

COMPREHENSIVE PLAN

Long Lake Township





TABLE OF CONTENTS

Section I. Introduction	3
Section II. Current Demographics & Trends	4
Section III. The Future	11
Section IV. Goals and Strategies	17
Section V. Future Land Use	23
Section VI. Implementation	26
Appendix A. Additional Planning Maps	30

This Plan was prepared by the **Citizens of Long Lake Township** with the assistance of the **Community Growth Institute**. The Plan was officially adopted on **August 16, 2005** by the **Long Lake Township Board of Supervisors**.



Long Lake Township



SECTION I. Introduction

The purpose of a community created comprehensive plan is to shape the future of the community, provide a basis for making land use decisions, and to create a guiding set of goals for the community to work towards. In order to manage the expected growth and to protect the rural uniqueness of Long Lake Township and the surrounding region, this document outlines a development path for Long Lake Township over the next 20 years.

The Planning Process

In January 2005, the Long Lake Township Board voted to move forward with the comprehensive planning process. Being the first community planning process in Long Lake Township, this Comprehensive Plan sets the stage for making the community stronger and guiding land use decisions and development for the next 20 years.

Residents and property owners were invited to participate and be involved in the planning process, which was facilitated by the Community Growth Institute. Participants were asked to contribute their concerns, knowledge, ideas, and expertise about Long Lake Township and the problems the Township faces. This process evaluated the current status of the Township, how it is changing, and how the Township should develop and function in the future.

Through a series of community meetings, citizens identified strengths and weaknesses regarding the quality of life and land use in the Township, developed goals to address issues affecting the Township, and created strategies to accomplish those goals. This plan was created by the residents of Long Lake Township for the future of their community and is their vision for how the Township should grow. The plan was adopted by the Long Lake Township Board of Supervisors on August 16, 2005.



SECTION II. Current Demographics and Trends

In order to plan for the future of a community, it is important to understand the past and track historical trends, as well as look at projections for how the Township is likely to change. Understanding the history of Long Lake Township and the trends that affect the area provides a factual base from which to make sound decisions. Although the past is not a perfect indicator of things to come, it does give perspective on the status of the community and suggests where the Township may be heading.

While there is the tendency to only look within the Township borders, Long Lake Township is part of a larger community in the Central Lakes Region of Minnesota. Therefore, a comparison of the Township to nearby cities and Crow Wing County as a whole is included to help show how the Township compares to neighboring communities and to identify the role that Long Lake Township plays in the region.

The information presented in the tables, figures, and maps in this Plan are as current as possible for the year 2005. The information is gathered from variety of sources including the U.S. Census Bureau, the Minnesota Demographer's Office, the Minnesota Department of Natural Resources, Minnesota Department of Transportation, the Minnesota Department of Employment and Economic Development, and the Farm Service Agency, among others.

Population Change

Crow Wing County has some of the fastest growing cities and townships outside of the Twin Cities metropolitan area, and Long Lake Township is among those fast growing townships. From 1970 to 2000, the population of the Township increased by 47 percent, which is well above the Brainerd and Minnesota average (Table 1).

The Minnesota Demographer's Office has projected the population change for all cities, townships, and

Table 1. Population, 1970-2000

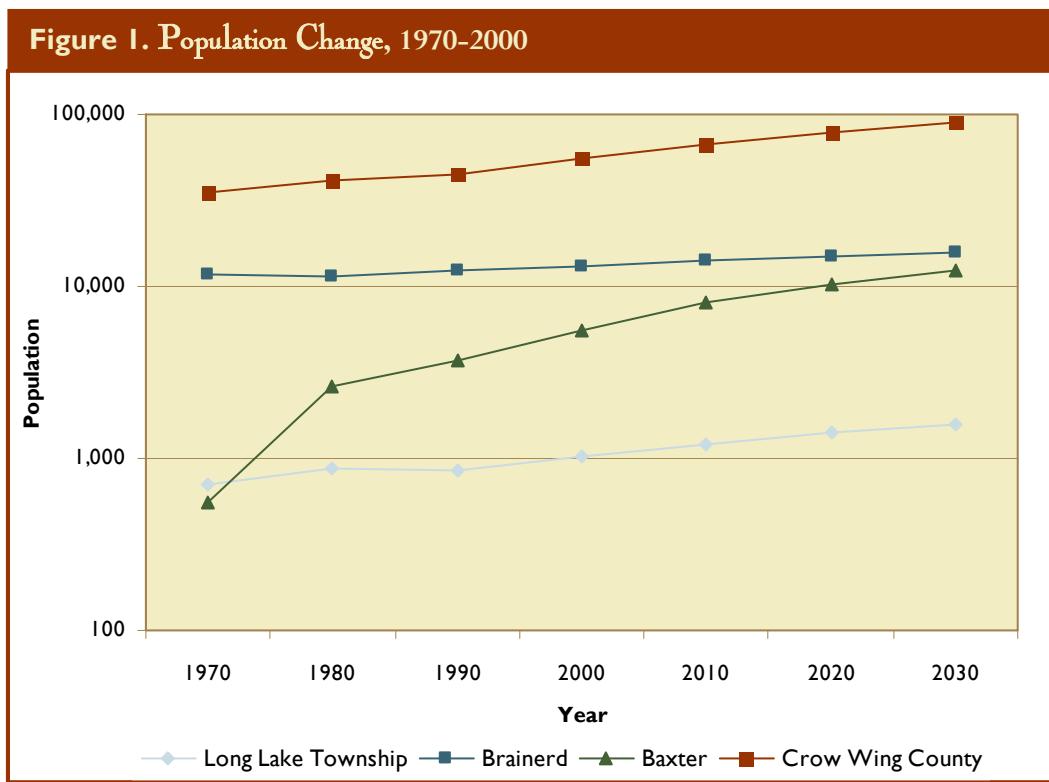
Unit of Government	1970	1980	% Change 1970-80	1990	% Change 1980-90	2000	% Change 1990-00	% Change 1970-00	2005*
Long Lake Township	699	877	25%	855	-3%	1,025	20%	47%	1,119
Brainerd	11,667	11,489	-2%	12,353	8%	13,178	7%	13%	13,929
Baxter	1,556	2,625	69%	3,695	41%	5,555	50%	257%	6,847
Crow Wing County	34,826	41,722	20%	44,249	6%	55,099	25%	58%	61,080
Minnesota	3,806,103	4,075,970	7%	4,375,099	7%	4,919,479	12%	29%	5,197,200

* Estimated, Source: US Census of Population and Housing 1970-2000, MN Demographer

Table 2. Population Projections, 2000-2030

Unit of Gov't	2000	2010	% Change 2000-10	2020	% Change 2010-2020	2030	% Change 2020-2030	% Change 2000-30
Long Lake Township	1,025	1,217	19%	1,415	16%	1,596	13%	56%
Brainerd	13,178	14,311	9%	15,069	5%	15,706	4%	19%
Baxter	5,555	7,972	44%	10,272	29%	12,398	21%	123%
Crow Wing County	55,099	67,090	22%	79,420	18%	90,240	14%	64%
Minnesota	4,919,479	5,452,500	11%	5,909,400	8%	6,268,200	6%	27%

* Estimated, Source: US Census of Population and Housing 1970-2000, MN Demographer



counties in Minnesota through 2030. From 2000 to 2030, the Township is projected to grow by an additional 56 percent to nearly 1600 people (Table 2).

The graph in Figure 1 shows past population change and projected population growth. The graph uses a logarithmic scale so that the population change in Long Lake Township can be compared to Brainerd, Baxter, and Crow Wing County on the same graph.

While the expected change in population for the Township may seem like a drastic increase, it is on par with other cities and townships in the region and is below the growth rate expected in Crow Wing County overall. The Central Lakes Region is a growth magnet in Minnesota. These expected population changes affect roads, the environment, land values, and a number of other factors.

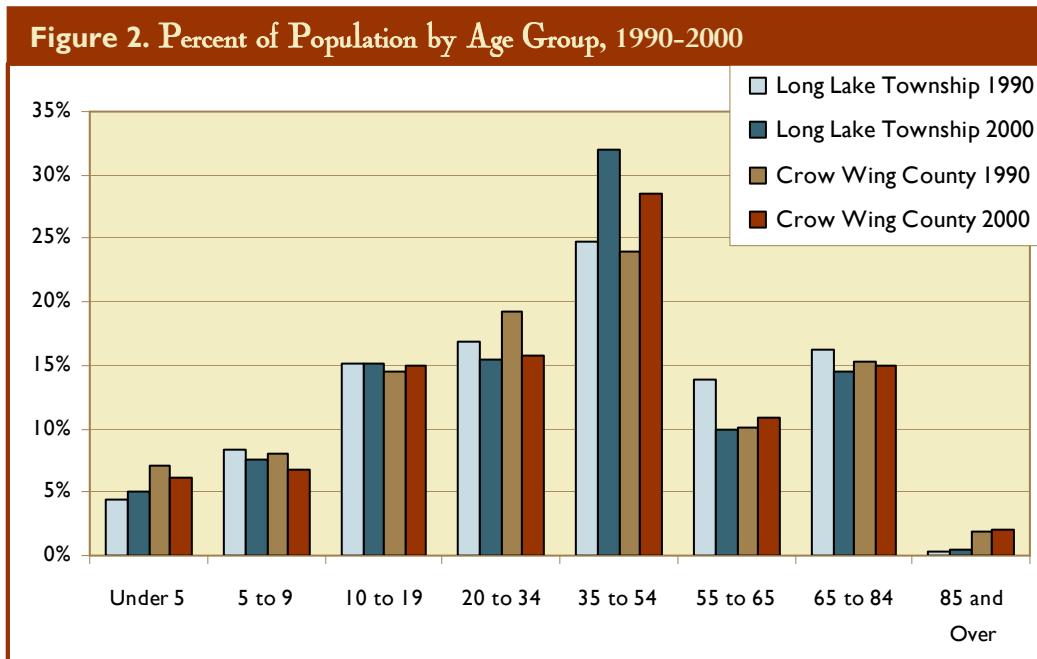
Population Structure

Although the region around Long Lake Township is growing, the structure of the population is also changing. As a whole, the residents' average age is increasing. While Long Lake Township has yet to feel the full affect of an aging population, the Township is likely to see a relatively smaller younger population compared to older residents. All age groups will grow in absolute terms over the next thirty years; however, the older population will make up a larger percentage of the total population

Table 3. Population Age Structure, 1990-2000

	1990		2000		% Change 1990-2000
	Persons	%	Persons	%	
Under 5	38	4%	51	5%	34%
5 to 9	71	8%	77	8%	8%
10 to 19	130	15%	155	15%	19%
20 to 34	144	17%	158	15%	10%
35 to 54	212	25%	328	32%	55%
55 to 65	118	14%	102	10%	-14%
65 to 84	139	16%	149	15%	7%
85 and Over	3	0.35%	5	0.49%	67%
Total	855	-	1025	-	-
Median Age	38.6	-	38.9	-	-

Source: US Census of Population and Housing 1990 & 2000



(Table 3). This follows the national trend toward an aging population.

The only significant growth in a particular age group was for those in the 35 to 54 age group, which also occurred throughout Crow Wing County (Figure 2). The age groups under 35 either stayed approximately the same or lost ground in terms of total percentage of the population. It is not surprising to see the over age 65 group shrink slightly because senior citizens may be forced to move out of a particular area if they are unable to take care of their home and no other housing options are available. A lack of housing diversity often forces residents in townships to seek housing elsewhere as they age.

Households

Households are different from housing units. Households are the number of houses occupied year round by residents. The growth in the number of households tends to reflect population growth, though some variation usually exists. The variation exists because the number of people per household changes. The current trend across the United States and Minnesota is toward fewer people per household. The trend towards smaller households is evident in Long Lake Township, Baxter, Brainerd, and Crow Wing County as the number of persons per household fell in all four government units.

The rate of household growth was slightly faster than population growth, which did contribute to a small

decrease in people per household in the Township. The trend of fewer people per household is likely to continue as families have fewer children and more people choose retire to the area or live alone. For that trend to continue, housing growth rate must be faster than the population growth rate. If that occurs, the impact on the environment is greater than

Table 4. Households & People per Household, 1990-2000

	Households			People per Household		
	1990	2000	% Change	1990	2000	% Change
Long Lake Township	327	395	20.8%	2.61	2.59	-0.9%
Baxter	1,200	2,007	67.3%	3.08	2.77	-10.1%
Brainerd	5,197	5,806	11.7%	2.38	2.27	-4.6%
Crow Wing County	17,204	33,483	94.6%	2.57	1.65	-35.8%

Source: U.S. Census of Population, 1990 - 2000

population growth because more housing requires more resources and more land for development.

The owner-occupied housing rate is especially high in Long Lake Township at 94 percent in 2004, which is even higher than it was in 1990. In both censuses, the owner-occupied housing rate was higher than the County and the State average. Owner occupied housing tends to lead toward more stable neighborhoods and a higher quality of housing. While the percent of renters increased in Crow Wing County, the percent of people renting in the Township fell by eight percent.

Housing Units, Values, Rent, and Age

Although the population increased and the number of households increased, the actual number of housing units fell by five percent (Table 6). While this may seem counterintuitive, the population was able to grow despite a loss in housing units because almost 100 housing units were converted from seasonal housing to year round housing (Table 7).

The U.S. Census Bureau does not count part-time resident households in total population counts. More people are staying in Long Lake Township, most likely around South Long Lake, year-round in 2000 than did in 1990. If the trend of converting seasonal housing to year round housing continues, the Township will need less new housing to accommodate the expected increase in population. Adding less housing will decrease the impact on the environment, reduce habitat fragmentation, and reduce the need for additional roads. However, the increase in population will still have an impact on the natural environment.

The late 1990s and the first part of the 21st century have been marked by remarkable increases in housing and land values. The median home price in Long Lake Township and Crow Wing County nearly doubled in ten years, which is approximately a seven percent increase each year in the 1990s (Table 8). The median value is the value where half of the houses are valued less than that amount and half are valued more. Almost all of the housing units were valued at less than \$100,000 in Long Lake Township in 1990. By 1990, less than 40 percent of the housing units were valued at less than \$100,000. The median price of rent for non-homeowners also nearly doubled.

The housing market is in a precarious position in many parts of the country due to the higher

Table 5. Occupied Housing Status, 1990-2000

	Long Lake Township			Crow Wing County		
	1990	2000	% Change	1990	2000	% Change
Total	327	395	21%	17,204	22,250	29%
Owner occupied	302	372	23%	13,188	17,732	34%
% Owner occupied	92%	94%	2%	77%	80%	4%
Renter occupied	25	23	-8%	4,016	4,518	13%

Source: US Census of Population 1990 & 2000

Table 6. Total Housing Unit Status, 1990-2000

	Long Lake Township			Crow Wing County		
	1990	2000	% Change	1990	2000	% Change
Total:	573	546	-5%	29,916	33,483	12%
Occupied	327	395	21%	17,204	22,250	29%
Vacant	246	151	-39%	12,712	11,233	-12%
% Vacant	43%	28%		42%	34%	

Source: US Census of Population 1990 & 2000

Table 7. Vacant Housing Status, 1990-2000

	Long Lake Township			Crow Wing County		
	1990	2000	% Change	1990	2000	% Change
Total:	246	151	-39%	12712	11,233	-12%
For seasonal, recreational, or occasional use	235	133	-43%	10,996	10,257	-7%
Other vacant (For sale, rent, other)	11	18	64%	1716	976	-43%

Source: US Census of Population 1990 & 2000

Table 8. Housing Value, Contract Rent, & Year Built

	Long Lake Township (%)		Crow Wing County (%)	
	1990	2000	1990	2000
Owner-Occupied				
Less than \$50,000	47.9	8.1	37.4	9.6
\$50,000 - \$99,999	49.3	33.8	37.5	36.3
\$100,000 - \$149,999	0.7	36.5	18.6	25.1
\$150,000 - \$199,999	0.7	13.5	5.2	14
\$200,000 - \$299,999	0.7	4.1	1.2	9.1
\$300,000 - \$499,999	0.0	4.1	13	4.7
\$500,000 - \$999,999	0.0	0.0	-	1.1
\$1,000,000+	0.0	0.0	-	0.1
Median Home Price	\$50,800	\$108,000	\$54,000	\$107,500
Median Rent	\$250	\$492	\$269	\$458
Median Year Built	1965	1973	1969	1974

Source: U.S. Census of Population and Housing, 1990 - 2000

than average housing value growth. However, if the population increases hold true, land and housing values can be expected to increase faster than the historical average as demand exceeds supply.

The median year built is the year at which half the housing is older and half of the housing is younger. Half of the housing units in Long Lake Township were built after 1973 in 2000. An increasing median age indicates that new housing units are being built, and some may be replacing dilapidated units.

Household Income

Table 9. Median Household Income, 1990-2000

	Long Lake Township	Crow Wing County	Minnesota
1990	\$26,523	\$22,250	\$30,909
2000	\$44,297	\$37,589	\$47,111
% Change	67%	69%	52%

Source: US Census of Population 1990 & 2000

average household income growth rate indicates that people with higher incomes are likely moving into the Township.

Labor Force

In 2000, unemployment was lower in Long Lake Township than many of the neighboring cities or the County. The labor force is measured by the number of those people able to work and over age 16. In

Table 10. Labor Force Statistics, 2000

	Long Lake Township	Brainerd	Baxter	Crow Wing County
Total:	817	10,086	4,124	43,106
In labor force:	559	6283	3119	27274
% in Labor Force	68%	62%	76%	63%
In Armed Forces	0	19	8	72
Civilian:	559	6264	3111	27202
Employed	538	5814	3006	25712
Unemployed	21	450	105	1490
% Unemployed	3.76%	7.18%	3.38%	5.48%

Source: US Census of Population 1990 & 2000

Although the median household income in Long Lake Township median household income of \$44,297 remains below the state median household income at \$47,111, the Township's median household income grew faster than the state average in the 1990s (Table 9). If that trend continues, the Township will be higher than the state average if it is not already. A faster than

average household income growth rate indicates that people with higher incomes are likely moving into the Township.

2000, Long Lake Township was home to 817 working age adults of which 559, or 68 percent, were employed.

An increasing the older population will likely decrease the percent of people in the labor force in the future, which is a sign of more retirees moving to the Township.

Travel Time to Work

All across the country, people are driving farther and taking more time to get to work. Long Lake Township conforms to this trend. In 1990, only one percent of the workforce traveled more than one hour to get to work, by 2000, that number increased to seven percent, which is a significant increase. Moreover, the number of people working close to home, less than five miles, decreased from five percent to zero percent. Crow Wing County saw similar changes across the County. As more people retire or simply move to the Central Lakes Region, the travel time to work will rise as people retain their jobs in larger metropolitan areas such as St. Cloud and even the Twin Cities.

Employment by Industry

Because Long Lake Township has only a handful of businesses, the State of Minnesota does not release detailed employment data for the Township due to privacy reasons. However, the Census does track the types of occupations that residents have in the Township. Similar to trends around the state, the entertainment and food services industry was one of the fastest growing professions for people to work in the Township. Agriculture and manufacturing suffered losses, which again follows state and national trends.

The professional jobs increased dramatically from 1990 to 2000. This can also be linked to the increased in household income and housing values. More professionally oriented people are likely moving into the Township and working outside of the Township.

Long Lake Township as a Neighborhood

Long Lake Township is a neighborhood in the larger Central Lakes Region that is home to more than 90,000 people and growing every year. While the commercial and industrial base of the Township is unlikely to change significantly, the pressure for increased population and residential development will continue. There will continue to be a high demand for land, land values will rise, and there will be greater pressure to protect the natural environmental and rural character of the Township that draws people to this part of Minnesota. The population of Long Lake Township will grow and age as more retirees move into the region.

Table 11. Travel Time to Work, 1990-2000

	Long Lake Township		Crow Wing County	
	1990	2000	1990	2000
Less than 5 minutes	5%	0%	6%	4%
5 to 14 minutes	22%	20%	42%	37%
15 to 29 minutes	56%	51%	33%	34%
30 to 44 minutes	7%	13%	9%	12%
45 to 59 minutes	4%	3%	2%	3%
60 or more minutes	1%	7%	2%	4%
Worked at home	5%	5%	5%	4%

Source: US Census of Population 1990 & 2000

Table 12. Occupation, 1990-2000

Industry	% Total	
	1990	2000
Agriculture, forestry, fisheries, mining	6.8	3.9
Construction	14.6	5.9
Manufacturing	16.4	15.4
Transportation, warehousing, information/communication, utilities	7.8	10.0
Wholesale trade	4.9	3.5
Retail trade	14.8	11.2
Finance, insurance, real estate	2.9	2.4
Professional, scientific, management, administrative, waste management	0.5	8.4
Arts, entertainment, recreation, accommodation, food services	1.0	8.6
Education, health and social services	18.5	22.5
Other services	6.0	4.5
Public administration	5.7	3.7

Source: U.S. Census of Population and Housing, 1990 and 2000



SECTION III. The Future

Over the course of the planning process, residents of Long Lake Township identified issues important to them and their community. The high participation rate in the planning process demonstrates the dedication residents have to preserving the high quality of life and characteristics of the Township. Residents' concerns focused on maintaining the rural character of the area, preserving agriculture wherever possible, and minimizing the negative effects of new development on the rural character, environment, and land use in the Township.

Creating a Vision

This is the first comprehensive planning process in Long Lake Township. Many of the Township's citizens have lived in the community their entire lives, other residents have lived in the community just a few years, and some are completely new to the area. This diversity brings a wide range of perspectives, experiences, and knowledge to the planning process that has helped the community create a vision for their future.

The citizens of Long Lake Township seek to protect the rural character of the Township, which is comprised of the wetlands, lakes, forests, grasslands, low density development, privacy, and agriculture. While some growth is likely to occur, new development should be compatible with existing land uses, the natural environment, and the goals of this Comprehensive Plan.



Natural Resources and Land Cover

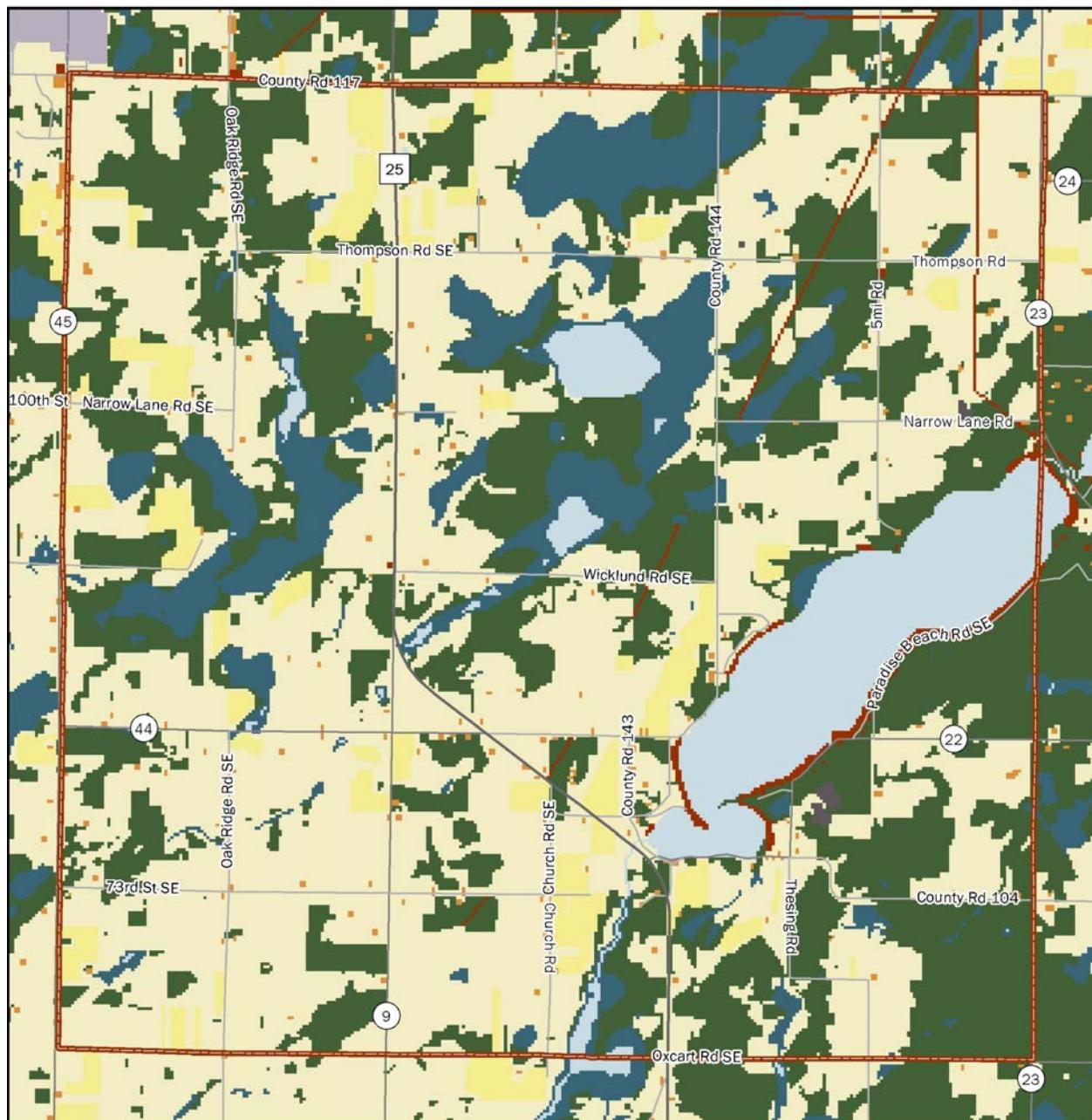
Long Lake Township is home to many beautiful natural resources such as forests, wetlands, woodlands, grasslands, and agricultural landscapes. Nearly half of the Township is covered in grasslands, which are spread throughout the Township and are often found on higher, drier ground. Prairie lands have become increasingly rare in Minnesota and the Midwest since most of that type of land cover was converted to agricultural uses. Remaining prairies provide important habitat for migratory birds and many game species.

Table 13. Land Use / Land Cover		
Land Use Category	Area	
	Acres	Percent
Grassland	11,142	48%
Forest	6,871	30%
Wetlands	2,186	9%
Open water	1,573	7%
Cultivated land	1,130	5%
Homesteads and other rural developments	322	1.38%
Gravel pits and open mines	28	< 1%
Total	23,253	100%

Source: LandSat Based Land Use/Land Cover - MnDNR

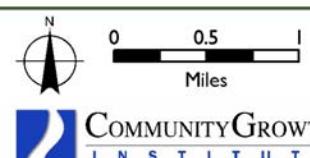


Current Land Use / Land Cover



Legend

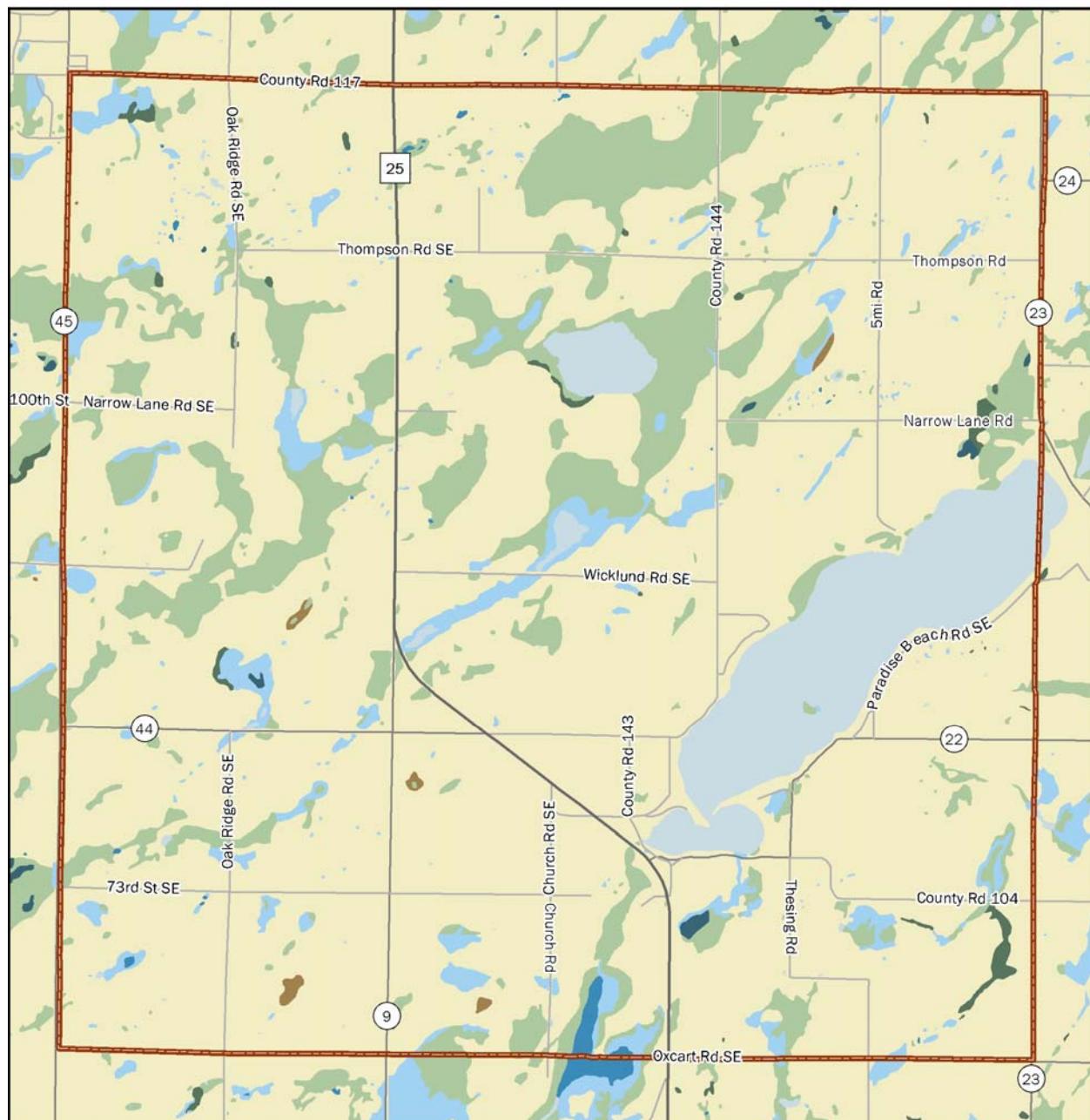
Open water	Farmsteads and rural residences
Wetlands	Other rural developments
Forest	Urban/industrial
Grassland	Gravel pits and open mines
Cultivated land	Bare rock



Prepared March 2005
Data sources: Minnesota DNR, Mn/DOT



Wetlands and Water Resources



Legend

Legend for wetland categories:

- Shallow open water
- Shrub swamp
- Seasonally flooded basin
- Wooded swamp
- Shallow marsh
- Bogs
- Deep marsh
- Uplands



Prepared March 2005
Data sources: Minnesota DNR, Minnesota
Department of Transportation

Approximately one third of the land area in the township is covered in forests, which are a mix of conifer and deciduous trees. Forest lands are fragmented in the Township, but there is some concentration in the southeastern portion of the Township around South Long Lake and some of the wetlands.

Wetlands and lakes constitute the next largest land cover in the Township with approximately 16 percent of the land cover. While there is only one large lake in the Township, South Long Lake, there are large swaths of wetlands, particularly in the north-central area of the Township. These wetlands may be difficult to discern since the majority of the wetlands are bogs and shrub swamps. These types of wetlands have heavy vegetation cover that make them appear similar to their surroundings, when in reality, the soils beneath them are heavily saturated with water, or in some cases, may actually have standing water beneath their vegetation. Wetlands provide nesting habitat for many bird species, including ducks and other game birds. Deer, turtles, and other animals also rely on wetlands for water, breeding, and habitat.

The edges between forests, grasslands, and other habitats, provide habitat for many types of game species such as deer, ducks, and other upland game birds. Many residents value these areas because they provide valuable hunting and recreational lands.

While agriculture is a defining character of the Township, just five percent of the land cover is defined as agriculture, though it is likely that a large percentage of the grasslands are really pastures and fields. Nevertheless, as agricultural businesses face greater pressure, it is likely that the amount of agricultural land will decrease and forests and grasslands will decrease.

Last, but certainly not least, is the amount of land area covered by development in the Township. Less than 1.5 percent of the Township is considered developed, though that number may be slightly higher with recent developments. However, the percent of developed land cover is disproportionate to the impact of that

Brainerd Lakes Area Conservation Collaborative

In 2003, twelve non-profit, private, and governmental organizations in the Central Lakes Region of Minnesota came together to form the Brainerd Lakes Area Conservation Collaborative (BLACC) and to study the natural resources of the Brainerd Lakes Area. The final report, "Inventory and Assessment of Natural Resources in Crow Wing County," identified a set of priority natural features, habitats, and attributes in need of protection. The BLACC project included all of Crow Wing County and portions of Aitkin, Morrison, Cass, and Hubbard counties.

While BLACCs key mission is to protect and conserve the ecologically significant terrestrial and aquatic habitats in the Central Lakes region, the collaborative acknowledged that Crow Wing County and the surrounding counties are growing and new development is part of the region's future. The report encourages conservation and land preservation, but it does not suggest stopping development. Instead, it encourages smarter development that takes natural characteristics into consideration when designing new developments and preserving the most ecologically sensitive lands and waters.

The Conservation Priority Indicator Map incorporates more than a dozen data sets to locate the land and water habitats most in need of protection. Although the map is not intended for site specific design, it does help guide development and land use decisions.

As development occurs, the data from the BLACC project and the Conservation Priority Indicator Map will help guide Ordinance updates, zoning updates, and overall development. The full report is available online under Resources at <http://www.1000fom.org/>.



development. Developed land divides habitats, impacts lakes and wetlands, and reduces land for hunting.

Annexation and Land Use

The rural character of the Township was repeatedly stated as one of the most important values of Township residents. Residents enjoy the undeveloped, low density, agriculturally based natural appearance of the Township and the many benefits attributed to this setting, which includes privacy, peacefulness, green spaces, and a clean environment. The rural setting, however, was a topic of great concern because residents felt that it was being threatened by annexation from Brainerd, the growing population, and the increasing level of small lot developments.

While most of the Township is out of the range of annexation from Brainerd, a small portion of the northwestern corner of the Township has already been annexed and the Brainerd Comprehensive Plan includes a significant portion of the northwestern portion of the Township as a potential growth area. Although it is unlikely that all of the Township will be annexed anytime soon, annexation is a concern amongst the residents.

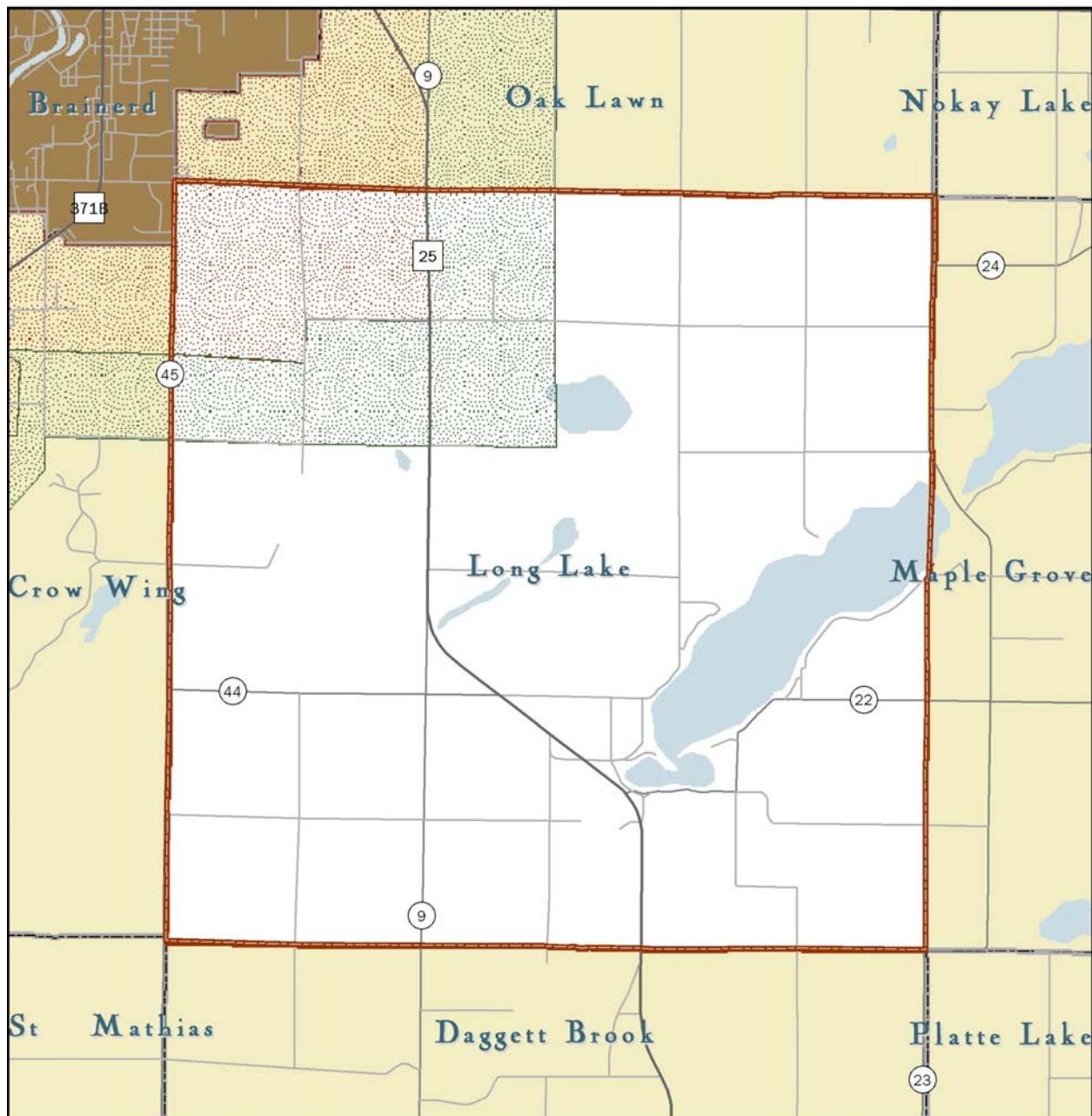
While forced annexation may be a possibility, many properties that are annexed by Brainerd are done so by request of the property owner or with property owner's consent. Most property owners that request annexation seek to maximize the profit on subdividing their land. By requesting annexation, property owners can often build at higher densities, because of the availability of municipal utilities, which increases profits.

The problem is less of annexation and more about the development patterns that occur on annexed lands and other lands in the northwestern part of the Township. Annexation brings higher density development, more traffic, less vegetation and animal habitat, and makes way for expansive lawns and pavement. These development patterns degrade the rural character of the area, in addition to the natural resources and privacy residents of Long Lake Township value. Residents do not want to see these types of development patterns engulf the rest of the township.

The Township is facing development pressure. The challenge for the Township is to employ strategies that maintain the rural character while accommodating a growing population without compromising the underlying rural character of the Township.

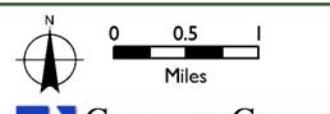


Annexation Pressure from Brainerd



Legend

20 Year Growth Reserve	Township & Municipal Boundaries
40 Year Growth Reserve	City of Brainerd
Long Lake Township Boundary	Lakes



Prepared March 2005
Data sources: Minnesota DNR, Minnesota
Department of Transportation

SECTION IV. Goals and Strategies

Starting in February 2005, the residents and property owners of Long Lake Township came together to develop a comprehensive plan that includes goals and strategies to address the issues facing Long Lake Township. This plan is a guide to future decision-making on land use issues, community development, and the overall character of the Township. Through a series of six public meetings, residents developed twelve goals, strategies to implement those goals, and a future land use map to guide land use decisions in the Township.

Goal 1: Ensure that new growth and development, especially in the areas adjacent to Brainerd, maintains the rural character of the Township.

Growth and development is an important issue all across Crow Wing County. The Central Lakes Region is one of the fastest growing regions in Minnesota and that trend is projected to continue as people seek to move outside of urban areas into rural settings. However, the very reasons that people are moving to this region and Long Lake Township – the rural character, lakes, open spaces, farmlands, woodlands, privacy, and clean air and water – are beginning to be harmed by the pressure of additional people moving into the region. Protecting the qualities that make Long Lake Township rural is a strong value expressed by many residents.

To achieve this goal, the following strategies should be implemented:

- Maintain areas of larger lot sizes in a majority of the Township to support agricultural uses and protect open spaces.
- Direct higher density housing (no less than 2.5 acre lots) to those areas within a one to two mile radius of Brainerd city limits (at the time this plan is adopted) in order to minimize or eliminate annexations.
- Explore the option of allowing cluster housing in order to minimize or eliminate annexations and to provide housing options, particularly in those areas closest to Brainerd.
- Develop ordinances that require screening and buffering of new developments to protect the rural, quiet nature of the Township.
- Work with Crow Wing County to review all development proposals at the Township level before being considered complete.
- Explore implementing a Township subdivision ordinance that would allow the Township to review and sign off on all plats before the County can approve a subdivision.
- Explore developing land use ordinance for the Township and administering ordinances at the Township level.

Goal 2: Work to keep large tracts of land in Long Lake Township for human enjoyment, agriculture, animal habitat, and to enhance the rural character of the Township.

As development has occurred, tree cover has been removed, natural habitat has been fragmented, wetlands have been compromised, and rural open spaces have been lost. Long Lake Township is primarily rural and the loss of these features has the potential to change the underlying character of the Township. Although development does not have to cause these changes, development can contribute to these problems if left unchecked. Large lots with undeveloped open spaces are a fixture of rural

living and enhance natural habitats. Moreover, it is increasingly difficult to successfully farm on smaller lots.

To achieve this goal, the following strategies should be implemented:

- Maintain larger lot sizes of at least 20 acres in a majority of the Township.
- Discourage subdivisions in agricultural areas beyond one mile from the Brainerd municipal border.
- Maintain existing public land for recreational purposes and green space protection.
- Educate and encourage residents to create green corridors, which connect woodlands and prairies across property and township lines to create larger natural habitats for preservation, recreation, and hunting purposes.
- Educate residents on conservation easements and how to use conservation easements, which allow non-profit and government organizations to purchase development rights on properties to protect undeveloped, natural open space.
- Do not allow properties to be subdivided that are less than the minimum lot size requirement or subdivisions that would leave a property at less than the minimum lot size requirement.

Goal 3: Ensure that annexations only occur where there is an orderly annexation agreement in place and the property owners are in agreement.

With recent annexations on all sides of Brainerd, the potential for having Township lands annexed into Brainerd has become an increasing concern. Forced annexations infringe on property rights and may significantly alter the rural character of Long Lake Township. Residents of Long Lake Township live in the area because they enjoy and seek the rural character, privacy, and sparse development within the Township. Many people do not wish to live in an urban or suburban area or to be forced to have their property annexed by a neighboring city. Moreover, most residents do not want to pay for infrastructure improvements that often come with annexation.

To achieve this goal, the following strategies should be implemented:

- Maintain open communications with Brainerd and Crow Wing County about potential annexations.
- Hold a Township public hearing on all annexation requests.
- Explore establishing an orderly annexation agreement with Brainerd.
- Work with neighboring Townships, particularly Crow Wing Township and Oak Lawn Township, to work together on annexation and present a united front.
- Support legislation that grants Townships more authority in the annexation process.

Goal 4: Work to protect the remaining agricultural lands for either farming or natural, undeveloped open space purposes.

Approximately 5 percent of the land in Long Lake Township is classified as cultivated land and a portion of the grassland, which covers 48 percent of the Township, is likely used for pasture land. Although agricultural uses are no longer the driving force of the local economy, agricultural lands and farming continue to define the vision of the Township and contribute to the rural character of the area. The loss and fragmentation of agricultural land into housing units reduces the rural character and reduces



open space. Continued agricultural practices, where feasible, is a primary element of Long Lake Township's rural character.

To achieve this goal, the following strategies should be implemented:

- Develop a zoning classification to preserve agricultural land for continued agricultural uses or open spaces.
- Provide residents with information about agriculture preservation programs.
- Encourage residents to enroll in the Conservation Reserve Program (CRP) to protect open spaces on agricultural lands.
- Inform new residents of the agricultural nature of the Township to reduce land use conflicts and complaints from new residents.

Goal 5: Work to define and protect Long Lake Township's environmental assets.

While it may seem that much of the Township is being developed at a fast pace, a majority of the Township remains undeveloped. Much of the Township is covered by forests, prairies, and water resources. In the face of an increasing residential development demand, it is essential that the Township acquire the information and data needed to protect the environmental assets of the community. These assets contribute to the rural character of the area as well as provide opportunities for recreation, wildlife habitat, and other environmental and social benefits. Finally, knowing where ecologically important environmental assets exist can help direct development and design more appropriate development for the land.

To achieve this goal, the following strategies should be implemented:

- Inventory and designate environmentally sensitive areas.
- Designate wetlands and other environmentally sensitive areas as unbuildable.
- Educate residents about the environmental assets within the Township and what can be done to protect those resources.
- Work to restrict habitat fragmentation by directing new development near existing roads rather than constructing new roads.
- Keep public lands in public ownership.
- Educate residents on the opportunities for recycling within the Township and the County.

Goal 6: Encourage a land use pattern that is compatible with land uses in and outside of the Township and is consistent with the goals of the Township.

Residents have become accustomed to having homes tucked away on wooded or otherwise vegetated properties. Residents do not want to worry about hearing the noise from neighboring properties, traffic noises, or other bothersome conditions. With the potential for increasing development, particularly suburban-style patterns, this level of privacy is declining and the rural character of the Township has the potential to be altered. Open lawns and reduced vegetation make homes appear closer together, limit the level of privacy afforded to neighbors, and take away from the lifestyle that the residents of Long



Lake Township seek to protect. Residents seek development that will not detract from the character of the Township and protects the Township's significant environmental assets.

To achieve this goal, the following strategies should be implemented:

- Consider adjacent land uses when new development proposals are reviewed to ensure that new developments are compatible with other surrounding land uses, particularly agricultural uses.
- Keep residents informed of land use issues in the Township to ensure that residents have the option to comment on land use changes in the Township.
- Explore the possibility of implementing local subdivision review and zoning administration in the Township.
- Encourage stronger communication ties between the Township and the County to reduce land use decision conflicts between the County and Township.
- Work with neighboring townships on land uses issues and other common issues to reduce conflicts and promote smarter growth, environmental protection, and agricultural preservation.
- Develop screening and buffering standards, possibly as an overlay zone, to reduce or prevent conflicts between neighboring properties.

Goal 7: All properties in the Township should maintain a basic level of appearance this is neat and non-offensive.

Excessive trash, debris and junk vehicles in view on properties within the Township are visually unappealing, depress property values, pose a public health threat, and takes away neighboring property owner's rights to the full market value of their property. It is important that a community take pride in the appearance of their community. Informing residents of how to dispose of appliances, automobiles, and other trash is a step toward resolving the issue.

To achieve this goal, the following strategies should be implemented:

- Limit the accumulation of trash and other refuse on properties in the Township.
- Create and enforce an ordinance that regulates the appearance of property and focuses on inoperable automobiles, junk piles, and health hazards but does not inhibit operable farm machinery and supplies.
- Create fence and vegetative screening requirements for some uses that may be nuisances to neighbors.
- Set up an annual or semi-annual clean up day in conjunction with community groups to dispose of garbage and items for recycling.
- Inform residents on how to anonymously report visual and other nuisance violations

Goal 8: The Township government should work to keep roads adequately maintained and to make financially sound decisions that do not lead to unplanned tax increases for road maintenance of other services.

Increasing property taxes are becoming a greater and greater burden on Township residents. The Long Lake Township government will face increasing demands for public services, particularly road construction and maintenance, as the population grows and residential development occurs. In an age of increasing demands on the government, it may become difficult for the Township to obtain resources to



meet all obligations. While tax increases may be necessary to accommodate some of the increased demand, proper long-term planning and budgeting may forestall increases in property taxes. Controlling road costs is a major step toward keeping taxes low.

To achieve this goal, the following strategies should be implemented:

- Require developers to build roads that meet Township standards before the Township accepts the road and begins any maintenance and for developers to bond the road to ensure that all construction is completed.
- Create an inventory of roads, the type of road, the road capacity, and the condition of the road to create a road plan for maintenance and upgrading.
- Encourage new development proposals to utilize existing roads.
- Post signs on roads that display the weight capacity to reduce damage on roads that are unable to handle larger trucks and vehicles.
- Enforce current road restrictions to reduce wear and tear on Township roads.
- Encourage residents to report road problems to Township supervisors.
- Perform a cost-benefit analysis on new developments to ensure that the Township is not taking on a financial burden that it is not equipped to handle.
- Develop a newsletter and/or website to keep residents informed of Township finances and financial decisions.

Goal 9: Explore the opportunities for residents to access and use non-motorized and motorized trails for recreational purposes.

Providing trails for motorized and non-motorized trail users is an important part of offering a balanced set of recreational opportunities and contributes to an integrated community. As traffic increases on major roads, it is becoming more and more difficult for Township residents to safely walk along existing roadways. State laws also restrict ATV use on public roadways, which can make it difficult to use those types of motorized vehicle. Township residents seek to provide walking and motorized trail connections throughout the Township to protect resident's safety and to offer recreational opportunities.

To achieve this goal, the following strategies should be implemented:

- Coordinate and partner with existing snowmobile/ATV clubs for education on motorized trail use rules and respect for private property
- Inventory and create a map of trails, roads, and access points for motorized and non-motorized trail users.
- Encourage green space in new developments that could be connected to a trail system.

Goal 10: The Township should work to preserve hunting opportunities within the Township while safeguarding Township residents.

Long Lake Township is home to wildlife habitat that residents have enjoyed for generations and value for

its hunting and recreational opportunities. Increasing demand for residential development is fragmenting and destroying animal habitat, which reduces hunting opportunities as habitats become smaller and houses and people become too close to safely hunt game. Residents seek to protect environmental assets and protect residential areas from possible harm resulting from hunting.

To achieve this goal, the following strategies should be implemented:

- Create a buffer around residential areas to preserve hunting areas and to protect residents.
- Explore the use of land trusts, transferring development rights (TDR), and other tools to protect undeveloped land for hunting.
- Create a map showing public land that can be used for hunting, which may include private property when the property owner agrees.
- Form alliances with conservation groups to educate hunters on hunting laws and where to hunt.

Goal 11: Protect individual property rights while preserving the Community's vision for the Township. Ensure that any regulations created from the Comprehensive Plan are fairly applied to all residents and meet the goals of the Comprehensive Plan.

Residents of the Township value their individual property rights, but recognize the need to have regulations to ensure that environmental assets are protected, property values do not decline, the rural character of the Township is preserved, and property uses do not conflict with one another. Furthermore, the residents want to be treated fairly in the land use regulation process and do not want certain property owners or developers to receive preferential treatment because of personal connections, money, or other reasons. Land use regulations should not stray from the ideas and goals set forth in the Comprehensive Plan developed by the residents.

To achieve this goal, the following strategy should be implemented:

- Keep property owners informed of development proposals so that property owners have the opportunity to express their concern.
- Be consistent in the decision-making process in terms of creating and enforcing land use regulations.
- Inform residents about land use and nuisance regulations.
- Use buildable lot area instead of total lot area when evaluating subdivisions to ensure that any new lots have sufficient space for construction without special permits.
- Be consistent with the future land use map when the Township and County evaluate development proposals.

Goal 12: Work to establish better communication between the Crow Wing County government and the Township government to ensure that the Township's concerns are addressed in future developments.

Currently, Crow Wing County administers planning and zoning for the Township, and residents do not always agree with decisions made by the County staff. The residents of Long Lake Township would like to have more control over land use decisions and development patterns in their community in order to preserve their way of life. An open line of communication between the Township and the County needs to be established in order to ensure that land use decisions meet the goals of the Comprehensive Plan.

Crow Wing County and the Township need more effective communication on matters of planning and zoning.

To achieve this goal, the following strategies should be implemented:

- Work to get the County to adopt the Long Lake Township Comprehensive Plan as an official part of the Crow Wing County Comprehensive Plan.
- Increase the notifying radius for public hearings to compensate for the larger lots in rural areas to ensure that a sufficient number of residents are notified of land use public hearings.
- Keep the Comprehensive Plan updated in a timely manner to ensure that the Plan is addressing pertinent Township needs.
- Request a visit from County personnel on a periodic basis to inform local residents on changes at the County and other information that affects Long Lake Township.
- Send a representative of the Township to County meetings as needed to ensure a continued Township influence on decisions made by the County.
- Encourage changes to the County decision-making process to ensure that decisions are fair and consistent for all residents.
- Work with Crow Wing County to enforce existing zoning regulations.
- Provide constructive feedback to the County on land use decisions, regulations, and enforcement on a timely basis.

SECTION V. Future Land Use

What is a future land use map?

A future land use map is intended to guide the decision-making process for the Township on development and subdivision proposals. While Townships can administer zoning to some extent, a future land use map is not a zoning map. Crow Wing County ordinances and zones remain in effect. The future land use map shows how the community prefers to see the Township developed in the future.

A primary function of the future land use map is to help the Town Board make recommendations to approve or deny rezoning proposals. Rezoning requests are often made in order to replace the existing zoning classification with a new zoning classification that allows smaller lot sizes. Smaller lot sizes allow subdivisions with more lots and may lead to a development style that is not compatible with the rural character of the Township.

How was the future land use map created?

The Future Land Use Map was created using the following criteria:

- Preservation of natural resources and habitats
- Present ownership, development, and lot size
- Shoreland development
- Location of lakes and wetlands
- Preservation of agricultural uses
- Protecting the rural character of the Township
- Existing roads
- Planned growth areas from Brainerd

Township residents used the above information to create a future land use map during the comprehensive planning process. Each criterion played a factor in determining where higher and lower density development should or should not occur. Residents placed a strong focus on protecting the natural environment, agricultural, and keeping the Township as rural as possible.

Land Use Categories

Rural Preservation/Agriculture (RPA) – Promotes sustainable agriculture practices, spacious lots, fewer housing units, protecting open space. Typically 20 to 40 acre minimum lot size.

Rural Transition (RT) – Areas near a municipality that have access to existing infrastructure and have the potential for higher housing density, may be suitable for cluster style housing to preserve larger tracts of open space. Lot sizes between 2.5 and five acres, possibly higher density with cluster style housing. This land use category is a primary tool for reducing annexation by providing housing options that reduce the desire to request annexation.

Neighborhood Residential (NR) – This category is for pre-existing lots that are already less than five acres and are unlikely to be subdivided further. This classification can be compatible with cluster housing style developments.

Medium Residential (MR) – Less intensive than Neighborhood Residential but more intensive than agriculture uses, particularly in terms of housing. This district would take advantage of the existing road infrastructure by following higher quality roads. Lot sizes would be ten acres, though if cluster housing is part of the plan, it could have a slightly higher density in certain areas to preserve open space and agricultural lands.

Shoreline Residential (SR) – Lands along the shoreline are already subject to minimum state regulations for lot sizes and density. This category includes all lots along South Long Lake.

Open Space (OS) – Wetlands and other unbuildable areas are included in this category.

Green Space (GS) – Publicly managed or publicly owned lands that are not open for development.

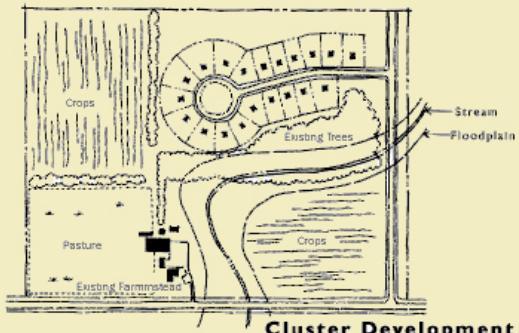
What is cluster development?

The basic premise of cluster development is to group new homes onto part of a property to be developed and preserve the rest of the property as open space. The clustering of the homes has two results: building more homes than would otherwise be permitted and protecting natural resources. Typically, subdivision design divides up all the development property so that the entire property is designated as private residential parcels or as roadway, regardless of the natural resources, topography, or surrounding development in the area. This technique, which is standard in most counties and cities, leads to habitat fragmentation and can contribute to the suburban look.

However, cluster development would place new houses on smaller lots that typically take up no more than half of the property while designating the remainder of the property as public open space through conservation easements or land trusts. A conservation easement or land trust would forever restrict development on the remaining open space. Since houses are built at a higher density, additional buffering and screening requirements would be needed to increase the visual appeal from roadways and neighboring properties.



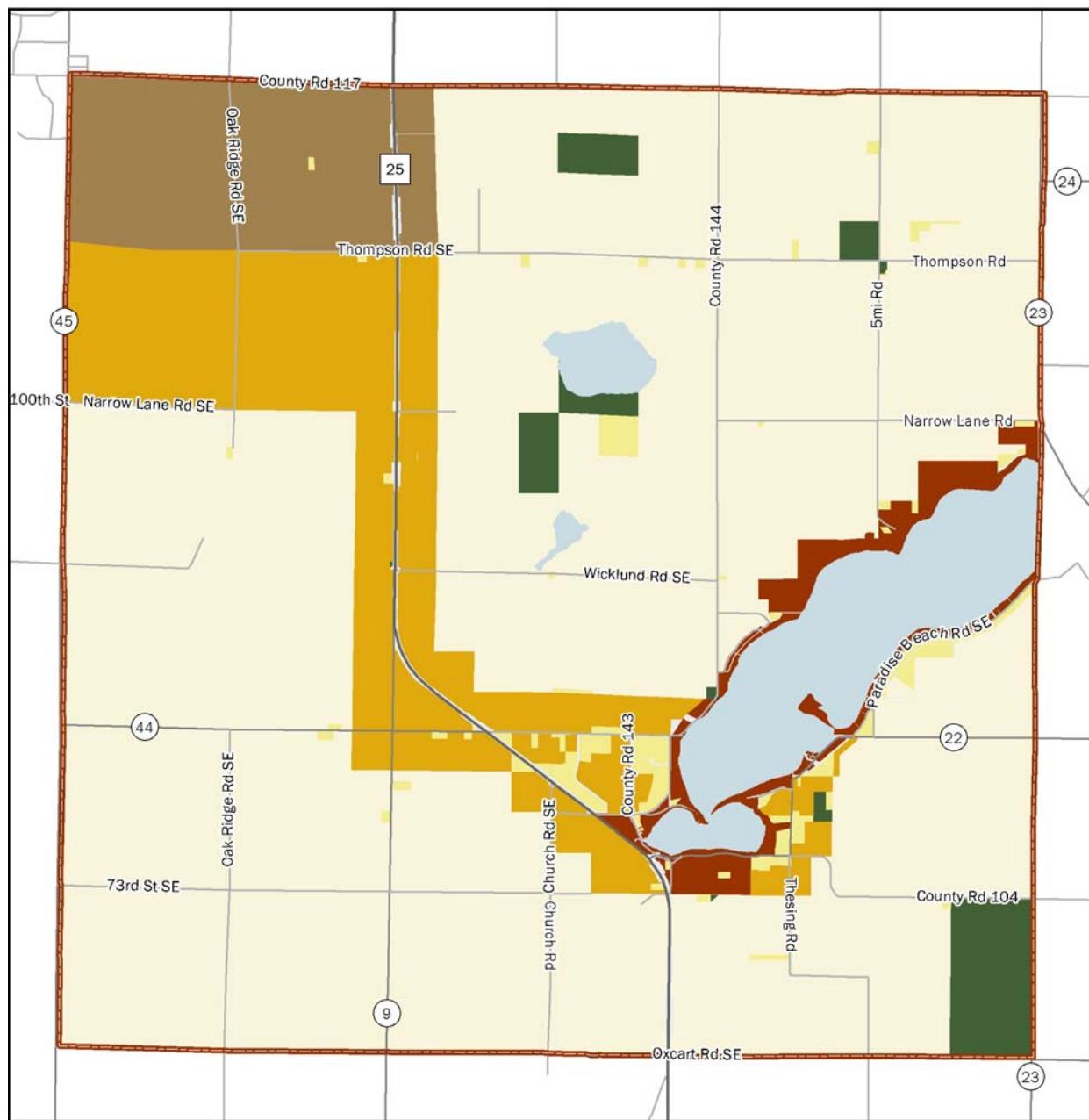
Conventional Development



Cluster Development

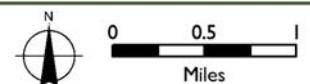


Future Land Use



Legend

Rural Transition	Shoreline Residential
Medium Residential	Green Space
Neighborhood Residential	Water Resource
Rural Preservation	ROW



COMMUNITY GROWTH INSTITUTE

Prepared July 2005
Data sources: Minnesota DNR, Minnesota Department of Transportation

SECTION V. Implementation

Compared to municipalities, townships are somewhat limited in their ability to control land use within its boundaries. Despite these limitations, there are techniques that Long Lake Township can use to influence, leverage change, and affect the decision-making process at the County, either directly or indirectly. These options vary in their cost and responsibility and should be thoughtfully considered before moving forward.

The Township recognizes that this Comprehensive Plan relies on implementation. It will take involvement and dedication from the Town Board and residents to implement this plan. Parts of the plan will be implemented in the short-term while other parts will take time and effort to fully implement.

One of the products of a comprehensive planning process is the creation of social capital. Social capital is a product of residents' excitement, enthusiasm, and the group desire to make the Township a better place. Moving forward with implementation sooner rather than later will keep residents involved and take advantage of the social capital that was created.

There are four general phases for implementing this plan. Phases one and two should be implemented in tandem and as soon as possible to keep the planning and implementing process moving forward. While all phases are important, phase two directs implementation of the Comprehensive Plan within the Township and is a continuing process regardless of the results of the other phases. Phase three should be thoroughly evaluated and attempted before moving into phase four.

Phase 1: Work with Crow Wing County to adopt and implement the Plan.

The simplest approach for the Township to implement their Comprehensive Plan is for the Township to have Crow Wing County adopt and administer the plan as part of their planning processes. Crow Wing County's Comprehensive Plan encourages townships to develop comprehensive plans for inclusion at the County level. Furthermore, the County has requested a future land use map from the township and has expressed a willingness to work to implement it. This is the easiest and smoothest approach.

To implement this approach, the Town Board needs to adopt the plan, which can then be forwarded to Crow Wing County for adoption. Once Crow Wing County accepts the plan, it becomes an official part of the County's Plan. In order for the County to comply with the Township's Future Land Use Map, the Township will need to develop some ordinances to address the land use needs of the Township. This may include developing an overlay zoning ordinance for the County. The overlay zone approach would allow the County to approve separate standards for the Township and apply them only to Long Lake Township. Ideally, the County would implement and administer the overlay zoning.

The Township Planning Board would continue to operate as it currently is, giving recommendations to the County on land use requests. Since the underlying regulations would more closely match the Township's objectives, recommendations could be supported with findings of fact based on the laws that are in place. This should streamline the review process and make those reviews more effective.

Although this approach is simple on the surface, there may be some difficulties. While the County has strongly indicated that they will accept comprehensive plans and recommendations from township governments, the County is still under no obligation to follow the plan or the Township's

recommendations. Moreover, getting an ordinance approved by the County, even an overlay zone that would apply only to the Township, may be politically difficult.

Unfortunately, Crow wing County does not have a history of continuity in their Planning Department. Since much of this phase of implementation is contingent on a good-faith relationship between the County and the Township, there is some risk that changes at the County could change how it deals with township issues.

Finally, there are responsibilities by the Township – most notably the responsibility to provide legal and defensible recommendations – that will take time and resources to uphold. Nevertheless, the direction of the County is changing and there have been positive developments regarding other township comprehensive plans in the County.

Phase 2: Implement the Comprehensive Plan within the Township.

A comprehensive plan relies on implementation to be successful. Once the Comprehensive Plan is approved by the Township, the next step is to review the goals in the plan and set priorities amongst the goals and strategies. The costs and benefits of each goal vary; however, each goal is important toward maintaining the rural character of the Township and providing a high quality of life within the Township. It is imperative that implementation begin soon after adoption to encourage residents to stay involved during the implementation process—this is using the social capital that was built during the comprehensive planning process.

Either the Town Board should direct implementation or an appointed planning committee should be created to guide the implementation of the Plan. Once a long term planning and implementation committee is created, that committee would set priorities and direct the overall implementation of the Comprehensive Plan. While many of the goals and strategies are ongoing, the committee should select a goal that can be at least partially completed in a short period of time. To keep people involved, it is important to show results both in the short-term and in the long-term.

Finally, a comprehensive plan is not static document. This Comprehensive Plan will require periodic review to make certain that the goals and the strategies are achieving the overall vision of the Township. As conditions in the Township change, the plan must be evaluated. This phase lasts the life of the plan and will ultimately guide a full update of the plan in five or ten years.

Phase 3: Implement and administer zoning and subdivision ordinances at the Township level.

If the first phase proves ineffective or otherwise undoable, Long Lake Township can decide to administer land use ordinances, subdivision regulations, or both within the Township. One of the reasons for creating this Comprehensive Plan is to form the basis for a Future Land Use Map and, if necessary, to develop land use and subdivision ordinances. To administer ordinances locally, the Township would need to develop land use and subdivision ordinances, which may be the same as the counties, and create the capacity to process and review applications.

Although the Township has a lot of rights and authority under this scenario, it also has a lot of responsibilities as well. Developing and administering an ordinance can be difficult. The Township would become responsible for any legal ramifications of land use decisions and would have to be prepared to defend its actions, in court if necessary. The Township would also bear the costs of enforcement. While

permit revenue would offset some of the costs, this phase would likely require at least some Township expenditures.

Subdivisions regulations are a logical first step since subdivisions are often a point of controversy in townships. Land Use regulations offer more control at the Township level; however, they increase the responsibility of the Township in evaluation land use applications.

Phase 3A – Subdivision Regulations

The State allows townships to implement subdivision ordinances either in combination with zoning ordinances or as a separate review process. Many townships have fewer issues with standard building permits, variances, and conditional use permits and more issues with land subdivisions that create higher densities. This step would likely require the formation of a planning commission and a greater responsibility of local government to review applications and provide legally defensible decisions.

If the Township chooses, subdivision ordinances can be adopted by the Township that would require applicants to have the Township review any new subdivisions before being filed at the County. The Township would be able to charge a fee to cover the cost of review and could use the existing County Subdivision Ordinances, a new ordinance, or a hybrid of the County ordinances with changes to suit the Township. The subdivision ordinance for the Township could not be any less restrictive than the existing County ordinance.

Reviewing subdivisions within the Township would move the Township toward dealing with some of the most pressing land use issues. There is less controversy on lot widths and similar land use controls than there is on creating new lots, which local subdivision ordinances could regulate.

Phase 3B – Land Use Ordinances

State Statute also allows townships to administer land use ordinances locally so long as the ordinance is no less restrictive than the county ordinances. Land Use Ordinances control setbacks, impervious surface coverage limits, lot sizes, and other lot use controls. The Township would be able to charge a fee for reviewing applications similar to the County; however the Township would need to create administration tools (applications, a review process, legal notifications, etc.) in order to administer the regulations.

Land use ordinances would guide land use permits, variances, and conditional use permits. Like subdivision ordinances, this step would likely require the formation of a planning commission and lead to a greater responsibility for the local government to review applications and provide legally defensible decisions. The Township could adopt the existing County Land Use Ordinance, a new ordinance that is at least as restrictive as the County Ordinance, or a hybrid of the County Ordinance and an ordinance that better suits the Township's needs.

A land use ordinance that is entirely different from the County may be politically and legally challenging; however, it is certainly within the Township's right to institute local planning and zoning controls. Before moving forward with land use ordinances, the Township would need to evaluate the capacity, the costs, and the benefits of the Township to review and process applications.

Phase 4: Incorporate into a municipality.

The most dramatic, and most effective, step for the Township to take would be to incorporate into a municipality. However, this is not a simple process and does pose some risk. According to the

Minnesota Association of Townships, Long Lake Township could, by State order, be incorporated into Brainerd if it chose to try and incorporate. Even if Long Lake Township were allowed to incorporate into its own city, the responsibilities of running a relatively fast-growing municipality are numerous.

This forth phase should only be considered where phases one and three have been shown to be absolutely ineffective. If incorporation is seriously contemplated, the Township should study the ramifications in depth before beginning the process.



APPENDIX A. Additional Planning Maps

A series of maps was created at the beginning of the Long Lake Township planning process so that planning participants could have a better understanding of the Township's land and characteristics. These maps assisted in developing many of the goals and strategies contained in the Plan and also guided the development of the Future Land Use Map and accompanying policies. Several of the planning maps have been included in the body of this document where they are referenced. All other maps used in the planning process are included in this appendix.

Employment by Industry

- Aerial Photo
- Topography
- Presettlement Vegetation
- Soils
- Geomorphology
- Groundwater Contamination Potential
- Septic Suitability



Aerial Photo



Legend

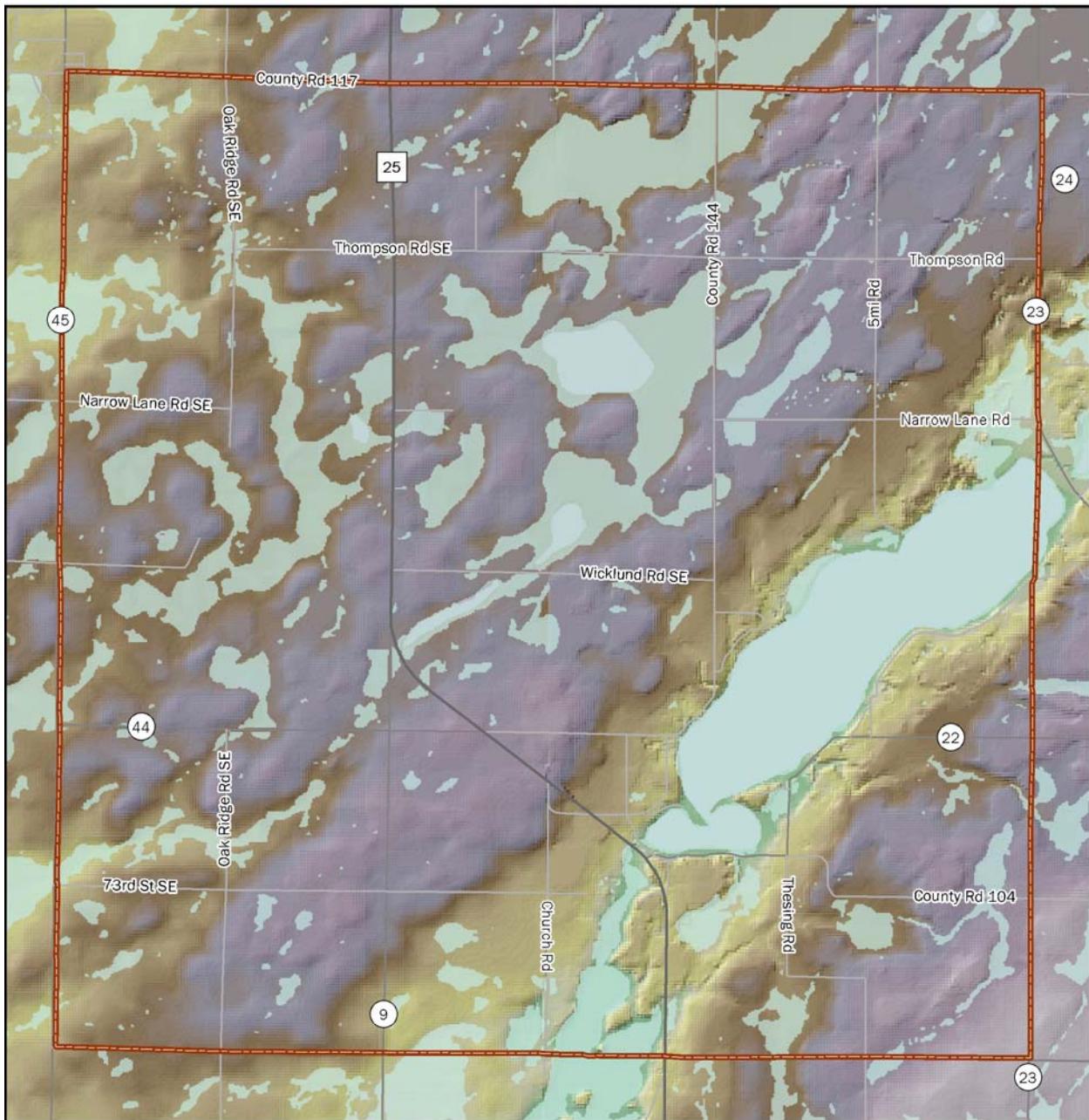
- Lakes
- Wetlands
- Township Boundary



COMMUNITY GROWTH
INSTITUTE

Prepared March 2005
Data sources: Minnesota DNR, Minnesota
Department of Transportation

Topography



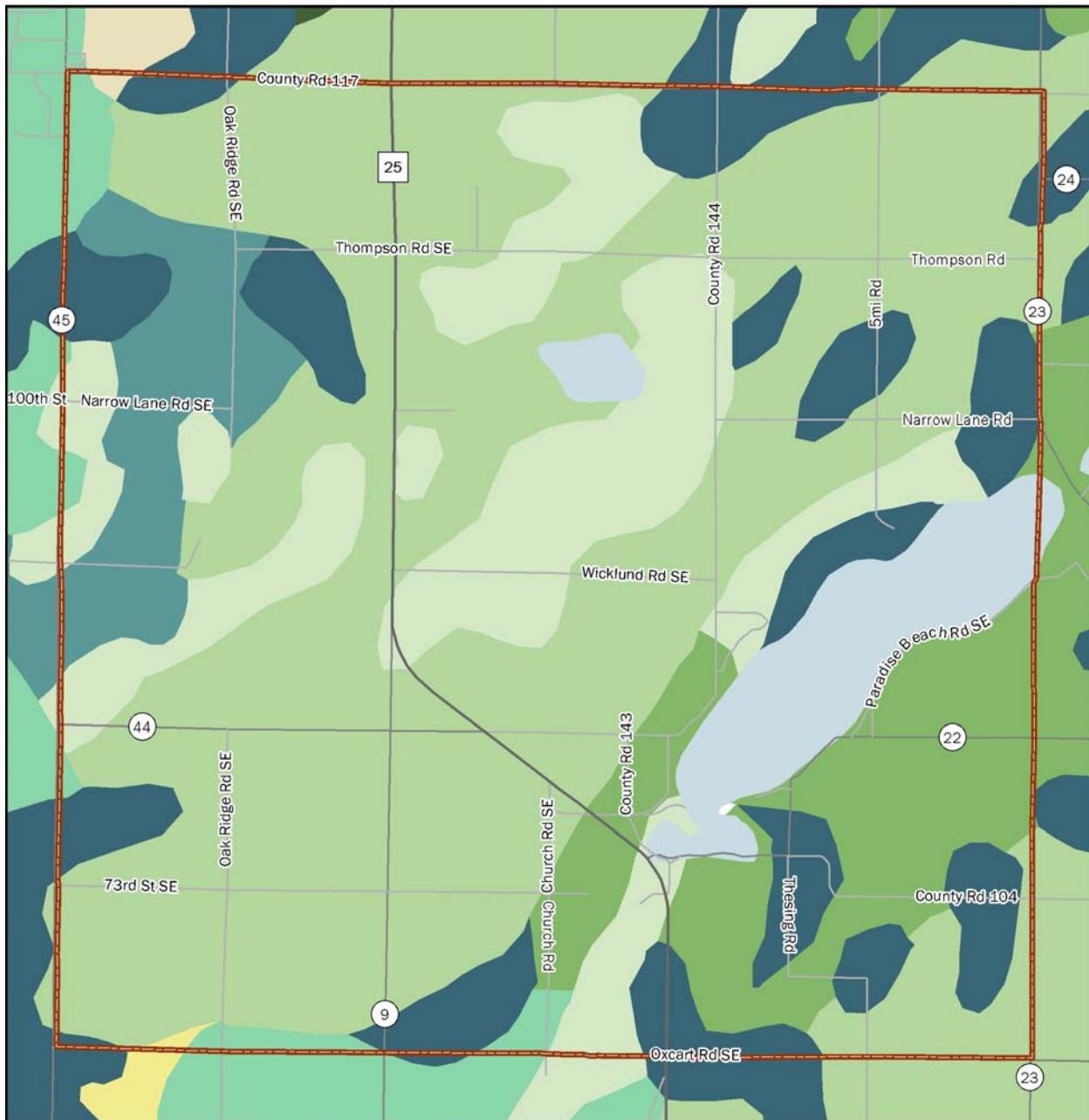
Legend

Elevation	Lakes, rivers, and streams
High : 1487	
Low : 900	Wetlands



Prepared March 2005
Data sources: Minnesota DNR, Mn/DOT,
National Wetlands Inventory

Presettlement Vegetation



Legend

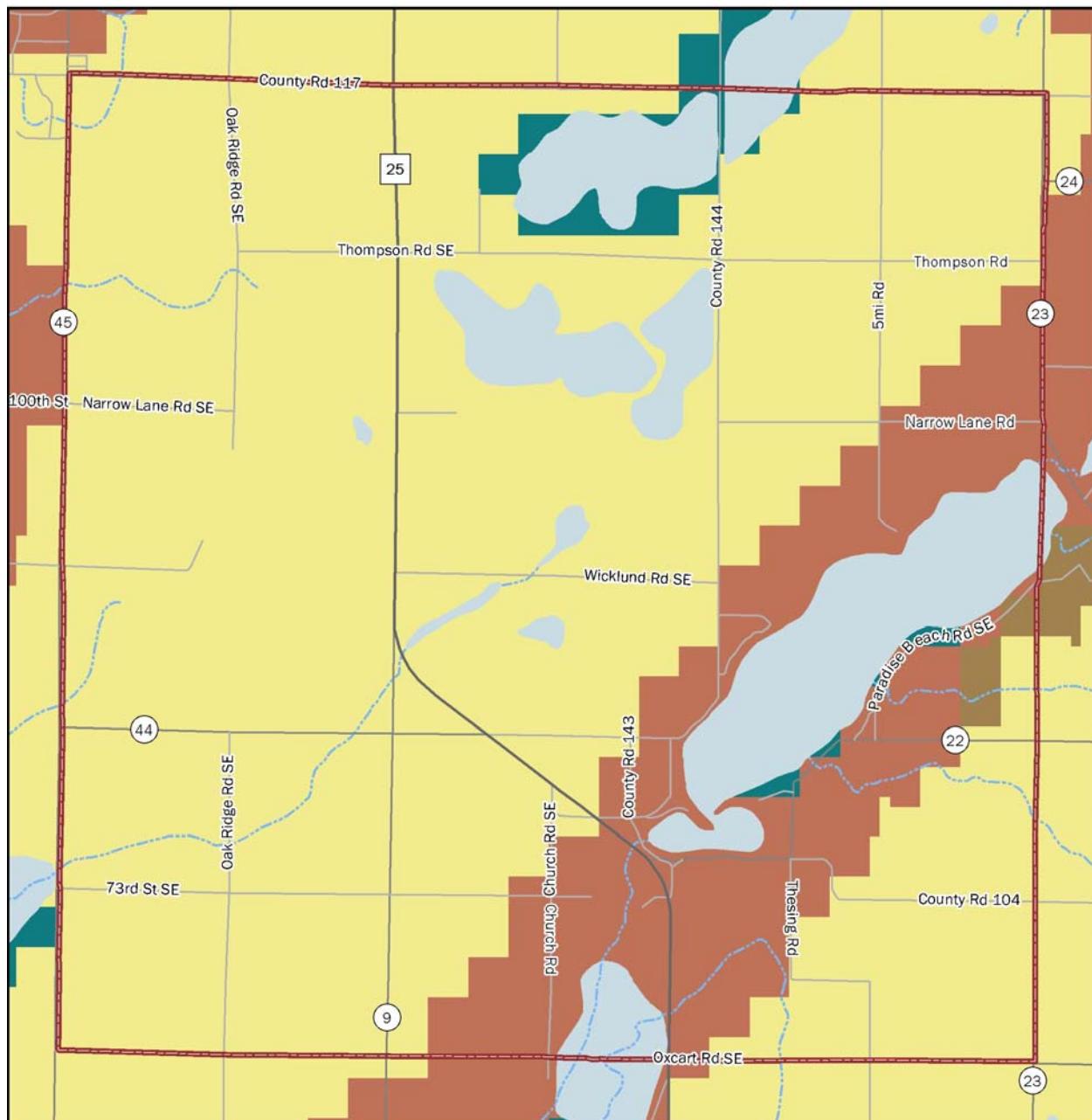
Mixed White Pine and Red Pine	Aspen-Oak Land
Jack Pine Barrens and Openings	Prairie
Mixed Hardwood and Pine	Wet Prairie
Big Woods	Lakes (open water)
Aspen-Birch (trending to Conifers)	Conifer Bogs and Swamps



Prepared March 2005
Data sources: Minnesota Department of Natural Resources, Mn/DOT



Soil Layers



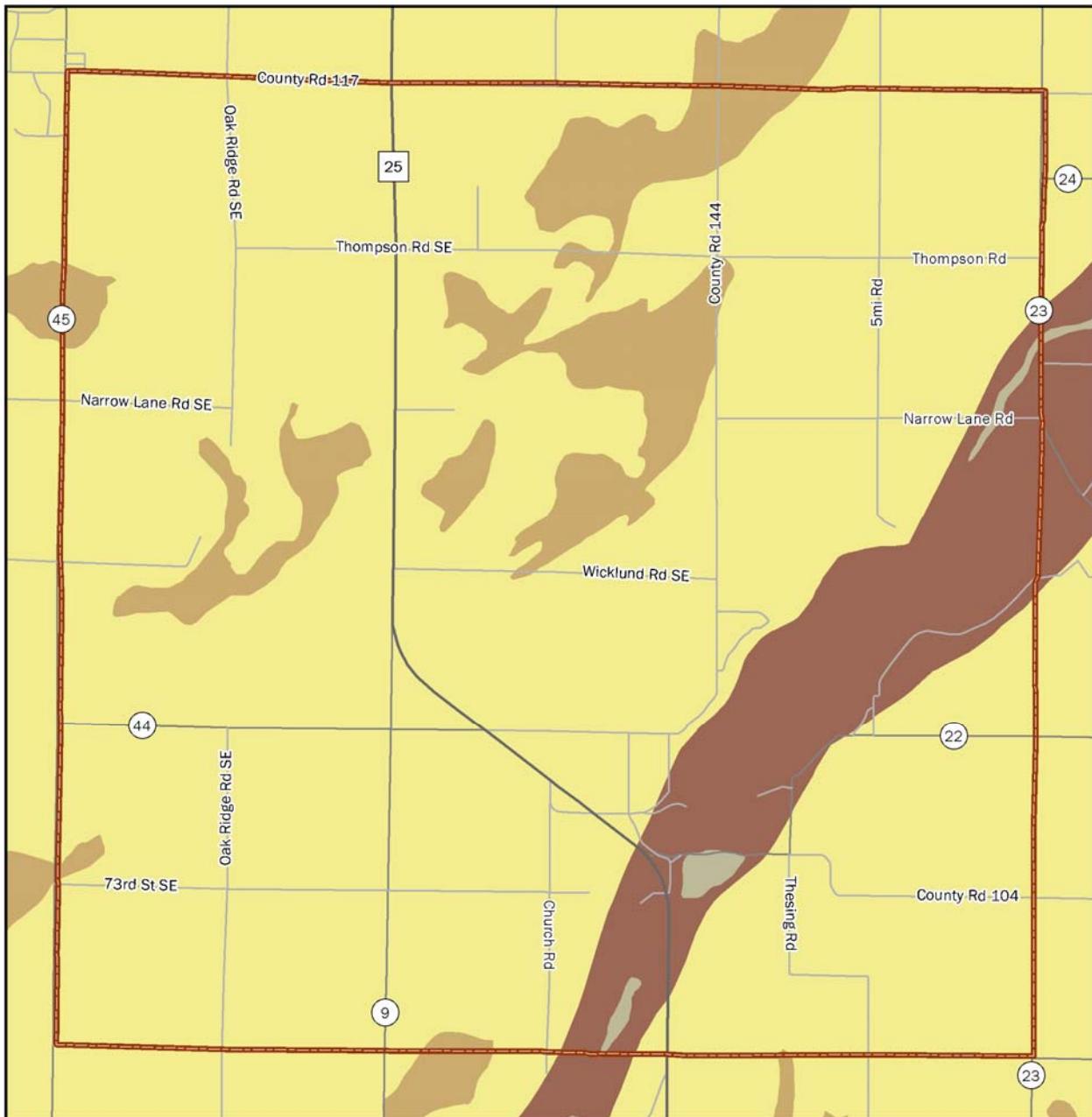
Legend

- Loam over loam
- Loam over sand
- Sand over sand
- Water or wetlands



Prepared March 2005
Data sources: University of Minnesota,
Minnesota Department of Transportation

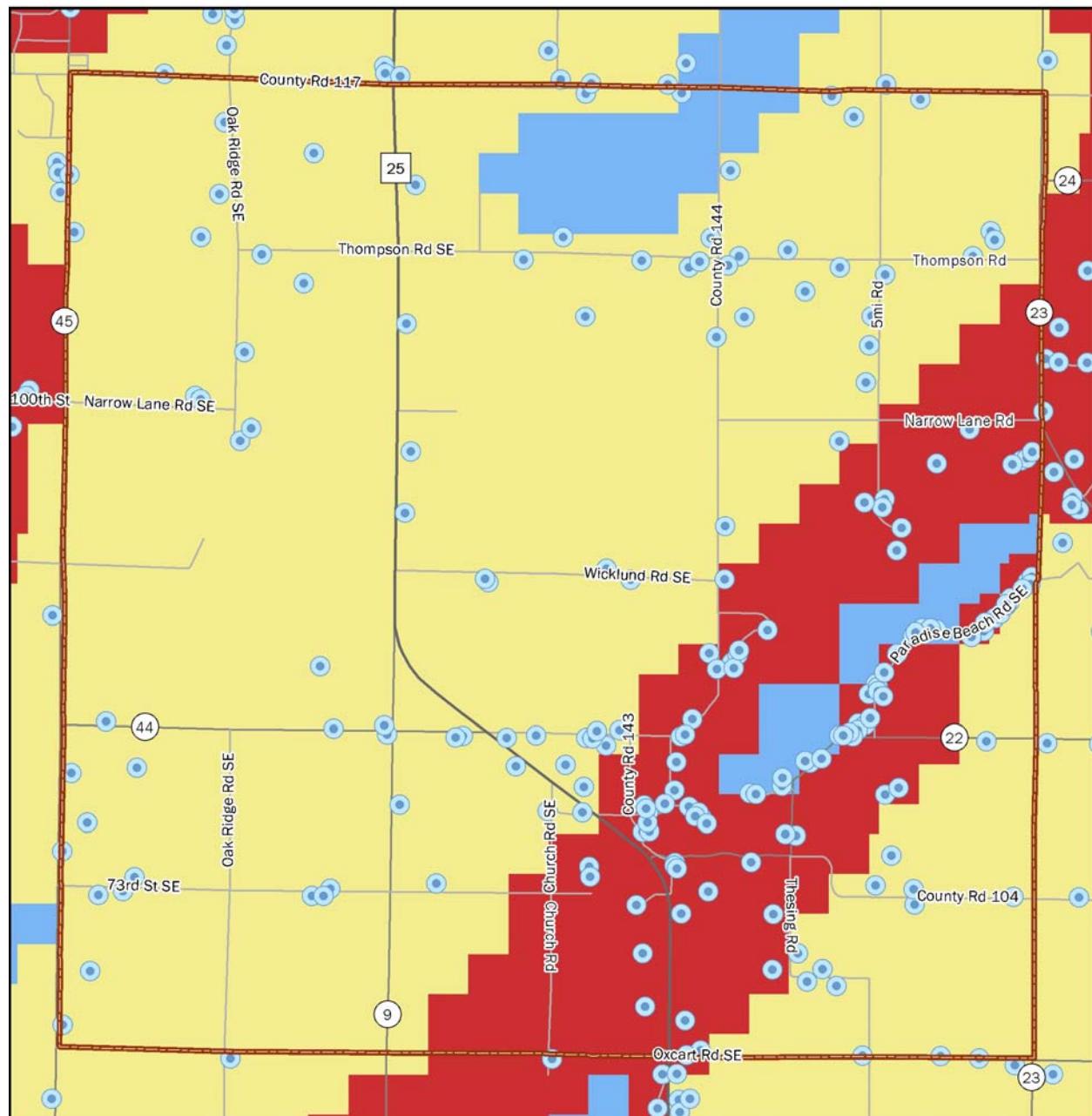
Geomorphology



Prepared March 2005
Data sources: Minnesota DNR, Minnesota
Department of Transportation



Groundwater Contamination Potential



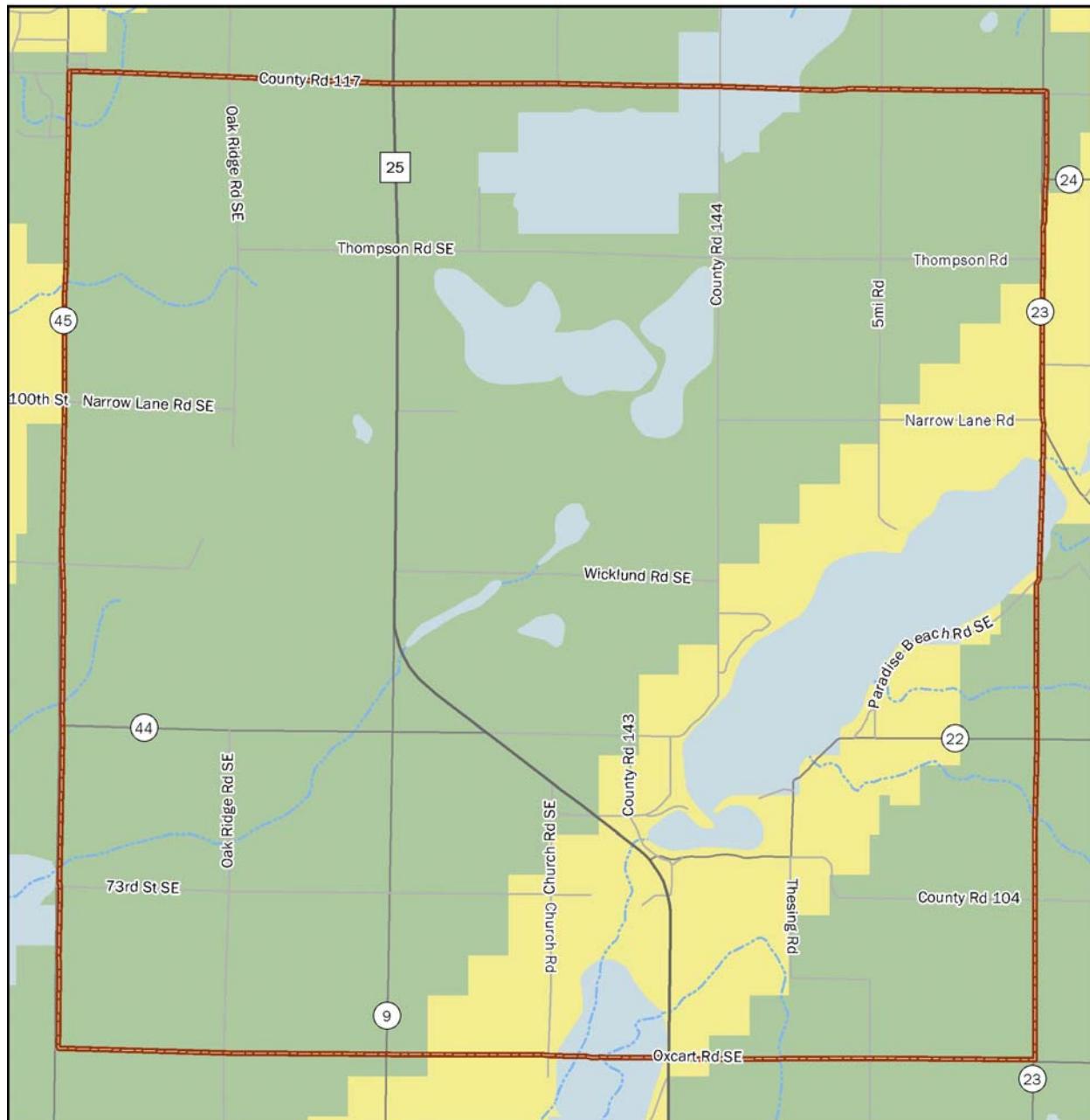
Legend

- Low
- Moderate
- High
- Water/wetlands, marsh, peat, alluvial
- Wells



Prepared March 2005
Data sources: University of Minnesota,
Minnesota Department of Transportation

Septic Suitability



Legend

- Suitable
- Somewhat Suitable
- Severely Limited
- Water and Wetlands



Prepared March 2005
Data sources: University of Minnesota,
Minnesota Department of Transportation