

ENVIRONMENTAL FEATURES

LYON COUNTY COMPREHENSIVE PLAN

INVENTORY AND ANALYSIS

Lyon County is blessed with an abundance of natural beauty and environmentally sensitive areas. The Redwood and Cottonwood Rivers flow through the county and are a source of recreation and beauty. The area also provides home to a variety of plant and animal life, and is a source of recreation and enjoyment for residents and visitors alike.

Protection of environmentally sensitive areas not only allows them to be enjoyed for generations to come, but also contributes to the quality of life for Lyon County residents and visitors today.

The purpose of this section is to identify areas of high environmental and natural resource value. Many times these features will determine what kind of land use may occur and the intensity of that use. While there is a substantial portion of the county that is inherently suitable for agricultural use and development, other segments of the area have intrinsic natural value. Some of these areas contain limitations to development such that they should not be urbanized or irrevocably altered, or may function best if left in a natural state. Preservation of significant natural resources is a legitimate goal for any local government. Protection of important sensitive areas not only allows them to be enjoyed for generations to come, but also contributes to the quality of life for residents of the county today. Natural resource areas can serve as amenities, which can be integrated with future development, provided their values are maintained.

Included in this inventory is a discussion of the following: Geology, Shoreland Regulation, Floodplains, Wetlands, Water Quality, Soils, Historic Landmarks, Vegetation, Feedlots, Public Open Spaces, Woodlands, Steep Slopes and Wind Power. Many of these are shown on Figure 7-1, *Natural Resources*.

GEOLOGY

According to the Lyon County soil survey, the southwestern portion of the county is part of the Coteau des Prairies, and the northeastern part is glacial ground moraine. There is a five hundred foot decent from the southwestern corner of the county to the edge of the Coteau des Prairies with only sixteen miles of travel. From that point the slope is less severe, roughly a 150 foot decent, to the edge of the county in the northeast corner. The elevation in the southwest corner of the county is 1,719 feet above sea level (ASL), 1,450 feet ASL in the southeast corner, 1,178 feet ASL in the northwest corner, and 1,057 feet ASL in the northeast corner. County slope information is shown on Figure 7-2, *County Slope Information*. The county's relative flatness is attributed to the remnants of glaciers that once covered the area.

The bedrock in the southwestern corner of Lyon County is Sioux quartzite. The rest of the county has granite bedrock. Sedimentary material is found covering the bedrock from former inland seas. The deposits are mostly shale, sandstone, siltstone and clay. Glacial material also covers the county's bedrock. The thickness of the glacial till ranges from 50 feet in the northwest part of the county to over 460 feet in the southwestern portion of the county. There is little to no exposed bedrock in the county.

SHORELAND REGULATION

The DNR's shoreland management program provides for the orderly development of shoreland and protects lakes and rivers from pollution by individual sewage treatment systems and non-point sources. The intent of this program is to encourage development of shorelands in ways that enhance water quality and preserve scenic resources. The program implements the Shoreland Management Act, which regulates all land within 1,000 feet of a lake and 300 feet of a river and the designated floodplain.

The DNR establishes minimum statewide standards for shoreland development of all lakes greater than 25 acres outside of municipalities and 10 acres within municipalities as well as rivers with a drainage area of two square miles or greater. For lakes and rivers regulated by these standards, the DNR sets guidelines for the use and development of shoreland property including sewage disposal, lot sizes, lot widths, setbacks, building heights and subdivision regulations. Local units of government must adopt these or stricter standards through their local zoning and subdivision ordinances.

The standards for any given lake or river vary depending on its classification. The DNR provides for three classifications of lakes: Natural Environment, Recreational Development and General Development. Rivers have six primary classifications: Remote, Forested, Transition, Agriculture, Urban and Tributary. In addition, some rivers have special classifications other than those listed above. These include: state or federal Wild and Scenic rivers, Critical Area rivers, trout streams and special river management districts.

Lyon County adopted a shoreland management ordinance in 1993 to comply with the DNR model. The ordinance establishes three shoreland zoning districts.

FLOODPLAINS

Floodplains often determine land use around a waterbody. The DNR administered Floodplain Management Program is intended to minimize the threat to life and property resulting from flooding. This program restricts development in floodplains by preventing structures from being built at too low an elevation in areas that have a high risk of flooding. It also controls encroachment so that the floodplain's capacity to hold water will not be reduced, which could lead to flooding of even properly located structures.

Lyon County has adopted the DNR's floodplain management program and has joined the National Flood Insurance Program (NFIP) administered by the Federal Emergency Management Agency (FEMA). As part of the program, "specialized flood hazard areas" (SFHA) are identified and permits are required for any developments within the SFHA. In exchange for being a member of the NFIP and adopting floodplain management standards, the federal government makes flood insurance available to all property owners within the community.

The primary floodplain in Lyon County is in the northeast portion of the county and runs northwest along the Redwood River to Three Mile Creek continuing northwest along the Yellow Medicine River. This area is prone to spring flooding for a short period of time.

WETLANDS

In the past, wetlands were generally regarded solely as obstacles to development. Only recently have public attitudes changed and brought the destruction of these productive areas to an end. Most wetlands are valuable for storing and stabilizing surface waters to alleviate the danger of droughts and floods and support wildlife habitat areas. They also serve as the primary method of recharging aquifers to ensure a continued supply of water to serve an area's needs. Wetlands also serve to cleanse and purify the water by removing nutrients and other contaminants in storm water runoff.

With urbanization and the introduction of farm field tiling, many of the wetlands that originally existed in Lyon County have been drained. Today, less than 50 percent of the county's original wetlands remain and comprise less than 1 percent of the county's land area, covering about 2,795 acres. They are scattered throughout the county, but wetlands of more considerable size are located in the townships of Coon Creek, Stanley, Amiret and Vallers.

Wetland regulations depend upon what a landowner intends to do with the wetland. Two of the regulatory bodies having jurisdiction over wetlands, the Army Corps of Engineers and the Minnesota Department of Natural Resources, regulate them differently. In addition, a local unit of government must accept responsibility and designate itself as the "local governmental unit" in charge of the Wetland Conservation Act (WCA) and may develop and apply their own wetland protection regulations that administer the intent of the WCA. Below is a brief overview of wetland regulations.

Army Corps of Engineers

The Army Corps of Engineers is concerned solely with one aspect of wetland alterations. They require a permit (the 404 permit) if a landowner intends to discharge fill or dredged material into a wetland. In general, permit applications are denied when an alternative to the proposed project is found to be practical and have less adverse impact on the aquatic environment. In addition, permit applications are denied when the proposed discharge either:

- Violates state water quality standards;
- Violates toxic effluent standards;
- Jeopardizes the continued existence of an endangered species; or
- Violates requirements enacted to protect federally designated sanctuaries.

Discharges will not be allowed when there are significant adverse effects on either:

- Human health or welfare, including but not limited to, effects on municipal water supplies, fish, shellfish and special aquatic sites;
- Life stages of aquatic life and other wildlife dependent on aquatic ecosystems;
- Aquatic ecosystem diversity, productivity and stability; or
- Recreational, aesthetic or economic values.

Finally, all appropriate and practicable measures to minimize potential harm to aquatic ecosystems should be taken.

The Emergency Wetland Resources Act of 1986 directed the U.S. Fish and Wildlife Service to map the wetlands of the United States. This is referred to as the National Wetlands Inventory (NWI). Although the Corps uses the NWI as a source to determine wetlands, the Corps does not consider it an “official” wetlands map, thus, the Corps could consider some areas as wetlands that are not delineated as such on the Inventory, or conversely, ignore areas that have been identified as wetlands by the U.S. Fish and Wildlife Service.

Minnesota Department of Natural Resources

Any project that alters the course, current or cross-section of a protected water or wetland is subject to the regulatory jurisdiction of the DNR. Such activities are classified as deregulated, permitted or prohibited.

In general, deregulated projects include activities that either have been determined to be categorically beneficial to public waters or wetlands, or have been determined to have minimal environmental impact. Permitted activities require review and analysis including:

- Filling
- Excavation
- Structures
- Water Level Controls
- Bridges and Culverts
- Storm water Outfall, Water Intakes
- Mining
- Drainage

Prohibited activities are those that typically have either no public beneficial impacts, including filling for development and excavating to eliminate aquatic vegetation for aesthetic desires.

The State of Minnesota passed wetlands protection legislation (the Wetlands Conservation Act, or WCA) that, as of January 1, 1992, make it illegal to drain or fill a wetland with out replacing it, unless the wetland is exempt. Exempted wetlands include:

- Wetlands planted with annually seeded crops or set aside to receive price support in six of the past 10 years before January 1, 1991,
- Wetlands in the Federal Farm Program or enrolled in the Federal Conservation Reserve,
- Types I and II wetlands of two acres or less and located on agricultural land,
- Wetlands subject to the Army Corps of Engineers 404 General Permit program,
- Aquaculture, forest management, and wild rice production activities in a wetland, or
- Development projects that received preliminary or final plat approval within five years of August 1, 1991.

In July 1993, the final rules were adopted regarding the State's wetland protection legislation. Included in those rules is a list of agricultural exemptions as well as requirements for wetland banking and mitigation. In addition, as mentioned above, the County must accept responsibility and designate itself as the local government unit (LGU) in charge of the program. (Failure to do so would cause a moratorium to go into effect on all non-exempt draining, filling, and burning activities.) The WCA also established an appeals process through the Board of Water and Soil Resources (BWSR) for landowners and affected parties who disagree with a decision of the LGU.

WATER QUALITY

Water quality is an important issue for most rural counties in Minnesota. This is particularly true in Lyon County where water resources are limited. Water in Lyon County is primarily drawn from underground aquifers, whether through municipal, rural water or private well systems. Thus, groundwater quality and protection is an especially important component of resource planning and protection in the county.

Since 1974 the U.S. Environmental Protection Agency has been responsible for regulating the nation's public water supply systems, under the provisions of the Safe Drinking Water Act. However, most states, including Minnesota, have assumed responsibility for enforcing the Act within their borders. To be considered "public" a water supply system must have its own water source and provide water to 25 or more people or have 15 or more service connections.

In Minnesota there are three primary programs for protecting public drinking water: The Wellhead Protection Program, Source Water Assessment Program and Surface Water Intake Protection Program. The Surface Water Intake Protection Program applies to public water suppliers that use surface water, such as a lake or river. There are no such systems in Lyon County. The Source Water Protection Program requires the assessment of each public water supply system delineating the area that supplies water to the system, the contaminants that are of concern to users of the system and the location of contaminant sources.

In 1995, the Minnesota Department of Health (MDH) established the Wellhead Protection Program and rules to safeguard public wells that supply drinking water against pollution. The goal of the program is to prevent contaminants from entering the area that contributes water to public water supply wells. For non-community, transient public wells, an inner wellhead protection zone is defined using a 200-foot radius around the well. The State Wellhead Protection Rule requires an inner wellhead management zone be established for all such wells and that potential contamination sources be managed within it. There are 11 non-community, transient wells in Lyon County.

For all community and non-community, non-transient public wells, a "wellhead protection area" must be determined through a detailed hydrologic and geologic analysis. Once this area is delineated for a particular well, possible sources of pollution are identified and the supplier is required to develop a Wellhead Management Plan to mitigate existing and potential pollution problems. Because of the large number of community and non-community, non-transient systems in the state, the MDH is implementing these requirements in phases, targeting the most vulnerable wells first. In Lyon County there are 12 community systems and 2 non-community, non-transient systems.

Ten public water supply wells in Lyon County have been identified by the MDH as “vulnerable”: Marshall #12, #14, #15, #16, #17, #18, #19, & #20; Lynd #4; and Balaton #1. In addition, two wells in neighboring communities whose wellhead protection areas may extend into Lyon County have been identified as vulnerable: Milroy #6 and Ruthton #4.

Although it is these municipalities that will be required to develop management plans once wellhead protection areas have been delineated, most of the wellhead protection areas will likely extend into surrounding townships. Because cities generally do not have land use authority outside their boundaries, it will be very important for townships and the County to work with cities in developing these plans, particularly with regard to land use policies.

SOILS

Soils determine much of the land use patterns of a community. Therefore, soil characteristics should be examined in order to make proper decisions on land uses and to protect the natural environment. Certain soil conditions may benefit a community, such as where they support high agricultural production.

On the other hand, soils can cause serious land use problems and controversy, such as when poorly sited urban development creates severe erosion and drainage problems. Therefore, it is essential to incorporate soils data into all planning activities and decisions.

The soils within Lyon County will be more easily understood if they are first studied as they occur in broad areas, or soil associations. An association is a geographic pattern of defined and named soils. Associations are named for the major soils in them, but other soils may be present. Interested parties should refer to the Lyon County Soil Survey for specific information concerning the soils described in this section. Before selecting a specific site for any type of development, proper tests documenting the specific characteristics of the soils should be conducted.

The soils within the Lyon County fall into one of seven associations:

Ves-Canisteo: This association is located in the northwest part of the county being undulating and nearly level and covering 35 percent of the county. Ves soils are well drained with a hazard of erosion. Canisteo soils are poorly drained with a large content of lime and also a high content of organic matter and high levels of potassium, but low levels of phosphorus. Wetness limits the use of Canisteo soils. Limitations for other uses include high water tables and frost-heave potential.

Lamoure-La Prairie: This association is located in a band that runs southeast to northwest through the county following Three Mile Creek in the middle of the Ves-Canisteo association. There is also a small area around Lake Marshall extending to the southeast. This association covers 5 percent of the county. Lamoure soils are poorly drained and calcareous, typically located in the lower levels of the floodplain. La Prairie soils are on the higher levels of the floodplain, which make them potentially productive. Limitations for other uses include risk of corrosion and potential flooding.

Colvin-Bearden: This association covers about 4 percent of the county and is nearly level with low rides, depressions and draws. This soil type is located in the mid part of the county stretching in a narrow band northwest of Marshall starting at Lake Marshall. Bearden soils are somewhat poorly drained and Colvin soils are poorly drained. These soils are fertile; however, they are strongly calcareous under the surface so nutrient imbalance can be a problem. The main concerns for cropping are wetness and wind erosion. Limitations for other uses include wetness, high water tables, shrink-swell and frost-heave potential.

Forman-Aastad: This association is located northwest of the Cottonwood River and runs northwest to the edge of Lyon County covering 21 percent of the county. These soils are nearly level. Forman soils are well drained and located near steeper side slopes along drainageways, which can cause them to be prone to erosion. Aastad are nearly level and well drained. Some potential hazards are erosion on steep slopes and soil erosion in the spring of the year. Limitations for other uses include risk of corrosion.

Arvilla-Barnes-Buse: This association covers 4 percent of the county running along the rail line south of Lynd and fingering out away from the railroad tracks. Arvilla soils by themselves are level to rolling, but become undulating to moderately steep close to Barnes and Buse soils. Arville soils are somewhat excessively drained which can make the availability of water a limitation. Barnes and Buse soils are well drained and undulating to moderately steep. Where the slope is steep the soil becomes almost entirely Buse soil. This slope can be an erosion hazard for both the Barnes and Buse soils. Limitations for other uses include risk of corrosion

Barnes-Flom-Buse: This association is located in the southwest part of the county and covers 23 percent of the county. Flom soils are nearly level and poorly drained. Wetness is a major concern for management in this type of soil. Barnes and Buse soils have been described above. Limitations for other uses include risk of corrosion

Everly-Letri-Wilmington: This association is located southeast of the Cottonwood River in the corner of Lyon County covering 8 percent of the county. Everly soils are well drained and mainly undulating and rolling. Erosion is a major concern for this type of soil. Letri soil is poorly drained located on the flats of drainageways, making wetness a major concern for management. Wilmington soil is moderately well drained with no serious limitations. Limitations for other uses include risk of corrosion.

HISTORIC LANDMARKS

Landmarks can be described as man-made buildings and structures that reflect the culture, history and/or significant architecture of an area and its people. Lyon County has a variety of important landmarks, eight of which are on the National Register of Historic Places:

- Anderson, J.S., House. 402 E. 2nd, Minneota
- Anderson, O.G., and Company Store. Jefferson St., Minneota
- First National Bank. 101 3rd St., Tracy
- Gieske, William F., House. 601 W. Lyon, Marshall
- Kiel and Morgan Hotel. Off of County Highway 5 Lynd Township
- Masonic Temple. 325 W. Main, Marshall

- Norseth/Larsen House. 61 E. Main, Cottonwood
- Saint Paul's Evangelical Lutheran Church. 412-414 E. Lyon St., Minneota

The Minnesota Historical Society also recognizes two bridges as having historical significance. Both of these bridges were built in 1931 over the Redwood River in the city of Marshall and are concrete girder style. They are bridge No. 5083 and bridge No. 5151 on Highway 19.

Current historic preservation regulations do not prohibit the destruction or alteration of buildings on the National Register. If the owner of a building conducts mitigation measures, he/she could, in fact, demolish a historically significant building. Such mitigation measures may range from preserving the facade of the building to taking photographs of the historically significant features of the building to be catalogued at the local historical society.

In addition to properties listed on the National Register, there are a number of sites that have been identified by the Lyon County Historical Society to be of local historic significance. Although not listed on the National Register, these properties and sites serve as important reminders of the county's past and should be considered during any planning or development projects that may impact them. These include:

- Wheels Across the Prairie Museum in Tracy
- All cemeteries, including abandoned sites
- Rural school sites (about 87)
- Indian burial mounds near Lynd
- Christian churches, including abandoned sites
- "Ghost Towns" including Upper Lynd, Lower Lynd, Florence, Saratoga, Saratoga Springs, Dudley, Burchard, Heckman Siding, Camden, Rock Lake, Sham Lake, Blan Avon, Ceresco, Hilrethsbury, Island Lake, Brenner and Leo.

VEGETATION

Lyon County is located in the Prairie Parkland classification of the Minnesota Department of Natural Resources Ecological Classification System (ECS). The Minnesota DNR uses this nationwide classification system to help manage all natural resources on a sustainable basis. The native plants within this area helped loosen the soils prior to settlement by protruding roots deep into the earth. Worms also assisted in the aeration of the soil to create some of the most beautiful prairies in the mid-west. The decay of these roots helped create very fertile soil.

Native vegetation in Lyon County consisted mainly of tall- and mid- prairie grasses. Prairie cord grass, reedgrass, switchgrass and sedges grew on the wet areas of the county. Bluestem, green needlegrass, porcupinegrass, Canada wildrye, indiagrass, needle-and-thread and side-oats grama grew primarily in the better-drained areas. There are also many flowering plants in the native prairie including aster, goldenrod, sunflower, blazing star, clover, rose, lily, harebell, phlox and gentian.

Due to the fertile soils left by the native prairie grasses, most of the land has been tilled for agricultural purposes. There is very little native prairie left in the county. It is important to preserve the remaining prairie where practical for future enjoyment and possible scientific study.

FEEDLOTS

Animal feedlots in Minnesota are regulated by the Minnesota Pollution Control Agency (MPCA), which establishes minimum statewide permitting and performance standards. Counties may assume responsibility for implementing the MPCA's regulations by becoming a "Delegated County" and/or may impose additional, more restrictive standards. Currently, Lyon County is not a Delegated County.

The MPCA regulations contain standards for feedlot construction and expansion as well as day-to-day management and operation including facility and manure storage design, facility location, air emissions, manure application, wastewater discharge and manure stockpiling.

The MPCA defines a feedlot as: *"A lot or building or a combination of lots and buildings intended for the confined feeding, breeding, raising, or holding of animals and specifically designed as a confinement area in which manure may accumulate, or, where the concentration of animals is such that a vegetative cover cannot be maintained within the enclosure."* Open lots used for the feeding and rearing of poultry (poultry ranges) are considered to be animal feedlots, but pastures are not.

Regulations of feedlots differ depending on the size of feedlot. For the purposes of MPCA regulations, feedlots generally fall into one of three categories:

- Under 300 Animal Units
- 300 to 999 Animal Units
- 1,000 or more Animal units

For each type of animal, an animal unit (AU) factor has been assigned by the state of Minnesota. The number of animals at a given feedlot facility is multiplied by the assigned AU factor to determine the number of animal units. An animal unit is calculated by the maximum number of animals that are intended to be at the facility at any given time in the next four years.

A feedlot permit is required for feedlots:

- With 300 or more animal units,
- That are designated as "concentrated animal feeding operations",
- Proposing to employ new technologies,
- In a drinking water supply management area where the aquifer is designated as vulnerable,
- In special protection areas (within 300 feet of protected waters and wetlands as well as intermittent streams and ditches identified by the USGS) with slopes exceeding 6 percent,
- On land where soil tests exceed allowed phosphorous levels,
- That violate of any applicable state rules or regulations,
- That pose a pollution hazard.

In order to obtain a permit, the feedlot must prepare and follow a manure management plan to ensure proper storage, application, etc. Larger feedlots must also submit air emissions plans and emergency response plans. Also, any feedlot construction or expansion within 2 miles of a vulnerable well must notify the Minnesota Department of Health.

In addition to a permit, a more extensive Environmental Assessment Worksheet (EAW) is required for the construction or expansion of a feedlot of 1,000 or more animal units, or of 500 or more animal units if located in a sensitive area which may include shorelands, floodplains, state-designated Wild and Scenic River Districts, drinking water supply management area for vulnerable wells, or areas within 1,000 feet of a sinkhole, cave, spring, karst area, blind or dry valley.

MPCA regulations also restrict where new feedlots may be located. New feedlots cannot be located:

- Within 300 feet of a river or stream
- Within 1,000 feet of a lake, pond or flowage
- In a 100 year floodplain
- Within 300 feet of a sinkhole
- Within 100 feet of a private well
- Within 1,000 feet of a community water supply unless certain conditions are met.

There are a number of environmental and land use concerns relating to feedlots. The major environmental concern is the potential for ground water contamination. The seepage of pollutants associated with the storage and application of manure into the water supply is a major concern. Many of the MPCA regulations are directly aimed at ensuring that feedlots do not pollute the water supply. Air pollution, although less environmentally crucial than water pollution, is also a concern for people living near a feedlot.

The changing nature of both agriculture and rural development patterns has created the potential for land use conflicts between rural farm operations and non-farm rural residents. Agricultural operations have become fewer and larger, with some facilities having several thousand head of cattle or swine. The 160-acre family farm with a few dozen animals is no longer the predominant operation. At the same time, rural non-farm residential development has been increasing due largely to increased mobility as well as the search for a more rural lifestyle. In addition to an increase in the number of households, is the changing nature of rural non-farm lifestyles. In the past, many rural non-farm residents originally came from a farm or made a living directly related to agriculture. Today, more rural residents are less directly connected to agriculture, and thus are often less tolerant of the realities of living near a modern farming operation, including the odors, noise, dust and other inconveniences associated with it.

Rural communities across the state are struggling with balancing the desires of rural residents with agricultural operators, particularly with regard to feedlot operations. Finding a balance between providing the lifestyle many rural residents desire with the need to maintain agriculture as a viable and acceptable part of rural communities is a difficult task.

In addition to the MPCA regulations, Lyon County has established additional standards to address this issue. First, the County has established minimum distances new or expanding feedlots must be from existing residences. Likewise, it has established minimum setbacks for new residences from existing feedlots. The County has also placed an upper limit on feedlot size of 2,000 animal units and requires feedlots to obtain conditional use permits under certain circumstances.

Lyon County currently has no inventory of existing feedlots. It will be essential to conduct an inventory in order to enforce the regulations of the state and to identify and mitigate any existing and potential pollution problems.

PUBLIC OPEN SPACES

Public open spaces are those areas open to the public for active and passive recreational use. The preservation of open space is a crucial factor in the quality of life in the county. Lyon County has two major parks as well as 55 Wildlife Management Areas. These are shown on Figure 7-3, *Public Open Space*.

Camden State Park, located on 1,820 acres of land, is located 3 miles southwest of Lynd, or 10 miles south of Marshall, on Highway 23. The park was acquired in 1934 and officially established in 1935. Camden has historic significance because of its development and use by the Civilian Conservation Corp (CCC) as part of the Federal Governments Work Projects Administration (WPA). These programs were designed to get Americans to work and reverse the effects of the Great Depression. The development of the park was completed in 1936. The park offers 15 miles of hiking trails, 4.25 miles of mountain bike trails and 10 miles of horse trails as well as camping and fishing in the summer months. During the winter there are 5 miles of cross-country ski trails, 1.4 miles of skate-ski trails and 7.6 miles of snowmobile trails.

Garvin County Park is the only County Park in Lyon County. This park covers 683 acres and is located in Custer Township, one mile north of the intersection of Highways 14 and 59, on Highway 59. The main use for the park is camping and picnicking in the summer, and snow tubing in the winter. Turkey and deer hunting is allowed during season through bow hunting only.

Lyon County has 8,979 acres of Wildlife Management Area (WMA) land that can be used for a variety of activities. The primary active use of these lands is for hunting purposes. The land is open to the public year round and is open for hunting during regular season. The WMA's are scattered throughout Lyon County. One of the largest is in Coon Creek covering 1,050 acres and is located in the Western part of the county. Wildlife Management Areas are a good open space preservation tool in both developing and agricultural counties.

The Glynn Prairie was donated by the Glynn family to be left in its natural state. This 80 acres of land is located 15 miles northwest of Tracy on County Road 9. Of the 80 acres, 35 acres of the land is covered by blacksoil prairie and a wide range of rare native plants. The plants include: big bluestem, Indian grass, prairie cordgrass, porcupine grass, leadplant, ground plum, larkspur, purple coneflower, prairie gentian, blazing star, gayfeather, flax, monarda, evening primrose, heart-leaved alexanders and death camus. This land is part of a very small portion of native prairie land within the county and represents a unique learning opportunity.

WOODLANDS

Woodland areas add scenic beauty to the county and provide habitat and corridors for wildlife. Because of their intrinsic beauty, these lands are also often the most prone to development. Lyon County has very few woodlands. Only 12,294 acres, or 2.7 percent of the county, is covered by deciduous forest. The major concentrations of woodlands in Lyon County are located in Camden State Park and Garvin County Park. Careful consideration should be given to preserving the other remaining woodland areas where possible. For any development that does occur in these areas, creative development techniques that preserve

natural features and minimize the impact of development on the environment should be encouraged. These could include Planned Unit Developments and cluster design.

STEEP SLOPES

Slopes and hills are often very desirable locations for development due to their scenic beauty. In the relatively level topography of Lyon County, an overlook from a slope would make a prime development site. Most of the steep slopes are in the southern half of the county, along the Redwood River south of Lynd and along the Cottonwood River in Custer Township. Creative development techniques should also be encouraged in these areas to best preserve their scenic beauty and minimize the impact of development on the environment. Slopes in Lyon County are shown on Figure 7-2, *County Slope Information*.

WIND POWER

According to the Minnesota Department of Commerce, electricity produced from wind energy is the fastest growing energy production method in the world, renewable or otherwise, having an overall growth rate of 36 percent in 1999. In 1999, Minnesota produced approximately 800,000 MWh of wind electricity, 1.5 percent of Minnesota's total electric use. Minnesota, which is proven to have excellent wind resources, is one of the top states in the nation for producing electricity from wind sources, second only to California.

Most of the wind power in Minnesota, more than 90 percent, is produced by utility-scale commercial wind farms typically equipped with 750 kilowatt (kw) turbines. The remainder comes from smaller turbines independently owned and operated. Most of Minnesota's wind production is concentrated in the southwestern part of the state in an area known as Buffalo Ridge. The Buffalo Ridge is a strip of land 75 miles long and 20 miles wide that runs diagonally from North and South Dakota into southwestern Minnesota and tapers off in northern Iowa. It rises about 200 feet higher in elevation than the surrounding land, creating an excellent site for wind energy projects.

In Lyon County, there is a 600-kilowatt capacity wind farm in Marshall. It consists of five 120-kilowatt Wind World wind turbines that are 46 meters in height with 44 meter in diameter rotors. The project was installed in May 1992 by Wind World and was purchased by Northern Alternative Energy, Inc. in September 1995. Power generated by the farm is then purchased by Marshall Municipal Utilities. The Marshall Wind Farm was built as a demonstration project for the city of Marshall. A loan from the Marshall Economic Development Authority provided the funding for this project and required that it be built within the city limits.

In addition to the environmental benefits of being a renewable, non-polluting energy resource, wind energy can have economic benefits as well. Wind farms contribute to the local economy with new income for farmers and landowners where the turbines are sited. The construction phase can stimulate the local business economy and ongoing operation creates permanent jobs and local pride.

ISSUES

As part of the Comprehensive Planning process, the County hosted a project kick-off meeting on April 12, 2001. Meeting participants were led through a number of exercises to elicit Task Force and resident views on the issues, opportunities and threats facing the county as well as its strengths and weaknesses. Participants listed and then ranked their ideas in order of importance.

Participants in the workshop identified a number of positive environmental features in Lyon County (the number of votes received is in parentheses):

- Good Farm Land (8)
- Highly Productive Soil (3)
- Parks and Natural Resources (2)
- Natural Resources and Recreational Opportunities (2)
- Diversified Non-Polluting Economy

Participants also identified a number of concerns or issues related to the county's natural environment:

- Lack of Groundwater/Water Resources for Expansion (14)
- Limited Water Supply and Flood Control Issues (13)
- Water Availability for Drinking Water (3)
- Threats to Natural Areas and Resources (2)
- Floodplain/Runoff Issues (2)
- Urban Pollution (2)
- Loss of Soils (1)
- Not Capitalizing of Recreation (1)
- Scenic Natural Resources
- Weather

POLICY PLAN

Lyon County recognizes the importance of the natural environment and cultural resources in the overall health of the county. Following are the goals and policies of Lyon County to address these issues.

NATURAL RESOURCES GOAL #1: IDENTIFY, PROTECT, AND PRESERVE THE COUNTY'S HIGH QUALITY NATURAL, SCENIC, CULTURAL AND OPEN SPACE AREAS.

Policies:

1. Identify major woodland and prairie tracts, wetland areas, steep slopes, native prairie, significant historic sites and other sensitive environmental areas within the county.
2. Develop strategies for the protection, preservation and/or acquisition of identified significant natural and historic areas where appropriate through a number of means such as conservation easements, land acquisition, grants, donations, etc.
3. Educate the public on tax incentives that are available for wetlands, prairie areas, etc..
4. Protect scenic values by controlling billboards and regulating signs, junkyards and other potentially unsightly land uses and practices.
5. Continue to monitor and inspect residential and commercial areas with on-site sewer systems to ensure that they function properly.
6. Continue to review and consider soil suitability for the placement of individual sewer treatment systems before the issuance of a permit. Enforce the most recent MPCA On-site Sewage Treatment System Regulations.
7. Promote the utilization of private community sewer systems in new development or existing areas with failing or potentially failing systems.
8. Utilize soil suitability information in planning new development.
9. Require new developments to adequately address stormwater run-off as part of the preliminary plat review process. Ensure that all development complies with all stormwater management plans approved by the County or MPCA.
10. Promote the proper enforcement of wetland mitigation legislation, and support individual landowners' efforts in the re-establishment of pre-existing wetlands by utilizing the wetland banking system. Replacement wetlands should be located outside of the same watershed only as a last resort.
11. Cooperate with appropriate watershed management organizations to develop strategies for the protection of the county's water resources.

12. Coordinate and cooperate with other local units of government in developing wellhead protection plans, including identifying appropriate land use and pollution mitigation measures in wellhead protection zones.
13. Recognize the impact of surface water quality on groundwater resources.
14. Continue to enforce the State Shoreland Management regulations on the county's lakes, rivers and streams.
15. Continue to work with the local water planning board and the Soil and Water Conservation District to update and implement the County Water Plan.
16. Continue to work to promote the effective management of solid waste and recycling. County solid waste officials and administrators should work with local municipalities and townships to expand services to residents of the County.
17. Discourage development in flood-prone areas. Continue to monitor flooding impacts in and around the city of Marshall.
18. Identify and compile existing information on known gravel resources and establish restrictions on land uses that would potentially conflict with gravel mining operations.
19. Evaluate fiscal impacts and long-term maintenance issues when deciding whether or not to support the acquisition of land for environmental protection purposes.
20. Support the use of density transfer and clustering within a development in order to protect natural resource features of the county, including woodlands, steep slopes, flood plains, native prairie sites and other sensitive environmental features.
21. Conduct an inventory of all feedlots in the county.
22. Continue to enforce and implement MPCA feedlot regulations.
23. Promote the proper use, storage and application of chemicals throughout the county.
24. Continue to explore wind power and other renewable energy options.

NATURAL RESOURCES GOAL #2: MAINTAIN ADEQUATE ACTIVE AND PASSIVE OPEN SPACE TO MEET THE NEEDS OF THE COUNTY.

Policies:

1. Identify and map locations within Lyon County that have both natural beauty and the existence of unique environmental, plant, animal, social or historical features and focus any future park and open space areas in those locations.

ENVIRONMENTAL FEATURES: LYON COUNTY COMPREHENSIVE PLAN

2. Develop a park and open space plan that establishes policies and strategies for the long-term protection and recreational use of the county's natural areas.
3. Explore the development of county walking, bicycle, snowmobile and other recreational activity trails.
4. Adopt official controls to ensure that appropriate open space is provided with new development.
5. Promote the sharing of recreational facilities among area communities.
6. Support funding for recreational and/or community education activities.

INSERT FIGURE 7-1, NATURAL RESOURCES MAP

INSERT FIGURE 7-2, COUNTY SLOPE INFORMATION

INSERT FIGURE 7-3, PUBLIC OPEN SPACE