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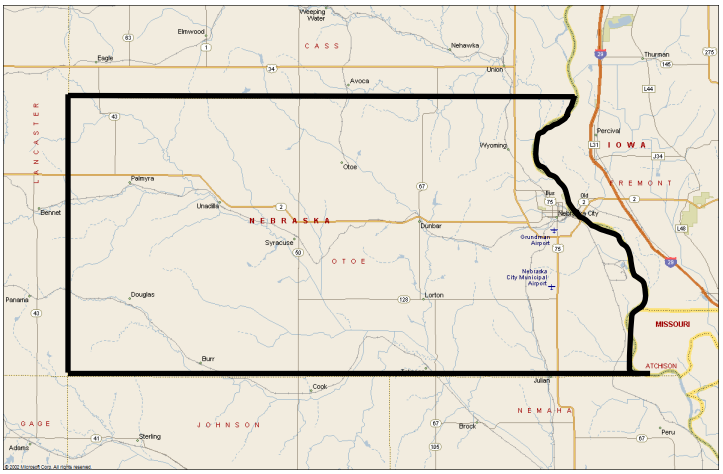
Introduction

Location

Otoe County is located in the southeast corner of Nebraska. The county is bounded on the west by Lancaster County; on the north by Cass County; on the east by the Missouri River and the state of Iowa and on the south by Nemaha and Johnson Counties. The county has six highways crossing the county including US Highway 75, Nebraska Highways 2, 43, 50, 67, and 128. The county is home to the communities of Nebraska City (county seat), Burr, Douglas, Dunbar, Lorton, Otoe, Palmyra, Syracuse, Talmage and Unadilla.



History of Otoe County

The following information is a mixture of the community histories found at http://www.casde.unl.edu/history/counties/Otoe

Burr

Burr can identify its beginnings to those of other "railroad-towns" that were established along the lines being built out across the prairie. However, even before Burr was a town, it was a community with its own postal address. A post office was established on July 15, 1869, named "Burr Oak," for the oak groves in the area. Later, it was spelled as one word -- "Burroak."

Surveyors charting a route for a railroad through Otoe County in 1886 crossed land settled by Levi Wilcox, George Strong, Cyrus Bassett, and Captain Ben Pindar. The route was resurveyed, with grading started in 1887. At that time, a town site was platted on the land owned by Winfield and Sarah Holden. One writer suggests that the town's name was chosen by Sarah Holden, whose maiden name was Burrell.

The first train to arrive brought mail and passengers to the depot in September 1888. According to Elton Perkey, the railroad had shortened the name to Burr, to avoid confusion with Burr Oak, Kansas. When the line was completed there were four trains daily -- down and back. There were also occasional excursions to Omaha -- with round trip tickets costing $1.

Barney Goerke built the first store. Other businesses established in 1888 included the Holden House Hotel, a saloon, a hardware store, a general merchandise store, a lumberyard, and two grain elevators. Various meeting places mentioned over the years include Wilcox Hall in 1889, followed by Landwehr Hall, with Panko Hall listed in 1911. In the late 1920s, Kenneth Chase built a large quonset-type building which was used to present "picture shows" and other gatherings. The first school for district 101 was built in 1889, with the notation, "....Preaching and meetings were held in the school until the churches were built." A large brick building was constructed in 1935. The last high school graduation, 12 students, was held in 1959. A K-8 school continues to serve the community.

Photograph 1.1
Historic photo of Burr
Source: http://www.casde.unl.edu/history/counties/otoe/burr/burr1_large.html

The earliest church, called the "Rockford Charge," was organized in the 1860s and built of rocks on Cyrus Bassett's homestead near the south branch of the Little Nemaha. Rebuilt of lumber on higher ground, the little white church was moved to Burr in 1891 using "home-made equipment." Beer kegs were used to help float it over the creek west of town. Currently known as the Burr United Methodist Church, it celebrated its "centennial plus" in 1971.

The Hopewell Presbyterian Church, established in 1874, was destroyed in the 1913 "Easter Tornado" that ravaged a wide area across southeast Nebraska before striking Omaha where it killed hundreds of people. The church was rebuilt at that location, which is in the center of the Burr-Unadilla-Douglas-Syracuse area, and next to the Hopewell Cemetery. The Hope Lutheran church was established in 1891, and in 1950 the old frame structure was replaced by a large brick one.

The large percentage of settlers of German descent is noted in the names of early residents, and the American German Bank, which was organized in 1892 with capital of $9,500. Managed by local stockholders, the bank's name was changed on April 18, 1919, to "The American Bank" due to the anti-German feeling during World War I. A new brick building had been completed earlier that year.

Burr's peak population, 263, occurred in 1940. As rail service declined and was finally abandoned, the need for an all-season road to Burr was evident. After nearly 20 years of work to get the state to provide one, the highway board agreed to build a hard surfaced road "...if the population of Burr reached 100 by 1970." That goal was achieved when the Don Parde family moved to town. This brought the total to 101, which is also the current population. The completion of the Burr Spur on June 8, 1975, was celebrated with a ribbon cutting, a barbecue, a ball game, a street dance, and a fireworks display. Many streets are now paved, and all are graded and maintained.

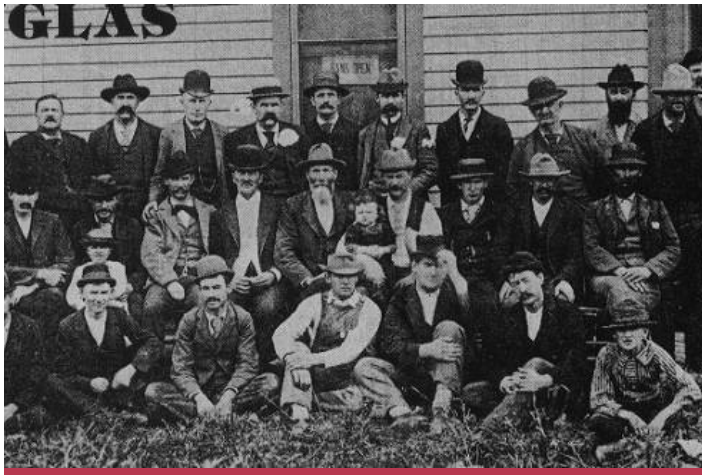
A quick response team of 14 persons completed training in the 1980s. "This is just another example of how our town exemplifies people-helping-people, to make a better place for all," said Village Clerk Nancy Thormahlen when writing Burr's history for the Otoe County History Book.

From material gleaned from records at the Nebraska State Historical Society, Perkey's Nebraska Place-Names , and the LNM handbook.

Douglas

The wild, untapped prairies of Nebraska attracted many people. Hiram Hendricks, a native of Virginia, came to Nebraska in 1856, where with his wife Cicily, he registered a pre-emption claim on 160 acres in the southwest corner of Otoe County. The precinct was named in his honor.

When the county organized, Hendricks became justice of the peace, and their home served as a polling place for elections -- a convenient arrangement since he was a judge over voting procedures from 1859-61. Instrumental in organizing the Methodist Episcopal Church, the couple's home often was the "meeting place" for itinerant preachers. Life on the prairie was not easy, as evidenced by Hiram Hendricks death on November 21, 1861, at the age of 53, leaving his wife and 11 children to work the farm. By this time many settlers had arrived, which provided some measure of protection for the family. On February 28, 1863, a post office was established and given the name "Hendricks."



Photograph 1.2
Historic photo from Douglas
Source: http://www.casde.unl.edu/history/counties/otoe/douglas/douglas1_large.html

In 1864 Irish-born Simpson McKibbon and his bride, Harriet Douglass, settled on a homestead in Hendricks Precinct. In 1872 he added to his holdings by buying a quarter-section of land from Anton Klaus. In a story of his life written many years later, it is noted, "...McKibbon's foresight in settling just where he did was rewarded, when a very short time after, part of this farm was divided up into lots and people were beginning to be convinced it was a good place to settle." It was also noted, "...the Missouri Pacific Railroad was grading its right-of-way."

The town's name evolved during an interesting series of events. A deed (registered in 1887) transferred a strip of land from the McKibbons to the MP. Thomas B. Stevenson, a noted Nebraska City lawyer, was then contacted by McKibbon and Tom Smith to assist in the platting of a village. On June 20, McKibbon received $3,200 for land and seven specific lots "...in the Village of Hendricks." On July 19 Stevenson and his wife Annie signed papers "...dedicating streets,

alleys, and highways for public use." The following week, however, lots were being sold in the village, which was now called "Douglas."

Several theories have been suggested as to the reason for the change. Some suggest that the railroad had another station named Hendricks [none found in the records], or that the name "Douglas(s)," the maiden name of the former land-owner, was part of the "deal" when deeding the land to either the railroad or to the Stevensons. Another consideration could be that the first postmaster, George Douglas, was somehow involved. The name of the post office was officially changed from Hendricks to Douglas on October 29, 1888.

An impressive array of businesses sprang into being along the town's main street. A photo, taken in front of the bank in the 1890s, recalls the names and occupations of 30 or more "businessmen," two of which are listed as "loafer."

The town's population reached 305 in 1910. Since then, shifts in population due to economic trends, employment opportunities, and available services are noted in the decades of census records. The current population is 210.

The school, established as soon as there were families enough to warrant it, grew from a one-room structure to an accredited K-12 institution. Reduced by low enrollment to a K-6 for many years, District 44 would merge with the Sterling school system in May 1993.

Celebrating its centennial in 1988, Douglas proudly published the "Centennial Yearbook," stories of its history, and took stock of the many interesting and important events during the first 100 years of its life.

From material supplied by F. K. Smith, librarian, Douglas Community School, Douglas, NE 68344.

Dunbar

A town was founded in 1856 at the intersecting property lines of four farms, whose owners were John Dunbar, Thomas Dunbar, Mrs. J. Wilson, and John McGinley. A settlement began as a ranch house and barn owned by Thomas Wilson, which was a stopping place for the overland stage. Green cottonwood lumber was brought in by oxen from Nebraska City, and soon there were houses and many businesses.

Initially called "Wilson," a post office was commissioned under that name on May 16, 1866. In 1867 plans for the Midland Pacific Railway from Nebraska City to the Union Pacific in Hamilton County were announced. However, rails were not immediately laid, and it was April 1871 before trains were operating as far as Lincoln.

For a very short time, the name of the station was changed to "Dennison." (Both were probably rejected since Wilson and Dennison were names of other Nebraska towns.) On April 2, 1874, the name was changed to "Dunbar," for John Dunbar, oldest resident of the community. The town celebrated its centennial in 1956 -- 100 years from its initial founding. The great Dunbar train robbery occurred on January 11, 1887. A passenger train carrying $17,000 in silver bullion was deliberately derailed one-half mile north of Dunbar. The men responsible for the wreck, which killed the train's engineer and injured many others, were caught. Called "the Crime of the Century," one man was hanged and the other was given ten years of hard labor.

Photograph 1.3
Historic photo from Dunbar area
Source: http://www.casde.unl.edu/history/counties/otoe/dunbar/dunbar1_large.html

When the town was established, a school was organized to help it grow. In time, a secondary school was added, with the first graduating class in 1893. There have been three buildings since then. The present school, built in 1915, is still at the top of the hill, now part of the Syracuse-Dunbar-Avoca district. John Reese, well-known author for the Saturday Evening Post , is a graduate of Dunbar High.

By the early 1920s Dunbar's population was well over 300. There were two or more hotels, banks, and elevators, and numerous shops. There was also a cement plant, a cheese factory, and "day service" for freight to and from the depot. "The Dunbar Review" was published weekly, there were four

churches, and a park where a two-day picnic was held annually. The dance hall was called "the Hyppodrome." In addition to lodge rooms, the Masonic Hall was used for traveling medicine shows, movies, and the junior and senior class plays.

Dunbar had a large stockyard next to the railroad and many cattle were driven in to be shipped to market. The story goes that after a successful round-up, one cowboy decided to ride his horse through the swinging doors of one of the local establishments, which caused a great uproar.

Dunbar experienced a devastating flood on May 8, 1950. Two lives were lost when seven homes, the dance hall, and a filling station were washed away. The depot, many homes, and several Main Street businesses received heavy damage. Most were not replaced, which was a further loss to the town.

In August 1965 the Highway 2 bypass was opened around Dunbar. The 1.7 mile curve, which routed traffic around one of the steepest main streets in the Midwest, benefited through traffic, but caused a hardship for the stores and stations in town. Highway 67, which runs north-south, still carries a fairly heavy line of traffic through town.

In recent years, our town celebrates "Dunbar Days" on the second weekend in August. In 1991 the town purchased Christmas decorations -- first time ever. Street signs were also erected.

Dunbar's highest population, 336, was recorded in 1940. Present-day Dunbar has a population of 186, the majority of whom are employed in Nebraska City, Syracuse, or Tecumseh. The area supports a volunteer fire department, a post office, a sizable co-op elevator, several independent businesses, and the Dun-Bar. The BN trains still go by, but the depot is a thing of the past.

Dunbar is still a pretty little town with many large trees. We have a Presbyterian Church and, in addition to our well-kept and attractive older homes, there are some newer ones. Dunbar may be short in area of population than before, and there are fewer business, but our town is long on "nice town to live in."
By Helen Roos, Box 85, Dunbar, NE 68346.

Lorton

Platted in 1881, our town was given the name "Delta." Its post office was established on June 26, 1882. When the Missouri Pacific Railway built a north-south connecting line from Talmage to Weeping Water, it came right through Delta.

While establishing the right-of-way, however, railroad officials informed the town that its name had to be changed since it had a station by that name in Kansas. While everyone was happy to get a railroad, no one wanted to change the name of the town, so no action was taken. The railroad -- determined in their decision -- chose its own name for the station, calling it "Cio."

For several years, the town had two names. The post office had no problem with the original name, since the other Delta was in another state. Mail was addressed to Delta, but freight had to be directed to Cio. When traveling, passengers also had to remember to identify their destination by its station name -- not that of the town. This was obviously a very confusing situation.

In time, the people decided to find a name that would be acceptable to all. Robert Lorton, a wholesale grocery salesman from Nebraska City who called on local merchants at that time, was well-liked, and since there were no other towns by that name in Nebraska or on the MP line, the people chose the name "Lorton." On November 6, 1894, the name -- approved by both the federal and railroad authorities -- was officially changed.

Photograph 1.4
Historic photo of Lorton
Source: http://www.casde.unl.edu/history/counties/otoe/lorton/lorton1_large.html

During its first 25 years, Lorton was a thriving railroad town, with four trains a day. The 1900 census lists the village with a population of 290. There was a Baptist church, an opera house, a hotel, a bank, a doctor's office, a blacksmith shop, two grocery stores (one with general merchandise), a pharmacist, a hardware store, a lumberyard, a livery stable, two taverns, a millinery shop, a dressmaking establishment, a harness shop, two elevators, and a stockyard.

Because of its location away from major east-west routes, Lorton became pretty-much a self contained community. At one time, over 60 children were enrolled in Lorton's school. As roads improved, and the economy of the state and nation changed, the need for the railroad and railroad-towns diminished. A number of businesses that closed during the 1930s and World War II did not reopen. When the 1950 flood washed out the tracks, it ended train service to Lorton and the elevator closed.

Today, Lorton has a population of 45. The post office is located in the grocery store, and we have a garage and repair shop, a tavern, and the Otoe County bridge equipment storage building. The town board, Chairman Ricci Landwehr, and members Judy Teten, David Goeden, Howard Hogankamp, and Lela Goeden, meet regularly at the town hall to provide for the needs of the citizens.

For many years the young people moved away to find employment in larger towns. Recently, younger families with small children have moved to Lorton. Now, as the older citizens move away, new people are purchasing homes and taking an interest in the small-town life.

This is giving new life to our town, and helps Lorton to grow again.

By Norma J. Castle, Village Clerk, Lorton, NE 68382.

Nebraska City

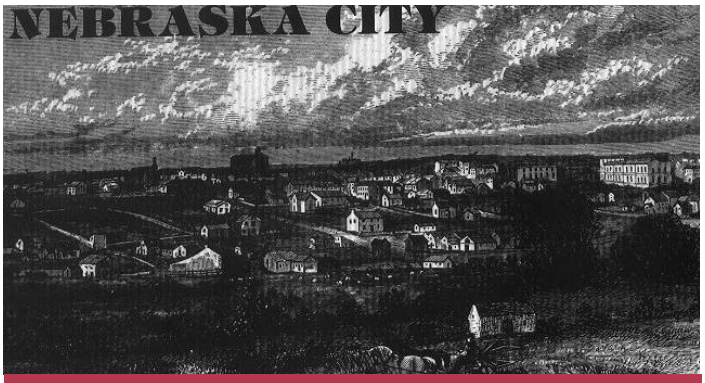
Lewis & Clark were first to note the "ideal site for a future city" on the table land between two small streams, which emptied into the Missouri, and Colonel Kearny recommended it for a fort in 1838. When built eight years later, this early "Fort Kearny" was active only two years, because at that time it was "outside the general stream of travel."

John Boulware's ferry at this location continued even after the fort was vacated in 1848, providing a river crossing during the California gold rush. Hundreds of "49ers" poured across into the territory and blazed "short-cuts" which linked up with more-travelled paths going West.

In 1854, when settlement was opened in the Nebraska Territory, the fort's old buildings provided initial shelter and a nucleus for a town. First called "Table Creek," it was a "postal address" in 1853, then named the county seat in 1854. "Kearney City," "Greggsport" and "Prairie City" were other names associated with this area. When surveyed on July 10, 1854, the plat was given the name "Nebraska City." The post office name was officially changed-over on March 14, 1855. Then, with incorporation completed in January 1856, other would-be settlements merged under this name in 1858.

Nebraska City leaped to prominence as an important steamboat port. Because of its favorable position on the river, it was selected as an outfitting point by the great firm of Russell, Majors, and Waddell for its western wagon train transportation operations in 1858.

In the debate over slavery, however, the citizens of Nebraska City were about evenly divided. The infamous John Brown, militant opponent of slavery, came through Nebraska City five times before he died for the cause. While not many slaves escaped to freedom using Nebraska's "underground railroad," it stands as a symbol of pride for the community.



Photograph 1.5
Historic photo from Nebraska City
Source: http://www.casde.unl.edu/history/counties/otoe/nebraskacity/nebraskacity1_large.html

Frustrated by the power held "north of the Platte" in the territorial government, local politicians nearly succeeded in getting the area south of the Platte attached to Kansas in 1859. Shortly before the Civil War, the legislature passed an anti-slavery bill over the veto of Governor Samuel Black, who was a resident of Nebraska City. When war came, the town gave strong support in defense of the Union.

The promise of a new, shorter road to the West in 1860 on which a "steam wagon" would run (without the need of rails), local businesses invested mightily. While the steam wagon failed, the improved road placed the town as the leading Nebraska freighting point.

Even with all this activity, and a greater population than that north of the river, Nebraska City was unable to "out politic" her rival, Omaha. However, the city claimed a great victory in 1867 when the state's capital was moved to the salt flats near the Nebraska City cut-off road.

Noting the obvious scarcity of trees in Nebraska, many incentives were offered for plantings. In addition to establishing his own orchard and arboretum, J. Sterling Morton became a political proponent of tree-planting, and was the founder of Arbor Day, now a national observance.

Early industrial development brought the city's population to a record 11,940 in 1890 -- using the adjusted figures for the highly-suspect census of that year. By then, river traffic had diminished and railroads were networking out across the prairie. Freighting, travel, and industry declined, as did the population to about 7,000, where it has remained for many years. Present employment includes plastic pipe and gas meter production, electric power generation, meat processing, retail trade and food processing, and service institutions.

Seasonal activity is stimulated by tourism. Attractions include Arbor Lodge Park and the National Arbor Day Foundation which directs a program of education and promotion of tree-planting and appreciation. They also operate the Morton Memorial Orchard, one of several apple orchards which bring thousands to this location each fall. The city has numerous examples of distinctive early-period architecture. Early orchard buildings are being restored, and the Lied Lodge conference center opened in 1993, which is a World Wide Attraction .

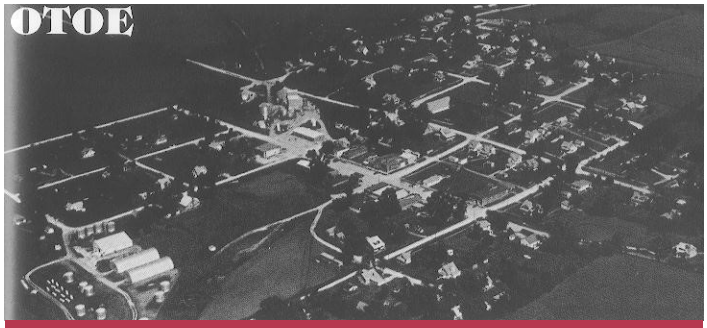
The wide Missouri, at the foot of Central Avenue, attracts visitor interest in the tradition of Nebraska City as a historic river town. It is also enjoyed as a scene of modern river navigation. The Lewis and Clark Missouri River Visitor Center celebrates Lewis and Clark's trip up the Missouri River. The Center is open daily.

By Glenn Noble, with photos sent by Eric Asboe, 1416 First Corso, Nebraska City, NE 18410.

ADDITIONAL MATERIAL: Frontier Steamboat Town , by Glenn Noble; Nebraska Place Names , Perkey, and History of Nebraska , by Andreas; and "The Correctness of the 1890 Census of Population of Nebraska Cities", by Edgar Z. Palmer, in the Nebraska History Quarterly Magazine, December 1951.

Otoe

Otoe is a small town in Otoe County. Located 18 miles northwest of Nebraska City, it is just 40 miles southeast of Lincoln and 50 miles south of Omaha. Otoe typifies today's trend to peaceful small-town living and access to larger cities for employment and entertainment.



Photograph 1.6
Historic photo from Otoe
Source: http://www.casde.unl.edu/history/counties/otoe/otoe/otoe1_large.html

Berlin precinct, established early in territorial days, was probably named for pioneer and Civil War veteran E. D. Berlin. Churches and schools were the first concern of the early settlers, who were primarily of German descent. In 1860 -- long before we were a town -- a Methodist church had been founded. County records list District 78 in the school census in 1876, with a schoolhouse just west of the present town site. A Lutheran church was established in 1878. Our town was founded in 1880 by Aureluis Bowen, who owned 160 acres in Berlin Precinct. At that time, the Missouri Pacific Railroad was building its line from Kansas City to Omaha. Bowen gave 20 acres to the railroad, and another 20 acres to a town, which he called "Berlin." The original plat -- only four blocks square -- was quickly outgrown, so the first of several additions were made.

The first passenger train made its entry in 1883. The railroad was an important part of our village life, with two passenger and two freights every day. The old schoolhouse had been moved into Berlin when the town was established. Soon, a larger school built and a high school was added. In January 1896, when the population reached the required 200, Berlin incorporated.

Introduction

Our town has survived a number of disasters. The 1913 Easter Sunday tornado did great damage to our town. The entire business district was destroyed and 75 homes were in shambles. After flattening Berlin, the storm ripped through several other towns on its way to Omaha where hundreds of people were killed. The citizens of Berlin gathered up the pieces and rebuilt.

Then, in 1918, numerous fires "broke out" along Berlin's main street. After a full block was destroyed, thought to have been because of the intense anti-German feelings during World War I, a group of citizens petitioned to the town's name changed to "something else." The name "Otoe" was chosen, and became official on October 18, 1918, less than a month before the end of the war. (Postal records show no other town by that name in the United States.)

In the 1920s, Otoe was a thriving town with two churches, a bank, two grocery stores, a light plant, two elevators, a butcher shop, a hardware store, a blacksmith, a newspaper, a livery stable, and two barber shops. Even though passenger train service was discontinued in 1932, Otoe's population peaked in 1940 with 298 citizens. After World War II, various shifts in both the rural and urban population occurred so that in 1958 the high school closed its doors. The railroad abandoned this branch of its line in 1960.

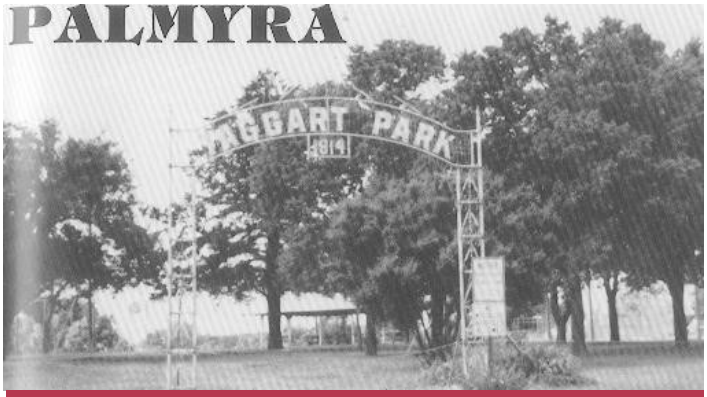
There have been many changes since then. Today Otoe has a population of 171. Still governed by a five -member board of trustees, the community supports a 14-member volunteer fire department, with a nine-member quick response team, and a K-8 elementary school. A new Lutheran church was built in 1971 to replace the structure destroyed by fire earlier that year. In addition to our post office, we have a grocery-catering service, two taverns with eating facilities, a radio and TV shop, a construction company, a small plant that manufactures car crushers, a plumbing shop, and an elevator.

Otoe has a very nice park. The ball diamond was dedicated in 1982, in connection with the Otoe centennial celebration. An annual barbecue is held the second Saturday in September as a community-wide project, with proceeds going to benefit the community. A booklet written for the centennial provides more details about our town, Otoe.

By Verena Paap and Loris Roettger, Box 85, Otoe, NE 68417.

Palmyra

On gently rolling hills near the Little Nemaha Creek, our town was platted in 1870 on land belonging to Rev. John M. Taggart, a Baptist minister. Taggart, who arrived early in 1856, was also an architect, stone cutter, and served in the territorial legislature. Early activities included a Sabbath school, "...held in an old log schoolhouse in 1856, Rev. Webb officiating."



Photograph 1.7
Historic photo from Palmyra
Source: http://www.casde.unl.edu/history/counties/otoe/palmyra/palmyra1_large.html

As pioneers settled along the cut-off trail from Nebraska City to Fort Kearny, a post office was requested. Established on June 20, 1862, it took its name from the ancient city of Palmyra in Asia Minor. Prior to this, mail was brought to J. R. McKee's farm by the stagecoach. McKee's great-granddaughter, Barbara Fey, served ten years as Palmyra's postmaster, retiring in 1989 after 30 years of postal service.

A "real town" started to take shape when the Midland Pacific Railway was being built parallel to the old trail in 1870-71. When platted, a four-square-block village park was dedicated and named Taggart Park in his honor. Oakley's built a general store, Sylvanus Brown established a hardware store, which included a stock of agricultural implements, and Foster & Garnett also erected a store. Viola Campbell built the first home in the spring of 1870, at which time the post office was moved to her home and run by her daughter. When the first train arrived in April 1871, Palmyra was well established.

In 1873, with the help of local farmers and citizens -- each subscribing $1,500 toward construction -- Gualt & Powell built a mill. The following year, using a windmill for power, a machine shop and elevator was established. A larger schoolhouse was also built in 1874 at a cost of $3,300.

Palmyra's first library, located in the town hall basement, was destroyed by fire on December 24, 1913. Moved to space above the drug store, it was again burned (along with many other buildings) in 1914. The Woman's Club decided that a fire-proof library should be built, a structure which is still being used.

For many years, Palmyra's premier event was a day-long picnic. First suggested by settler Edwin Baldwin in 1870 "...to welcome the many new settlers to the area," it was formally organized in 1887 as the Old Settlers' Association. Held at J. R. McKee's grove just south of town until 1899, the gathering grew of over 10,000 persons, many of whom arrived on special trains that offered reduced rates for the event. It was moved to the village park, where a big tent could shelter people from the sun. There were bands, races, contests, and "...plenty of food, music, and political speakers."

A "big affair" was featured at the 1933 picnic, when a monument was dedicated on the Douglas Road south of town, marking the early westward trail from Nebraska City to Denver. Built from stones gathered from the foundation of the Oakley store, a bronze plaque commemorates "...the second night stop" along that trail. For the 100th anniversary of the event, observed June 13-14, 1987, Palmyra's senior citizen, 96-year-old Dick Nash, was chosen Grand Marshal of the "Parade of the Century."

Other excitement in bygone days was provided by baseball games and horse races. It is said that Palmyra had two real-good race tracks.

Today over 500 people call Palmyra home. A housing development, started in the 1970s, provided for new growth. Our businesses include a grocery store, a bank, a farmers' co-op, numerous small shops, and gas stations. The school district, which consolidated with Bennet in 1969, remodeled its facilities in 1982. The Senior Citizens' Activities Center, built in 1984, attracts senior diners daily and is available for other activities in the evening.

Volunteers provide fire protection for the town and rural residents, and have formed a quick-response medical squad. Volunteers also support year-round athletic programs that ranges from kid's T-Ball to adult co-ed volleyball. Others deliver meals-on-wheels, care for plants around town, publish a monthly village newsletter, and provide fun and educational programs for all ages.

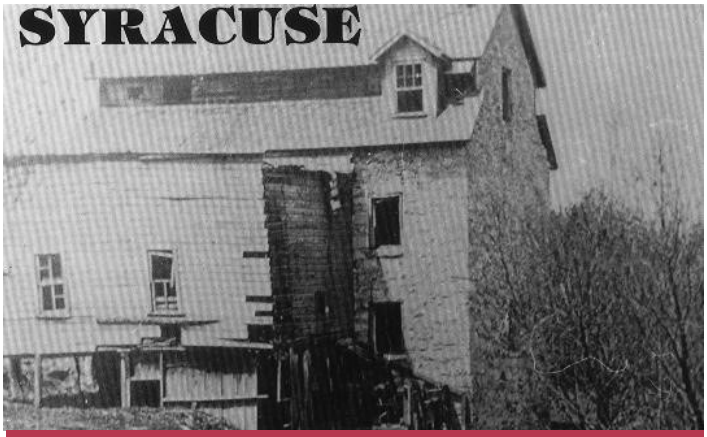
These are the things that help make our town, Palmyra, a nice place to live and grow.

By Bob Fey, Box 194, Palmyra, NE 68418, with the help of his daughter Pam Bolz (a great-great granddaughter of J. R. McKee, one of the original settlers of Palmyra).

ADDITIONAL MATERIAL: "Picnic Day" by Winifred Dowding, 1987; and an earlier history by Cora Nash and J. H. Sweet.

Syracuse

Syracuse had an unusual origin. The name appears at a site southeast of Unadilla in 1856, nearly six miles west of its present location where salt was discovered. To claim the land, the "Syracuse Town Company" was formed. Named for the great salt entity in New York, it was hoped that a similar market would develop. Salt mining was not successful and it soon died down, but the name was not forgotten.



Photograph 1.8
Historic photo from Syracuse
Source: http://www.casde.unl.edu/history/counties/otoe/syracuse/syracuse1_large.html

A "postal drop" established at a farm in Syracuse precinct was lost in 1863 when another man acquired the office and moved it to his place of business on "Nursery Hill," west of our present location. Some historians suggest that present-day Syracuse was an outgrowth of that settlement. However, those observations are not entirely correct, since the earlier Syracuse postal address was moved to Nursery Hill, it was not the predecessor -- only an interim step.

The first root for the present town of Syracuse was planted in the late 1850s when a school was established. It continued as settlement increased. In

1869, when talk of a railroad coming through the area got serious, a Mr. Thorn gave 100 acres of land to the Midland Pacific Railway, and Dr. J. N. Converse and L.E. Sinsabaugh laid out a town. In 1871, when the railroad was completed to Lincoln, the station was given the name "Syracuse."

The importance of the railroad was immediately felt. As Syracuse became a major shipping point in the county, buildings sprang up at a rapid pace. Nursery Hill's two stores and post office were moved to the new town, and on March 6, 1872, the post office became "Syracuse" again. Incorporation was accomplished on January 6, 1875.

Syracuse also grew as an agricultural center. In 1878 over 350 cars of grain and 100 carloads of livestock were shipped from this station. The original town was built primarily on the bottomland near the tracks, but it gradually moved to the higher ground. By 1879 the population was upwards of 500 residents, and in 1882 over 80 services were listed, including a carriage factory. A stone quarry was developed five miles from Syracuse. Some of its light-gray stone was used to build the state penitentiary at Lincoln.

Gradual but steady growth is noted, with the population at 510 in 1880, 728 in 1890, and 861 by 1900. With community infrastructure in place, the 2014 population of 1,960 represents a solid citizenry, and the highest to date.

Syracuse's schools played a major role in its continued existence, with 31 students registered in 1859. (The average attendance, however, was only five.) During railroad construction in 1870, a new schoolhouse was built for the 50 pupils. Other buildings were needed in 1880 and again in 1890. Enrollment was 330 by 1900. An annex was built to the main building in 1925. These buildings were replaced in 1943, and a new high school was built in 1963. Now a consolidated district known as Syracuse-Dunbar-Avoca, serves over 600 students from this area.

The first church was built in 1873, with others in 1887 and 1880. A number of fraternal and social organizations also appeared in the community. Because of its central location, the county fair was moved to Syracuse in 1883. A half-mile race track was constructed and became well-known throughout the state, with huge crowds gathering, especially on the Fourth of July. While athletic events, such as ball games, became very important in the late 1890s, probably the greatest center for social activity was the opera house. Moving pictures first appeared in 1901.

In May 1899 Henry Coit of St. Louis established a telephone exchange. Rent was $1 per month for a residence, and $2 for businesses. The next civic improvement was a water system and standpipe. By 1915 electricity was sought for the town. Concrete started replacing boardwalks in 1902, with six blocks of main street paved in 1923 and another 24 blocks surfaced the following year.

The activity which came in the early 1900s provided a strong basis for the town, and made it appear much more advanced than other communities its size. As the railroad era diminished, Syracuse did not die. Instead it recognized its reason for existence -- the rich soil on which it had been founded and the agricultural potential of it. Syracuse stands as an example of the struggles and successes endured to became an established town on the Nebraska prairie.

By the Otoe County Museum Society, Norma Jean Dettmer, president, 366 Poplar, Syracuse, NE 68446.

ADDITIONAL MATERIAL: For The Record , 1972, a centennial history of Syracuse by Margaret Dale Masters; and Otoe County History , 1983, Otoe County Historical Society and Otoe County Museum Society.

Talmage

The first address for the community which later became our town, was "Morrallton," said to be "a port on the Missouri." Its post office was established on July 15, 1854. On November 1, 1864, when John Patrick became postmaster, the office was renamed "Grant" and moved to a farm in Nemaha County, where he had a small general store. It remained at that location for nearly two decades. Not until the 1880s, when a railroad was being built through this area, did the town, "Talmage," come into being.

Early in 1881 plans for a station were announced, some distance to the north of this location. A committee of citizens headed by Clark Puffer, a prominent farmer and cattle feeder, asked the railroad to build the station on a hill several miles to the south of its proposed site. The officials agreed to "consider the proposal."
To help influence its decision, Puffer offered to donate the land the railroad would need. Since the land had been planted to corn, neighbors -- wanting

the station nearby -- helped cut down the knee-high corn so that the grade and a town site could be surveyed immediately. (It is said that evidence of old corn stalks are still found under several early houses.) Puffer, who declined to have the town called "Pufferville," asked that it be named for Archibald Talmage, the railroad's superintendent. Honored by the request, Talmage consented, and agreed to establish the station at this location.

Photograph 1.9
Historic photo from Talmage
Source: http://www.casde.unl.edu/history/counties/otoe/talmage/talmage1_large.html

Water-use system came early, established more for fire protection than for private or commercial use. Fire, which had ravaged the business district in 1891 and again in 1894, resulted in strong support for a bond issue. By 1896, when the 100-foot standpipe was in place, Talmage had organized a "fire company." That system served until 1954, when a larger tank was built. The present volunteer fire department consists of 21 well-trained members, representing farmers and business people.

A "subscription school" was started in 1881 in Gregory Hall and a district had organized by 1882. The town grew so fast that by the time the first schoolhouse was ready for use in 1883, it was outgrown, so some classes continued to be held in the hall. The first graduation was held in 1896 in Cash's Opera House. Early in 1900 several additions were made to accommodate a K-12 system. A brick structure was built in 1935, with vocational classes added in 1951. As enrollment declined, Talmage and Cook merged to form the Nemaha Valley Schools in 1967.

Our first church was Charter Oak Christian Church, established in 1868 about one mile south near the Grant post office in Nemaha County. A cemetery was established and a larger church built at that location in 1884. When that building was destroyed by fire in 1949, its members accepted an invitation to meet at the Methodist church in Talmage, and later merged under the Charter Oak name. Several Lutheran families that arrived as early as 1858, organized a church by 1868, and second Lutheran congregation formed in 1906. In 1972 the two Lutheran congregations merged and built a new church in Talmage. A Church of Christ was organized with its first services held on Christmas Eve 1884.

A creamery, established in the north part of Talmage in 1888, purchased cream from local farmers that was made into butter. Ice was cut and stored from "Creamery Pond," for use during the summer. The pond also provided recreation -- boating and fishing during the summer, and ice skating during the winter.

When ice was no longer needed, the pond was allowed to deteriorate. When the Talmage businessmen organized a chamber of commerce in 1927, initial projects included outdoor picture shows during the summer, and treats for children at Christmas. In 1956, when George Stanley was elected president, his project was to restore the old pond to its original beauty. Renamed for Dr. C. T. Gritzka, it is again enjoyed by fishermen. By 1960, with renewed purpose and leadership, the chamber sponsored a drive to build a community building and a medical facility. Annual events now include a pancake supper, Easter egg hunt, and Christmas party for all.

During Talmage's centennial, May 29-31, 1982, a caboose and an historical marker were dedicated. Several descendants of the town's founder, Clark Puffer, were in attendance for that occasion.

By Jane Graff from material found in the Otoe County History Book, 1983; Andreas' History of Nebraska ; and Perkey's Nebraska Place Names.

Unadilla

When looking at all the towns platted in Otoe County during the 1860s, it is a wonder that Unadilla has survived. Paisley, to the west, and Nursery Hill, to the east, met their demise before the turn of the century. In 1864 James Wallen and his family claimed the 24th homestead in the county and established a "half-way house" which served freighters on the Nebraska City cut-off route. It was immortalized under another name in the novel "Nebraska Coast" by Clyde Brion Davis.

Strite and Catherine Axtell, having "inside information" on the path of the railroad, platted and recorded a town in May 1871. Mrs. Axtell is said to have borrowed the name from Unadilla, New York. "Unadilla" is an Iroquois Indian word meaning "a place of meeting." William Saunders built the first house, which was on the site now occupied by Lempka Recycling. Almost due south, on the bank of the Little Nemaha, Saunders built a dam to provide power for the Unadilla Roller Mills.

The school district was organized in 1871, with classes held in a building near the town site. A school was built in 1872 near where the Methodist Church now stands.

The Missouri Pacific Railroad tracks entered Unadilla approximately 1,000 feet south of the Saunders' residence. Crossing the south road, it makes a wide curve and exits the town in a north westerly direction. Following the grade of the tracks, main street was also laid out along the curved line.

A post office was established in April, 1872, as were two small general stores, and a blacksmith shop. However, while there was a siding at this location, no depot was built. A depression, which gripped the nation in 1873, made for "tight money" all along the new line. In 1874 the people collected what they could and built their own depot and a stockyard, which they donated to the railroad. It soon became known for "top prices" for cattle and grain. An elevator was built in 1880, which handled 90,000 bushels of grain the following year. Large amounts of stone from a nearby quarry were also shipped by rail.

Sunday services met in John Abbott's store in 1873. The first church was built in 1879, with a Methodist church completed in 1899. Numerous fraternal organizations provided cultural and financial support for the community. These include the Order of Good Templars (1874), the Building and Loan (1879), the Equitable Aid Union (1881), and the Mutual Aid Association (1882). A literary association was established in 1881, and a cornet band, best known and long affiliated with the community, was organized in 1879.

Unadilla grew in spurts. In 1888, when the Bank of Unadilla was formed, the population hovered around 300. The 1900 census listed only 243 residents. After numerous small floods, which were blamed on the mill dam, it was blown up. A few years later, in 1908, an even larger flood did $20,000 damage and took six lives. The drop to 209 residents in 1910 was attributed to the flooding. The town gradually moved north to higher ground.

Telephones were introduced in 1901 and a water system was installed in 1905. However, no fire department was initiated at that time. In 1911, a disastrous fire destroyed all the businesses, with the exception of Horstman & Parker's Grocery and the bank.

Photograph 1.10
Historic photo from Unadilla
Source: http://www.casde.unl.edu/history/counties/otoe/unadilla/unadilla2_large.html

The restoration of Unadilla during the next two years were a tribute to the unity of the community. Residents pitched in to help clean up and build temporary shelters. While a number of businesses suggested relocating to the block north (so the buildings could "line up straight") the majority were rebuilt along the original curved street. Soon new buildings were completed, and a full line of services, which had been available in Unadilla since its inception, were again in place.

Unadilla's population remained constant until the end of World War II when the town again began to grow. Now boasting a population of nearly 300, a new Methodist Church was built in 1990, and an elementary school was completed in 1991.

Unadilla celebrated its centennial in 1971. Since then an annual birthday party has been held in June with a picnic, ball games, and other festivities. In January 1988, the Lt. Governor signed a proclamation declaring Unadilla "Groundhog Capital of Nebraska." It is celebrated with a Wild Game fee, and (weather permitting) a parade.

By Barb Wilhelm, local historian, Rt. 1 Box 161, Unadilla, NE 68454.

ADDITIONAL MATERIAL: Unadilla -- the First 100 Years , by Norman Rodaway, and Perkey's Nebraska Place Names.

Comprehensive Development Planning

The Otoe County Comprehensive Development Plan is designed to promote orderly growth and development for the county, as well as providing policy guidelines to enable citizens and elected officials to make informed decisions about the future of the county.

The Comprehensive Development Plan will provide a guideline for the location of future developments and uses within the planning jurisdiction of Otoe County. The Comprehensive Development Plan is intended to encourage a strong economic base for the County so all goals can be achieved.

The Plan is only one of several tools within the toolbox that helps guide the community into the future.

The Comprehensive Development Plan is intended as an information and management tool for County leaders to use in their decision-making process when considering future developments. The Comprehensive Development Plan is not a static document; it should evolve as changes in the land use, population or local economy occur during the planning period.

Planned growth will make Otoe County more effective in serving residents, more efficient in using resources, and able to meet the standard of living and quality of life every individual desires.

The Planning Process

The Comprehensive Development Plan begins with the development of general goals and policies, based upon current and future issues faced by the County and its residents. These are intended to be practical guidelines for addressing existing conditions and guiding future growth.

In conjunction, the data collection phase will be occurring. Data is collected to provide a snapshot of the past and present conditions within the community. Analysis of data provides the basis for developing forecasts for future land use demands, as well as future needs regarding housing and facilities.

The Comprehensive Development Plan is a blueprint….designed to identify, assess, and develop actions and policies in the areas of population, land use, transportation, housing, economic development, community facilities, and utilities. The Comprehensive Development Plan contains recommendations that when implemented will be of value to the County and its residents.

The Comprehensive Development Plan identifies the tools, programs, and methods necessary to carry out the recommendations. Nevertheless, the implementation of the development policies contained within the Comprehensive Plan is dependent upon the adoption of the Plan by the governing body, and the leadership exercised by the present and future elected and appointed officials of the County.

The Comprehensive Development Plan is a vision presented in text, graphics and tables representing the desires of the County and its residents for the future.

Plan Preparation

The Plan was prepared under the direction of Otoe County Planning Commission;, with the assistance and participation of the Otoe County Board of Commissioners; County staff; the Plan Review Committee and citizens of Otoe County. The time period for achieving the goals, programs, and developments identified in the Otoe County Comprehensive Plan is 20 years. However, the County should review the Plan annually and update the document every 10 years (2025), or when an unanticipated opportunity arises. Completing updates every ten years or so will allow the County to incorporate ideas and developments not known at the time of the present comprehensive planning process.

Comprehensive Plan Components

Nebraska State Statutes require the inclusion of certain elements in a Comprehensive Plan. A "Comprehensive Development Plan," as defined in Neb. Rev. Stat. § 23-114.02 (Reissue 1997), "shall consist of both graphic and textual material and shall be designed to accommodate anticipated long-range future growth." The Comprehensive Plan is comprised of the following chapters and sections:

- Introduction Chapter
- Community Engagement Chapter
- Population Statistics Chapter
- Housing Chapter
- Economics/Economic Development Chapter
- County Facilities Chapter
- Resources/Environmental Chapter
- Energy Chapter
- Land Use Chapter
- Transportation Chapter
- Implementation Chapter
- Otoe County Zoning and Subdivision Regulations

Analyzing past and existing demographic, housing, economic and social trends permit the projection of likely conditions in the future. Projections and forecasts are useful tools in planning for the future; however, these tools are not always accurate and may change due to unforeseen factors. Also, past trends may be skewed or the data may be inaccurate, creating a distorted picture of past conditions. Therefore, it is important for Otoe County to closely monitor population, housing and economic conditions that may impact the County. Through periodic monitoring, the County can adapt and adjust to changes at the local level. Having the ability to adapt to socio-economic change allows the County to maintain an effective Comprehensive Development Plan for the future, to enhance the quality of life, and to raise the standard of living for all residents.

The Comprehensive Development Plan records where Otoe County has been, where it is now, and where it likely will be in the future.

The Comprehensive Development Plan records where Otoe County has been, where it is now, and where it likely will be in the future. Having this record in the Comprehensive Development Plan will serve to inform County officials as much as possible. The Comprehensive Development Plan is an information and management tool for County leaders to use in their decision-making process when considering future developments. The Comprehensive Development Plan is not a static document; it should evolve as changes in the land-use, population or local economy occur during the planning period. This information is the basis for Otoe County's evolution as it achieves its physical, social, and economic goals.

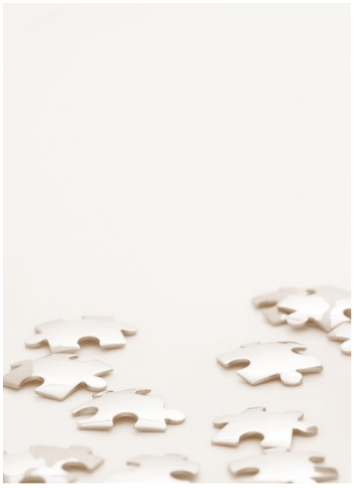
Jurisdictional Organization

The Otoe County Board of Commissioners, which is a board of elected officials, performs the governmental functions for the County. Each incorporated community in Otoe County also has elected officials and officers that oversee how their community is governed.

The planning and zoning jurisdiction of Otoe County, pursuant to Neb. Rev. Stat. § 23-114 (Reissue 1997), includes all of the unincorporated portions of the County, excluding the established extraterritorial jurisdiction of each incorporated city or village.

In addition, Otoe County does building permits for the Villages of Talmage and Dunbar.






2

Community Engagement




Community Engagement

Community engagement is important to a successful planning effort. The use of public participation makes it possible to have a clearer understanding of how the residents feel regarding different parts of the community. However, there are limited numbers of individuals concerned about the effort either because of things are going in a good direction or specific issues do not impact them.

Community Engagement

Community engagement in Otoe County was designed as a major component of the project and the process included multiple approaches. It was structured in a manner allowing for stakeholders to be involved in numerous ways throughout the process. Some key elements will include:

- Education: Planning 101
- Use of a steering committee
- SurveyMonkey
- Facebook
- Three Open Meetings
- Public hearings

Planning 101

Planning 101 forms the educational foundation for the entire project. In this process, there was one workshop. This workshop addressed:

- What is a Comprehensive Plan?
- How the plan is used?
- How does the plan impact me?

Steering Committee Meetings

With the assistance of Otoe County, a steering committee was decided upon, the county Planning Commission, to provide regular input on all phases of the planning project. This group also provided the internal assistance the planning effort needed to get more people involved in the process.

The steering committee also acts as a sounding board during the entire process; this allows all pieces/Chapters of the plan to be reviewed and commented on at regularly scheduled meetings. The steering committee is one of the more critical components of the process.

SurveyMonkey

SurveyMonkey, a web based survey tool was utilized for gathering specific input on Otoe County. The survey process allows individuals to provide input while remaining totally anonymous. The survey was advertised using specially designed cards, announcements on the project, Facebook page, and on posters hung up throughout the communities.

There were three different surveys individuals were asked to provide feedback: 1) General Otoe County; 2) Otoe County Ag; and 3) Western Otoe County. The surveys examined different topic areas impacting Otoe County. Receiving the most responses was the Western Otoe County survey. Overall, there were a total of 20 participants in the survey process. The complete summary will be available through Otoe County.

Facebook

A special Facebook page was established for the Otoe County Comprehensive Plan. The Facebook page served as a means to notify people about the survey as well as providing another medium for asking questions. In addition, the Facebook page provided a location to upload links to parts of the Comprehensive Plan as they were completed and reviewed.

Town Hall Meetings

The team attended three meetings with regard to the county. The meetings were:

- June 25, 2015 in Palmyra
- July 31, 2015 at the County Fair in Syracuse
- September 9, 2015 in Nebraska City

Attendance at these meetings was limited; however, there was good discussion regarding the future of the county. The following section will provide a summary of the issues discussed.

Goals and Poliices

Planning for the future land uses of the community is an ongoing process of goal setting and problem solving aimed at encouraging and enhancing a better community with a better quality of life. Planning focuses upon ways of solving existing problems within the county, and providing a management tool enabling Otoe County citizens to achieve their vision for the future.

Visioning is a process of evaluating present conditions, identifying problem areas, and bringing about consensus on how to overcome existing

problems and manage change. By determining Otoe County's vision, the county can decide where it wants to be in the future, and then develop a "roadmap" guiding decisions of the county. However, the plan cannot only be based upon this "vision" and "road map" concept. The residents of Otoe County must also act or implement the necessary steps involved in achieving this "vision".

Vision without action is merely a dream

Action without vision is just passing time

Vision with action can change the world

Joel Barker

Change is continuous, therefore Otoe County must decide specific criteria that will be used to judge and manage change. Instead of reacting to development pressures after the fact, the county along with their strategic vision, can better reinforce the desired changes, and discourage negative impacts that may undermine the vision. A shared vision allows Otoe County to focus its diverse energies and minimize conflicts in the present, and in the future.

A key component of a Comprehensive Plan is the goals and policies. The issues and concerns of the citizens are developed into a vision. The vision statement can then be further delineated and translated into action statements and/or policies, used to guide, direct, and base decisions for future growth, development and change within Otoe County. Consensus on "what is good land use?" and "how to manage change in order to provide the greatest benefit to the community and its residents?" is formed. Otoe County's goals and policies attempt to address various issues, regarding the questions of "how" to plan for the future.

Goals are desires, necessities and issues to be attained in the future. A goal should be established in a manner that allows it to be accomplished. Goals are the end-state of a desired outcome. Goals also play a factor in the establishment of policies within a county. In order to attain certain goals and/or policies within County government, they may need to be modified or changed from time to time.

Policies are measurable, definable steps that lead to the eventual completion of the goal. They are specific statements of principle or actions that imply a direction that needs to be undertaken.

These policies will synthesize the information from the goals, as well as the responses from the participants of the various input processes. Policies play an important role in the Comprehensive Development Plan because they direct the different actions that will need to be taken to meet the goals.
It is important for counties to establish their goals and policies in a manner allowing for both long-term and short-term accomplishments. The short-term goals and policies serve several functions:

- Allow for immediate feedback and success, which fuels the desire to achieve additional goals and better policies.
- Allow for the distribution of resources over time thus assuring a balanced use of public investment.
- Establish certain policies that need to be followed before the long-term goals can be accomplished.

The Otoe County Comprehensive Plan provides a broadly painted picture for the county's future. The vision statements and goals describing the desired future conditions provide guidance for land use decisions and other actions, both public and private that collectively will determine the future of the County.

Otoe County Vision and the Plan

The Otoe County Comprehensive Plan provides a broadly painted picture for the county's future. The vision statements and goals describing the desired future conditions provide guidance for land use decisions and other actions, both public and private that collectively will determine the future of Otoe County.

The core premise embedded in the Otoe County Plan 2016 is designed to maintain and enhance the health, safety and welfare of the county during times of change, to promote our ideals and values as changes occur, and to meet the needs of today without sacrificing the ability of future generations to meet their needs. The plan acknowledges the importance of the connections between economic,

environmental, and social components of the county. The plan is a combination of practicality and vision, and provides guidelines for sustaining the rich fabric of Otoe County.

Otoe County Plan Goals and Policies

The goals and policies for the Otoe County Comprehensive Plan will be contained throughout the following Chapters. Each Chapter shall contain the pertinent goals and polices for the Chapter.

Goals are intended as a long-range desire; however, as the Plan is implemented and different things in the world around Otoe County changes, then the goals need to be modified to address the new direction and factors. Therefore, goals need to be flexible to ensure success and positive outcomes.

3

Population

Population Profile

Understanding past and existing populations; while applying these to the future is critical. Otoe County, including the decision-makers need to understand where the county has been, where it is and where it appears to be going. Population drives all of the major components making up the county including housing, local employment, economics, and the fiscal stability.

Developing an understanding of the historic population helps understand where the future population is going in the future. Realizing where the future population is heading, in turn assists in seeing the impacts on future housing, retail, medical, employment and educational needs within Otoe County.

Projections provide an estimate for the county to base future land use and development decisions. However, population projections are only estimates and unforeseen factors may affect projections significantly.

Population Trends and Analysis

Table 3.1 contains the historic population for Otoe County, and the incorporated communities in Otoe County, and the unincorporated areas, between 1980 and 2010. The data provide a look at where Otoe County has been and allows for the eventual projection of populations in the county.

Table 3.1: Population Trends and Analysis Otoe County 1980 to 2010

Community	1980	1990	2000	2010	% Change 2000 to 2010
Burr	101	75	66	57	-43.6%
Douglas	207	199	231	173	-16.4%
Dunbar	216	171	237	187	-13.4%
Lorton	47	61	39	41	-12.8%
Nebraska City	7,127	6,547	7,228	7,289	2.3%
Otoe	197	196	217	171	-13.2%
Palmyra	512	545	546	545	6.4%
Syracuse	1,638	1,646	1,762	1,942	18.6%
Talmage	246	246	268	233	-5.3%
Unadilla	291	294	342	311	6.9%
Incorp. Areas	10,582	9,980	10,936	10,949	3.5%
Unincorp. Areas	4,601	4,272	4,460	4,791	4.1%
Otoe County	**15,183**	**14,252**	**15,396**	**15,740**	**3.7%**

Source: U.S. Census Bureau, 1980 - 1990, 2000, 2010

Typically, a mid-decade comprehensive plan update such as Otoe County would include the most recent population projections. However, after examining the 2013 population estimates, it was determined nothing significant was available at either the county or municipal level.

Overall, Otoe County has seen a 3.7% (557 people) increase in population from 1980 to 2010. This increase was based upon overall increases in Nebraska City, Palmyra, Syracuse and Unadilla, as well as the unincorporated areas of Otoe County. These four communities allowed the municipal populations to increase by 3.5% since the remaining six municipalities all lost population during the time period.

The greatest increase in population was in Syracuse which added 18.6% (304 people) to its population between 1980 and 2010. Nebraska City added 2.3% (162 people) during the same time period. The unincorporated area of Otoe County grew by 4.1% (367 people) during the this period.

Migration Analysis

Migration Analysis is a toll which allows the county to understand critical dynamics of the population shifts. Total Migration indicates the population size migrating in or out of the county over a given period of time.

Table 3.2: Migration Analysis Otoe County 1980 to 2010

Time Period	Total Change (persons)	Natural Change (persons)	Total Migration (persons)
1980-1989	(931)	91	(1,022)
1990-1999	1,144	(195)	1,339
2000-2009	344	133	211
Total	557	29	528

Sources: U.S. Census Bureau 1980 – 2010
Nebraska DHHS, Vital Statistics Reports, 1980 –2009

Table 3.2 shows some of the key dynamics in Otoe County's population. Overall from 1980 to 2010, Otoe County has increased by 557 people. This Table indicates if this new population base was created through natural changes and/or through people moving in and out of the county.

During the 30 year period births exceeded deaths by only 29 people. This dynamic actually saw 195 more deaths versus births between 1990 and 1999. This

trend did reverse itself between 2000 and 2010 with 133 more births versus deaths.

A critical component to Otoe Counties population shift lies between 1980 and 1989 when 1,022 people moved away from the county. This factor alone was responsible for the population loss between 1980 and 1990.

Age Structure Analysis

Age structure is an important component of population analysis. By analyzing age structure, one can determine other dynamics affecting the population of Otoe County. Note: the data in Table 3.2 is based on a calendar year and the data in Table 3.3 is as of April 1, 2000 and 2010; therefore the numbers may not support one another.

Each age group affects the population in a number of different ways. For example, the existence of larger young age groups (20-44 years) means there is a greater ability to sustain future population growth compared to the larger older age groups. Understanding what is happening within the age groups of the community's population is necessary to effectively plan for the future.

Table 3.3: Age and Sex Characteristics Otoe County 2000 to 2010

Age	2000	2010	2000-2010	
	Male and Female	Male and Female	Cohort Change	% Change
0-4	986	1,008	1,008	-
5-9	1,089	1,006	1,006	-
10-14	1,219	1,089	103	10.4%
15-19	1,104	1,002	-87	-8.0%
20-24	638	711	-508	-41.7%
25-29	814	802	-302	-27.4%
30-34	817	808	170	26.6%
35-44	2,392	1,821	190	11.6%
45-54	2,027	2,519	127	5.3%
55-64	1,485	2,003	-24	-1.2%
65-74	1,292	1,350	-135	-9.1%
75 & older	1,533	1,621	-1,204	-42.6%
Total	**15,396**	**15,740**	**344**	**2.2%**

U.S. Census Bureau 2000, 2010

Table 3.3 Contains the age group structure for Otoe County in 2000 and 2010. The examination of population age structure allows for an understanding of where some of the population shifts are occurring. These data allow for a better understanding of what could occur in the future.

A review of population by this method permits one to undertake a detailed analysis of which specific groups are moving in and out of the community. Negative changes in a group indicates out-migration or a combination of out-migration and deaths.

Otoe County saw growth in six age groups. The 0 to 4 and 5 to 9 groups always indicate an increase, since these persons were not born when the 2000 Census was completed. Outside of the 2010 age groups of 0-4 and 5-9 years, the other increase were in the 10-14 (2010), the 30-34 (2010), the 35-44 (2010), and the 45-54 (2010). Overall, there was an increase of 2,604 persons in these age groups. When you eliminate the first two younger populations, there were 590 people moving to Otoe County during this period. This population increase consisted primarily of family aged adults and children.

Table 3.4: Negative Age Groups Otoe County 2000 to 2010

2000 Age Group	Persons	2010 Age Group	Persons	Change
5 - 9 years	1,089 persons	15 - 19 years	1,002 persons	- 87 persons
10 - 14 years	1,219 persons	20 - 24 years	711 persons	-508 persons
15 - 19 years	1,104 persons	25 - 29 years	802 persons	- 302 persons
45-54 years	2,027 persons	55-64 years	2,003 persons	- 24 persons
55–64 years	1,485 persons	65–74 years	1,350 persons	- 135 persons
65 years +	2,825 persons	75 years +	1,621 persons	- 1,204 persons
Total Change				**- 2,260 persons**

Source: U.S. Census Bureau 2000, American Community Survey 2010

There were six age groups from 2000 that declined by 2010. The group with the greatest loss was the 75 years + (2010) which lost 1,204 persons over the period. This loss is can be attributed to two causes, 1) people moving on after 65 years to other

communities and senior care facilities, or 2) a dying population base. The latter is likely the largest reason since between 2000 and 2010 there were 1,814 resident deaths in Otoe County.

Table 3.5: Positive Age Groups Otoe County 2000 to 2010

2000 Age Group	Persons	2010 Age Group	Persons	Change
NA	NA	0 - 4 years	1,008 persons	+ 1,008 persons
NA	NA	5 - 9 years	1,006 persons	+ 1,006 persons
0-4 years	986 persons	10-14 years	1,089 persons	+ 103 persons
20-24 years	638 persons	30-34 persons	808 persons	+ 170 persons
25 - 34 years	1,631 persons	35 - 44 years	1,821 persons	+190 persons
35 - 44 years	2,392 persons	45 - 54 years	2,519 persons	+127 persons
Total Change				+ 2,604 persons

Source: U.S. Census Bureau 2000, ACS 2010

Overall, Otoe County has had a positive population pattern occur during this past ten year period. Solid in -migration from family age groups but then still being negatively impacted by the out-migration of the elderly and post high school youth/adults.

Median Age

Between 2000 and 2010 the median age in Otoe County increased from 39.2 years to 42.9 years. This increase equaled 3.7 years or an increase of 9.4%.

Table 3.6: Median Age/Dependency Ratio Otoe County 2000 to 2010

2000		2010	
Under 18 years of age	4,050	Under 18 years of age	3,790
% of total population	26.3%	% of total population	24.1%
Total 65 yrs and older	2,825	Total 65 yrs and older	2971
% of total population	18.3%	% of total population	18.9%
Median Age	39.2	Median Age	42.9
Total Females	7,846	Total Females	8,026
Total Males	7,550	Total Males	7,714
Dependency Ratio	0.81	Dependency Ratio	0.75
Total Population	**15,396**	**Total Population**	**15,740**

Source: U.S. Census Bureau 2000 and 2010

Dependency Ratio

The dependency ratio examines the portion of a community's earnings that is spent supporting age groups typically and historically dependent on the incomes of others.

< 1: 1 Independent resident is able to support more than 1 Dependent resident

=1: 1 Independent resident able to support 1 Dependent resident

>1: 1 Independent resident able to support less than 1 Dependent resident

$$\frac{\%\text{18 years and younger} + \%\text{ 65 years} +}{\%\text{ of remaining population}}$$

Dependency Ratio

The dependency ratio examines the proportion of Otoe County that supports age groups historically dependent upon others for survival (those under 18 years and those 65 years and more). See the box above for details on calculating the ratio.

Table 3.6 indicates the dependency ratios for 2000 and 2010 in Otoe County. The proportion of persons less than 18 years of age decreased by 6.4% between 2000 and 2010; while those aged 65 years and older increased by 5.2% overall.

In 2000, Otoe County had a Dependency Ratio of 0.81 (44.6%/55.4%); however, by 2010 the Ratio had decreased to 0.75 (43%/57%). This is supported by the substantial decrease in the 18 and under age group.

Ethnicity

Otoe County during the past decade has seen a shift in the ethnicity within the county. Analysis of the ethnicity provides more detail as to the changes seen in a county. Ethnicity is more than additional people living in the county since the new residents bring their own cultures and beliefs to the area; some of these may not mesh well with those already in place. The changes in Otoe County saw considerable increases in all non-white ethnic groups between 2000 and 2010.

The largest change was the Hispanic population, primarily Mexican and other Hispanics. The Hispanic population grew by 525 people between 2000 and 2010, the largest was those of Mexican ethnicity which accounted for nearly 400 of the 525 people.
The second largest ethnic group was those classified

as Other, not Hispanic. This classification saw approximately 250 new people come to Otoe County between 2000 and 2010. In Nebraska, in recent years, this typically is people from Sudan and Somalia. These two groups present new issues for counties and communities, especially for law enforcement, since these two cultures have historically been natural enemies.

Table 3.7: Population by Ethnicity Otoe County 2000 to 2010

Race	2000		2010		2000-2010	
	Number	% of total	Number	% of total	Net Change	% change
White, not Hispanic	14,999	97.4	14,932	94.9	-67	-0.4
Black	44	0.3	75	0.5	31	70.5
Am. Indian & AK. Native	34	0.2	46	0.3	12	35.3
Asian & Pacific Islander	43	0.3	86	0.5	43	100.0
Other, not Hispanic	176	1.1	422	2.7	246	139.8
Hispanic	377	2.4	902	5.7	525	139.3
Mexican	311	2.0	710	4.5	399	128.3
Puerto Rican	0	0.0	5	0.0	5	-
Cuban	1	0.0	9	0.1	8	-
Other Hispanic	65	0.4	178	1.1	113	173.8

Source: US Census 2000, and 2010

In addition, the White population had a 0.4% decrease overall, which equaled 67 less Caucasian people in the county. The County, communities and school districts need to track these changes annually in order to minimize any potential fiscal impacts.

Population Projections

Population projections are estimates based upon past and present circumstances. The use of population projections allows Otoe County to estimate the potential population in future years by looking at past trends. By scrutinizing population changes in this manner, the County will be able to develop a baseline of change from which future scenarios can be generated. A number of factors (demographics, economics, social, etc.) may affect projections positively or negatively.

At the present time, these projections are the best crystal ball Otoe County has for predicting future population changes. There are many methods to project the future population trends; the two projection techniques used below are intended to give Otoe County a broad overview of the possible population changes that could occur in the future.

Trend Line Analysis

Trend Line Analysis is a process of projecting future populations based upon changes during a specified period of time. In the analysis of Otoe County, four different trend lines were reviewed: 2000 to 2010, 1980 to 2010, 1990 to 2010, and 1960 to 2010. A review of these trend lines indicates Otoe County will see varied levels of population changes between now and 2040. The following projections summarize the decennial population for Otoe County through 2040.

Otoe County Trend Analysis

Year	2000 to 2010
2010	15,740 persons
2020	16,092 persons
2030	16,451 persons
2040	16,819 persons

Year	1990 to 2010
2010	15,740 persons
2020	16,562 persons
2030	17,426 persons
2040	18,336 persons

Year	1980 to 2010
2010	15,740 persons
2020	15,932 persons
2030	16,127 persons
2040	16,325 persons

Year	1960 to 2010
2010	15,740 persons
2020	15,594 persons
2030	15,450 persons
2040	15,307 persons

Cohort Survival Analysis

Cohort Survival Analysis reviews the population by different age groups and sex. The population age groups are then projected forward by decade using survival rates for the different age cohorts. This projection model accounts for average birth rates by sex and adds the new births into the future population.

The Cohort Survival Model projection indicates Otoe County's population will decline slightly in 2020 and then begin a steady increase each decade through 2040. The following projection for Otoe County is based on applying survival rates to age cohorts, but does not consider the effects of either in-migration or out-migration.

Otoe County Cohort Survival Analysis

Year	Cohort Survival Model
2020	14,316 persons
2030	15,150 persons
2040	15,842 persons

Summary of Population Projections

Using the modeling techniques discussed in the previous paragraphs, a summary of the population projections for Otoe County through the year 2040 is shown in Figure 3.1. Three population projection scenarios were selected and include (1) a Low Series; (2) a Medium Series; and, (3) a High Series. All three projections forecast a mixture of changes for Otoe County through the year 2040.

Low = *1960 to 2010*

2020	15,594 persons
2030	15,450 persons
2040	15,307 persons

Medium = 2000 to 2010

2020	16,092 persons
2030	16,451 persons
2040	16,819 persons

High = 1990 to 2010

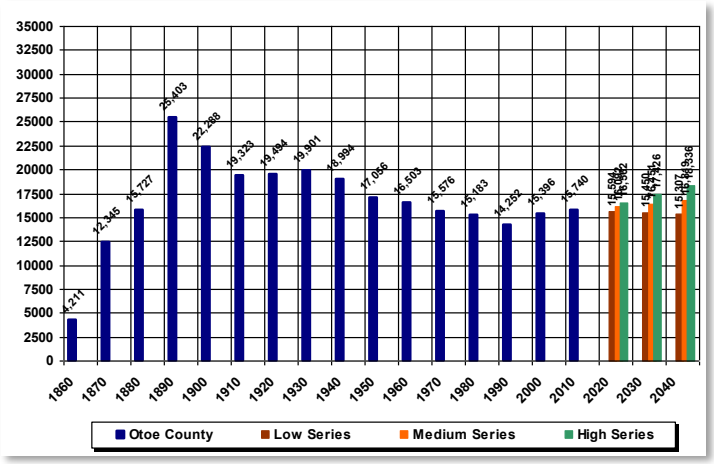
2020	16,562 persons
2030	17,426 persons
2040	18,336 persons

Figure 3.1 reviews the population history of Otoe County between 1860 and 2010, and identifies the three population projection scenarios into the years 2020, 2030 and 2040. Figure 3.1 indicates the peak population for Otoe County occurred in 1890 with 25,403 people. Since 1890, the population in Otoe County slowly decreased until flattening out in 1970.

The three population projections are difficult to read on Figure 3.1 due to the fact that the projections indicate future populations will continued the flattened growth experienced since 1970. These projections will need to be compared to actual Census numbers every 10 years to see if there are any great variations.

As stated previously, the projections have been developed from data and past trends, as well as present conditions. A number of external and internal demographic, economic and social factors may affect these population forecasts. Otoe County's greatest population threats will continue to be out-migration of youth, and strategies should be developed to further examine and prevent this phenomenon.

Figure 3.1: Population and Projections Otoe County 1860 to 2040



Source: U.S. Census Bureau, Marvin Planning Consultants

4

Housing

Housing Profile

The Housing Profile identifies existing housing characteristics and projected housing needs for residents of Otoe County. The primary goal of the housing profile is to allow the county to examine past and present conditions; while, identifying potential needs including provisions for safe, decent, sanitary and affordable housing for every family and individual residing within county.

The housing profile is an analysis that aids in determining the composition of owner-occupied and renter-occupied units, as well as the existence of vacant units. It is important to evaluate information on the value of owner-occupied housing units, and monthly rents for renter-occupied housing units, to determine if housing costs are a financial burden to Otoe County residents.

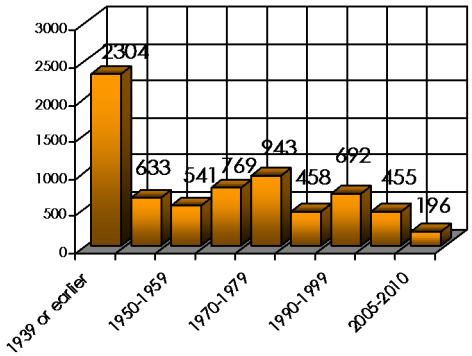
Projecting future housing needs, requires several factors to be considered. These factors include population change, household income, employment rates, land use patterns, and residents' attitudes.

The following tables and figures provide the information to aid in determining future housing needs and develop policies designed to accomplish the housing goals for Otoe County.

Age of Existing Housing Stock

An analysis of the age of the housing stock can reveal a great deal about population and economic conditions of the past. Examining the housing stock is important in order to understand the overall quality of housing in Otoe County.

Figure 4.1: Age of Existing Housing Stock Otoe County 2010



Source: U.S. Census Bureau, American Community Survey 2010

Figure 4.1 indicates 2,304 homes or 32.9% of Otoe County's 6,991 total housing units, were constructed prior to 1940. This statistic is county-wide, including each community, and will consist of older well-kept homes as well as homes likely in need of repair or demolition.

Otoe County saw very positive construction activity between 1970 and 2000 with 2,744 (39.3%) homes constructed. This was especially true between 1970 and 1980 saw 943 (13.5%) new homes built during the decade. These data indicate the economy was relatively good during these decades. However, in recent years the construction of new homes has slowed.

Approximately 74.2% of all housing units in Otoe County were constructed prior to 1980. Due to the age of these homes, there may be a need for special weatherization programs in the county and the communities to bring these homes up to current energy efficiency standards.

Table 4.1: Community Housing Trends Otoe County 2000 to 2010

Selected Characteristics	2000	2010	% Change 2000-2010
Population	15,396	15,740	2.2%
Persons in Household	15,036	15,402	2.4%
Persons in Group Quarters	360	338	-6.1%
Persons per Household	2.48	2.42	-2.4%
Total Housing Units	6,567	7,025	7.0%
Occupied Housing Units	6,060	6,362	5.0%
Owner-occupied units	4,486	4,659	3.9%
Renter-occupied units	1,574	1,703	8.2%
Vacant Housing Units	507	663	30.8%
Owner-Occupied vacancy rate	2.3%	2.3%	0.0%
Renter-Occupied vacancy rate	9.5%	8.8%	-7.4%
Single-family Units	5,399	5,986	10.9%
Duplex/Multiple-family units	759	685	-9.7%
Mobile Homes, trailer, other	404	320	-20.8%
Median Gross Rent - 2000-2010			
Otoe County	$434	$580	**33.6%**
Nebraska	**$491**	**$632**	**28.7%**
Median Value of Owner-Occupied Units - 2000-2010			
Otoe County	$78,000	$114,000	**46.2%**
Nebraska	**$88,000**	**$119,700**	**36.0%**

Source: U.S. Census Bureau 2000, ACS 2010

Housing Trends

Table 4.1 identifies several different housing trends in Otoe County. The Table indicates the breakdown between owner- or renter-occupied housing as well as the number of people living in Group Quarters.

Persons in Households/Group Quarters

In 2010 there were 366 more people living in households than in 2000, this represents a change of 2.4%. The increase in persons in households is slightly higher than the actual population increase of 2.2% seen for the same period. Between 2000 and 2010, the number of people living in group quarters went from 360 people in 2000 to 338 in 2010 a change of –6.1%.

Persons per Household

Table 4.1 also includes the number of persons per household. The average persons per household in Otoe County decreased from 2.48 to 2.42 persons. The trend nationally has been towards a declining household size; however, the person per household in Otoe County is similar to the surrounding counties:

- Cass County has 2.57 persons per household
- Johnson County has 2.31 persons per household
- Nemaha County has 2.29 persons per household
- Lancaster County has 2.40 persons per household
- Gage County has 2.31 persons per household

Occupied vs. Vacant Housing Units

Occupied housing units in the county increased by 5.0% between 2000 to 2010; this was a 302 unit increase over 2000.

During the timeframe, vacant housing units grew from 156 units to 663 units or 30.8%. This is a significant increase for the 10 year Census period. The largest increase in vacancy rates was likely in the owner-occupied units since the overall percentage remained the same at 2.3% and the owner-occupied units had an overall increase during the 10 year period.

Median Gross Rent

Median gross rent in Otoe County increased from $434 per month in 2000 to $580 per month in 2010, or 33.6%. The State's median monthly gross rent increased by 28.7%. This indicates Otoe County has seen gross rent increase slightly higher rate than the state. However, the county's median gross rent is 92% of the states median gross rent.

Comparing changes in monthly rents between 2000 and 2010 with the Consumer Price Index (CPI) enables the local housing market to be compared to national economic conditions. Inflation between 2000 and 2010 increased at a rate of 28.7%, indicating Otoe County's rents exceeded the rate of inflation for the 10-year period. Thus, Otoe County tenants were paying more in monthly rents in 2010, in terms of real dollars, than they were in 2000, on average. Landlords were also making more on their investment.

Median Value of Owner-occupied Units

The Median value of owner-occupied housing units in Otoe County increased from $78,000 in 2000 to $114,000 in 2010 and represents an increase of 46.2%. The median value for owner-occupied housing units in the state showed an increase of 36.0%. Housing values in Otoe County grew at a considerably faster rate than seen statewide. However, the median value of an owner occupied unit in Otoe County is 95% of the state median.

In comparison to the CPI, the local value of owner-occupied housing increased at a rate greater than the CPI. This indicates housing values in the county were worth more in 2010 compared to 2000 dollars. In 2010, the median value of an owner-occupied dwelling was worth $1.14 for every dollar in 2000.

Household Characteristics

Table 4.2 shows tenure (owner-occupied and renter-occupied) of households by number and age of persons in each housing unit. Analyzing these data gives Otoe County the opportunity to determine where there may be a need for additional housing.

2000

The largest section of owner-occupied housing in Otoe County in 2000, based upon number of persons, was two person households, with 1,772 units, or 39.5% of the total owner-occupied units. By comparison, the largest household size for rentals was the single person households which had 619 renter-occupied housing units, or 39.3% of the total renter-occupied units.

Otoe County was comprised of 3,792 1-or 2-person households, or 62.6% of all households. Households having 5-or more persons comprised only 9.6% of the owner-occupied segment, and 8.6% of the renter-occupied segment. Countywide, households of 5-or more persons accounted for 567 units, or 9.4% of the total.

TABLE 4.2: HOUSEHOLD CHARACTERISTICS
OTOE COUNTY 2000 TO 2010

Householder Characteristic	2000				2010				O.O.	R.O.
	Owner-Occupied	% O.O	Renter-Occupied	% R.O	Owner-Occupied	% O.O	Renter-Occupied	% R.O	Percent Change	
Tenure by Number of Persons in Housing Unit (Occupied Housing Units)										
1 person	979	21.8%	619	39.3%	1,022	21.9%	721	42.3%	4.4%	16.5%
2 persons	1,772	39.5%	422	26.8%	1,969	42.3%	449	26.4%	11.1%	6.4%
3 persons	652	14.5%	220	14.0%	650	14.0%	234	13.7%	-0.3%	6.4%
4 persons	652	14.5%	177	11.2%	608	13.1%	140	8.2%	-6.7%	-20.9%
5 persons	278	6.2%	95	6.0%	267	5.7%	95	5.6%	-4.0%	0.0%
6 persons or more	153	3.4%	41	2.6%	143	3.1%	64	3.8%	-6.5%	56.1%
TOTAL	**4,486**	**100.0%**	**1,574**	**100.0%**	**4,659**	**100.0%**	**1,703**	**100.0%**	**3.9%**	**8.2%**
Tenure by Age of Householder (Occupied Housing Units)										
15 to 24 years	50	1.1%	189	12.0%	43	0.9%	159	9.3%	-14.0%	-15.9%
25 to 34 years	468	10.4%	352	22.4%	471	10.1%	317	18.6%	0.6%	-9.9%
35 to 44 years	936	20.9%	335	21.3%	680	14.6%	269	15.8%	-27.4%	-19.7%
45 to 54 years	869	19.4%	230	14.6%	1,087	23.3%	336	19.7%	25.1%	46.1%
55 to 64 years	717	16.0%	157	10.0%	920	19.7%	208	12.2%	28.3%	32.5%
65 to 74 years	669	14.9%	120	7.6%	693	14.9%	152	8.9%	3.6%	26.7%
75 years and over	777	17.3%	191	12.1%	765	16.4%	262	15.4%	-1.5%	37.2%
TOTAL	**4,486**	**100.0%**	**1,574**	**100.0%**	**4,659**	**100.0%**	**1,703**	**100.0%**	3.9%	8.2%

Source: U.S. Census Bureau 2000, American Community Survey 2010

In 2000, the age cohorts representing the largest home ownership group was 35-44 years. Of the total residents living in owner-occupied housing units, 20.9% were between 35 and 44 years of age. This group was closely followed by the 45 to 54 years with 19.4%. Overall, 48.2% of all owner-occupied units were owned by individuals 55 years and older.

The renter occupied housing was dominated by two cohort groups; the 25 to 34 years (22.4%) and the 35 to 44 years (21.3%). These two cohorts represent 43.7% of all the renter-occupied units in 2000.

2010

In 2010, the largest section of owner-occupied housing in Otoe County remained with the two-person household, with 1,969 units, or 42.3% of the total owner-occupied units; an increase of 11.1% over 2000. By comparison, the largest household size for rentals was the single person households with 721 renter-occupied housing units, or 42.3% of the total renter-occupied units; a change of 16.5% over 2000. The renter-occupied group having the largest percentage increase was the six or more person household at 56.1%.

In 2010, the age cohorts representing the largest home ownership group was those 45 to 54 years. Of the total residents living in owner-occupied housing units, 23.3% were between 45 and 54 years of age. The 55 to 64 years cohort was a close second with 19.7% of the total owner-occupied units.

The renter occupied housing was again dominated by the two different cohort groups; the 45 to 54 years (19.7%) and the 25 to 34 years (18.6%). These two cohorts represent 38.3% of all the renter-occupied units in 2010. However, the 45 to 54 years group is not a common occurrence for most Nebraska counties; however, it is in line with the large number of renters in the 35 to 44 years category in 2000; in most cases once the 35 to 44 years (2000) age another 10 years they have moved into the owner occupied category.

Otoe County was comprised of 4,161 1-or 2-person households, or 65.4% of all households; which represents an increase of 9.7% from 2000. Households having 5-or more persons comprised 8.8% of the owner-occupied segment, and 9.4% of the renter-occupied segment. Countywide, households with 5-or more persons accounted for 569 units, or 8.9% of the total.

TABLE 4.3: SUBSTANDARD HOUSING CONDITIONS OTOE COUNTY 2000 TO 2010

Substandard Units	Otoe County		State of Nebraska	
	Total	% of Total	Total	% of Total
Characteristics				
2000 Units Lacking Complete Plumbing Facilities	22	1.1%	6,398	0.9%
2000 Units with More Than One Person per Room	78	4.0%	17,963	2.5%
2010 Units Lacking Complete Plumbing Facilities	22	1.1%	2,540	0.3%
2010 Units with More Than One Person per Room	57	2.9%	12,201	1.5%
Substandard Units				
2000 Total	100	5.1%	24,361	3.1%
2010 Total	79	4.0%	14,741	1.9%

Source: U.S. Census Bureau 2000, American Community Survey 2010

Substandard Housing

According to the U.S. Department of Housing and Urban Development (HUD) guidelines, housing units lacking complete plumbing or are overcrowded are considered substandard housing units. HUD defines a complete plumbing facility as hot and cold-piped water, a bathtub or shower, and a flush toilet; overcrowding is more than one person per room. In addition, anytime there is more than 1.0 persons per room, the housing unit is considered overcrowded, thus substandard.

These criteria when applied to Otoe County indicate 100 housing units, or 5.1% of the total units, were substandard in 2000. This figure was reached by adding the number of housing units meeting one criterion to the number of housing units meeting the other criterion. However, the largest amount of substandard units was based on overcrowding with 78 units.

In 2010 the total number of substandard housing units decreased to 79 units. The primary contributing factor was still overcrowding which accounted for nearly 73% of substandard problem and the actual reported number decreased by 21 units from 2000 to 2010. Comparing Otoe County to the state of Nebraska as a whole, the percent of substandard housing units in Otoe County was slightly higher than the state as a whole for both time periods.

What these data fail to consider are housing units that have met both criterion and counted twice. Even so, the county should not assume these data overestimate the number of substandard housing. Housing units containing major defects requiring rehabilitation or upgrading to meet building, electrical or plumbing codes should also be included in an analysis of substandard housing. A comprehensive survey of the entire housing stock should be completed every five years to determine and identify the housing units that would benefit from remodeling or rehabilitation work. This process will help ensure that a county maintains a high quality of life for its residents through protecting the quality and quantity of its housing stock.

HOUSING GOALS, OBJECTIVES AND POLICIES

Housing Goal 1

Provide quality housing throughout the county.

Housing Policies and Strategies

H-1.1 The county should work with local agencies to provide quality housing.

H-1.2 A program to identify substandard housing units throughout Otoe County should be a priority and substandard housing units should be repaired or demolished.

H-1.3 The County should continually work with each community as they strive to provide better housing within the corporate limits.

Housing Goal 2

Affordable housing should be available throughout the county.

Housing Policies and Strategies

H-2.1 The County should work with agencies and funding sources like CDBG to offset development costs in order to bring the overall cost of housing down.

H-2.2 The county should continue to focus on affirmatively furthering fair housing throughout the entire county area.

H-2.3 The zoning and subdivision regulations should accommodate specific tools such as planned unit developments in order to aid in minimizing required improvements within developments.

H-2.4 Support all funding mechanisms available to effectively lower the cost of development and housing.

H-2.5 The County should continually work with each community as they strive to provide better housing within the corporate limits.

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Economy and Economic Development

Economic and Employment Profile

Economic data are collected in order to understand local changes in economic activity and employment needs and opportunities within Otoe County. In this section, employment by industry, household income statistics, commuter analyses, and agricultural data were reviewed for Otoe County and Nebraska.

Income Statistics

Income statistics for households are important for determining the earning power of households in a county. The data presented here show household income levels for Otoe County in comparison to the state. These data were reviewed to determine whether households experienced income increases at a rate comparable to the state of Nebraska and the Consumer Price Index (CPI).

Table 5.1: Household Income Otoe County 2000 to 2010

Household Income Ranges	2000				2010			
	Otoe County	% of Total	State of Nebraska	% of Total	Otoe County	% of Total	State of Nebraska	% of Total
Less than $10,000	504	8.3%	55,340	8.3%	357	5.6%	47,902	6.8%
$10,000 to $14,999	481	7.9%	43,915	6.6%	401	6.3%	41,039	5.8%
$15,000 to $24,999	893	14.7%	98,663	14.8%	768	12.1%	82,906	11.8%
$25,000 to $34,999	897	14.8%	97,932	14.7%	844	13.3%	83,822	11.9%
$35,000 to $49,999	1,236	20.4%	122,654	18.4%	887	14.0%	109,525	15.6%
$50,000 to $74,999	1,274	21.0%	136,141	20.4%	1,407	22.2%	146,852	20.9%
$75,000 to $99,999	438	7.2%	58,361	8.7%	735	11.6%	87,734	12.5%
$100,000 to $149,999	245	4.0%	36,565	5.5%	617	9.7%	69,882	9.9%
$150,000 to $199,999	65	1.1%	8,551	1.3%	242	3.8%	17,498	2.5%
$200,000 or more	29	0.5%	8,873	1.3%	77	1.2%	15,477	2.2%
Total	6,062	100.0%	666,995	100.0%	6,335	100.0%	702,637	100.0%
Median Household Income	$37,302		$39,250		$47,493		$47,995	
Number of Households	6,062		666,995		6,335		702,637	

Source: U.S. Census Bureau, 2000, ACS 2006-2010

Table 5.1 indicates the number of households in each income range for Otoe County for 2000 and 2010. In 2000, the household income range most commonly reported was $50,000 to $74,999, which accounted for 21.0% of all households. Within the state of Nebraska the income range most reported statewide was also the $50,000 to $74,999.

By 2010, the income range reported most was still the $50,000 to 74,999 which accounted for 22.2% of the total. The statewide income range remained unchanged as well. Otoe County, between 2000 and 2010, saw strong growth in the middle to upper income levels; while, the lower levels were level to decreasing.

Those households earning less than $15,000 decreased from 16.2% in 2000 to 11.9% in 2010. These household groups account for the poorest of the poor in the county. The decrease between 2000 and 2010 was 23.0%, which indicates some improvement.

The median household income for Otoe County was $37,302 in 2000, which was 95% of the State median income. By 2010, the median household income increased to $47,493 or an increase of 27.3% and was still less than the state median income; however, the median household income in Otoe County was at 99% of the state's. Therefore, the gap between the state and county shrunk.

The CPI for this period was 23.6%, indicating household incomes in Otoe County were growing at a faster rate than the nation. Households were earning more in real dollars in 2010 than in 2000.

Income Source/Public Assistance

The table below shows personal income by source for Otoe County and the State. These data are compared to the CPI, in order to determine if increases are consistent with inflation and in terms of real dollars. Between 1980 and 2010, the CPI was equal to 164.7%.

TABLE 5.2: INCOME BY SOURCE
OTOE COUNTY/STATE OF NEBRASKA 1980 TO 2010

Income Characteristics	1980	1990	2000	2010	% Change 1980-2010
Otoe County					.
Total Personal Income	$119,530,000	$227,526,000	$392,727,000	$579,315,000	384.7%
Non-farm Income	$121,939,000	$205,099,000	$372,550,000	$540,318,000	343.1%
Farm Income	-$2,409,000	$22,427,000	$20,177,000	$38,997,000	1718.8%
Per Capita Income	**$7,876**	**$16,005**	**$25,347**	**$36,745**	**366.5%**
State of Nebraska					
Total Personal Income	$14,394,940,000	$28,388,321,000	$48,997,941,000	$72,189,707,000	401.5%
Non-farm Income	$14,296,494,000	$26,201,453,000	$47,577,270,000	$68,743,169,000	380.8%
Farm Income	$98,446,000	$2,186,868,000	$1,420,671,000	$3,446,538,000	3400.9%
Per capita income	**$9,155**	**$17,948**	**$28,590**	**$39,445**	**330.9%**

Source: U.S. Census Bureau 2000, ACS 2005-2009

TABLE 5.3: TRANSFER PAYMENTS
OTOE COUNTY/NEBRASKA 1970 TO 2010

Payment Type	1970	1980	1990	2000	2010	% Change 1970 to 2010	% Change Per Year
Otoe County							
Government payments to individuals	$5,594,000	$17,918,000	$33,228,000	$59,041,000	$113,149,000	1922.7%	38.5%
Retirement, Disability & Insurance Benefits	$3,539,000	$11,156,000	$20,425,000	$30,023,000	$45,482,000	1185.2%	23.7%
Medical Benefits	$860,000	$3,994,000	$9,389,000	$23,279,000	$48,692,000	5561.9%	111.2%
Income Maintenance Benefits (SSI, AFDC, Food Stamps, etc)	$319,000	$812,000	$1,555,000	$2,885,000	$8,916,000	2695.0%	53.9%
Unemployment Insurance Benefits	$200,000	$723,000	$378,000	$587,000	$3,277,000	1538.5%	30.8%
Veteran's Benefits	$549,000	$1,018,000	$1,082,000	$1,611,000	$5,046,000	819.1%	16.4%
Federal Education and Training Assistance	$127,000	$214,000	$394,000	$630,000	$1,243,000	878.7%	17.6%
Payment to Non-profit Institutions	$191,000	$560,000	$382,000	$1,235,000	$1,915,000	902.6%	18.1%
Business Payments	$164,000	$422,000	$568,000	$1,749,000	$1,334,000	713.4%	14.3%
Total	**$5,949,000**	**$18,900,000**	**$34,905,000**	**$62,062,000**	**$116,398,000**	**1856.6%**	37.1%
Transfer Payments Per Capita	$382	$1,245	$2,449	$4,031	$7,395	1836%	36.7%
Total Per Capita Income	$3,805	$7,876	$16,005	$25,347	$36,745	865.7%	17.3%
Per Capita Transfer Payments as % of Per Capita Income	**10.0%**	**15.8%**	**15.3%**	**15.9%**	**20.1%**	**100.5%**	2.0%
State of Nebraska							
Total	**$497,556,000**	**$1,693,802,000**	**$3,365,241,000**	**$6,088,115,000**	**$11,549,607,000**	**2221.3%**	44.4%
Transfer Payments Per Capita	$335	$1,079	$2,132	$3,558	$6,323.91	1787.8%	36%
Total Per Capita Income	$3,905	$9,386	$18,459	$28,967	$39,935	923%	18%
Per Capita Transfer Payments as % of Per Capita Income	**8.6%**	**11.5%**	**11.6%**	**12.3%**	**15.8%**	**84.6%**	1.7%

Source: Bureau of Economic Analysis, REIS, 2010

Non-farm and Farm Income

Total non-farm income, in Otoe County, increased from $119,530,000 in 1980 to $579,315,000 in 2010, or an increase of 384.7%, which was more than 2.3 times the CPI. By 2010, farm income had risen from $ -2,409,000 to $38,997,000, or 1718.8%, which is over 10 times the CPI.

In 1980, non-farm income made up 101.9% of the total personal income in Otoe County due to the negative income status of farm income. By 2010, non-farm income had 93.3% of the total personal income in the county; due in large part to improved farming incomes within the county, state and nation.

Comparing Otoe County to the state of Nebraska as a whole, Otoe County's total personal income, non-farm income and farm income, all grew at considerably slower rates. Total personal income in Otoe County grew at 384.7% compared to 401.5%; non-farm income grew at a rate of 343.1% compared to 380.8% ; and farm income grew by 1718.8% in Otoe County compared to 3400.9% for the entire state.

Per Capita Income

The per capita income in Otoe County increased from $7,876 in 1980 to $36,745 in 2010, or an increase of 366.5%. The Per Capita Income in Otoe County grew at twice the rate of inflation between 1980 and 2010. Otoe County's per capita income has grown at a greater rate than the state as a whole.

Transfer Payments

Another income source is federal subsidies called Transfer Payments (not including the Farm Program dollars) which go to individuals in across the United States. Table 5.3 examines Transfer Payments to residents of Otoe County from 1970 to 2010. Note the total amount of Transfer Payments equals Government Payments to Individuals plus Payments to Non-Profit Institutions plus Business Payments. The remaining categories listed in the table are subsets of the Government Payments to Individuals category. In 1970, Total Transfer Payments to Otoe County were $5,949,000, and the State was $497,556,000. By 2010, Total Transfer Payments to Otoe County was $116,398,000, or an increase of 1856.6%, and the State total was $11,563,462,000, or an increase of 2224.1%.

The trend for transfer payments per capita between 1970 and 2010 also indicates a significant increase. In 1970 the Transfer Payment per capita in Otoe County was $382; by 2010 this increased to $7395 per person. This is an increase of 1836% or 36.7% annually.

The per capita Transfer Payments can be compared to the total per capita income of Otoe County. When comparing the two, in 1970, Transfer Payments made up 10.0% of the total per capita income in Otoe County; however, by 2010, Transfer Payments per capita comprised 20.1% of the total per capita income of the county (over 1 in 5 dollars per capita were a government payment).

Total transfer payments between 1970 and 2010 have shown an increase in each reporting period. Income maintenance and medical payments comprised the majority of total transfer payments. The largest percentage increase occurred within Medical Payments, which increased by nearly 5561.9% or 111.2% annually. Income Maintenance was second at nearly 2695% or 53.9% annually.

The significance of these numbers is to make the county aware of the impact federal programs, outside of the Farm Program, are having within Otoe County. Discussion will likely continue in Washington D.C. regarding the cutting or elimination of some or all of these federal programs; as it does continue, counties and communities need to realize the impacts and need to be prepared for any negative effects that result.

Industry Employment

Employment by industry shows where the residents of Otoe County are employed. The data in Table 5.4 does not necessarily represent the types and numbers of jobs within Otoe County. Table 5.4 indicates employment size by industry for Otoe County and the State of Nebraska for 2000 and 2010.

Table 5.4 shows the employment sector in 2000 with the greatest number of employees was Educational, health and social services, as well as Manufacturing. The sectors employed 1,443 people or 18.8% and 1,124 people or 14.6% respectively of the total employed residents.

By 2010, Educational, health and social services had increased to 1,742 employees or 21.9% of the total workforce. In 2010 the second largest employment sector was still Manufacturing with 1,264 people or 15.9%.

TABLE 5.4: EMPLOYMENT BY INDUSTRY OTOE COUNTY 2000 TO 2010

Industry Categories	Otoe County				
	2000	% of Total	2010	% of Total	% Change 200-2010
Agriculture, Forestry, Fishing and Hunting and Mining	635	8.3%	561	7.1%	-11.7%
Construction	638	8.3%	556	7.0%	-12.9%
Manufacturing	1,124	14.6%	1,264	15.9%	12.5%
Wholesale Trade	171	2.2%	153	1.9%	-10.5%
Retail Trade	925	12.0%	946	11.9%	2.3%
Transportation and warehousing and utilities	594	7.7%	700	8.8%	17.8%
Information	183	2.4%	148	1.9%	-19.1%
Finance, insurance, real estate, and rental and leasing	391	5.1%	436	5.5%	11.5%
Professional, scientific, management, administrative, and waste management	295	3.8%	347	4.4%	17.6%
Educational, health, and social services	1,443	18.8%	1,742	21.9%	20.7%
Arts, entertainment, recreation, accommodation and food services	677	8.8%	514	6.5%	-24.1%
Other services (except public administration)	288	3.7%	237	3.0%	-17.7%
Public Administration	329	4.3%	340	4.3%	3.3%
Total Employed Persons	7,693	100.0%	7,944	100.0%	3.3%

Source: U.S. Census Bureau 2000 and ACS 2005-2010

Overall the top five industries in Otoe County in 2000 were:

1. Educational, health, and social services
2. Manufacturing
3. Retail Trade
4. Arts, entertainment, recreation, accommodation and food service
5. Construction

Overall the top five industries in Otoe County in 2010 were:

1. Educational, health, and social services
2. Manufacturing
3. Retail Trade
4. Transportation and warehousing and utilities
5. Agriculture, forestry, fishing and hunting and mining

Regional Basic/Non-Basic Analysis

The following data examine five occupational areas established by the U.S. Census Bureau to evaluate trends in employment and the area economy. Basic employment and non-basic employment are defined as follows:

- Basic employment is business activity providing services primarily outside the area through the sale of goods and services, the revenues of which are directed to the local area in the form of wages and payments to local suppliers.
- Non-Basic employment is business activity providing services primarily within the local area through the sale of goods and services, and the revenues of such sales re-circulate within the community in the form of wages and expenditures by local citizens.

In order to establish a number of Basic jobs, a comparative segment or entity must be selected. For purposes of this analysis, the state of Nebraska will be used. This allows the analysis to establish where Otoe County is seeing exports from the state as a whole.

TABLE 5.5: BASIC/NON-BASIC EMPLOYMENT OTOE COUNTY 2010

Location	Management business, science, and arts occupations	Service occupations	Sales and office occupations	Natural Resources, construction and maintenance occupations	Production, transportation, and material moving occupations	Base Multiplier
Otoe County	31.4%	13.9%	23.5%	11.5%	19.7%	12.7
Cass County	33.5%	15.9%	24.0%	13.5%	13.1%	28.4
Johnson County	22.8%	20.8%	18.3%	20.1%	18.1%	4.3
Nemaha County	35.9%	20.9%	19.4%	11.3%	12.5%	13.3
Lancaster County	38.6%	16.4%	25.5%	8.2%	11.4%	21.2
Gage County	30.4%	20.5%	19.7%	10.7%	18.6%	9.3
Nebraska	34.8%	16.2%	25.0%	10.1%	13.8%	NA

Source: ACS 2006-2010

This analysis is used to further understand which occupational areas are exporting goods and services outside the area, thus importing dollars into the local economy. The five occupational categories used in the analysis are listed below:

- Management business, science, and arts occupations
- Service occupations
- Sales and office occupations
- Natural resources, construction and maintenance occupations
- Production, transportation, and materials moving occupations

A related concept to the basic/non-basic distinction is the Base Multiplier. The base multiplier is a number, which represents how many non-basic jobs are supported by each basic job. A high base multiplier means the loss of one basic job will have a large potential impact on the local economy if changes in employment occur. The rationale behind this analysis is if basic jobs bring new money into a local economy, the money then becomes the wages for

workers in the economy. Therefore, the more money brought in by basic jobs the more it creates non-basic jobs.

Basic Employment

The occupation categories are compared to the same categories for the state and where Otoe County's percentage exceeds the state's percentage there is Basic employment. Table 5.5 indicates there are two categories where Basic employment is present:

- Natural Resources, construction and maintenance occupations
- Production, transportation, and material moving occupations

Overall, 7.3% of the employment base in Otoe County is tied to the exportation of goods or services in these two categories. The county needs to continually work on their Business Retention and Expansion process in order to make these employers stay in the county.

Base Multiplier

The information in Table 5.5 shows Otoe County has a base multiplier of 12.7, which means every job falling into the basic category, 12.7 other jobs in the county are supported and/or impacted. This is illustrated by comparing the basic and non-basic percentages against each other.

Therefore, these jobs tied to exports are critical to supporting these additional 12.7 jobs and the dollars generated from both sets of employment. Therefore, if Otoe County lost just one of the jobs tied to exports then there is the potential to lose approximately 12.7 jobs from the non-basic employment side.

There is no magical multiplier a county should aim to achieve. Every county is different and the dynamics involved are different. The unique and ever changing dynamics are what make a particular county unique and attractive to different employers.

There is one concern showing up in Table 5.5, the large amount of basic employment found in the Production, transportation, and material moving occupations. This area has 81% of all the Basic employment in Otoe County. Major decisions could have major economic impacts on the county. Future economic development efforts need to focus on improving the basic activity found in the other four categories.

It is critical for a county to determine their future vision for business and industry and work towards an end goal. As previously mentioned it is also critical to diligently work towards a successful Business Retention and Expansion program to support those employers already located in the county. Some counties become too focused on attracting that next big catch and forget about the opportunities existing employers can offer through expansion of their operations.

Commuter Trends

Table 5.6 show the commuter characteristics for Otoe County in 2000 and 2010. Travel time to work is another factor used to gauge where Otoe County's workforce is employed. Table 5.6 shows how many residents of Otoe County travel to work in several time categories.

Table 5.6: Travel Time to Work Otoe County 2000 to 2010

Travel Time Categories	2000	% of Total	2010	% of Total	% Change
Less than 10 minutes	2,539	33.4%	2,535	59.3%	-0.2%
10 to 14 minutes	1,186	15.6%	1,031	14.1%	-13.1%
15 to 19 minutes	491	6.5%	517	2.4%	5.3%
20 to 29 minutes	828	10.9%	770	3.0%	-7.0%
30 to 44 minutes	960	12.6%	1,279	12.0%	33.2%
45 to 59 minutes	693	9.1%	599	3.4%	-13.6%
60 minutes or more	391	5.1%	466	5.8%	19.2%
Worked at home	505	6.7%	543	7.0%	7.5%
Total	7,593	100.0%	7,740	100.0%	1.9%
Mean Travel Time (minutes	20.3		20.9		3.0%

Source: U.S. Census Bureau 2000 and ACS 2006-2010

Table 5.6 indicates an overall increase in the number of people from Otoe County working in 2010 compared to 2000. The number of people working increased from 7,593 in 2000 to 7,740 in 2010 or a change of 1.9%. The 1.9% change in persons working compared to an overall population change of 3.7% and the level of in-migration into the county would suggest the overall change in commuter population was due to the different changes in population seen between 2000 and 2010.

Table 5.6 indicates the workforce in 2010 spent slightly more time traveling to work than in 2000. The average travel time increased from 20.3 minutes in 2000 to 20.9 minutes in 2010. The largest increase occurred with those traveling 30 to 44 minutes, which increased by 319 people or 33.2%. The second greatest group was the 60 minutes or more category, which increased by 75 persons, or 19.2%. One item of

note contributing to the drive time is those working from home increased by 38 people or 7.5%. All of the drive times less than 30 minutes all saw sharp decreases, except for the 15 to 19 minute category, in the number of people driving those distances.

Agricultural Profile

The agricultural profile evaluates key elements of the agriculture industry. Since most Nebraska counties were formed around county seats and agriculture, the agricultural economy, historically, has been the center of economic activity for counties. The U.S. Census Bureau, through the Census of Agriculture tracks agricultural statistics every five years. Since the frequency and years do not coincide with the decennial U.S. Census, it is difficult to compare sets of data.

Agriculture Trends

Table 5.7 identifies key components affecting Otoe County's agricultural profile. This Table examines the number of farms, size of these farms, cropland data, and certain value criteria for these farms. The data are for 1997 through 2012.

TABLE 5.7: AGRICULTURAL PROFILE
OTOE COUNTY 1997 TO 2012

Agricultural Characteristics	1997	2002	2007	2012	% Change 1997-2012
Number of Farms	821	797	804	897	9.3%
Land in Farms (acres)	354,430	350,539	322,146	387,715	9.4%
Average size of farms (acres)	432	440	401	432	0.0%
Total area for Otoe County	396,224	396,224	396,224	396,224	0.0%
Percentage of land in farms	89.5%	88.5%	81.3%	97.9%	9.4%
Total cropland (acres)	276,413	277,713	258,398	321,871	16.4%
Harvested cropland (acres)	231,667	233,223	233,222	304,905	31.6%
Estimated Market Value of Land & Bldg (avg./farm)	$400,132	$641,056	$874,306	$1,856,520	364.0%
Estimated Market Value of Land & Bldg (avg./acre)	$973	$1,498	$2,182	$4,295	341.4%

Source: U.S. Census of Agriculture, 1997, 2002, 2007, 2012

Number of Farms

Table 5.7 shows the number of farms in Otoe County increased between 1997 and 2012. This goes against the typical trend seen across Nebraska and the United States. In 1997 there were 821 farms in the county; by 2012 the number increased to 897 or a change of 9.3%. The state of Nebraska, for the same period, saw a decrease of over 5,200 farms for a total change of -9.8%.

Average Size

The average size of each farm stay even at 432 acres in 1997 and 432 acres in 2012; however, in both 2002 and 2007 the average went up to 440 and down to 401acres. One reason for the average farm size remaining equal was the increase in the number of farms and the overall increase in land in farms.

The average farm in Nebraska was 839 acres in 1992 and increased to 953 acres in 2007, an increase of 13.6%.

Total Cropland

The total cropland in Otoe County has been increasing as well between 1997 until 2012; during this period the amount went from 276,413 acres to 321,871 acres. In 1997, 89.5% of the land within Otoe County was considered to be in farms and by 2012 the amount of the county considered to be in farms increased to 97.9%.

Harvested Cropland

The next term/data is harvested cropland. Harvested cropland is as it sounds, cropland actually harvested. In 1997 the Harvested Cropland in Otoe County was 231,667 (84% of Total Cropland and only 65% of the Total Land in Farms). By 2012, the Harvested Cropland increased to 304,9050 acres (95% of Total Cropland and 79% of the Total Land in Farms).

Estimated Market Value

Table 5.7 also shows the Estimated Market Values of Land and Buildings, both by average per farm and average per acre. In 1997 the average value per farm acre was $973. The average value increased in every Census of Agriculture and in 2012 it reached an average per acre of $4,295; an increase of 341.4% from 1997. The CPI for this same period was approximately 50%; therefore the average value per acre increased at nearly seven times the rate of inflation in Otoe County.

The increase in the average per acre also translates into an increase in the average per farm. The average value per farm in 1997 was $400,132 and increased to $1,856,520 in 2012, an overall increase of

364.0%. Again, this increase exceeded the CPI and the rate of inflation for the period.

The average per farm, statewide, was $567,468 in 1997 and $2,159,268 in 2012, an increase of 280.5%. Therefore, the average farm value in Otoe County is less than the state average.

TABLE 5.8: NUMBER OF FARMS BY SIZE OTOE COUNTY 1997 TO 2012

Farm Size (acres)	1997	2002	2007	2012	% Change 1997-2012
1 to 9	39	23	41	54	38.5%
10 to 49	119	150	147	213	79.0%
50 to 179	207	201	233	211	1.9%
180 to 499	216	190	179	153	-29.2%
500 to 999	151	119	109	131	-13.2%
1,000 or more	89	114	95	135	51.7%
Total	**821**	**797**	**804**	**897**	**9.3%**

Source: U.S. Census of Agriculture, 1997, 2002, 2007, 2012

Number of Farms

Table 5.8 shows the number of farms by size (in acres) in 1997, 2002, 2007, and 2012. The table between 1997 and 2012 there was a mixed change with regard to farm size. Farms 1 to 9 acres in size saw an increase of 38.5% while those 180 to 499 acres saw a change of –29.2%. Furthermore, the number of farms between 50 and 179 acres increased by 1.9%. Overall, Otoe County saw an odd occurrence, with farms less than 180 acres increasing and all other sized farms showing a decrease, except for the 1,000 acre and more, in number or staying equal between 1997 and 2012.

Farms and Livestock

Table 5.9 indicates the number of farms and livestock by type for Otoe County between 1997 and 2012. The predominant livestock raised in Otoe County are Hogs and Pigs followed by Cattle and Calves, and Beef Cows. Livestock production in Otoe County has been varied between 1997 and 2012. Not a single livestock category has seen huge increases; the only increase has been small increases within the production of sheep and lambs as well as chickens (layers and pullets).

TABLE 5.9: FARMS AND LIVESTOCK BY TYPE 1997 TO 2012

Type of Livestock	1997	2002	2007	2012	% Change 1997 to 2012
Cattle and Calves					
farms	431	345	293	341	-20.9%
animals	25,281	20,668	15,331	13,782	-45.5%
average per farm	59	60	52	40	-31.1%
Beef Cows					
farms	354	284	258	302	-14.7%
animals	10,390	9,049	8,331	8,022	-22.8%
average per farm	29	32	32	27	-9.5%
Milk cows					
farms	27	17	8	7	-74.1%
animals	1,014	852	269	71	-93.0%
average per farm	38	50	34	10	-73.0%
Hogs and Pigs					
farms	87	63	43	39	-55.2%
animals	56,748	52,204	42,101	48,371	-14.8%
average per farm	652	829	979	1,240	90.1%
Sheep and lambs					
farms	21	18	10	19	-9.5%
animals	905	705	446	1,012	11.8%
average per farm	43	39	45	53	23.6%
Chickens (layers and pullets)					
farms	18	22	29	82	355.6%
animals	1,797	469	989	2,407	33.9%
average per farm	100	21	34	29	-70.6%

Source: U.S. Census of Agriculture, 1997, 2002, 2007, 2012

Cattle and calf production decreased by 45.5% regarding the total number of animals raised. However, there was also a decline in the number of farms producing Cattle and calves; going from 431 in 1997 to 341 in 2012 or –20.9%. The average per farm also decreased by approximately 1/3 for the same period.

Hogs and Pigs saw declines, as well, from 1997 to 2012. The most significant decline was in the number of farms raising hogs and pigs, which went from 87 in 1997 to 39 in 2012, or –55.2%. The number of animals being raised declined from 56,748 animals in 1997 to

48,371 animals in 2012 or a loss of 14.8%. The two factors discussed did result in an overall increase in the average per farm which went from 652 animals to 1,024 animals or an increase of 90.1%. Otoe County in 2015 has seven commercial feedlot operations.

Sheep and Lambs in Otoe County saw a slight decrease in the total farms raising the animals from 21 to 19 farms or a change of –9.5%. The total number of animals raised increased from 905 animals in 1997 to 1,012 animals in 2012 a change of 11.8%. Combined these factors saw the average per farm increase for the time period.

Farms raising beef cows decreased from 354 farms in 1997 to 302 farms in 2012 or -14.7%. The number of animals saw a decrease of 22.8% for the same period going from 10,390 animals to 8,022 animals. The average per farm decreased from 29 cows to 27 cows or –9.5%.

TABLE 5.10: FARMS AND CROPS BY TYPE 1997 TO 2012

Type of Crop	1997	2002	2007	2012	% Change 1997 to 2012
Corn for Grain					
farms	541	439	414	449	-17.0%
acres	100,059	102,211	112,755	144,467	44.4%
average per farm	185	233	272	322	74.0%
Corn for Silage					
farms	25	64	16	14	-44.0%
acres	872	4,188	509	336	-61.5%
average per farm	35	65	32	24	-31.2%
Sorghum					
farms	134	22	-	-	-
acres	11,094	1,366	-	-	-
average per farm	83	62	-	-	-
Wheat					
farms	168	92	102	60	-64.3%
acres	8,660	4,312	7,653	3,310	-61.8%
average per farm	52	47	75	55	7.0%
Oats					
farms	26	24	13	8	-
acres	610	406	199	109	-
average per farm	23	17	15	14	-
Soybeans					
farms	545	443	395	447	-18.0%
acres	98,810	109,331	101,718	144,005	45.7%
average per farm	181	247	258	322	77.7%
Dry Edible Beans excluding Limas					
farms	-	-	-	-	-
acres	-	-	-	-	-
average per farm	-	-	-	-	-
Potatoes					
farms	-	-	1	5	-
acres	-	-	(D)	2	-
average per farm	-	-	(D)	0.4	-

Source: U.S. Census of Agriculture, 1997, 2002, 2007, 2012

Finally, the milk cow operation saw a decline form 27 farms in 1997 to only seven farms in 2012 or –74.1%. In addition, the actual number of animals also decreased from 1,014 milking cows to 71 milking cows or a change of –93.0%. The average milk cows per farm decreased by 73.0% as well going from 38 in 1997 to 10 in 2012.

Farms and Crops

Table 5.10 shows the number of farms and crop by type for the period from 1997 to 2012. The table shows the prominent crops grown in the county. In addition, the table indicates the total number of farms producing the specific crop and finally an average per farm.

Corn for grain and soybeans have been the two most frequently raised crops in Otoe County since 1997. Corn has historically had the largest number of acres planted in Otoe County during this period and has been increasing through each Census. Between 1997 and 2012, the acres planted in Corn has increased by 44.4% in Otoe County.

During the same period the number of acres planted in soybeans has seen an increase of 45.7%. However, there are fewer farmers that planted soybeans in Otoe County in 2012 compared to 1997; declining by 18.0%.

Two crops that have been completely eliminated from production in Otoe County are Oats and Sorghum. As of the 2012 Census of Agriculture there was were no farms planting either crop.

One crop that appears to be gaining in Otoe County and in the state of Nebraska is potatoes. As of the 2012 Census of Agriculture there were five operations planting potatoes but only two acres of production.

Agriculture has always been a major part of the Otoe County economy. It appears its importance will only grow during the planning period of this document. It will be critical to maintain a balance in the type of livestock and grains raised in order to minimize future economic downturns.

Economic Development Goals and Policies

Economic Development Goal 1

Promote Otoe County on a full-time basis

Economic Development Policies and Strategies

ED-1.1 The county needs to develop a joint economic development board charged with promoting Otoe County and all of the communities in the county, as opposed to one serving Nebraska City only.

ED-1.2 The county along with the new economic development board should raise the necessary revenue to hire a full-time Executive Director.

Economic Development Goal 2

Promote a balanced economic development program striving to add value to the agricultural base of the county.

Economic Development Policies and Strategies

ED-2.1 Agriculture and agricultural employment, including value-added agricultural businesses, should be promoted throughout Otoe County.

ED-2.2 Otoe County should encourage economic development projects, which do not conflict with the agricultural character of the County.

ED-2.3 Work with businesses and agricultural operators to build new vertically integrated economic systems from the current agricultural uses in place.

ED-2.4 Work to establish new or existing public and/ or private research facilities in Otoe County.

Economic Development Goal 3

Recruit or retain the youth of the county during or after college.

Economic Development Policies and Strategies

ED-3.1 Develop programs and jobs to address the needs of the youth in order to attract them back to the area after completion of their post-secondary education.

ED-3.2 The youth of Otoe County should be involved in the identification and development of these projects.

ED-3.3 The county should also attract the youth back to the county that are living in Omaha and Lincoln.

Economic Development Goal 4

Develop new industrial sites within Otoe County that have rail access.

Economic Development Policies and Strategies

ED-4.1 Work with OPPD to identify strategies for expanding rail access in Otoe County.

ED-4.2 The County should continue working with the Nebraska Department of Economic Development regarding the identified Enterprise zones within Otoe County.

Economic Development Goal 5

Examine the potential and promote Otoe County as a great place to work and telecommute.

Economic Development Policies and Strategies

ED-5.1 Develop a promotional campaign to promote the quality of life issues of Otoe County as a place to live and "Work from".

ED-5.2 Economic Development activities should focus on growing local businesses, established by county residents, as opposed to pursuing the ultimate "smokestack(s). Homegrown businesses and industries will contribute more to the local communities and county and will be a part of the community.

ED-5.3 Identify businesses and professions where telecommuting would be appropriate and functional.

6

Otoe County Facilities

County Facilities

State and local governments provide a number of services to their citizens. The people, buildings, equipment and land utilized in the process of providing these goods and services are referred to as public facilities.

Public facilities represent a wide range of buildings and services that are built and maintained by the different levels of government. Such facilities are provided to insure the safety, wellbeing and enjoyment of the residents of Otoe County. These facilities and services provide residents with social, cultural, educational, and recreational opportunities, as well as law enforcement and fire protection services designed to meet area needs.

It is important for all levels of government to anticipate the future demand for their services if they are to remain strong and vital. The analysis of existing facilities and future services are contained in the Facilities Plan. Alternatively, in some instances, there are a number of services not provided by the local or state governmental body and are provided by non-governmental private or non-profit organizations for the community as a whole. These organizations are important providers of services and are in integral part of the community.

County Facilities Plan

The Facilities Plan component of a Comprehensive Development Plan reviews present capacities of all public and private facilities and services.

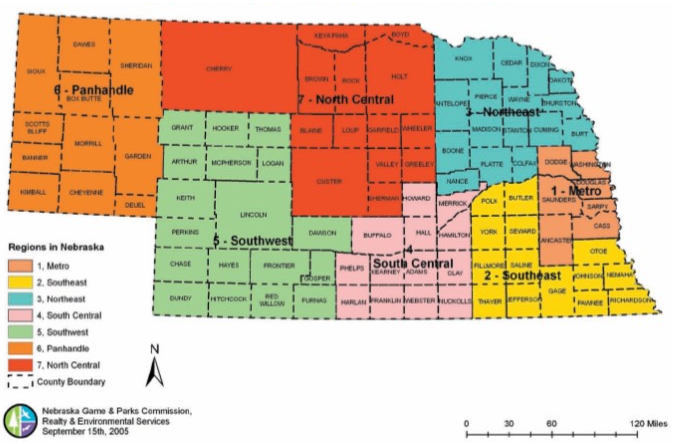
The Facilities Plan for Otoe County is divided into the following categories:

- Recreation
- County Buildings
- Historic Sites and Places
- Education
- Fire/Law Enforcement
- Communication
- Health Care

Recreation

Otoe County is located in Nebraska's Southeast Recreation Planning, Region 2, and a region within the Nebraska Department of Game and Parks system. The Region includes 14 counties in Southeast Nebraska.

Figure 6.1: Nebraska Game and Parks Regions



Community Parks and Facilities

The following facilities and programs can be found in the identified communities of Otoe County.

Nebraska City Parks

Nebraska City has seven city park facilities throughout the community. The primary parks and recreation facilities include:

- Steinhart Park 54.40 acres
- Nuckolls Park Square 1.70 acres
- Wildwood Park 63.70 acres
- Riverview Park 22.80 acres
- Greggsport Park 1.70 acres
- Kearney Hill Park 2.50 acres
- Nebraska City Softball Complex 12.1 acres

Overall, the city of Nebraska City has 359.80 acres of city owned and operated parks. See the Nebraska

Photo 6.1 Entrance into Steinhart Park in Nebraska City

City Comprehensive Plan for more detailed information on these facilities.
Source: City of Nebraska City

Burr Parks
Burr has one park located at the corner of Main and 5th Streets. The park has a tennis court, sand volleyball court, playground equipment, and a picnic shelter. In addition, the park as a hard surfaced trail connecting portions of the park together.

Douglas Park

Photo 6.2 Aerial view of Burr Park
Source: Google Earth

The park in Douglas is located south of "N" Road on west edge of the community. The park contains a ball field, tennis court, concession stand and restrooms, and playground equipment.

Palmyra Park
The park in Palmyra is four square blocks in size and is bordered by 9th Street, 7th Street, "E" Street, and "G" Street. The park contains:

- A ball field
- A tennis court
- A basketball court
- A sand volleyball court
- A gazebo
- Restrooms
- Concession stand
- A trail
- Picnic shelters
- Playground equipment

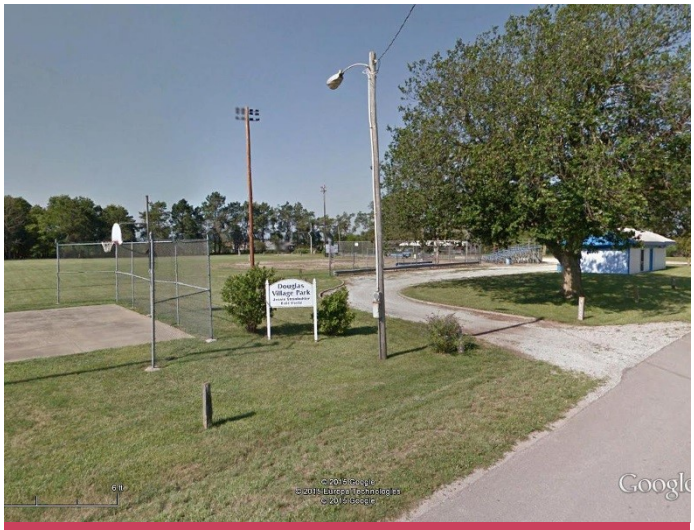


Photo 6.3 View of Douglas Park
Source: Google Earth

Photo 6.4 Aerial view of Palmyra Park
Source: Google Earth

Syracuse Parks
The City of Syracuse has one city park located on the south end of the community between 1st and 3rd Streets and Midland and Thorne Streets. The park has the following amenities:

- A ball field
- Playground equipment
- A batting cage
- Concession stand
- Restrooms
- Picnic shelters

Besides the park on the south edge of the

community, Syracuse also has a small ball field and an aquatic center in the north part of the community, located along Chestnut Street.

Photograph 6.5
Aerial of new ball fields in Syracuse
Source: Google Earth

Finally in the southwest corner of the community, Syracuse has a new four field ball complex. The complex includes a concession stand/press box and restrooms.

Unadilla Park

The village of Unadilla has one park located on the eastern edge of the community. The park has the following amenities:

- A ball field
- Playground equipment
- Concession stand
- Restrooms
- Picnic shelters
- Basketball court

Photograph 6.6
Aerial of park in Unadilla
Source: Google Earth

Regional Recreation

Regional recreational areas are a combination of state, federal, and major private facilities that attract people into the Otoe County area.

Riverview State Recreational Area

Located along the Missouri River in Nebraska City. The facility is in the northeast corner of the City. Riverview SRA contains a total of 37.79 acres of land, of which 36.79 acres are pasture and 1 acre is in water. The SRA has a boat ramp to the Missouri River available. In addition to the boat ramp, the SRA has 12 electrical hook-ups for campers, modern latrine facilities and vault pit latrines. Hunting is prohibited in this facility and a permit is needed to enter the SRA.
Source: Nebraska City Comprehensive Plan

Arbor Lodge State Historical Park

The park contains a total of 72.01 acres of which 32.01 acres are pasture and 40.00 acres are timber. The site contains Arbor Lodge, the past home of J. Sterling Morton (founder of Arbor Day). Arbor Lodge is listed on the National Register of Historic Places by the National Parks Service. The park does not require a permit to enter and contains the following facilities:

- Arbor Lodge (historic mansion)
- Hiking/biking trails
- Concessions
- Visitors Center, and
- Park Office

Source: Nebraska City Comprehensive Plan

Photograph 6.7
Arbor Lodge State Historical Park
Source: Google Earth

Lewis and Clark Interpretive Center

The Interpretive Center has been open since 2004 and is approximately 12,000 square feet in size and located on 79 acres of ground. The center contains the following amenities:

- Exhibits focused on Lewis and Clark including:
  - Animals
  - Boats
  - Birds
  - Earth lodge
  - Fish
  - Medicine
  - Plants
- Theatre
- Gift Shop

Photograph 6.8
Lewis and Clark Interpretive Center

Lied Lodge & Convention Center at Arbor Day Farms

Lied Lodge and Convention Center were constructed in the early 1990's on an area called the Arbor Day Farms. Lied Lodge was thoughtfully designed to be a grand, beautiful, nature-inspired facility that would serve many. Turning Lied Lodge from vision to reality began with a $6 million congressional appropriation endorsed by the National Association of State Foresters and administered by the U.S. Forest Service.

This appropriation was matched with a major donation from the Lied Foundation Trust along with donations from environmental agencies, foundations and corporations, and more than 100,000 contributions from Arbor Day Foundation members.
Source: http://www.liedlodge.org/twenty/how-it-began.cfm

Photograph 6.9
Lied Lodge and Convention Center

Arbor Day Farms

Arbor Day Farms is a 260 acre facility dedicated to preservation and conservation. The 260 acres were originally the estate of J. Sterling Morton, founder of Arbor Day. The 260 acres includes the following amenities:

- Lied Lodge and Convention Center
- A 50 foot treehouse
- Nature classrooms
- South Table Creek Trail
- ArborLinks Golf

Hamburg Bend Wildlife Management Area

Hamburg Bend WMA is a 1,544 acre area where hunting is permitted. The WMA is located 4 miles southeast of Nebraska City and is owned and operated by the Nebraska Game and Parks Commission.

Triple Creek Wildlife Management Area

Triple Creek WMA is a 80 acre area where hunting is permitted. The WMA is located 1 mile west of Palmyra.

Wilson Creek Wildlife Management Area

Wilson Creek WMA is a 42 acre area where hunting is permitted. The WMA is located 1 mile south, 3 miles east, and 1/2 mile south of Otoe.

Golf Courses

The following is a brief description of the local golf courses in and around Otoe County.

Wildwood Golf Course
Wildwood Golf Course is located in Nebraska City. The course is a nine-hole, 2,945 yard, Par 36 design and is open to the public. The course opened in 1954.

ArborLinks Golf Course
ArborLinks Golf Course was designed by Arnold Palmer and it opened in 2002. The course is an 18-hole, 7,031 yard, Par 72.

The Golf Club at Table Creek
The Table Creek Golf Club is located outside Nebraska City, just off Nebraska Highway 2. The course is an 18-hole course that measures 6,185 yards and is open to the public. The course is a Par 72. The course opened in 1997.

Syracuse Golf Course
The Syracuse Golf Course is on the west edge of Syracuse. The course is a nine-hole course and plays 3,815 yards and is a Par 35. The course opened in 1967.

Woodland Hills Golf Course
Woodland Hills is locates in northwestern Otoe County even though the mailing address is Eagle. The course was opened in 1991. It is an 18-hole, Par 71 course and it plays at 6,592 yards.

Other golf courses serving the Otoe County area include:

Course	Community
Fremont County Golf Club	Sidney, IA
Lake Ridge Country Club	Plattsmouth
Grandpa Woods	Murdock
Tecumseh Country Club	Tecumseh
Auburn Country Club	Auburn

Plus, several courses in Lincoln

Museums

Nebraska City Museum of Firefighting
This museum chronicles the evolution of firefighting and fire safety education by Nebraska City's 150-year-old Volunteer Fire Department. This family-friendly attraction features one of the largest (and oldest) collections of fire equipment in the state. Kids young and old can dress in fire gear and climb aboard a fire engine.
Source: http://gonebraskacity.com/member/nebraska-city-museum-of-firefighting/

Photograph 6.10
Nebraska City Museum of Firefighting

Lewis & Clark Interpretive Center
The three story, 12,000 square foot, Lewis & Clark Interpretive Center sits on a scenic 79 acre wooded bluff overlooking the Missouri River. An unobstructed view of the river gives today's audience a sense for what greeted the captains 200 years ago.

Education through time-honored methods of observation and discovery is the central mission of this interactive center and adjoining hiking trails. The flora and fauna (178 new plants and 122 new animals) and scientific discoveries recorded by the Lewis & Clark Expedition (1804-1806) are the focus of the Center. This theme is exciting and unique because no other museum or interpretive center in the nation, existing or planned, focuses on the captains' amazing scientific discoveries. People of all ages will learn through interactive participation and you-are-there experiences. The exhibits and displays were designed with the expert advice of the University of Nebraska's distinguished professor, Dr. Gary Moulton, the nation's definitive scholar on the Lewis & Clark Journals, who served as the Center's first In-Resident Scholar.
Source: http://gonebraskacity.com/member/missouri-river-basin-lewis-and-clark-center/

Kregel Windmill Museum

Step inside the modest, one-story structure on Central Avenue in Nebraska City and you will enter a world that few have experienced—the manufacture of windmills as tools of modern technology circa 1902.

As you enter you can almost sense the heat of the forge, feel the rumbling from vibrations of the huge overhead machines and hear hammer meeting metal in the fabrication area.

Photograph 6.11
Kregel Windmill

The museum has been described as a time capsule of early 20th Century shop-type manufacturing.
Source: http://gonebraskacity.com/member/kregel-museum/

River City Nature Center

Since the early 1930's Joe Voges has been collecting mounted wildlife. To meet the needs for housing this large and unique collection, a group of dedicated individuals worked to purchase the Brawner building.

In 2005, the collection was moved into its present location on South 6th Street. Also constructed in the museum is an interactive learning center, assembly area for meetings about nature, a library containing relevant materials, a gift shop and a children's story telling area.
(Source: http://www.rivercountrynaturecenter.org/about.html)

Civil War Veterans Museum at the G.A.R Memorial Hall

At one time, there were more than 100 Grand Army of the Republic Halls in Nebraska. Only four remain today.

The Nebraska City G.A.R. Hall, built in 1894, is the only one of these halls in the state that has undergone restoration and development as a Civil War and G.A.R. museum. In addition, it is the only Civil War Museum in Nebraska.

The Hall is a reminder to us and to our children of the presence of Civil War veterans in Nebraska City and the role they played in the growth of the community, state and nation after the war.

Dedicated to the memory of the Union and Confederate veterans, the Hall is being maintained so that it may once again serve the community as a meeting place, research library and historical museum.
(Source: http://www.civilwarmuseumnc.org/)

Otoe County Museum of Memories

The Otoe County Museum of Memories consists of three buildings at 366 Poplar Street in Syracuse. A variety of historical attractions are available at the museum. The Otoe County Museum Society was organized Nov. 9, 1972. The main building is the former First Lutheran Church, which was dedicated Nov. 20, 1881. The church, built for $1,500, was a daughter church of First Lutheran Church, North Branch, near Avoca.

Today, the downstairs rooms in the parsonage display vintage furnishings in the kitchen and parlors. Upstairs is an old-fashioned bedroom. The Thomas Edison room exhibits the beginning of movies, electric lights, the phonograph and many other things. The Otoe County room has the desk and sofa that were used by the Otoe County Commissioners for many years. A map on the wall shows every landowner in Otoe County in 1870.

The church has been created into five display rooms: an old-time butcher shop, a carriage room with sleigh, a country store made from cottonwood logs, a loom room which also includes a section of the 1912 Syracuse switchboard from the telephone office, and a doctor's office.

A special project started in 1979, under the direction of Robert Manley, was "Buggy Whips, Flivvers and Threshing Crews." It involved recording local history on tapes. There are more than 70 tapes available to be checked out for listening, as well as DVDs or MP3s to be checked out for listening or copying.

The museum volunteers filmed a video on the history Syracuse. A year of research went into the video,

released in 1997. In 2006, the museum volunteers updated the list of graduates to include 1996-2005 in the Syracuse-Dunbar-Avoca Public Schools history, "Keeping a Roof Over Their Heads." The video on VHS videocassettes or digital video discs, the school book and the Syracuse Centennial book, "For the Record," are available through the museum.
(Source: http://www.ocgsne.com/index.php/research/museum)

Historical Sites

Boscbel

Located along the historic Steam Wagon Road, the two-story, brick, Italianate dwelling was built in 1879 for the prominent Nebraska City freighter and businessman Rollin M. Rolfe. Rolfe became the first wholesale "jobber" south of the Platte River and was instrumental in developing a direct route from Nebraska City to Fort Kearny, which became known as the Nebraska City-Fort Kearny cutoff.
(Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)

Arbor Lodge (J. Sterling Morton House)

J. Sterling Morton was the founder of Arbor Day, an American holiday designated for planting trees. The original house, built in 1855, was remodeled several times by the late 1800s. In 1903 Morton's son, Joy, converted the house to the three-story, fifty-two-room, Neo-Classical Revival mansion of today. As a pioneer Nebraska journalist, politician, and leader in horticulture and conservation, J. Sterling Morton served as secretary of agriculture under President Grover Cleveland in 1893. Arbor Lodge, located near Nebraska City, was donated to the state of Nebraska in 1923 and is now a state historical park.
(Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)

Photograph 6.12
Arbor Lodge
Source: Nebraska State Historical Society

Jasper A. Ware House (Wildwood Center)

Jasper Anderson Ware was born in Kentucky in 1831 and moved to Otoe County in the 1850s. He opened one of the first private banks in Nebraska Territory in 1859 and was city treasurer from 1864 to 1867. The property, located in Nebraska City, includes the 1869 brick dwelling, an outstanding product of Gothic Revival architecture; a brick barn built about 1869; and several outbuildings. Commonly known as Wildwood Center, the property is now a museum.
(Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)

Photograph 6.13
Jasper A. Ware House

George F. Lee Octagon House

Located near the Missouri River, two octagon houses were built by George F. Lee, a farmer and carpenter who came to Otoe County in the fall of 1856. A frame octagon dwelling was built for George and Betsy Lee; in 1872 they moved across the road and built a brick octagon house. Today only the frame house remains.
(**Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)**

Camp Creek Cemetery and Chapel

Located between Nebraska City and Peru, the rural community of Camp Creek was formed soon after Nebraska Territory was opened to settlement in 1854. Twelve years later, a group of local men formed a public cemetery association and accepted the donation of one acre from George Lee. In honor of the cemetery's 50th Anniversary, the Lee's Ladies Cemetery Association (formed in 1912) raised funds to make improvements and build a chapel.
(**Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)**

Camp Creek School
Located near Nebraska City the stuccoed brick building was constructed in 1870-75. It is a good example of the one-room school in Nebraska. The school district was created in 1857, ten years before Nebraska became a state, and the building has served as a rural meeting hall as well as an educational facility throughout its long history.
(**Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)**

Harmony School
Located in rural Otoe County, the original Harmony School began operating in 1869. In 1879 a new schoolhouse, the current building, was constructed. This schoolhouse was in service for 118 years before closing in 1997. The Harmony School is significant for its association with rural education in Nebraska.
(**Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)**

Bridge
Spanning a small tributary of the Little Nemaha River, this forty-foot bowstring carries a vacated section of county road southwest of Lorton. The wrought iron superstructure has evidently been moved to this crossing, its original location unknown. The structure consists of two-panel, bowstring arch-truss fabricated from a patented design by the King Iron Bridge Company of Cleveland, Ohio. It is perhaps one of five iron spans purchased by the county from King in June and July 1876.
(**Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)**

Photograph 6.14
"Bridge" #1
Source: Nebraska Historical Society

Bridge
This small-scale concrete bridge carries a gravel surfaced county road over a small unnamed watercourse southwest of Nebraska City. The structure dates to 1912. It has carried relatively light traffic since in unaltered and well preserved condition. As one of a handful of concrete arches remaining in Otoe County, this bridge is noteworthy for its high degree of detailing and quality workmanship.
(**Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)**

Little Nemaha River Bridge
As indicated by a builder's plate on the bridge itself, the structure was erected in 1901 by the John Gilligan Company of Falls City, Nebraska. Marketed extensively by virtually all of the in-state bridge contractors and promoted in the form of standardized designs by the Nebraska State Engineer's office, the pinned Pratt pony truss was used widely by Nebraska's counties to carry roads over the state's myriad small streams. Thousands of such small-scale trusses were erected across the state in the late nineteenth and early twentieth centuries, and many remain today. The Little Nemaha River Bridge, located near Syracuse, is technologically significant as one of the earliest examples in Nebraska of this common type.
(**Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)**

Photograph 6.15
Little Nemaha River Bridge
Source: Nebraska Historical Society

Wolf Creek Bridge
In Nebraska, the pinned through truss was the bridge of choice for short- and medium-span applications in the late nineteenth and early twentieth centuries. Most of the structures erected during this period were based on standard plans developed either by the state engineer's office or by the individual bridge companies. As a result, hundreds of Pratts were built across the state, all essentially identical, and today

the Pratt truss constitutes the most populous group of through trusses. However, the Wolf Creek Bridge is not like any other truss in Nebraska. Erected in 1889 by the King Iron Bridge Company, it displays features such as fishtail floor beams, peculiar upper-chord connections and "sideways" end posts and upper chords that were soon thereafter rendered anachronistic. Moved to this location near Dunbar, the truss has more recently been closed and its deck removed.

(**Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)**

Massow/Schutz House

The Joachim Massow/Charles & Annie Schutz House is located in rural Otoe County between the villages of Otoe and Dunbar. Built in c. 1875, the wood-frame home is one of the best regional examples of the Gothic Revival style applied to a farmhouse. The Gothic Revival style is relatively rare in Nebraska, although it is seen applied to small rural schools and churches, both of which are threatened property types. Gothic Revival residences are uncommon, but the early settlement of southeastern Nebraska, within the later part of the style's popularity, provides more examples of the style than in other regions of the state.

(**Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)**

McCartney School District 17

Constructed in 1927, the McCartney School is located just west of Nebraska City. The rural school operated for over 73 years and the building tangibly illustrates the enduring capacity of the traditional one -room schoolhouse to successfully educate the young.

(**Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)**

Nebraska City Historic District

The Nebraska City Historic District, comprising fifty-eight square blocks, is a major residential neighborhood that had its beginnings in the 1850s. The historic district contains excellent examples of architectural styles popular during the mid to late nineteenth and early twentieth centuries including Greek Revival, Gothic Revival, Italianate, Queen Anne, Shingle, and Georgian Revival. These houses were occupied by some of Nebraska City's most prominent residents including George and Robert Hawke, Alexander Majors, William Fulton, and Robert Payne, who were involved in commercial and freighting ventures. The district also includes a small commercial area along Central Avenue (old Main Street). The earliest business activities of the city were concentrated along Central Avenue, which connected the Missouri River and what came to be known as Steam Wagon Road. The two-story masonry commercial buildings, which date from the 1870s and 1880s, replaced earlier structures, many of which were destroyed by fires in the 1870s.

(**Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)**

Photograph 6.16
Nebraska City Historic District

Otoe County Courthouse

A contract for the new county courthouse in Nebraska City was signed in August 1864. A. G. Basset was the architect and W. R. Craig and F. W. Wood were hired as builders. The original two-story brick structure was completed in 1865 with additions being made about 1882 and 1936. The Otoe County Courthouse is the oldest public building in Nebraska still in use.

(Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)

Photograph 6.17
Otoe County Courthouse

United States Post Office (presently Premier Bank)
Completed in 1889, the Nebraska City post office building was designed in 1886 under the direction of W. E. Bell, supervising architect for the U.S. Treasury. The two-story brick structure combines elements of the Chateauesque and Romanesque Revival styles to produce an impressive example of late nineteenth century governmental architecture.
(Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)

Photograph 6.18
Former United States Post Office

Morton-James Public Library
The Morton-James Public Library is a brick and stone structure erected in 1896-97 and designed in a simplified Richardsonian Romanesque style by the Omaha architectural firm of Fisher and Lawrie. Discussions concerning the establishment of a Public library in Nebraska City began as early as 1885 with John W. Steinhart as the main promoter. Joy Morton (see J. Sterling Morton House) provided financial assistance to construct the library, which celebrated its grand opening on April 10, 1897.
(Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)

Kregel Wind Mill Company Building
Beginning in at least 1890, The Kregel Wind Mill Company (then called the Nebraska City Manufacturing Company) began selling windmills in the Nebraska City area. Although their main product, the Eli windmill, was not widely marketed, the building (ca. 1905) is of special significance. The factory today remains completely intact with equipment and parts appearing as they probably did when the firm was in operation. This leaves the Kregel Wind Mill Building as a unique example of what was once an important part of the nation's history.
(Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)

Grand Army of the Republic Memorial Hall
The Grand Army of the Republic (G.A.R.) Memorial Hall in Nebraska City was built in the Richardson Romanesque style in 1894. The G.A.R., formed in 1866, was a nationwide movement composed of Union veterans of the Civil War. Aside from the political influence it wielded, the association worked to increase patriotism, and provided an environment of fraternity and comradeship for its members. While other halls are still extant in the state, most are on the second floor of a multi-use commercial building. This building, however, is one of only three extant free-standing halls that were built exclusively by, or for, the G.A.R. in Nebraska.
(Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)

Photograph 6.19
Grand Army of the Republic Memorial Hall

South Thirteenth Street Historic District
The South Thirteenth Street Historic District comprises nine and one-half square blocks of residential and industrial buildings located in the southwest part of Nebraska City. This area is associated with some of Nebraska City's business, professional, and political figures, including John Mattes, Sr., who operated the Mattes Brewing Company; Dr. Elisha Merritt Whitten, a physician who arrived in Nebraska City in 1867; and F. W. Rodenbrock, a successful grocer.
(Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)

Mayhew Cabin
As a tourist destination at its current location in Nebraska City since 1937, the Mayhew Cabin and "John Brown's Cave" were a commercial enterprise created by Edward Bartling; however, its importance to the state of Nebraska is more complex. With its connections to known abolitionist John Henry Kagi, and location that facilitated easy access across the Missouri River into Iowa, whether real or imagined, this

property provided local residents, and Nebraskans at large, with an easily accessible connection to significant figures in American History, such as John Brown and the Underground Railroad. With skepticism and intrigue surrounding the property, the cabin and cave serve as a unique piece of Nebraska folklore.
(Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)

South Nebraska City Historic District
The South Nebraska City Historic District occupies nine square blocks and contains ninety structures primarily residential in nature, including several religious buildings. The district is a good example of a nineteenth century, moderate-income neighborhood displaying various architectural styles. The Taylor-Wessel House, a one-story brick dwelling built in 1857 for William H. Taylor, is one of the state's oldest buildings. The largest building in the district is the First Baptist Church, a simplified Romanesque Revival structure built in 1884-85 and designed by Omaha architects Fisher and Lawrie.
(Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)

Photograph 6.20
Nebraska City Burlington Depot

Nebraska City Burlington Depot
The introduction and expansion of the railroad to other areas of the state adversely impacted Nebraska City's status as a major river port and overland freighting center. The citizens of Nebraska City realized that in order to compete with other towns, their community needed passenger lines. In 1887 Burlington opened a passenger line between Omaha and Nebraska City. However, by 1910 many people in Nebraska City, seeing improvements made to railroad facilities in other towns, felt they were being slighted by Burlington because of the perceived inadequacy of the depot. The importance of having a larger modern depot played a duel role. First, it would allow for the accommodation of increased traffic. Also, the depot presented the first impression of a community to the passengers. After placing considerable pressure on the railroad, Burlington built a new depot for the community in 1912.
(Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)

St. Benedict's Catholic Church
St. Benedict's Catholic Church is associated with Father Emmanuel Hartig, a missionary and Benedictine priest. Father Hartig, a native of Germany, served St. Benedict's for forty years and was responsible for the erection of six Catholic churches and the establishment of several parishes in southeastern Nebraska and northwestern Missouri. The church, located in Nebraska City, was built in 1861. It is a simplified version of the Romanesque Revival style and is believed to be the oldest brick Catholic church in Nebraska.
(Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)

Unadilla Main Street Historic District
The Unadilla Main Street Historic District is located on triangular-shaped lots that contain nine connected buildings. These buildings diminish in size and scale from east to west, parallel Main Street and the railroad tracks. The district is an excellent example of the impact of the railroad on town form.
(Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)

EDUCATION

PUBLIC SCHOOLS

The public schools in Nebraska are grouped into six classes, depending upon the type of educational services provided and the size of the school district. The six classes, as defined by the State of Nebraska, are:

Class 1 Dissolved by Legislative action

Class 2 Any school district with territory having a population of 1,000 inhabitants or less that maintains both elementary and high school grades under the direction of a single school board.

Class 3 Any school district with territory having a population of more than 1,000 and less than 100,000 that maintains both elementary and high school grades under the direction of a single school board.

Class 4 Any school district with territory having a population of 100,000 or more and less than 200,000 inhabitants that maintains both

elementary and high school grades under the direction of a single school board.

Class 5 Any school district with territory having a population of 200,000 or more that maintains both elementary and high school grades under the direction of a single school board.

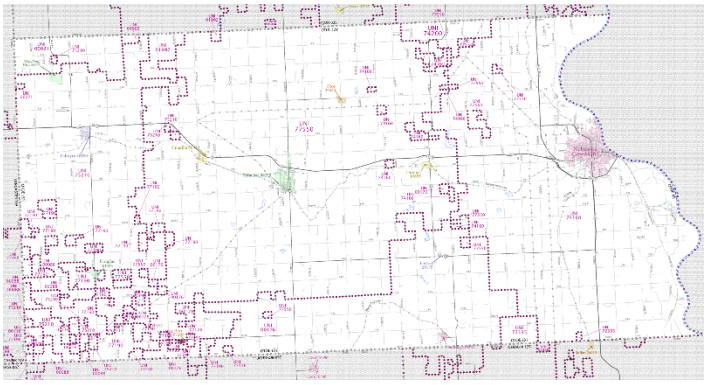
Class 6 Any school district that maintains only a high school under the direction of a single school board. The territory of Class 6 district is made up entirely of Class 1 districts (or portions thereof) that have joined the Class 6.

Nebraska City Public Schools

Education in eastern Otoe County is provided to the public by the Nebraska City Public Schools. NCPS is accredited by the State of Nebraska. The district is a Class 3 school district as previously defined. The District operates four facilities:

- Northside Elementary (K-2) located at 1200 North 14th Street.
- Hayward Elementary (3-5) located at 306 South 14th Street.
- Nebraska City Middle School (6-9) located at 909 1st Corso.
- Nebraska City High School (9-12) located at 141 Steinhardt Park Road.

FIGURE 6.2: SCHOOL DISTRICT MAP OTOE COUNTY PUBLIC SCHOOL DISTRICT



Source: US Census 2010

Syracuse-Dunbar-Avoca Schools

Syracuse-Dunbar-Avoca Schools (SDA) serves most of central Otoe County. The district is a Class 3 District. SDA is accredited and has the following facilities in the district:

- SDA Elementary located at 550 7th Street in Syracuse.
- SDA Middle School is located at 1430 Education Drive in Syracuse.
- SDA High School located at 1500 Education Drive in Syracuse.

Photograph 6.21
Nebraska City High School

Palmyra District OR-1

Education in western Otoe County is provided primarily to the public by the Palmyra District (PD). PD is accredited by the State of Nebraska. The district is a Class 3 school district. The District operates two facilities:

- Bennet Elementary School located in the community of Bennet, 9 miles from Palmyra.
- Palmyra High School located in Palmyra

Johnson County Central Schools

Johnson County Central Schools (JCCS) serves residents in the south-central Otoe County. JCCS covers portion of multiple counties. JCCS is based in Tecumseh, Nebraska and is accredited by the State of Nebraska. The district is a Class 3 school district. The District operates three facilities:

- JCCS Elementary located in Tecumseh
- JCCS Middle School located in Tecumseh
- JCCS High School located in Tecumseh

Other Public Schools serving Otoe County

Besides the four primary public school districts serving Otoe County, there are several additional public school districts with small territories in Otoe County. These include:

- Conestoga Public Schools
- Norris School District 160
- Freeman Public School
- Elmwood-Murdock Public Schools
- Johnson-Brock Public Schools
- Sterling Public Schools

Parochial Schools serving Otoe County

Besides the public school districts serving Otoe County, there is one parochial school serving residents in Otoe County. The school system is Lourdes Central Catholic in Nebraska City.

Nebraska City Lourdes

The Lourdes Central Catholic School's "tradition of excellence" began over a century ago. In 1861, Saint Benedict's Parish, with the assistance of the Benedictine Sisters from Pennsylvania, founded a parochial school known as Saint Benedict's School. As the need for Catholic education grew in Nebraska City, Saint Benedict's School was joined in 1865 by Annunciation Academy, an all girls school, and in 1880 by Saint Mary's School.

Lourdes Central Catholic Schools include grades kindergarten through twelve and are supported by St. Mary's and St. Benedict's Parishes in Nebraska City, St. Joseph's in Paul, St. Bernard's in Julian, St. Paulinus' in Syracuse, St. Clara's in Peru, St. Joseph's in Auburn, Holy Trinity in Avoca, and Holy Spirit in Plattsmouth. Lourdes is a class D-1 school according to the Nebraska Scholastic Activities Association (NSAA) and is comprised mostly of students from the nine supporting Catholic parishes, but also including students from other faith traditions.
Source: (http://www.lourdescentralcatholic.org/home/school-history)

Post-Secondary Education

There are no post-secondary educational facility located in Otoe County.

The residents of Otoe County and the surrounding area have a large selection of in-state post-secondary schools to select. Some of these include:

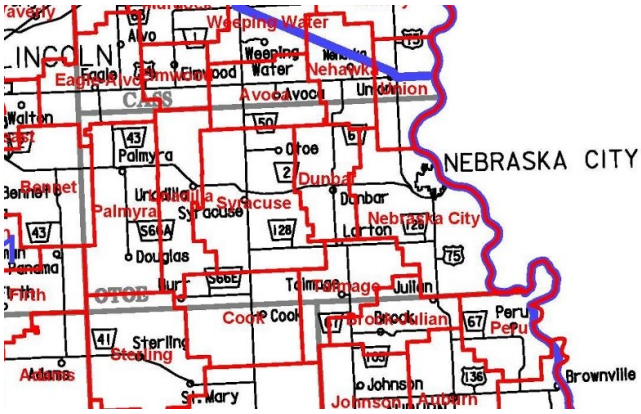
- Southeast Community College
- Peru State College
- University of Nebraska-Lincoln
- University of Nebraska-Omaha
- University of Nebraska-Kearney
- Nebraska Wesleyan
- Union College
- Kaplan University
- Doane College
- Concordia University
- Creighton University

Fire and Police Protection

Fire and Rescue

Fire and rescue in Otoe County is handled through 14 different volunteer departments. These departments are located in Nebraska City, Bennet, Eagle, Sterling, Palmyra, Cook, Syracuse, Unadilla, Avoca, Nehawka, Union, Dunbar, Talmage, and Brock/Julian.

Figure 6.3: Fire District Map Otoe County 2014



Source: Nebraska Department of Roads

Law Enforcement

Otoe County Sheriff's Department

Law enforcement in Otoe County is the responsibility of the Otoe County Sheriff. The principal office of the Otoe County Sheriff is located at 1021 Central Avenue in Nebraska City. In addition to the Sheriff's office, the facility also contains a county detention center.

Based upon data from the Nebraska Commission on Law Enforcement and Criminal Justice, Otoe County had 14 full-time sworn officers in 2013. The prior two years can be seen in Table 6.1.

Table 6.1: Sworn Officer Comparison

County	2011		2012		2013	
	Sworn Officers FT/PT	Officers per 1,000 Population	Sworn Officers FT/PT	Officers per 1,000 Population	Sworn Officers FT/PT	Officers per 1,000 Population
Otoe	**15/0**	**1.8**	**14/0**	**1.6**	**14/0**	**1.6**
Cass	51/4	2.7	22/4	1.2	20/4	1.1
Johnson	6/2	1.1	5/1	1.0	6/1	1.1
Nemaha	5/4	1.3	5/3	1.3	9/3	2.3
Lancaster	79/1	2.9	77/0	2.8	82/0	3

Source: Nebraska Commission on Law Enforcement and Criminal Justice 2014

When examining the number of sworn officers per 1,000 people, the Otoe County Sheriff's office had an average of 1.6 sworn officers per 1,000 people in 2013.

Table 6.1 also shows the number of sworn officers and officers per 1,000 persons in the surrounding counties. The county with the highest ratio in 2013 was Lancaster County at 3.0 officers per 1,000 people.

The ratio of law enforcement officers per 1,000 persons in the population for any given area is influenced by many factors. The determination of law enforcement strength for a certain area is based on such factors as population density, size and character of the community, geographic location and other conditions existing in the area. The data indicate Otoe County has been maintaining a ratio of approximately 1.6 to 1.7 sworn officers per 1,000 people over a period of time; apparently this is a good balance for Otoe County.

County Buildings

County Courthouse

The primary offices for Otoe County are located in the courthouse in Nebraska City. The courthouse houses the offices of the Clerk, Assessor, Treasurer, Register of Deeds, the County and District Courts and courtrooms, planning and zoning, elected County Surveyor, and others.

A contract for the new county courthouse in Nebraska City was signed in August 1864. A. G. Basset was the architect and W. R. Craig and F. W. Wood were hired as builders. The original two-story brick structure was completed in 1865 with additions being made about 1882 and 1936. The Otoe County Courthouse is the oldest public building in Nebraska still in use.
(Source: http://www.nebraskahistory.org/histpres/nebraska/Otoe.htm)

Communication

Telephone Services

There are numerous telephone providers serving Otoe County.

Radio Stations

There are two radio stations based in Nebraska City, as well as, several radio stations serving the Otoe County area. Other stations are based and broadcast from Omaha, Lincoln and Plattsmouth which are approximately 30 to 50 miles from Nebraska City.

Television Stations

Presently there are no local television stations located in Otoe County. The over the air stations that serve the area originate out of Lincoln and Omaha in Nebraska.

Besides over the air television, there are a number of cable television suppliers as well as satellite providers.

Internet/World Wide Web Service Providers (ISP)

High speed Internet service is provided in Otoe County by numerous companies.

Newspapers

The residents of Otoe County are served locally by the News Press in Nebraska City and the Syracuse News Journal in Syracuse. Listed below are newspapers with daily circulation within the Otoe County area:

- Lincoln Journal Star
- Omaha World-Herald

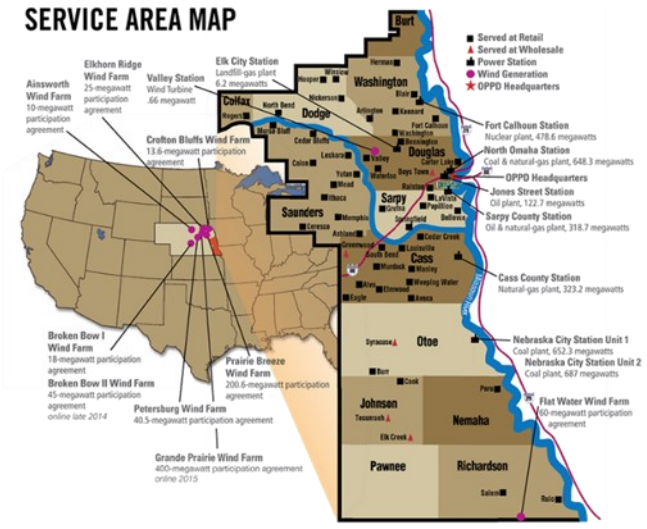
Public Utilities

Electricity

There are several public power providers serving Otoe County. These include:

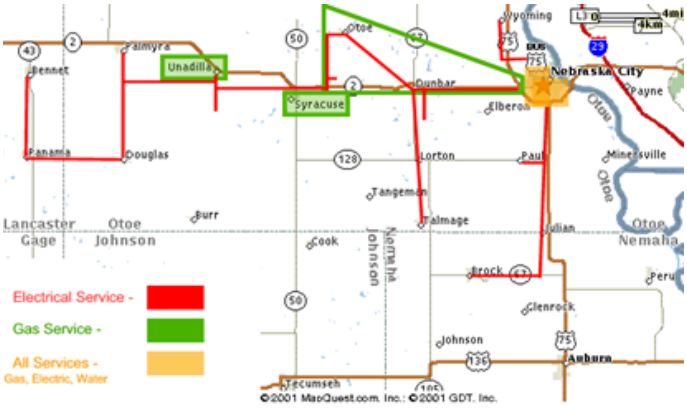
- Nebraska City Utilities
- Omaha Public Power District

Figure 6.3: Service Area Map - OPPD 2014



Source: http://www.oppd.com/about/service-area/

FIGURE 6.4: SERVICE AREA MAP - NEBRASKA CITY UTILTIIES



Source: http://nebraskacityutilities.com/map.html

Natural Gas

Natural gas supplies in Otoe County is handled primarily by two providers. One supplier to customers in Otoe County is Nebraska City Utilities based in Nebraska City. For services area information see Figure 6.4.

A second provider serving most of eastern Otoe County is Black Hills Energy.

Solid Waste

Sanitation collection in Otoe County is provided by private haulers.

HEALTH CARE

St. Mary's Hospital

CHI Health St. Mary's has served Nebraska City and the surrounding areas since 1927. We are an affiliate of Catholic Health Initiatives (CHI), a national health system committed to promoting healthy communities through innovative programs, collaborations, and partnerships.

In the fall of 2014, St. Mary's opened the doors of a brand-new, fully modernized 18-bed critical care facility. The original St. Mary's building was constructed in 1927, and the hospital has since outgrown the structure. The new 110,000-square-foot campus is better equipped to meet the changing needs of our community with, among other benefits, an increased capacity for specialty clinics and an integrated primary care clinic.

Services at St. Mary's include:

- Allergy
- Arrhythmia
- Cardiology
- Colonoscopy/Endoscopy
- Dermatology
- Diabetes Education
- Ear, Nose, and Throat
- Emergency care
- Family birth center
- General Orthopedics
- Hematology/Oncology
- Nephrology
- Neuro/Spinal Surgery
- Neurology
- Occupational Therapy
- Ophthalmology
- Physical Therapy
- Psychiatry
- Pulmonary/Critical Care
- Radiology
- Respiratory Therapy
- Rheumatology
- Sleep studies
- Surgical services
- Urology
- Women's services
- Wound care/Vascular Medicine

Source: http://chihealthstmarys.com/

Community Memorial Hospital (CMH) - Syracuse

Community Memorial Hospital has a history rich in tradition of providing high quality, cost effective health care to all individuals seeking medical care.

In 1952, the Community Memorial Hospital (CMH) District was formed. It is governed by five elected board members serving four year terms. The hospital is a district hospital per the Nebraska Local Hospital District Act.

CMH has experienced many upgrades over the years including the most recent remodel of patient rooms, Nurses station, hallways, front lobby, Business Office, Pharmacy and administration areas, as well as implementing Digital Mammography and a Wellness Lab.

CMH has the following services available:

- Cardiac Rehab
- Diabetic Education
- Urogynecology
- Cardiopulmonary Services
- Diagnostic Imaging

- Emergency Services
- Extended Care Services
- Laboratory
- Lifeline
- Nursing
- Nutritional Services
- Occupational / Speech Therapy
- Outpatient Services
- Pain Clinic
- Pharmacy
- Physical Therapy
- Specialty Clinics
- Surgery
- Swing Bed
- Wellness Lab

Source: http://www.syracusecmh.org/

Facilities Goals and Policies

Parks and Recreational Goals

Parks and Recreation Goal 1

Development of a county-wide trails system will aid in the long-term recreational and walkability needs as well as creating a tourism destination for the county.

Parks and Recreation Policies and Strategies

PR-1.1 The County should complete a long-range trails Master Plan in order to identify specific locations, routes and amenities to connect.

PR-1.2 The County should work with the NRD's to determine potential funding for the planning and construction of recreational trails within Otoe County.

PR-1.3 The County should, as the paved county roads are repaired, overlaid, etc. work to incorporate a standard trail width to the shoulder of the roadway.

PR-1.4 A trail system should work to connect different entities within Otoe County together as well as connect to other regional trails in the area.

Parks and Recreation Goal 2

Otoe County will continue to work closely with different entities including the community's and NRD to maintain and enhance the existing parks, camps, and lakes.

Parks and Recreation Policies and Strategies

PR-2.1 The County should find ways to help promote the area recreational destinations throughout the county.

PR-2.2 The should continue to promote local orchards especially through agri-tourism.

Educational Goals

Educational Goal 1

Quality education is a vital component of positive growth. Although the County's role is limited, objectives and policies need to be established with regard to locating development to insure cost effective use of existing facilities.

Educational Policies and Strategies

EDU-1.1 Cooperate with the school systems in expanding public uses of educational facilities.

EDU-1.2 The school districts should review all new development proposed within the zoning jurisdiction of Otoe County so they can accommodate future school populations.

Educational Goal 2

The county should coordinate with the school districts to insure adequate areas for future educational needs. Above all, the main goal is to encourage excellence in the school curriculum and facilities.

Educational Policies and Strategies

EDU-2.1 Cooperate with school systems on any future expansion or the development of new joint facilities.

EDU-2.2 Work with students to continually identify new facilities that will be needed in the future.

Public Safety Goals

Public Safety Goal 1

The goal of Otoe County (residents) is to maintain fire protection, rescue and ambulance programs by exploring programs and alternative services to insure optimum service levels and public costs.

Public Safety Policies and Strategies

PS -1.1 The county should continue to work with the different elements of the fire and rescue to maintain quality equipment levels.

PS-1.2 The fire departments should continue to expand fire safety education and prevention throughout the county.

Public Safety Goal 2

The goal of Otoe County is to maintain quality law enforcement throughout the county.

Public Safety Policies and Strategies

PS-2.1 Continue to identify specific ways to work cooperatively with the County Sheriff regarding protection in Otoe County.

PS-2.2 Continue to support minimum standards regarding equipment used by law enforcement.

Public Safety Goal 3

The goal of Otoe County is to maintain regulations to protect the general health and safety of all residents.

Public Safety Policies and Strategies

PS-3.1 Establish regulations protecting the county residents from the secondary effects of adult entertainment.

7

Natural Resources and the Environment

Introduction

In order to formulate a truly valid and "comprehensive" plan for the future development of Otoe County, it is first necessary to evaluate the environmental and man-made conditions currently existing in order to determine the impacts these factors may have on future land uses in the County. This component of the Otoe County Comprehensive Plan provides a general summary of the environmental and man-made conditions, which are present in the County, and identifies and qualifies the characteristics of each which will directly or indirectly impact future land uses in the County.

Natural Environmental Conditions

- Climate
- Geology
- Relief and Drainage
- Wildlife
- Wetlands
- Soil Association
- Capability Grouping
- Prime Farmland
- Soil Limitations

Natural Conditions

Climate

(This information was taken from the Otoe County Soil Survey by the United States Department of Agriculture – Soil Conservation Service – March 1982)

Otoe County is cold in winter and is quite hot with occasional cool spells in summer. Precipitation in winter frequently occurs as snowstorms. During the warm months precipitation is chiefly showers, often heavy when warm moist air moves in from the south.

In winter the average temperature is 26 degrees F, and the average daily minimum temperature is 15 degrees. In summer the average temperature is 75 degrees, and the average daily maximum temperature is 88 degrees.

The total annual precipitation ranges from about 29 inches in the western part of Otoe County nearly 34 inches in the eastern part. At Syracuse, 23 inches, or 70 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 19 inches. Thunderstorms occur on about 50 days each year, and most occur in summer.

Average seasonal snowfall is 25 inches. On an average of 19 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is 60 percent. Humidity is higher at night, and the average at dawn is 80 percent. The sun shines 70 percent of the time possible in summer and 60 percent in winter. The prevailing wind is from the south-southeast. Average windspeed is highest, 12 miles per hour, in spring.

Tornadoes and severe thunderstorms strike occasionally. These storms are local and of short duration and result in sparse damage in narrow belts. Hailstorms occur at times during the warmer part of the year in irregular patterns and in relatively small areas.

Geology

(This information was taken from the Otoe County Soil Survey by the United States Department of Agriculture – Soil Conservation Service – March 1982)

In Otoe County, the surface materials are loess, glacial deposits, alluvium, shale, and limestone. The deep bedrock consists of calcareous shale and limestone of Permian age in the southwestern part of the county and of Pennsylvanian age in the northern and eastern parts. Benfield and Kipson soils are in areas where the shale and limestone bedrock is at the surface.

After the bedrock materials on the surface were buried under glacial material during the ice age, the landscape was one of hills and valleys. After the ice melted, some of the valleys were filled with sand and gravel, and some were filled with clayey material. In Otoe County, the dominant glacial deposit is grayish and clayey and has many fine to coarse sand grains, some pebbles and cobblestones, and a few boulders. Burchard, Pawnee, Shelby, and Steinauer soils are in areas where this deposit is at the surface.

Associated with the clayey glacial deposit are silty, sandy, loamy, and clayey materials. Malcolm soils are in areas of grayish coarse silty material, Dickinson soils are in areas of sandy material, Morrill soils are in areas of brown or reddish brown loamy material, and Mayberry soils are in areas of brown or reddish brown clayey material.

Grayish brown loess is the predominant surface material in the county. It is most extensive in the uplands. Loess consists mostly of silt-sized particles and some clay-sized particles. Dow, Marshall, Monona, Ponca, Sharpsburg, and Wymore soils formed in areas of loess.

The alluvium is mostly silty and clayey material that washed from upland slopes onto the flood plains in the valleys. In the Missouri River flood plain, the material came from outside the area; it is loamy, clayey, and sandy. Colo, Judson, Kennebec, and Nodaway soils are in areas of silty material. Albaton, Onawa, Wabash, Zoe, and Zook soils are in areas of clayey material. Haynie soils are in areas of loamy material, and Sarpy soils are in areas of sandy material.

Physiography, Relief and Drainage
(This information was taken from the Otoe County Soil Survey by the United States Department of Agriculture – Soil Conservation Service – March 1982)

Otoe County lies within the glaciated part of the Great Plains physiographic province. It is a dissected glacial plain, but only small remnants of the original till plain remain on the highest divides. The gently sloping to very steep landscape formed through geologic erosion of the glacial plain. Materials have been added and modified by cycles of sedimentation, erosion, and soil formation. Erosion shaped the uplands and the continuous strips of bottom land. The uplands are the most extensive feature of the landscape. The strips of bottom land include the low-lying areas adjacent to streams where soil material was deposited.

Relief ranges from nearly level to very steep. Because of the headward advance of numerous small drainageways, the areas of nearly level uplands are small and, in places, irregular in outline. The rest of the county comprises a succession of ridges, sloping areas, and valleys. The ridges are rounded and gently sloping; the sloping areas range from moderately sloping to very steep; and the valley bottoms are nearly level.

Long, gradual slopes on the north side of stream valleys and short, steep slopes on the south side are features of the uplands. The small drainageways are generally shallow; however, in places, they are sharply cut and have short, steep grades. The steepest slopes in the county are on the uplands. Other steep areas adjoin the bottom lands of some streams. Most of these areas are narrow strips. The bottom lands range in width from a few rods along the smaller streams to nearly 2 miles along the Little Nemaha and Missouri Rivers.

The highest elevation is the upland divide between the Little Nemaha and Big Nemaha Rivers in the southwestern part of the county. The lowest elevation is the southeastern corner of the county along the Missouri River.

Drainage in Otoe County is chiefly southeastward. The county has a number of major and minor streams, each fed by many tributaries. The Little Nemaha River flows southeastwardly across the central part of the county and receives about 85 percent of the surface runoff. The principal tributaries include the North and South Forks of the Little Nemaha River and the Muddy, Russell, Owl, Silver, Hooper, Brownell, Sandy, and Rock Creeks. Most of the water from the rest of the county is carried eastward directly to the Missouri River by Camp, Four Mile, Walnut, and Table Creeks and northward to Weeping Water Creek by small streams. Nearly all of the rivers and major creeks flow constantly except during prolonged droughts.

WETLANDS

Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods during the year, including during the growing season. Water saturation (hydrology) largely determines the soil development and the types of plant and animal communities living in and on the soil. Wetlands may support both aquatic and terrestrial species. The prolonged presence of water creates conditions that favor the growth of specially adapted plants (hydrophytes) and promote the development of characteristic wetland (hydric) soils. Wetlands vary widely because of regional and local differences in soils, topography, climate, hydrology, water chemistry, vegetation, and other factors, including human disturbance. Two general categories of wetlands are recognized: coastal or tidal wetlands and inland or non-tidal wetlands.

Inland wetlands found in Otoe County are most common on floodplains along rivers and streams (riparian wetlands), in isolated depressions surrounded by dry land (for example, playas, basins, and "potholes"), along the margins of lakes and ponds, and in other low-lying areas where the

groundwater intercepts the soil surface or where precipitation sufficiently saturates the soil (vernal pools and bogs). Inland wetlands include marshes and wet meadows dominated by herbaceous plants, swamps dominated by shrubs, and wooded swamps dominated by trees.

Certain types of inland wetlands are common to particular regions of the country:

- wet meadows or wet prairies in the Midwest
- prairie potholes of Nebraska

Many of these wetlands are seasonal (dry one or more seasons every year). The quantity of water present and the timing of its presence in part determine the functions of a wetland and its role in the environment. Even wetlands that appear dry at times for significant parts of the year - such as vernal pools - often provide critical habitat for wildlife adapted to breeding exclusively in these areas.

The federal government protects wetlands through regulations (like Section 404 of the Clean Water Act), economic incentives and disincentives (for example, tax deductions for selling or donating wetlands to a qualified organization and the "Swampbuster" provisions of the Food Security Act), cooperative programs, and acquisition (for example, establishing national wildlife refuges). Beyond the federal level, a number of states have enacted laws to regulate activities in wetlands, and some counties and towns have adopted local wetlands protection ordinances or have changed the way development is permitted. Few states, however, have laws specifically regulating activities in inland wetlands, although some states and local governments have non-regulatory programs that help protect wetlands.

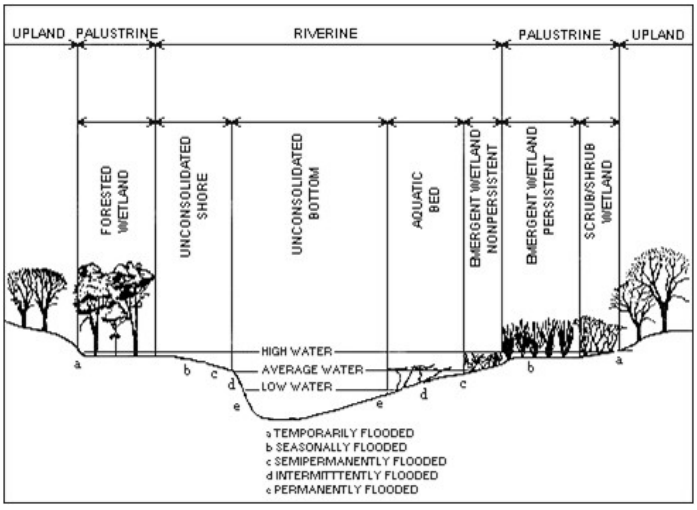
Partnerships to manage whole watersheds have developed among federal, state, tribal, and local governments; nonprofit organizations; and private landowners. The goal of these partnerships is to implement comprehensive, integrated watershed protection approaches. A watershed approach recognizes the inter-connection of water, land, and wetlands resources and results in more complete solutions that address more of the factors causing wetland degradation.

The government achieves the restoration of former or degraded wetlands under the Clean Water Act Section 404 program as well as through watershed protection initiatives. Together, partners can share limited resources to find the best solutions to protect and restore America's natural resources. While regulation, economic incentives, and acquisition programs are important, they alone cannot protect the majority of our remaining wetlands. Education of the public and efforts in conjunction with states, local governments, and private citizens are helping to protect wetlands and to increase appreciation of the functions and values of wetlands. The rate of wetlands loss has been slowing, but we still have work to do. You can be a part. Approximately 75 percent of wetlands are privately owned, so individual landowners are critical in protecting these national treasures.

Wetlands play an important role in the ecology of Otoe County. Wetlands are home to many species of wildlife, many of which live only in wetland areas. Wetlands also provide an important service to nearby areas by holding and retaining floodwaters. These waters are then slowly released as surface water, or are used to recharge groundwater supplies. Wetlands also help regulate stream flows during dry periods.

The U.S. Fish and Wildlife Service (FWS) produce information on the characteristics, extent, and status of the Nation's wetlands and deep-water habitats. This information has been compiled and organized into the National Wetlands Inventory (NWI).

FIGURE 7.1: RIVERINE WETLAND SYSTEM



Source: National Wetlands Inventory

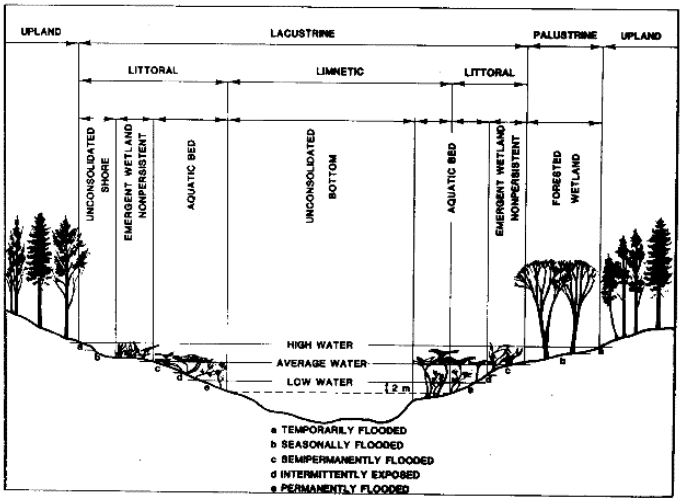
Wetlands are categorized in several classifications, each more detailed and specific than the previous. The NWI uses five systems; marine, estuarine, riverine, lacustrine, and palustrine. Within each system, there

are subsystems, classes, subclasses, and dominance types to describe different wetland characteristics. The system classification refers to wetlands sharing similar hydrologic, geomorphologic, chemical, or biological factors. The following are definitions and examples of three of the five systems used to describe wetlands. The Marine and Estuarine wetland systems are located in and near the open ocean; therefore, they do not occur in Nebraska. Further information, through NWI, on specific classifications is available.

Otoe County experiences each of these three other wetland systems. The majority of the wetlands in the county occur, mostly along the Missouri River. However, there are smaller wetland pockets scattered around Otoe County.

Figures 7.1, 7.2, and 7.3 depict common examples of the riverine, lacustrine, and palustrine wetlands, respectively. Figure 7.4 shows the occurrence of wetlands in Otoe County. These figures were produced by the United States Fish and Wildlife Service, and are taken from their 1979 publication entitled "Classification of Wetlands and Deepwater Habitats of the United States", some enhancement was completed in order to place accents on key areas.

FIGURE 7.2: LACUSTRINE WETLAND SYSTEM



Source: National Wetlands Inventory

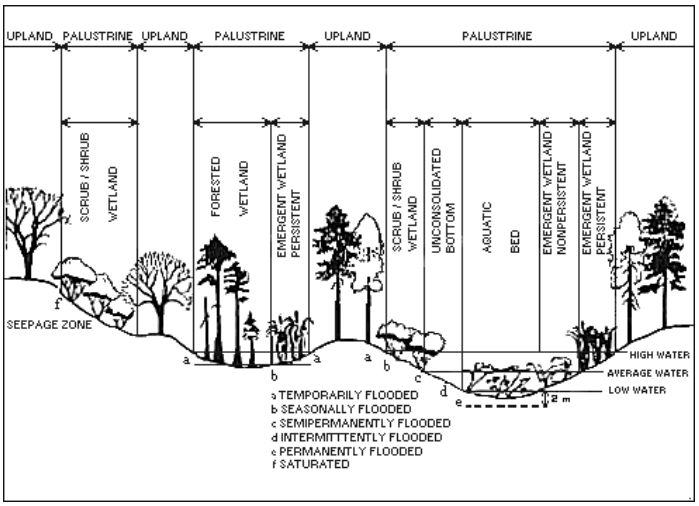
Figure 7.1 shows the riverine system includes all wetlands that occur in channels, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and (2) habitats with water containing ocean derived salts in excess of 0.5%. A channel is an open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water. Therefore, water is usually, but not always, flowing in the riverine system.

Springs discharging into a channel are also part of the riverine system. Uplands and palustrine wetlands may occur in the channel, but are not included in the riverine system. Palustrine Moss-Lichen Wetlands, Emergent Wetlands, Scrub-Shrub Wetlands, and Forested Wetlands may occur adjacent to the riverine system, often in a floodplain.

The Lacustrine System includes all wetlands with all of the following characteristics: (1) situated in a topographic depression or a dammed river channel; (2) lacking trees, shrubs, persistent emergents, emergent moss or lichens with greater than 30% area coverage; and (3) total area exceeds 20 acres. Similar wetland areas totaling less than 20 acres are also included in the Lacustrine System if an active wave-formed or bedrock shoreline feature makes up all or part of the boundary, or if the water depth in the deepest part of the basin exceeds 6.6 feet (2 meters) at low water.

The Lacustrine System includes permanently flooded lakes and reservoirs (e.g. Lake Superior), intermittent lakes (e.g. playa lakes), and tidal lakes with ocean-derived salinities below 0.5% (e.g. Grand lake, Louisiana). Typically, there are extensive areas of deep water and there is considerable wave action. Islands of Palustrine wetlands may lie within the boundaries of the Lacustrine System.

FIGURE 7.3: PALUSTRINE WETLAND SYSTEM



Source: National Wetlands Inventory

The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5%. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 20 acres; (2) lacking active wave-formed or bedrock shoreline features; (3) water depth in the deepest part of basin less than 6.6 feet (2 meters) at low water; and (4) salinity due to ocean-derived salts less than 0.5%.

The Palustrine System was developed to group the vegetated wetlands traditionally called by such names as marsh, swamp, bog, fen, and prairie, which are found throughout the United States. It also includes the small, shallow, permanent, or intermittent water bodies often called ponds. These wetlands may be situated shoreward of lakes, river channels, or estuaries; on river floodplains; in isolated catchments; or on slopes. They may also occur as islands in lakes or rivers.

Soil Formation and Classification

The general soil map shows broad areas having a distinctive pattern of soils, relief, and drainage. Each map unit, or soil association, on the general soil map is a unique natural landscape. Typically, an association consists of one or more major soils and some minor soils. The associations are named for the major soils. The soils making up one association can occur in other associations but in a different pattern.

Because of its scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one soil association differ from place to place in slope, depth, drainage, and other characteristics that affect management.

(The following information has been inserted directly from the Otoe County Solis Survey dated March 1982)

Soil Associations

1. Wymore association

Deep, nearly level and gently sloping, moderately well drained clayey and silty soils that formed in loess on uplands

This association consists mainly of soils on ridges and side slopes on some of the highest uplands in the county (figure 7.6). The ridges and side slopes are uneven in width and length and in percent of slope. The slope ranges from 0 to 7 percent. There are some nearly level divides in the association. Several small waterways drain the areas.

This association makes up about 34 percent of the county. It is about 85 percent Wymore soils and 15 percent minor soils.

Wymore soils are moderately well drained. They have a surface layer of very dark brown silty clay or silty clay loam. In many areas, these soils are eroded, and the subsoil is at the surface. The subsoil, in the upper part, is very dark grayish brown and dark grayish brown, mottled silty clay. In the lower part, it is grayish brown, mottled silty clay loam. The underlying material is grayish brown, dark yellowish brown, and olive gray, mottled silty clay loam.

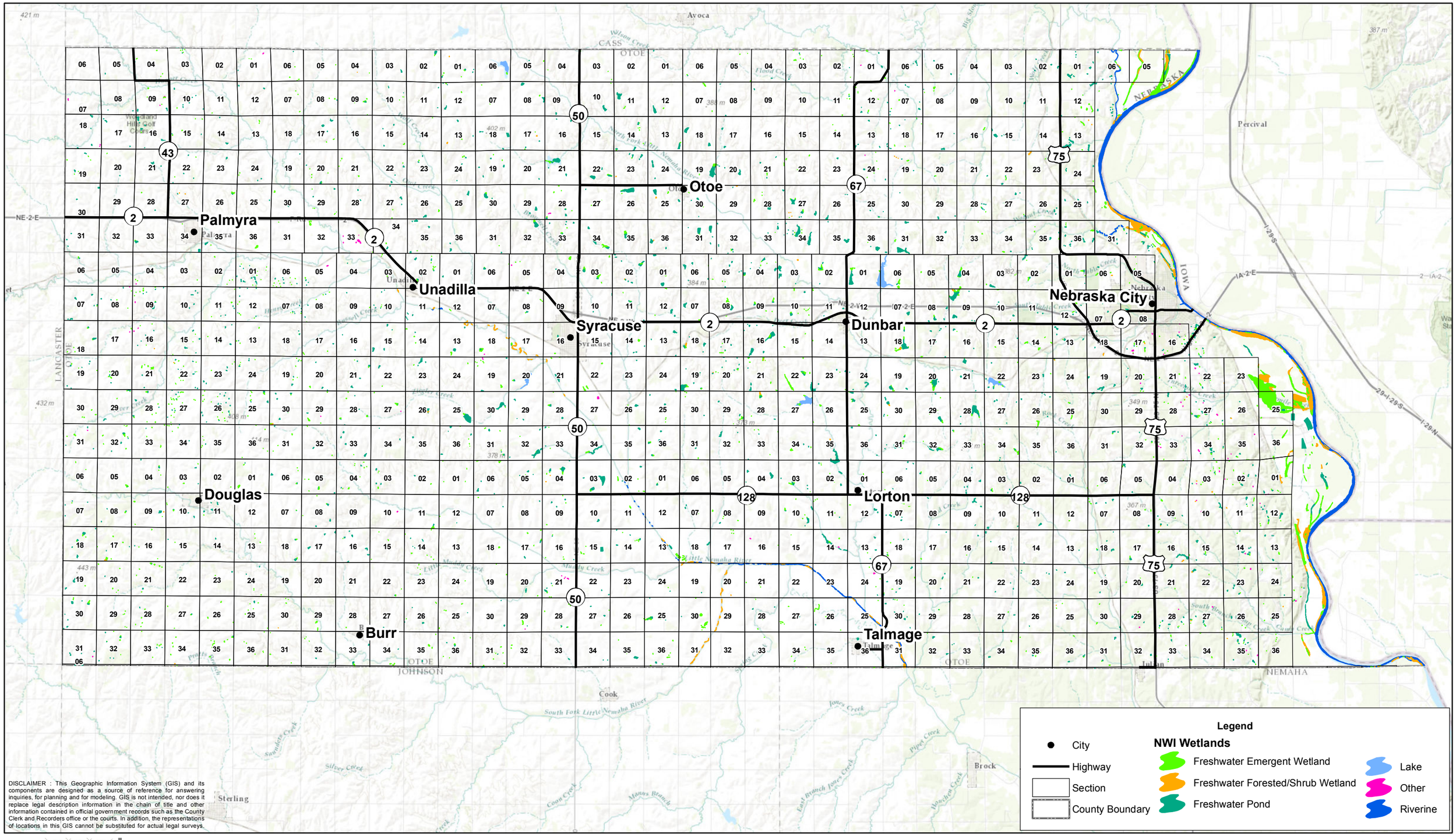
Colo, Judson, Mayberry, Morrill, Nodaway, Pawnee, and Sharpsburg soils are the minor soils. Judson soils are on foot slopes. Mayberry, Morrill, and Pawnee soils are on hills downslope from the Wymore soils. Nodaway and Colo soils are nearly level on bottom lands in the narrow valleys of upland drainageways. Sharpsburg soils are in positions similar to those of Wymore soils.

The soils in this association in most areas are used for cultivated crops. In some small tracts they are planted to tame grasses. The major crops are grain sorghum, wheat, corn, and soybeans. Alfalfa and clover are also grown.

The soils have high potential for cultivated crops and pasture grasses.

Erosion is the principal hazard. Maintaining the content of organic matter and soil structure and selecting crops that are best adapted to the soils and climate are also concerns in management. Complete conservation management should include terraces, contour farming, grassed waterways, and conservation tillage.

Growing cash crops and feed crops and raising livestock are the main agricultural enterprises. In most places, the supply of ground water is limited but is generally adequate for domestic use. Rural water districts supply some farms with water through pipelines. Some farm ponds have multiple uses, including erosion control, watering of livestock, and



DISCLAIMER : This Geographic Information System (GIS) and its components are designed as a source of reference for answering inquiries, for planning and for modeling. GIS is not intended, nor does it replace legal description information in the chain of title and other information contained in official government records such as the County Clerk and Recorders office or the courts. In addition, the representations of locations in this GIS cannot be substituted for actual legal surveys.

MARVIN PLANNING CONSULTANTS

OLSSON ASSOCIATES

FIGURE 7.4
WETLANDS
OTOE COUNTY, NEBRASKA

Source: United Station Fish and Wildlife Service National Wetlands Inventory (NWI)

0 1 2 4 Miles

N

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
UNIVERSITY OF NEBRASKA CONSERVATION AND SURVEY DIVISION

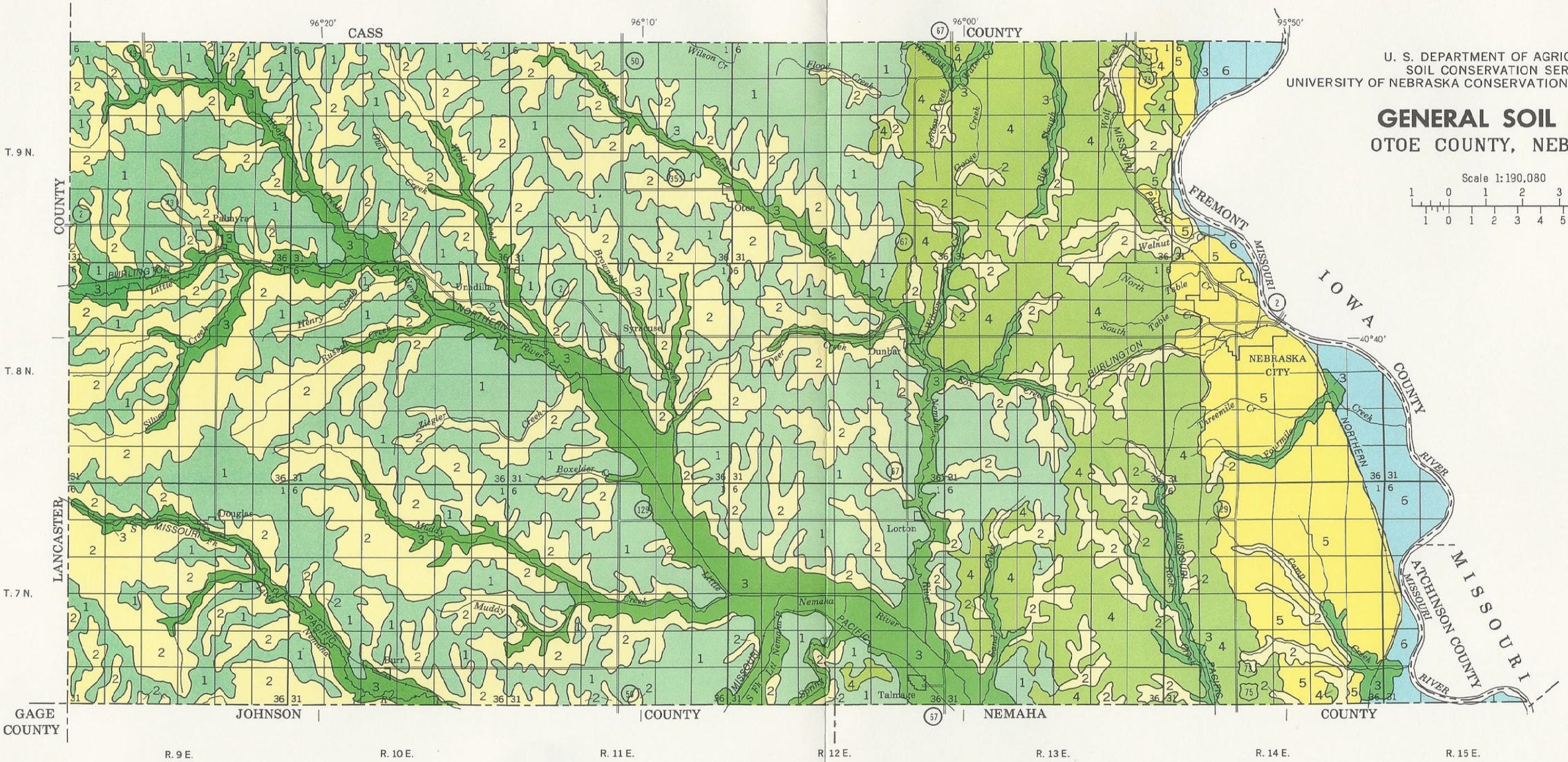
GENERAL SOIL MAP

OTOE COUNTY, NEBRASKA

Scale 1:190,080

1 0 1 2 3 4 Miles
1 0 1 2 3 4 5 6 Kilometers

N



SOIL LEGEND*

1 — Wymore association: Deep, nearly level and gently sloping, moderately well drained clayey and silty soils that formed in loess on uplands

2 — Pawnee-Morrill-Shelby association: Deep, gently sloping to steep, moderately well drained to somewhat excessively drained clayey and loamy soils that formed in glacial deposits on uplands

3 — Zook-Nodaway-Judson association: Deep, nearly level and gently sloping, poorly drained, moderately well drained, and well drained silty soils that formed in alluvium and colluvium on bottom lands, foot slopes, and stream terraces

4 — Sharpsburg association: Deep, nearly level to strongly sloping, moderately well drained silty soils that formed in loess on uplands

5 — Marshall-Monona-Porca association: Deep, gently sloping to very steep, well drained and somewhat excessively drained silty soils that formed in loess on uplands

6 — Haynie-Onawa-Albaton association: Deep, nearly level, moderately well drained to poorly drained silty and clayey soils that formed in alluvium on bottom lands

*Texture terms refer to the surface layer of the major soils.

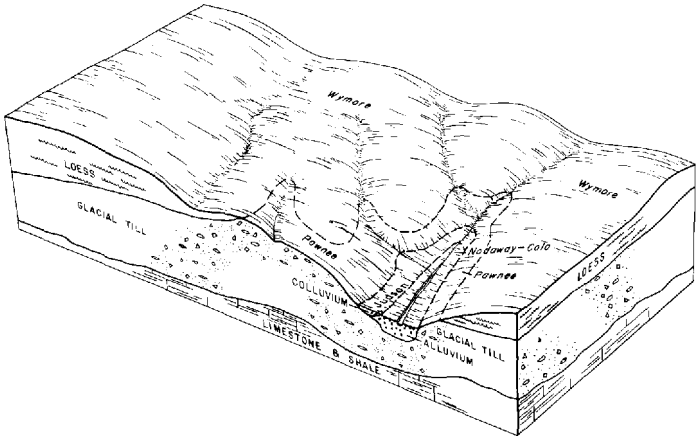
Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

recreation.
Most roads are unpaved but are graded, and some are surfaced with crushed rock. Most of the cash grain and other produce is marketed locally and then shipped to larger terminals.

FIGURE 7.6: WYMORE ASSOCIATION



2. Pawnee-Morrill-Shelby association

Deep, gently sloping to steep, moderately well drained to somewhat excessively drained clayey and loamy soils that formed in glacial deposits on uplands

This association consists mainly of soils on hills above numerous drainageways and streams (figure 7.6). The slope generally ranges from 3 to 30 percent. Some slopes are long and smooth, others are abrupt and steep. There are some gently sloping hilltops. In some areas there are pebbles and a few stones on the surface. Canyons or bluffs where the slope is more than 30 percent are included.

This association makes up about 29 percent of the county. It is about 43 percent Pawnee soils, 10 percent Morrill soils, and 7 percent Shelby soils. Other soils make up the remaining 40 percent.

The Pawnee soils are moderately well drained. They are commonly on gently sloping and strongly sloping ridgetops and side slopes above the Morrill and Shelby soils. They are commonly eroded, and the clay subsoil is at the surface. The surface layer is very dark brown clay or clay loam. The subsoil is dark brown and brown, mottled clay in the upper part and dark yellowish brown, mottled clay loam in the lower part. The underlying material is grayish brown, mottled calcareous clay loam.

The Morrill soils are well drained, and they are commonly eroded. They have a surface layer of dark brown clay loam. The subsoil is yellowish red, reddish brown, and brown clay loam. The underlying material is brown, mottled sandy clay loam and sandy loam.
The Shelby soils are well drained and somewhat excessively drained. They are commonly less eroded than the Pawnee or Morrill soils because they are not farmed regularly. They are on hills downslope from the Pawnee soils. Their surface layer is black clay loam. The subsoil is brown and dark yellowish brown clay loam. The underlying material is mottled grayish brown and brown clay loam.

Burchard, Colo, Dickinson, Judson, Malcolm, Mayberry, Nodaway, Steinauer, and Wymore soils are of minor extent in this association. Cob and Nodaway soils are on bottom lands in narrow valleys of drainageways. Judson soils are in high valley areas or on foot slopes. Burchard, Dickinson, Malcolm, Mayberry, and Steinauer soils are closely intermingled with the major soils. Wymore soils are at the higher elevations in the association and on some ridgetops above the major soils.

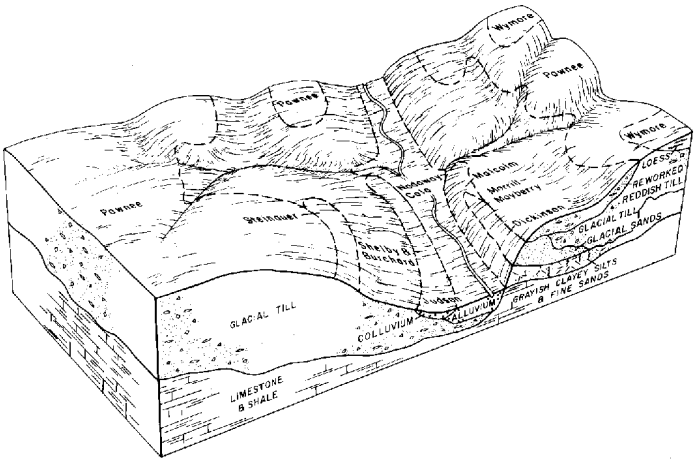
About 50 percent of this association is used for cultivated crops. The rest is mainly in pasture, although some small tracts are used for hay. Trees grow on some of the steeper slopes. The principal cultivated crops are grain sorghum, wheat, and alfalfa.

The soils in this association have medium potential for cultivated crops and high potential for grasses. They have high potential for wildlife and recreation uses.
Erosion is the principal hazard. Other concerns in management are maintaining fertility and the content of organic matter. Flooding is a hazard on some of the narrow bottom lands along drainageways. Areas in grass that are used as pasture need grazing control and other management to insure vigorous growth.

The few farms in this association are mainly the combination grain-forage-livestock type. In most places, the supply of good water from wells is limited, but the water is generally adequate for domestic use. Rural water districts supply some farms with water through pipelines. There are a few springs along the drainageways. In places, surface water is collected in farm ponds as a source of water for livestock. Potential sites for dam construction are numerous.

Most of the roads are unpaved but are graded and maintained.

FIGURE 7.7: PAWNEE-MORRILL-SHELBY ASSOCIATIONS



3. Zook-Nodaway-Judson association

Deep, nearly level and gently sloping, poorly drained, moderately well drained, and well drained silty soils that formed in alluvium and colluvium on bottom lands, foot slopes, and stream terraces.

This association consists mainly of soils on flat bottom lands on some of the lowest elevations in the county (Figure 7.8). The bottom lands are nearly 2 miles wide on the lower reaches of rivers but are less than one-half mile wide in the upper reaches of tributary creeks. The slope ranges from 0 to 6 percent. Drainageways dissect the bottom lands. The lower reaches of some creek and river channels have been straightened. The channels are mostly deeply entrenched and have vertical banks. There are gently sloping foot slopes in some places at the base of the uplands.

This association makes up about 13 percent of the county. It is about 27 percent Zook soils, 25 percent Nodaway soils, 18 percent Judson soils, and 30 percent minor soils.

Zook soils are poorly drained. They are commonly in areas some distance from the original main stream channels. The surface layer is very dark brown silty clay loam, the subsurface layer is black silty clay loam and silty clay, and the subsoil is dark gray silty clay. The underlying material, below a depth of 66 inches, is also dark gray silty clay.

Nodaway soils are moderately well drained and are commonly adjacent to stream channels. They have a surface layer of very dark grayish brown silt loam. The underlying material is stratified, very dark gray and very dark grayish brown silt loam.

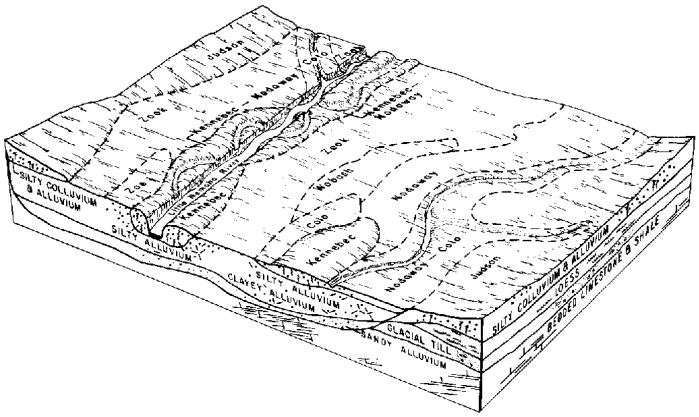
Judson soils are well drained. They are on stream terraces and foot slopes at the base of uplands. They have a surface layer of very dark brown silt loam, a subsurface layer of black and very dark brown silt loam, and a subsoil of dark brown and brown silty clay loam. The underlying material is dark yellowish brown silty clay loam.

Colo, Kennebec, Wabash, and Zoe are minor soils. Colo soils are somewhat poorly drained and poorly drained. They are in areas similar to the Zook soils and along the narrower valleys. Kennebec soils are moderately well drained and are in areas adjacent to stream channels. Wabash soils are very poorly drained and clayey. Zoe soils are poorly drained and saline-alkali. Wabash and Zoe soils are at some of the lower elevations in the association.

Nearly all of the acreage in this association is cultivated.

The soils have a high potential for cultivated crops. The principal crops are corn, grain sorghum, soybeans, and wheat.

FIGURE 7.8: ZOOK-NODAWAY-JUDSON ASSOCIATIONS



Wetness and flooding of the soils in spring are the principal concerns in management. Maintaining fertility, soil structure, and the content of organic matter is also a concern.

Farms in this association are either the cash-grain or grain-livestock type. Very few farmsteads and buildings are located in areas of these soils. Water for livestock is obtained from streams, a few springs, and shallow wells. The supply of good ground water from wells is not adequate for irrigation or large municipalities.

Most of the roads are on section lines and are unpaved. There are no roads on many section lines because intersecting stream channels are eroding, and bridges are difficult to maintain.

4. Sharpsburg association

Deep, nearly level to strongly sloping, moderately well drained silty soils that formed in loess on uplands

This association consists mainly of soils on ridges and hillsides on higher uplands. The ridges and hillsides are uneven in width and length and in percent of slope. The slope ranges from 0 to 11 percent. There are some nearly level divides in the association. Several small waterways drain the areas.

This association makes up about 15 percent of the county. It is about 75 percent Sharpsburg soils and 25 percent minor soils.

Sharpsburg soils are on divides, ridgetops, and, most commonly, convex hillsides. The surface layer has been eroded, and the subsoil is near the surface. The surface layer is very dark brown silty clay loam. The subsoil is very dark grayish brown, brown, and grayish brown silty clay loam. The underlying material is grayish brown, mottled silty clay loam.

Colo, Judson, Morrill, Nodaway, Pawnee, and Wymore soils are the minor soils. Colo and Nodaway soils are nearly level on bottom lands in the narrow valleys of upland drainageways. Judson soils are on foot slopes. Morrill and Pawnee soils are on hills downslope from the Sharpsburg soils. Wymore soils are mainly on concave slopes at the head of drainageways.

The soils in this association in most areas are used for cultivated crops. The soils have high potential for all crops commonly grown in the county. The principal crops are corn, soybeans, grain sorghum, and alfalfa. Small acreages are in wheat, oats, forage sorghum, and bromegrass.

Erosion is the principal hazard. Maintaining soil fertility, soil structure, and the content of organic matter are also concerns in management.

The farms in this association are either the cash-grain or grain-livestock type. Well water is limited but is generally adequate for household use. Rural water districts supply some farms with water through pipelines. A few farm ponds are used for watering of livestock.

Most country roads are unpaved. They are graded and follow section lines. A few roads are surfaced with crushed rock. Most of the cash grain and other produce is marketed in Nebraska City and then shipped to larger terminals.

5. Marshall-Monona-Ponca association

Deep, gently sloping to very steep, well drained and somewhat excessively drained silty soils that formed in loess on uplands

The soils in this association are on a succession of ridges, hills, upland drainageways, and narrow valleys (figure 7.9). The ridges are rounded, gently sloping, and uneven in width. The hills are uneven in length and percent of slope. The slope ranges from 3 to 70 percent.

This association makes up nearly 7 percent of the county. It is about 50 percent Marshall soils, 15 percent Monona soils, 9 percent Ponca soils, and 26 percent minor soils.

The well drained Marshall soils are on ridgetops and hills. They are gently sloping to moderately steep. The most common Marshall soil is on strongly sloping hillsides and is eroded. The surface layer is very dark brown silty clay loam, and the subsoil is dark brown and brown silty clay loam. The underlying material is dark yellowish brown, mottled silty clay loam.

The well drained and somewhat excessively drained Monona soils are typically hillsides and are steep and very steep. In some places they are on narrow ridgetops. They generally are not eroded. They have a surface layer of very dark grayish brown silt loam and a subsoil of dark brown and brown silt loam. The underlying material is yellowish brown silt loam.

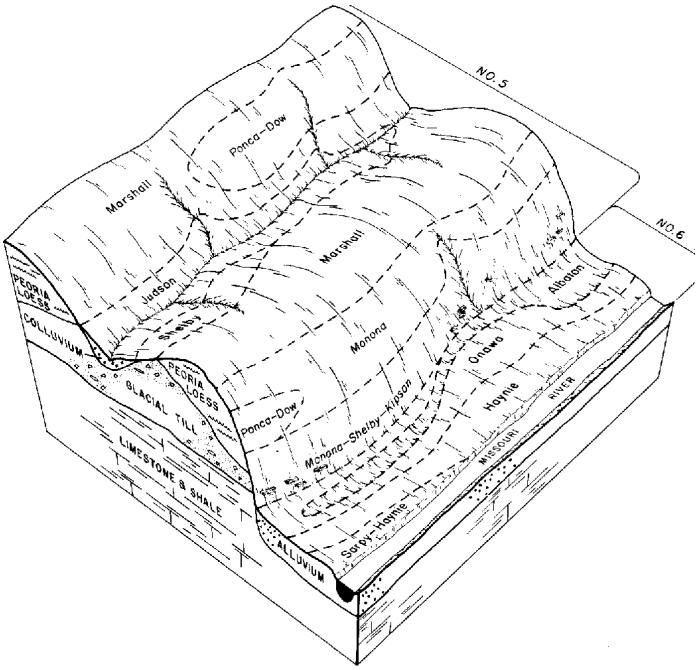
The well drained and somewhat excessively drained Ponca soils are on strongly sloping and moderately steep hills. They are eroded. They have a surface layer of dark brown silt loam and a subsoil of olive brown and light olive brown silt loam. The underlying material, below a depth of 28 inches, is olive gray, calcareous silt loam.

Colo, Dow, Judson, Kipson, Nodaway, and Shelby soils are minor soils. Colo and Nodaway soils are on bottom lands in the narrow valleys of the drainageways. Dow soils are closely intermingled with

the Ponca soils. Judson soils are on foot slopes or are in high valley areas. Areas of Kipson and Shelby soils are on the lower slopes of very steep bluffs.

About 70 percent of this association is cultivated. The rest is in grass or trees. Some of the steep areas are cultivated, but most of these areas are used for pasture or as habitat for wildlife. Major crops are corn, soybeans, wheat, and alfalfa.

FIGURE 7.9: MARSHALL-MONONA-PONCA ASSOCIATIONS



The gently sloping and strongly sloping soils have high potential for cultivated crops. The steeper soils are scenic and have high potential for wildlife and parkland uses.

Erosion is the principal hazard. Maintaining the organic matter content and fertility are concerns in management. Areas that are used for pasture require grazing control to insure vigorous growth of the grasses.

The farms in this association are the cash-grain or grain-livestock type. They are mainly on ridgetops. Well water is limited but is generally adequate for domestic use. A few farm ponds are used for watering livestock.

Most country roads are unpaved but are well graded. Most roads follow section lines, except in the very steep areas. Most of the cash-grain and other produce is marketed in Nebraska City. It is then shipped to larger terminals.

6. Haynie-Onawa-Albaton association

Deep, nearly level, moderately well drained to poorly drained silty and clayey soils that formed in alluvium on bottom lands

This association consists mainly of soils on low bottom lands, half a mile to nearly 2 miles wide, within bends of the Missouri River channel (Figure 7.9). These areas are subject to flooding. Some areas are slightly undulating, and low places collect water. There are very gentle slopes along the sides of lakes in old stream channels. The slope ranges from 0 to 3 percent. These soils formed in stratified alluvium. This alluvium is calcareous and has small snail shells and disseminated lime in it.

This association makes up about 2 percent of the county. It is about 40 percent Haynie soils, 30 percent Onawa soils, 20 percent Albaton soils, and 10 percent minor soils.

The Haynie soils are moderately well drained. They are at some of the higher elevations in this association. They have a surface layer of very dark grayish brown silt loam. The underlying material consists of many fine layers of very dark grayish brown, dark grayish brown, and grayish brown silt loam and very fine sandy loam.

The Onawa soils are somewhat poorly drained. They are in positions similar to those of Haynie soils. Onawa soils have a surface layer of very dark grayish brown silty clay. The underlying material, to a depth of about 21 inches, is dark grayish brown silty clay. Below a depth of 21 inches there are many fine layers of grayish brown silt loam and very fine sandy loam.

The Albaton soils are poorly drained. They are at the lower elevations in this association. They have a surface layer of very dark gray silty clay. The underlying material, to a depth of 60 inches, is also silty clay. It is very dark gray, dark grayish brown, and olive gray.

Oxbow areas of old stream channels that are often ponded make up a small part of the association. Sarpy soils are of minor extent in this association. They are mainly in slightly elevated areas along the edges of old stream channels.

About 75 percent of this association has been cleared of trees and is used for cultivated crops such as corn and soybeans. The rest is in grass, shrubs, or trees and is mainly wildlife habitat. Some cottonwood timber is harvested.

The soils in this association have medium to high potential for cultivated crops and for raising cottonwood timber. They have high potential for use as wildlife areas. The soils are suited to many kinds of grasses, shrubs, and trees.

Flooding is the principal hazard. Another concern in management is drainage because of the low elevation and high water table.

The soils in this association are generally not suitable for building site development and sanitary facilities. There are very few farms and roads in this association. Underground water of good quality is generally abundant.

Soil Suitability

The characteristics of soils play a major role in determining the potential compatibility of certain uses on the land. The ability to absorb certain liquids such as water and wastewater are different for certain types of soils. In addition, how sensitive an area is to erosion or how shallow the soils are in an area can have a major impact on the ability to develop a specific area of Otoe County. These conditions and how they factor into a soils ability to support certain types of uses is referred to limitations.

Finally, if a soil has some level of limitation, it does not mean that different uses cannot be constructed in those soils. However, the key focus needs to be on the type of special engineering solutions needing to be implemented in order to overcome these specific soil limitations.

Soil Limitations

The interpretations are based on the engineering properties of soils, on test data for soils in the survey area and others nearby or adjoining, and on the experience of engineers and soil scientists familiar with the soils of Otoe County.

Soil limitations are indicated by the ratings Not Limited, Somewhat Limited, and Very Limited.

Not Limited means soil properties are generally favorable for the stated use, or in other words, that limitations are minor and easily overcome.

Somewhat Limited means some soil properties are unfavorable but can be overcome or modified by special planning and design.

Very Limited means soil properties may be so unfavorable and difficult to correct or overcome as to require various degrees of soil reclamation, special designs, or intensive maintenance.

Dwellings without Basements

Figure 7.10 shows the soil suitability conditions for constructing dwelling without a basement (slab on-grade construction). In addition Table 7.1 provides the suitability by soil types and the specific conditions impacting the soil.

Very Limited Conditions

Based upon the Table 7.1, a majority of the soils in Otoe County are considered Very Limited for a Dwelling Unit without a Basement. There are five major conditions impacting the soils (not all four are present in any one soil type). The conditions present in the different soils are:

- Flooding
- Depth to saturation zone
- Slope
- Depth to Rock
- Shrink-Swell

Again, these conditions may or may not eliminate the ability of a land owner to build a slab-on-grade dwelling unit, but specific conditions will need to be engineered to overcome to eliminate potential problems in the future.

Somewhat Limited Conditions

Besides the Severe soils, there are some soils considered Somewhat Limited which is less of an issue when developing. The conditions that are creating the Somewhat Limited classification are:

- Shrink-swell
- Slope

Dwellings with Basements

Figure 7.11 shows the soil suitability conditions for constructing Dwellings with basements. In addition Table 7.1 provides the suitability by soil types and the specific conditions impacting the soil.

TABLE 7.1: SOIL PROPERTIES BY TYPE AND USE

Soil Symbol/Soil Name Bolded soil represents	Dwellings without Basements		Dwellings with Basements		Septic tank and absorption fields		Sewage Lagoons	
	Suitability	Conditions	Suitability	Conditions	Suitability	Conditions	Suitability	Conditions
7205 Aksarben	2	8	2	8	2	4	0	-
7206 Aksarben	2	8	2	8	2	4	1	5
7710 Albaton	2	1,2,8	2	1,2,8	2	1,2,4	2	1,2
7212 **Burchard**-Morrill	1	8,5	1	8,5	2	4,5	2	5
7212 Burchard-**Morrill**	1	8,5	1	8,5	1	4,5	2	5,7
7770 Colo	2	1,2,8	2	1,2,8	2	1,2,4	2	1,2
7773 **Colo**-Nodaway	2	1,2,8	2	1,2,8	2	1,2,4	2	1,2,7
7773 Colo-**Nodaway**	2	1	2	1,2	2	1,2,4	2	1,7,2
7270 Dickinson	1	5	1	5	2	7,5	2	7,5
7271 Dickinson	2	5	2	5	2	7,5	2	5,7
7741 Haynie	2	1	2	1	2	1,7	2	1,7
7230 Judson	1	8	1	8	2	4	1	7
7231 Judson	1	8	1	8	2	4	1	7,5
7050 Kennebec	2	1,8	2	1,2,8	2	1,2,4	2	1,2
7057 **Kennebec**-Nodaway	2	1	2	1,2	1	4,2,1	1	7,1
7057 Kennebec-**Nodaway**	2	1	2	1,2	2	1,2,4	2	1,2,7
7153 Kennebec	2	1	2	1,2	1	4,2,1	1	7,1
7154 **Kennebec**-Nodaway	2	1	2	1	1	4,2,1	1	7,1
7154 Kennebec-**Nodaway**	2	1	2	1,2	2	1,2,4	2	1,2,7
4164 **Kipson**-Benfield	1	5	2	6,5	2	6,5	2	6,5,7
4164 Kipson-**Benfield**	1	5,8	1	5,8,6	2	6,5	2	6,5
7296 Malcolm	1	8	0	-	2	7,4	2	7,5
7297 Malcolm	1	8	0	-	2	7,4	2	7,5
7299 Malcolm	2	5,8	2	5	2	7,4,5	2	5,7
7344 **Malmo eroded**-Pawnee	2	8,2,5	2	2,8,5	2	2,4,5	2	5,2
7344 Malmo eroded-**Pawnee**	2	8,2,5	2	2,8,5	2	2,4,5	2	5,2
7350 Malmo	2	8,2	2	2,8	2	2,4	1	5,2
8019Marshall	1	8	1	8	2	4	1	5
8034 **Marshall**-Ponca	1	5,8	1	5,8	2	4,5	2	5,7
8034 Marshall-**Ponca**	1	5,8	1	5	1	5	2	5
7668 Mayberry	2	8,2,5	2	2,8,5	2	2,4,5	2	5,2
7669 Mayberry	2	8,2	2	2,8	2	2,4	1	5,2
8073 Monona	2	5,8	2	5	2	5,4	2	5,7
8075 Monona	1	8	0	-	1	4	1	7,5
8096 **Monona**-Kipson	2	5,8	2	5,8	2	5,4	2	5,7
8096 Monona-**Kipson**	2	5,6,8	2	5,6,8	2	6,5	2	6,5
8101 **Monona**-Shelby-Kipson	2	5,8	2	5	2	5,4	2	5,7
8101 Monona-**Shelby**-Kipson	2	5,8	2	5,8	2	5,4	2	5
8101 Monona-Shelby-**Kipson**	2	5,8	2	5,6,8	2	6,5	2	6,5,7
7418 Morrill	1	8	1	8	2	4	2	5,7
7422 Morrill	1	8	1	8	2	4	2	5,7
7446 **Morrill**-Malmo	1	8	1	8	2	4	1	5,7
7446 Morrill-**Malmo**	2	8,2	2	2,8	2	2,4	1	5,2

Legend for Table 7.1

Suitability	Conditions
0 = Not Limited	1= Flooding
1 = Somewhat Limited	2 = Depth to saturated zone
2 = Very Limited	3 = Poor filter
	4 = Slow water movement
	5 = Slope
	6 = Depth to Rock
	7 = Seepage
	8 = Shrink-swell

Soil Symbol/Soil Name	Dwellings without Basements		Dwellings with Basements		Septic tank and absorption fields		Sewage Lagoons	
	Suitability	Conditions	Suitability	Conditions	Suitability	Conditions	Suitability	Conditions
7750 Nodaway	2	1	2	2	2	1,2,4	2	1,2,7
7867 Nodaway	2	1,8	2	1,2,8	2	1,2,4	2	1,2,7
7870 **Nodaway**-Colo	2	1	2	1,2	2	1,2,4	2	1,2,7
7870 Nodaway-**Colo**	2	1,8	2	1,2,8	2	1,2,4	2	1,2
7871 **Nodaway**-Colo	2	1	2	1,2	2	1,2,4	2	1,2,7
7871 Nodaway-**Colo**	2	1,2,8	2	1,2,8	2	1,2,4	2	1,2
7878 Onawa	2	1,8	2	1,8,2	2	1,2,4,7	2	1,7,2
7880 Onawa	2	1,8	2	1,2,8	2	1,2,7	2	1,7,2
7464 Otoe	2	8,2	2	2,8	2	2,4	2	5,2
7501 Pawnee	2	2,8	2	2,8	2	2,4	2	2,5
7507 Pawnee	2	8,2,5	2	2,8,5	2	2,4,5	2	5,2
7511 Pawnee	2	8,2,5	2	2,8,5	2	2,4,5	2	5,2
7515 Pawnee	2	8,2,5	2	2,8,5	2	2,4,5	2	5,2
8125 Pohocco	1	8	1	8	1	4	2	5,7
8135 **Pohocco eroded**-Ida	0	-	0	-	1	4	2	5,7
8135 Pohocco eroded-**Ida**	0	-	0	-	1	4	2	5,7
8150 **Ponca**-Dow	0	-	0	-	1	4	2	5,7
8150 Ponca-**Dow**	0	-	0	-	1	5,4	2	5,7
8151 **Ponca**-Dow	1	5	1	5	1	5,4	2	5,7
8151 Ponca-**Dow**	1	5	1	5	1	5,4	2	5,7
7087 **Sarpy**-Haynie	2	1	2	1	2	1,7,3	2	1,7
7087 Sarpy-**Haynie**	2	1	2	1	2	1,7	2	1,7
7546 **Shelby**-Burchard	1	5,8	1	5,8	2	4,5	2	5
7546 Shelby-**Burchard**	1	5,8	1	5,8	2	4,5	2	5
7548 Shelby	1	8	1	8	2	4	2	5
7549 Shelby	1	5,8	1	5,8	2	4,5	5	5
7596 Shelby	2	5,8	2	5,8	2	4,5	2	5
3921 Sogn	2	6,5	2	6,5	2	6,5	2	6,5
7610 Steinauer	2	5,8	2	5,8	2	4,5	2	5
7091 Wabash	2	1,2,8	2	1,2,8	2	1,2,4	2	1,2
7684 Wymore	2	8,2	2	2,8	2	2,4	1	2,5
7689 Wymore	2	8,2	2	2,8	2	2,4	1	2
7693 Wymore	2	8,2	2	2,8	2	2,4	1	2,5
7695 Wymore	2	8,2	2	2,8	2	2,4	1	2,5
7641 Yutan	1	8	1	8	2	4	1	5
7644 Yutan	1	8	1	8	2	4	2	5
7094 Zoe	2	1,8,2	2	1,2,8	2	1,2,4	2	1,2
7095 **Zoe**-Zook	2	1,8,2	2	1,2,8	2	1,2,4	2	1,2
7095 Zoe-**Zook**	,	1,8,2	2	1,2,8	2	1,2,4	2	1,2
7099 Zook	2	1,2,8	2	1,2,8	2	1,2,4	2	1,2

Legend for Table 7.1

Suitability	Conditions
0 = Not Limited	1= Flooding
1 = Somewhat Limited	2 = Depth to saturated zone
2 = Very Limited	3 = Poor filter
	4 = Slow water movement
	5 = Slope
	6 = Depth to Rock
	7 = Seepage
	8 = Shrink-swell

Flooding is defined as soils located in areas which are prone to flooding.

Depth to saturated zone refers to soils which do not drain well or have a low permeability. This conditions creates an above average existence of wet soils.

Poor Filter means soils with rapid permeability or an impermeable layer near the surface, the soil may not adequately filter effluent from a waste disposal system.

Slow water movement means soils that do not allow reasonable downward movement of water.

Slope means the inclination of the land surface from the horizontal. Within Otoe County the class of slopes are:

Nearly level	0 to 1 percent
	0 to 2 percent
Very gently sloping	1 to 3 percent
Gently sloping	2 to 6 percent
	3 to 6 percent
Strongly sloping	6 to 9 percent
	6 to 11 percent
Moderately sloping	9 to 20 percent
	11 to 15 percent
Steep	15 to 30 percent

Depth to Rock means typically a soil that has limited distance to bedrock of some kind.

Seepage means the movement of water through the soil. Seepage adversely affects the specified use.

Shrink-swell means the shrinking of soil when dry and swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Very Limited Conditions
Based upon the Table 7.1, the Very Limited conditions are very similar to Dwellings without Basements. As noted above, a majority of the soils in Otoe County are considered Very Limited for a Dwelling Unit with a Basement. There are five major conditions impacting the soils (not all five are present in any one soil type). The conditions present in the different soils are:

- Flooding
- Depth to saturated zone
- Slope
- Shrink-Swell
- Depth to Rock

Again, these conditions may or may not eliminate the ability of a land owner to build a dwelling unit, but specific conditions will need to be engineered to overcome to eliminate potential problems in the future.

Somewhat Limited Conditions
There are fewer Somewhat Limited rated soils having fewer issues when developing. The conditions creating the Somewhat Limited classification are:

- Shrink-swell
- Slope
- Depth to Rock

Septic Tank and Absorption Fields

Figure 7.13 shows the soil suitability conditions for placement of a septic tank and absorption field in Otoe County. Table 7.1 provides the suitability by soil types and the specific conditions impacting the soil.

Very Limited Conditions
Based upon the Table 7.1, there are seven conditions impacting the use of septic tanks and absorption fields in Otoe County. The major conditions impacting the soils are:

- Flooding
- Depth to saturated zone
- Poor Filter
- Slow water movement
- Depth to Rock
- Slope
- Seepage

Again, these conditions may are may not eliminate the ability of a land owner to use a septic tank and absorption field but specific conditions will need to be engineered to overcome to eliminate potential problems in the future.

Somewhat Limited Conditions
The issues present creating Somewhat problems for septic tanks are:

- Slow water movement
- Depth to saturated zone
- Flooding
- Slope
- Depth to Rock

Sewage Lagoons

Figure 7.14 shows the soil suitability conditions for placement of Sewage Lagoons in Otoe County. Table 7.1 provides the suitability by soil types and the specific conditions impacting the soil.

Very Limited Conditions
Based upon the Table 7.1, there are six conditions impacting the use of sewage lagoons in Otoe County. The major conditions impacting the soils are:

- Flooding
- Depth to saturated zone
- Seepage
- Ponding
- Slope
- Depth to rock

Again, these conditions may are may not eliminate the ability of a land owner to use a sewage lagoon but specific conditions will need to be engineered to overcome to eliminate potential problems in the future.

Somewhat Limited Conditions
Besides the Very Limited soils, there are some soils considered Somewhat Limited which is less of an issue when developing. The conditions that are creating the Somewhat Limited classification are:

- Seepage
- Slope
- Depth to saturated zone
- Flooding

Again, these conditions may need special engineering to overcome to eliminate potential problems in the future.

Other Factors Impacting Land Uses

The previously discussed uses are typical to counties similar to Otoe County. Earlier in this Chapter, the issue of wetlands was covered in some detail and is very closely associated with surface and groundwater. The following topics are greatly influenced by the type of soil and its location in an area. The following paragraphs will focus on Prime Farmland and Percent of Slope.

Prime Farmland

Prime farmland is directly tied to the specific soils and their composition. The map in Figure 7.15 identifies Prime Farmland, Prime Farmland if Drained, Farmland of Statewide Importance, and Not Prime Farmland.

According to the USDA, Prime farmland

> "...is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. It must also be available for these uses. It has the soil quality, growing season, and moisture supply needed to produce economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding."

Soils determined to be prime farmland need to be protected throughout the rural areas of Nebraska. These soils are typically the best crop producing lands.

Percent of Slope

The slope of an area is critical to the ability of the area to be used for agricultural purposes to constructing homes and septic systems. Typically the steeper the slope the more difficult these issues become. However, lands with little to no slope can also create problems regarding the inability of water to drain away from a site.

Table 7.2: Defintion of Soil Slopes

Classes Simple Slopes	Complex Slopes	Slope Gradient Limits	
		Lower Percent	Upper Percent
Nearly level	**Nearly level**	0	3
Gently	**Undulating**	1	8
Strongly	**Rolling**	4	16
Moderately	**Hilly**	10	30
Steep	**Steep**	20	60
Very steep	**Very steep**	>45	

Figure 7.16 shows the percent slope for Otoe County. Based upon the map, the only areas with steep slopes is on the eastern edge near the Missouri River. There are small pockets of steep slopes scattered throughout the county.

Based upon Table 7.1 slope is factor in a few soils/locations in the county. In a number of situations, any soil conditions based upon slope could likely be engineered to become more compatible. However, it is important to involve an engineer, geologist, or soil scientist in the issue in order to make the correct modifications.

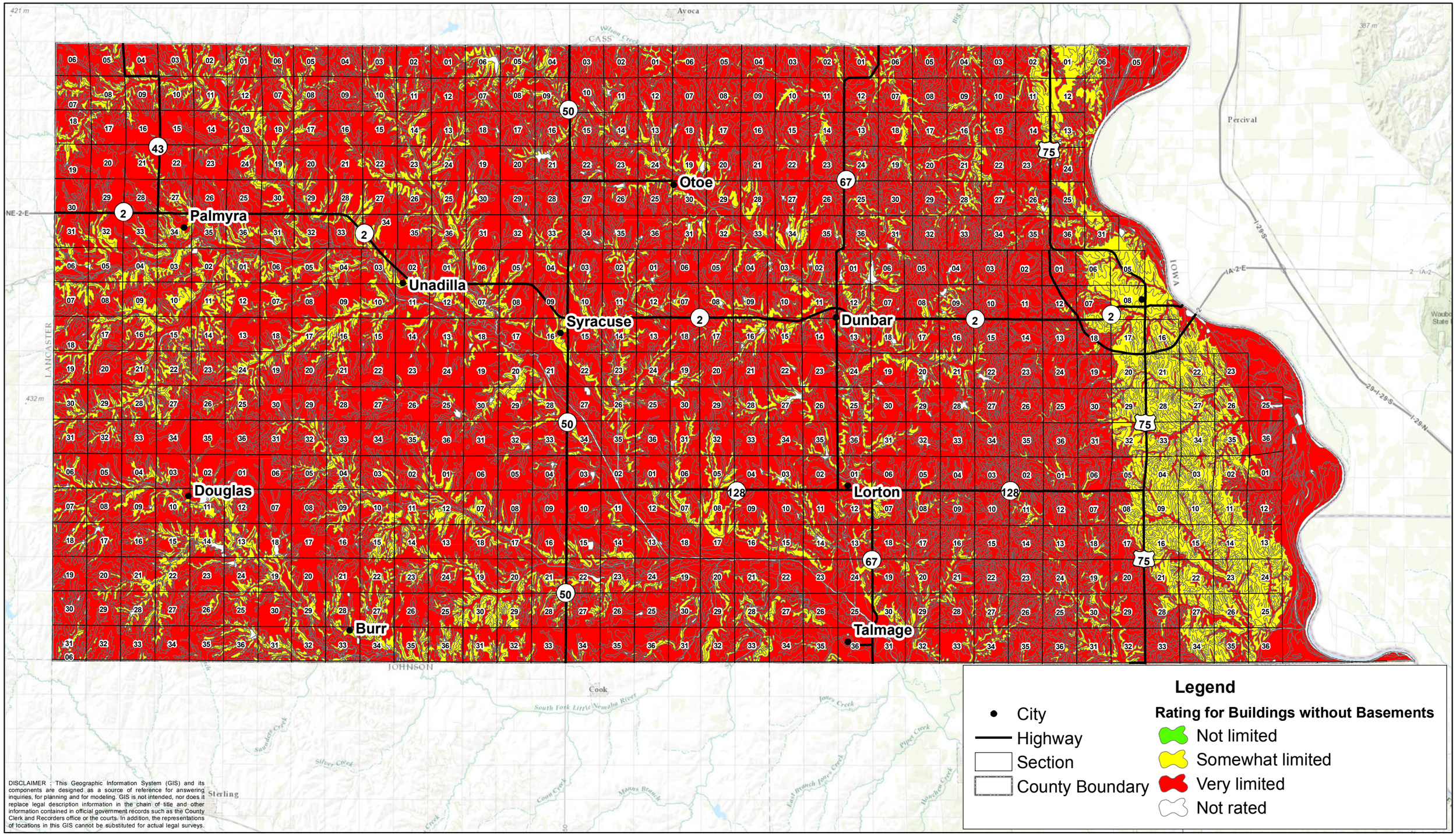


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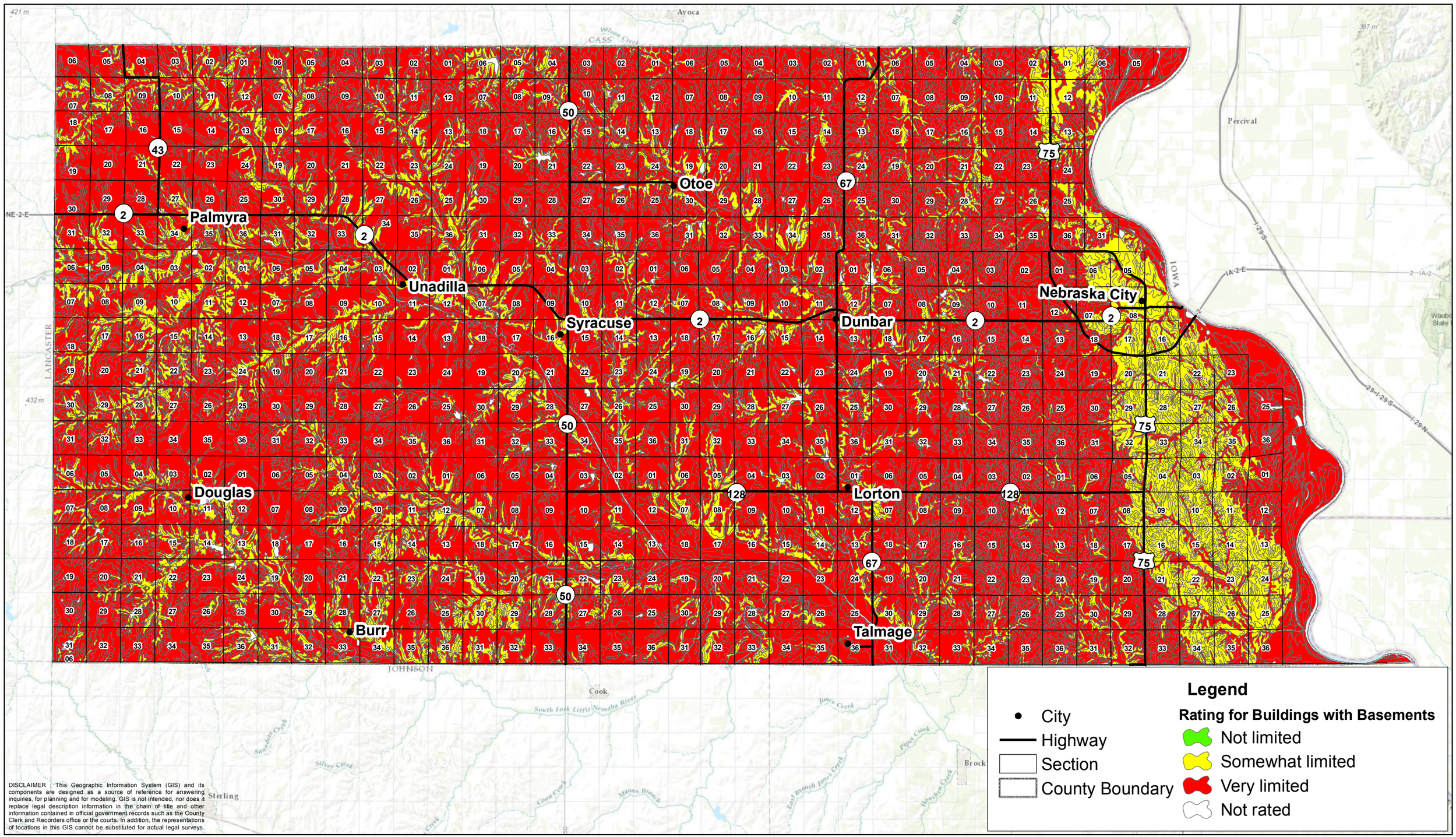
FIGURE 7.10
SOIL SUITABILITY MAP-DWELLINGS WITHOUT BASEMENTS
OTOE COUNTY, NEBRASKA

Source: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for Otoe County, Nebraska.



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Source: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for Otoe County, Nebraska.

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FIGURE 7.11
SOIL SUITABILITY MAP-DWELLINGS WITH BASEMENTS
OTOE COUNTY, NEBRASKA

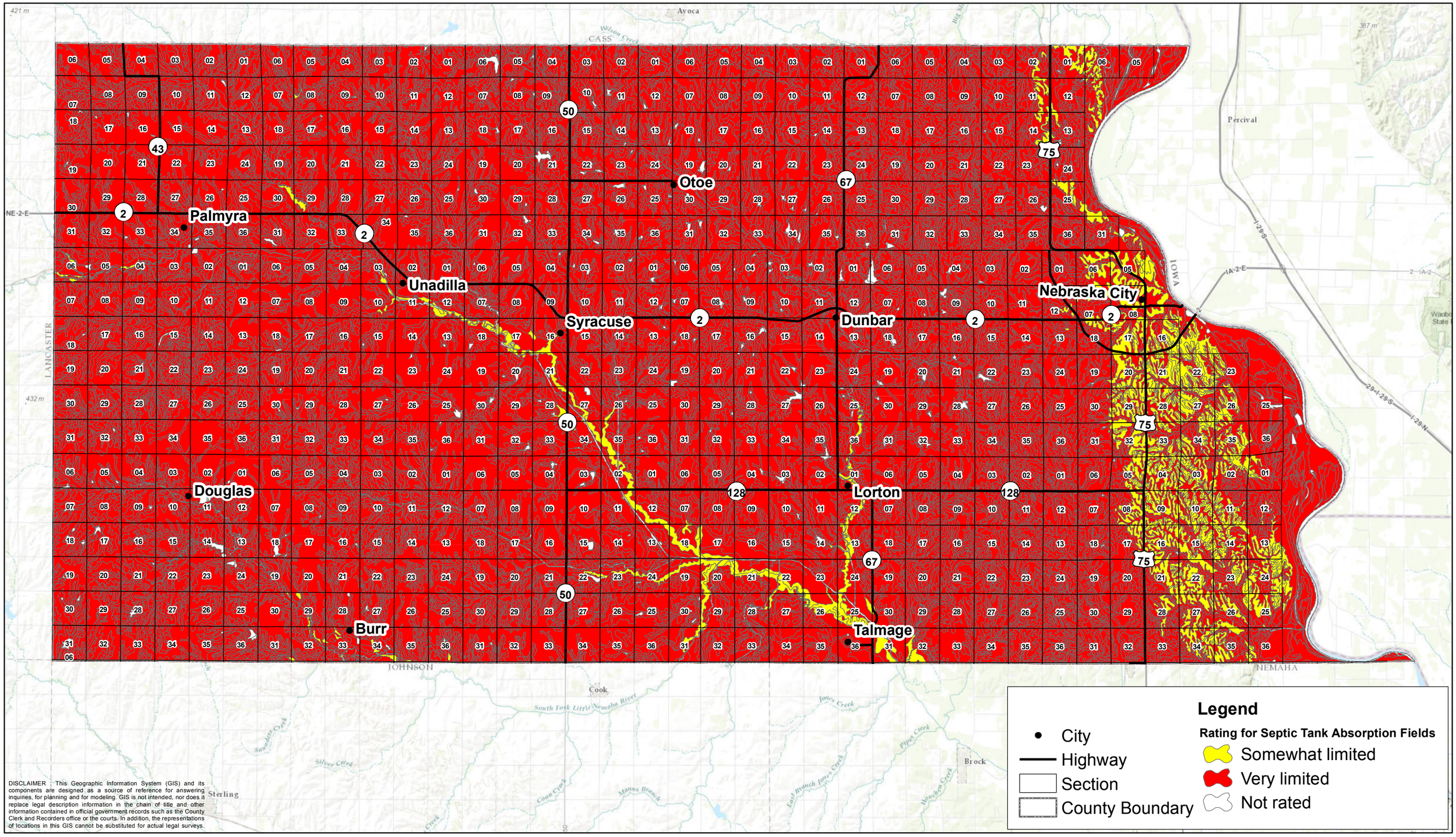

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FIGURE 7.12
SEPTIC TANK ABSORPTION FIELD CONDITIONS
OTOE COUNTY, NEBRASKA

Source: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for Otoe County, Nebraska.

Ayoca
CASS
Percival
Otoe
Palmyra
Unadilla
Syracuse
Dunbar
Nebraska City
Douglas
Burr
Lorton
Talmage
IOWA
LANCASTER
JOHNSON
Cook
Sterling
Brock
South Fork Little Nemaha River
Jones Creek
Silver Creek
Coon Creek
Manns Branch
Pipers Creek
Weichert Creek
East Branch Jones Creek
Swanders Creek
421 m
432 m
387 m
NE-2-E
IA-2-E
I-29-S
I-29-N
2 IA-2

Legend

- City
- Highway
- Section
- County Boundary

Rating for Sewage Lagoons

- Not limited
- Somewhat limited
- Very limited
- Not rated

Source: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for Otoe County, Nebraska.

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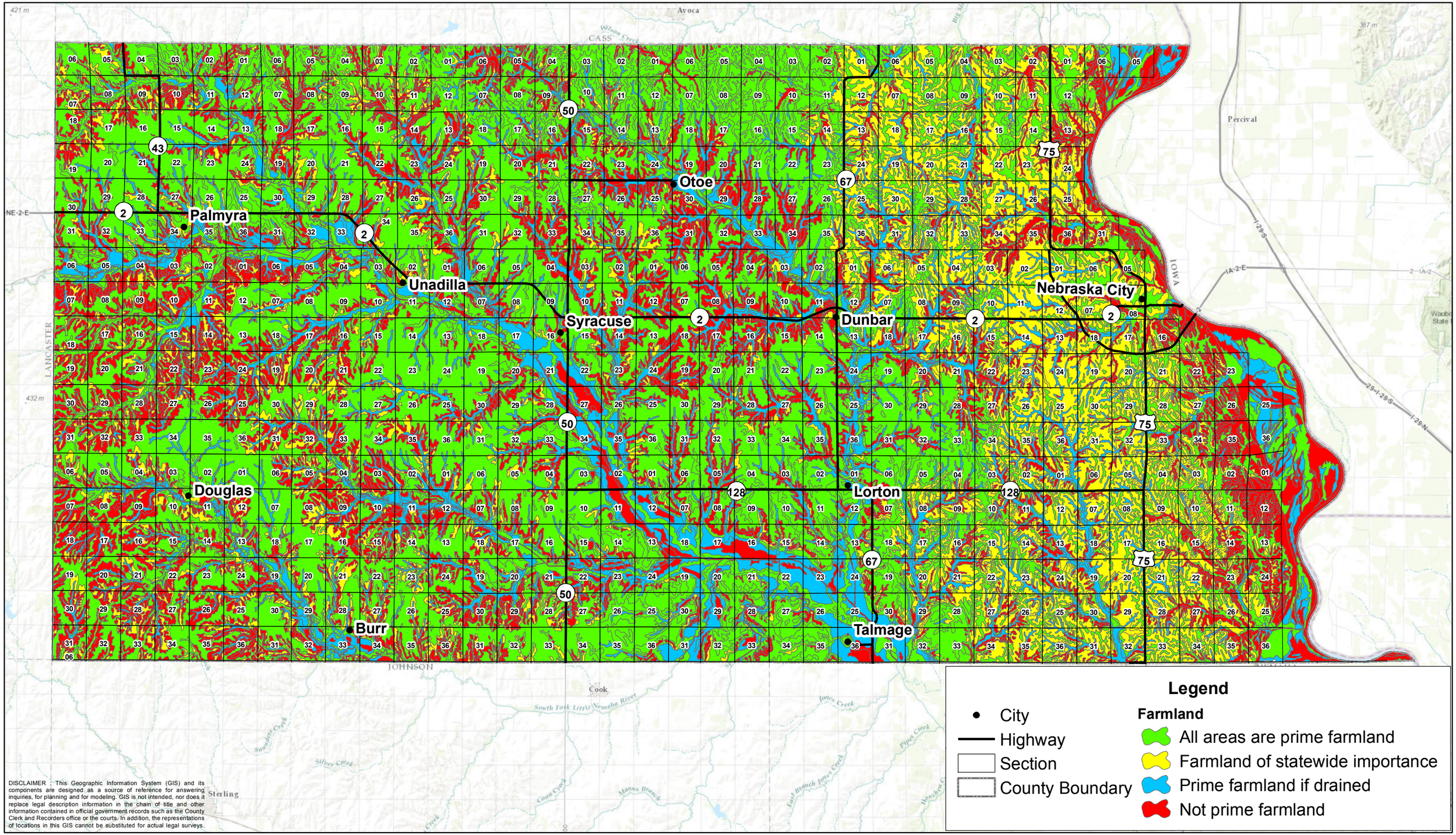
FIGURE 7.13
SOIL RATINGS FOR SEWAGE LAGOONS
OTOE COUNTY, NEBRASKA

0 1 2 4 Miles

N



Legend

- City
- Highway
- Section
- County Boundary

Farmland

- All areas are prime farmland
- Farmland of statewide importance
- Prime farmland if drained
- Not prime farmland

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FIGURE 7.14
PRIME FARMLAND
OTOE COUNTY, NEBRASKA

Source: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for Otoe County, Nebraska.

0 1 2 4 Miles

N

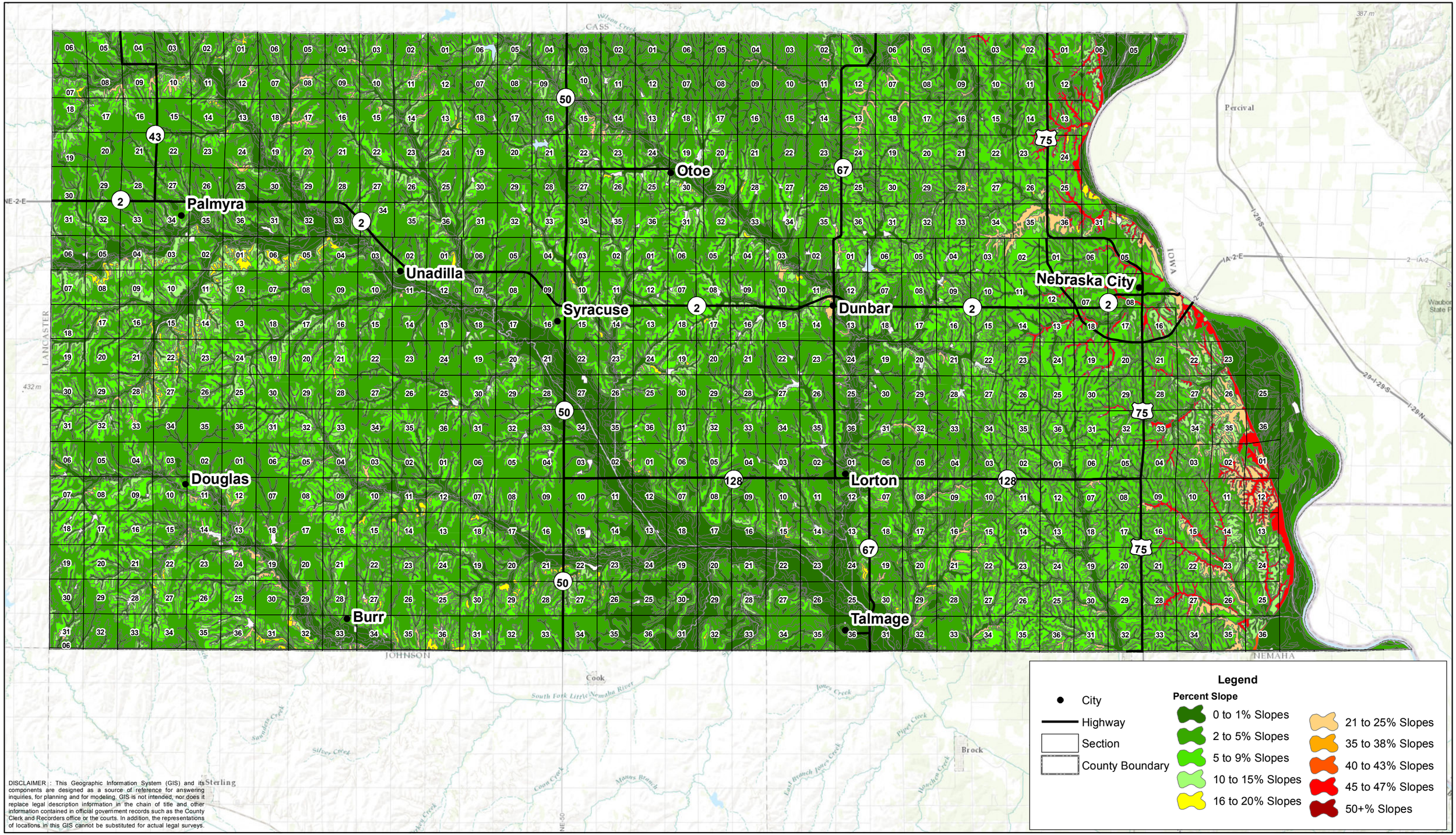

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FIGURE 7.15
SLOPES
OTOE COUNTY, NEBRASKA

Source: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for Otoe County, Nebraska.

0 1 2 4 Miles

N

TABLE 7.3: PERMEABILITY/SHRINK-SWELL BY SOIL TYPE

Soil Symbol/Soil Name	Depth (inches)	Permeability (inches/hour)	Shrink-Swell potential
7205 Aksarben	0-6 6-14 14-45 45-54 54-79	0.2-0.6 0.2-0.6 0.06-0.2 0.2-0.6 0.2-0.6	Moderate Moderate **High** Moderate Moderate
7206 Aksarben	0-6 6-12 12-18 18-45 45-54 54-79	0.2-0.6 0.2-0.6 0.06-0.2 0.06-0.2 0.2-0.6 0.2-0.6	**High** **High** **High** **High** Moderate Moderate
7710 Albaton	0-9 6-60	<.06 <.06	**Very High** **Very High**
7212 **Burchard**-Morrill	0-7 7-44 44-60	0.2-0.6 0.2-0.6 0.2-0.6	Moderate Moderate Moderate
7212 Burchard-**Morrill**	0-14 14-47 47-60	0.2-0.6 0.2-2.0 **0.6-4.0**	Moderate Moderate Moderate
7770 Colo	0-12 12-36 36-60	0.2-0.6 0.2-0.6 0.2-0.6	Moderate Moderate Moderate
7773 **Colo**-Nodaway	0-24 24-38 38-60	0.2-0.6 0.2-0.6 0.2-0.6	Moderate Moderate Moderate
7773 Colo-**Nodaway**	0-60	0.6-2.0	Moderate
7270 Dickinson	**0-12** **12-38** **38-60**	**2.0-6.0** **2.0-6.0** **6.0-20.0**	Low Low Low
7271 Dickinson	**0-12** **12-38** **38-60**	**2.0-6.0** **2.0-6.0** **6.0-20.0**	Low Low Low
7741 Haynie	0-7 7-60	0.6-2.0 2.0-6.0	Low Low
7230 Judson	0-34 34-60	0.6-2.0 0.2-0.6	Moderate Moderate
7231 Judson	0-34 34-60	0.6-2.0 0.2-0.6	Moderate Moderate
7050 Kennebec	0-8 8-41 41-54 54-79	0.2-0.6 0.2-0.6 0.2-0.6 0.2-0.6	Moderate Moderate Moderate Moderate
7057 **Kennebec**-Nodaway	0-42 42-60	0.6-2.0 0.6-2.0	Low Low
7057 Kennebec-**Nodaway**	0-7 7-72	0.6-2.0 0.6-2.0	Low Low
7153 Kennebec	0-42 42-60	0.6-2.0 0.6-2.0	Low Low
7154 **Kennebec**-Nodaway	0-36 36-60	0.6-2.0 0.6-2.0	Low Low
7154 Kennebec-**Nodaway**	0-5 5-60	0.6-2.0 0.6-2.0	Low Low
4164 **Kipson**-Benfield	0-15 15-20 20-60	0.6-2.0 0.6-2.0 0.01-0.14	Low Moderate -
4164 Kipson-**Benfield**	0-7 7-36 36-60	0.2-0.6 0.01-.06 01-0.14	**High** **Very High** -
7296 Malcolm	0-7 7-28 **28-60**	0.6-2.0 0.2-0.6 **2.0-6.0**	Low Moderate Low
7297 Malcolm	0-7 7-28 **28-60**	0.6-2.0 0.2-0.6 **2.0-6.0**	Low Moderate Low
7299 Malcolm	0-7 7-28 **28-60**	0.6-2.0 0.2-0.6 **2.0-6.0**	Low Moderate Low
7344 **Malmo**-eroded-Pawnee	0-6 6-43 43-54 54-80	0.06-0.2 <0.06 0.06-0.2 0.06-0.2	**High** **High** Moderate Moderate
7344 Malmo-eroded-**Pawnee**	0-10 10-14 14-45 45-53 53-80	0.06-0.2 0.06-0.2 <0.06 <0.06 0.06-0.2	Moderate Moderate Moderate **High** **High**
7350 Malmo	0-6 6-43 43-54 54-80	0.06-0.2 <0.06 0.06-0.2 0.06-0.2	**High** **High** Moderate Moderate
8019 Marshall	0-7 7-22 22-27 27-59 59-71 71-79	0.14-1.40 0.14-1.40 0.14-1.40 0.14-1.40 0.14-1.40 0.14-1.40	Moderate Moderate Moderate Moderate Moderate Moderate
8034 **Marshall**-Ponca	0-10 10-46 46-60	0.6-2.0 0.2-0.6 0.6-2.0	Moderate Moderate Moderate
8034 Marshall-**Ponca**	0-8 8-28 28-60	0.6-2.0 0.6-2.0 0.6-2.0	Low Moderate Low
7668 Mayberry	0-6 6-50 50-60	0.2-0.6 0.06-0.2 0.06-0.2	**High** **Very High** **High**
7669 Mayberry	0-10 10-60 60-80	0.2-0.6 0.6-2.0 0.6-2.0	Moderate **Very High** Moderate
8073 Monona	0-12 12-36 36-60	0.6-2.0 0.6-2.0 0.6-2.0	Low Moderate Low
8075 Monona	0-12 12-36 36-60	0.6-2.0 0.6-2.0 0.6-2.0	Low Moderate Low
8096 **Monona**-Kipson	0-10 10-39 39-60	0.6-2.0 0.6-2.0 0.6-2.0	Low Moderate Low
8096 Monona-**Kipson**	0-7 7-12 12-60	0.2-0.6 0.6-2.0 0.01-0.14	Moderate Moderate -
8101 **Monona**-Shelby-Kipson	0-12 12-36 36-60	0.6-2.0 0.6-2.0 0.6-2.0	Low Moderate Low
8101 Monona-**Shelby**-Kipson	0-10 10-40 40-60	0.2-0.6 0.2-0.6 0.2-0.6	Moderate Moderate Moderate
8101 Monona-Shelby-**Kipson**	0-13 13-20 20-60	0.6-2.0 0.6-2.0 0.01-0.14	Low Moderate -
7418 Morrill	0-10 10-48 48-60	0.2-0.6 0.2-0.6 0.2-2.0	Moderate Moderate Low

TABLE 7.3: PERMEABILITY/SHRINK-SWELL BY SOIL TYPE

Soil Symbol/Soil Name	Depth (inches)	Permeability (inches/hour)	Shrink-Swell potential
7422 Morrill	0-7 7-48 48-60	0.2-0.6 0.2-0.6 0.2-0.6	Moderate Moderate Moderate
7446 **Morrill**–Malmo	0-8 8-43 43-60	0.2-0.6 0.2-0.6 0.2-2.0	Moderate Moderate Low
7446 Morrill–**Malmo**	0-6 6-43 43-54 54-80	0.06-0.2 <0.06 0.06-0.2 0.06-0.2	**High** **High** Moderate Moderate
7750 Nodaway	0-7 5-80	0.6-2.0 0.6-2.0	Low Low
7867 Nodaway	0-5 5-60	0.6-2.0 0.6-2.0	Moderate Moderate
7870 **Nodaway**-Colo	0-7 7-80	0.6-2.0 0.6-2.0	Low Low
7870 Nodaway-**Colo**	0-52 52-60	0.2-0.6 0.2-0.6	Moderate Moderate
7871 **Nodaway**-Colo	0-12 12-60	0.6-2.0 0.6-2.0	Low Low
7871 Nodaway-**Colo**	0-12 12-36 36-60	0.2-0.6 0.2-0.6 0.2-0.6	Moderate Moderate Moderate
7878 Onawa	0-7 7-28 **28-60**	0.6-2.0 <0.06 **2.0-6.0**	Low **Very High** Low
7880 Onawa	0-6 6-21 **21-60**	<0.06 <0.06 **2.0-6.0**	**Very High** **Very High** Low
7464 Otoe	0-6 6-32 32-57 57-80	0.06-0.2 0.06-0.2 0.06-0.2 0.06-0.2	Moderate **High** Moderate Moderate
7501 Pawnee	0-7 7-13 13-53 53-79	0.6-2.0 0.6-2.0 <0.06 0.6-2.0	Moderate **High** **Very High** **High**
7507 Pawnee	0-6 6-55 55-60	0.6-2.0 <0.06 0.6-2.0	Moderate **Very High** **High**
7511 Pawnee	0-12 12-42 42-60	0.6-2.0 <0.06 0.6-2.0	Moderate **Very High** **High**
7515 Pawnee	0-7 7-45 45-60	0.6-2.0 <0.06 0.6-2.0	**High** **High** Moderate
8125 Pohocco	0-7 7-46 46-60	0.6-2.0 0.6-2.0 0.6-2.0	Moderate Moderate Moderate
8135 **Pohocco** eroded-Ida	0-10 10-27 27-60	0.6-2.0 0.6-2.0 0.6-2.0	Low Low Low
8135 Pohocco eroded-**Ida**	0-7 7-60	0.6-2.0 0.6-2.0	Low Low
8150 **Ponca**-Dow	0-8 8-18 30-80	0.6-2.0 0.6-2.0 0.6-2.0	Low Moderate Low
8150 Ponca-**Dow**	0-6 6-60	0.6-2.0 0.6-2.0	Low Low
8151 Ponca-Dow	0-8 8-18 30-80	0.6-2.0 0.6-2.0 0.6-2.0	Low Moderate Low
8151 Ponca-**Dow**	0-6 6-60	0.6-2.0 0.6-2.0	Low Low
7087 **Sarpy**-Haynie	**0-6** **6-60**	**6.0-20.0** **6.0-20.0**	Low Low
7087 Sarpy-**Haynie**	0-7 **7-60**	0.6-2.0 **2.0-6.0**	Low Low
7546 Shelby-**Burchard**	0-8 8-30 30-60	0.2-0.6 0.2-0.6 0.2-0.6	Moderate Moderate Moderate
7546 **Shelby**-Burchard	0-7 7-36 36-60	0.2-0.6 0.2-0.6 0.2-0.6	Moderate Moderate Moderate
7548 Shelby	0-17 17-42 42-60	0.2-0.6 0.2-0.6 0.2-0.6	Moderate Moderate Moderate
7549 Shelby	0-15 15-51 51-70	0.2-0.6 0.2-0.6 0.2-0.6	Moderate Moderate Moderate
7596 Shelby	0-7 7-36 36-60	0.2-0.6 0.2-0.6 0.2-0.6	Moderate Moderate Moderate
3921 Sogn	0-10 10-22	0.14-0.6 <0.01	Moderate -
7610 Steinauer	0-5 5-18 18-60	0.2-0.6 0.2-0.6 0.2-0.6	Moderate Moderate Moderate
7091 Wabash	0-10 10-60	<0.06 <0.06	Moderate **High**
7684 Wymore	0-6 6-11 11-40 40-51 51-79	0.2-0.6 <0.06 0.06-0.2 0.2-0.6 0.2-0.6	**High** **Very High** **High** **High** **High**
7689 Wymore	0-6 6-11 11-18 18-45 45-53 53-79	0.2-0.6 0.2-0.6 <0.06 0.06-0.2 0.2-0.6 0.2-0.6	**High** **High** **Very High** **High** **High** **High**
7693 Wymore	0-6 6-10 10-14 14-41 41-53 53-79	0.2-0.6 0.2-0.6 <0.06 0.06-0.2 0.2-0.6 0.2-0.6	**High** **High** **Very High** **High** **High** **High**
7695 Wymore	0-6 6-10 10-41 41-51 51-79	0.2-0.6 <0.06 0.06-0.2 0.2-0.6 0.2-0.6	**High** **Very High** **High** **High** **High**
7641 Yutan	0-8 8-13 13-40 40-51 51-79	0.2-0.6 0.06-0.2 0.2-0.6 0.2-0.6 0.2-0.6	**High** **High** Moderate Moderate Moderate
7644 Yutan	0-7 7-13 13-32 32-43 43-79	0.2-0.6 0.06-0.2 0.2-0.6 0.2-0.6 0.2-0.6	**High** **High** Moderate Moderate Moderate
7094 Zoe	0-8 8-24 24-80	0.06-0.2 <0.06 <0.06	Moderate Moderate Moderate
7095 **Zoe**-Zook	0-12 12-32 32-60	0.2-0.6 <0.06 0.06-0.2	Moderate **High** **High**
7095 Zoe-**Zook**	0-19 19-60	0.2-0.6 0.06-0.2	**High** **High**
7099 Zook	0-25 25-80	0.06-0.2 <0.06	**High** **High**

Permeability

Permeability is defined in the Otoe County Soil Survey as..."The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through saturated soils." Permeability is rated as:

Very slow	less than 0.06 inches
Slow	0.06 to 0.20 inches
Moderately slow	0.2 to 0.6 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Table 7.3 indicates the various permeability rates for each soil and at what depth the rating was taken. The Table indicates those considered to moderately rapid or higher in red. There are a number of soils in Otoe County that can see a permeability of twenty inches per hour or more.

There are a number of specific uses that are not compatible for soils rated as Moderately rapid or higher. Soils rated at these levels will move contaminated materials much faster through the profile and into the regional water tables and aquifers. These uses will typically include anything dealing with animal or human sanitary waste systems.

Permeability, as with other soil factors, can be overcome with the proper engineering and construction techniques. Caution is a must when dealing with these conditions since the potential for contaminating an aquifer that feeds an entire area with water is a risk.

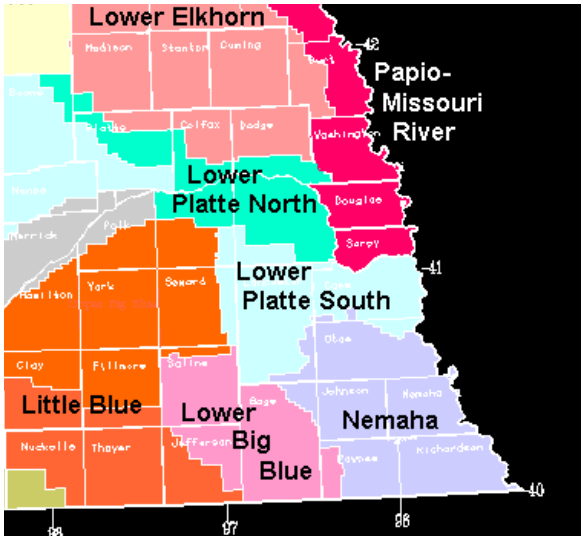
Water and the Impact on Otoe County

Water, along with the soils are the two most restricting environmental conditions faced by Otoe County. Damaging either one of these two elements will impact the residents of the county for years to come. As with the soil descriptions and conditions, it is important to discuss the water factors impacting Otoe County during the present and coming planning period. Water in this section will apply to two topics, surface water and ground water.

Surface water applies to any water running across a surface and eventually runs into a minor drainage area, eventually ending up in a major waterway such as the Missouri River. However, a certain portion of surface water can and is absorbed by the soil in order to support plant life including corn, soybeans, and grass lawns.

Otoe County lies in two distinct watersheds, these are defined and drainage areas controlled by the respective Natural Resource District. The two districts covering Otoe County are the Lower Platte South Natural Resource District and the Nemaha Natural Resource District. The Lower Platte South is based in Lincoln, Nebraska, while the Nemaha is in Tecumseh, Nebraska.

Figure 7.16: Watersheds and the Natural Resource Districts



Source: www.lancaster.unl.edu

Hydric Soils

Hydric soils are formed under conditions of saturation, flooding, or ponding. The process has to occur long enough during the growing season to develop anaerobic conditions in the upper part. Hydric soils along with hydrophytic vegetation and wetland hydrology are used to define wetlands. (USDA/NRCS, Fall 1996)

Figure 7.17 indicates where the hydric soils are located in Otoe County. The soils are classified as the following:

- All Hydric,
- Not Hydric

The majority of the soils in Otoe County are considered All Hydric or Partially Hydric.

Groundwater/Water Table Elevations

Groundwater refers to water found beneath the surface and includes smaller pockets of water as well as aquifers. This water source is where the residents of Otoe County both city and rural, get their potable water for everyday living as well as the irrigation water for crops. The ability to find water meeting these specific needs is critical to the placement of certain uses. These specific needs include water quantity, water quality, and water pressure.

Depth to Water

Figure 7.18 indicates the approximate water table/aquifer elevations. The water table elevation, in Otoe County, varies from 0 feet below grade to over 200 feet below grade. Shallow areas can be found throughout Otoe County, especially in the central portion of the county. A large portion of Otoe County has a depth of 0 to 100 feet.

Thickness of Principal Aquifer

Figure 7.19 indicates the thickness of the water table/ aquifer. The thickness ranges from 0 feet to 200 feet in depth depending upon which part of the county ones resides. The deepest portion of the aquifer can be found in northwest and southeast Otoe County.

Use of Groundwater

Groundwater use in Otoe County is in three forms; domestic and livestock supply, public water supplies, and irrigation. Each use is important to the overall viability of Otoe County.

Domestic and Livestock supplies

Typically domestic and most livestock water supplies are obtained through the use of small diameter wells. Most of these wells are drilled only a few feet below the top of the water table, are low production wells, and equipped with electric powered jet or submersible pumps. The water yield of this type of well is usually no more than five gallons of water per minute.

Public water supplies

The public water supply is one of the most critical uses of groundwater resources. These supplies are used by the municipalities supplying water to its residents. In Otoe County, all of the incorporated communities have a publicly owned water supply system. In addition, Otoe County has three rural water districts located in the county.

The State of Nebraska places a great deal of value on these systems across the state. The value is so high that a Wellhead Protection Program is available to municipalities through Nebraska Department of Environmental Quality. This program allows the municipalities, after a series of prescribed steps are completed, to designate special areas around their wells and well fields in order to protect the quality and quantity of the water within the underlying aquifers. Development of a community wellhead protection plan can help communities receive financial assistance to protect and secure the source of drinking water for the community.

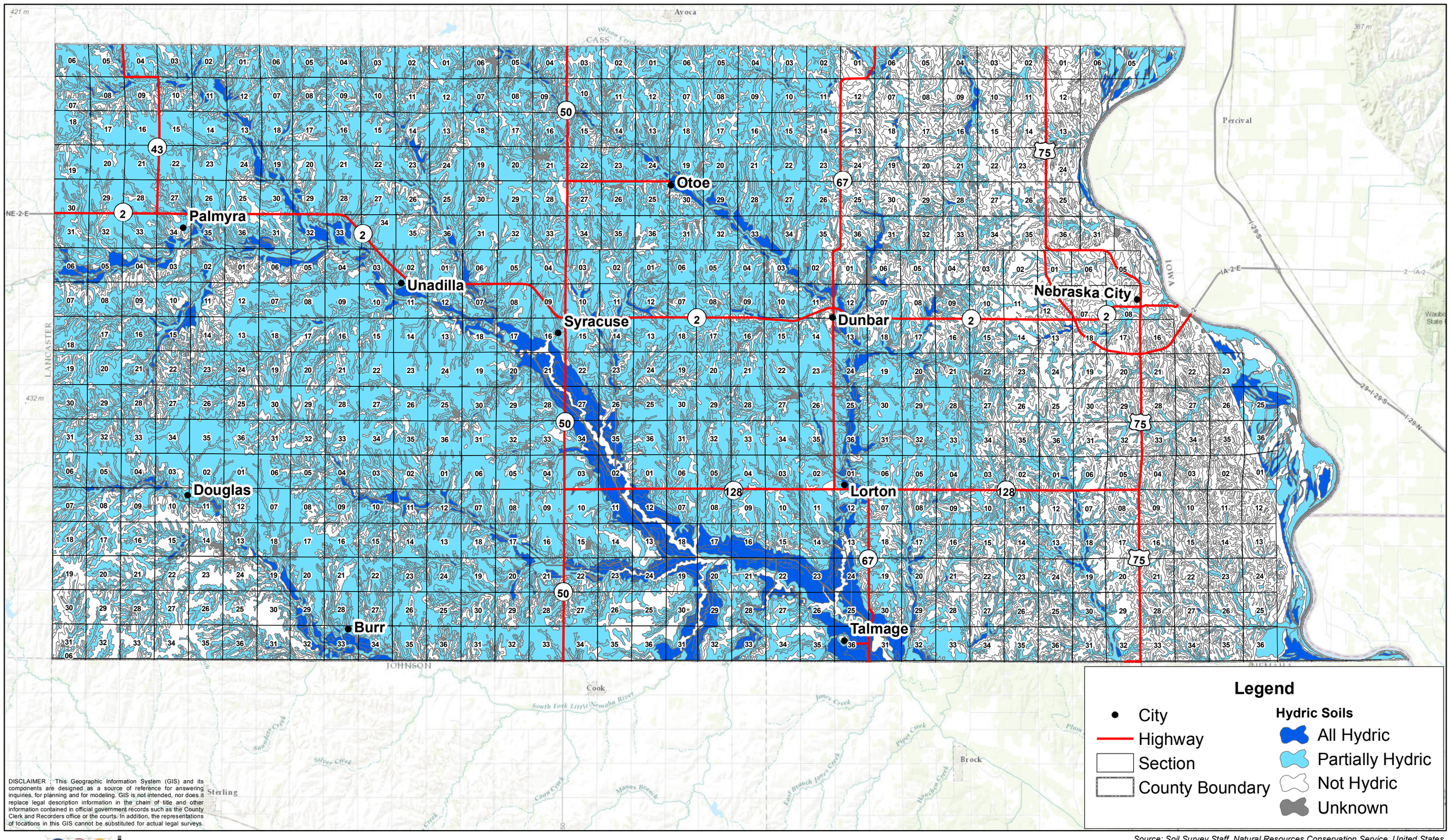
Wellhead Protection

A Wellhead Protection Area is an delineated area indicating where a water source is located, as well as the area of travel for a specific well or well field. A wellhead protection area is important from the aspect that correctly implemented, the area will aid in protecting the water supply of a domestic well providing potable water to a community.

In Nebraska, the goal of the Nebraska Department of Environmental Quality's Wellhead Protection Program "...is to protect the land and groundwater surrounding public drinking water supply wells from Contamination". Within the NDEQ's program there are five steps to developing a wellhead protection area, which are:

1. Delineation
2. Contamination Source Inventory
3. Contaminant Source Management
4. Emergency, Contingency, and Long-term Planning
5. Public Education

The mapping process includes the use of computer modeling and other data. From this the NDEQ can generate a map indicating the wellhead Protection Area. However, delineating an area is not sufficient for protecting the groundwater around a public supply well, the governmental entity must adopt an ordinance in order to enforce the area and the regulations used to protect this water supply. Another way to officially regulate a wellhead protection area is for the community to create an interlocal agreement with the County to regulate these areas as part of the county comprehensive plan and zoning regulations.



Source: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for Otoe County, Nebraska.

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FIGURE 7.17
HYDRIC SOILS
OTOE COUNTY, NEBRASKA

Otoe
Palmyra
Unadilla
Syracuse
Dunbar
Nebraska City
Douglas
Lorton
Burr
Talmage
Avoca
Percival
Cook
Sterling
Brock
CASS
JOHNSON
NEMAHA
LANCASTER
IOWA
NE-2-E
IA-2-E
I-29-S
I-29-N
421 m
387 m
432 m

Legend

- City
- Highway
- Section
- County Boundary

General Depth to Water

- 0-50 ft.
- 50-100 ft.
- 100-200 ft
- > 200 ft.

Source: University of Nebraska GIS Water Database

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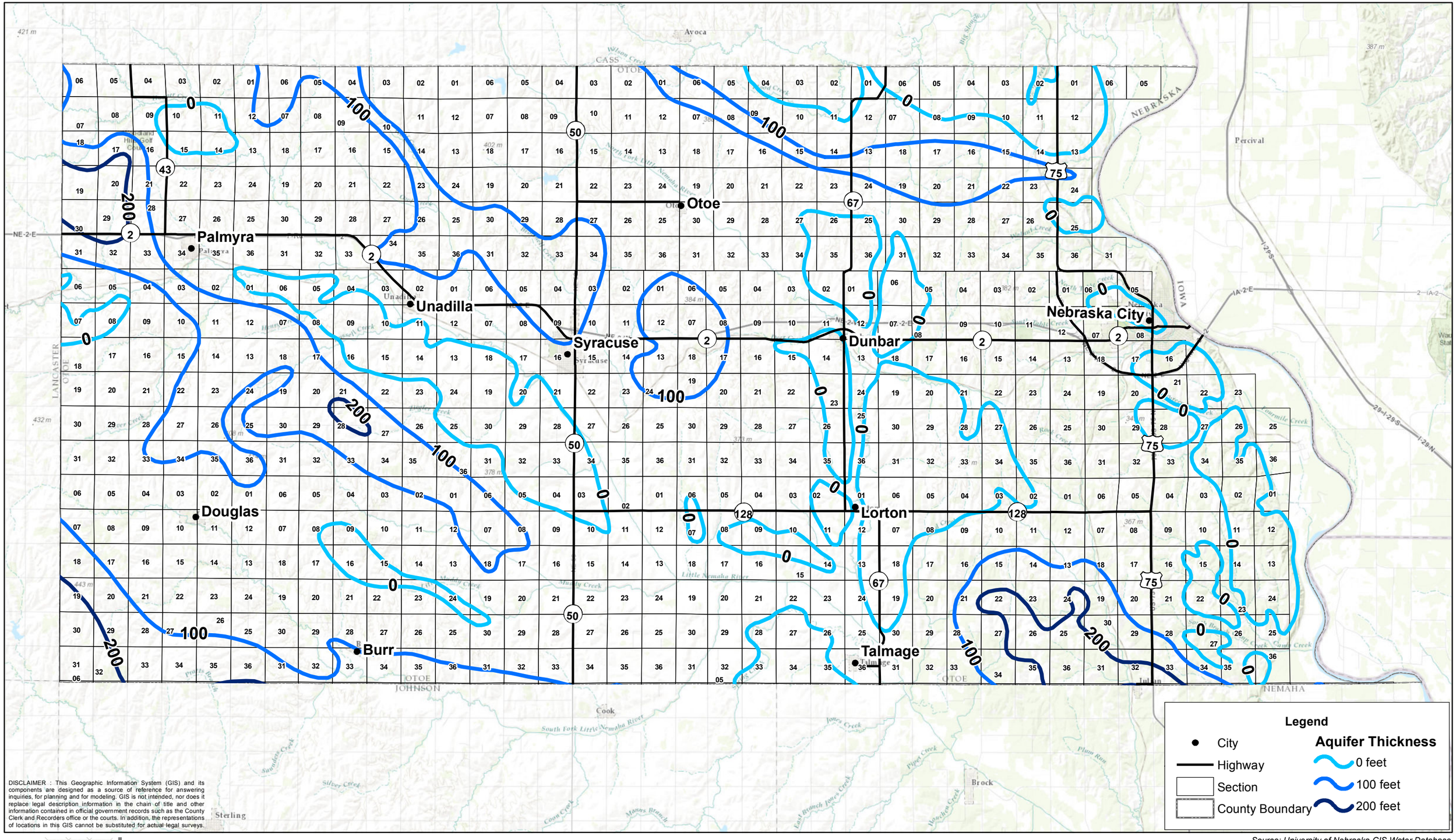
FIGURE 7.18
GENERAL DEPTH TO WATER
OTOE COUNTY, NEBRASKA

0 1 2 4 Miles

N



Source: University of Nebraska GIS Water Database

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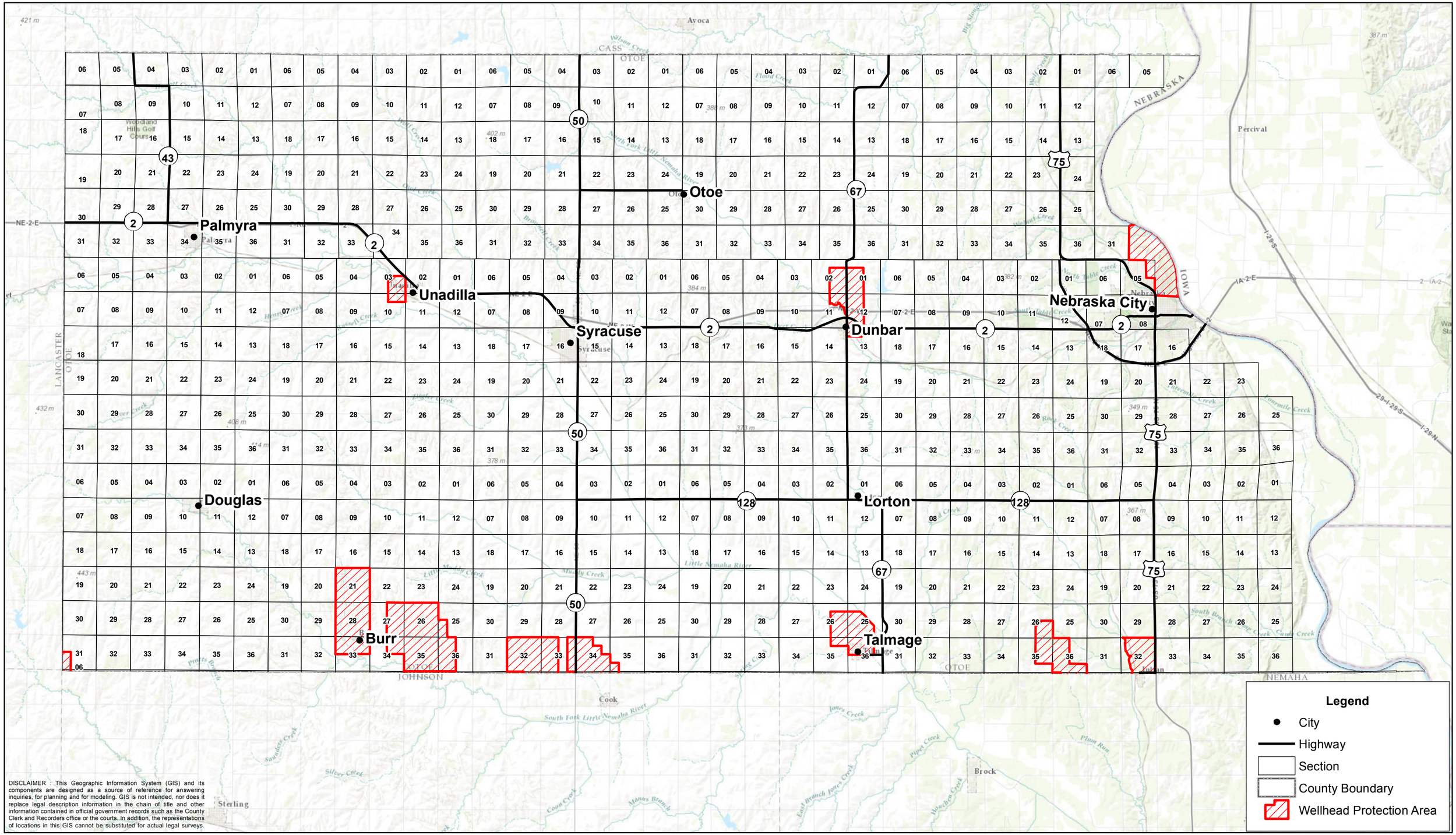
FIGURE 7.19
THICKNESS OF PRIMARY AQUIFER
OTOE COUNTY, NEBRASKA



DISCLAIMER : This Geographic Information System (GIS) and its components are designed as a source of reference for answering inquiries, for planning and for modeling. GIS is not intended, nor does it replace legal desription information in the chain of title and other information contained in official government records such as the County Clerk and Recorders office or the courts. In addition, the representations of locations in this GIS cannot be substituted for actual legal surveys.

Source: Nebraska Department of Environmental Quality

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FIGURE 7.20
WELLHEAD PROTECTION AREA
OTOE COUNTY, NEBRASKA

FIGURE 7.21 FLOODPLAIN AND FLOODWAY MAP

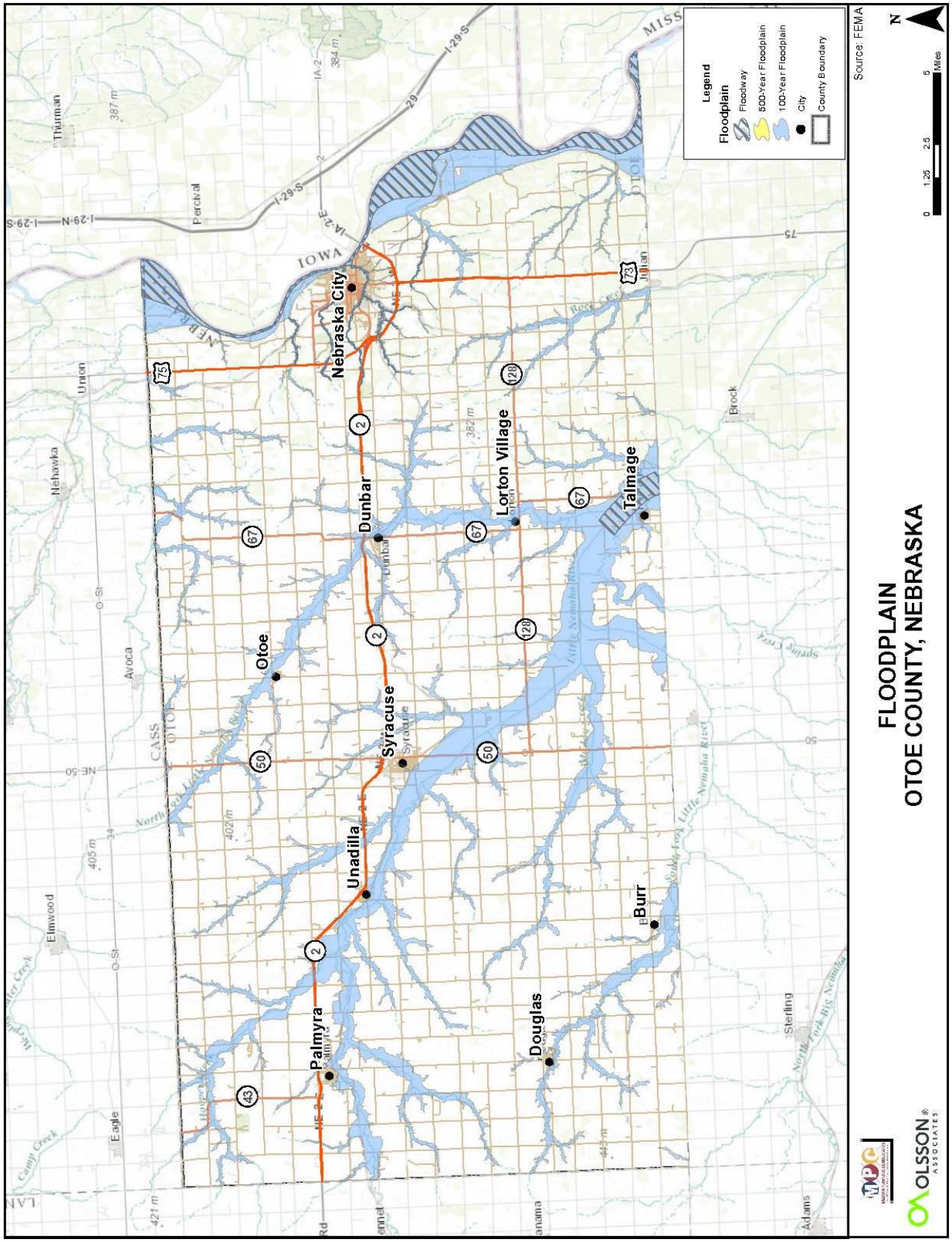


Figure 7.20 shows the documented wellhead protection areas impacting Otoe County. These are only the mapped areas, it is not clear if these communities have actually adopted the proper ordinances to fully protect the water supply.

Irrigation

Irrigation wells in Otoe County has been a long standing practice. This process has become increasingly important to the production of crops within Otoe County and Nebraska. The water demand for irrigation varies greatly from year to year and is dependent upon the amount of natural precipitation received in the area.

The use of irrigation is critical during the growing and finishing periods of the crop lifecycle. The demand for irrigation can have major impacts on the draw down of the aquifer and the aquifers ability to recharge itself in an appropriate time period.

Irrigation in Otoe County does have some limitations based upon the topography/ percentage slope of agricultural grounds. However, if an area can be irrigated in a cost-effective manner then it has a high probability of occurring.

Transmissivity

Transmissivity is the term used to describe the ability of water to move below groundwater through the different soils. The data are described in terms of "1000 gallons/day/foot". The higher the numbers the more water that is transmitted through the soils. Therefore, if an area indicates a Transmissivity of 50 to 100, it means there is between 50,000 to 100,000 gallons/day/foot being transmitted through these soils.

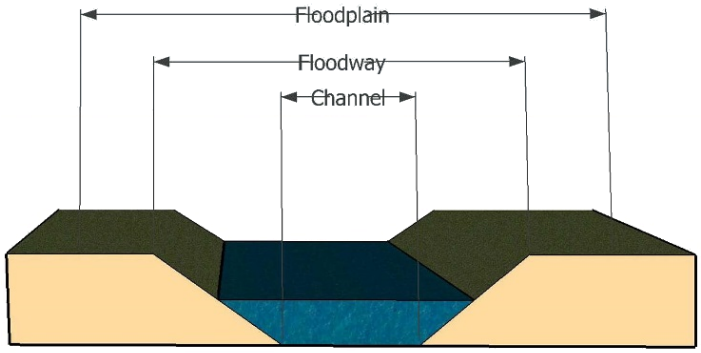
Transmissivity is a critical component to determining the wellhead protection areas. Since the rate of flow below the surface is critical to identifying how much time is required for water to travel from one spot to the wellhead.

Floodways and Floodplains

Flooding is the temporary covering of the soil surface by flowing water from any source, such as streams and rivers overflowing their banks, runoff from adjacent or surrounding slopes, or a combination of different sources. During a flooding event there are a number of components that make up the flooded area. These areas include:

Floodway which is the channel of a watercourse and those portions of the adjoining floodplains which are required to carry and discharge the 100-year flood with no significant increase in the base flood elevation.

Floodplain which is the low land near a watercourse which has been or may be covered by water from flood of 100-year frequency, as established by engineering practices of the U.S. Army Corps of Engineers. It shall also mean that a flood of this magnitude may have a 1 percent chance of occurring in any given year.



Floodway Fringe which is that portion of a floodplain that is inundated by floodwaters but is not within a defined floodway. Floodway fringes serve as temporary storage for floodwaters.

The floodplain also includes the floodway and the flood fringe, which are areas covered by the flood, but which do not experience a strong current.

The floodplain area of greatest significance in terms of state and federal regulation is the 100 year floodplain. This area is defined by the ground elevation in relation to the water elevation experienced during a 100 year flood event. The 100 year floodplain is calculated to be the elevation level of flood water expected to be equaled or exceeded every 100 years on average. In other and more accurate words, the 100 year flood is a 1% flood, meaning it defines a flood that has a 1% chance of being equaled or exceeded in any single year.

A home north of Quincy, Illinois within the 100 year floodplain - river is between 1 and 2-miles away

Same home during the 2008 Mississippi River floods

Preserving the floodplain and floodway are critical to limiting the level of property damage that can occur as well as the level of damage to life of the occupants of the area. Land when not flooded seems to be harmless, but it is those rare times that threaten life and property that need to be controlled.

In recent years there have been numerous flooding occurrences in Nebraska and the Midwest. These events have included the Platte River, the Missouri River, and the Mississippi River, as well as their tributaries. Each of these events have caused significant damage to life and property. In order to protect an individuals property there are specific rules and guidelines that need to be followed. On some occasions these guidelines work and others they may not; most guidelines are developed for 100 year flooding events. The times that the guidelines do not work are typically referred to a 500 year event for lack of a better term. However, in some cases, due to mother nature and increases in development runoff, the area needed to handle the floodway and floodplain (100 year event) have increased due to the amount and speed that the water is reaching the streams and rivers.

Additionally, in 2011, the state of Nebraska and Iowa saw similar destruction when the Missouri River flooded. That flooding destroyed large sections of Interstates 680 and twenty-nine in Iowa, which were laying flat on the ground. In themed 2000's, Cedar Rapids. Iowa saw numerous structures swept off their foundations and sent downstream creating huge losses and large amounts of recovery dollars to be spent.

Natural Resources/Environment Goals and Policies

Soils

Soil Goal 1

Otoe County needs to protect specific soils regarding the suitability of certain uses.

Soil Policies and Strategies

Soil-1.1 The County should require the use of the Planned Unit Development technique for larger developments in highly sensitive areas.

Soil-1.2 Discourage conversion of designated prime agricultural land and soils to non-agricultural uses by targeting less productive agricultural soils (crops) for urban or non-farm uses.

Water (surface water and groundwater)

Water Goal 1

Protect both the surface water and groundwater that runs through and is under the county.

Water Policies and Strategies

W-1.1 Encourage the preservation of environmentally sensitive areas such as wetlands, wooded areas, waterways (streams, ponds, lakes, rivers, etc.).

W-1.2 Protect all water supplies and aquifers from development activities that may affect the quality of water; development must demonstrate a positive or, at least, a neutral impact on groundwater.

W-1.3 Continue participation in the FEMA National

Flood Insurance Program to prevent flood-caused loss of life and property.

W-1.4 Otoe County should discourage land use development within the floodplains of the county.

W-1.5 Otoe County should support soil and water conservation efforts to aid in erosion, sediment, and run-off control.

W-1.6 Otoe County should coordinate with and support city, regional, state and federal water -quality plans and programs so that high water quality will be achieved in the cities and villages of the County.

W-1.7 Otoe County should require the protection of riparian vegetation from damage that may result from development.

W-1.8 Water erosion control structures, including riprap and fill, should be reviewed by the appropriate authorities to insure they are necessary and are designed to minimize adverse impacts on water currents, erosion, and accretion patterns.

W-1.9 Otoe County should consider the following in any public or private land use determination subject to county review:

1) the impact of filling or drainage of swamps or marshes;
2) the damming of rivers and streams;
3) the location and construction of highways and utility transmission lines; and
4) Any other land development activities which significantly interfere with the vegetation or soil cover or drainage patterns in critical habitat areas.

8

Energy Element

ENERGY ELEMENT

Energy usage in the early 21st Century is becoming a critical issue throughout Nebraska as well as the entire United States. Our dependency on non-renewable energy sources has increased significantly over the past 100 years.

Energy consumption comes in several forms, such as:

- Lighting our homes, businesses, and industries
- Heating and cooling our homes, businesses, and industries
- Heating our water for homes, businesses, and industries
- Food preparation
- Transportation – both personal and business related
- Agricultural equipment
- Recreation and Entertainment – vehicular, computers, music, etc.

The 21st Century ushered in an increased concern for energy usage and its impacts on the environment. With this increased concern for the environment came a better understanding of the carbon footprint generated by any one individual as well as striving towards modifying our behavior patterns in order to lessen that footprint. In addition, the phrase and concept of sustainability has become more widely used, even in Nebraska.

Energy and the issues connected to the different sources are becoming more critical every year. The need for the Energy Element in the Otoe County Comprehensive Development Plan should be something desired as opposed to required. However, during the 2010 Legislative Session of the Nebraska Unicameral, the State Senators passed LB 997 which required this section become a part of all community and county comprehensive plans, except for villages. The passage of LB 997 appears to be a first step toward comprehensive plans addressing the entire issue of energy conservation and/or sustainability.

SUSTAINABILITY

Sustainability, in today's discussions, has a number of meanings. According to Webster's Third International Dictionary, the verb "sustain" is defined as "to cause to continue...to keep up especially without interruption, diminution or flagging". However, the American Planning Association has come up with the following definition:

> ***"Planning for 'sustaining places' is a dynamic, democratic process through which communities plan to meet the needs of current and future generations without compromising the ecosystems upon which they depend by balancing social, economic, and environmental resources, incorporating resilience and linking local actions to regional and global concerns".***

In other words, sustainability is the ability of present day generations to live without jeopardizing the ability of future generations to sustain life as we know it today.

All of us living in today's world need to begin switching gradually to cleaner and more renewable resources. By doing so it will aid future generations with their quality of life. The more renewable energy sources become the norm for our generation, the more likely these sources will be second nature and common place in the future.

Americans have grown to rely more heavily on electricity. However, state and federal policies have been more insistent on curbing the level of our reliance on electricity; especially, those sources produced by non-renewable fossil fuels such as oil and coal. Federal policy has set a goal for 20% of all electricity, by 2020, in the United States be from renewable sources such as solar and wind.

So, what can Otoe County do to encourage sustainability? There are a number of activities that can be undertaken and pursued to make an impact. The following information will meet at a minimum, the requirements of LB 997 but they will also examine strategies Otoe County can undertake to make a contribution to the overall energy solution.

ENERGY INFRASTRUCTURE

Electrical Power

Electrical power in Otoe County is supplied by the Omaha Public Power District (OPPD). OPPD supplies electricity to a large portion of eastern Nebraska residents. Currently, OPPD has a mixture of power generation including coal, wind, landfill-gas recovery and nuclear.

Figure 8.1: OPPD Service Area

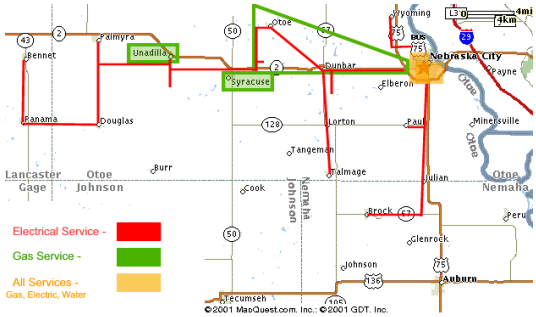
Source: http://www.oppd.com/about/service-area/

In June 2014, OPPD announced a plan to decrease the district's dependence on non-renewable sources. After a survey of OPPD customers, the OPPD managers took the information and put together different options for meeting the desires of the consumers. There were initially three options ***"...and recommended one that will cut emission levels on various chemicals and gases by up to 85 percent. After studying the options, the board told management to proceed on that recommendation at its June 19, 2014 public meeting."***

> ***"Following the plan, OPPD will shut down three of the five units at its North Omaha Station in 2016 and put stronger emissions controls on the other two units. Then, in 2023, OPPD will quit burning coal altogether in Omaha. Also in 2016, stronger emissions controls will be installed on Nebraska City Station's older coal unit. It will also enact new energy-efficiency programs for customers and programs to reduce power usage. This reduction will cut OPPD's need to generate power at key times by 300 megawatts, or 300 million watts."***
>
> ***"It's a comprehensive plan that, combined with additional wind energy already contracted for in the next few years, means the electricity OPPD customers use will continue to get cleaner and cleaner."***
> Source: OPPD News Release

In addition, portions of Otoe County are served by Nebraska City Utilities based in Nebraska City.

Figure 8.2: Nebraska City Utilities Service Area



Source: http://nebraskacityutilities.com/map.html

The goal of the Nebraska City Utilities is to provide the best possible service at the lowest possible cost commensurate with that service. This can best be accomplished by hiring and retaining the best quality employees to operate and maintain the utility system.

Electrical Distribution

The overall distribution system is in good condition. The system is owned and operated by OPPD as well. The distribution system not only supplies power throughout Otoe County but is the foundation for power that is transmitted to other customers in eastern Nebraska.

Natural Gas Service

Natural gas supplies in Otoe County is handled primarily by two providers. One supplier to customers in Otoe County is Nebraska City Utilities based in Nebraska City. For services area information see Figure 8.2.

A second provider serving most of eastern Otoe County is Black Hills Energy.

Energy Use by Sector

This section analyzes the energy use by residential, commercial, industrial and other users and will examine the different types of energy sources that are utilized by these different sectors.

Residential Uses

Otoe County residential uses are provided a number of options for both power and heating and cooling.

These include electrical power (both fossil fuel and renewable resources), natural gas, oil, propane, and wood. The most dominant of the energy sources available and used by the residents of Otoe County is electricity produced from both fossil fuels and renewable resources.

The use of natural gas, oil, propane and wood will be found typically as heating sources during the winter months. The type of fuel used will depend a great deal on where a residence is located within the county. Residents located within the more urbanized parts of Otoe County are more likely to have natural gas heating or electrical furnaces. Propane and wood stoves are most likely found in the rural parts of the county where natural gas infrastructure is not available.

Commercial Uses

Otoe County's commercial uses also have a number of options for both power and heating and cooling. These include electrical power (both fossil fuel and renewable resources), natural gas, propane, oil and wood. The type of energy source is very dependent upon the specific commercial use and the facilities employed to house the use. The most dominant of the energy sources available is electricity produced from both fossil fuels and renewable resources.

Similar to residential uses, the use of natural gas, oil, propane and wood will be found typically as heating sources during the winter months. The type of fuel used will depend a great deal on the type of commercial use and the construction of the building (s) involved. The location of the commercial uses will dictate, similar to residential uses, what type of heating fuels are used. However, in commercial uses such as repair garages and other uses in larger metal buildings, they may be dependent upon recycling used motor oils to heat their facilities.

Industrial Uses

Otoe County's industrial uses will be very similar to those discussed within the commercial section. However, in some cases, diesel fuel can play a role in both power generation and heating and cooling.

Short-term and Long-term Strategies

As the need and even regulatory requirements for energy conservation increases, residents of Otoe County will need to:

1. Become even more conservative with energy usage
2. Make use of existing and future programs for retrofitting houses, businesses, and manufacturing plants
3. Increase their dependence on renewable energy sources.

Residential Strategies

There are a number of different strategies that can be undertaken to improve energy efficiency and usage in residences. These strategies range from simple (less costly) to complex (costly). Unfortunately not all of the solutions will have an immediate return on investment. As individual property owners, residents will need to find strategies that fit their budgets to invest in the long-term savings.

There are several ways to make a residence more energy efficient. Some of the easiest include:

- Converting all incandescent light bulbs and Compact Florescent Lights (CFL) to Light Emitting Diodes (LED) or newer technologies as they become available.
- Installing additional insulation in the attic.
- Converting standard thermostats to digital/ programmable thermostats.
- Changing out older less efficient air conditioners and furnaces/boilers to newer high-efficiency units
- Changing out older appliances with new EnergyStar appliances.
- Exchanging less efficient water heaters with EnergyStar units or on demand systems.

Some of the more costly ways to make a residence more energy efficient include:

- New insulation in exterior walls.
- Addition of solar panels for either electrical conversion and/or water heater systems.
- Adding individual scale wind energy conversion systems.
- Installing a geothermal heating and cooling system.
- Installation of energy-efficient low-e windows.

Commercial/Industrial Strategies

Strategies for energy efficiency within commercial/ industrial facilities are more difficult to achieve than those for residential uses. Typically, these improvements will require a greater amount of investment due to the size of most of these facilities.

There are a number of different strategies that can be undertaken to improve energy efficiency and usage in commercial and industrial facilities. Again, not all of the solutions will have an immediate return on investment. Businesses and industries will need to

find strategies that will fit into their ability to pay for savings at the present time.

There are several ways to make businesses/industries more energy efficient. Some of the easiest include:

- Converting all incandescent light bulbs and Compact Florescent Lights (CFL) to Light Emitting Diodes (LED) or newer technologies as they become available.
- Converting standard florescent fixture to newer more energy efficient units.
- Converting standard thermostats to digital/ programmable thermostats.
- Installing additional insulation in an attic space.
- Changing out older less efficient air conditioners and furnaces/boilers to newer high-efficiency units.
- Exchanging less efficient water heaters with EnergyStar units or on demand systems.

Some of the more costly ways to make a business more energy efficient include:

- Installation of energy-efficient low-e windows and/or storefronts.
- New insulation in exterior walls.
- Addition of solar panels for either electrical conversion and/or water heater systems.
- Adding individual scale wind energy conversion systems.
- Installing a geothermal heating and cooling system.
- New storefronts with insulated panels and insulated Low-E glazing.

Public Strategies

Energy efficiency strategies for public facilities are similar to those of commercial and industrial users. Typically, these improvements will require a greater amount of investment due to the size of most of these facilities. However, in some cases there are grants available from time to time to assist public agencies with these improvements.

There are a number of different methods that can be undertaken to improve energy efficiency and usage in public facilities, including:

- Converting all incandescent light bulbs and Compact Florescent Lights (CFL) to Light Emitting Diodes (LED) or newer technologies as they become available.
- Converting standard florescent fixture to newer more energy efficient units.
- Converting standard thermostats to digital/ programmable thermostats.
- Installing additional insulation in an attic space.
- Changing out older less efficient air conditioners and furnaces/boilers to newer high-efficiency units.
- Exchanging less efficient water heaters with EnergyStar units or on demand systems.

Some of the more costly ways to make public facilities more energy efficient include:

- Installation of energy-efficient low-e windows and/or storefronts
- New insulation in exterior walls
- Addition of solar panels for either electrical conversion and/or water heater systems
- Adding individual scale wind energy conversion systems
- Installing a geothermal heating and cooling system
- New storefronts with insulated panels and insulated Low-E glazing

Renewable Energy Sources

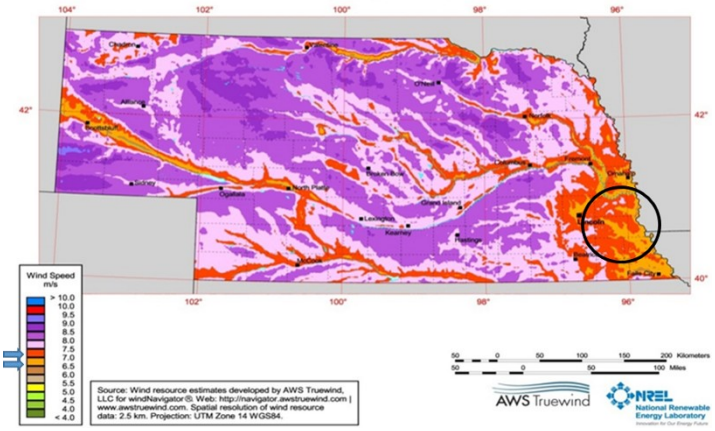
Renewable energy sources, according to most definitions, include natural resources such as the wind, the sun, water, and the earth (geothermal) that can be used over and over again with minimal or no depletion, as well as tapping into sources of methane (from natural resources or man-made conditions). The most common sources of renewable energy used in Nebraska are the wind, the sun, water and earth. The following are examples of how these renewable resources can be used to reduce dependency on fossil fuels.

Wind

The wind is one of those resources in abundance in Nebraska. Wind is not a new technology in Nebraska; the pioneers that settled in Nebraska used wind mills for power and to work the water wells on their farms and ranches.

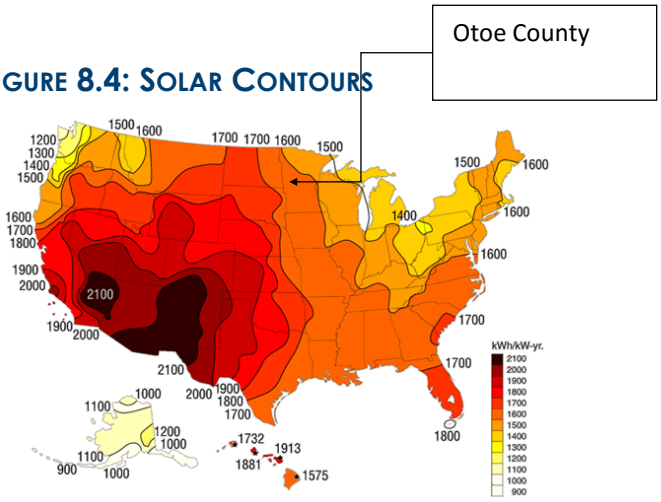
Wind can be used to produce electricity through the construction of small-scale or utility/commercial grade wind conversion systems (wind turbines). However, not all areas of the state have the ideal levels needed to produce electricity on a utility or commercial level; but the use of small-scale wind turbines on homes and businesses will work in most parts of Nebraska.

Figure 8.3: Annual Average Wind Speed at 80 Meters



Source: AWS Truewind

Figure 8.4: Solar Contours



Source: Solar Energy Industries Association

Solar

Solar energy has been around for decades and it last hit a high in popularity in the 1970's. However, today's solar energy design is much more efficient and aesthetically pleasing. Some of the aesthetic improvements have to do with the fact that today's systems are not as bulky as their ancestors. Today, solar is being used much like wind turbines, on a small -scale level (home or business) or a much grander level (solar farms).

Solar energy includes solar water and space heating as well as taking solar photovoltaic panels to convert the sun's rays into electricity. Solar panels can typically produce between 120 and 200 watts per square meter at an installed cost of $11 to $22 per watt, according to the American Solar Energy Society, but these costs are becoming less every year as more solar units are commissioned and new more cost effective technologies are developed.

Based upon the diagram below there is great solar potential in the state of Nebraska. A majority of the state lies within some of the better areas in the country for solar potential.

In addition, special urbanized solar farms can be constructed as a dual purpose for generating shade and electricity, as seen on the right (the parking lot is located at 25th and Cuming Streets in downtown Omaha.

In the future, it may become desirable for new subdivisions/developments to incorporate renewable energy systems such as solar and wind. In order for this to occur, a standard subdivision regulation and zoning code would likely need to be modified in order to allow these systems. In addition, the state regulations under the C-Bed program would likely need to be updated.

Geothermal Energy

Geothermal energy is typically utilized through a process where a series of pipes are lowered into vertical cores called heat-sink wells. The pipes carry a highly conductive fluid that either is heated or cooled by the constant temperature of the ground. The resulting heat exchange is then transferred back into the heating and cooling system of a home or other structure. This is called a geothermal heat exchange system or ground source heat pump. The California Energy Commission estimates the costs of a geothermal system can earn net savings immediately when financed as part of a 30-year mortgage *(Source: American Planning Association, PAS Memo January/February 2009)*.

Methane Energy

The use of methane to generate electricity is becoming more cost-effective to use in Nebraska. Methane electrical generation can be accomplished

through the use of a methane digester which takes the raw gas, naturally generated from some form of decomposing material, and converts the gas into electrical power.

There have been some attempts to take the methane generated from animal manure and convert it into electricity; most have been successful but were costly to develop. Another approach to methane electrical generation is to tap into the methane being generated from a solid waste landfill; instead of burning off the methane, it can be piped into a methane convertor and generated into electricity for operating a manufacturing plant or placed on the overall grid for distribution.

Methane convertors make use of unwanted gases and are able to produce a viable product. As long as humans need to throw garbage into a landfill or the production of livestock is required, there will be a source of methane to tap for electrical generation.

State Programs

The following provides a basic history and description of some newer programs in Nebraska; interested parties should contact the State of Nebraska Energy Office or OPPD/MUD.

C-BED Program

In May 2007, Nebraska established an exemption from the sales and use tax imposed on the gross receipts from the sale, lease, or rental of personal property for use in a community-based energy development (C-BED) project. The Tax Commissioner is required to establish filing requirements to claim the exemption. In April 2008 L.B. 916 made several amendments to this incentive, including: (1) clarified C-BED ownership criteria to recognize ownership by partnerships, cooperatives and other pass-through entities; (2) clarified that the restriction on power purchase agreement payments should be calculated according to gross and not net receipts; (3) added language detailing the review authority of the Tax Commissioner and recovery of exempted taxes; and (4) defined local payments to include lease payments, easement payments, and real and personal property tax receipts from a C-BED project.

A C-BED project is defined as a new wind energy project that meets one of the following ownership conditions:

- For a C-BED project that consists of more than two turbines, the project is owned by qualified owners with no single qualified owner owning more than 15% of the project and with at least 33% of the power purchase agreement payments flowing to the qualified owner or owners or local community; or
- For a C-BED project that consists of one or two turbines, the project is owned by one or more qualified owners with at least 33% of the power purchase agreement payments flowing to a qualified owner or local community.

In addition, a resolution of support for the project must be adopted by the county board of each county in which the C-BED project is to be located. A qualified C-BED project owner means:

- a Nebraska resident;
- a limited liability company that is organized under the Limited Liability Company Act and that is entirely made up of members who are Nebraska residents;
- a Nebraska nonprofit corporation;
- An electric supplier(s), subject to certain limitations for a single C-BED project.

In separate legislation (LB 629), also enacted in May 2007, Nebraska established the Rural Community-Based Energy Development Act to authorize and encourage electric utilities to enter into power purchase agreements with C-BED project developers.

Local Government and Renewable Energy Policies

Local governments can take steps to encourage greater participation in wind generation. Cities and counties can pursue strategies to make these projects more attractive, including:

- Develop or amend existing zoning regulations to allow small-scale wind turbines as an accessory use in all districts.
- Develop or amend existing zoning regulations to exempt small-scale turbines from maximum height requirements when attached to an existing or new structure; provided, they meet all building codes and manufacturers requirements for attachment.
- Work with the OPPD on ways to use wind turbines on small-scale individual projects or as a source of power for the community.

Net Metering in Nebraska

LB 436, signed in May 2009, established statewide net metering rules for all electric utilities in Nebraska. The rules apply to electricity generating facilities which use solar, methane, wind, biomass, hydropower or

geothermal energy, and have a rated capacity at or below 25 kilowatts (kW). Electricity produced by a qualified renewable energy system during a month shall be used to offset any kilowatt-hours (kWh) consumed at the premises during the month.

Any excess generation produced by the system during the month will be credited at the utility's avoided cost rate for that month and carried forward to the next billing period. Any excess remaining at the end of an annualized period will be paid out to the customer. Customers retain all renewable energy credits (RECs) associated with the electricity their system generates. Utilities are required to offer net metering until the aggregate generating capacity of all customer-generators equals one percent of the utility's average monthly peak demand for that year.

State Law of Solar and Wind Easements

Nebraska's solar and wind easement provisions allow property owners to create binding solar and wind easements for the purpose of protecting and maintaining proper access to sunlight and wind. Originally designed only to apply to solar, the laws were revised in March 1997 (LB 140) to include wind. Counties and municipalities are permitted to develop regulations, or development plans protecting access to solar and wind energy resources if they choose to do so. Local governing bodies may also grant zoning variances to solar and wind energy systems that would be restricted under existing regulations, so long as the variance is not substantially detrimental to the public good.

LB 568, enacted in May 2009, made some revisions to the law and added additional provisions to govern the establishment and termination of wind agreements. Specifically, the bill provides that the initial term of a wind agreement may not exceed forty years. Additionally, a wind agreement will terminate if development has not commenced within ten years of the effective date of the wind agreement. If all parties involved agree to extend this period, however, the agreement may be extended.

Current Renewable Energy Programs/ Funding Sources

There are several programs available through OPPD to assist in purchasing and installing more energy efficient equipment in residences and businesses. In addition, there are funding opportunities through the Nebraska Energy Office.

Energy in Otoe County

Otoe County will continue to encourage the development of energy-related goals, policies and strategies.

9

Land Use

INTRODUCTION

The purpose of the Otoe County Land Use Chapter is to provide a general guide to land use which directs future uses and zoning criteria. The resulting land uses are intended to be a guide without creating multiple incompatibilities with what currently exists within Otoe County. This Chapter reflects the existing conditions and should be flexible in order to meet the needs of its citizens as well as the vision of the county.

The Otoe County Land Use Chapter provides the basis for the formulation of land use and the zoning regulations. For this reason, it is imperative to formulate a plan tailored to the needs, desires and environmental limitations of the planning area. The Chapter should promote improvements in all the components of the local economy.

OTOE COUNTY LAND USE ELEMENTS

The elements of the Otoe County Land Use Chapter include:

- Existing Land Use, and
- Future Land Use Plan

Both of these elements are integrated in some manner. Effective evaluations and decisions regarding development decisions require a substantial amount of information to be utilized.

EXISTING LAND USE

The term "Existing Land Use" refers to the current uses in place within a building or on a specific parcel of land. The number and type of uses can constantly change within a county, and produce a number of impacts either benefiting or detracting from the county. Because of this, the short and long-term success and sustainability of the county is directly contingent upon available resources utilized in the best manner given the constraints the county faces during the course of the planning period.

Overall, development patterns in and around Otoe County have been influenced by topography, water, soils and manmade features such as four Nebraska highways, one U.S. Highway and several hard-surfaced county roads. These items will likely continue to influence development patterns throughout the course of the planning period.

Existing Land Use Categories

The utilization of land is best described in specific categories that provide broad descriptions where numerous businesses, institutions, and structures can be grouped. For the purposes of the Comprehensive Plan, the following land use classifications are used:

- Farmsteads/residential uses
- Commercial uses
- Quasi-Public/Public (includes churches and schools)
- Livestock facilities
- Agriculture

The above land use categories may be generally defined in the following manner:

Agriculture- Row crop, alfalfa, pastureland and all grain crops are considered agriculture land uses. Otoe County is an agricultural based county and the existing land use map verifies these uses.

Livestock facilities– These are specific confinement buildings including chicken and swine houses, dairies, and open lots. Since Otoe County is considered a Livestock friendly county then it is important to located these facilities so their ability to exist and expand in the future is not encroached upon by other incompatible uses.

Residential– This category includes residential dwellings either as a farmstead, acreage or residential developments located within the county. Residential units of this type are distributed throughout the County.

Commercial- Uses in this category consist of convenient stores; feed, seed, automobile and machinery sales; petroleum sales, etc. Commercial uses tend to be located near urban areas or in proximity to major highways for accessibility.

Industrial/Railroad Right-of-Way - Land uses of this nature may include communication plants, light manufacturing, commercial storage, industrial parks, large salvage yards, etc. These uses tend to be located near municipalities and major transportation routes for accessibility purposes.

have met certain criteria for promoting livestock production through their comprehensive plan and zoning codes, as well as other programs. It is the desire of Otoe County, at the time of adoption to continue with this program and remain livestock friendly.

Physical Character of Otoe County

One of the most critical factors, concerning land use development in any area is the physical characteristics of the area. The physical character of Otoe County has a variety of different environmentally sensitive landscapes. The county is a variety of environments including:

- Missouri River valley
- Cropland
- Rolling hills

County Land Use Management Policy (CLUMP)

Purpose of CLUMP

The purpose of the CLUMP system is to develop a broad policy acknowledging existing land use patterns, existing and future market demands, and manages these factors in relation to one another. CLUMP establishes a long-range management policy that provides guidance for future development.

CLUMP Process

CLUMP was devised to identify and examine existing development trends within Otoe County. The CLUMP process includes a review of two critical elements of the existing land use fabric within the County; which are:

- Existing Land Use patterns and locations (see Figure 9.1), and
- Areas where development will likely move towards during the planning period.

CLUMP balances the demand for urban and non-urban development with the preservation and conservation of agriculture and the fiscal responsibilities to provide services either at the County or the municipal level. CLUMP utilizes principles found within the "Smart Growth" movement. According to the Urban Land Institute's publication Smart Growth: Myth or Fact, a major myth is "Smart growth is a code word for no growth". However, as the ULI points out, a major fact is "Smart growth recognizes that growth and development are both inevitable and beneficial".

"The goal of smart growth is not "no growth" or even slow growth. Rather, the goal is sensible growth that balances our need for jobs and economic development with our desire to save our natural environment"

-Parris Glendening,
former Governor State of Maryland

The development of CLUMP was premised on the belief that development pressures and demands exist and the best approach is to acknowledge and accommodate these pressures through diligent planning. However, these pressures must be managed and channeled to areas in the process of developing, or areas that can accommodate this development over the long term.

CLUMP Concept

The CLUMP concept centers on three policy areas. These areas are:

- Agricultural
- Transitional,
- Urban Reserve

These three policy areas are indicated on Figure 9.2 of this document. These areas generally identify different levels of development based upon proximity to existing urban centers or smaller developments; proximity to major transportation routes; existing land use densities; and potential land uses to be allowed in the future. The intent is to concentrate each of the different policy considerations into areas based upon these factors.

Intense development (major commercial centers, densely populated subdivisions, etc.) should be encouraged to locate within or adjacent to the existing communities of Otoe County. Ultimately, the CLUMP concept is to encourage growth and development within the unincorporated areas of Otoe County using a well-considered management approach.

Policy Areas

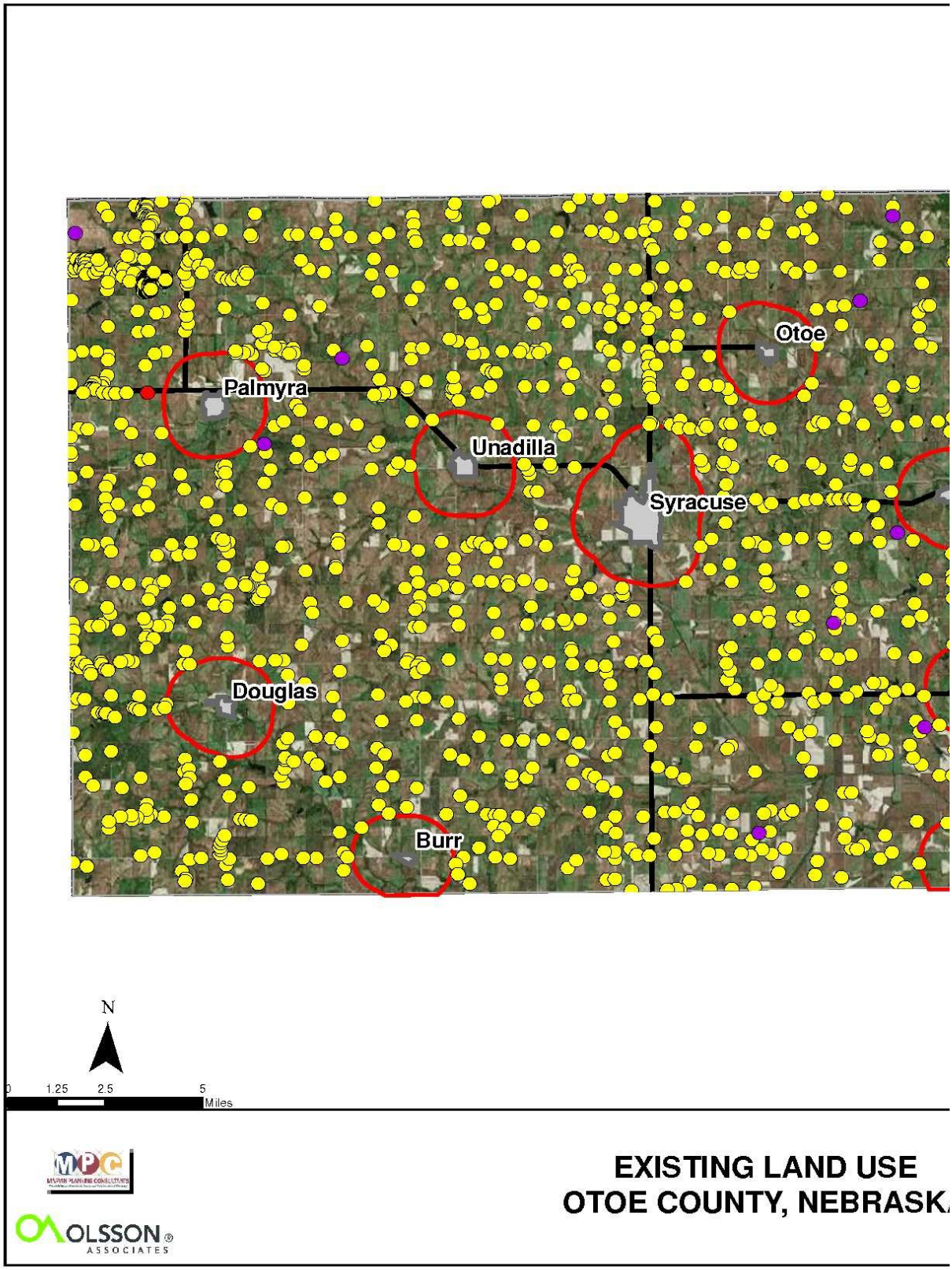
Agriculture Policy Area

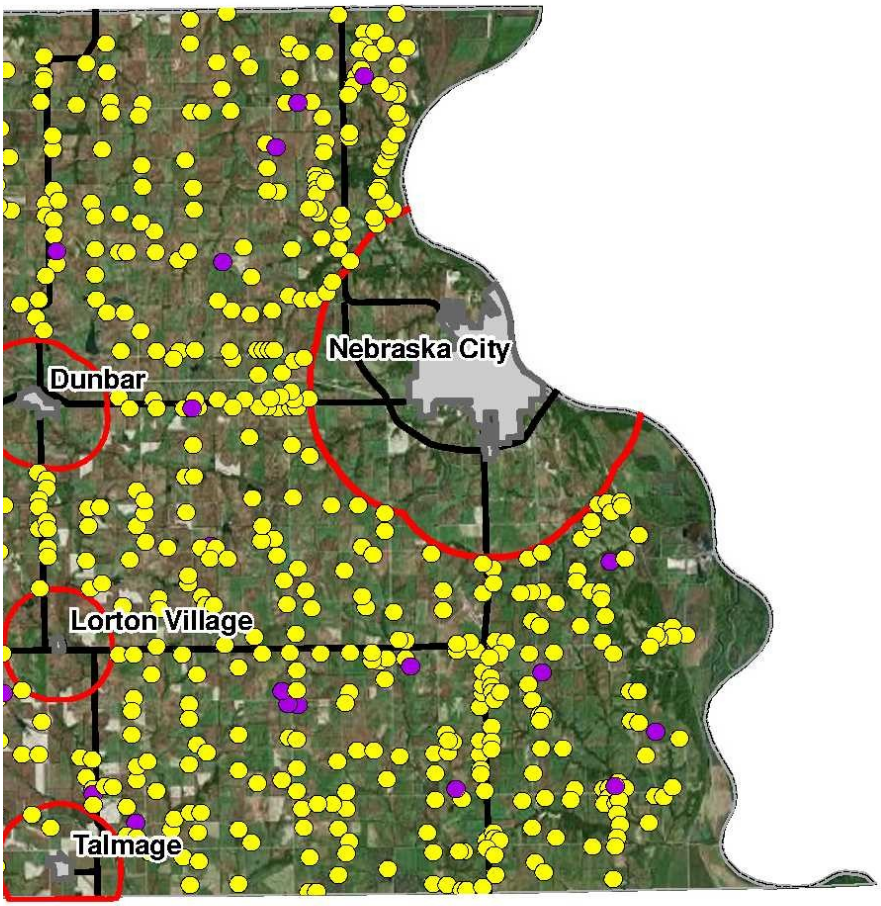
The Agriculture policy area is intended to accommodate the following policies:

- The preservation of agricultural uses,
- Low density residential development, primarily farmsteads and residences connected to an existing farming operation.

The Agriculture policy area is the covers the majority of Otoe County.

Figure 9.1
Existing Land Use Map





Legend
CityBoundaries
ETJ
Highway
County Boundary
Existing Land Use
Farmstead
Commercial
Quasi Public

KA

The proposed land uses for the Agriculture policy areas are:

- General Agriculture,
- Transitional Agriculture,
- Mixture of Agriculture and agri-businesses,
- Public
- Parks / Recreation

When making future land use and zoning decisions, the policy would allow only these use types to be located within an Agriculture policy area. These areas have been identified based upon their lack of development and the ability to preserve the agricultural base of Otoe County. All future development of this type should be located in the designated areas in order to minimize future sprawl and haphazard development.

Transitional Policy Area

The Transitional Policy Area is intended to accommodate the following policies:

- Higher density development than allowed in the Agricultural areas. Typically, residential acreages,
- Located along major transportation routes within the county,
- Location of higher intensity uses,
- Potential growth areas adjacent to the smaller communities.

The Transitional Policy Areas are generally located throughout Otoe County. The locations are as follows:

- Along Nebraska Highway 50
- Along US Highway 75
- South of Unadilla
- South of Palmyra to Douglas and west to the Lancaster County line.

The proposed land uses for the Transitional policy areas are:

- General Agriculture,
- Transitional Agriculture,
- Rural Residential
- Mixture of Agriculture and agri-businesses,
- Public, and
- Parks / Recreation

When making future land use and zoning decisions, the policy requires any of these use types to be located within an Transitional policy area. These areas, as well as the area within the extraterritorial jurisdictions of the communities should allow for ample development opportunities while allowing for a controlled growth policy. All future development of this type should be located in the designated areas in order to minimize future sprawl and haphazard development.

Urban Reserve Policy Area

The Urban Reserve policy area is intended to accommodate the following policies:

- More dense development including residential and commercial,
- Residential development could reach densities typically seen in urban areas provided some level of centralized water and sewerage is in the development,
- Major areas along the highways are intended to aid in strengthening the economic base of Otoe County.

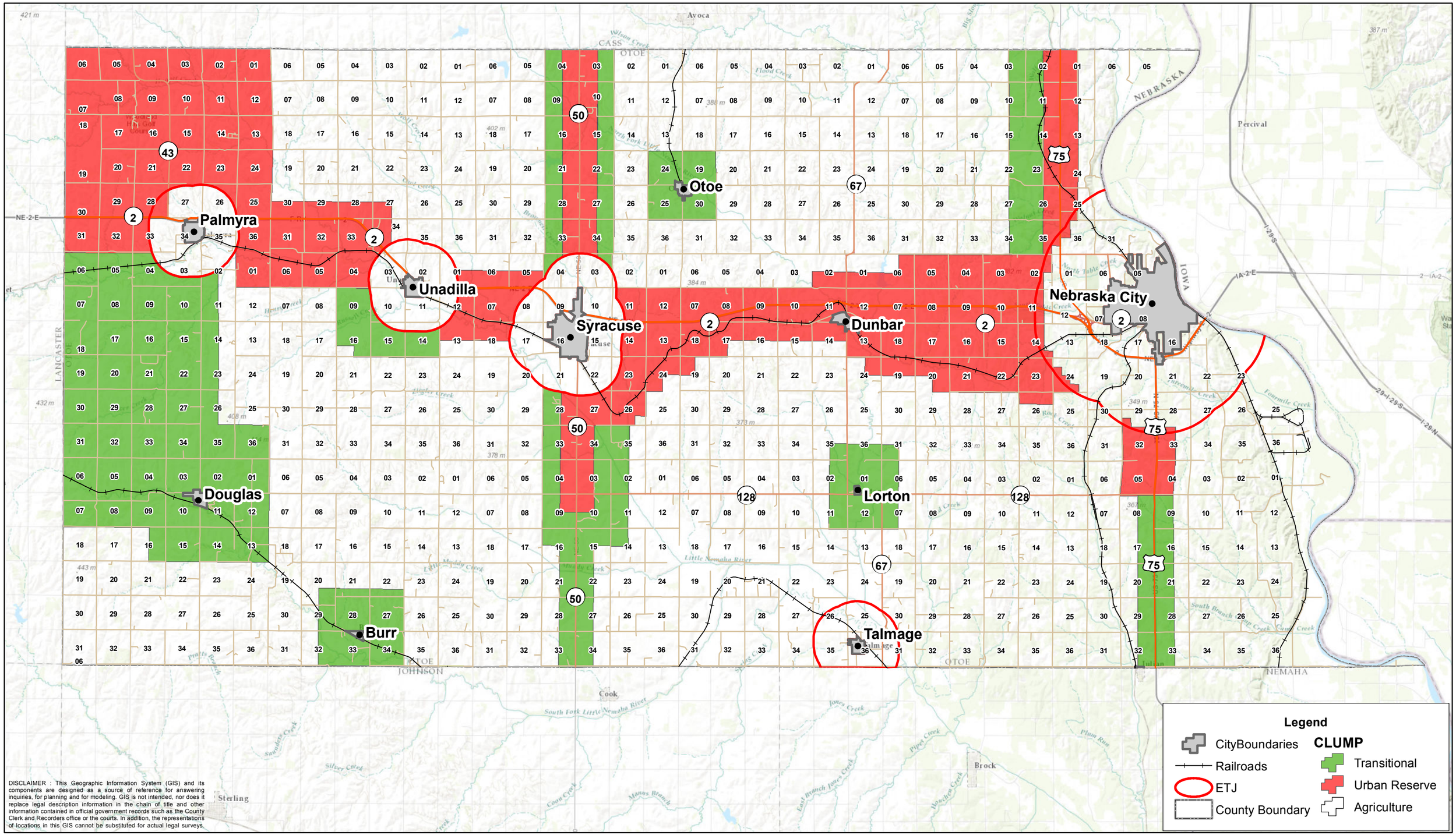
The Urban Reserve policy areas are approximately located:

- Northwest corner of Otoe County,
- Along Nebraska Highway 2,
- Along portions of Nebraska Highway 50,
- Along portions of US Highway 75
- South of Nebraska City.

The proposed land uses for the Urban Reserve policy areas are:

- Rural Residential,
- Commercial,
- Commercial/Industrial Flex
- Industrial,
- Transitional Agriculture,
- Agri-businesses,
- Public
- Parks / Recreation.

When making future land use and zoning decisions, the policy requires any of these use types to be located within a Urban Reserve policy area unless overlap uses are allowed in another policy area. Future development, especially the commercial and industrial uses and rural residential should be designed in ways to minimize impact on surrounding uses (i.e. cluster development, development away from environmentally sensitive conditions). One key factor determining the Urban Reserve locations was based upon the density of existing residential development. Due to the sensitivity of the soils regarding percolation, and flooding hazard and slopes, any land use and zoning changes to the maps must consider the potential impacts on the soils and other natural resources and the impact on adjacent properties. All future development of this type should be located in the designated areas in order to minimize future sprawl and haphazard development.



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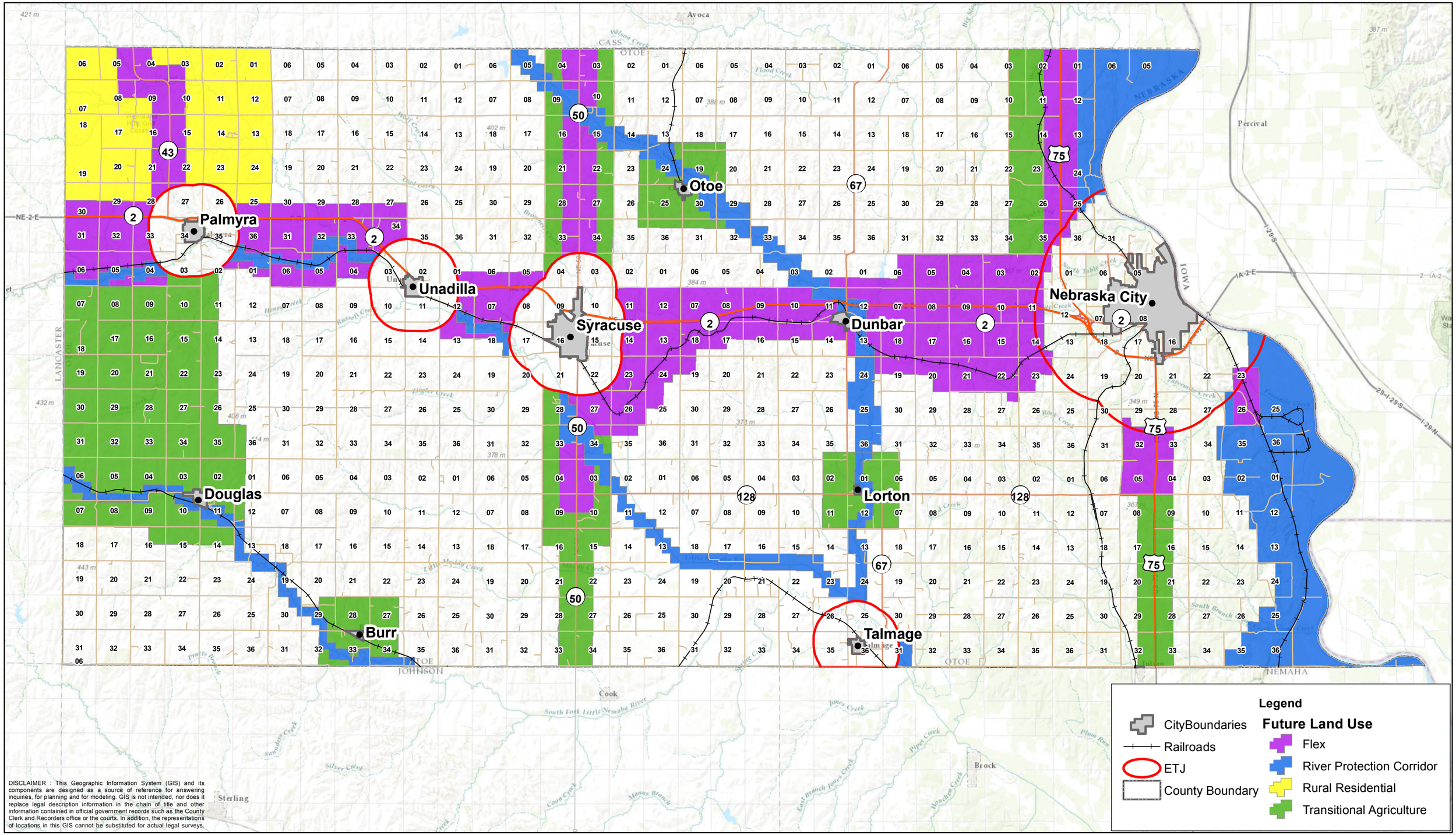
Source: ESRI Base Map

MARVIN PLANNING CONSULTANTS

OLSSON ASSOCIATES

FIGURE 9.2
CLUMP
OTOE COUNTY, NEBRASKA



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Source: ESRI Base Map

MARVIN PLANNING CONSULTANTS

OLSSON ASSOCIATES

FIGURE 9.3
FUTURE LAND USE
OTOE COUNTY, NEBRASKA

0 1 2 4 Miles

N

Future Land Use Plan

The Future Land Use Plan provides the basis for the formulation of land use policy and zoning regulations. For this reason, it is imperative to formulate a plan tailored to the needs, desires and environmental limitations of the planning area. The Future Land Use Plan should promote improvements in all components of the local economy. The following common principles and land use concepts have been formed to guide future development and redevelopment activities within Otoe County's planning and zoning jurisdiction.

The plan is based upon existing conditions and projected future conditions for the county. The Land Use Plan also assists the county in determining the type, direction and timing of future growth and development activities. The criteria used in this Plan reflect several elements, including:

- the current use of land within and around the county
- the desired types of growth, including location of growth
- future development activities
- physical characteristics, opportunities and constraints of future growth areas
- current population and economic trends affecting the county

Efficient allocation of land recognizes the forces of the private market and the limitations of the capital improvement budget. This Plan acknowledges these factors play an important role in the growth and development of Otoe County. A Future Land Use Plan is intended to be a general guide to future land uses that balance private sector development (the critical growth element in any county) with the concerns, interests, and demands of the overall local economy.

The land uses for Otoe County are becoming more and more critical as the county continues to feel growth pressures from the west, north and around Nebraska City and Syracuse. The future policies within this plan will be critical to directing growth in Otoe County for the next 10 to 20 years.

Land Use Categories

The future land uses for Otoe County are separated into seven categories. The following list shows the land uses within this plan:

- Primary Agricultural
- Transitional Agricultural
- River Protection Corridor
- Rural Residential
- Commercial
- Commercial/Industrial Flex
- Industrial

Primary Agriculture

General Purpose

This land use provides for all agriculture practices. In this "agriculture first" land use district, agricultural activities should be given primary consideration where conditions prove favorable. This category is where livestock production and feeding operations are allowed and non-farm residential development are discouraged.

Within the County's Zoning Regulations, it is suggested smaller livestock facilities, up to 1,000 animal units be a permitted use; while larger livestock feeding operations be regulated through the conditional use process in order to help minimize environmental impacts and the health, safety and general welfare of the public.

Compatible Uses

1. Crop production, including grazing lands
2. Livestock operations for all types of animals
3. Private grain storage
4. Commercial grain storage
5. Manure/fertilizer applications
6. Single acreage developments
7. Public recreational, wildlife and historical areas
8. Renewable energy equipment
9. Tourism activities such as: hunting preserves, fishing, vineyards etc.
10. Religious uses and structures
11. Educational uses and structures

Incompatible Uses

1. Residential/Acreage developments not associated with a farming operation including Mobile homes as a single-family dwelling
2. Large commercial developments

Potential issues to consider

1. Rural Water availability and connections
2. Slopes
3. Topography
4. Natural amenities such as trees, ponds, and streams
5. Site drainage
6. Flooding hazards.
7. Groundwater availability
8. Groundwater contamination
9. Minimum lot sizes and residential densities
10. Wetlands
11. Existing and/or proposed sanitary system
12. Potable well locations
13. Wellhead protection areas

Special Policies

1. Minimum residential lot sizes should be kept at the lowest possible size accommodating both private water and sanitary sewer.
2. Residential densities within this land use category should be no more than 2 dwelling units per 1/4 section, unless all dwellings are clustered to a max of
3. Cluster developments should be considered and used whenever soils, topography, natural amenities warrant.
4. Separation distances should be applied only to the livestock facility.






TRANSITIONAL AGRICULTURE

General Purpose

The Transitional Agriculture represents an area in the County where agriculture is protected, but limited. The location of these land use areas are near jurisdictional intersections of the larger communities of Otoe County. The district is generally located 1/2 mile around the extraterritorial jurisdictions of the communities with planning and zoning. In addition, there will be a 1/2 mile band around the communities without any planning and zoning. In addition, this district may be appropriate for areas along major highways and entire portions of the county depending upon the overall residential densities.

The Transitional Agriculture land use is intended to provide a location where agriculture can continue to thrive but may at some point in the future be influenced by growth in the adjacent communities.

Compatible uses

1. Crop production, including grazing lands
2. Livestock operations for all types of animals
3. Private and commercial grain storage
4. Manure/fertilizer applications
5. Single acreage developments
6. Public recreational, wildlife and historical areas
7. Renewable energy equipment
8. Religious uses and structures
9. Educational uses and structures

Incompatible Uses

1. Large scale residential developments including mobile homes as a single-family dwelling unless located within a mobile home park
2. Livestock operations over 1,000 animal units
3. Large commercial developments

Potential issues to consider

1. Rural Water availability and connections
2. Slopes
3. Proximity to existing livestock facilities
4. Topography
5. Natural amenities such as trees, ponds, and streams
6. Site drainage
7. Flooding hazards.
8. Groundwater availability
9. Groundwater contamination
10. Wetlands
11. Existing and/or proposed sanitary system
12. Potable well locations
13. Wellhead protection areas

Special policies

1. Residential lot sizes may vary depending upon the types of sanitary system installed and the source of potable water.
2. Residential densities within this land use category should be no more than 4 dwelling units per 1/4 section.
3. Cluster developments should be considered and used whenever soils, topography, natural amenities warrant.






River Protection Corridor

General Purpose

This land use area shown as the River Protection Corridor closely follows the Missouri River and other major waterways in Otoe County. The River Protection Corridor has the environmental objective of protecting water supplies through a limited number of permitted uses. Preserving water quality and minimizing flood hazards are the leading priorities in considering any type of land use.

Residential development, limited agricultural uses, and recreation will be the primary uses in this land use. It is suggested, if these areas are further developed, trails and designated open spaces should be considered to provide for increased recreational opportunities in the County. However, no new construction will be allowed in the designated floodway unless a Letter of Map Amendment (LOMA) can be obtained from FEMA.

Compatible uses

1. Crop production, including grazing lands
2. Private grain storage
3. Manure/fertilizer applications
4. Single acreage developments
5. Public recreational, wildlife and historical areas
6. Tourism activities such as: parks, hunting preserves, fishing etc.
7. Religious uses and structures
8. Educational uses and structures
9. Community/Recreational Center
10. Larger park and recreation areas

Incompatible Uses

1. Livestock operations
2. Large commercial developments
3. Large industrial developments
4. Mobile homes as a single-family dwelling unless located within a mobile home park

Potential issues to consider

1. Floodway
2. Floodplain and flooding hazard
3. Rural Water availability and connections
4. Proximity to existing livestock facilities
5. Wetlands
6. Depth to groundwater
7. Topography
8. Natural amenities such as trees, ponds, and streams
9. Site drainage
10. Groundwater contamination
11. Existing and/or proposed sanitary system
12. Potable well locations
13. Wellhead protection areas

Special policies

1. Residential lot sizes may vary depending upon the types of sanitary system installed and the source of potable water.
2. Residential densities within this land use category should be no more than 2 dwelling units per 1/4 section; except when a sandpit development is proposed.
3. Cluster developments should be considered and used whenever soils, topography, natural amenities warrant.





Rural Residential

General Purpose

This land use is intended to provide for residential development adjacent to and in close to proximity to the municipalities and highways where conditions prove favorable. Industrial, commercial or livestock operations of any size would not be permitted and buffers in the residential land use area would be critical. Lot size requirements would be based upon the capacity of the area to provide potable water and to properly handle sanitary waste systems. However, it is intended that densely developed areas would be connected to a rural water district.

Compatible uses

1. Residential uses
2. Acreages and associated accessory uses
3. Religious uses and structures
4. Educational uses and structures
5. Community/Recreational Center/Recreational facilities

Incompatible Uses

1. Livestock operations
2. Large commercial developments
3. Mobile homes as a single-family dwelling unless located within a mobile home park

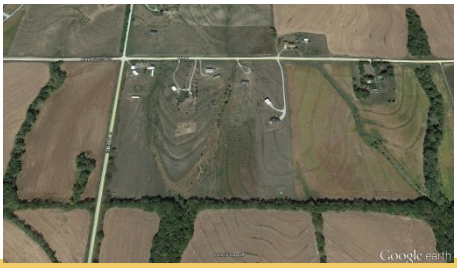
Potential issues to consider

1. Rural Water availability and connections
2. Floodplain and flooding hazard
3. Slopes
4. Proximity to existing livestock facilities
5. Wetlands
6. Depth to groundwater
7. Topography
8. Natural amenities such as trees, ponds, and streams
9. Site drainage
10. Existing and/or proposed sanitary system
11. Potable well locations
12. Wellhead protection areas.

Special policies

1. Residential lot sizes may vary depending upon the types of sanitary system installed and the source of potable water.
2. Density of lots could be similar to an adjacent community unless the development is on individual septic and water, then the minimum sanitary standards would apply.
3. Cluster developments should be considered and required in this land use area.




Commercial Land Use

General Purpose

The Commercial land use provides for larger commercial development where transportation routes and other conditions prove favorable. This land use is to promote commercial and any value added agricultural industry in Otoe County and to provide services and development opportunities at key locations within the County.

Compatible uses

1. Agricultural/commercial uses including implement stores
2. Commercial grain facilities
3. Uses serving the motoring public (truck stops, convenient stores, etc.)
4. Religious uses and structures
5. Educational uses and structures
6. Self-storage facilities including recreational vehicles, boats, etc.
7. Community/Recreational Center
8. Adult entertainment where appropriate

Incompatible Uses

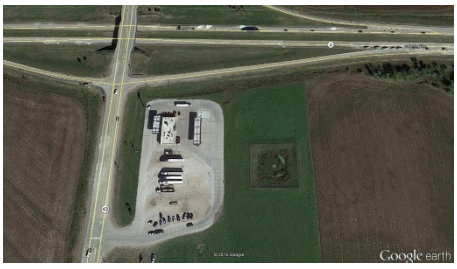
1. Livestock operations
2. Residential developments
3. Mobile homes as a single-family dwelling unless located within a mobile home park

Potential issues to consider

1. Rural Water availability and connections
2. Floodplain and flooding hazard
3. Slopes
4. Erosion controls
5. Wetlands
6. Depth to groundwater
7. Topography
8. Natural amenities such as trees, ponds, and streams
9. Site drainage
10. Existing and/or proposed sanitary system
11. Potable well locations
12. Wellhead protection areas

Special policies

1. No minimum lot size other than adequate space for vehicular movement, parking and septic and water systems.
2. Developments of 1 acre or more may be required to meet the standards of NPDES permitting.
3. Developments that create more than a 5% increase in runoff may be required to construct a detention basin to control runoff.





Flex Land Use

General Purpose

This land use is intended to allow a mixture of commercial and lighter industrial uses. The type of specific use is very dependent upon its access to transportation routes, as well as making sure all conditions prove favorable. These commercial and industrial land use areas are to promote the commercial, industrial, and ag-industry of Otoe County and to provide services and development opportunities at key locations within the County.

Typical uses

1. Agricultural/commercial uses including implement stores
2. Commercial grain facilities
3. Commercial/retail businesses serving the motoring public (truck stops, convenient stores, etc.)
4. Religious uses and structures
5. Community/Recreational Center/Recreation
6. Light manufacturing and assembly
7. Storage and warehousing
8. Trucking terminals
9. Renewable energy facilities including Ethanol and Bio-Diesel
10. Construction yards
11. Salvage yards with specific screening guidelines
12. Agricultural uses
13. Adult Entertainment where appropriate
14. Post-Secondary Educational Uses and Structures (including Technical Training Centers)

Potential issues to consider

1. Rural Water availability and connections
2. Floodplain and flooding hazard
3. Slopes
4. Erosion controls
5. Wetlands
6. Depth to groundwater
7. Topography
8. Natural amenities such as trees, ponds, and streams
9. Site drainage
10. Site layout
11. Highway access points
12. Existing and/or proposed sanitary system
13. Potable well locations
14. Wellhead protection areas

Buildable lot policies

1. No minimum other than adequate space for vehicular movement, parking and septic and water systems.

Development policies to consider

1. Developments of 1 acre or more may be required to meet the standards of NPDES permitting.
2. Developments that create more than a 5% increase in runoff may be required to construct a detention basin to control runoff.
3. Where dwellings are located within this district, a limit of two dwelling units per 1/4 section should be observed.

Industrial Land Use

General Purpose

This land use provides for industrial development to continue where transportation routes and other conditions prove favorable, including rail access. These industrial land use areas are to promote general industrial development, the ag-industry of Otoe County and to provide services and development opportunities at key locations within the County. These areas will also provide the necessary opportunities needed under the Otoe County Enterprise Zone criteria.

Typical Uses

1. Light manufacturing and assembly
2. Meat packing
3. Storage and warehousing
4. Trucking terminals
5. Commercial grain facilities
6. Post-Secondary Educational uses and structures (including Technical Training Centers)
7. Renewable energy facilities including Ethanol and Bio-Diesel
8. Adult Entertainment where appropriate
9. Agricultural/commercial uses including implement stores
10. Construction yards
11. Salvage yards with specific screening guidelines
12. Agricultural uses

Potential Issues to Consider

1. Rural Water availability and connections
2. Floodplain and flooding hazard
3. Slopes
4. Erosion controls
5. Wetlands
6. Depth to groundwater
7. Topography
8. Natural amenities such as trees, ponds, and streams
9. Site drainage
10. Site layout
11. Highway access points
12. Existing and/or proposed sanitary system
13. Potable well locations
14. Wellhead protection areas

Buildable Lot Policies

1. No minimum other than adequate space for vehicular movement, parking and septic and water systems.

Development Policies to Consider

1. No minimum lot area required.
2. Developments of 1 acre or more may be required to meet the standards of NPDES permitting.
3. Developments that create more than a 5% increase in runoff may be required to construct a detention basin to control runoff.

Wellhead Protection Areas (Overlay)

General Purpose

This land use area is identified for the protection of public water supplies. These areas are identified but will not be strictly enforced through zoning until an interlocal agreement is approved by the county and other party owning the wellhead.

These areas are considered as overlays and are in addition to the requirements and policies of the underlying area.

Typical Uses

1. Use allowed in the underlying area that are not considered a contamination hazard to the wellhead area and the water supply.

Potential Issues to Consider

1. See underlying land use category.

Buildable Lot Policies

1. See underlying land use category.

Development Policies to Consider

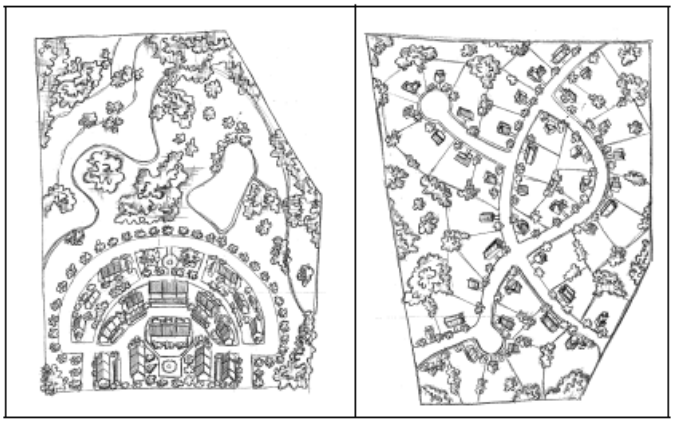
1. See underlying land use category.

Conservation Subdivisions

The graphic above represents a standard subdivision and how it can be redrawn into a conservation subdivision. The primary usage of this technique in Otoe County is so a developer can maintain a specific density of building lots while protecting key environmental elements on the property. Some of these environmental elements include:

- Wetlands
- Steep slopes
- Floodplains
- Streams
- Natural prairie

The concept allows the developer and county to negotiate the lot sizes through a plan unit development (PUD) concept. In most cases the sensitive areas are placed in some type of conservation easement. The protected areas, in a majority of cases, are placed into a common area to be shared by all the residents; this in turn increases the overall value of the lots.



Conservation subdivisions (left) feature smaller lots with a high percentage of open space. Conventional subdivisions (right) feature large lots with little common open space. A conventional subdivision is subject to all of the base zoning district standards, such as minimum lot size, front setbacks, landscaping, and adequacy of public facilities.

FUTURE LAND USE GOALS

Land Use Goal and Objectives

Guiding future growth and development in Otoe County in order to insure compatible uses locate together is essential during this planning period.

General Land Use Policies and Strategies

GENLU-1.1 Future land uses in the county should carefully consider the existing natural resources of the area, including soils, rivers, and groundwater.

GENLU-1.2 Future growth and development in Otoe County should work toward compact patterns of land uses.

GENLU-1.3 The County should control leapfrog development beyond the extraterritorial jurisdictions of the communities in Otoe County.

GENLU-1.4 Otoe County should consider limited future development to identified areas along the major highways spanning the county.

GENLU-1.5 The Otoe County Land Use Plan and Zoning Regulations should be designed to expedite the review and approval process where possible.

GENLU-1.6 All land uses and structures should be carefully reviewed for compliance with the duly adopted floodplain and floodway regulations in Otoe County.

Agricultural Land Use Policies and Strategies

AGLU-1.1 Otoe County should continue to develop policies that enhance their "Livestock Friendly" designation.

AGLU-1.2 Otoe County should continue to encourage uses referred to as "Agri-tourism" (Wineries and orchards).

AGLU-1.3 Livestock production should be encouraged in Otoe County provided environmental conditions are appropriate.

AGLU-1.4 Livestock production should be protected from the establishment of conflicting uses such as acreages.

AGLU-1.5 New livestock operations should be located in areas where their impact on neighboring land uses will be minimal.

AGLU-1.6 Otoe County should allow agricultural production throughout the county; except where there may be potential conflicts with other policies of this plan.

AGLU-1.7 Livestock operations should be encouraged to utilize odor reducing technologies such as methane digestion and composting .

AGLU-1.8 Regulations should be established and implemented that create setback and buffer requirements to minimize the impacts of solid, liquid, and gas emissions from livestock facilities.

AGLU-1.9 Establish adequate separation distances between livestock facilities and residential uses.

AGLU-1.10 Establish adequate separation distances between residences and livestock operations allowing for potential expansion of livestock operations.

AGLU-1.11 Otoe County should minimize encroachment of non-agricultural uses into areas designated as "Prime Farmland".

AGLU-1.12 Encourage low to zero non-farm densities in prime farmland areas and other agricultural districts by providing residential lot size requirements, densities and separation distances between residential and agricultural uses.

AGLU-1.13 Protect the quality of groundwater in agricultural areas of Otoe County.

AGLU-1.14 Work with livestock producers on a continual basis in evaluating protections and regulations.

River Protection Corridor Land Use Policies and Strategies

RPCLU-1.1 The Missouri River Corridor should be protected due to the nature of the soils in the area and the occasional flooding occurring in the area.

RPCLU-1.2 The County should not allow the introduction of new livestock operations into the Missouri River Corridor, especially in any designated floodway.

RPCLU-1.3 The establishment of chemical storage facilities including the manufacturing of chemicals should not be allowed in this area.

RPCLU-1.4 Existing uses within the Missouri River Corridor having a high contaminate potential should be relocated to a more suitable location when possible.

RPCLU-1.5 The County should continue to promote the recreational potential of the area and work with existing property owners to establish specific eco-tourism opportunities.

Residential Land Use Policies and Strategies

RESLU-1.1 Residential developments should be separated from more intensive uses, such as agriculture, industrial, and commercial development, by the use of setbacks, buffer zones, or impact easements.

RESLU-1.2 Encourage low to zero non-farm densities in prime farmland areas and other agricultural districts by providing residential lot size requirements and proper separation distances between residential and agricultural uses.

RESLU-1.3 Develop subdivision regulations to provide a quality living environment while avoiding inefficient and expensive public infrastructure expansions.

RESLU-1.4 New residential developments should include a subdivision agreement, which provides for the maintenance of common areas, easements, groundwater, use of plant materials and drainage.

RESLU-1.5 Establish zoning and subdivision design standards requiring buffers, and screening standards and functional usable green space, for new developments.

RESLU-1.6 All proposed rural area developments should be based on reasonable expectations and no large-scale development should be approved without:

1) The submission and approval of a layout and design concept, with provision for the staging and servicing of all phases of the development;
2) The approval of all federal and state agencies relative in any applicable health, safety and environmental controls; and
3) An adequate demonstration of the financial capacity (escrows, performance bonds, etc.) and responsibility of the applicants to complete the development and provide for operation and maintenance services.
4) Should be appropriately, if not uniquely, suited to the area or site proposed for development;
5) Should not be located in any natural hazard area, such as a floodplain (unless a sandpit development mitigating the circumstances) or area of geologic hazard, steep slope, severe drainage problems or soil limitations for building or sub-surface sewage disposal, if relevant
6) Should be furnished with adequate access – when possible a minimum of two entrances and exits.

RESLU-1.7 Examine implementation of a planned unit development (PUD)/Clustered Development concept which provides a viable alternative to conventional urban development patterns, while providing a means to encourage creative yet responsible/sensitive developments.

RESLU-1.8 Otoe County should review and accommodate, wherever possible, any new or alternative development concepts or proposals, provided such concepts or proposals are consistent with and do not compromise in any way the established disposition of land uses on the Land Use Map or the goals and policies of the Plan.

RESLU-1.9 New residential construction or relocations should not be allowed along any minimum maintenance road unless the road is upgraded to county specifications and paid for by the property owner, prior to construction.

Commercial Land Use Policies and Strategies

COMLU-1.1 Encourage the location of commercial uses to locate within the communities of Otoe County or along the major highways.

COMLU-1.2 Encourage the location and clustering of commercial uses within the rural areas of Otoe County at major transportation intersections.

COMLU-1.3 Utilize frontage roads within clustered commercial centers when locating along major roads/highways.

COMLU-1.4 Commercial uses should be required to provide their own adequate water supply without negatively impacting existing neighboring properties.

COMLU-1.5 Landscaping standards for all new commercial construction and expansion to existing operations should be implemented.

COMLU-1.6 Discourage the construction of "strip" commercial developments in rural areas of the county.

Industrial Land Use Policies and Strategies

INDLU-1.1 Encourage the location of industrial uses to locate within the communities of Otoe County or along the major highways and/or the OPPD rail line.

INDLU-1.2 Where industrial uses need to locate in the rural areas of the county and need rail access, the county should work with OPPD to identify strategies for spur lines/ sidetracks.

INDLU-1.3 Industrial development not utilizing rail transport should be discouraged from locating next to a railroad right-of-way.

INDLU-1.4 Otoe County should continue to promote the Enterprise Zones as established through the Nebraska Department of Economic Development.

INDLU-1.5 Heavy industrial uses with a high water and/or waste disposal requirement should be encouraged to locate or relocate only in or immediately adjacent to urban areas where all required services are available.

INDLU-1.6 Industrial areas located outside a community's extraterritorial jurisdiction should have adequate services, including major utility lines, electric power substations and transmission lines, rail, sanitary sewer and water can be provided, and where appropriate, gas lines are available.

INDLU-1.7 Industrial uses should be located so an adequate buffer space is provided between incompatible land uses.

INDLU-1.8 The County should develop appropriate performance, design and specification standards and requirements for all existing and future industrial uses to guide their location or relocation in the County.

INDLU-1.9 The County should encourage industrial development that bases its products on renewable and indigenous raw materials.

INDLU-1.10 The County should recognize and encourage small-scale industries as viable alternatives to larger, conventional enterprises.







10

Transportation




Introduction

Transportation networks tie communities together as well as providing a link to the outside world. Adequate circulation systems are essential for the safe and efficient flow of vehicles and pedestrians, and accessibility to all parts of the community. The Transportation Plan will identify existing systems and any major improvements planned for the future and those necessary to provide safe and efficient circulation of vehicles within Otoe County, including major projects that ensure implementation of the Land Use Plan.

Existing Transportation System and Facilities

Residents within a county have specific transportation needs. These include rail service, bus service, air transportation, as well as vehicular transportation. All of the transportation facilities present are not available within the county and require residents to travel to the nearest location. This portion of the Comprehensive Development Plan examines those services with regard to the closest proximity for residents of Otoe County.

Railroad Service

The closest rail freight service to Otoe County is in Lincoln. However, OPPD has a supply rail line through Otoe County but at present the number of trains are limited The nearest passenger service is located in Lincoln or Omaha through Amtrak.

Photo 10.1

OPPD Rail Line near Dunbar

Bus Service

The nearest commercial bus service with ticketing services is available in Lincoln via Black Hills Stage Lines and in Omaha via Burlington Trailways and Greyhound.

Commercial Airport Service

Eppley Airfield in Omaha is one of the closest commercial facility to residents in Otoe County. Currently, the airports have commercial service connections throughout the United States.

Lincoln Airport in Lincoln is the next closest point for commercial service. However, airlines and flight schedules are limited. The airport is served by Delta and United Airlines.

Small craft Public Airports

The Nebraska City Municipal Airport is the nearest small aircraft facility. Runway #15/33 is 4501 feet by 76 feet with concrete surfacing. Runway 5/23 is 2550 feet by 151 feet and is a turf runway.
The fixed based operator (FBO) for this facility is Infinity Aviation. Elevation is listed at 1165 feet.

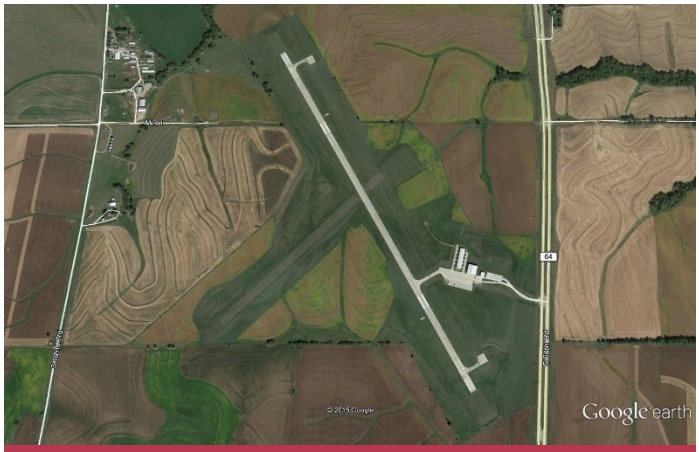
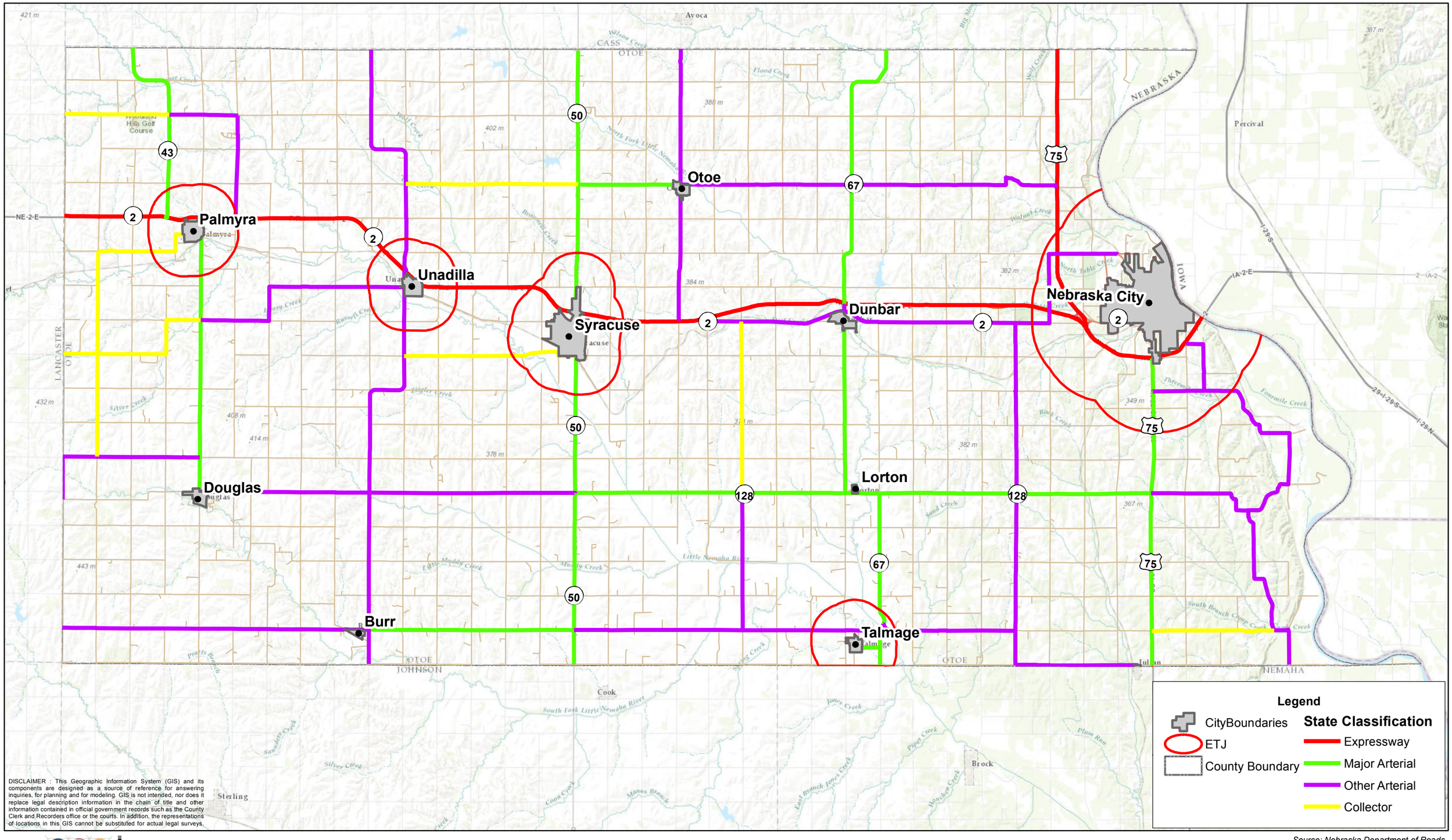


Photo 10.2

Aerial of Nebraska City Municipal Airport

State and Federal Highways

Otoe County has six major highways running through the county. The major north-south highways are Nebraska Highways 43, 50, and 67; while US Highway 75 also crosses the county. The east-west connections are Nebraska Highways 2 and 128.



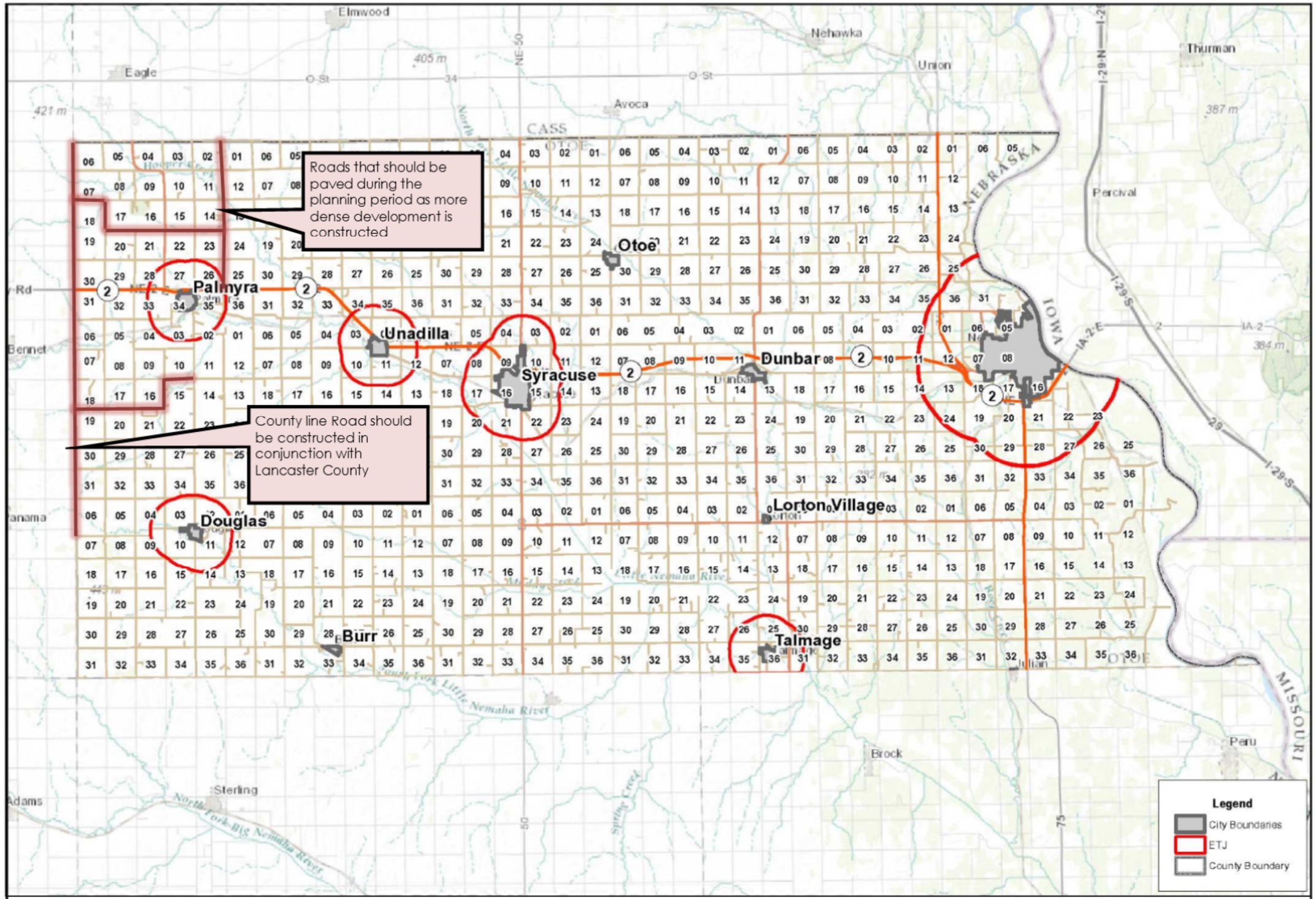
DISCLAIMER : This Geographic Information System (GIS) and its components are designed as a source of reference for answering inquiries, for planning and for modeling. GIS is not intended, nor does it replace legal description information in the chain of title and other information contained in official government records such as the County Clerk and Recorders office or the courts. In addition, the representations of locations in this GIS cannot be substituted for actual legal surveys.

Source: Nebraska Department of Roads

MARVIN PLANNING CONSULTANTS

OLSSON ASSOCIATES

FIGURE 10.1
TRANSPORTATION SYSTEM
OTOE COUNTY, NEBRASKA



Source: Nebraska Department of Roads

FIGURE 10.2

TRANSPORTATION ENHANCEMENTS - EASTERN OTOE COUNTY

0 1.25 2.5 5 Miles

N

Transportation Planning and Land Use

Land use and transportation create the pattern for future development and are extremely interdependent upon one another in order to effectively shape the community. An improved or new transportation route generates a greater level of accessibility and will likely determine how adjacent land will be utilized in the future.

In the short term, land use shapes the demand for transportation and vice versa; one key to good land use planning is to balance land use and transportation. However, new or improved roads, as well as, county and state highways may change land values, thus altering the intensity of which land is utilized.

In general, the greater the transportation needs of a particular land use, the greater its preference for a site near major transportation facilities. Commercial activities are most sensitive to accessibility since their survival often depends upon how easy a consumer can get to the business. Thus, commercial land uses are generally located near the center of their market area and along highways or at the intersection of arterial streets.

Industrial uses are also highly dependent on transportation access, but in a different way. For example, visibility is not as critical for an industry as it is for a retail store. Industrial uses often need access to more specialized transportation facilities, which is why industrial sites tend to be located near railroad lines or highways to suit individual industrial uses.

Street and Road Classification System

All of the public highways, roads, and streets in Nebraska are divided into two broad categories, and each category is divided into multiple functional classifications. The two broad categories are Rural Highways and Municipal Streets. State statute defines Rural Highways as "all public highways and roads outside the limits of any incorporated municipality," and Municipal Streets as "all public streets within the limits of any incorporated municipality." Neb. Rev. Stat. § 39-2102 (RRS 1998)

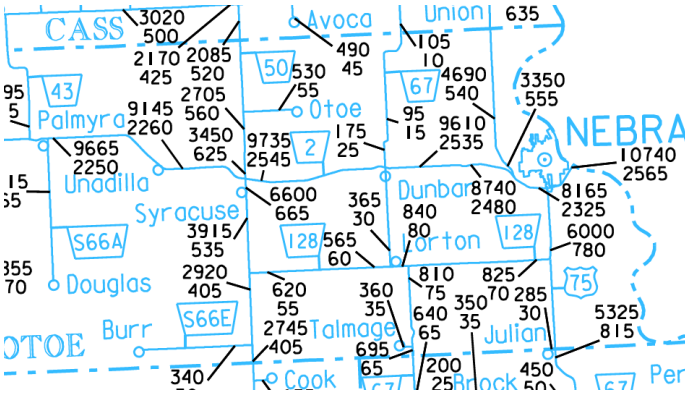
Nebraska Highway Law (Chapter 39, Article 21, Revised Reissue Statutes of Nebraska 1943) proposes the functional classification of both rural and municipal roads and streets and public highways. Chapter 39, Article 21.03 lists rural highway classifications as:

1. Interstate: federally-designed National System of Interstate and defense highways;
2. Expressway: second in importance to Interstate. Consists of a group of highways following major traffic desires in Nebraska and ultimately should be developed to multiple divided highway standards;
3. Major Arterial: consists of the balance of routes that serve major statewide interests for highway transportation in Nebraska. Characterized by high speed, relatively long distances, travel patterns;
4. Other Arterial: consists of a group of highways of less importance as through-travel routes.
5. Collector: consists of a group of highways that pick up traffic from the local or land-service roads and transport community centers or to the arterial systems. Main school bus routes, mail routes, and farm-to-market routes;
6. Local: consists of all remaining rural roads, generally described as land-access roads providing service to adjacent land and dwellings; and
7. Bridges: structures crossing a stream three hundred feet or more in width or channels of such a stream having a combined width of three hundred feet or more.

Traffic Counts in Otoe County

Traffic flow within the county on these six highways varies considerably.

Figure 10.3:
Traffic Flow Map



Source: Nebraska Department of Roads

Figure 10.1 indicates the greatest traffic flows are at the Stateline with Iowa along Nebraska Highway 2 with over 10,700 cars and 2,565 trucks per day. The second greatest traffic flow is east of Syracuse with over 9,700 cars and 2,500 trucks per day. The other

highways have significantly less traffic than Nebraska Highway 2.

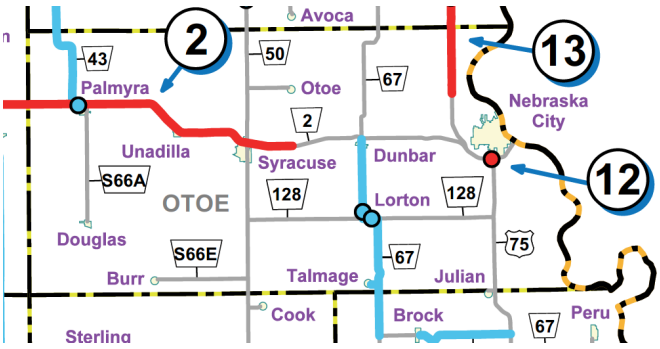
Nebraska Department of Roads' Improvements

The Nebraska Department of Roads publishes an annual list of proposed projects for the current fiscal year, for fiscal years one to five years from the present, and six years and beyond. Otoe County is in the Department of Road's District 1. Between Fiscal Years 2016 and 2021, there are six projects budgeted for the Otoe County area. These projects include:

- Nebraska Highway 2 between Lincoln and Syracuse - 27.1 miles of resurfacing, shoulder work and rumble bars
- US Highway 75 - 1.3 miles interchange Nebraska City Southeast
- US Highway 75 - near Union, 6.1 miles grading and culverts
- Nebraska Highway 2 - near Palmyra, 0.1 miles intersection improvement
- Nebraska Highway 43 - Eagle south, 8.0 miles Milling, resurfacing and bridge
- Nebraska Highway 67 - near Talmage 10.3 miles of Milling, resurfacing and bridge repairs (2)

Overall the Nebraska Department of Roads is expecting to spend nearly $40,000,000 in repairs and upgrades in the Otoe County over the next six years.

FIGURE 10.4:
NDOR SIX-YEAR HIGHWAY PROGRAM
OTOE COUNTY



Source: Nebraska Department of Roads

FUTURE TRANSPORTATION UPGRADES

Future transportation needs within Otoe County will include a number of items including some paving of existing roads and repairing/replacing bridges throughout the county. At the time of this Plan, Otoe County had ** bridges declared as deficient. As funding becomes available through various tax sources, the County Board will need to begin the repair and replacement tasks as required by the situation.

Figure 10.3 indicates key roads needing to be placed on the 1 and 6-year plan for paving. The goal for these areas was to minimize the amount of gravel needed with the higher density developments. One road is a shared county road with Lancaster County and coordination will need to be undertaken with their Highway Department regarding future paving activities.

Transportation Policies and Strategies

TRAN-1.1 Development in Otoe County should be guided to safely utilize existing and future investment.

TRAN-1.2 Development should be discouraged from occurring in areas where the road system is insufficient to handle any additional traffic load.

TRAN-1.3 Improve, develop, and maintain well-traveled roads with hard surfacing, when possible.

TRAN-1.4 Otoe County should require new development to:

1. Limit access points on highways designated as arterials when alternative access points are feasible.
2. Minimize direct access points onto arterial right-of-ways by encouraging the utilization of common driveways.
3. New development should not be located along roads officially designated as "Minimum Maintenance"

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Implementation

Achieving Otoe County's Future

Successful community plans have the same key ingredients: "2% inspiration and 98% perspiration." This section of the plan contains the inspiration of the many county officials and residents who have participated in the planning process. However, the ultimate success of this plan remains in the dedication offered by each and every resident.

There are numerous goals and objectives in this plan. We recommend reviewing the relevant goals during planning and budget setting sessions to determine what projects may need to be undertaken during the course of the fiscal year.

Action Agenda

The Action Agenda is a combination of the following:

- Goals and Objectives
- Land Use Policies
- Support programs for the above items

It will be critical to earmark the specific funds to be used and the individuals primarily responsible for implementing the goals and objectives in Otoe County.

Support Programs for the Action Agenda

Five programs will play a vital role in the success of Otoe County's plan. These programs are:

1. **Zoning Regulations**--updated land use districts can allow the county to provide direction for future growth.
2. **Subdivision Regulations**--establish criteria for dividing land into building areas, utility easements, and streets. Implementing the Transportation Plan is a primary function of subdivision regulations.
3. **Plan Maintenance**--an annual and five-year review program will allow the county flexibility in responding to growth and a continuous program of maintaining the plan's viability.
4. **Housing Study** – A Housing Study will be critical to use in direct relationship to the Comprehensive Plan due to the need for housing issues in the county. The study will help guide the county in the redevelopment and future development of housing throughout the county and all of the communities in Otoe County.
5. **Strategic Plan** – A Strategic Plan will assist in identifying future economic development strategies that will tie into the overall planning effort of the county. It will be critical to work with this document and the Plan in unison.

Comprehensive Plan Maintenance

Annual Review of the Plan

A relevant, up to date plan is critical to the on-going planning success. To maintain both public and private sector confidence; evaluate the effectiveness of planning activities; and, most importantly, make mid-plan corrections on the use of county resources, the plan must be current. The annual review should occur during the month of January.

After adoption of the comprehensive plan, opportunities should be provided to identify any changes in conditions that would impact elements or policies of the plan. At the beginning of each year a report should be prepared by the Planning Commission, which provides information and recommendations on:

- whether the plan is current in respect to population and economic changes; and
- The recommended goals, objectives, and/or policies are still valid for the County and its long-term growth.

The Planning Commission should hold a meeting on this report in order to:

1. Provide citizens or developers with an opportunity to present possible changes to the plan,
2. Identify any changes in the status of projects called for in the plan, and
3. Bring forth any issues, or identify any changes in conditions, which may impact the validity of the plan.

If the Planning Commission finds major policy issues or major changes in basic assumptions or conditions have arisen which could necessitate revisions to the Comprehensive Plan, they should recommend changes or further study of those changes. This process may lead to identification of amendments to the Comprehensive Plan and would be processed as per the procedures in the next section.

Unanticipated Opportunities

If major new, innovative development and/or redevelopment opportunities arise which impact any number of elements of the plan and which are determined to be of importance, a plan amendment may by proposed and considered separate from the Annual Review and other proposed Comprehensive Plan amendments. The Comprehensive Plan amendment process should adhere to the adoption process specified by Nebraska law and provide for the organized

participation and involvement of citizens.

Methods for Evaluating Development Proposals

The interpretation of the Comprehensive Plan should be composed of a continuous and related series of analyses, with references to the goals and policies, the land use plan, and specific land use policies. Moreover, when considering specific proposed developments, interpretation of the Comprehensive Plan should include a thorough review of all sections of the Comprehensive Plan.

If a development proposal is not in conformance or consistent with the policies developed in the Comprehensive Plan, serious consideration should be given to making modifications to the proposal or the following criteria should be used to determine if a Comprehensive Plan amendment would be justified:

- the character of the adjacent area
- the zoning and uses on nearby properties
- the suitability of the property for the uses allowed under the current zoning designation
- the type and extent of positive or detrimental impact that may affect adjacent
- properties, or the county at large, if the request is approved
- the impact of the proposal on public utilities and facilities
- the length of time that the subject and adjacent properties have been utilized for their current uses
- the benefits of the proposal to the public health, safety, and welfare compared to
- the hardship imposed on the applicant if the request is not approved
- comparison between the existing land use plan and the proposed change regarding the relative conformance to the goals and policies
- consideration of County staff recommendations