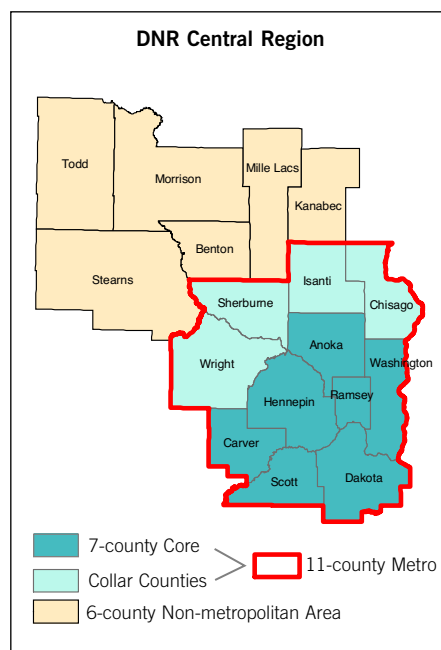


INTRODUCTION

The purpose of this research was to determine through GIS mapping where sensitive natural areas still remained in the Minnesota Department of Natural Resources (DNR) Central Region and to assess how expected growth patterns in the region might affect these areas. Specifically, the intent was to identify areas where natural resources might be most at risk from projected growth and development in order to assist local, regional and state decision-makers in understanding the impending tradeoffs between regional growth and natural resource conservation.

DNR's Central Region contains a variety of different types of communities, with very different sorts of pressures on sensitive natural areas. To better understand some of these differences, the region was broken down into smaller areas for independent analysis. Five “regions” are discussed in this report: (1) the full 17-county DNR Central Region; (2) the 11-county Twin Cities metropolitan area; (3) the 7-county core of the metropolitan area; (4) the four “collar” counties adjacent to the 7-county core; and (5) the 6-county non-metropolitan area.



GROWTH PATTERNS IN DNR'S 17-COUNTY CENTRAL REGION

The 17-county study area is home to 3.2 million people, nearly two-thirds of the state's population, and contains the state's primary growth engine: the Twin Cities metropolitan area economy. The 11-county metropolitan area is projected to grow significantly by 2030, with the seven core metropolitan counties continuing to receive the majority of the state's new residents and jobs.

Like most metropolitan areas in the U.S., the Twin Cities metropolitan area has seen significant decentralization of population and jobs during recent decades. This pattern has not been as pronounced as in many large metropolitan areas due at least, in part, to the existence of relatively strong (compared to other metropolitan areas) regional institutions like the Metropolitan Council and the Twin Cities Fiscal Disparities Program. ¹

However, the region has been growing more rapidly than any other metropolitan area in the upper Midwest and current projections show the metropolitan area adding more than one million people in the first three decades of the 21st century.

The non-metropolitan portion of the 17-county region has grown much less rapidly than the Twin Cities metropolitan area. Like rural areas across the country, many parts of the 6-county non-metropolitan region have endured significant population declines.

The attraction of natural amenities, however, has drawn retirement and resort-driven growth to the 6-county non-metropolitan area, putting increasing pressures on sensitive natural areas. Continued income growth in the metropolitan area, and the increasing share of the retirement-aged population, will likely fuel continuing demand for land and housing in the non-metropolitan part of Central Region.

Population Growth

The 7-county metropolitan core: The metropolitan area's core is the most densely settled area in the state. In 1990, 86 percent of the population of the 17-county study area lived in the core counties and 78 percent of the growth in the 1990's occurred in this area.

While both of the core cities of Minneapolis and Saint Paul gained population overall between 1990 and 2000, the two cities grew at a substantially slower rate than the 7-county region as a whole—3.9 percent for Minneapolis and 5.4 percent for Saint Paul, compared with a 7-county growth rate of 15.4 percent.

The region's inner-ring suburbs also saw either very modest growth or decline. Growth was strongest in outer ring suburban communities, such as Woodbury and Lakeville, extending to the outer edges of the 7-county core area (Map 1).

More recent population estimates show strong, continuing growth at the perimeter of the 7-county area. According to estimates by the Metropolitan Council, the 7-county region grew by 30,045 people between 2003 and 2004 and almost all of this growth occurred in developing suburbs (25,241 new residents) and exurban areas (4,747 new residents).² Between 2000 and 2004, the 10 cities adding the most population were all middle-ring and outer suburbs—Shakopee, Maple Grove, Blaine, Lakeville, Eden Prairie, Prior Lake, Plymouth, Farmington, Chaska and Woodbury. These 10 cities alone added a total of 54,303 new residents over the four-year time period.

Growth patterns can be seen very clearly in Maps 2 and 3, which show housing subdivisions built between 1998 and 2005 in the 11-county metropolitan area. Map 2 shows the location and size of individual developments and Map 3 sums the numbers of new housing units to the municipal level.

Collar and non-metropolitan counties: All of the metropolitan collar counties—Chisago, Isanti, Sherburne and Wright—grew very quickly during the 1990's. Although not as densely settled as the 7-county metropolitan core, these counties continue to grow. In 1990, the collar counties were home to just six percent of the population in the 11-county metropolitan area; during the 1990's they captured 15 percent of the entire region's growth. Most of Sherburne County, for instance, grew by more than three percent per year during the 10-year period.

Moving beyond the metropolitan area into the non-metropolitan area, rapid growth occurred in northern Mille Lacs County and northwestern Kanabec County. Mille Lacs County was unique in the study area in that all census tracts in that county experienced positive population growth in the 1990's.

Much of the rest of the 6-county non-metropolitan region experienced population losses, especially large portions of Todd, Morrison and Stearns counties. However, just northwest of the metropolitan area, St. Cloud acted as a locus of growth, with immediately adjacent tracts in Benton, Sherburne and Stearns counties showing relatively strong growth (Map 1).



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Urbanization

While the spatial pattern of population growth is an important way to track growth, it does not capture all of what is important in growth patterns. Remote sensing from satellite imagery and aerial photography provide a means for visualizing the direct effect of growth and development on the landscape.

Map 4 shows one major aspect of land use change—urbanization—in the 7-county core region over the period 1986 to 2002.³ Urbanization in this report is defined as land which is in the following uses—residential, commercial, industrial, transportation or communications. Based on satellite imagery analyzed by the Department of Forestry, University of Minnesota, the map shows how growth in population and employment consumed previously undeveloped land during the period.⁴

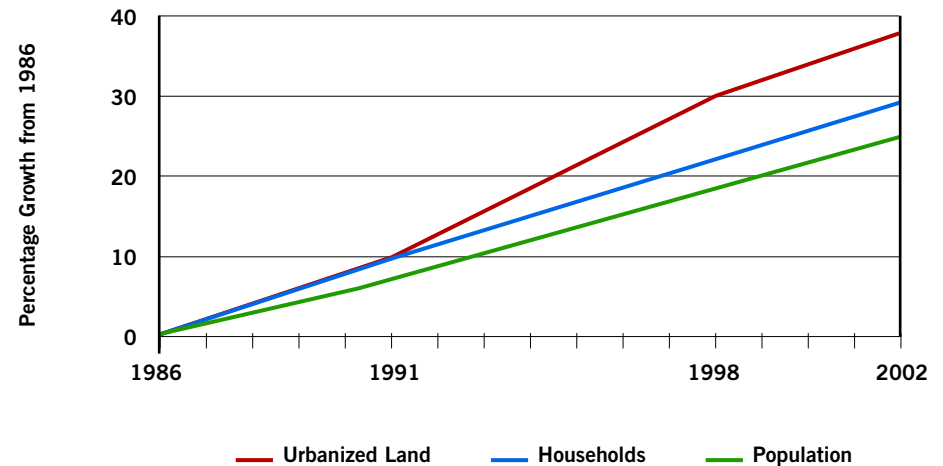
Very rapid urbanization occurred in areas immediately adjacent to previously urbanized areas (in inner and middle suburbs) as well as in locations along major roads and highways. The data show a pattern seen in most American metropolitan areas—as it has grown, the metropolitan area has become less dense, consuming (or urbanizing) land at a rate greater than population has grown.

BETWEEN 1986 AND 2002, THE GROWTH RATE IN URBANIZED LAND WAS 53 PERCENT GREATER THAN THE POPULATION GROWTH RATE.

This is true even in the most densely-settled parts of the region. Between 1986 and 2002, the amount of urbanized land in the seven-county metropolitan core grew from 450,000 to 625,000 acres, or by 38 percent. During the same period, population grew by just 29 percent—the growth rate in urbanized land was 53 percent greater than the population growth rate (Figure 1).

Current population projections show the 7-county region growing by 33 percent between 2003 and 2030. If this growth urbanizes land at the same rate as the recent past then the amount of urbanized land in the 7-county region will grow by another 50 percent during that period, consuming hundreds of thousands of acres of previously undeveloped land.

**Figure 1: Growth in Urbanized Land, Population, and Households
7-county Core Area: 1986-2002**



Sources: Remote Sensing and Geospatial Analysis Laboratory, University of Minnesota, U.S. Census Bureau.

Jobs

Historically, jobs have tended to follow people to the suburbs. As areas became suburbanized, firms followed to be nearer their workforces and customers. In addition, many of the same factors that draw households to the suburbs directly affect businesses as well—such as cheaper land and improving access as a result of substantial transportation investments like roads and highways.

However, not only do jobs follow people, but people follow jobs. The spread of significant numbers of jobs to middle and outer suburbs enables many workers to live further and further from the core of the region while still remaining within reasonable commutes from their jobs. In addition, for a select group of workers, technological advances in communications, such as the internet and wireless communications, have made telecommuting possible.

All of these factors have made living at the edges of the metropolitan area much more practical. In many cases these are areas that still retain natural habitats with significant ecological value and little of the physical infrastructure (such as sewers and waste water treatment facilities) needed to support low-impact development.

A trend toward decentralization is clearly evident in the job and job change data for the 17-county region. Like population, jobs still tend to cluster in the core of the metropolitan area and in a few towns in the non-metropolitan portion of the study area, most notably St. Cloud (Map 5).

Job growth in the 7-county metropolitan area, however, has been significantly greater in middle and outer suburbs (Map 6). Growth was negative or below the regional average in the core of the metropolitan area, including both central cities of Minneapolis and Saint Paul and most of the older, inner-ring suburbs. High percentage gains in jobs between 1993 and 2003 were concentrated in growing suburban communities just inside or at the boundaries of the 7-county metropolitan area where much of the urbanization in recent years occurred.

Beyond the 7-county metropolitan area, job densities tend to be much lower. Many of these largely rural areas show significant job growth but it is from such small numbers that it represents relatively few jobs in absolute numbers. Between 1993 and 2003, 90 percent of the job growth in the 17-county area occurred in the 11-county metropolitan area and most of that was in the core seven counties.

The jobs data reinforce the conclusions from prior sections. The metropolitan area is the primary locus of growth in the 17-county region and the fastest growing areas are in its middle and outer suburbs, especially on the outskirts of the 7-county core region.



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The Increasing Reach of the Twin Cities Metropolitan Area

The prior sections show very clearly the importance of the 11-county metropolitan area in any discussion of growth pressures in central Minnesota. The metropolitan economy is the strongest growth engine in the larger region. Given that the dominant trends in the metropolitan economy involve the decentralization of jobs and people, this suggests that the influence of the core metropolitan area is spreading further out into the region.

The places where this can be seen most clearly are in the four collar counties of Chisago, Isanti, Sherburne and Wright that are adjacent to the core region. These counties, which were not added to the Census-designated “metropolitan area” in the 1970’s and 1980’s, are the fastest growing counties outside of the 7-county core and this growth is clearly being driven by the metropolitan economy.

Table 1 shows one measure—increases in the number of workers commuting from residences in the collar counties to jobs in the 7-county core—of how much more connected to the core metropolitan area the collar counties have become. The total number of workers residing in these four counties almost quadrupled between 1970 and 2000, from about 31,500 to 118,225. However, during the same time period, the number of workers living in the collar counties and working in the core seven counties increased by *more than six times*, from just 8,900 to more than 56,000. By 2000, 48 percent of the workers living in these counties commuted to jobs in the 7-county core, compared to just 28 percent in 1970.

How did this kind of change occur? Transportation improvements made a significant contribution, but another important factor was the growth of jobs in the middle and outer sections of the core seven counties. Map 6 shows this job growth in one way. Another way to see this expanding reach is by examining commuting data into job centers in Twin Cities suburbs.

Map 7 shows the distribution of job centers, which were derived using data describing commuting patterns in the metropolitan area in 1990 and 2000.⁵ Job centers were defined as areas with jobs per square mile higher than the regional average and with more than 2,500 jobs in 2000. Large clusters like those in the centers of Minneapolis and St. Paul were divided into more than one center by examining the job densities and the types of jobs.

The data indicate that there are 40 significant job clusters located near major transportation arteries within the core region. This group of job centers has remained fairly stable for a number of years. The same job clusters result if the analysis is performed on 1990 data.

Table 2 shows job and job growth data for the job centers grouped by their locations in the metropolitan core area. The groups include the central business districts, other job centers within the two central cities, inner suburban job centers, middle suburban job centers, and outer suburban job centers.⁶ Also shown are the totals for all non-clustered jobs, or jobs not in a job center.

Table 1: Integration of the Collar Counties into the Twin Cities Metropolitan Area, 1970 — 2000

County	Total Resident Workers			Resident Workers Commuting to the Core 7 Counties			Percentage of Resident Workers Commuting to the Core 7 Counties		Percentage of Resident Workers Commuting in County of Residence	
	1970	2000	% Change	1970	2000	% Change	1970	2000	1970	2000
Chisago	5,935	20,772	250	1,732	11,754	579	29	57	42	34
Isanti	5,597	16,085	187	1,611	7,319	354	29	46	56	40
Sherburne	6,037	34,084	465	1,643	14,265	768	27	42	38	32
Wright	13,921	47,284	240	3,945	22,960	482	28	49	63	43
Total	31,490	118,225	275	8,931	56,298	530	28	48	53	38

Source: U.S. Bureau of the Census.

The job center data show a pattern consistent with the decentralization evident in prior sections. Large numbers of job centers and jobs are now in the suburbs, including the vast majority of the non-clustered jobs. Job growth rates increase, on average, with distance from the core. In addition, the number of jobs not in job clusters increased much more rapidly than those in job centers—so not only are jobs decentralizing but they are also becoming less concentrated.

The rapid growth in job centers on the fringes of the 7-county metropolitan area and in non-clustered jobs opens up opportunities for individuals to live in parts of the region well beyond the current urbanized area. While it might not be practical for someone living in western Wright County to commute to the Minneapolis central business district, it might be very practical for that same person to commute to Maple Grove. Growth of job centers at the fringes of the core region allows individuals previously residing within the urbanized area to take advantage of cheaper land and housing outside of the metropolitan core without giving up employment opportunities.

Commuting data for 1990 and 2000 show how accessible residences on the fringes have become. Maps 8 and 9 show a representative suburban job center—the Fridley/Coon Rapids center—and various commute times to that job center in 1990 and 2000 (i.e., 0-20 minutes, 20-30 minutes, and 30-40 minutes). These commuter-sheds were derived using data about where commuters to the job center live and how long their commutes take.⁷ The Fridley/Coon Rapids job center had 14,500 jobs in 1990 and grew by 45 percent, to 21,000 jobs in 2000.

Map 8 shows that, in 1990, workers in this job center could live relatively far out at the edges of the metropolitan area and still have reasonable commuting times to their jobs. At that time, much of Isanti and Sherburne counties, and significant parts of Chisago and Wright counties, were within a 40 minute commute of the Fridley/Coon Rapids job center.

However, rapid population and job growth in this part of the region during the 1990's led to increasing traffic congestion, making these commutes more and more difficult. By 2000, although the commuter-shed still reached into Chisago, Isanti and Sherburne counties, the area within a 40 minute drive of the job center had shrunk considerably (Map 9).

Increasing congestion in the periphery of the region could have different effects. On one hand, slower commutes make the farthest locations less desirable to potential residents/commuters. On the other hand, firms locating or relocating to this part of the region have incentives to move even further away from the core to remain within a “reasonable” distance of the area’s growing number of workers and customers.

Overall, it is clear that the collar counties are rapidly transforming from largely self-contained rural environments to more suburban communities with strong links to the metropolitan economy. As long as that economy continues to grow, this part of the region can expect to see growing demand drive development of currently undeveloped land, including sensitive natural areas.

Table 2: Job Growth by Type of Employment Center Percentage

Job Center Type	Number	Total Jobs		% Growth 1990-2000	Jobs per Sq. Mile	Percentage of Regional Jobs	
		1990	2000			1990	2000
Central Business District	2	168,673	179,070	6	58,847	13	11
Other Central City	8	197,409	206,060	4	7,497	15	13
Inner Suburb	10	163,622	194,565	19	6,596	12	12
Middle Suburb	13	176,100	214,275	22	4,626	13	13
Outer Suburb	7	37,419	51,105	37	2,452	3	3
Total – Employment Ctrs.	40	743,223	845,075	14	7,958	55	52
Non-clustered Employment		596,045	783,405	31		45	48
Total – Metropolitan Area		1,339,268	1,628,480	22		100	100

Central Business Districts: Minneapolis CBD and St. Paul CBD
Other Central City: Highland, Minneapolis - North, Minneapolis - Northeast, Minneapolis - Phillips/Whittier, Minneapolis - University of MN, St. Anthony, St. Paul - Midway, St. Paul Center
Inner Suburb Job Centers: Airport/Fort Snelling, Brooklyn Center, Edina, Golden Valley - I-394, Maplewood - 3M, Maplewood - I-694, Richfield-Crosstown, Robbinsdale, Roseville, St. Louis Park
Middle Suburb Job Centers: Bloomington, I-35W, Bloomington - Mall of America, Brooklyn Park, Eagan, Eden Prairie - Hwy 169, Eden Prairie Center, Fridley/Coon Rapids, Minnetonka/Hopkins, New Hope, Plymouth - I-494, Shoreview/Arden Hills, White Bear Lake, Woodbury
Outer Suburb Job Centers: Anoka, Burnsville-Hwy 13, Burnsville Center, Maple Grove, Shakopee, Stillwater-Hwy 36, Wayzata

Source: U.S. Census Transportation Planning Package

Growth in the 6-County Non-metropolitan Area

The power of the metropolitan economy and job decentralization have driven population shifts in much of DNR's Central Region, but other factors have also been at work, particularly outside the metropolitan area. The 6-county non-metropolitan part of the study area is beyond the reach of the metropolitan labor market for the most part. Although growth was very modest, on average, in this part of the region, there were pockets of significant growth during the 1990's.

The highest growth rates occurred in the Highway 169 corridor through Mille Lacs County, across much of Kanabec County and in parts of Todd County (Map 1). The most likely impetus for past growth in these areas was natural amenities. Comparing the distributions of seasonal housing (a proxy for amenity-driven resort or cabin development) and population growth illustrates this relationship.

In 2000, there were two major clusters of seasonal housing in the 6-county region: from southern Todd County stretching northeast to the Camp Ripley area in Morrison County; and in northern Kanabec and Mille Lacs counties and northeastern Morrison County around the southern end of Lake Mille Lac (Map 10). The areas showing the strongest population growth during the 1990's (Map 1) are nearly identical.

Demand for year-round housing from increasing numbers of retirees moving to the area also contributes to growth in the 6-county non-metropolitan part of Central Region. Throughout Minnesota, seasonal properties are commonly converted to year round residences by retiring owners. Where this process has just begun, you would expect to see high, but declining seasonal housing rates. High initial seasonal housing rates reflect the resort and cabin economy and declining rates reflect new year-round housing and conversions from seasonal to year-round housing.

Maps 10 and 11 show precisely this pattern in the fastest growing parts of the 6-county, non-metropolitan area. The fastest growing areas with high seasonal housing rates highlighted above—near Lake Mille Lacs and in the Camp Ripley area—also show declining seasonal housing rates. The seasonal housing declines were the result of both increases in the overall number of housing units (from growth) and decreases in the number of seasonal units (from replacement or conversions to year-round units). This pattern is likely to intensify as more and more baby-boomers retire.



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Projected Future Growth in DNR's 17-County Central Region

Past population and job growth trends can help us to understand the forces at work in defining the demographic and economic face of a region. However, past patterns do not always foretell the future, so it is worthwhile to examine projections that account for a variety of factors. Population projections are available for the entire Central Region. Such projections are subject to error, of course, but they provide the best available basis for evaluating future pressures on sensitive resources.

Map 12 shows projected population growth to 2030 as estimated by the Office of the Minnesota State Demographer and the Twin Cities Metropolitan Council.⁹ The 17-county study area is projected to add 1,073,532 residents between 2003 and 2030. The vast majority of this growth—93 percent or about 1 million people—is expected to fall in the 11-county metropolitan area. Roughly 900,000 new residents are expected within the 7-county metropolitan core alone.

The greatest projected growth rates in the 7-county metro area are found in the second and third ring suburbs (Map 12). These high growth areas lie almost uniformly adjacent to land that made up the urbanized core of the region in 2002 (Map 3), implying that a large share of future growth will most likely consume currently undeveloped land.

Overall, growth within the seven-county metro area is expected to be strongest in the western half, with nearly all remaining non-urbanized areas of Hennepin, Carver, and Scott Counties seeing high population growth rates.

Many of the municipalities in the four collar counties show similarly high projected growth rates. The highest rates occur in western Chisago County, all but the western most tip of Sherburne County, and extreme northeastern Wright County. Notably, the growth in the collar counties falls almost exclusively in areas directly adjacent to or one municipality removed from major transportation corridors: Interstate 94 (and U.S. Highway 10) through Sherburne and northeastern Wright Counties, U.S. Highway 169 through eastern Sherburne County, and Interstate 35 through western Chisago County.

Although this growth is from relatively small numbers compared to the high-growth areas of the 7-county core metro, the 100,000 people expected to settle in these areas represent very significant growth—46 percent for the four counties as a whole. Further, since much of the land in these counties is currently non-urban, this growth is also likely to represent significant consumption of currently undeveloped land.

Significant growth rates are also predicted for parts of the 6-county non-metropolitan portion of the study area. Much of this growth is expected in the same areas highlighted in the discussion of non-metropolitan growth in the 1990's. The Highway 169 corridor through Mille Lacs County shows the greatest projected growth, illustrating again the power of major infrastructure investments to shape growth.

In general, if the rate of land consumed continues to outstrip the rate of population growth in the metropolitan area, as it has in the past, the growth projections shown in Map 12 are almost certain to result in the loss of sensitive natural areas, valuable agricultural land, and other types of open spaces. To document these threats, the next section examines the location of sensitive natural areas in the 17-county region and the variation in water sources to meet water demands from growth.

THE VAST MAJORITY OF POPULATION GROWTH IS EXPECTED TO FALL IN THE 11-COUNTY METROPOLITAN AREA, PARTICULARLY IN THE 7-COUNTY CORE REGION. THE FOUR COLLAR COUNTIES ARE EXPECTED TO GROW BY 46% BY 2030.