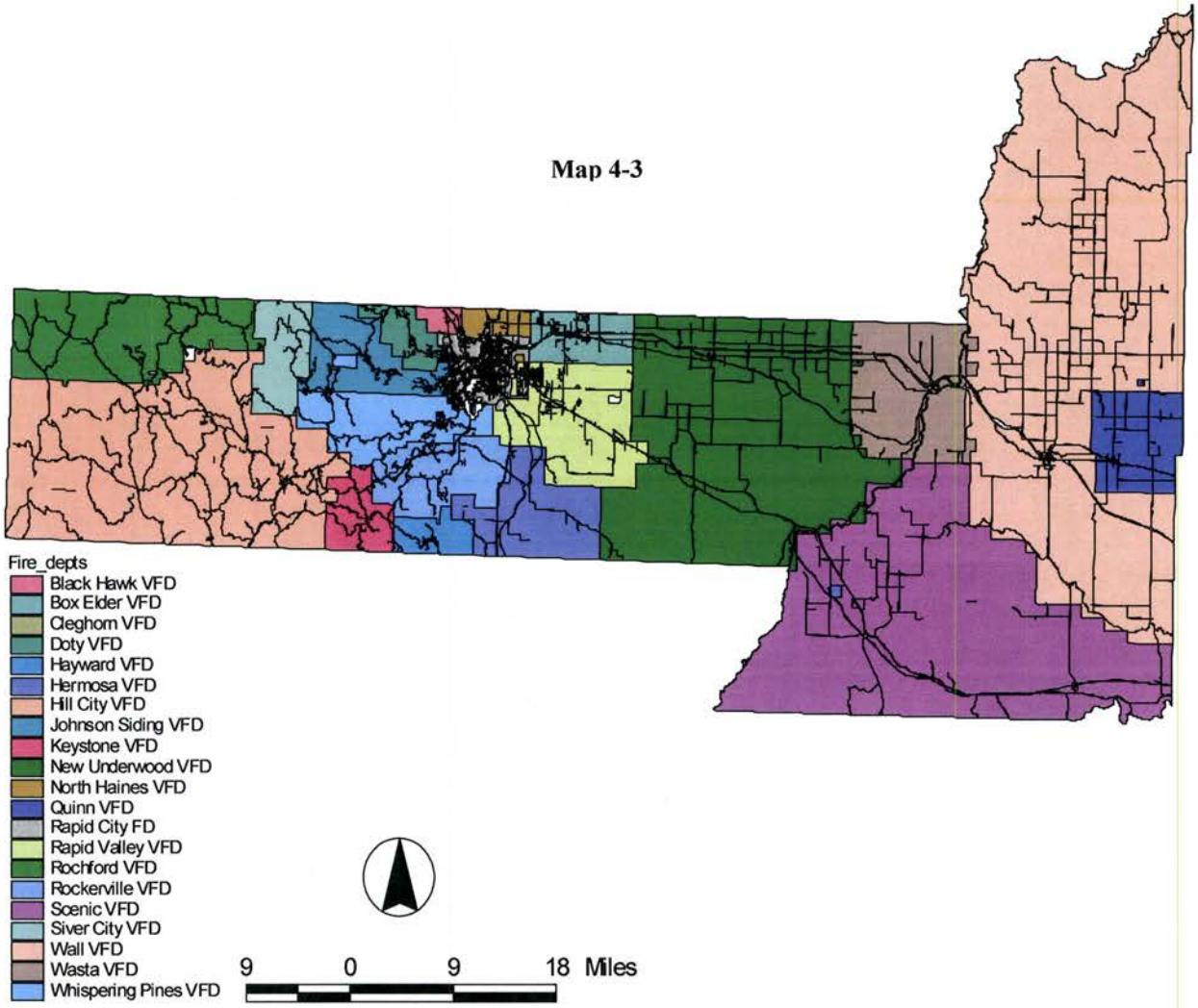
4.6 Wildfire Interface

The Black Hills are a beautiful and desirable place to live. The forests and meadows make the Black Hills attractive, but also make them a dangerous place to live in relation to wildfires. The Black Hills have always been subject to fire. Recently, major fires have occurred in Pennington County. These fires include the Jasper Fire in 2000, which burned over 100,000 acres and the Battle Creek Fire in 2002, which burned over 12,000 acres. Development in forested areas alters the natural ecosystem. Fuels build which can lead to even larger and more damaging fires.

Fire protection in rural, forested developments is not the same as fire protection within a city. Response times to the fire are slower, the road network may not allow easy access to the fire, and substandard roads may not accommodate current fire fighting apparatus. Development in the forested area will continue and efforts should be made to mitigate the fire danger. This effort could include advocating the use of fire resistant building materials and promoting vegetation management. Other ways to promote fire safety are to review new residential and commercial developments within the Black Hills to ensure that the infrastructure is in place to aid in future firefighting efforts. This would include roads that are wide enough to provide for emergency vehicles, roads that are not too steep and the construction of adequate water systems.

The Fire Fighting Districts Map shown as Map 4-3 indicates the major fire boundaries in Pennington County. Development in these areas should consider the impact and ability to fight a major fire within the district. The district maps combined with the road classification and slope information can help initially indicate areas that may require special consideration for road location and grades in regard to fire fighting. In addition, the County may wish to consider requiring developments to meet certain fire reduction goals, such as no wood shake shingles, thinning of timber and defensible space around dwelling units.

Map 4-3



4.7 Wildlife Interface

Pennington County is home to a wide variety of wildlife including elk, mountain lions, bighorn sheep, whitetail and mule deer, antelope, turkey, coyotes, pheasants, grouse and numerous other small animals and birds. Artificial feeding and landscaping practices that cause deer and turkeys to congregate around homes will increase the likehood of unwanted mountain lion encounters.

While Pennington County does not have the well-defined wildlife migration corridors that exist in other western states, care and forethought must be given to the needs and welfare of wild animals when re-zoning and platting large tracts of undeveloped land, especially in the forested areas of western Pennington County. Ideas that should be considered include the clustering of home sights to allow for large areas of undisturbed forest and the use of conservation easements to permanently protect sensitive calving and fawning areas and critical winter habitat.

Chapter Five
5.0 TRANSPORTATION

GOAL: To achieve a safe, efficient, and convenient transportation system that is well coordinated with existing land use activities occurring throughout Pennington County and allow for future planned growth.

POLICIES:

1. Transportation planning for Pennington County shall be coordinated between the Pennington County Highway Department, South Dakota Department of Transportation, all municipalities located within Pennington County and other interested agencies.

2. Coordinate County transportation plans with the metropolitan area transportation process in the development of a regional transportation system and improvements.

3. Circulation in Pennington County shall be based upon a system of major and minor arterial roads as indicated by the Pennington County Transportation Plan Map. Road improvements shall be based upon the accompanying classification standards, the Pennington County Subdivision Regulations, traffic demands and changes in land use and traffic patterns.

4. Encourage land use patterns that utilize existing roads in an efficient manner that minimizes the need for further transportation improvements.

5. Improvements, the upgrading and/or new construction of major and minor arterial routes shall be specified and prioritized within this section of the Comprehensive Plan.

6. Encourage energy conservation and a decrease in fuel consumption through the proper planning and location of future land-uses.

7. Review new road design, location and construction to ensure that areas sensitive to physical limitation such as topography, soils and floodplains are considered.

8. Develop standards that limit and effectively control the number of ingress and egress points onto major and minor arterial roads.

9. Require new development to finance road improvements that are needed to support the increased traffic volumes.

10. Review and implement Subdivision Regulation standards to ensure proper design and construction of subdivision roads when property is platted within Pennington County.

Transportation in Pennington County involves the movement of people and goods to their various destinations. Transportation issues are readily apparent to people everyday because of the time spent traveling. Congestion, roads in poor condition, non-through streets and safety hazards are all daily problems faced by the residents of Pennington County. The purpose of the transportation element is to identify and address these transportation problems. In an area faced with growth such as is found in Pennington County, a certain amount of road issues cannot be avoided. Due to the rural nature that has existed in the past in Pennington County, many have been accustomed to easy movement. As the county becomes more urbanized and the influx of tourists increases, conflicts and congestion will increase. Land use and transportation planning, nonetheless, attempts to mitigate the negative effects.

Land use and transportation are closely related. The transportation network often dictates the land use pattern. For example the location of major U.S. Highways and Interstate 90 have increased the commercial and residential development along these corridors. On the other hand, land use activities have a direct influence on the viability of the transportation system. A major shopping mall, an industry or a large apartment complex can generate enough traffic to negatively affect the surrounding transportation network. Transportation and land use can hardly be separated because of the strongly connected relationship.

Because of the size of Pennington County the transportation system includes all variations of roads. The types of roads vary from a major U.S. Interstate to old mining and logging trails now being use for access.

The circulation system in Pennington County is based on a system of major and minor arterial roads, collector and local roads. Much of the road system in Pennington County is based on older trails and topographic features. Arterial roads are intended to accommodate major movements of traffic. Collector roads are intended to serve internal traffic movements within an area and to connect that area with the arterial roadway system. Local roads have the sole purpose of providing access to immediately adjacent land. Because of land use changes that constantly occur, revisions to Pennington County's roadway system should be considered from time to time. Currently, there are approximately 893 miles of road maintained by the Pennington County Highway Department and approximately another 200 miles of roads that are not maintained by any governmental organization.

Pennington County's future roadway system needs to be based on several factors including:

- The relationship with the regional transportation network
- Traffic volumes and road capacity
- Existing and future land uses in the surrounding area
- Safety
- Available right-of-ways
- Major traffic generators

Pennington County has an excellent regional transportation network with Interstate 90 traversing the majority of the County east to west. Interstate 90 traverses the northern portion of Pennington County for a distance of 74.3 miles. There are nineteen (19) interstate exits located within Pennington County. Of these exits, five (5) exits are primarily associated with Rapid City, but are certainly used to access property outside of any municipality. Traffic volumes on the portion of Interstate 90 located within Pennington County range from 31,130 ADT[2] at Haines Avenue Exits in Rapid City to 4950 ADT[3] between Exits 121 and 127 east of Wall. In addition there are two United States Highways, US Highway 14/16 and US Highway 385 and seven (7) South Dakota Highways, SD Highway 44, 240, 79, 40, 244, 87, 79. These state and federal highways provide the backbone of the major arterial roadway system in Pennington County.

A major emphasis has been place on the construction of the Heartland Express. The Heartland Express is the construction or reconstruction of a four lane, divided highway extending from Canada to Denver. A portion of expressway has already been constructed between Rapid City and Hermosa. Construction is continuing as state and federal funding becomes available.

In order to better facilitate traffic movement, traffic improvement projects have been determined. These projects have been discussed with the citizens of Pennington County through a number of open houses held in various locations throughout the County during 2000. The proposed list of highway improvement projects was then discussed by the Pennington County Commission and prioritized. When these projects are completed Pennington County's transportation system will be enhanced.

5.1 Major Improvements

1. Sheridan Lake Road reconstruction from the Rapid City Limits to Old Hamm Saw Mill, approximately 5 miles at a projected cost of 4.8 million dollars to be completed in 2012.
2. Deerfield Road reconstruction from the city limits of Hill City to Newton Lake, approximately 4.5 miles at a projected cost of 3.0 million dollars to be completed in 2011.
3. Covington Street reconstruction from Twilight Drive to Haven Street approximately .4 miles at a projected cost of $420,000.00 dollars to be completed in 2003.
4. North Haines Avenue reconstruction from the city limits of Rapid City to the Meade County line approximately 1 mile at a projected cost of $720,000.00 dollars to be completed in 2003.
5. Reservoir Road reconstruction from S.D. Highway 44 to Meadowridge Drive approximately 1.5 miles at a projected cost of 2.7 million dollars to be completed in 2007 to 2009.

[2] 2000 S.D. Department of Transportation traffic counts.
[3] Based on 2000 S.D. Department of Transportation traffic counts.

In order to have the street classification system consistent with function and right-of-way widths, the following street classification should be considered:

Classification	Right-of-way width	Function
Major Arterial	100'	Major roads that carry large volumes of traffic and serve as major thoroughfares within the county. Access points should be restricted whenever possible.
Minor Arterial	80'	These roads also serve as movers of traffic, but do not carry the higher volumes of traffic that are associated with major arterial roads. Access may be limited in some areas.
Collector Road	66'	Collector roads serve as links between local roads and arterial roads moving traffic from neighborhoods to destinations.
Local Road	40'-66'	The primary function of local roads is to provide access to immediately adjacent land.

Maps 5-1 and 5-2 show the Major and Minor Arterial road network for Pennington County. The following categories outline the various road designations and some examples of important roads located within Pennington County.

Major Arterial – Interstate 90, US Highway 16, and US Highway 385 are all examples of major arterial roads found in Pennington County. Major arterial roads often have multi-lanes and carry large volumes of traffic. The traffic occurring on major arterial roads often are of a regional nature and are passing through Pennington County. Major arterial roads should be designed for maximum speed and capacity with controlled access. Major arterial roads usually handle trips between different parts of the county and typically are in excess of one mile.

Minor Arterial - Neck Yoke Road, Old Folsom Road, Deerfield Road and Nemo Road are all classified as minor arterial roads. Often minor arterial roads have some of the same characteristics of major arterial roads in that they are used for longer trips, but have lower traffic counts than major arterial roads. Minor arterial roads serve to connect collector and local roads to major arterial roads. Direct residential access onto minor arterial roads should be limited whenever possible and right-of-ways should be

maintained for future expansion of minor arterial roads into major arterial roads should the need arise.

Collector Roads – These are primarily streets connecting major neighborhood areas with major and minor arterial roads. Collector roads often have moderate traffic.

Local Roads – Local roads are the main interior streets within neighborhoods and subdivisions. Typically local roads have lower traffic counts. Local roads constitute the majority of roads within Pennington County.

5.2 Alternate Means Of Transportation

The major focus of this section of the Comprehensive Plan has been on private vehicular transportation. Not all methods of transportation revolve around the personal automobile. Indeed, there are other alternative methods of transportation. Listed below are some alternative methods of transportation used by the citizens of Pennington County.

Bike & Walking Trails – While bicycle paths can be an important part of a transportation system, they are primarily suited to higher densities and urban development. Given the large geographical area covered by Pennington County, it is not realistic to anticipate wide usage of bike trails for the movement of people. There could be minor usage of bicycles in the outskirts of more urban development as a method of transportation.

There is a significant amount of bike trails for recreational use. The Mickelson Trail runs thought the western portion of Pennington County. The Mickelson Trail is 114 miles long and extends from Deadwood to the north to Edgemont to the south. The Mickelson Trail is a multi-use trail that is also accessible to hikers, walkers and horseback riders. Approximately 32.1 miles of the Mickelson Trail are located within Pennington County. According to South Dakota Game, Fish and Parks approximately 6,511 people used the Mickelson Trail at the Mystic counting site during 2000.

In addition to the Mickelson Trail, the Centennial Trail meanders through Pennington County. The Centennial Trial is designated exclusively as a walking/hiking trail. Many other Forest Service trails are available for hiking and biking throughout the portion of the Black Hills National Forest in Pennington County. Rapid City also has an extensive bike path system located primarily along Rapid Creek. Rapid City has approximately 21.5 miles of bike paths, which are also accessible to pedestrians. Maps of the Rapid City Bike Path system may be obtained from the Rapid City Parks and Recreation Division.

Public Transportation – All public transportation found in Pennington County is provided either by the various municipalities or private businesses. Rapid City has established bus routes that provide public transportation. Other towns have senior citizen buses, but not transportation that is available to all citizens. Pennington County does not provide any public transportation or participate in any public transportation programs.

Rail Service – Historically the railroads played an important role in the settlement and development of Pennington County. They brought settlers west and once railroads were established in Pennington County, they were used to move timber, mineral and agricultural goods. South Dakota and Wyoming are the only two states in the Union that currently do not have passenger rail service. Passenger rail service may once again be available if the Dunrail system comes to fruition. The Dunrail would operate under the authority of the Northern Hills Railroad Authority. The proposed Dunrail would extend from the Rapid City Regional Airport to Whitewood, South Dakota. The intent is to provide a scenic and nostalgic trip from the major airport in the area to a terminal near the Dunbar Resort in Deadwood. The rail service would utilize newly constructed tracks, rails owned by the DM&E and railroad right-of-way owned by the State of South Dakota that were previously abandoned.

The railroad is still used to transport goods into and out of the area. Currently the DM&E operates rail lines running through Pennington County. There has been interest expressed in the construction of new rail lines in order to supply coal from Wyoming to power plants in eastern South Dakota and Minnesota. The proposed route for the new rail line is planned to run through eastern Pennington County.

Air Service – All commercial air transportation is provided by the Rapid City Regional Airport, which is located outside of the Rapid City municipal boundary. The Rapid City Regional Airport is located approximately 7 miles east of Rapid City along S.D. Highway 44.

The Regional Airport provides a host of services in addition to regularly scheduled passenger services, such as charter services, commercial freight services, miscellaneous airplane services, car rental and food services. The terminal building has 90,000 square feet of floor space with three gates.

Currently, there are two runways servicing Rapid City Regional Airport. The longest runway, Runway 14-32, is 8,701 feet long and 150-feet-wide and made of a grooved concrete surface. Runway 5-23 is 3,600 feet long and 75-feet-wide and constructed of asphalt.

Pennington County's location near major tourist attractions and serving as a major retailing and service center means significant use of the Regional Airport. A need for better connecting flights within South Dakota exists.

There are two other airports located in Pennington County. The town of Wall owns and operates an airport, which does not provide passenger services. The Ellsworth Air Force Base located in Box Elder has the largest airport in Pennington County, but this airport is restricted to military use only. No other air facilities are anticipated to develop in Pennington County in the near future.

5.3 Conclusion

The connection between the transportation network and land uses cannot be denied. A well thought out, planned, and maintained transportation network is vital for livable communities. This portion of the Comprehensive Plan is intended to evaluate how Pennington County deals with its transportation network and to identify to property owners and developers what is expected for any future development with the county.

Table 5-1
Road Classification
As proposed by the Planning Department

Major Arterial Roads

1. Interstate 90
2. U.S. Highway 16
3. U.S. Highway 385
4. S.D. Highway 44
5. S.D. Highway 79
6. S.D. Highway 40
7. S.D. Highway 240
8. S.D. Highway 14
9. S.D. Highway 244
10. S.D. Highway 87
11. Sheridan Lake Road
12. Nemo Road
13. County Road
14. Radar Hill Road
15. Deadwood Avenue

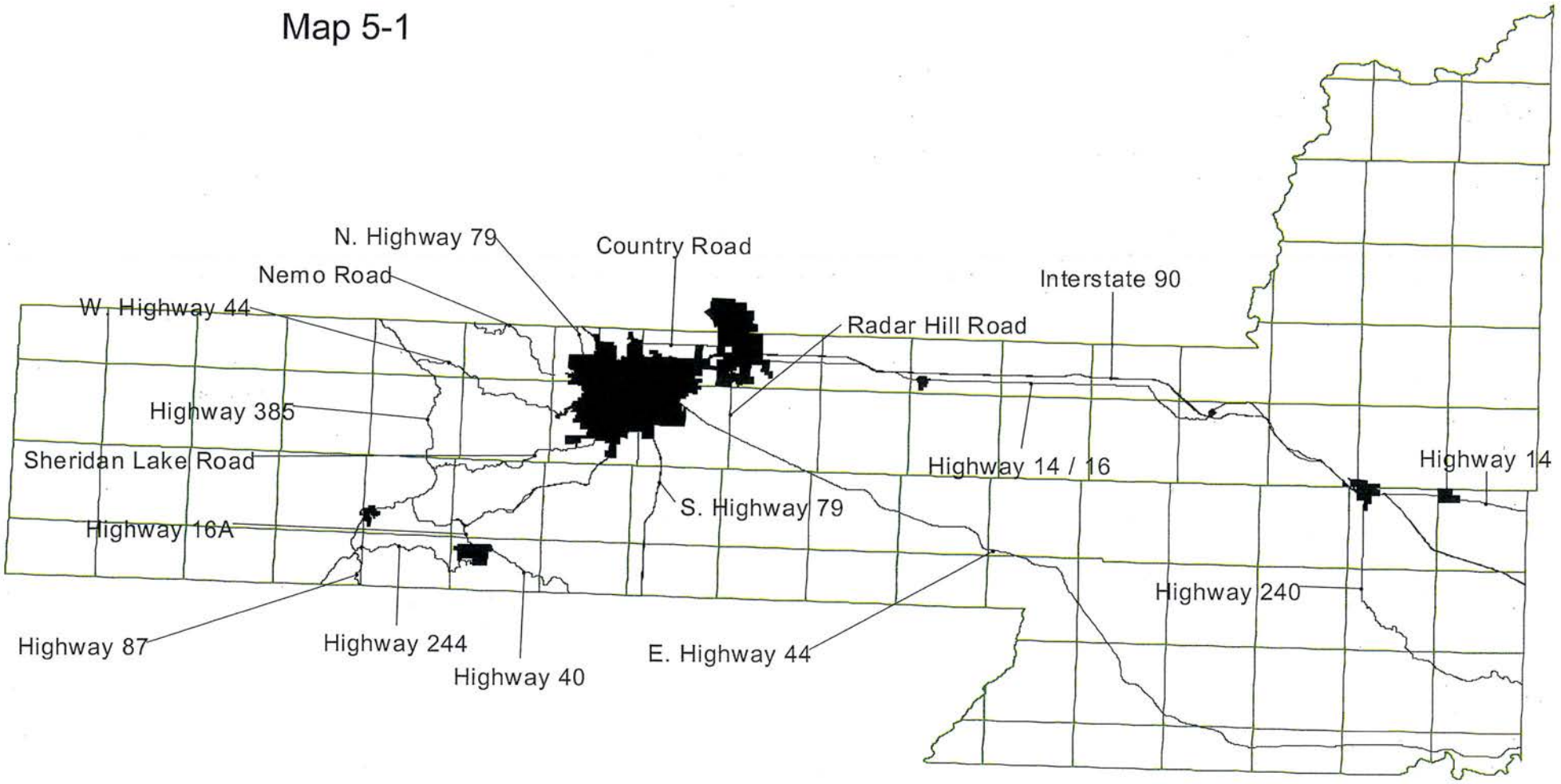
Minor Arterial Roads

1. Old Hill City Road
2. Neck Yoke Road
3. Deerfield Road
4. Rochford Road
5. Mystic Road
6. South Rochford Road
7. South Rockerville Road
8. North Haines Avenue
9. Twilight Drive
10. Reservoir Road
11. Twin Springs Road
12. Spring Creek and Lower Spring Creek Road
13. Universal Road
14. Antelope Creek Road
15. Sage Creek Road

16. Old Folsom Road
17. Silver City Road
18. Longview Road
19. Creighton Road
20. Playhouse Road
21. Slate Prairie Road
22. Norris Peak Road
23. 160th Avenue
24. Edelweiss Mountain Road
25. Moon Meadows Drive
26. Dunsmore Road
27. Elk Vale Road
28. Bombing Range Road
29. Anderson Road
30. South Side Drive
31. Seger Drive
32. Dyess Avenue
33. 143rd Avenue
34. Quinn Road

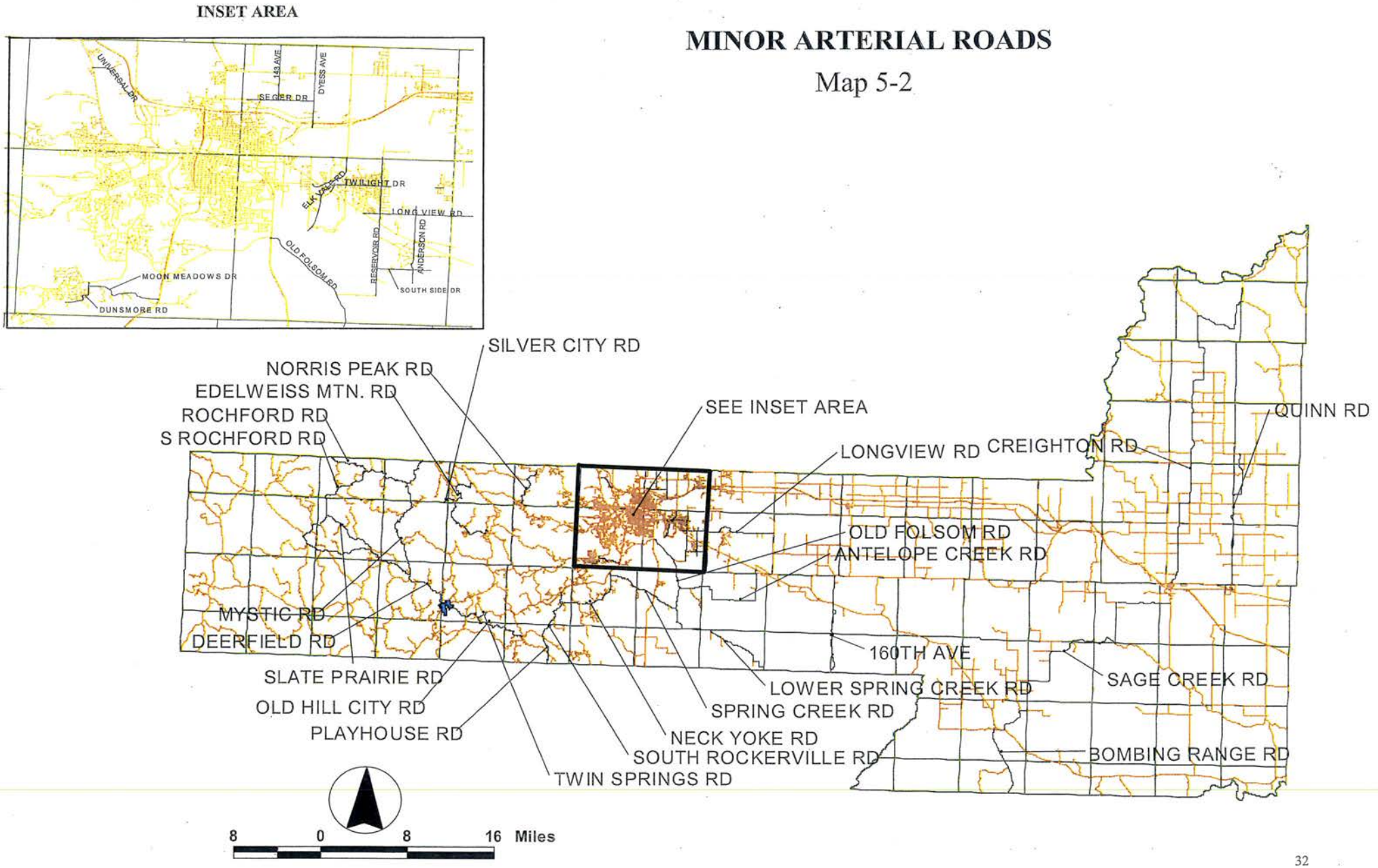
Major Arterial Roads

Map 5-1



MINOR ARTERIAL ROADS

Map 5-2



Chapter Six
6.0 FUTURE LAND USE

GOAL: To provide for adequate amounts of commercial and industrial land in the future and to ensure attractiveness and stability of these areas.

To achieve attractive, stable and safe residential areas and to plan for a desirable and compatible mixture of residential densities.

To protect prime agricultural areas from the encroachment of non-compatible land uses.

To provide suitable area for recreational activities and associated resort activities to occur.

To protect Pennington County's natural resources and areas of scenic beauty through proper land use practices.

POLICIES:

1. Insure that the quality, location and type of commercial land uses are related to the needs and demands of the local population.

2. Industrial areas shall consider all significant environmental constraints, that there is direct access to adequate transportation facilities, and that all industrial areas are compatible with surrounding uses.

3. Encourage the infilling of vacant residential land in order to promote the existing infrastructure.

4. Provide for stable neighborhoods by minimizing adverse effects from conflicting land uses.

5. Insure that residential growth takes place in an orderly and efficient manner so that public facilities and needed services can be adequately provided.

6. Residential development should occur in areas where urban services such as adequate water and sewage disposal are accessible so the greatest amount of benefit yet the lowest cost to maintain them can be achieved.

7. Transition between types of land uses, especially between conflicting land uses shall be orderly and efficient through the use of buffers such as increased setbacks, open space, fencing and/or landscaping.

8. Ensure that all new development is an asset to the community in terms of appearance and impact on community facilities and the natural environment

through impact assessment reports on all new developments exceeding ten (10) lots.

9. Special consideration of development occurring in areas that present natural hazards to human life and property, such as areas prone to flooding, land movement or wildfire danger.

6.1 Agricultural Land Use

The agricultural activities certainly represent the single largest land use category in Pennington County. There are a variety of uses that are associated with agriculture. In the western part of the County, this primarily includes forestry and grazing. In the portion of the County east of Rapid City, it constitutes field crops, haying and animal production. All of these land uses typically require larger parcels of land. Agricultural activities have a significant impact on Pennington County's overall economy.

Pennington County has two agriculturally oriented zoning districts. These are the General Agriculture Zoning District and Limited Agriculture Zoning District. Both districts have similar permitted and conditional uses; however, have a differing minimum lot size. The minimum lot size in the General Agriculture District is forty (40) acres, while the minimum lot size in the Limited Agriculture District is only ten (10) acres.

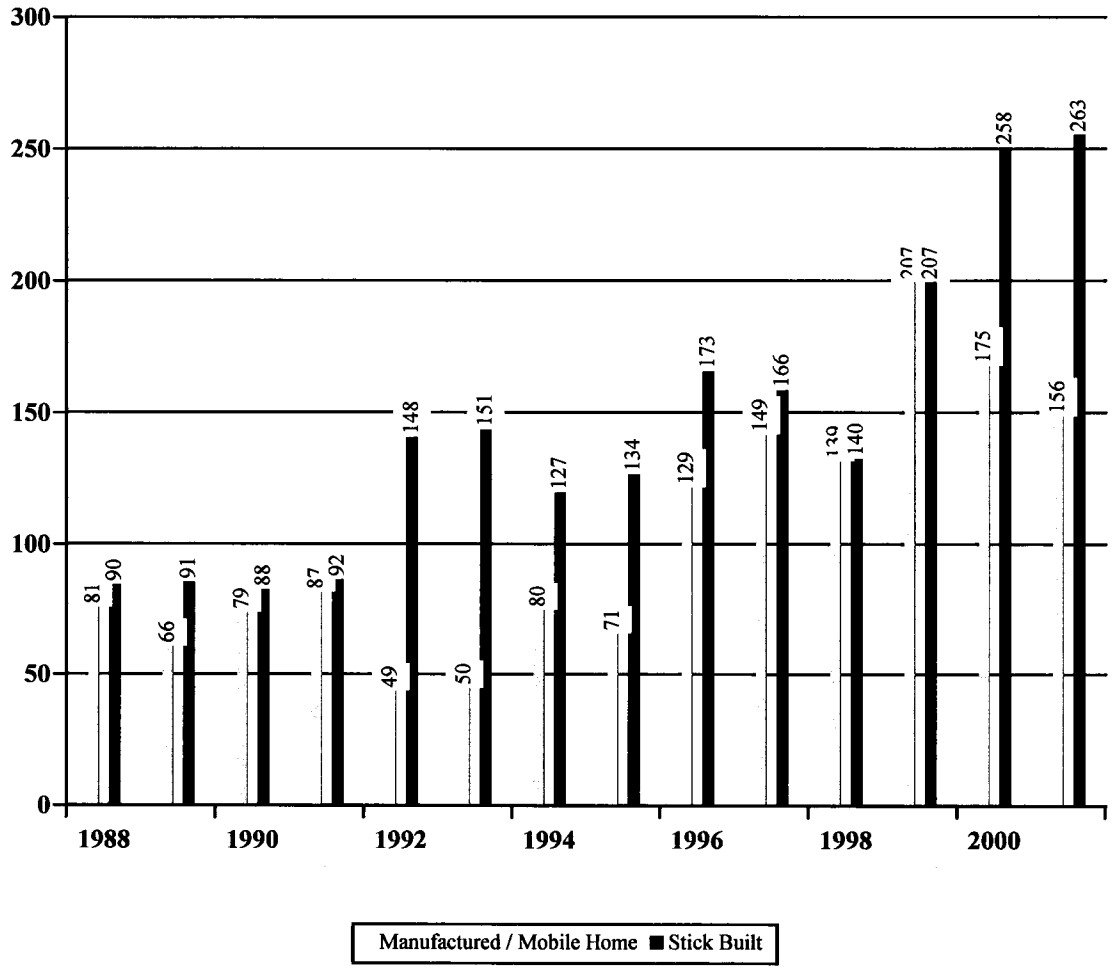
6.2 Residential Land Use

Residential land use represents one of the most intense uses of land in Pennington County. Historically, the County developed as mining camps were established in the watershed areas. Later agricultural communities sprang into existence and parcels of property were homesteaded. These early land use activities have left a lasting land use trend. There are older mining communities in the County, such as Keystone, Hill City, Silver City, Rochford, Sheridan, and Hayward. Likewise, agricultural communities sprang up such as Caputa, Farmingdale, Owonka, Wasta, New Underwood, Wall and Quinn. Both types of communities have had their ups and downs. Some of the communities continue to exist and play a role in the land use pattern in the County, while others have completely disappeared.

In the last 60 years, the growth of four (4) communities has had the greatest impact on land use trends in Pennington County. The growth of Rapid City, Box Elder, Hill City and Keystone has changed land use patterns. As Rapid City has grown, the county has seen an increase in urbanization. Many rural developments, such as Countryside, Countryside South, Hart Ranch and the development in Rapid Valley all act as quasi bedroom developments for Rapid City. The establishment of Ellsworth Air Force Base in the 1940s served as a strong stimulus for the growth of Box Elder. Similarly, Hill City and Keystone have both contributed to development in their general areas. The amount and density of development around these smaller communities has not been the same as Rapid City's, however the trend exists. Figure 1 represents the number of residential building permits issued from 1988 to 2001. The information on this graph represents the number of building permits issued for both stick-built residences and mobile or

manufactured homes. Over a ten-year period from 1991 to 2001, 1,859 stick-built homes were constructed in the unincorporated areas of Pennington County. During the same time period, 1,292 manufactured or mobile homes were placed in Pennington County. As of October 31, 2001, the Director of Equalization's records indicated that there were a total of 5,602 manufactured or mobile homes and 23,963 stick-built residences in Pennington County.

Figure 6.1
Residential Building Permits
1988 - 2001
Unincorporated Pennington County



As indicated by Figure 1, the greatest demand for change to existing land use in Pennington County will be from the increased residential development occurring on the outskirts of established towns and municipalities. The Pennington County Planning Commission has realized this and addressed areas they feel are suitable for future

residential development. The County has several classifications of residential uses based on minimum lot sizes. These areas of future residential development have been identified on the Future Land Use Maps 6-1, 6-2 and 6-3.

There have been a number of trends taking place in Pennington County over the last few decades. There has been a strong increase in the number of smaller lots for residential development. The majority of this activity has taken place in property that has been zoned Suburban Residential District. Currently, there are over 11,362 acres of property zoned Suburban Residential District. Typically the lot size in this type of zoning is ½ acre or less and is located around the established municipalities and with both water and sewer services provided to them.

The second type of residential development that has occurred has taken place on lots that are three (3) acres and larger. Typically these lots are zoned Low Density Residential District. Currently there is 7,504 acres of Low Density Residential District found in Pennington County. Most generally, these lots have private on-site wastewater disposal systems. The method of obtaining drinking water varies between hauling water to a cistern, public water systems and private wells.

The third type of residential development occurring in Pennington County can be called residential estates or hobby farms. The majority of this type of residential development occurs in areas zoned Limited Agriculture and General Agriculture. This use requires large amounts of land as the minimum lot size is ten (10) acres or larger. Currently, there are 21,895 acres of land zoned Limited Agriculture District within Pennington County.

To the casual observer, Pennington County might appear to have ample areas for development. While Pennington County contains over 2,700 square miles of land, many areas are not suitable or available for development. As outlined earlier in this comprehensive plan, much of Pennington County is owned or controlled by the Federal Government. Other areas of Pennington County are not conducive to development due to physical limitations, such as flood hazard, poor soil conditions, or steep terrain. Adequate services, such as police and fire protection, utilities and road infrastructure are severely lacking in portions of the County. Urban development will continue throughout Pennington County. It is likely that most residential development will occur around established towns and communities. The maps of the future land use portion of the Comprehensive Plan will indicate the areas best suited for residential development, as identified by the Planning Commission. These maps serve as a guideline for the development of Pennington County, and future rezoning petitions should comply with the Land Use Maps before being approved.

Pennington County has two primary residential zoning districts, the Suburban Residential District and Low Density Residential District. Once again, the permitted uses and conditional uses are similar, but the minimum lot sizes differ between the two districts. The Low Density Residential District has a minimum lot size of three (3) acres, while the Suburban Residential District allows for lot sizes as small as 6,500 square feet provided both a central water and sewer system are provided.

Pennington County also allows for residential development to occur in Planned Unit Developments. Planned Unit Developments allow for developments in which ingenuity, imagination and design efforts on the part of the builders, architects, site planners and developer can produce desirable residential developments. Planned Unit Developments can allow for a mixture of lot sizes and varied setbacks, which may be prohibited in other districts.

6.3 Commercial Land Use

The commercial land uses occurring in Pennington County vary from area to area. Generally, however, it can be noted that almost all of the commercial land uses are found along major U.S. or state highways. As of 2002, there was approximately 3,287 acres of land zoned General Commercial District and Highway Service District. Most commercial development is drawn to major transportation routes. A commercial land use corridor extends from Rapid City south towards Keystone and Hill City. The majority of commercial activity taking place in this corridor is directly related to the tourist industry. The types of commercial activities include motels, campground, gas stations, eateries, tourist attractions and tourist retail outlets. The primary services required by the residents of the County are typically found within or close to the towns and municipalities.

Pennington County has two commercially oriented zoning districts. They are the Highway Service District and the General Commercial District. Currently, there are approximately 2,592 acres of Highway Service District and 695 acres of General Commercial District found in Pennington County. The Highway Service District differs somewhat from the General Commercial District in that it focuses more toward tourist related activities, while the General Commercial District focuses more on the day-to-day requirements of the year-round population.

Strip commercial development poses particular problems for almost every community, yet the prerequisite for some businesses to have high visibility and close proximity to large traffic volumes virtually assures the continued existence of the development pattern. Problems caused by strip development include traffic congestion, high accident rates, premature development into undeveloped areas and costs associated with the extension of services. Additional extension of strip development should be avoided. Node development at major intersections is a better alternative to continued strip development. Larger nodes of commercial zoned property at a major intersection will also allow for cluster development.

Large commercial development is unlikely to occur in areas outside of municipalities in Pennington County. The unavailability of central sewer greatly limits most kinds of commercial development. Larger and big-box retailers must have adequate water and sewer in order to develop. This is lacking except within the towns and municipalities of Pennington County. It is more likely that any future commercial development that will take place in the unincorporated areas will be smaller in size.

Areas indicated as suitable for future commercial land uses are shown on Future Land Use Maps 1-3. These maps should serve as a guide for directing the location of future commercial land uses in Pennington County. Each request received by Pennington County to rezone property to a commercial land use should be compared to the future land use map to determine whether it is compatible.

6.4 Industrial Land Use

Most industrial activities are located within the towns and municipalities of Pennington County. There are a few notable exceptions to this. There is a concentration of industrial land uses found between Rapid City and the Meade County line. The mining of limestone and other minerals are the primary focus of the industrial land uses, which occurs in the North S.D. Highway 79 area. Other minor industrial land uses are found in the area. The other areas where industrial activities are evident are found along South Highway 79 south of Rapid City. These areas combined with the other assorted parcels of industrially zoned property located throughout the County equals 166 acres of light industrial and 863 acres of heavy industrial land.

Heavy Industrial District and Light Industrial District constitute the only two industrial zoning districts in Pennington County. These districts allow for varied industrial and manufacturing uses. The Light Industrial District is intended to allow uses that do not create serious problems of compatibility with other kinds of lands uses. The Heavy Industrial District allows uses that may require isolation from many other kinds of land uses.

Growth in manufacturing and industrial processing is important to the overall economy of Pennington County. It may be easy to assume that industrial development should be encouraged and promoted no matter where it might be located. A number of criteria should be considered when examining future industrial land uses.

It is necessary to consider the effects industrial land uses will have on other types of development and insure that adequate separation between industrial uses, existing uses and possible future uses, especially residential uses. Adequate buffer may be required to mitigate negative impacts.

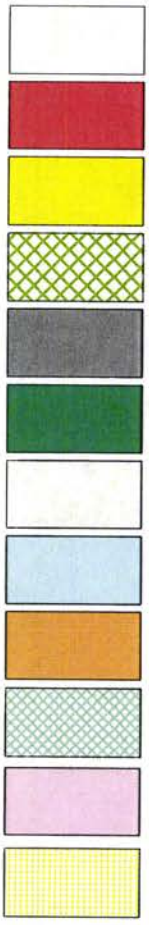
Industrial or manufacturing land uses have many needs and requirements to consider. While not all of these factors may apply to every location, industrial and manufacturing land uses commonly require:

1. Good access to a transportation network, such as major highways and railroad facilities.
2. Sufficient water delivery capacity, meeting processing demands, employee needs and fire protection requirements.
3. Adequate sanitary sewer and treatment capacity to transport and treat normal effluent.
4. Convenient transportation links between industrial and residential areas.
5. Reasonable response time for police, fire, and Hazardous Material teams.

6. Parcel of sufficient size to allow for parking, storage of material and facility expansion, but that are away from areas of natural hazards, such as floodplains and floodways.
7. Availability of private utilities such as electrical power and natural gas that may be required to meet the demands of industry.

Future areas of industrial use are limited in Pennington County due to site location, lack of amenities, and conflicting land use. Certain areas have been identified as appropriate for future industrial land uses and are shown on Future Land Use Maps 1-3. By considering the clearly set forth guidelines for industrial development, Pennington County will be able to identify the areas best suited for that use.

Zoning Legend



NOCODE

GC (General Commercial District)

LDR (Low Density Residential District)

Public Land

HI (Heavy Industrial District)

LAD (Limited Agriculture District)

LI (Light Industrial District)

PUD (Planned Unit Development)

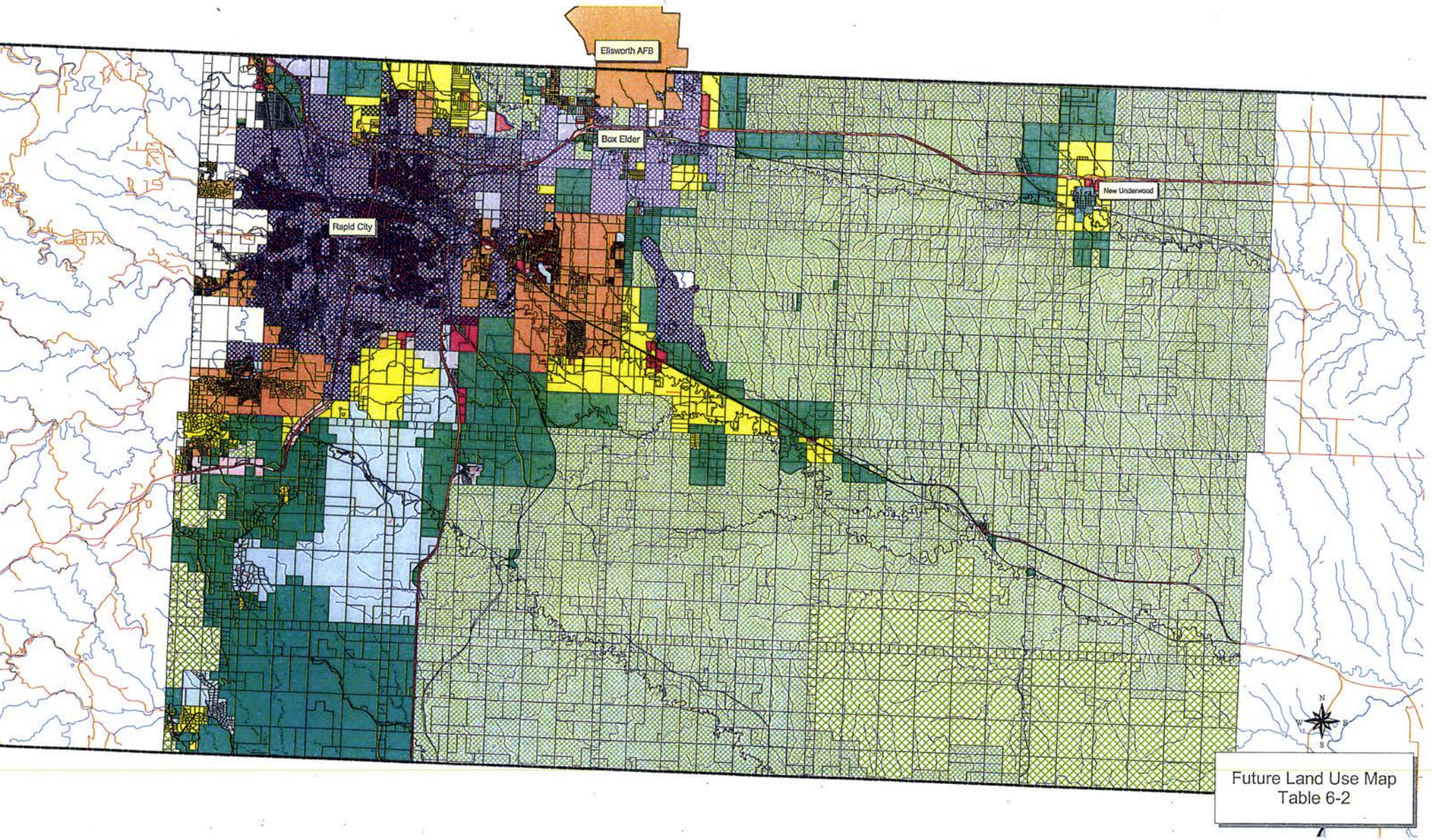
SRD (Suburban Residential District)

GAD (General Agriculture District)

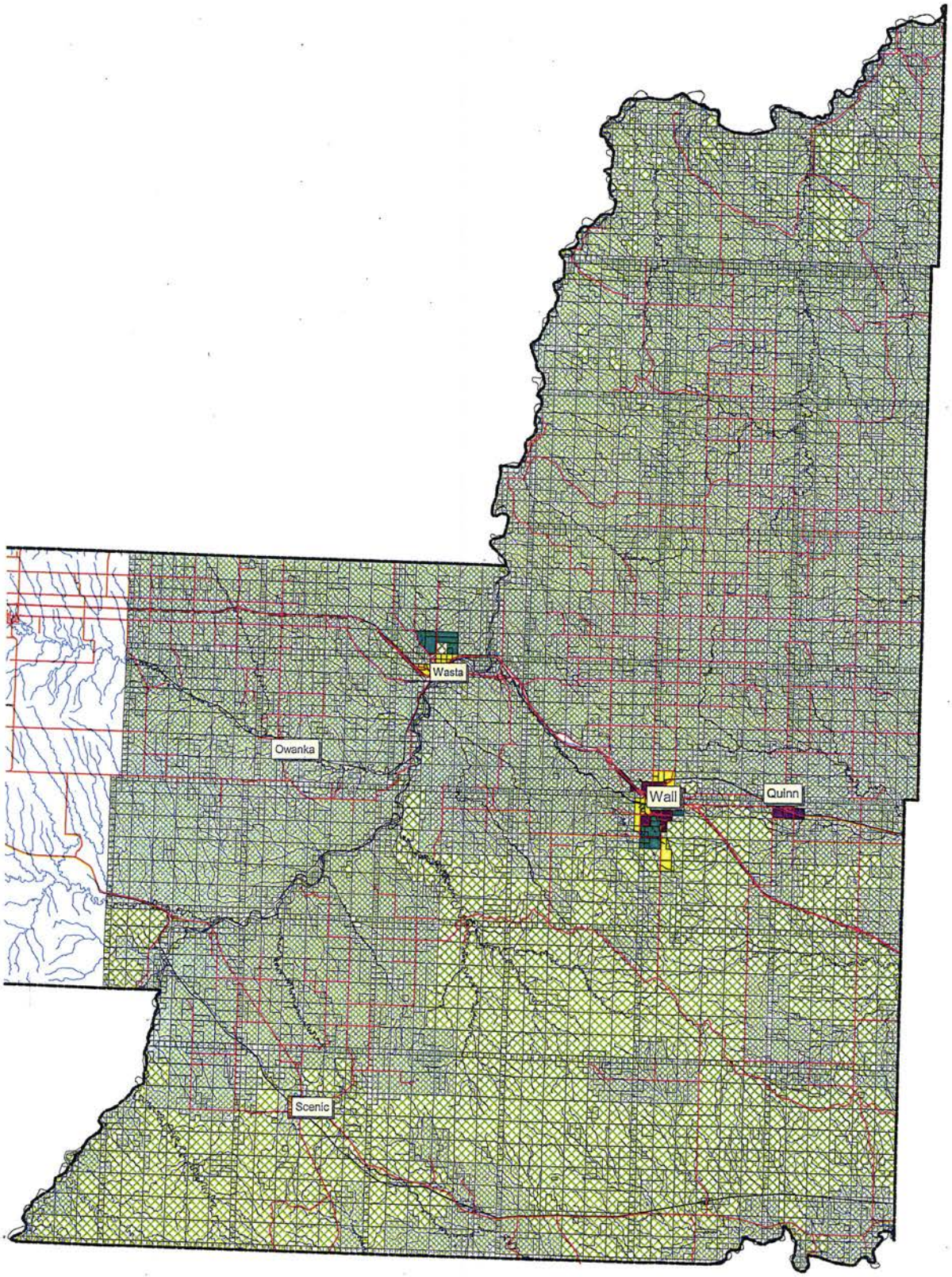
HS (Highway Service District)

Planned Unit Development/Sensitive

Future Land Use Map
Table 6-1
KEYSTONE
HILL CITY
N
E
W
S



Future Land Use Map
Table 6-2



Future Land Use Map
Table 6-3

N
W E
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