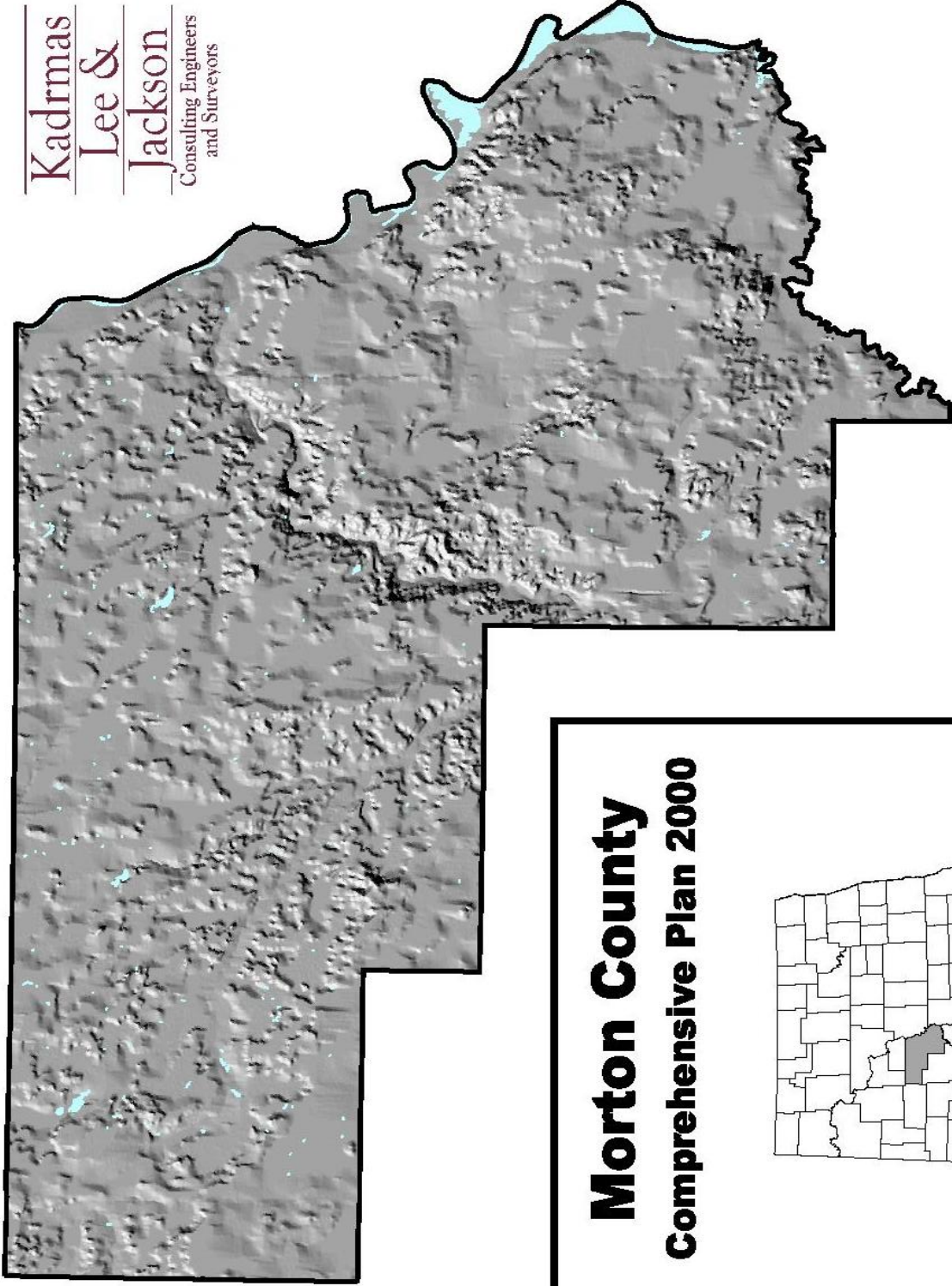
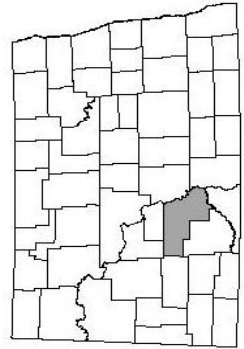


Kadrmass
Lee &
Jackson
Consulting Engineers
and Surveyors



Morton County Comprehensive Plan 2000



Morton County, North Dakota

Morton County
Comprehensive Plan
February 2000

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CERTIFICATE OF ADOPTION

MORTON COUNTY, NORTH DAKOTA

THIS DOCUMENT is adopted by resolution of the Board of County Commissioners as the official Comprehensive Land Use Plan for Morton County, North Dakota for the purpose of protecting and guiding physical development; to secure safety from fire and other dangers; to protect tax base; to encourage a distribution of population and utilization of land which will facilitate economic growth of the area and to make recommendations providing for adequate transportation, roads, water supply, drainage, sanitation, education, recreation, or other public requirements; to lessen government expenditures, to conserve and develop natural resources; and to foster the areas of agriculture or other industries. Also, all maps, charts or other descriptive matter accompanying this document and all other matters intended to form the whole or part hereof are hereby made a part of this document the same as if set forth in full herein.

ADOPTED THIS _____ DAY OF _____ A.D.

2000 BY THE COUNTY COMMISSION OF MORTON COUNTY.

SIGNED:

Chairman, Board of County Commissioners

ATTEST:

County Auditor

COMPREHENSIVE LAND USE PLAN
MORTON COUNTY, NORTH DAKOTA

FEBRUARY 2000

ACKNOWLEDGEMENTS

The Comprehensive Land Use Plan May 1984 for Morton County was prepared by the staff of the Lewis and Clark 1805 RCD in conjunction with the Morton County Planning Commission, the Morton County Commission and the citizens of Morton County.

Acknowledgements of the February 2000: Comprehensive Land Use Plan for Morton County was prepared by the staff of Kadmas Lee & Jackson in conjunction with the Morton County Planning Commission, the Morton County Commission and the citizens of Morton County.

PUBLIC OFFICIALS

MORTON COUNTY COMMISSION

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JAMES BOEHM

MATT L. ERHARDT

ANDY ZACHMEIER

MORTON COUNTY PLANNING COMMISSIONERS

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JEROME GANGLE

A SPECIAL ACKNOWLEDGEMENT TO COUNTY COMMISSIONER CHARLES ENGELTER, WHO SERVED AS THE CHAIRMAN OF THE PLANNING FROM 1971 TO 1983, DURING WHICH TIME THE DRAFTING OF THE MAY 1984 AMENDED DOCUMENT WAS INITIATED. CHARLES ENGELTER DIED IN OFFICE ON MARCH 10, 1984.

CHAPTER I
INTRODUCTION, PURPOSE AND SCOPE

INTRODUCTION

The character of Morton County continues to change as we enter the 21st Century. During the last 60 years, the County's rural population has declined by approximately 40 percent. The County's largest city and County Seat, Mandan, has nearly tripled in population during the same period. This shift from rural to urban is due in part to advancements in farm technology, decreasing profitability of farming, and increasing diversification of the industrial and service sectors. Many city residents have chosen to make their homes in the county side near Mandan resulting in rapid residential growth and multiple new subdivisions around the city. Morton was one of the only eight counties in the state that realized a net increase in population between 1990 and 1997.

Realizing that these trends will continue for some time to come, the Morton County Planning Commission has taken upon itself the task of preparing for this growth, in order to insure that it occurs in a manner harmonious with the environment as well as the existing lifestyles of the residents within the county. This comprehensive land use plan for Morton County endeavors to identify existing and future areas of need or conflict regarding land use and provides guidelines for effective resolution or prevention of such conflicts.

The Morton County Comprehensive Land Use Plan has been developed under the supervision and authority of the Morton County Planning and Zoning Commission and has been developed in compliance with section 11-33-03 of the North Dakota Century Code. Section 11-33-03 stipulates that all zoning regulations shall be made or revised to be in accordance with the comprehensive plan.

PURPOSE

A comprehensive land use plan is document composed of goals, objectives policies, and recommendations for existing and future development. The comprehensive land use plan does not in itself serve as a legal document but as a comprehensive, long-range policy guide for the

development of the county as a whole. For the plan to be effective in promoting proper management and planning of future growth and development, two requirements must be met first: 1) The goals and policies within the plan must represent the public's attitude toward the future use of resources within the county. The Morton County Planning Commission has met this requirement by sponsoring several public meetings in the county at which residents identified that they believed to be the major goals, problems or conflicts concerning land use. 2) A comprehensive land use plan must be consistent in thought with the county's zoning ordinance and subdivision regulations.

A comprehensive plan is no more than a statement by the public about how growth and development should occur in the future. The zoning ordinance and the subdivision regulations on the other hand are mechanisms available to the County Planning Commission to insure that growth does, in fact, occur in a manner consistent with the land use goals identified in the comprehensive plan. Utilization and enforcement of the ordinances within the county must be consistent with the goals of the comprehensive plan. Only in that manner will implementation of the plan actually occur. Proper implementation of the comprehensive land use plan through the use of zoning ordinances and subdivision regulations will result in growth and development occurring in rate, location or style which will not threaten the health, safety, or general welfare of the public.

SCOPE

The plan is intended to serve to serve as a general guide for growth and development in Morton County. Background data such as, history, geography, economics, etc., serves as a very brief and general introduction to the County. The goals and objectives are based on citizen input and serve as the framework of the plan and illustrates how citizens of the county feel existing as well as anticipated growth and development should be handled. Policies are presented as rather specific measures for insuring realization of the goals and policies, as well as means for achieving plan consistency. Finally, the appendix section contains data which supports the text of the plan.

CHAPTER II

GENERAL CHARACTERISTICS

MORTON COUNTY HISTORY

Originally the area now known as Morton County became a part of the United States through the Louisiana Purchase in 1803. The area was part of the Louisiana Territory from 1803 to 1812, part of the Missouri Territory from 1812 to 1834, part of the Nebraska Territory from 1834 to 1861, and became part of the Dakota Territory on February 26, 1861. The Dakota Territory was opened for settlement on January 1, 1863.

Morton County was named after Oliver Perry Morton, the Governor of Indiana, a man who actively supported the United States administration during the civil war. Several attempts at organization were made before Morton County finally became successful in establishing a permanent county setup. Originally, Morton County covered a vast expanse of land reaching west to the Montana State line and south to the Black Hills. The County was actually founded in 1878 but in 1879 the Territorial Legislature annexed an 18-mile wide strip of Morton County (including Mandan) to Burleigh County, leaving the remainder of the County unorganized. Morton County was reunited and organized for the second time in 1881. The present boundaries of the County were established in 1916 after the splitting-off of Sioux County in 1914 and the creation of Grant County in 1916. The present land area of Morton County is 1,228,928 acres or 1,920.2 square miles, not including water surface area. The county encompasses 15, 232 acres or 23.9 square miles of water.

Evidence of inhabitation of the MORTON COUNTY area dates back over 9,000 years. These original inhabitants were both nomadic and sedentary or agrarian people. Native American groups included members of what are now known as the Mandan, Hidatsa, Arikara, Lakota and Assiniboine. Each of these groups depended on the Buffalo, particularly the Lakota and Assiniboine who were more nomadic. The Mandan, Arikara, and Hidatsa maintained a sedentary, agrarian lifestyle with regular hunting expeditions for buffalo and other wild game.

A flourishing trade in furs, shell, and Knife River Flint by the Mandans and other native groups resulted in contacts with other cultures reaching out to both coasts of the North American continent.

The earliest record of non-Indian visitors to the MORTON COUNTY area indicates a 1738 French expedition led by Louis Verendry visited the Mandan Indian villages near what is now the City of Mandan. Verendry was followed by MacKenzie who was seeking passage to the Pacific Ocean. Following MacKenzie, in 1804, the Lewis and Clark Expedition made their winter camp approximately 50 miles upstream of the current location of the City of Mandan and approximately 12 miles west of current location of Washburn. The non-Indian visitors brought with them several infectious diseases such as smallpox which resulted in the deaths of thousands of native peoples who, having never been exposed, had not developed a resistance to the diseases. Trappers and fur traders followed the Lewis and Clark Expedition, and by the early 1860's, military outposts began to spring up.

Fort Rice became the first permanent white settlement in MORTON COUNTY in 1864 followed by Fort Lincoln and Fort McKeen. Fort Lincoln is where George Armstrong Custer and the 7th Cavalry began their fateful march to the Little Bighorn in June of 1876.

Within five years after the battle of Battle of the Little Bighorn, the Northern Pacific Railroad line was completed through the Morton County area. The NP Railroad built a train station at Mandan. Around the turn of the century a large wave of immigrant settlers and homesteaders began streaming into the County.

Mandan, located along the Missouri River in the northeastern corner of the County serves as the County Seat and is the largest urban area in the County. Mandan is the second oldest incorporated city in the state, having filed for incorporation on February 21st, 1881. This second incorporation of a North Dakota city occurred six years after Fargo was incorporated. Colonists from Ohio, Indiana, Wisconsin, Illinois and Minnesota settled Glen Ullin in May of 1883. The town name was derived from the Gaelic word, "Glen", meaning valley, and "Ullin"

which comes from a favorite English ballad; “Lord Ullin’s Daughter”. Glen Ullin was incorporated in 1910.

New Salem (originally just Salem) was renamed because Salem already existed in the southern half of the Dakota Territory. New Salem, like Glen Ullin was settled in 1883 and later incorporated as a village in 1911.

Flasher was founded in 1902 and was incorporated as a village in 1914. It was named for Mabel Flasher, whose homestead is now part of the town site known as West Flasher.

Hebron (originally called Knife River) derived its name from a traveling minister who recommended the name change because the valley here reminded him of the Biblical Vale of Hebron. Settlement began here in 1885 and the incorporation of the city came about in 1916.

Almont, the youngest of the incorporated communities in this report (incorporated in 1936), was named for the local buttes, the Altamont Moraine. Translated from Latin, alta means high, montis means mountain.

Although the simultaneous settlement of several other smaller communities in MORTON COUNTY was occurring in the late 1800s and the early 1900s, the following have not become incorporated municipalities: Breien, Ft. Rice, Huff, Judson, St. Anthony, and Sweet Briar.

GEOLOGY, TOPOGRAPHY, AND DRAINAGE

MORTON COUNTY topography generally slopes east-southeast toward the Missouri River Valley from a high point of about 2,460 feet near Hebron, located in the western end of the county, to an elevation of about 1,600 feet in the southeast corner of the county (see **Exhibit 1**). Big Muddy Creek and Sweet Briar Creek drain the northern portion of the county and flow southeast into the Heart River, which flows into the Missouri River south of Mandan. The south part of the county is drained by Cannonball River and many smaller intermittent and perennial streams that flow generally east-southeast into the Missouri River, including Little

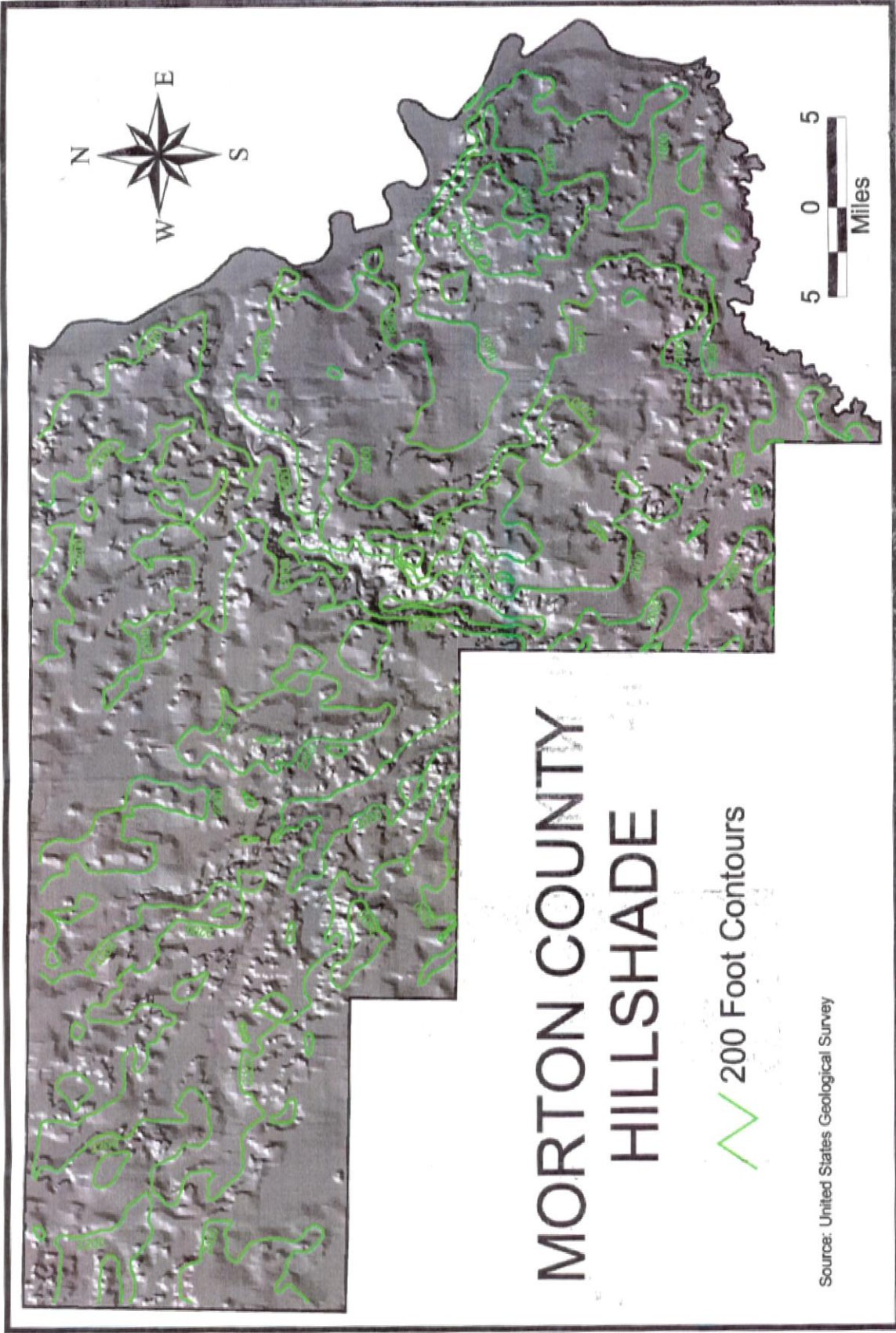
Heart River, the northwest branch of Cantapeta Creek, Rice Creek, Louse Creek, and Dogtooth Creek.

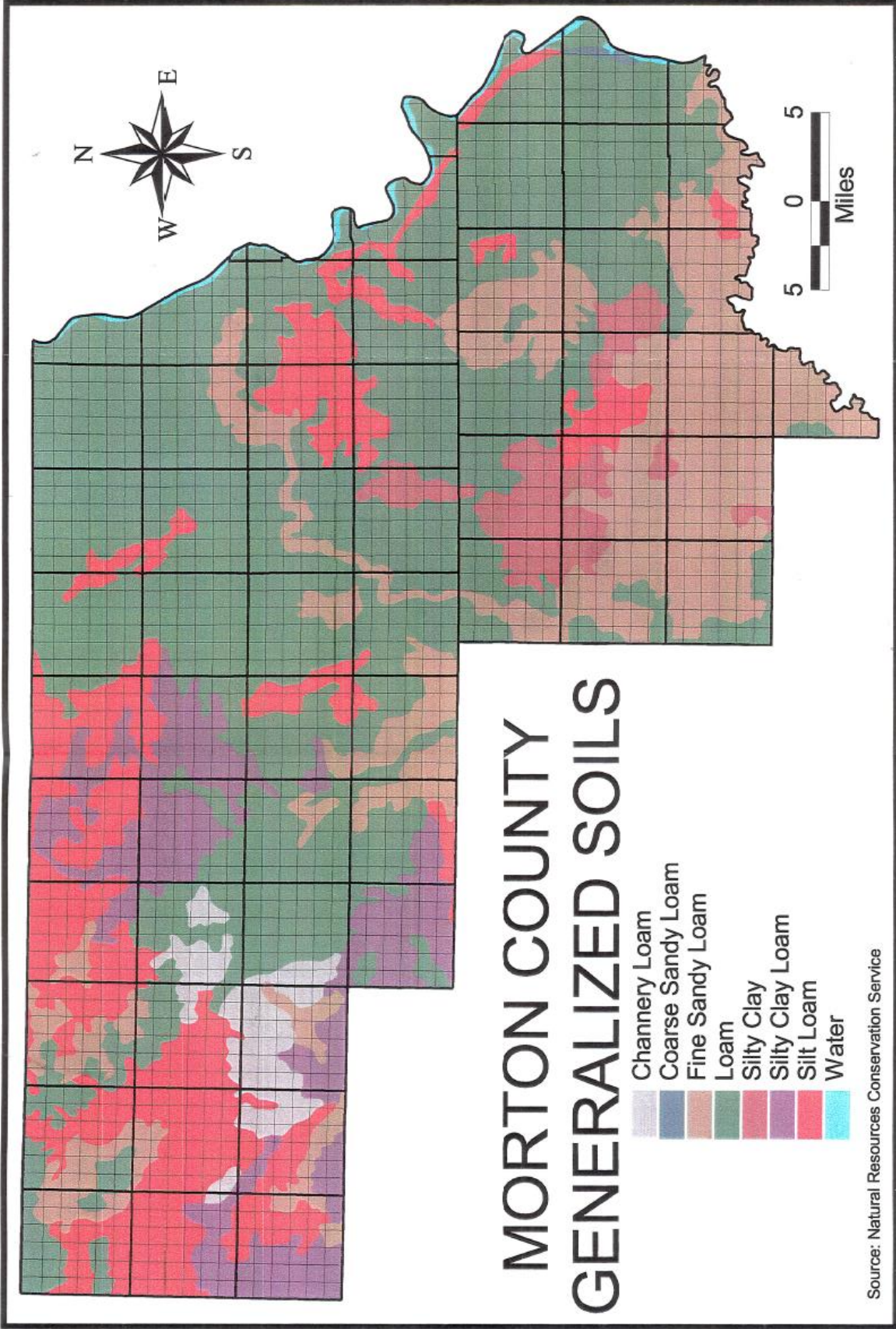
MORTON COUNTY is located on the east edge of the Williston Basin, a large structural depression extending from Canada to South Dakota. The basin contains sedimentary rocks from the Cambrian Period (570 to 500 million years ago) through the Quaternary Period (from 3 million years ago to present). Over 12,000 feet of sedimentary rocks underlie the west end of Morton County. Surface geology of the county consists of the Fox Hills, Golden Valley, Hell Creek, Cannonball, Sentinel Butte, and Ludlow Formations. Glacial till (Coleharbor Group) is preserved on upland surfaces in the eastern end of the county. Most soils of the county formed on the poorly consolidated sand, silt, and clay of these upper Cretaceous and Tertiary formations (from 100 million to 3 million years ago). Other soils formed atop glacial till and alluvium deposited after glaciation of the region (see Exhibit 2). Large deposits of “scoria” (clinker) are located in the west end of the county. These deposits formed as the result of heat from burning lignite coal veins found in the Sentinel Butte Formation.

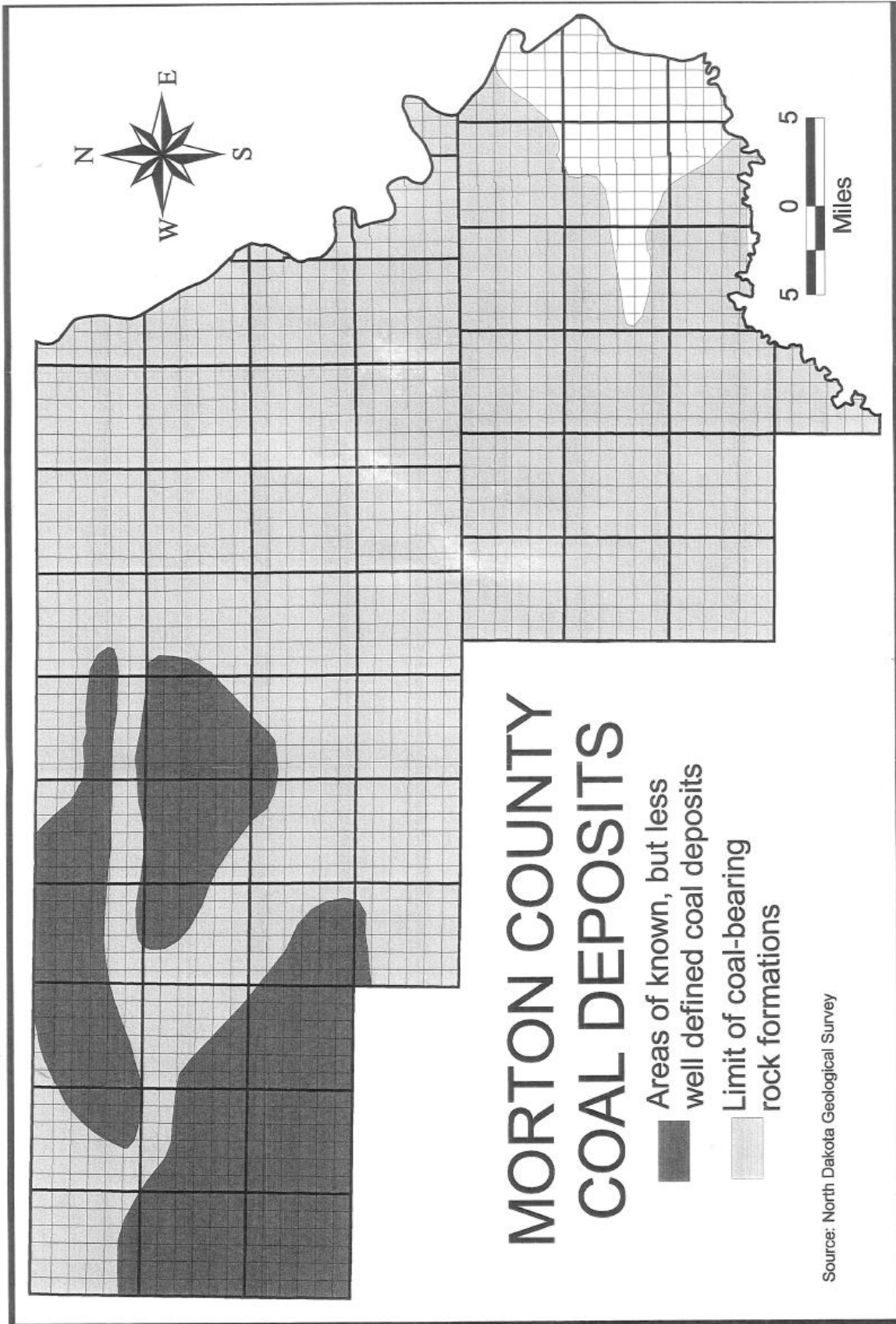
Lignite coal beds are located primarily in western Morton County and to a lesser extent in the eastern part of the county (see Exhibit 3). These beds are associated with the Ludlow and Sentinel Butte Formations. Most of these beds are not considered currently economically viable, although historically coal mining (both surface and subsurface) was extensive. Scoria was mined on a commercial level near Glen Ullin in the early 1900’s. Clay resources from the Golden Valley Formation are currently used in an economically viable brick making industry located in Hebron. Gravel for road building is also a mineral resource of the county.

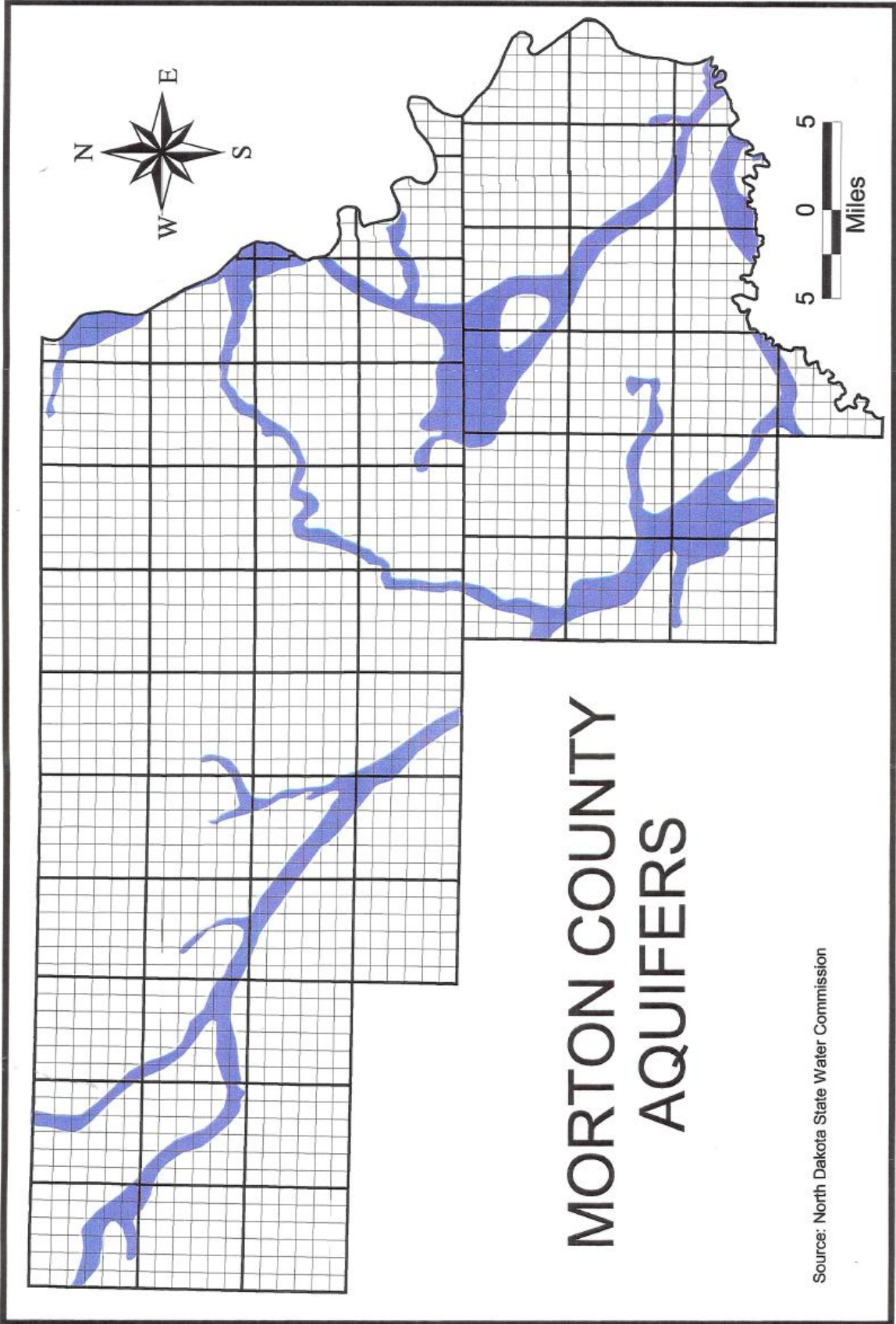
The most extensive underground aquifer in Morton County is the Fox Hills Aquifer. This aquifer is exposed in the southeast corner of the county and is located about 1,500 feet below the land surface in the northwest part (see Exhibit 4). Most groundwater in the county contains a fairly high concentration of minerals. Both the Hell Creek and Sentinel Butte Formations are considered to be of limited use in the county because these formations are either discontinuous or exposed at the land surface within the county. Water is generally available and suitable across the county for livestock consumption but not for large-scale

irrigation except in areas adjacent to the Heart River and Missouri River (see Exhibit 5). Large-scale irrigation has the potential to decrease water quality of aquifer recharge water because of increased levels of dissolved solids, including salt, in the recharge water.



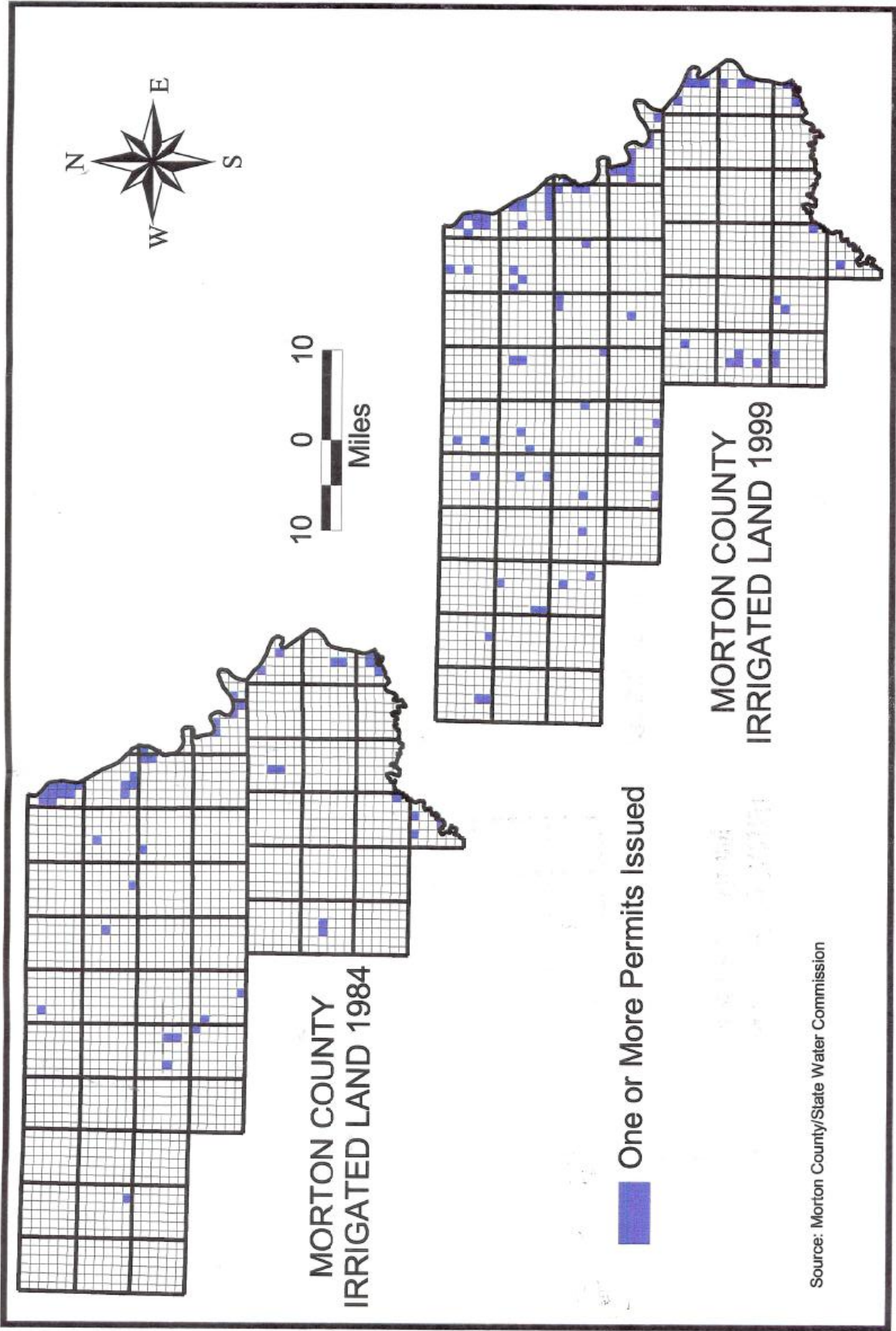






MORTON COUNTY AQUIFERS

Source: North Dakota State Water Commission



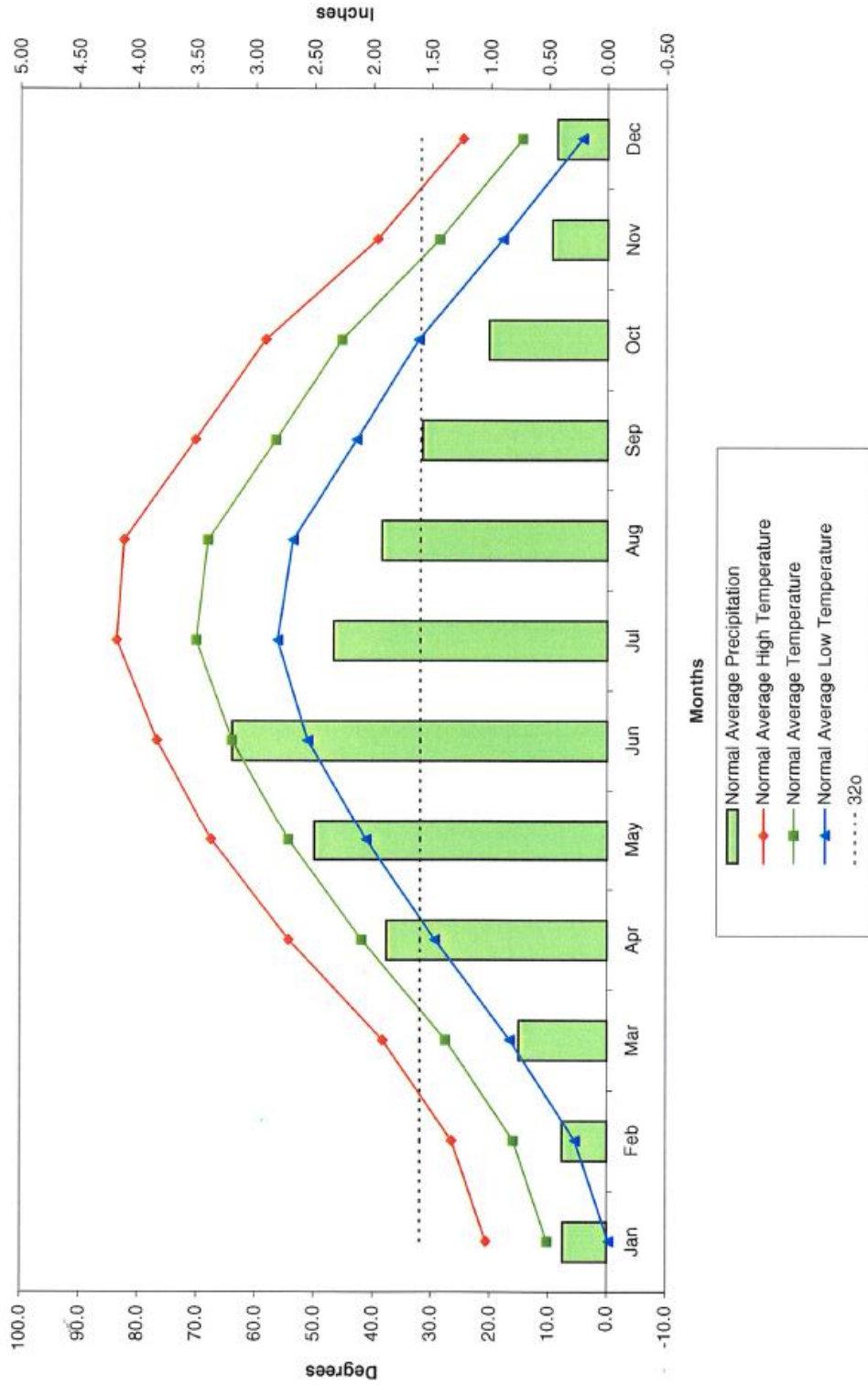
CLIMATE

MORTON COUNTY typifies the meteorological extremes and variability of the Northern Great Plains. The people of the area have shown an ability to adapt to those extremes. Morton County is often warm or even hot in the summertime. Occasional cool spells may be followed by very hot days when the temperatures exceed 100 degrees Fahrenheit. The winters are very cold, with surges of arctic air over the area. The climate offers one of the greatest ranges of temperature found on the North American Continent, varying in excess of 135 degrees in the course of a year from summer to winter. Occasionally temperature changes as great as 50 to 70 degrees may be observed within a 24-hour period. Severe weather events often may accompany such extreme changes including strong thunderstorms with severe wind or hail. Thunderstorms that dump up to 6 inches of precipitation in a short time are not unusual.

Records from the Automated Weather Data Network (ADWN) were used to develop the average temperatures and precipitation for Morton County over a 30-year period from 1961 to 1990. Data from recording stations at Carson, Center, Mandan, New Salem, Richardton, and Shields were all averaged. The results are plotted on the graph (see (Exhibit 6) in this section.

In July the normal average temperature is 70.0 degrees with a normal average low of 56.3 degrees and a normal average high of 83.6 degrees. In two out of 10 years the hottest temperature remains above 32 degrees. For 5 out of 10 years, the first frost below 32 degrees is earlier than September 21 and the first frost below 24 degrees occurs earlier than October 10. The average precipitation for the period from 1914 to 1993 was 15.76 inches per year. The annual average precipitation for Morton County from 1961 to 1990 was 16.86 inches. Precipitation ranges from an average minimum of approximately 12.6 inches per year to an average maximum of 18.7 inches per year.

Morton County Climate Summary 1961 to 1990



(Note: Average Annual Precipitation = 16.86")

NATIVE VEGETATION AND WILDLIFE

Native vegetation on rangeland in Morton County consists of a wide variety of grasses, forbs, shrubs, and trees. Dominant species remain constant when left undisturbed. However, when the site is disturbed by activities such as grazing, construction or mining, species composition changes as other plants invade the site. Some of the more common species include, but are not limited to, the following:

1.) Native grasses, legumes and herbaceous plants include:

Approximately 60 varieties of grasses, sedges, and worts, comprise the dominant native species of the prairie:

2.) Native wetland plants include:

Smartweed, wild millet, wildrice, saltgrass, cordgrass, rushes, sedges, and reeds

3.) Native shrubs include:

Plum, junberry, common chokecherry, silverberry, buffaloberry, sumac, sumac, western snowberry, leadplant amorphia, hawthorne, woods rose, fringed sage brush, and silver sagebrush

4.) Native Tree species include:

American elm, plains cottonwood, green ash, boxelder, bur oak, quaking aspen

5.) Some nuisance and exotic species include:

Leafy spurge, Canadian thistle, green and yellow pigeongrass, field bindweed, wild oats

Morton County's wide variety of habitat supports a number of fish and wildlife species.

Wildlife populations are currently lower than they were before the area was settled but habitat quality and diversity are still good. Although farming has reduced the area of natural rangeland habitat, farming has established a habitat for ring-necked pheasant and gray partridge, which are introduced species. Some other of the more common species include, but are not limited to, the following: sharp-tailed grouse, white-tailed deer, ducks, geese, herons, shorebirds, raptors, cottontail rabbit, fox squirrel, pronghorn antelope, mule deer, mink, raccoon, badger, striped skunk, red fox, coyote, muskrat and beaver. Fisheries include walleye, northern pike, white bass, crappie, catfish, perch, largemouth bass, small mouth bass, goldeneye, bluegill, and bullhead.

SOCIO-ECONOMIC CHARACTERISTICS

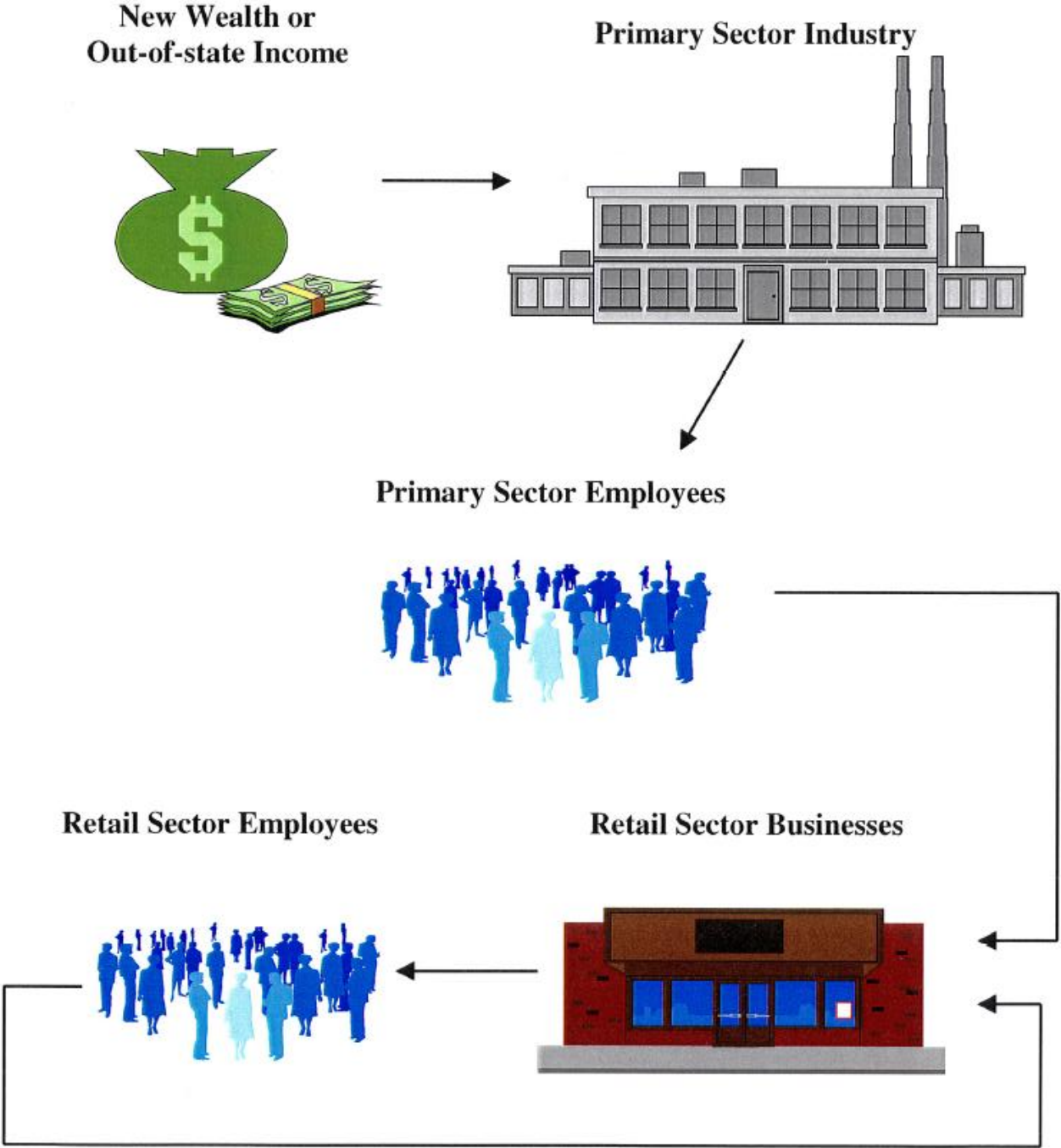
ECONOMY

Economic growth in Morton County is dependent on primary sector industries. Primary sector industries are those that export products or services to bring in new money from outside the area. Examples of these are the energy industries such as the Amoco Refinery, the Heskett Power Plant and the Dakota Gasification Plant and near Beulah. Many Morton County residents commute to to work at one of the nearby coal mines or power plants. Coal mining operations include the Freedom and Knife River mines near Beulah, the BNI Mine new Center, and the Falkirk Mine near Washburn. Export and manufacturing businesses located in Morton County include the agriculture and livestock industries, Hebron Brick, Cloverdale Foods, Concepts In Wood, Kohler Industries, North Country Thermal Line, and Dakota Country Cheese. Other businesses that could be considered primary sector businesses for Morton County include government services, hospitals, nursing homes, and auction barns. Tourism in Morton County also brings in a portion of outside capital.

A rapidly growing area of the primary sector economy in Morton County are the information technology (IT) businesses that export processed information. Examples of these are Pro Mart One, Impact Telemarketing, Laducer & Associates and North Central Data Cooperative.

Morton County realizes the importance of retaining and expanding existing primary sector business and attracting new primary sector business. Exports generated by primary sector businesses bring dollars back to the local area that are then used to purchase other goods and services within the County. It is these businesses that bring in new wealth that allow the other retail and service sector businesses to hire additional people and increase workers' wages. The economy of Morton County will grow in proportion to the value of its exported goods and services. The diagram on the following page (Exhibit 7) illustrates how dollars flow through a community.

Significance of the Primary Sector



The state and county primary sector economies are composed of six major categories. These categories are:

- Agriculture
- Federal Activities
- Tourism
- Energy
- Manufacturing
- Exported Services

Agriculture includes agricultural sales for final demand, including both grain and livestock. Also included in this sector are the transition payments provided by the Federal Agricultural Improvement and Reform Act.

Federal Activities include the transfer payments from entitlement programs such as Social Security as well as federal expenditures at the two air bases in the state and for highway construction funds.

Tourism includes those dollars spend on both “destination attractions” as well as other recreational activities.

The state and local energy sector includes the obvious coal and oil exports as well as local exports of anhydrous ammonia from the Dakota Gasification Plant near Beulah, finished products from the Amoco refinery, and electrical power from the Heskett Plant.

Manufacturing includes the normal manufacturing processes such as those non-energy manufacturers listed in the first paragraph of this section.

Exported Services includes information technology businesses such as the telemarketing and data processing businesses mentioned earlier in this section.

The percentages generated by five of the economic sectors for MORTON COUNTY and the State of North Dakota for the years 1985, 1990 and 1996 (1997 for the state) are illustrated by

the charts on the following page. Current data on Exported Services as a percentage of the state and local economy are unavailable because relatively new activity.

The state pie charts show that Tourism, Manufacturing and Federal Activities have increased through the 12-year period. Agriculture and Energy have not declined; they simply have not grown as rapidly in proportion to the other three sectors. The state's agricultural sector has actually grown by 3.8% (from \$3,928,485,000 to \$4,078,221,600) in constant 1996 dollars. The state's energy sector has grown by 9.0% (from \$1,336,588,000 to \$1,457,347,200) in constant 1996 dollars.

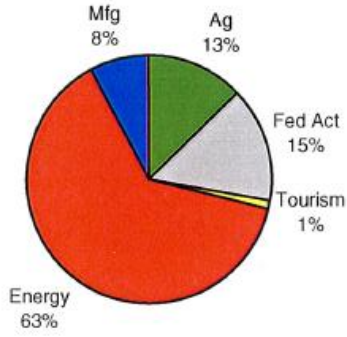
North Dakota contains an estimated 351 billion tons of lignite, the single largest deposit of lignite known in the world. North Dakota also contains an estimated 35 billion tons of economically mineable coal, enough to last for well over 100 years at the present rate of 32 million tons per year. As the demand for energy continues to increase, the value of this vast natural resource will also increase, lending stability to local economy.

Almost two-thirds of Morton County's economy is energy based. The County's economy has nearly paralleled the state for the last 10 years, with the exception of energy, which has played a larger role in the county. In order to protect the county from the economic impacts of large, uncontrollable swings in the worldwide oil market (influencing Amoco Refinery profits), it will be important to promote continued diversification of business and encourage efforts to upgrade facilities for tourism, and expansions of the information technology industry and export manufacturing.

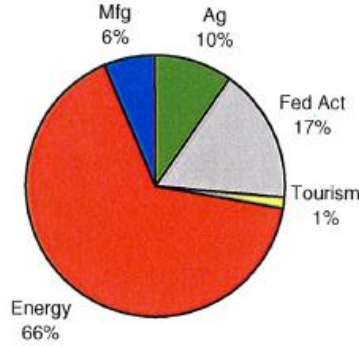
The agricultural sector is dominated by livestock, dairy products, and spring wheat. Morton County leads the state in the number of cattle and the number of milk cows. Nearly 75% of the farmland is devoted to livestock production. Of all land in production over 66% was for spring wheat. The balance of the cropland acreage was for corn, oats, barley, and sunflowers. The graph on the following page shows what percentage of each of those sectors MORTON COUNTY contributes to the state economy.

Proportional Allocation of Primary Sector Revenue by Industry for Morton County and North Dakota

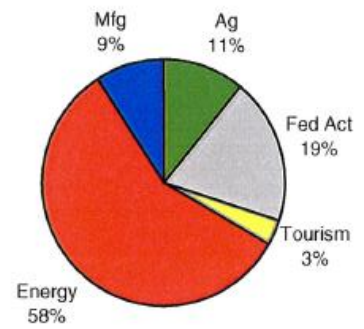
Morton County - 1985



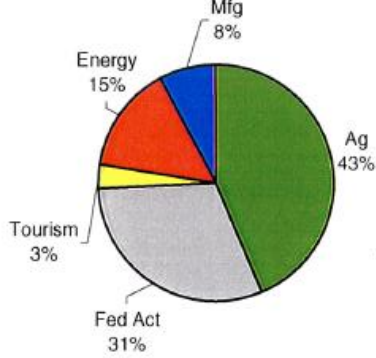
Morton County - 1990



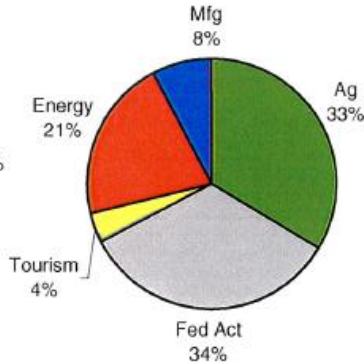
Morton County - 1996



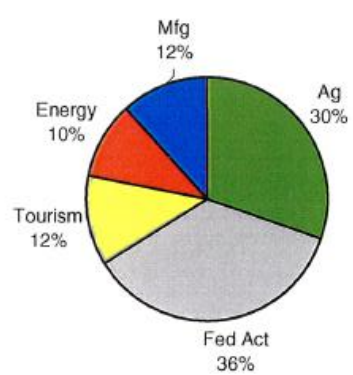
North Dakota - 1985



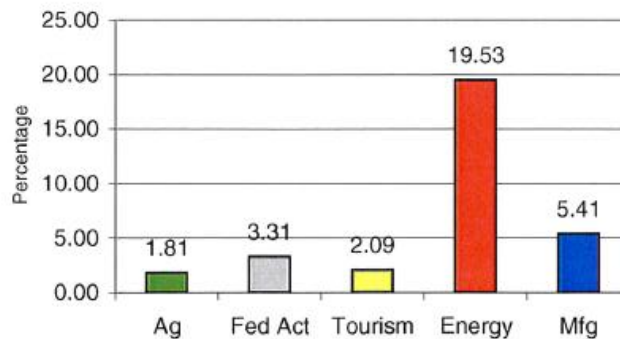
North Dakota - 1990



North Dakota - 1997



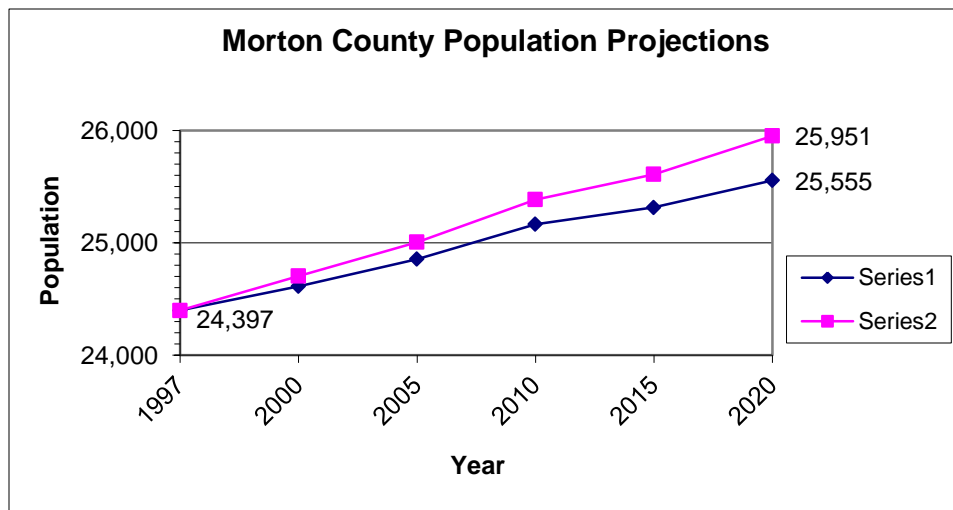
Morton County's Share
of the North Dakota Economy - 1996



POPULATION

Morton County population has grown over 20% in the last 60 years and the projections are for the county to continue to grow (see Exhibit 9). The growth has not been steady as can be seen in the population chart (see Exhibit 10). The City of Mandan has grown the most with the smaller cities staying nearly the same or with only slight declines. The rural areas have lost the most with over a 40% decline, however, the 1990's have shown a slight increase in the rural areas. Some of the same factors that are impacting the United States and North Dakota are also true for MORTON COUNTY. The number of farms continues to decline as farm sizes get larger. The size of families continues to get smaller, especially in rural areas. The population is aging. This is highlighted by the fact while the city of Mandan has grown during the last 20 years the number of students in school (public and private) has grown by only one! The shift from rural to urban is also a factor. Appendix C shows that this shift has been quite dramatic. In 1940 only 1/3 of the county population was "urban" with nearly 50% being rural. By 1990 the urban population was nearly 2/3 and the rural was less than 23%. The following population projections are from the North Dakota State Data Center.

Exhibit 9



There are two series of projections presented here. "They represent different migration scenarios in that the assumptions regarding births and deaths are the same for the two series. Series 1 was developed by applying the 1990 to 1997 county-specific migration rates by age and gender to the 1997 population estimates. The 1997 base population was segmented into

17 five-year age cohorts by gender and an 18th cohort representing the population above the age of 84. Series 1 reflects a moderated growth pattern.

Series 2 projections portray a more optimistic scenario. They were developed by adjusting downward the 1990 to 1997 migration rates by $\frac{1}{4}$. This series assumes that the state will recover from most of the losses during the last few years and sustain a modest growth pattern for the next 15 years. It also assumes that the state's economy will remain relatively healthy bolstered by the manufacturing, construction and service sectors¹.”

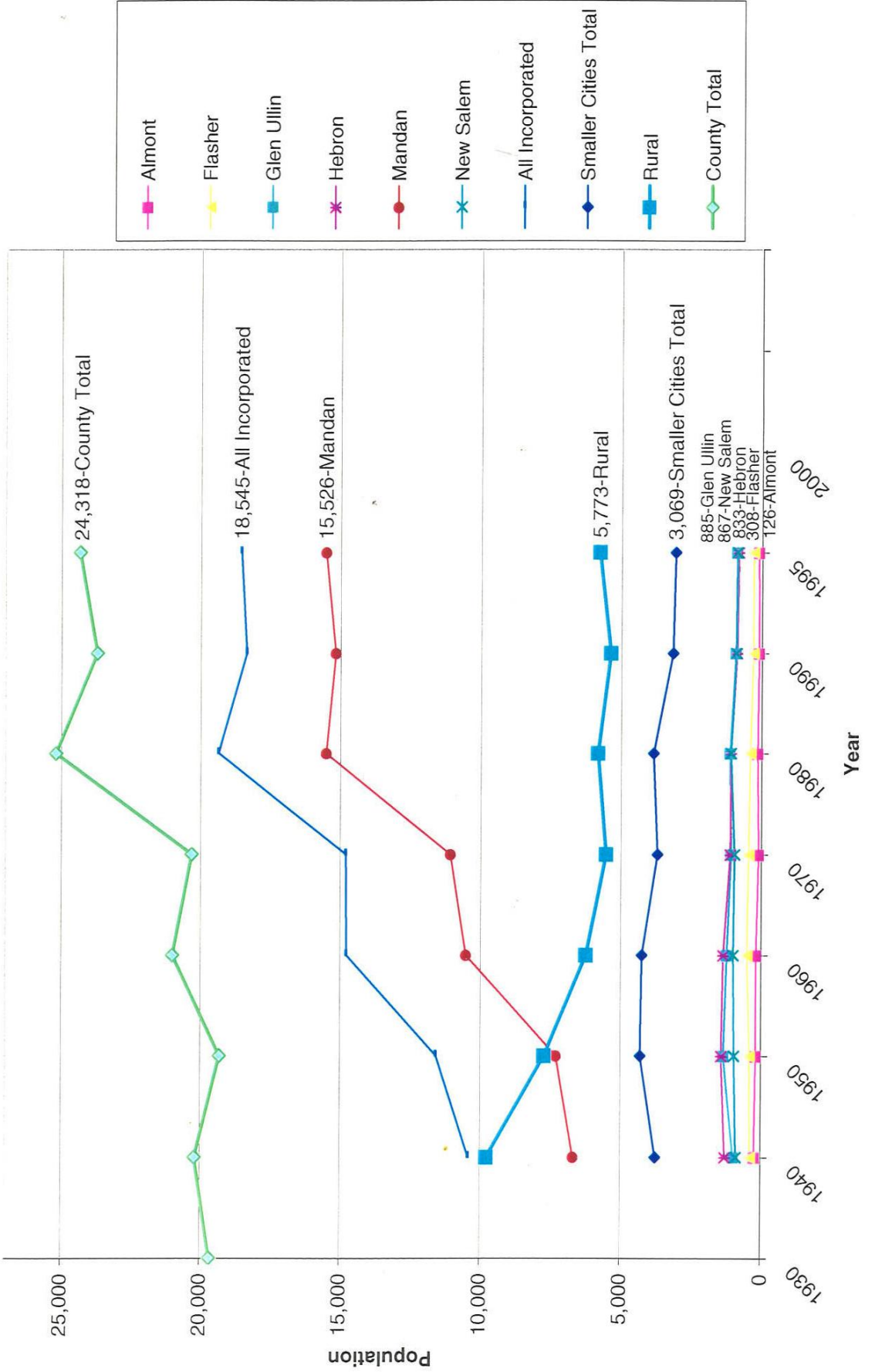
The projections to the year 2020 are linear extensions of the projections developed by the State Data Center for the years 2000 to 2015.

“Population projections are mathematical calculations which indicate the population that would result given specific assumptions persist throughout the projection period. Although information depicting North Dakota's resident population is relatively accurate, our ability to forecast changes in any socioeconomic or demographic process which may alter current population trends is tenuous at best. It is wise, therefore, to utilize these projections with caution. They should not be viewed as the sole element in planning or decision making, rather as only one tool in the process¹.”

¹North Dakota State Data Center

EXHIBIT 10

Morton County Population



CHAPTER III

LAND USE

In order to properly plan for and promote acceptable forms of physical development, it is necessary that the existing land use patterns within the county be identified and briefly discussed. Only in this manner can the public officials of Morton County hope to establish and maintain the proper relationships between existing and future land use types within the county. The existing land uses within Morton County are identified in the remainder of this chapter and Exhibit 11 illustrates their existing relationship within the county.

AGRICULTURAL LAND

Of all counties in the United States, Morton County ranks 60th in the number of acres of cropland. In 1997, Morton County had 565,363 acres (883 square miles) of cropland, according to the USDA Census of Agriculture. Cropland represents approximately half of the acreage of all agricultural land in the County.

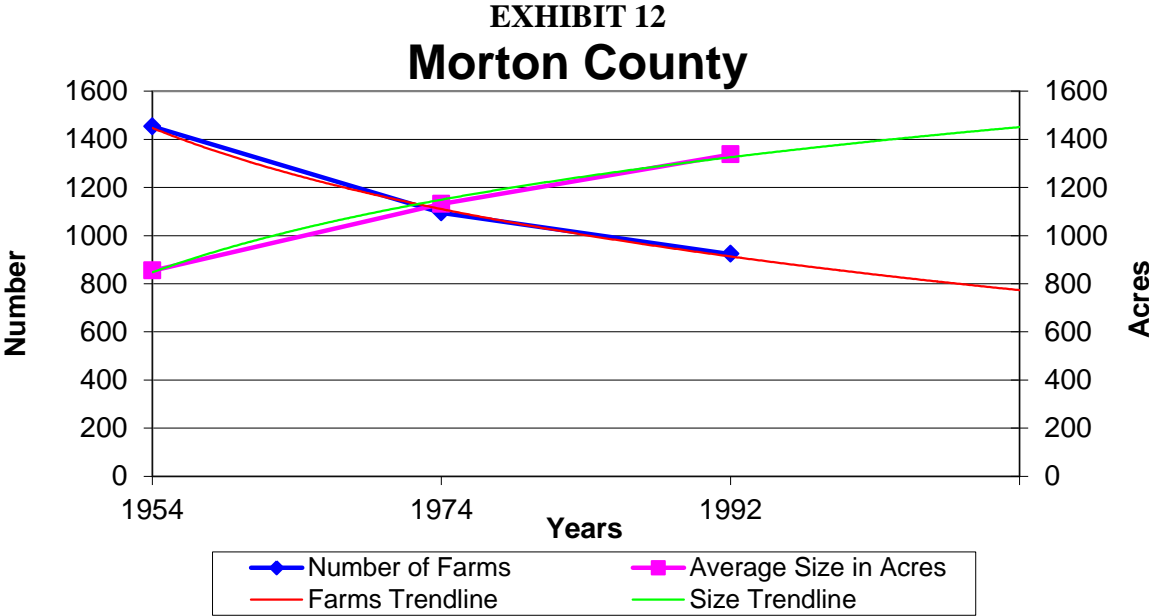
MORTON COUNTY FARMING IN 1997

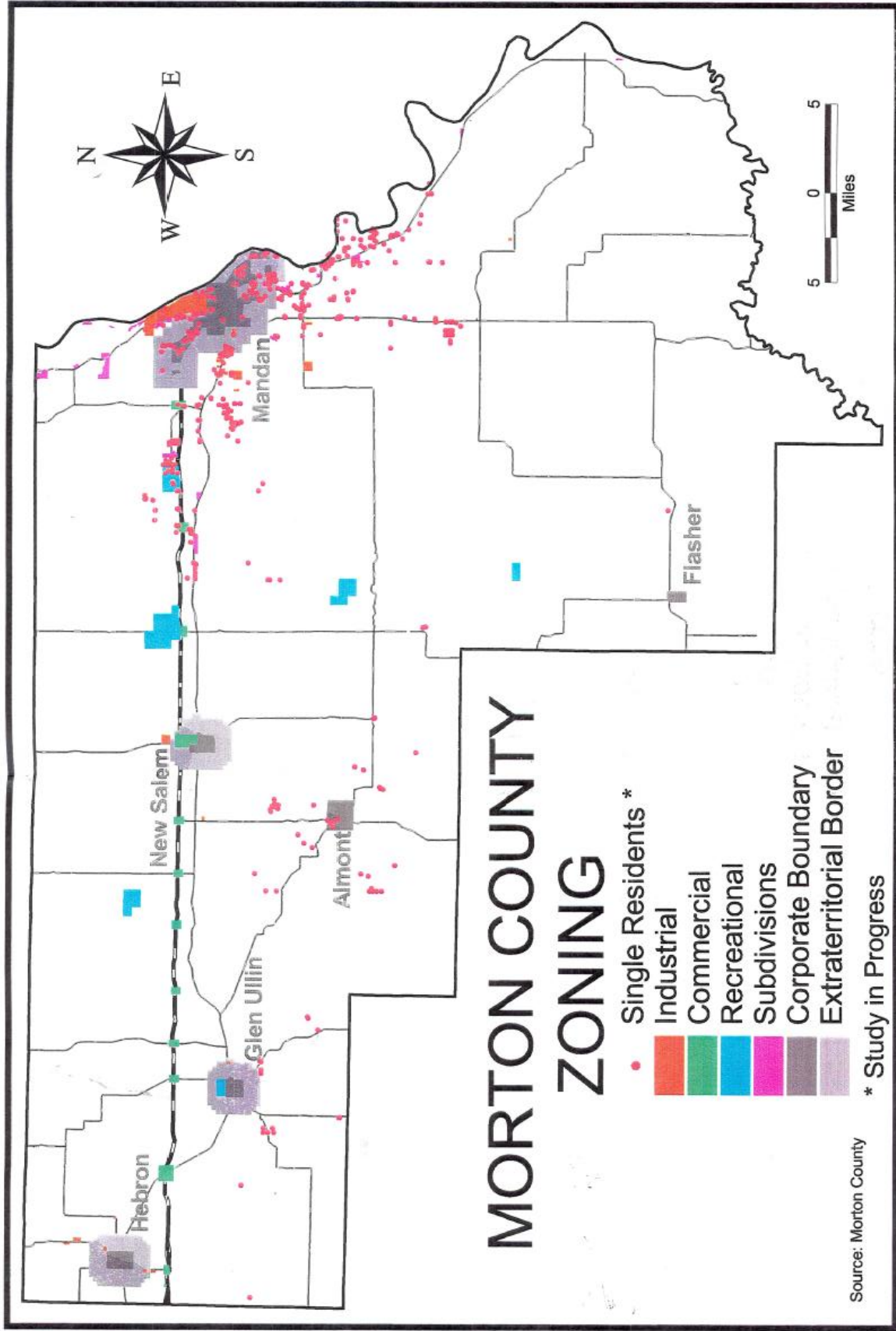
(USDA Census of Agriculture)

Total number of farms in Morton County	907
Total acres of farmland	1,228,774
Average size of farm (acres)	1,355
Median size of farm (acres)	775
Number of farms growing crops	788
Number of farms raising cattle	643
Acres of selected crops - relative percentage	
Corn for grain or seed	9,111 - 2%
Corn for silage	16,226 - 4%
Wheat for grain	186,398 - 46%
Barley for grain	30,554 - 7%
Oats for grain	23,799 - 6%
Sunflowers	8,311 - 2%
Hay	134,045 - 33%

In North Dakota, Morton County ranks first in the number of cattle raised as well as the number of milk cows. It is then not surprising that the county then also ranks first in the number of acres of silage harvested. The largest crop is spring wheat with 215,000 acres harvested in 1996. This ranks 18th in North Dakota.

The history of agriculture in Morton County dates back to the Native Americans who originally lived along the Missouri River and derived part of their diet from agriculture. The first European homesteaders were granted 160 acres to farm. As modern machinery replaced hand and oxen labor the farms started to increase in size because the original 160 acres was not large enough to maintain a family farm. Today family farms range in size from 640 acres to over 10,000 acres. Modern farming and ranching practices will continue to improve and family farms will continue to increase in size as the number of farms declines. The chart shows that the rate of decline in the number of farms will slow over the next decade.





URBAN LAND USES

The urban land uses in the county for the purposes of this plan comprise all commercial, industrial, residential, recreational and agricultural uses which take place within the incorporated municipalities of the county. The county has no zoning authority within these incorporated city limits or within cities' extraterritorial zones.

The reach and extent of a city's extraterritorial zoning authority is based on its population. State law has established that "A city may, by ordinance, extend the application of a city's zoning regulations to any quarter quarter section of unincorporated territory if a majority of the quarter quarter section is located within the following distance of the corporate limits of the city (NDCC 40-47-01.1).

- a. One mile if the city has a population of less than 5,000.
- b. Two miles if the city has a population of 5,000 or more, but less than 25,000.
- c. Four miles if the city has a population of 25,000 or more.

Of all the incorporated municipalities in Morton County, only one, Mandan, has a population of more than 5,000, allowing an extension of the extraterritorial zone to two miles beyond the corporate boundary. At the time of this printing, Mandan has not extended its extraterritorial zone beyond one mile but has plans to do so in the future.

One concern of extraterritorial zoning is that the County Board of Commissioners is obligated to represent the interests of the residents who pay County tax but they cannot do so for their constituents residing in the city's extraterritorial range. Another concern is that the County remains responsible for providing road maintenance and other services yet has no zoning authority to regulate development in the extraterritorial zone.

One solution would be to create a joint zoning board comprised of city and county representatives to share in decision making and guide development within the extraterritorial zones of the County. According to the Regional Environmental Assessment Program (REAP) approximately 4,400 acres of the county comprised this classification in 1976.

RESIDENTIAL LAND USES

Residential uses within Morton County are those land uses of a non-farm, residential nature occurring outside incorporated communities, in rural fringe corridors, near scenic or recreation areas and in the unincorporated villages located throughout the county. In recent years there has been a decided trend for people to build residences outside urban areas for the purpose of enjoying a rural environment with scenic views and wide-open spaces. Other factors contributing to increases in rural subdivisions have been improvements to the rural transportation system, the installation and subsequent extensions of a rural water distribution system, and the fact that farmers can make a greater profit by subdividing their land than by growing crops.

As growth in the rural sector continues, strict zoning and subdivision regulations should be enforced so as to ensure the most appropriate type of development possible. The county supports rural residential growth yet is obligated to promote orderly development.

COMMERCIAL LAND USES

Commercial areas in the rural sector of Morton County are located in relatively few areas throughout the county. In general, such areas are located on junctions of highways and cater to services and entertainment for motorists. The development of the interstate highway system promulgated several such areas in the county. Discretion must be used in approving further commercial areas, especially of the highway-strip variety, for they have a tendency of attracting rural residential developments as their adjacent uses.

With the rapid growth of information technology businesses, consideration should be given to those commercial uses which do not require the same level of public services and facilities as conventional commercial uses. Such new E-business activities may include more home occupations, telemarketing, and data processing.

INDUSTRIAL LAND USES

For the most part industrial uses outside the cities of Morton County include manufacturing plants, energy related industries, and sand and gravel operations. Because of the Mandan

Municipal Airport's separateness from that community, and the airport's incompatibility with adjacent residential development, due to aircraft activity and noise, that area is also classified industrial. In general, industrial uses are unusual in that they are considered compatible with few other uses of the land, therefore in planning for such uses, consideration must be given for appropriate open space or buffers to separate industrial uses from those of a commercial, residential or recreational nature.

The potential for further expansion of industry in the rural sector of Morton County can be enhanced by planning for new industrial locations and infrastructure. Currently, industrial zoned land is very limited in the County and new locations for industrial sites should be considered. Quick access to roadways of adequate strength, rail transport, and availability of water are some of the site selection factors.

If and when, the lignite resources within the county are mined, large tracts of land will undoubtedly be moved into the industrial classification. illustrates the approximate location of lignite reserves within the county that have been identified.

PUBLIC AND RECREATION LAND USES

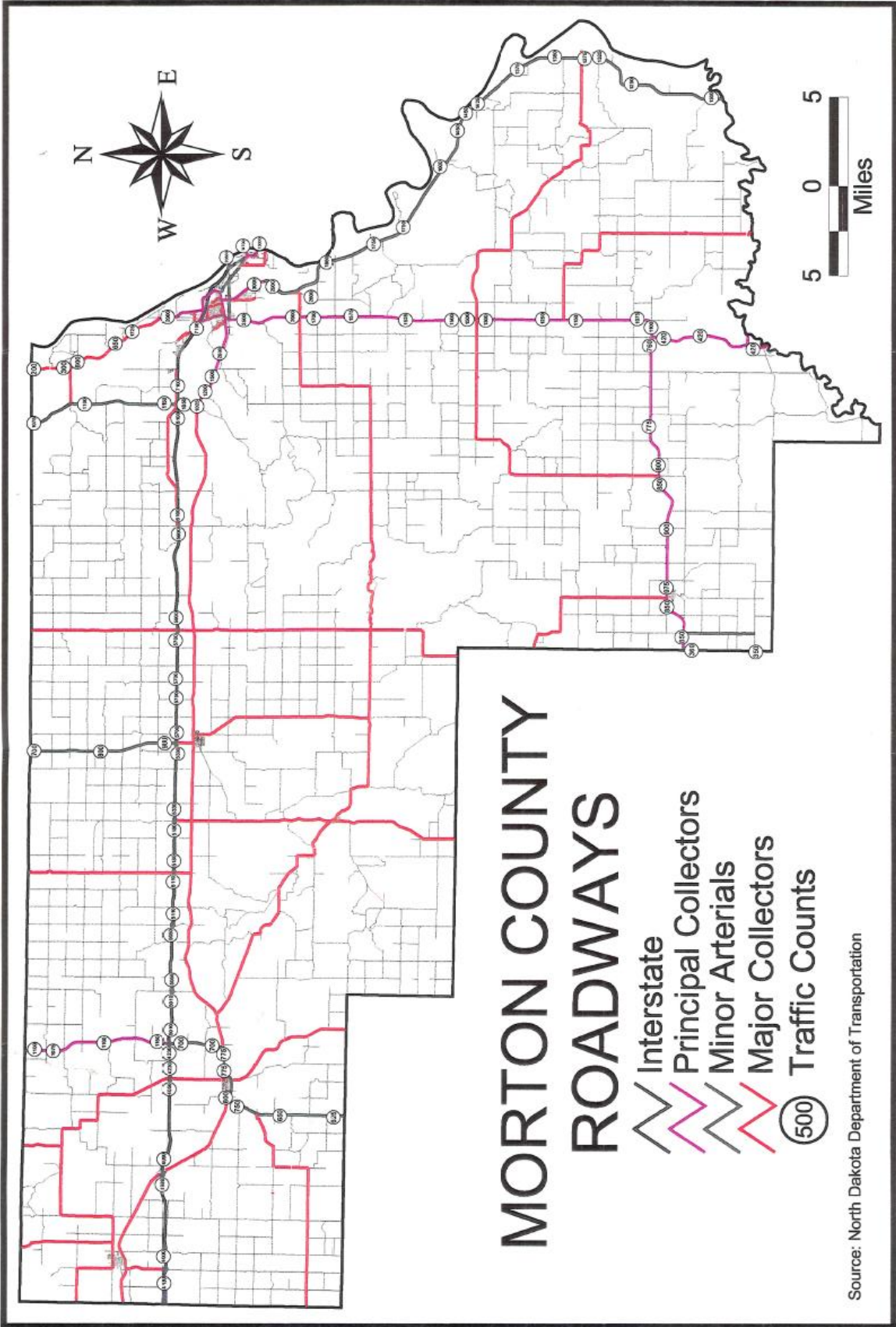
The land uses categorized under public and recreation areas designates those areas throughout the county owned, managed or leased by either state, federal or local government for the purposes of promoting recreation, leisure-time activities, game management, waterfowl production or for the preservation of historical, scenic, archeological, or natural areas. Such areas as the Fort Lincoln State Park and the Northern Great Plains Experiment Station are also included within this classification. A detailed inventory of not only county but municipal parks and recreation areas is presented in Appendix D.

Public park and recreational areas only account for approximately 10,000 acres⁷ within the county, but contain some of the most varied scenic, historical and wooded areas the county has to offer. These areas include most notably large sections of the Missouri River Valley and game management areas throughout the county. Recreational dwellings are becoming popular in or near such areas and pose a definite threat to their fragile environments.

⁷ The total acreage for park and recreation areas does not include municipal parks, surface water acres on any rivers within the county, nor does it include the lands comprising the Agricultural Experiment Station in the county. (See Appendix D)

TRANSPORTATION

As are other rural counties, Morton County is very dependent on its transportation network for the provision of goods and services. The county highway system and the county (farm-to-market) roads are especially important to the agricultural sector for they represent the only means for getting produce to the market areas. Exhibit 14 identifies the primary transportation routes in the county and their relationship to the county's incorporated communities.



CHAPTER IV
COUNTY LAND USE GOALS, OBJECTIVES, AND POLICIES

The State of North Dakota allows counties to establish and enforce zoning regulations for the purposes of promoting health, safety, morals, public convenience, general prosperity, and public welfare. The zoning regulations must be made in accordance with a comprehensive plan. The purpose of the comprehensive plan is to establish standards for the county by setting forth explicit goals, objectives, and policies.

To guide decisions on planning and zoning matters; goal statements identify conditions that are desired in Morton County. Objectives comprise rather general avenues of approach which, when satisfied, will lead to ultimate achievement of the goal statements. Policies are specific guidelines for action to help meet the objectives and thus get closer to achieving the goals. All decisions made regarding planning and zoning should be made with consideration of these goals, objectives and policies.

Goal 1:

Protect and guide the development of non-urban areas.

Objectives

- 1.a Discourage incompatible land uses from locating in close proximity to one another and implement buffer zones when appropriate.
- 1.b Support adequate and proper enforcement of existing zoning ordinances, subdivision regulations, and building codes by the County Zoning Compliance Officer.
- 1.c Encourage the development of the flood plain for parks, recreation and agricultural use and discourage residential development there.
- 1.d Encourage non-farm, residential growth and development to occur within designated rural-residential growth zones.
- 1.e Provide that designs of roads and streets allow for extension to existing roads and streets and that future developments comply with the county's standard design and construction specifications.
- 1.f Requires designs for water and sewer systems that allow for extension to existing and future developments within the growth corridor and that comply with current design and construction standards.
- 1.g Assure minimum front, side, and rear yard setback requirements for the purposes of: allowing for a safe separation between the home and traffic, for allowing cars to park in driveways without blocking sidewalks, for allowing future widening of the roadway, for allowing adequate room for snow removal, for allowing space between buildings for access by fire equipment, for airflow and sunlight, space for building maintenance, open space and privacy.
- 1.h In accordance with modern and evolving principles of subdivision planning and development, promote flexibility, economy, and ingenuity in the location, layout, and design of subdivisions.
- 1.i Promote proper design, construction, and maintenance standards through the comprehensive subdivision plat review process.
- 1.j Promote an increased awareness among subdivision residents of their covenants by supporting acquisition and distribution of covenant information.

Policies

- 1.a Evaluate new development and zoning proposals for conformance with the goals, objectives, and policies of the Morton County Comprehensive Plan.
- 1.b Review the Comprehensive Plan, Zoning Regulations, and Zoning Map on a periodic basis. Make revisions and updates as needed to keep in pace with progress and changing circumstances in the County.
- 1.c Create new zoning districts and revise existing zoning district definitions to establish a clear understanding of the allowable uses within each district.
- 1.d Establish clear procedures to be followed in carrying out the enforcement of zoning ordinances, subdivision regulations, and building codes and the prosecution of violators.
- 1.e Encourage developers to prepare subdivision master plans for areas to be developed incrementally.

Goal 2:

Conserve and develop natural resources and restrict uses adversely affecting air quality, water quality, land quality, noise levels, and aesthetics.

Objectives

- 2.a Maintain adequate levels of water quality and availability throughout the county.
- 2.b Prevent rural areas from becoming dump grounds for uses not wanted elsewhere.
- 2.c Prevent soil erosion and save topsoil by encouraging: stormwater management plans for subdivisions; stormwater facilities of adequate size and design; establishing vegetation in bare areas, disturbed areas and drainage swales; and through the implementation of other appropriate land management practices.
- 2.d Ensure the preservation of rural water table by discouraging high-intensity non-farm development and water usage in agricultural areas.
- 2.e Promote the establishment of rural water distribution systems in the county.
- 2.f Lessen the chance of groundwater pollution or excessive nutrient enrichment by requiring that lots, unable to be tied into sewer and water facilities, be in compliance with local and state codes.
- 2.g Develop reasonable zoning regulations to guide the development of proposed animal feeding operations and expansions of existing animal feeding operations to insure compatibility among adjacent land uses and to preserve water quality.
- 2.h Encourage enforcement of the existing weed controls and regulations.
- 2.i Enhance the attractiveness of residential areas by preventing junkyards, other unsightly industries and incompatible uses from locating in or near such neighborhoods. When necessary, use buffer zones or barriers to separate existing conflicting uses.

Policies

Evaluate proposed developments and changes to existing developments by asking the questions: How will the proposed change affect the following vital environmental concerns:

- 1) Water quality?
 - a) Will the change generate discharges?

- b) Will the change use groundwater, how much?
- 2) Air quality?
 - a) Will the change generate emissions?
 - b) Will the change generate odors?
 - c) Is the change located near existing odor or emission producing land uses?
- 3) Topsoil preservation?
 - a) Will the change result in erosion?
 - b) Will measures be taken to prevent erosion?
- 4) Noise?
 - a) Will the change create noise or vibrations?
 - b) Is the change located near existing noise producing land uses?
- 5) Aesthetics?
 - a) Will the change detract from the surrounding view?
 - b) Is a barrier or screening needed?

Goal 3

Plan and provide for needed public facilities and services in order to promote public health, safety, and welfare including provisions for emergency management.

Objectives

- 3.a Prohibit uses which threaten the physical well being of residents due to flood hazards, fire, erosion, subsidence or other avoidable areas.
- 3.b Require that storm drainage structures and flood controls (such as detention ponds and drainage ways) be constructed where needed to prevent damage from flooding, stormwater runoff, and snowmelt.
- 3.c Assure that utilities meet established health and safety standards.
- 3.d Make sure access points on major roads are limited and spaced properly so as to not create interference with traffic flow by encouraging the construction of frontage roads where appropriate.
- 3.e Maintain clear driving sight lines.
- 3.f Provide sufficient off-street parking.
- 3.g Heavy industrial or commercial developments should be encouraged to locate on primary roadways.
- 3.h Develop and maintain a roadway system that minimizes barriers to the movement of agricultural equipment or products.
- 3.i Protect residential areas from heavy through traffic.
- 3.j Promote consolidation of city and county contractual services as much as possible.

Policies

Evaluate proposed developments and changes to existing developments by asking the questions:

- 3.a Will the proposed change endanger, in any way, the physical well being of citizens due to floods, fire, erosion, subsidence, or other avoidable dangers?
- 3.b Is the proposed change in compliance with the County Flood Plain Regulations? (Article 12 of County Zoning Regulations)

- 3.c Will the proposed change intensify traffic in a manner which results in congestion and traffic hazards?
- 3.d Will the impact of the proposed change increase the burden and cost of local government (i.e. sewer and water, police and fire protection, schools, street and highway maintenance) without an equivalent increase in revenues?
- 3.e Is there adequate, all weather, and emergency access to the site for public and private use?
- 3.e Develop a transportation plan for the county to be done in conjunction with existing municipalities within the county (update annually).
- 3.f Promote joint review by city and county of any proposed development within cities' extraterritorial zones.
- 3.g Promote shared use of utility locations by providing a copy of proposed plats to each utility (i.e. rural water, power, TV cable, gas lines, phone lines).
- 3.h Develop a (five-year) county capital improvement program to be updated annually.

Goal 4

Provide adequately for meeting the recreational and leisure time needs of the public.

Objectives

- 4.a Preserve and enhance the historic, scenic, recreational and valuable natural and wildlife areas in the county.
- 4.b Develop recreational areas which are accessible by the entire public including the elderly and the physically handicapped.
- 4.c Promote tourism by enhancing local features of interest and conserving the natural beauty of the area.
- 4.d Encourage special provisions for the acquisition and protection of scenic easements within the county.
- 4.e Develop public access to rivers and lakes.

Policies

- 4.a Provide for adequate recreation areas, and open space by including park or playground dedications for subdivisions (land or fees in lieu of land transfers) after careful consideration of the suitability and long-term maintenance of the site.
- 4.b Evaluate proposed developments and changes to existing developments by asking the following questions:
 - 4.c How will the proposed change affect scenic areas?
 - 4.d How will the proposed change affect historic sites or landmarks?

Goal 5

Protect the economic base of the county through the retention and expansion of existing businesses. Continue to encourage diversification of the economic base by attracting new primary sector businesses.

Objectives

- 5.a Maintain cooperation with and enhancement of the energy industries.
- 5.b Promote the protection of agriculture and the development of value-added agricultural products industries.
- 5.c Promote the expansion of existing manufacturing.
- 5.d Promote the development of exported services businesses such as telemarketing and data processing.
- 5.e Promote expansion of the tourism industry.

Policies

- 5.a Work with economic development agencies, chambers of commerce, and other business people and groups to identify locations and areas suited for proposed developments.
- 5.b Assist developers in liaison with business and property owners in finding properties and locations suited to their plans.
- 5.c Within the scope and confines of this plan, encourage and assist in the location and development of businesses which offer new, well-paying jobs to the people of Morton County.

Goal 6

Promote greater participation by the general public in the decision making process.

Objectives

- 6.a Maintain a continuing program of public information in order to keep the planning goals of the county constantly before the eyes of the public.
- 6.b Continue to solicit public input and involvement regarding land use decisions and in plan or ordinance preparation or update.
- 6.c Make all important documents available for review by the public.
- 6.d Develop clear and understandable procedure for changes and amendments to plans as well as ordinances.

Policies

Make sure all proceedings follow the required publication and hearing processes.

CHAPTER VI

PLAN IMPLEMENTATION

This chapter purpose is to identify those measures necessary to insure implementation of the comprehensive land use plan through proper execution of the planning process at the county level. Although these mechanisms have been touched on briefly in previous chapters, they will be discussed in much greater detail in this chapter.

IMPLEMENTATION

The initial steps to effective implementation of the plan occur when all necessary revisions of the plan have been made and the document is officially adopted by the Morton County Planning Commission according to the procedures set forth in the North Dakota Century Code. Following adoption of the plan, proper implementation is dependent upon a variety of mechanisms available for such implementation. Such mechanisms as proper zoning enforcement, control of subdivisions, and enforcement of building codes which, when done in conjunction with the recommendations mentioned in the preceding chapter, can promote well planned growth and development at the county level. Such a plan can only serve as a general framework for decision making and policy development when the following tools are available and put to proper use.

ZONING

Preparation of the comprehensive plan should serve as the foundation for the zoning ordinance. The responsibility for this preparation, according to the North Dakota Century Code, lies with the County Planning Commission. State statutes recognize zoning as the principle method for achieving orderly growth. These statutes also exclude agricultural activity and incorporated municipalities from county zoning regulations.

The County Planning Commission, as the designated legal authority for administering and enforcing zoning ordinances. And subdivision regulations, must base its land use decisions-on well-defined-criteria.

Generally, there are two such sources for that criteria--the county comprehensive plan and five specific purposes adopted by the North Dakota Legislature which establishes county zoning in order to promote health, safety, morals, public convenience, general prosperity, and general welfare. These five purposes which follow should serve as the general-guide for review of zoning changes or other land use proposals. The applicant or advocate of change would need to offer convincing evidence that the proposed change is in compliance with this guide and the comprehensive plan.

Purpose #1 "To protect and guide the development of non-urban areas."

- 1) Is the proposed change consistent with the comprehensive plan?
- 2) Is the proposed change a logical extension of existing ordinances?
- 3) Is the proposed change compatible with existing land uses on adjacent property?
- 4) How will the proposed change affect both adjacent and county wide property values?
- 5) How will the proposed change affect the existing transportation network within the county?
- 6) Does the change reinforce present development where substantial public and private investment already exists?

Purpose #2 "To secure safety from fire, flood and other dangers."

- 1) How will the proposed change affect the following vital environmental concerns?
 - a) water quality
 - b) air quality
 - c) noise
- 2) Will the proposed change endanger, in any way, the physical well-being of citizens due to floods, fire, erosion, subsidence, or other avoidable dangers?
- 3) Will the proposed change intensify traffic in a manner which results in congestion and traffic hazards?

Purpose #3 "To regulate and restrict erection, construction, or use of buildings and structures, the height, number of-stories, and rise of buildings and structures, the percentage of lot area that may be occupied, the size of court yards and other open spaces, the density of

population, and the location and use of buildings, structures and land for trade, industry, residence or other purposes."

- 1) Is the appropriate technique (i.e. rezoning, planned unit development, sub-division, conditional use, variance, etc.) being used to obtain the desired land use?
- 2) Is the proposed change in accordance with the zoning ordinance requirements regarding procedures, notices, etc.?

Purpose #4 "To lessen governmental expenditures."

- 1) Will the proposed change overload existing public facilities?
- 2) Will the impact of the proposed change increase the burden and cost of local government (i.e. sewer and water, police and fire protection, schools, street and highway maintenance) without an equivalent increase in revenues?
- 3) If increased revenues as a result of the proposed change are anticipated, when will this revenue be realized and can governmental units meet immediate needs if it is not readily available?
- 4) Will the proposed change result in an unnecessary spread of development adding to governmental expenditures?
- 5) How will the proposed change affect property values and the local tax base?

Purpose #5 "Conserve and develop natural resources."

- 1) Will this change result in the removal of good agricultural land or potentially irrigable lands for production?
- 2) What effect will the proposed change have on the valuable soil base?
- 3) How will the proposed change affect efforts to conserve area water resources?
- 4) Will the proposed change hinder future development of sand, gravel, coal, oil or other mineral resources?
- 5) How will the proposed change affect the following:
 - a) scenic areas?
 - b) historic sites or landmarks?

SUBDIVISIONS

Subdivision regulations generally affect the conversion of undeveloped land. The regulations mainly address those initial and long term improvements--streets, sewer, and water main locations, widths and standards for these improvements, park and school site locations, and lot size-- affecting the character of the subdivision and the provision of public services. The regulations insure that the interest of the public as well as the purchaser and developer of the land are properly protected. Such regulations also foster a beneficial pattern of development conforming with the goals of the comprehensive plan.

Established subdivision procedures require that a plat of the proposed subdivision be submitted to the Planning Commission for their review. There, approval or disapproval is based upon compliance with the standards set forth in the subdivision regulations and assures that the cost of public improvements is split equitably between new residents and taxpayers. The regulations will also result in new development which meets the standards set forth in the zoning ordinance.

APPENDIX A

**Morton County Climate Data
1961 to 1990
(for Exhibit 6)**

	January	February	March	April	May	June
Normal Average Precipitation	0.38	0.38	0.76	1.89	2.50	3.20
Normal Average High Temperature	20.7	26.6	38.3	54.4	67.5	76.8
Normal Average Temperature	10.2	16.0	27.5	41.9	54.3	64.0
Normal Average Low Temperature	-0.3	5.4	16.6	29.4	41.2	51.1

	July	August	September	October	November	December	Average Annual
Normal Average Precipitation	2.34	1.93	1.58	1.01	0.48	0.43	16.86
Normal Average High Temperature	83.6	82.4	70.3	58.4	39.4	24.8	
Normal Average Temperature	70.0	68.0	56.6	45.4	28.7	14.6	
Normal Average Low Temperature	56.3	53.7	42.9	32.3	18.0	4.3	

APPENDIX B

**Economic Data
(for Exhibit 8)**

Sales for Final Demand

	1996 Dollars			% Change 1985-1996
	1985	1990	1996	
Morton County	552,200,000	702,300,000	653,400,000	18.3
Region 7	1,753,300,000	2,585,600,000	2,770,400,000	58.0
North Dakota	9,031,000,000	10,739,500,000	11,752,800,000	30.1

Sector Share of Total, 1996

	Ag	Fed Act	Tourism	Energy	Mfg
Morton County	10.8	19.1	3.4	57.6	9.1
Region 7	16.7	26.2	6.5	44.3	6.3
North Dakota	34.7	33.6	9.5	12.4	9.8

Sector Share of Total, 1990

	Ag	Fed Act	Tourism	Energy	Mfg
Morton County	9.6	16.8	1.3	65.9	6.4
Region 7	16.3	26.5	2.8	49.2	5.2
North Dakota	33.6	33.6	3.9	21.1	7.8

Sector Share of Total, 1985

	Ag	Fed Act	Tourism	Energy	Mfg
Morton County	12.8	15.0	1.2	63.1	7.9
Region 7	26.9	25.7	2.5	39.5	5.4
North Dakota	43.5	30.6	3.4	14.8	7.7

APPENDIX C

Morton County Population
1880 to 2020
(for Exhibits 9 and 10)

Community	1880	1890	1900	1910	1920	1930	1940	1950	1960
Almont							232	190	190
Flasher							387	413	515
Glen Ullin							976	1,324	1,210
Hebron							1,267	1,412	1,340
Mandan							6,684	7,298	10,525
New Salem							875	942	986
Small comm total							3,737	4,281	4,241
Total Incorporated							10,421	11,579	14,766
Unincorporated							9,763	7,716	6,226
Morton County	200	5,239	10,277	25,289	18,714	19,647	20,184	19,295	20,992
County (series 1)									
County (series 2)									
Region 7 Area									106,491
North Dakota	36,909.00	190,983.00	319,146.00	577,056.00	646,872.00	680,845.00	641,935.00	619,636.00	632,446.00

Community	1970	1980	1990	1995	2000	2005	2010	2015	2020
Almont	109	146	117	126					
Flasher	467	410	317	308					
Glen Ullin	1,070	1,125	927	885					
Hebron	1,103	1,078	888	833					
Mandan	11,093	15,513	15,177	15,526					
New Salem	943	1,081	909	867					
Small comm total	3,692	3,840	3,158	3,069					
Total Incorporated	14,785	19,353	18,335	18,545					
Unincorporated	5,525	5,824	5,365	5,773					
Morton County	20,310	25,177	23,700	24,318					
County (series 1)				24,318	24,612	24,854	25,165	25,315	25,555
County (series 2)				24,318	24,704	25,006	25,384	25,609	25,951
Region 7 Area	104,207	124,693	124,097		124,128		122,744		
North Dakota	617,792.00	652,717.00	638,800.00	641,344.00					

APPENDIX D

Morton County School Enrollments

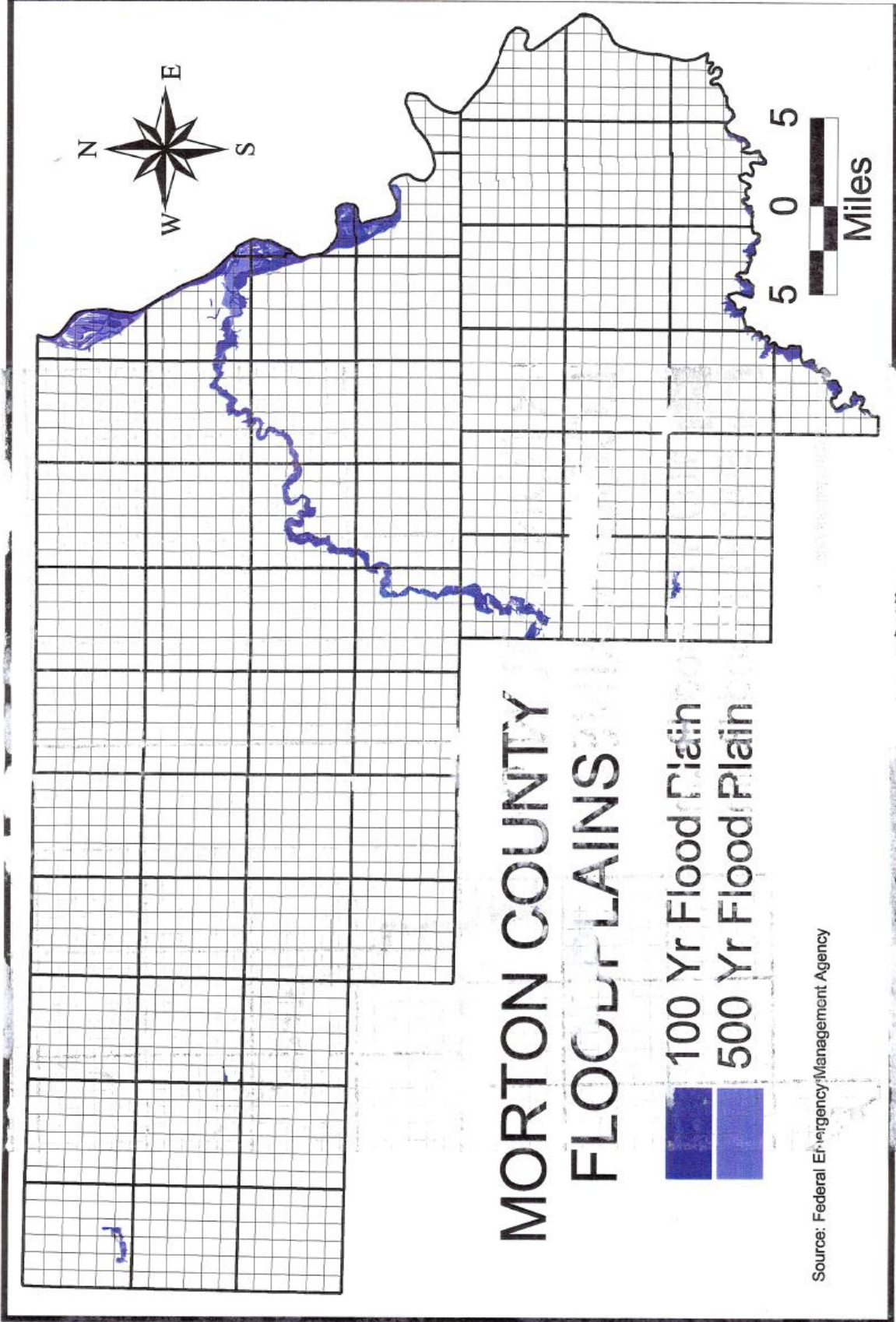
School District	1979-1980	1999-2000	Percent Change
Sims #8 (Almont)	76	35	-53.9%
Flasher #39	316	263	-16.8%
Glen Ullin #48	387	251	-35.1%
Hebron #13	335	200	-40.3%
Mandan #1	3140	3621	15.3%
Sweet Briar #17 (Mandan)	7	12	71.4%
New Salem #7	452	389	-13.9%
Little Heart #4 (St. Anthony)	36	30	-16.7%
Christ the King Elem Sch #409	757	120	-84.1%
St Joseph Elem Sch #410		111	+
Immanuel Christian Sch #421		46	+
Total Mandan Schools	3897	3898	0.0%
Total Rural Schools	1609	1180	-26.7%
TOTAL PUBLIC/NON-PUBLIC	5506	5078	-7.8%
Marmot Schools #800 (State)	40	361	802.5%

APPENDIX E

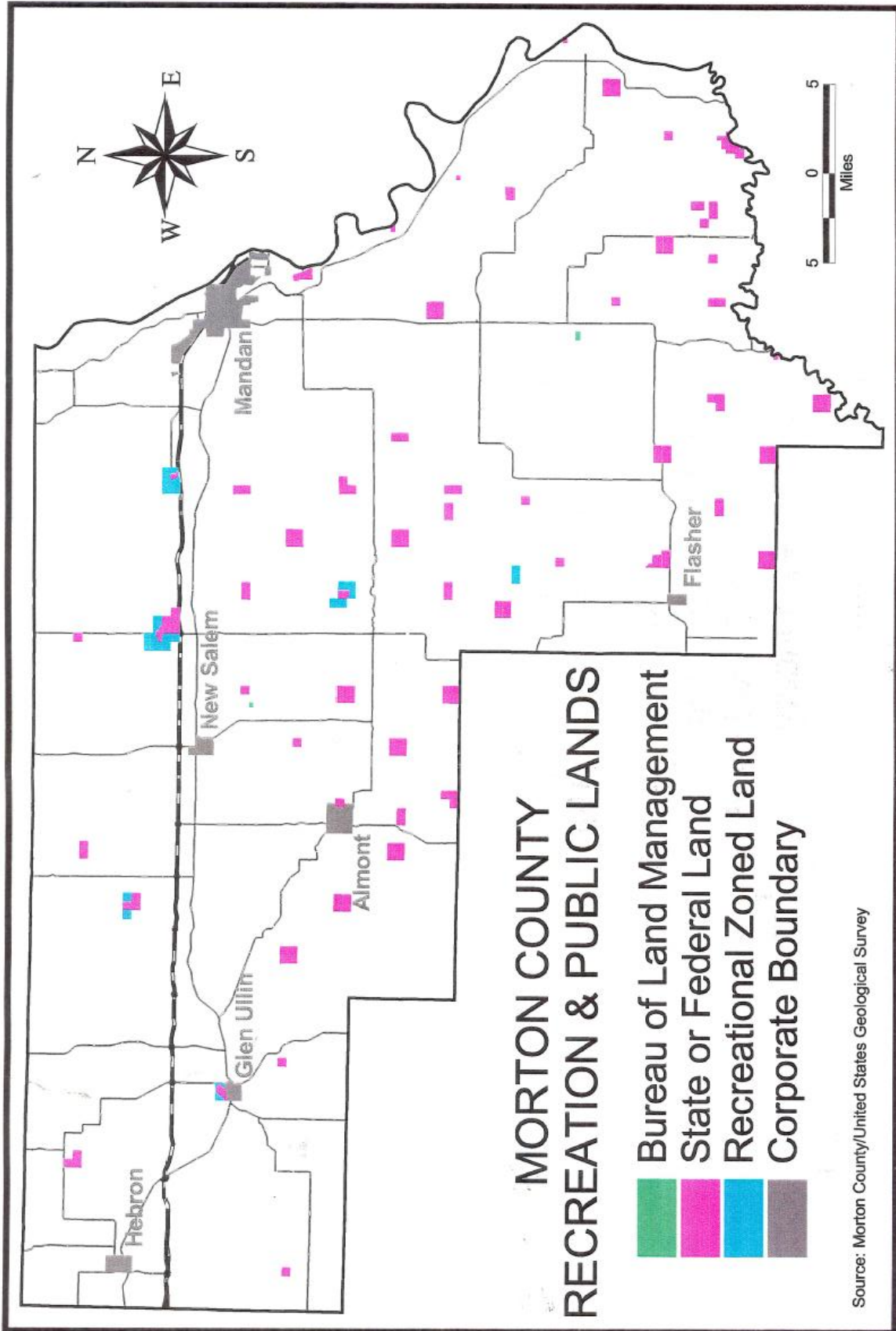
**Number of Farms and Farm Size
in Morton County and North Dakota
(for Exhibit 13)**

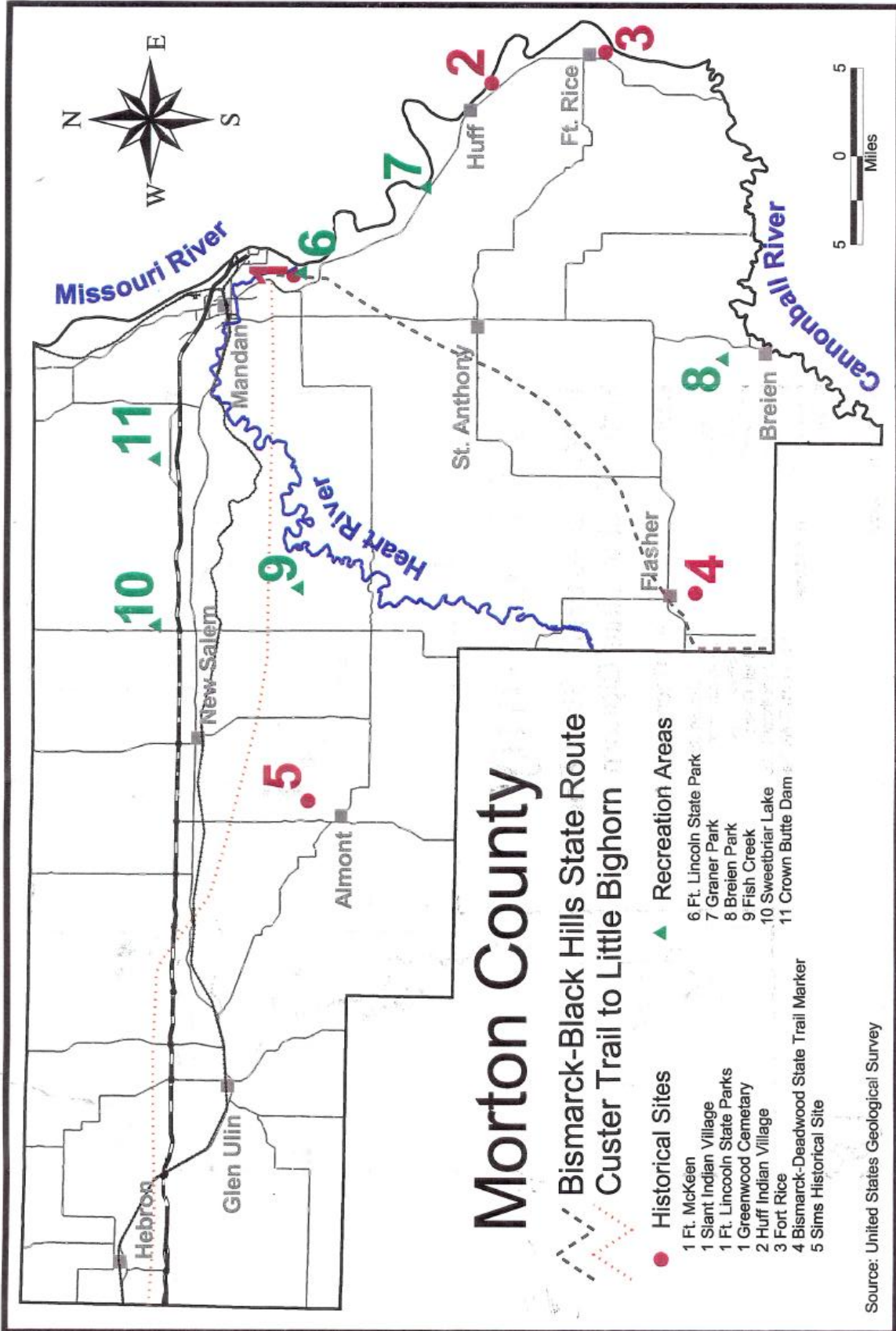
	1954	1974	1992	% Change 1954-1992	% Change 1987-1992
<u>Morton County</u>					
Number of Farms	1453	1095	923	-36.5	-6.6
Avg Size in Acres	854	1131	1337	56.6	7.6
<u>North Dakota</u>					
Number of Farms	61943	42710	31123	-49.8	-11.8
Avg Size in Acres	676	992	1267	87.4	10.8

APPENDIX F



APPENDIX G





APPENDIX I

SOIL LIMITATIONS FOR DEVELOPMENT IN MORTON COUNTY*

The estimated interpretations listed on the following pages are based-on the engineering properties of soil, on test data for soils in the survey area and adjoining areas, and on the experience of engineers and soil scientists with soils of the Mandan area.

The soils indicated below are rated by slight, moderate, and severe. Slight means soil properties generally favorable for the rated use, or in other words, limitations that are minor and easily overcome. Moderate means that some soil properties are unfavorable but can be overcome or modified by special planning and design. Severe means soil properties so unfavorable and so difficult to correct or overcome as to require major soil reclamation, special designs or intensive maintenance. For the most part, severe areas should be considered avoidance areas.

*Judgments made on these soil limitations must be based on the use of a detailed soils map for the county and not the general soils map contained within the plan. Detailed soils maps of Morton County can be obtained from the local Soil Conservation District offices.