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INDUSTRIAL MIGRATION TRENDS IN THE TWIN CITIES METROPOLITAN AREA 1960-1977

**A METROPOLITAN COUNCIL STAFF REPORT
SEPTEMBER 1979**



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INDUSTRIAL MIGRATION TRENDS
IN THE
TWIN CITIES METROPOLITAN AREA

A Metropolitan Council Staff Report
September 1979

Metropolitan Council
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Introduction

The Metropolitan Council has been charged by the Minnesota Legislature with coordinating the orderly and economic development of the Region. The Council has specific responsibilities for planning public investments at the regional level and for coordinating plans and actions of local governments.

The growth and location of industry in the Area affect the regional economy. Council actions have some impact on industrial migration in the Region. This is true of both the movements of firms to and from the Area and movements within the Area.

The purpose of this report is to analyze the movement of industrial firms within this Metropolitan Area and to identify the major factors influencing these movements. The report is a background document the Metropolitan Council will use as it explores its role with the private sector in planning economic development in the Region.

A two-part approach was used to examine recent firm movements. The first step was to obtain data on firm movements within the Metropolitan Area. The primary source of this data was building permits. Consequently, the study is largely limited to moves into new buildings. Firms in these categories accounted for approximately 23 percent of total establishments in the Region in 1977, but at the same time they accounted for 37 percent of total employment. Within SIC categories 19 through 50, the study estimates that only 30 percent of the firms moved during the study period (1960-1977) and only half of these moved into new buildings. Finally, industrial construction in 1977 was only a small portion of total construction in the Region, approximately seven percent.

Industry's share of total annual construction during the period 1960-1977 for the Metropolitan Area varied from 12.4 percent in 1966 to 4.2 percent in 1971. The average annual share was eight percent or \$49,654,000 (see Appendix A).

The second step was to analyze migration trends, identifying factors influencing location decisions and assessing the relative importance of specific factors. As part of this analysis, Council staff examined recent literature on industrial location decisions and interviewed individuals familiar with industrial development trends in the Metropolitan Area.

This report has three sections. The first section is a summary of findings. The second section presents data on firm movements in the Twin Cities Metropolitan Area between 1960 and 1977. The factors behind these industrial migration patterns are discussed in the final section.

SECTION ONE: SUMMARY

A comprehensive picture of why and where firms move is difficult to put together. Firm locational decisions are influenced by labor force characteristics and housing location as well as such basic factors as the location of raw materials and public services. To complicate matters, data on moves is not complete. The data collected and analyzed in this report represents a first step in advancing the Council's understanding of how the Regional economy is changing and why, but additional research is needed. These findings are taken from the data discussed and analyzed in Sections 2 and 3.

- . In the 1960s and early 1970s, the major trend of firm movement was out of the central cities. This resulted in the formation of new concentrations of employment in suburban areas.
- . Since 1973, the movements have been primarily suburban--out of the older, fully developed suburbs into developing suburbs.
- . The northwest part of the Region, centered in Plymouth, has been the focal point of recent activity. The east half of the Region (particularly northern Dakota County) has experienced relatively little recent growth.
- . The attraction of the highway network and the importance of land availability are evident in the firm movements. Poor access to activity concentrations in the Area appears to have affected some areas such as northern Dakota County.
- . In 1977, industrial parks were attracting a larger percentage of the Area's industrial development than in 1963 as they offer firms a secure, attractive environment with public services already in place.
- . This report concentrates on firm movements into new facilities. It appears that about the same number of firms migrate to old buildings as move into new ones. A survey of 200 firms and their locations in 1963 indicates that approximately 30 percent had moved to a different address by 1978.

SECTION TWO: ANALYSIS OF INDUSTRIAL MIGRATION

This section contains an analysis of the migration patterns of industrial firms in the Metropolitan Area from 1960 through 1977. The data in the tables and figures came from building permit reports which are submitted to the Metropolitan Council annually by the individual communities in the Area.

The firms studied include those engaged in manufacturing, wholesale trade, transportation, communications and electric, gas and sanitary services. These industries comprise Standard Industrial Classification (SIC) categories 19 through 50 (see Appendix B). This report deals primarily with industrial migration where new construction was involved. However, a sample of all industrial firms was made to put these particular moves in a broader perspective (see last part in this section).

The next two parts of this section describe two different sets of data. The first set summarized in Table 1, describes the moves of firms from one city to another within the Region. Figures 1 through 4 are drawn based on this data. The second set of data, summarized in Table 3, describes all moves into new buildings over the study period, but it does not contain information on the origins of the moves.

Moves by Origin and Destination

The term "complete moves" as used here represents the relocation of a firm's entire operation into a new building within the Area. It does not include on-site expansions or off-site moves (establishing new branch facilities at a different site not adjacent to an existing administrative office or production facility). The information on these industrial moves has been gathered into tables which show the origin and destination of moves for each year between 1963 and 1977. Several maps are included which graphically illustrate the origin and destination of industrial moves.

Table 1 summarizes all complete moves between 1960 and 1977 by origin and destination. It also shows intra-city moves (where the origin and destination addresses are within the same political unit), but does not include these in the total columns. Figures illustrating these moves on an annual basis for the years 1960 through 1977 are contained in Appendix C. Figure 1 shows the destination of all industrial firms leaving Minneapolis during the period 1960 through 1977. Figure 2 shows the same information for St. Paul. All moves with a suburban origin during the period 1960 through 1977 are shown in Figure 3.

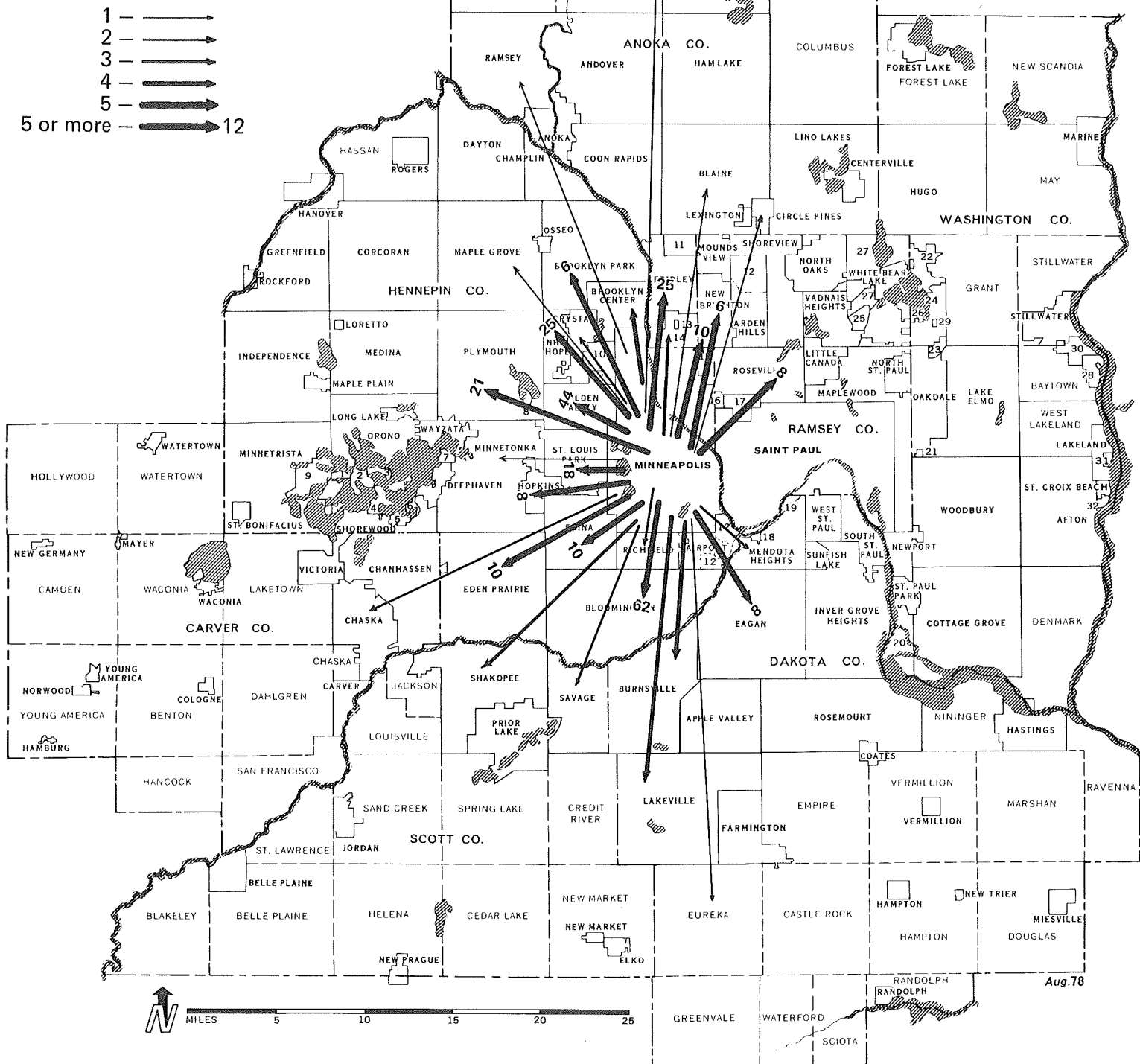
An examination of Table 1 shows that the top 10 recipients of migrating industries received 59 percent (359) of the complete moves. A ranking of these 10 communities is shown in Table 2. The leader, Bloomington, received 90 firms during the period 1960 through 1977, but none of these was between 1973 and 1977 (see Figure 4). By 1965,

-4-

[illegible]

Figure 1

INDUSTRIAL MIGRATION
MINNEAPOLIS ORIGIN
1960 - 1977



TWIN CITIES METROPOLITAN AREA
Political Boundaries, 1978

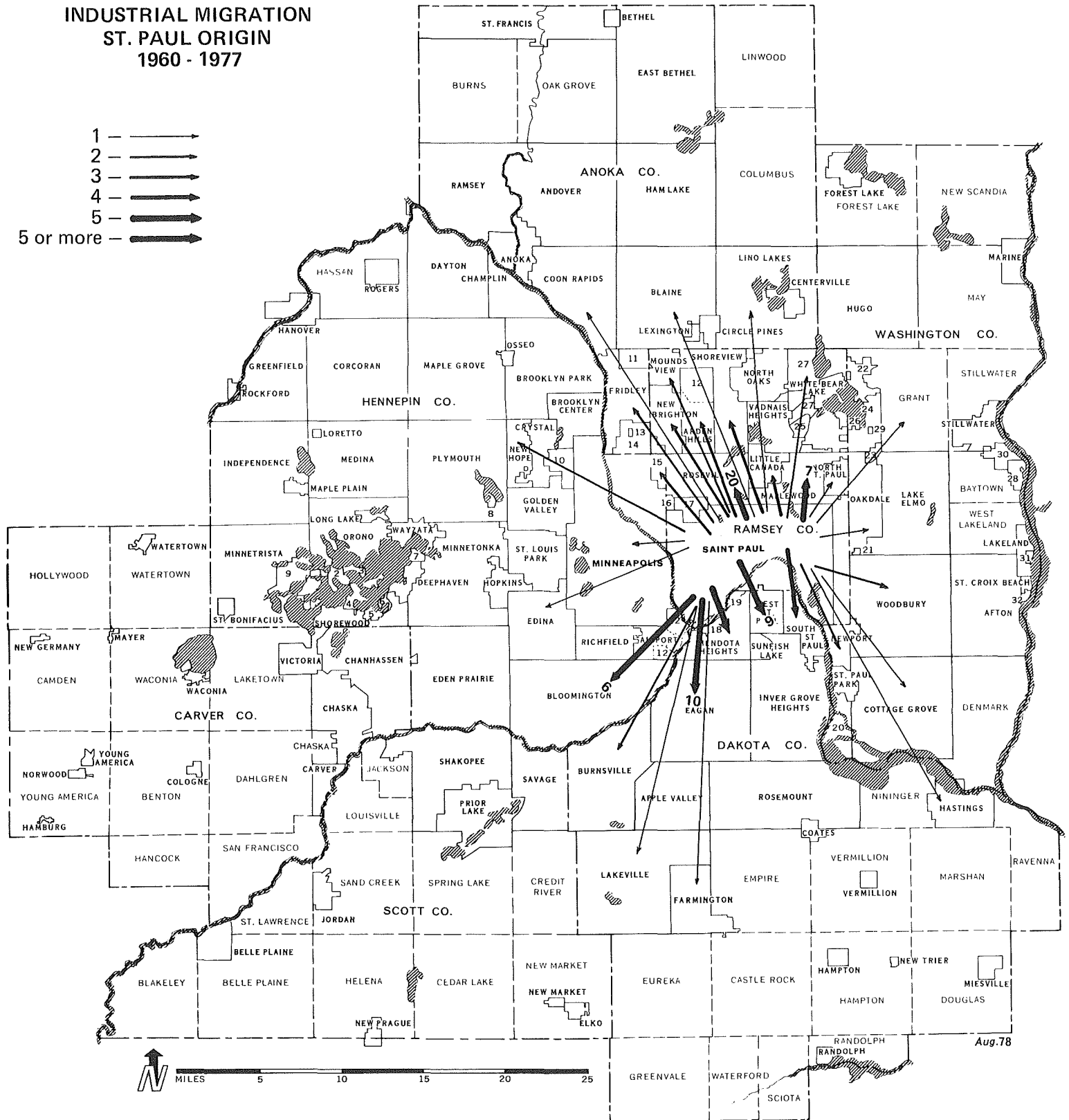
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|--------------------|---------------------|-------------------|---------------------|
| 1 SPRING PARK | 9 MOUND | 17 FALCON HEIGHTS | 25 GEM LAKE |
| 2 ORONO | 10 ROBBINSDALE | 18 MENDOTA | 26 BIRCHWOOD |
| 3 MINNETONKA BEACH | 11 SPRING LAKE PARK | 19 LILYDALE | 27 WHITE BEAR |
| 4 TONKA BAY | 12 U. S. GOVT. | 20 GREY CLOUD | 28 BAYPORT |
| 5 EXCELSIOR | 13 HILLTOP | 21 LANDFALL | 29 WILLERNIE |
| 6 GREENWOOD | 14 COLUMBIA HEIGHTS | 22 DELLWOOD | 30 OAK PARK HEIGHTS |
| 7 WOODLAND | 15 ST. ANTHONY | 23 PINE SPRINGS | 31 LAKELAND SHORES |
| 8 MEDICINE LAKE | 16 LAUDERDALE | 24 MAHOMETDI | 32 ST. MARY'S POINT |

ANOKA — County Boundary
ORONO — Municipal Boundary
CAMDEN — Township Boundary

Figure 2

INDUSTRIAL MIGRATION
ST. PAUL ORIGIN
1960 - 1977

- 1 —————→
2 —————→
3 —————→
4 —————→
5 —————→
5 or more —————→

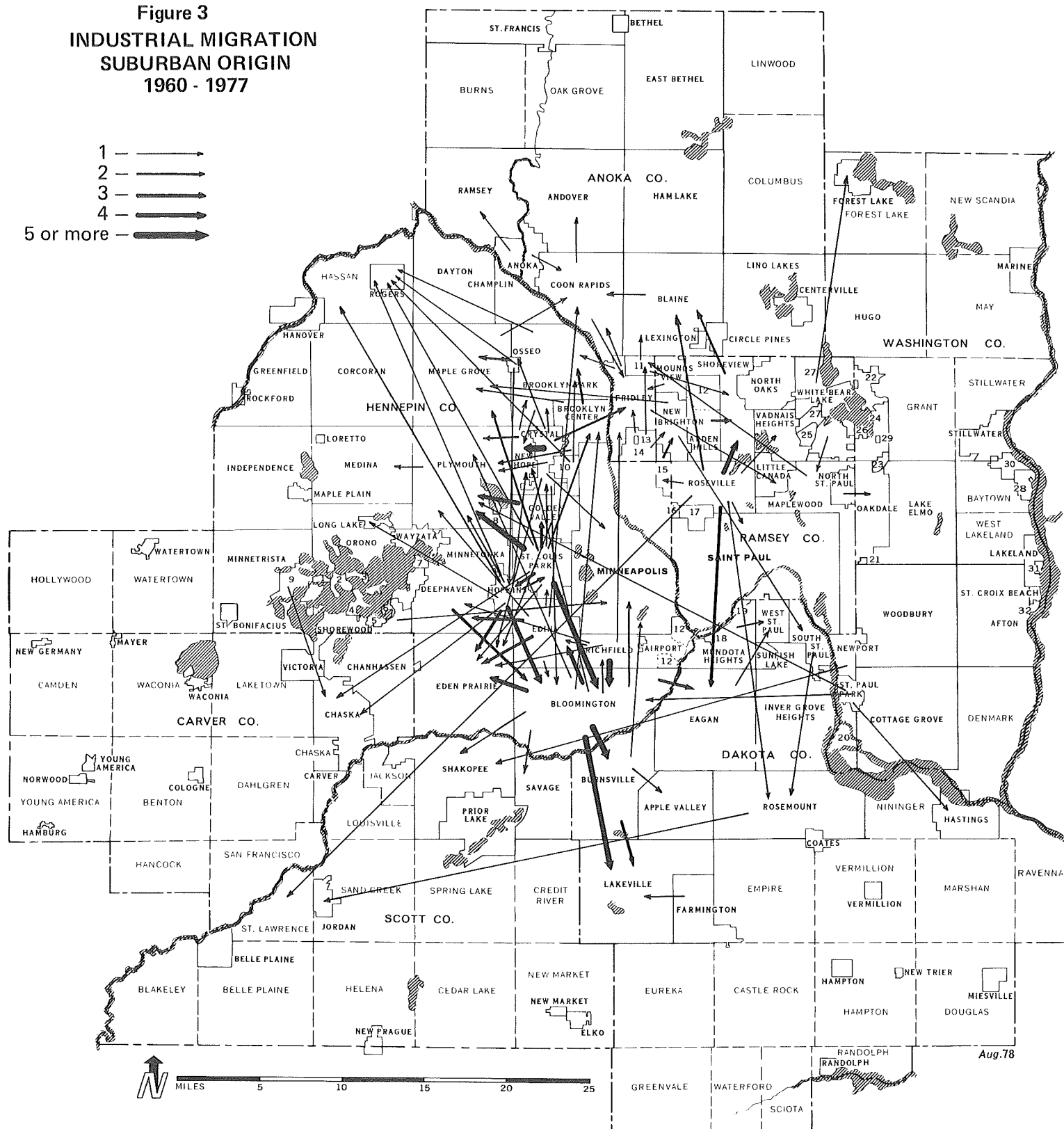


TWIN CITIES METROPOLITAN AREA
Political Boundaries, 1978

- | | | | |
|--------------------|---------------------|-------------------|---------------------|
| 1 SPRING PARK | 9 MOUND | 17 FALCON HEIGHTS | 25 GEM LAKE |
| 2 ORONO | 10 ROBBINSDALE | 18 MENOTA | 26 BIRCHWOOD |
| 3 MINNETONKA BEACH | 11 SPRING LAKE PARK | 19 LILYDALE | 27 WHITE BEAR |
| 4 TONKA BAY | 12 U. S. GOVT. | 20 GREY CLOUD | 28 BAYPORT |
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- ANOKA — County Boundary
ORONO — Municipal Boundary
CAMDEN — Township Boundary

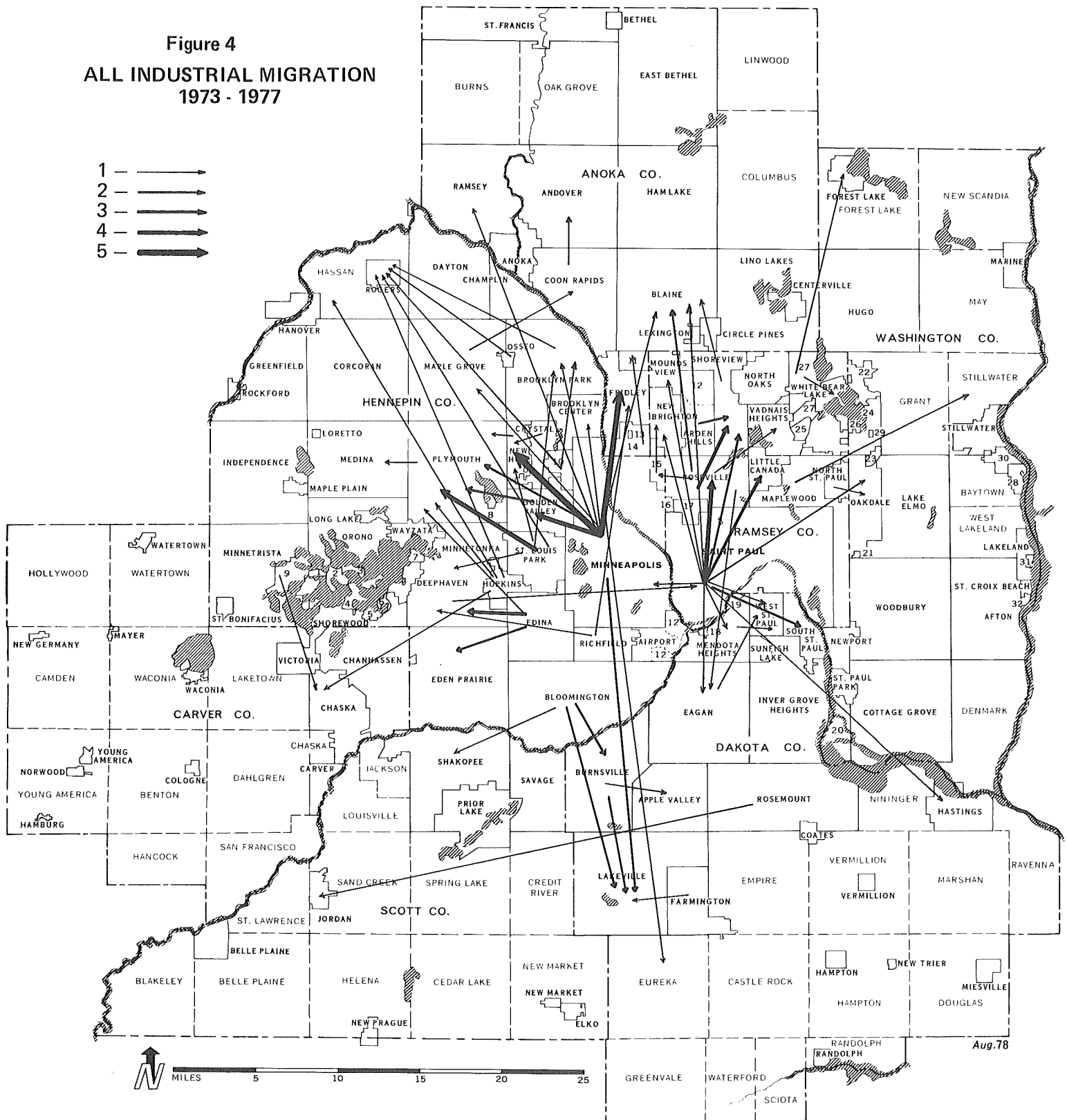
1 —————→
2 —————→
3 —————→
4 —————→
5 or more —————→



1	SPRING PARK	9	MOUND	17	FALCON HEIGHTS	25	GEM LAKE
2	ORONO	10	ROBBINSDALE	18	INDIAN H.	26	BIRCHWOOD
3	MINNETONKA BEACH	11	SPRING LAKE PARK	19	LITTLE	27	WHITE BEAR
4	TONKA BAY	12	U. S. GOVT.	20	GREY CLOUD	28	BAYPORT
5	EXCELSIOR	13	HILLTOP	21	LANDFALL	29	WILLERNIE
6	GREENWOOD	14	COLUMBIA HEIGHTS	22	DELLWOOD	30	OAK PARK HEIGHTS
7	WOODLAND	15	ST. ANTHONY	23	PINE SPRINGS	31	LAKELAND SHORES
8	MEDICINE LAKE	16	LAUDERDALE	24	MAHTOMEDI	32	ST. MARY'S POINT

ANOKA County Boundary
ORONO Municipal Boundary
CAMDEN Township Boundary

Figure 4
ALL INDUSTRIAL MIGRATION
1973 - 1977



TWIN CITIES METROPOLITAN AREA Political Boundaries, 1978

- | | | | |
|--------------------|---------------------|-------------------|---------------------|
| 1 SPRING PARK | 9 MOUND | 17 FALCON HEIGHTS | 25 GEN LAKE |
| 2 ORONO | 10 ROBBINSDALE | 18 MENDOTA | 26 BIRCHWOOD |
| 3 MINNETONKA BEACH | 11 SPRING LAKE PARK | 19 LILYDALE | 27 WHITE BEAR |
| 4 TONKA BAY | 12 U. S. GOVT. | 20 GREY CLOUD | 28 BAYPORT |
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while still receiving many firms each year, Bloomington had become an exporter of industrial firms as well. Such other inner-ring suburbs as Richfield, Edina, Hopkins, St. Louis Park, Crystal, Robbinsdale and Roseville have also undergone this changed from importer to exporter.

Table 2
MAJOR RECIPIENTS OF INTER-CITY COMPLETE MOVES
1960-1977

	Number of Moves	Percent Region Total
Bloomington	90	14.8
Golden Valley	47	7.7
Plymouth	44	7.2
New Hope	37	6.1
Fridley	33	5.4
Roseville	28	4.6
Eden Prairie	25	4.1
Eagan	24	3.9
Edina	16	2.6
Lakeville	15	2.5
Total For Top Ten	359	59.0

Moves by Destination

The destinations of all moves into newly constructed quarters by industrial firms by year is shown in Table 2. Four types of moves are shown: (1) intra-city moves, (2) inter-city moves, (3) new industry with origin unknown, (4) vacant for rental or lease buildings (usually built with a client in mind, counted here because the moves are anticipated). Table 1 differs from Table 2 in that the former does not include moves of types 3 and 4 above. Table 1 covers only 1963 through 1977. This was necessary because the data for years 1960 through 1963 was combined and could not be separated by year.

During the period 1963 through 1977 there were 1,365 new buildings constructed for migrating industrial firms in the Metropolitan Area as shown in Table 2. Of these, 13 percent were occupied by firms making intra-city moves, 37 percent by firms making inter-city, 17 percent by firms moving into the Area or newly formed industries, and 33 percent represented new buildings constructed on speculation or for anonymous clients. The number of industries in this latter category could be much higher since many of the buildings are quite large and could attract multiple tenants.

Major recipients of these four types of moves are shown in Table 4. The top 10 communities accounted for over half of the moves, with the central cities receiving 235, for 17 percent of the total. The data shows recent declines in moves to some of the major industrial areas, notably Minneapolis, St. Paul, Eagan, Bloomington, Edina, Roseville and St. Louis Park. Most of the moves to the central cities, however, were of the intra-city type. Golden Valley, Fridley and Plymouth have remained fairly strong throughout the period, while

Table 3
ALL INDUSTRIAL MOVES BY DESTINATION BY YEAR
1963 - 1977

[illegible]

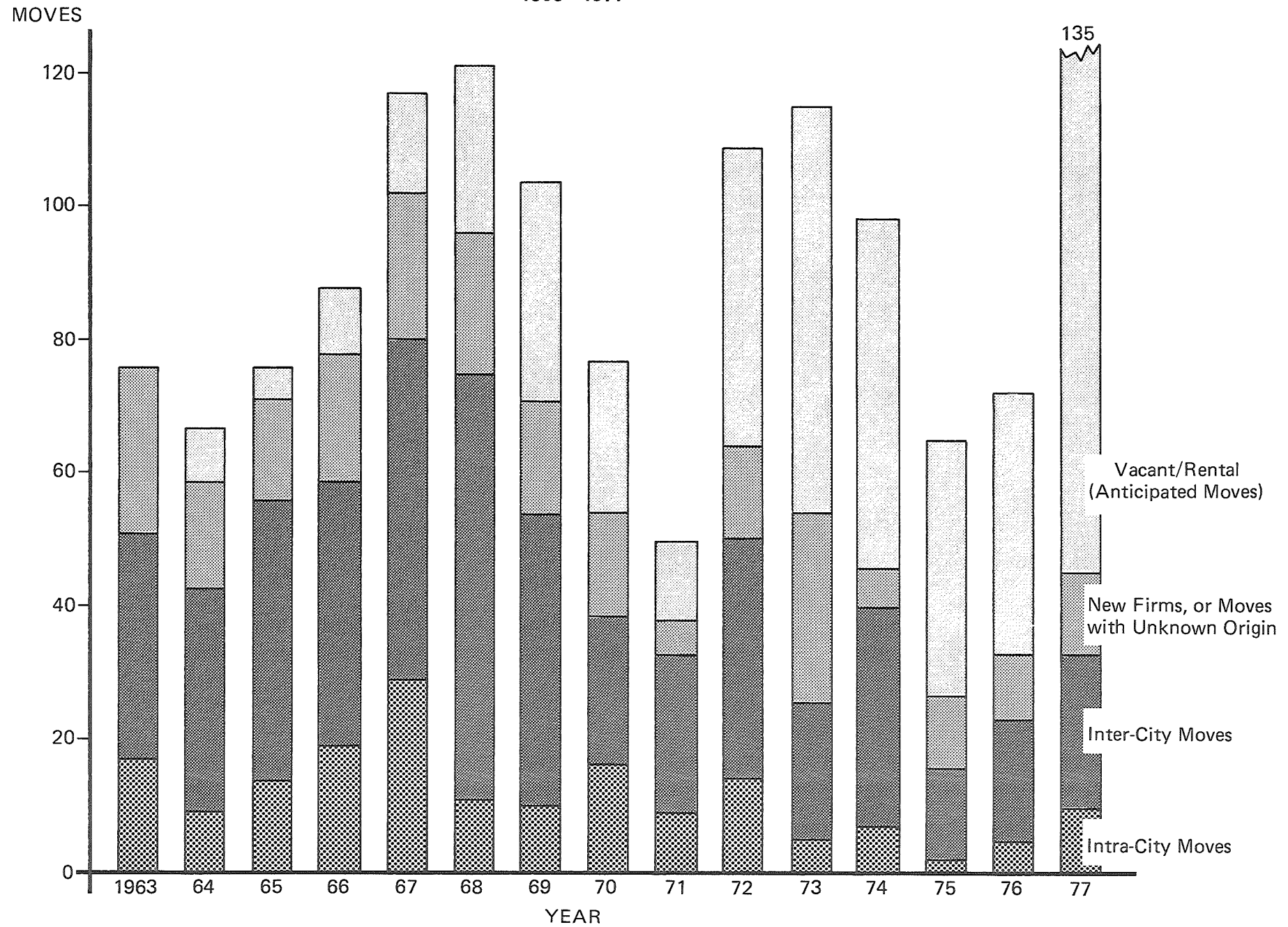
Table 3 (continued)
ALL INDUSTRIAL MOVES BY DESTINATION BY YEAR
1963 - 1977

[illegible]

1 = Intra-city move 3 = New industry
2 = Inter-city move 4 = Vacant/rental building

Figure 5

MOVES INTO NEW STRUCTURES WITHIN THE REGION
1963 - 1977



several newer suburbs--Maple Grove, Blaine, Lakeville and Brooklyn Park--have recently emerged as industrial locations. There has also been a significant number of vacant rental buildings constructed in Minneapolis in the past few years. Most of the moves to the central cities, however, were of the intra-city type. It would appear from the data that these types of units had greatly increased since 1972. Although some of this is due to an increase in industrial park development, a good portion is due to changes in the way data is recorded. Prior to 1970 most permit data was not recorded until the buildings were occupied. Figure 5 shows the types of moves by year.

Table 4
MAJOR RECIPIENTS OF MOVES INTO NEW STRUCTURES

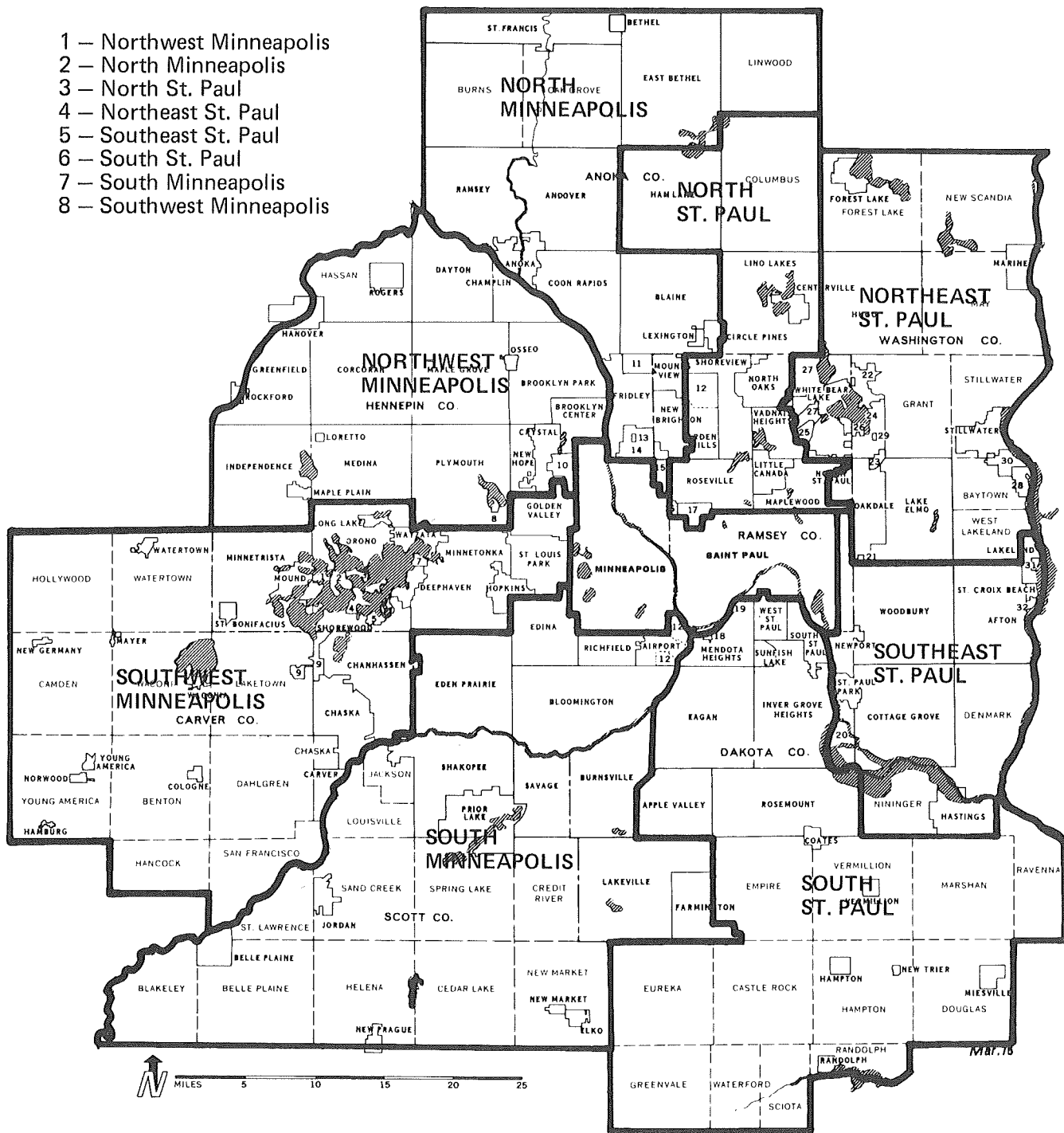
	<u>Number</u>	<u>Percent</u>
Minneapolis	149	10.9
Bloomington	107	7.8
St. Paul	86	6.3
Plymouth	77	5.6
Fridley	74	5.4
Golden Valley	71	5.2
Edina	58	4.2
Roseville	55	4.0
Eagan	52	3.8
New Hope	51	3.7
Total	780	56.9

Ring and Sector Analysis

For analytical purposes, the Metropolitan Area has been divided into eight sectors (Figure 6) and three development rings (Figure 7). The sectors were drawn somewhat arbitrarily while the rings correspond generally to the degree of development of the communities, i.e., fully developed, developing and rural. These rings roughly correspond to the Development Framework planning areas. The data used for Table 2 is used for this analysis. However, new buildings (instead of the number of firms) are counted by rings and sectors.

Figures 8 and 9 show the number and value of buildings built by new and migrating industrial firms by sector during the period 1963 through 1977. Sector 7 (south Minneapolis) had the greatest activity both in number and value of permits. This sector accounted for 27 percent of the new industrial construction value in the Metropolitan Area during the study period. Sectors 1, 2 and 8 (northwest, north, and southwest Minneapolis) ranked next with 15, 14 and 14 percent, respectively. The western half of the Region (Sectors 1, 2, 7 and 8) accounted for 70 percent of the new buildings for 1963 through 1977. The rest of the sectors ranked as follows: Sector 6 (south St. Paul) 10 percent, Sector 3 (north St. Paul) nine percent, Sector 4 (northeast St. Paul) two percent, Sector 5 (southeast St. Paul) two percent. The Central Cities accounted for seven percent of new construction value.

Figure 6
SUBURBAN SECTORS

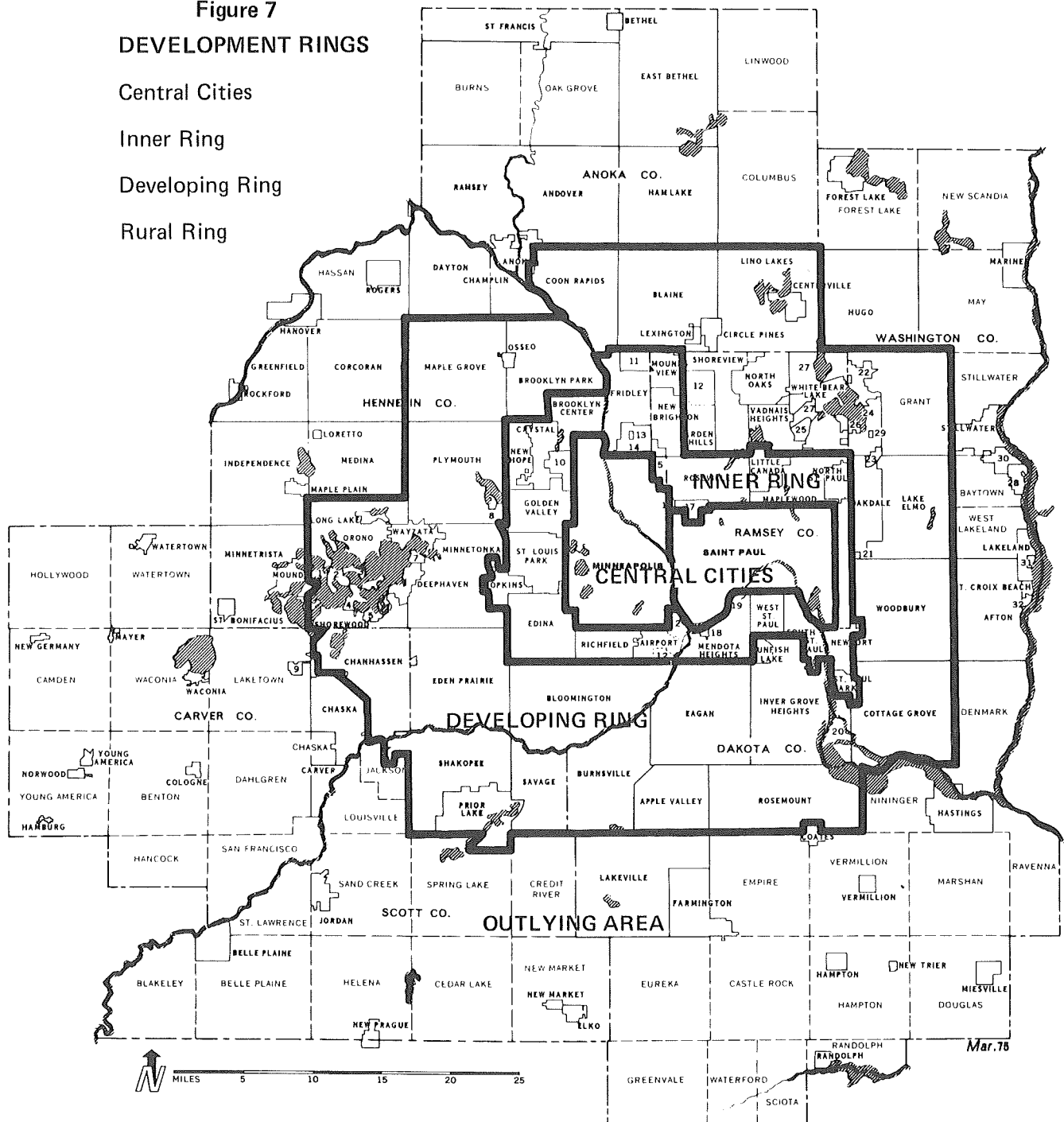


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|--------------------|---------------------|-------------------|---------------------|
| 1 SPRING PARK | 9 VICTORIA | 17 FALCON HEIGHTS | 25 GEM LAKE |
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Figure 7
DEVELOPMENT RINGS

Central Cities
Inner Ring
Developing Ring
Rural Ring



- | | | | |
|--------------------|---------------------|-------------------|---------------------|
| 1 SPRING PARK | 9 VICTORIA | 17 FALCON HEIGHTS | 25 GEN LAKE |
| 2 ORONO | 10 ROBBINSDALE | 18 MENDOTA | 26 BIRCHWOOD |
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CAMDEN — Township Boundary

Figure 8

NUMBER OF NEW BUILDINGS BUILT BY NEW
AND MIGRATING FIRMS – BY SECTOR
1963 - 1977

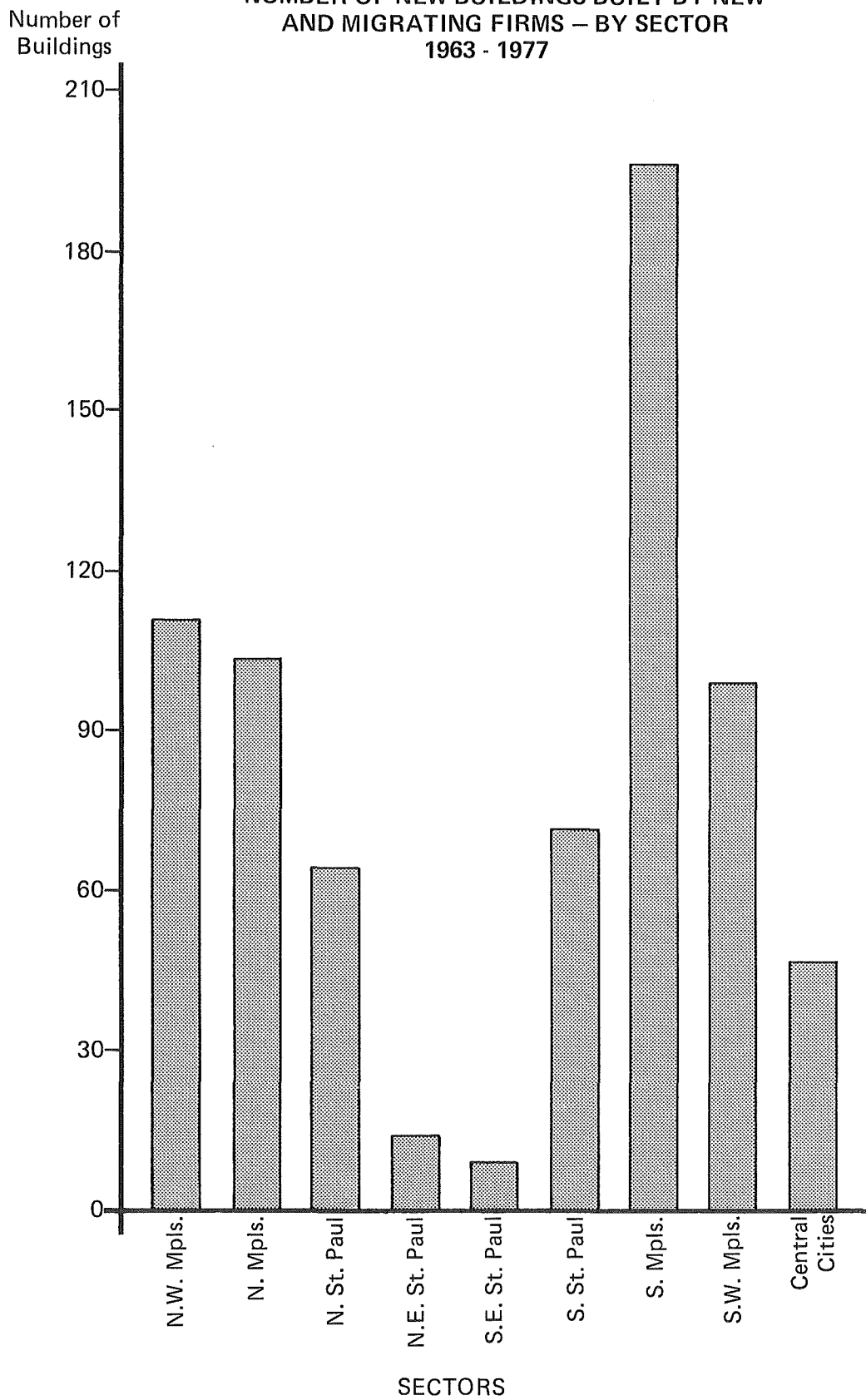


Figure 9

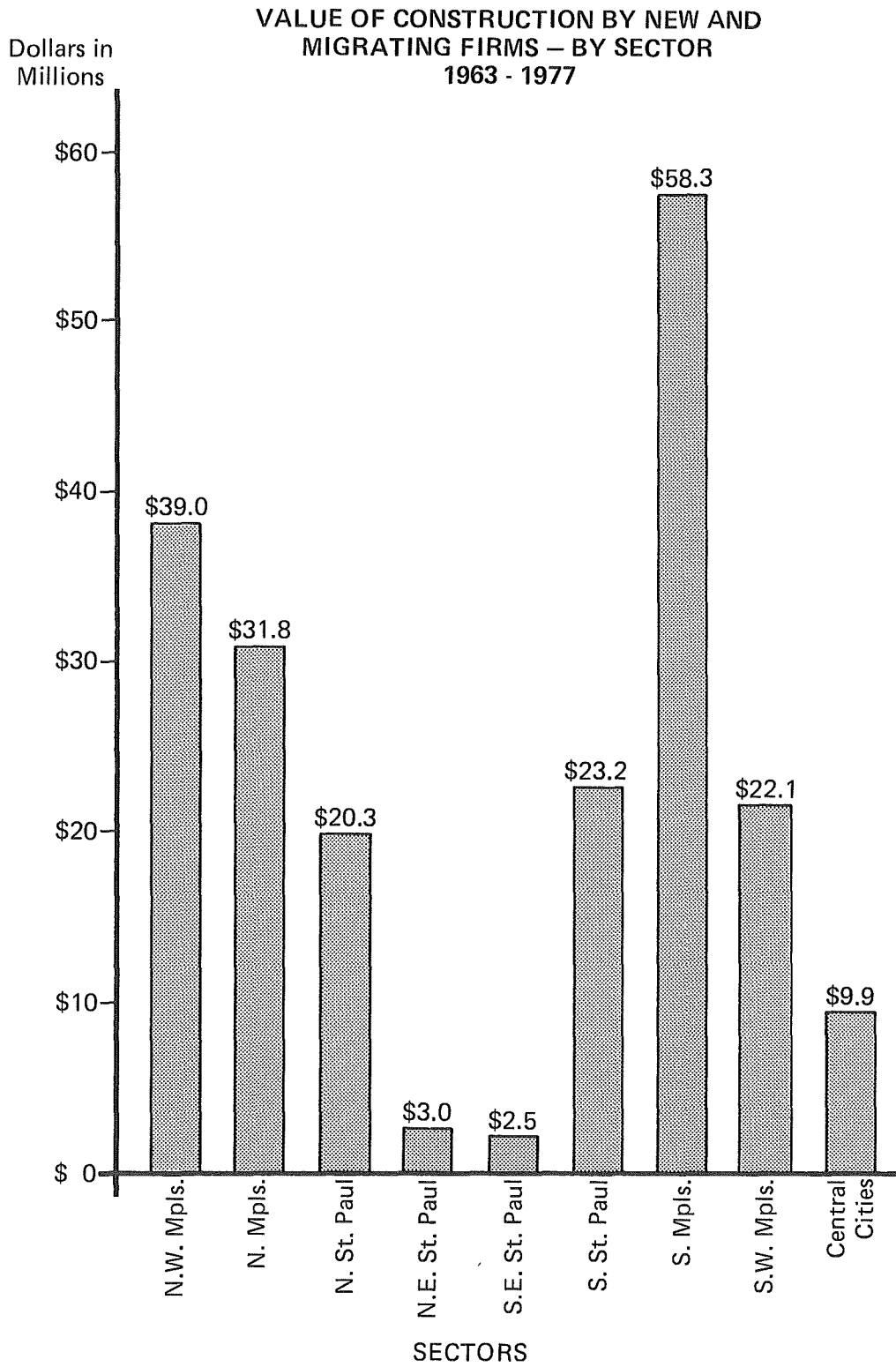


Figure 10 shows the developing ring holding a slight edge over the fully developed ring in value of new industrial construction between 1963 and 1977. This disparity can be expected to widen in future years as the fully developed area experiences shortages of large tracts of land suitable for industrial development similar to what happened in the Central Cities during an earlier period.

Location Behavior of Manufacturing Firms

This report so far has dealt only with those firms that have moved into newly constructed buildings. To determine the magnitude and direction of movement of all industrial migration, a random sample of 202 Area firms with more than eight employees each was drawn from the 1963 Directory of Manufacturers. They were checked again in 1978, noting which ones had moved, which were at the same location and which could not be found. This latter group represents industries that have left the Area, industries that have been dissolved or merged with others, those that have changed their names, and those that may have become so small that no telephone listing was maintained. In most cases, reasons for their disappearance could not be determined.

Figure 12 shows the firms by Standard Industrial Classification (SIC) and their locational behavior. Of the 202 firms sampled, 43 percent were still at the same address, 30 percent had moved to a different address and 27 percent could not be found. Because of the small sample size within SIC classifications, it is not possible to draw many conclusions about the locational behavior of the various SIC groups. Among the larger ones, however, it appears that SIC 20 (food processing) is a very locationally stable industry, while SIC's 27 (printing and publishing) and 35 (non-electrical machinery) are quite mobile. This is not surprising given the nature of their operations.

If the sample is representative, it would indicate that approximately 2,260 industrial firms migrated into all types of buildings during the period 1963-1977 (calculated by taking 30 percent of the Region's 7,535 firms in SIC categories 19 through 50). This is approximately twice the number of moves shown in Table 2, which lists only those firms moving into new buildings. Thus one might conclude that about the same number of firms migrate to old buildings as build new plants.

Figure 10
VALUE OF CONSTRUCTION BY NEW AND
MIGRATING FIRMS – BY RING
1963 - 1977

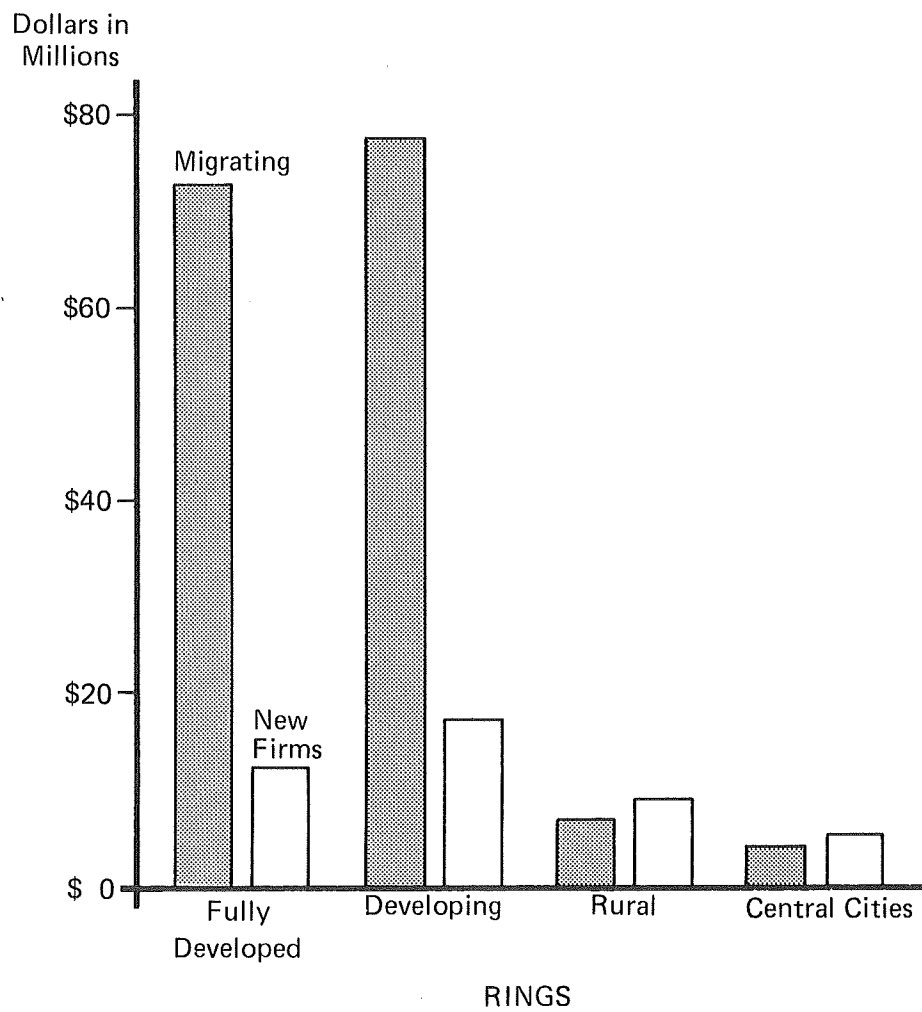


Figure 11

PERCENT OF NEW INDUSTRIAL CONSTRUCTION
BUILT BY MIGRATING FIRMS – BY RING
1963 - 1977

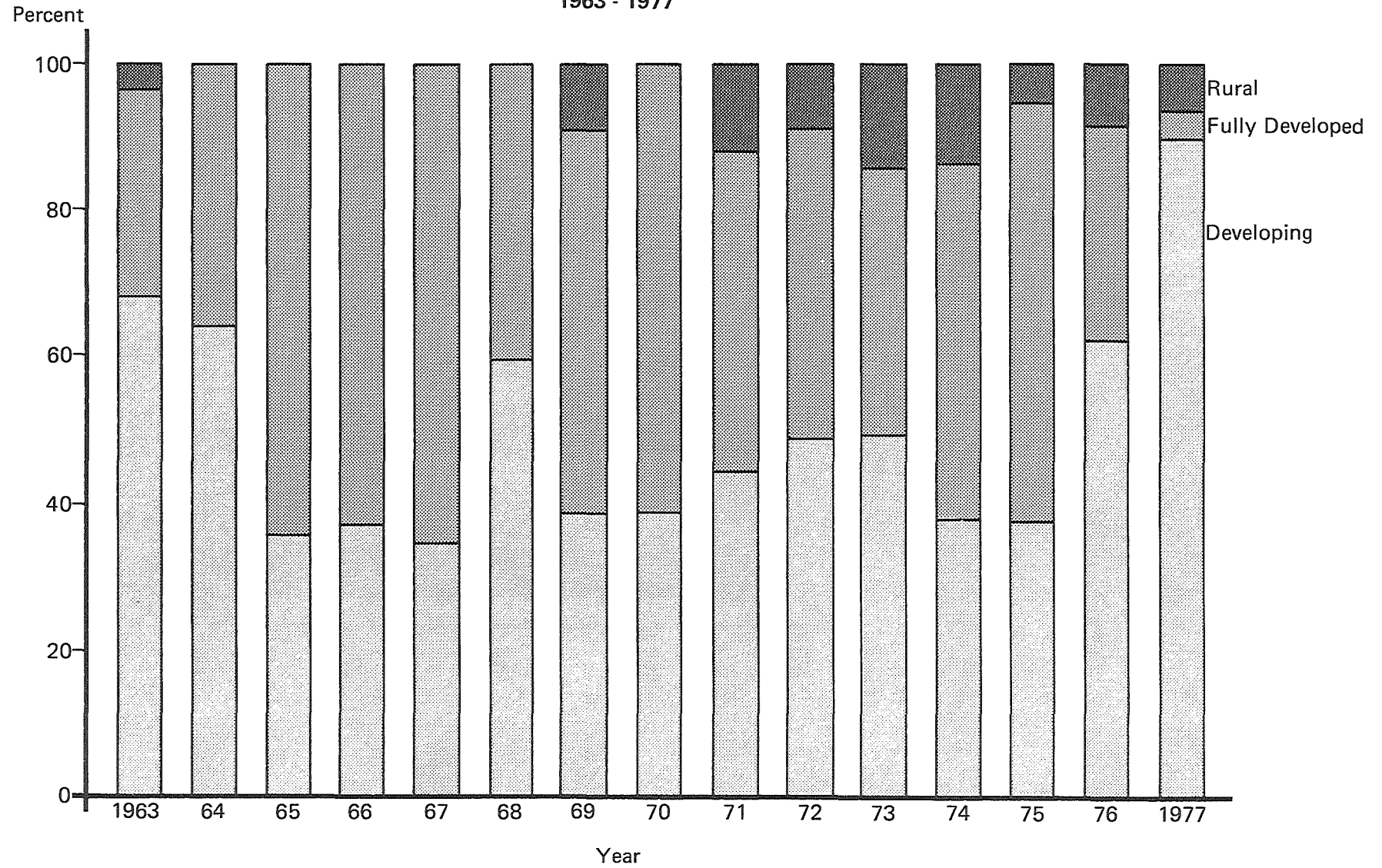
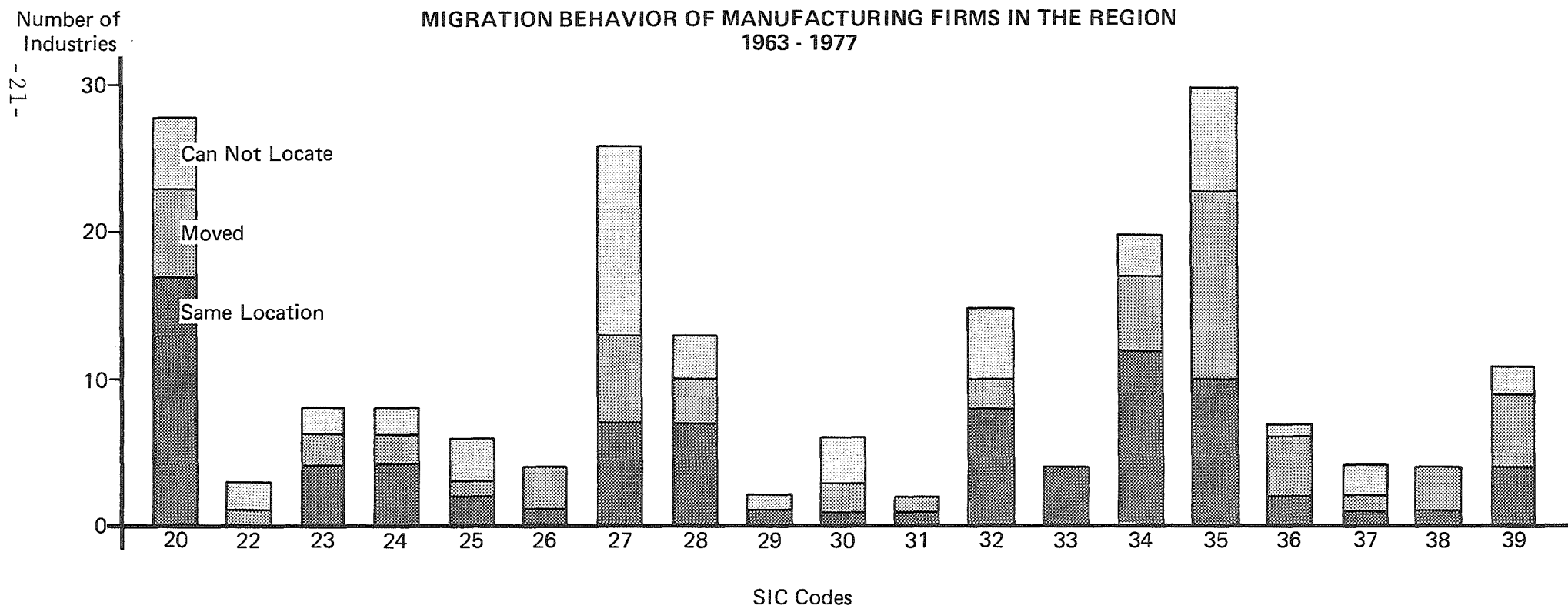


Figure 12

MIGRATION BEHAVIOR OF MANUFACTURING FIRMS IN THE REGION
1963 - 1977



SECTION THREE: ANALYSIS OF FACTORS CONTRIBUTING TO MOVES

This section focuses on the factors which contribute to decisions to change industrial location. While there is general agreement on which factors influence industrial moves, it is difficult to determine the relative importance of specific factors. To some extent, this reflects the complex interrelationships which characterize metropolitan development trends. The simultaneous interaction of such influences as investment, labor force characteristics, markets, supplies, housing location, available public services and taxes complicate industrial migration trends.

The major factors influencing the decision to locate in a particular metropolitan area differ from those determining where to locate within an area. Similarly, the relative importance of different factors varies for different types of industries and different-sized firms.

The purpose of this section is to identify major factors governing location decisions in order to explain recent industrial migration trends in the Twin Cities Metropolitan Area. Two approaches were used to determine these factors. First, staff reviewed recent literature on location determinants. Second, individuals directly involved in the Twin Cities industrial real estate market were interviewed.

The literature can be divided into empirical studies and survey studies (see Bibliography). Using statistical techniques, empirical studies infer location determinants from observed location patterns. Recent empirical studies single out transportation access and the availability of skilled labor as the most important factors influencing firm moves. Other important factors are proximity to other firms or markets and land availability. The importance of taxes seems to be ambiguous, while wage differentials are usually statistically insignificant.

The survey approach identifies location determinants by asking firm executives why a specific move was made. The results of studies using a survey approach support the findings of the empirical studies. Transportation and skilled labor are the most important factors in location decisions. The surveys emphasize another factor--the availability of energy--which may become increasingly important to this Region. High taxes are identified as a disincentive, but good public services are important. Thus, the tax issue is again somewhat ambiguous.

The literature review and the data on firm movements provided the background material for interviewing individuals experienced in Twin Cities industrial development trends. The migration data provided a picture of what was happening; the literature--and to some extent the trends themselves--suggested some reasons why this was happening. The purpose of the interviews was to verify these explanations or identify factors unique to the local environment.

Summary of Interviews

The interviews confirmed most of the preliminary findings. Transportation and land availability are generally the important factors in the location decision. Trends established in the 1960s are continuing even though the areas of activity have shifted. The densely populated part of the Metropolitan Area now includes the first-ring suburbs. Space for expansion is not always available and is more expensive in the developed area than at locations farther out. Transportation facilities provide the opportunity for firms to relocate in the developing suburbs without incurring increased transportation costs.

Companies increasingly buy larger sites to allow for future on-site expansion. Some are also constructing larger buildings than may be immediately necessary. One developer noted a trend toward owning rather than leasing, particularly in the case of existing smaller buildings. The lease versus buy analysis is becoming a common part of the location decision.

The industrial migration has moved outward from the central cities over the past 15 years. Today, industrial development is concentrated in the northwest part of the Metropolitan Area. This area exhibits the characteristics mentioned previously--good highway access (I-494/694) and available land at lower cost than land closer in. Several industrial parks, including the Minneapolis Industrial Park, are located in this area.

Northern Dakota County and the east side of the Metropolitan Area have highways and available land, but relatively little development. Access is felt to be a problem for both of these areas. Northern Dakota County, in particular, is hindered by the Minnesota River and the limited capacity of bridge crossings. In part, the lessened activity on the St. Paul side reflects the smaller number of companies there and the nature of these companies. Most of the movement out of St. Paul has been to the Roseville area. In addition, St. Paul's Port Authority has provided attractive central city locations.

Although energy is a consideration for locating in the Region, it was not a significant factor in intra-metropolitan moves during the study period. It has become more important as the cost of energy has increased. The prime energy consideration is availability rather than cost. The importance of energy in a location decision varies from firm to firm. It depends upon the firm's needs--process fuels or heating fuels only--and the fuel substitution possibility.

In recent years industrial parks have been attracting a greater part of the Area's industrial development. Industrial parks provide an attractive environment for plant locations, providing access to major

highways, complete utilities, parking space, convenient design coordinated with amenities and protection of investment. Industrial parks are becoming well known, thereby affording locational image or identity.

Several persons interviewed cited the importance of the mover's residence in determining intra-metropolitan moves. This is similar to the residential location process in which the search for a new residence is usually concentrated in areas close to the pre-move residence. Where employees live may also influence industrial moves.

Six factors identified in the literature and in the interviews were examined in relation to recent industrial migration trends in the Twin Cities Area. These factors include the two identified as most important in industrial location decisions--transportation and land availability. Other factors analyzed are the availability of public services, proximity to resources and markets, the development of industrial parks and local tax rates.

Transportation

How important is transportation as an industrial location decision factor? Economic literature shows that both freeways and proximity to the labor force are important. Both are discussed here.

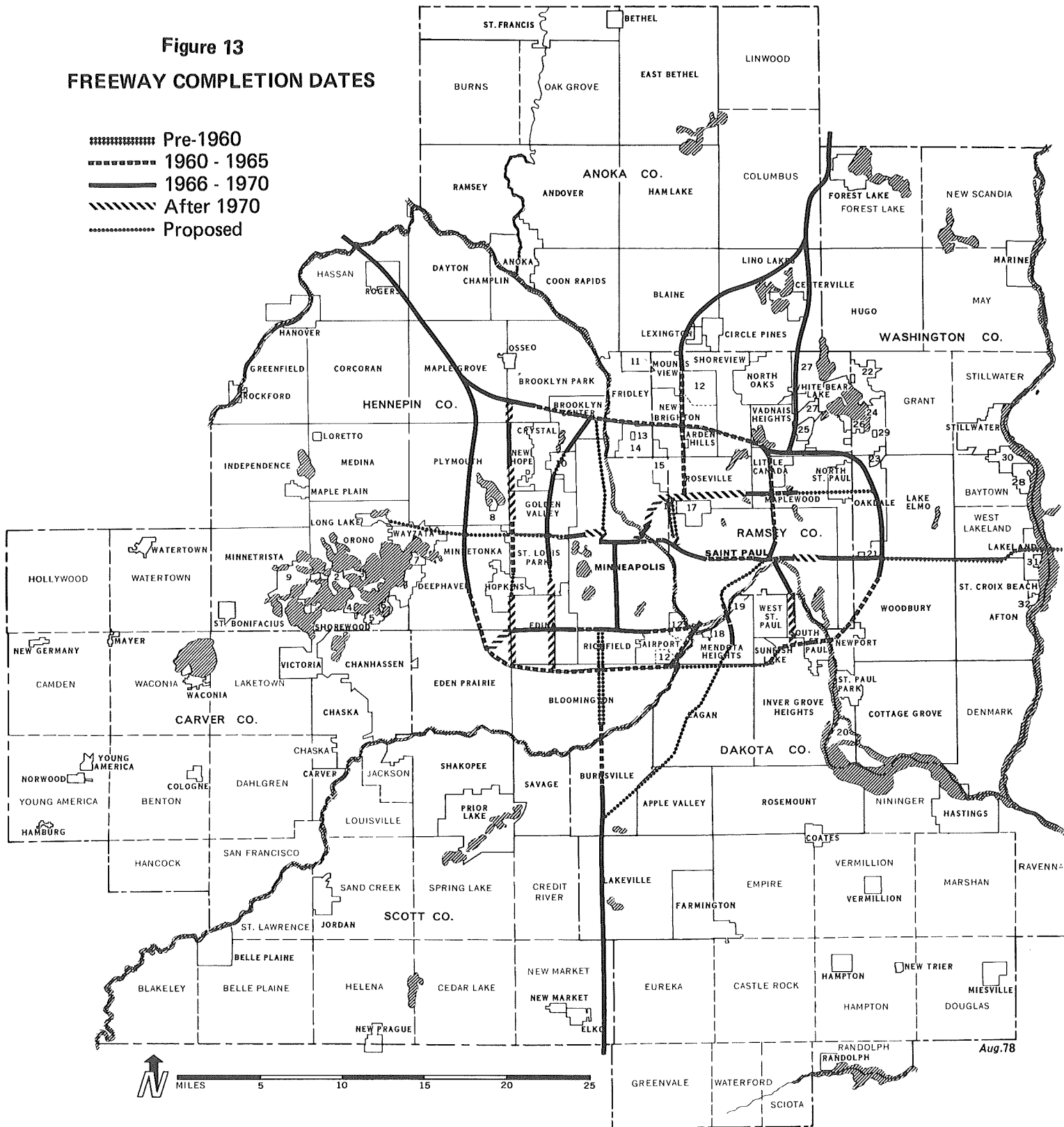
To measure the effectiveness of the transportation system serving areas with industrial development, 20-minute trip lines for specific sites in the Metropolitan Area for 1960 and 1975 were studied. Six sites were selected: Hopkins, Eden Prairie, Edina, Mendota Heights, Roseville and Fridley. If transportation is important for industrial development, then sites with large planned service areas for 1975 (represented by the 20-minute trip lines) should have experienced industrial growth between 1960 and 1975.

Maps of the 1960 and 1975 20-minute trip lines for the six selected sites are presented in Appendix E. The area inside the 20-minute line is the collection of all points a driver could reach from a given point (traffic zone). Conversely, it is the area within which a person could make a 20-minute trip to work at that point. Trip times were obtained from the computer representation of the actual road and highway network. Differences between 1960 and 1975 service areas are due to both system changes and changes in the speed limits. In 1960, the speed limit was 70 m.p.h.; in 1975, the limit was reduced to 55 m.p.h. Speed limits for the zones are important because they were served by good highways in 1960 and freeways later. Lowering the limit would have reduced the service area but improved facilities compensated for the change. Freeway system changes are reflected in Figure 13 presented here.

The 1970 Travel Behavior Inventory reflects extensive suburban development from 1960 to 1970. Only 50 percent of the Region's trips started or ended in the central cities. Almost 23 percent of the trips started or ended in suburban Hennepin County. This portion of the Region also attracted the most new industrial sites. Three of the areas studied in this report, Hopkins, Eden Prairie and Edina, experienced a good part of this growth from 1960-70. An examination

Figure 13
FREEWAY COMPLETION DATES

- Pre-1960
- 1960 - 1965
- 1966 - 1970
- After 1970
- Proposed



TWIN CITIES METROPOLITAN AREA Political Boundaries, 1978

- | | | | |
|--------------------|---------------------|-------------------|---------------------|
| 1 SPRING PARK | 9 MOUND | 17 FALCON HEIGHTS | 25 GEM LAKE |
| 2 ORONO | 10 ROBBINSDALE | 18 MENDOTA | 26 BIRCHWOOD |
| 3 MINNETONKA BEACH | 11 SPRING LAKE PARK | 19 LILYDALE | 27 WHITE BEAR |
| 4 TONKA BAY | 12 U. S. GOVT. | 20 GREY CLOUD | 28 BAYPORT |
| 5 EXCELSIOR | 13 HILLTOP | 21 LANDFALL | 29 WILLERIE |
| 6 GREENWOOD | 14 COLUMBIA HEIGHTS | 22 DELLWOOD | 30 OAK PARK HEIGHTS |
| 7 WOODLAND | 15 ST. ANTHONY | 23 PINE SPRINGS | 31 LAKELAND SHORES |
| 8 MEDICINE LAKE | 16 LAUDERDALE | 24 MAHOMETDI | 32 ST. MARY'S POINT |

- ANOKA — County Boundary
- ORONO — Municipal Boundary
- CAMDEN — Township Boundary

of the maps in Appendix E shows that these areas had changes in 20-minute trip service areas. Edina, served by Highway 100 and Highway 5, had a large service area in all directions in 1960. By 1975, congestion and lower speed limits had reduced some of the service area, but overall it expanded. Hopkins was served by Highway 18 in 1960. Since then it has shown dramatic increases in service area because of easy access to the freeway system and improvements on Highway 18. Eden Prairie's service area has expanded to the north, west and south with some reduction to the east. Access to the freeway system going north is perhaps the largest factor.

On the east side of the Region, zones were chosen in Roseville and Mendota Heights (adjacent to Eagan). Roseville had good highway access to Highways 36 and 8. By 1975, it had access to Freeway I-35W and Highway 36. Even though it is an inner-ring suburb it continued to develop with improved access and a growing service area.

The Mendota Heights/Eagan area was served by Highways 100, 55 and 49 in 1960. In 1960, it was still on the edge of development, but it had one important difference. The freeway system designed to serve Eagan and Mendota Heights had not been completed. Its service area increased to some degree due to completion of freeway links up to the area. Scheduled completion for the system has been delayed until the early 1980s. Eagan experienced considerable industrial development in the late 1960s and early 1970s in anticipation of completion of the planned freeway system, but growth has slowed appreciably since then due to the freeway construction delays.

Fridley was selected on the north side of the Region. It was on the edge of development in 1960 with good access to developed areas along Highways 10 and 65. Even with the increased congestion due to development, the service area has expanded with the completion of 694 I-694 through it.

In addition to access, a readily available labor force is also important. The number of housing units within the 20-minute time line for each site was compared for 1960 and 1975 as a proxy for the labor force. The sites were chosen originally because they represented areas experiencing industrial growth since 1960. Each area also served over 100,000 housing units in 1960. The Edina service area was the only one that experienced a loss in units served in 1975. This is because a highly populated portion of north Minneapolis could no longer be reached in 1975 within 20 minutes. The change in housing units served for the six sites is displayed in Table 5.

Table 5
HOUSING UNITS WITHIN 20 MINUTES OF SELECTED SITES

<u>City</u>	<u>1960</u>	<u>1975</u>	<u>Percent Change</u>
Edina	270,000	245,000	-10
Eden Prairie	126,000	208,000	69
Hopkins	126,000	294,000	134
Roseville	194,000	435,000	125
Fridley	157,000	309,000	97
Mendota Heights	200,000	271,000	36

If labor force were important for industrial location, continued growth would be expected in Eden Prairie, Hopkins, Roseville and Fridley: it has happened. Edina has slowed down and Mendota Heights (Eagan) awaits completion of the planned freeway system.

Availability of Land

Trucking and improved transportation allowed firms to begin moving out of central cities to nearby suburbs in the 1950s. Good transportation was necessary to allow the moves, but another motivating economic force was the need for additional land for expansion. During the 1960s and early 1970s, Minneapolis firms moved to Bloomington, Edina, Golden Valley, St. Louis Park and Fridley. St. Paul firms moved to Roseville and Maplewood. These suburbs have good access to the central cities and at that time were developing communities with land available for expansion. But by 1975, these first ring suburbs were becoming full. In its Development Framework, the Council defines fully developed suburbs as communities with 15 percent or less developable land remaining in 1975. Figure 11 in Section 2 illustrates the share of new industrial construction going to three rings: the fully developed (1975 definition), the developing, and the rural area. From 1965 to 1975, more than half of the new construction was in the developed suburbs (first-ring). In 1976, there was a shift toward the developing ring.

This shift also is seen in Figure 4 from Section 2, the 1973 to 1977 moves. Firms moved out of Bloomington, Edina, St. Louis Park and Roseville, as well as Minneapolis and St. Paul, to suburbs in the developing ring. While there have been some completions of freeway links, there have been no major changes in the transportation system serving the two rings during that period. A major reason for this outward movement may be that the first-ring suburbs are becoming nearly full, while the next ring has land available.

Availability of Public Services

The availability of public services, at least sewers and transportation, is generally a necessary condition before a firm will locate in an area. Figure 10 in Section 2 shows the value of construction by rings for 1963 through 1977. Almost all of this construction was located in the fully developed and developing suburbs where basic public services are available.

An examination of Figure 4 in Section 2 shows some movements to the rural area, but these moves were to rural town centers where local public services are available. Thus, firm movements seem to have been consistent with the Council's Development Framework plan. They either stayed within the Metropolitan Urban Service Area or they moved to portions of the rural area where there are local services. There were several moves to Rogers in the far northwest corner of the Region. These were primarily small firms engaged in millwork and cabinet making.

Proximity to Resources, Markets and Other Firms

Proximity is a difficult factor to measure, but it is mentioned often in the literature. Three observations can be made based on the maps in Section 2.

First, the Region appears to be divided between Minneapolis and St. Paul. Minneapolis firms moved north, west and south, but not east. St. Paul firms moved north, south and some east, but not west. Whether this is the historic rivalry at work or simply an unwillingness of businesses to move too far from known markets and suppliers is impossible to say. The pattern, however, is clear.

Second, the 1973 to 1977 moves are to nearby or adjacent suburbs. The fact that moves continue the outward thrust from the center of the Region rather than other directions tends to support the interview finding that locational familiarity of the industries' chief executive(s) is a factor in intra-urban locations.

Third, firms, like homeowners, do not move very far when changing locations. There is a tendency to move toward areas where other firms have been moving. It is important to be near established markets and established suppliers. Business people also seem to focus on one community or area at a time. Bloomington was the dominant community of the 1960s. Plymouth seems to be the Bloomington of the 1970s.

Industrial Parks

Several factors contributed to making the 1960s unique in degree of industrial mobility. Massive urban renewal in the early 1960s in both Minneapolis and St. Paul sent many firms in search of new quarters at a time when the developing (then first ring) suburbs were becoming aware of the financial desirability of a sound industrial tax base. Construction of new freeways during the decade meant that sites once considered unfavorable because of travel time became eminently desirable. The appearance of planned industrial parks with their paved streets, spacious parking lots, available utilities and generally prosperous appearance became a lure for many firms, regardless of whether they were forced to move because of renewal or overcrowded quarters. Many firms moved to enhance their image and, they hoped, their market. There are, of course, many other factors involved when a firm decides to move to a new location, but industrial parks offer a unique combination of the factors discussed thus far.

Figure 14

VALUE OF ALL NEW INDUSTRIAL
CONSTRUCTION FOR SELECTED YEARS

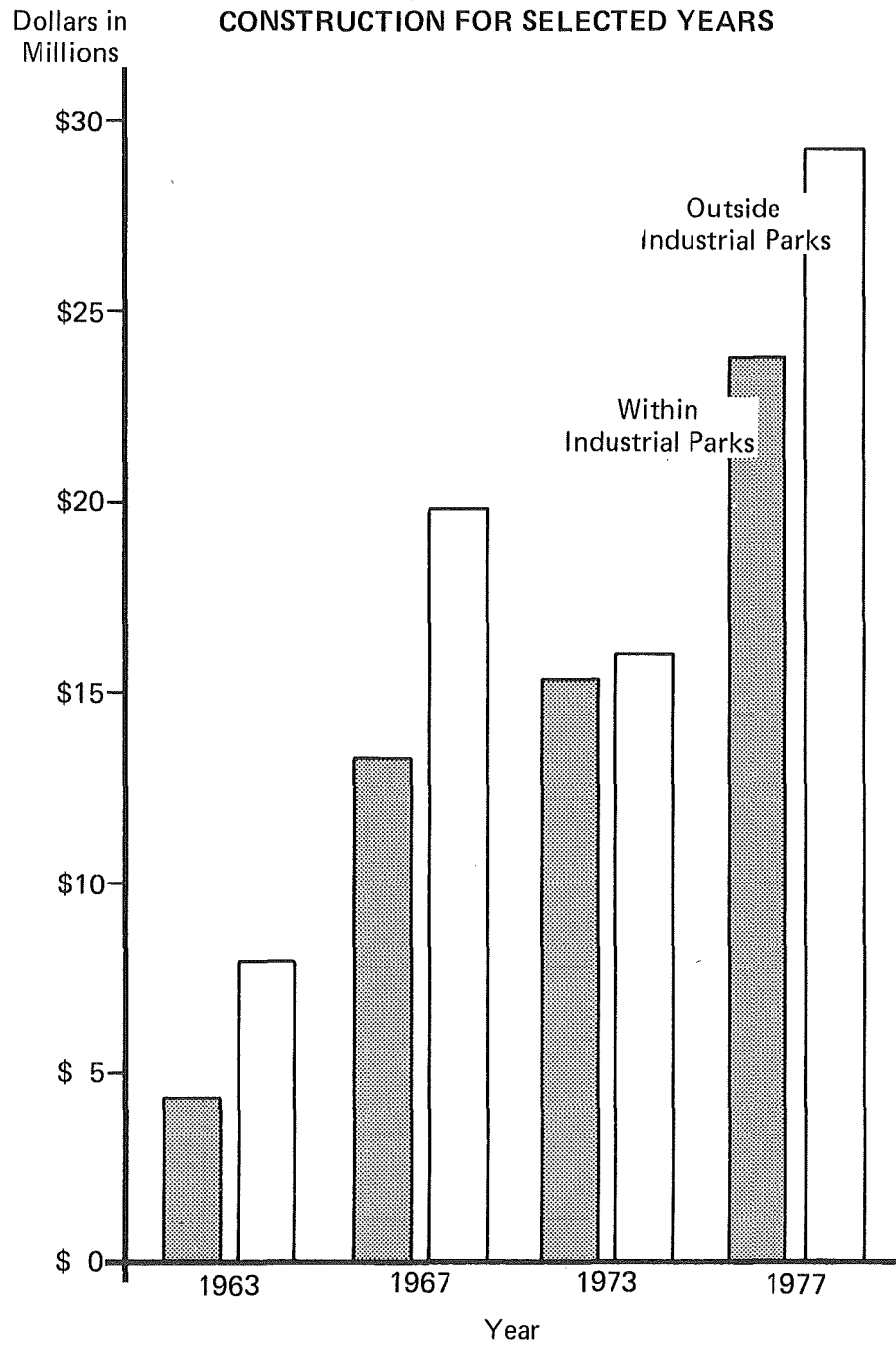


Table 6 shows the percent of moves inside and outside industrial parks for 1963, 1967, 1973 and 1977. Generally, one-third of the moves were to industrial parks, but it accounted for 45 percent of the value of new construction. Also, a large number of those that located outside industrial parks were near existing parks. Figure 14 shows actual values for each of the years.

Table 6
FIRM MOVEMENT INSIDE AND OUTSIDE INDUSTRIAL PARKS

<u>Year</u>	<u>INSIDE</u>		<u>OUTSIDE</u>	
	<u>Number of Firms</u>	<u>Value</u>	<u>Number of Firms</u>	<u>Value</u>
1963	21%	36%	79%	64%
1967	34%	40%	66%	60%
1973	38%	49%	62%	51%
1977	35%	45%	65%	55%

It appears that the availability of serviced land offered by industrial parks is a strong incentive for many migrating firms, particularly medium-sized ones.

Tax Rates

Both the literature and study observations suggest that transportation and land availability are the dominant factors in location decisions of industries. Taxes may have some influence, however. The fiscal disparities law is designed to reduce tax differentials eventually between communities for commercial and industrial property located in the Metropolitan Area, but the adjustment in rates is a slow process. An examination of what influence taxes might have had on migration patterns follows.

Table 7 presents tax rates for communities in two different Council policy areas, the fully developed area and the area of planned urbanization. Although there are 58 communities in the area of planned urbanization, only communities adjacent to the fully developed communities were examined. Mill rates for taxes payable in 1973 were used. The average mill rate for the fully developed communities was 96 mills compared with 98 mills for the developing communities. The question is whether industry moved to communities with lower tax rates. The answer is, generally yes.

Table 8 lists the communities which received the most moves for two periods, 1963-1977 and 1973-1977. For the first period, much growth went to the developed suburbs. With the exception of Roseville and Golden Valley, they all were at or below the average mill rate for that policy area. Growth since 1973 began to move out of the fully developed suburbs. In the second group of communities, all but Minnetonka and Shoreview were below the average mill rate.

To some extent, the low mill rates of the developed communities in the first group came about because they had received much of the Area's growth between 1963 and 1973. One could argue about which came first--low rates or commercial growth and industrial migration. However, for the second group, rates were low prior to growth. It cannot be said that firms moved directly to communities with the lowest tax rates, but on the average they did not move to communities with high tax rates. The two central cities appeared to be the exception. Firms moving to the cities probably had specific needs which only the cities could meet; thus taxes did not matter.

Summary

Of the major factors studied in this section, good transportation and sewer services were necessary conditions before a firm chose to locate in a particular area. Availability of land and closeness to markets and resources were the major economic forces. Taxes seemed to be a consideration only if sites were generally identical in all other aspects.

Table 7
1973 MILL RATES BY POLICY AREA

FULLY DEVELOPED AREA		AREA OF PLANNED URBANIZATION	
<u>Community</u>	<u>Mill Rate</u>	<u>Community</u>	<u>Mill Rate</u>
Minneapolis	111	Apple Valley	96
St. Paul	<u>113</u>	Arden Hills	101
		Blaine	94
		Brooklyn Park	95
Bloomington	98	Burnsville	100
Brooklyn Center	99	Chanhassen	106
Columbia Heights	94	Chaska	101
Crystal	85	Coon Rapids	93
Edina	77	Eagan	94
Falcon Heights	99	Eden Prairie	80
Fridley	89	Inver Grove Heights	94
Golden Valley	103	Lakeville	80
Hopkins	102	Little Canada	97
New Hope	83	Maple Grove	97
Richfield	97	Maplewood	108
Robbinsdale	88	Mendota Heights	96
Roseville	103	Minnetonka	103
St. Anthony	90	New Brighton	93
St. Louis Park	91	North St. Paul	106
South St. Paul	127	Oakdale	113
West St. Paul	<u>104</u>	Plymouth	97
		Shakopee	104
		Shoreview	104
		Woodbury	<u>109</u>
Average (Suburban Only)	96	Average	98

Table 8
TAX RATES OF MAJOR RECIPIENTS (1973)

1963-1977 MOVES		1973-1977 MOVES	
<u>Community</u>	<u>Mill Rate</u>	<u>Community</u>	<u>Mill Rate</u>
Bloomington	98	Blaine	94
Eagan	94	Fridley	89
Edina	77	Lakeville	80
Fridley	89	New Hope	83
Golden Valley	103	Plymouth	97
Minneapolis	111	Minnetonka	103
New Hope	83	Shoreview	104
Plymouth	97		
Roseville	103		
St. Paul	113		
Developed Average	96	Developing Average	98

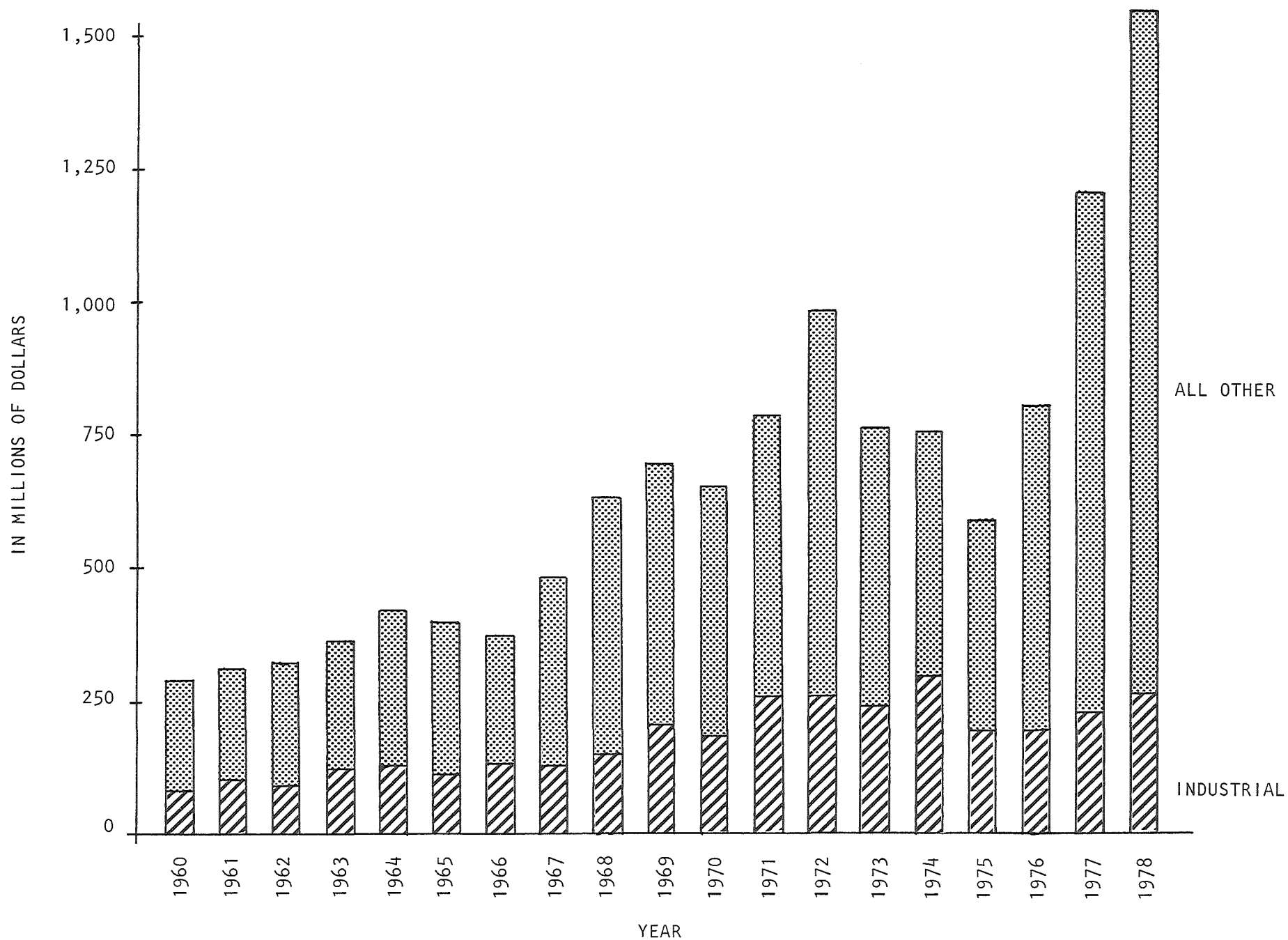
APPENDIX A
Value Of All Construction

TABLE 9
ANNUAL VALUE OF ALL NEW CONSTRUCTION IN THE TWIN CITIES
METROPOLITAN AREA 1960 - 1978
(in \$1,000)

	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>	<u>Miscellaneous</u>	<u>Total</u>
1960	145,900	36,048	23,711	79,859	285,518
1961	150,782	42,257	19,738	99,399	312,176
1962	171,125	39,826	19,252	94,178	324,381
1963	190,722	33,089	20,758	121,259	365,828
1964	218,346	41,193	39,985	121,893	421,417
1965	193,796	49,521	40,464	114,123	398,004
1966	147,689	49,518	46,564	132,097	375,868
1967	222,315	72,118	59,571	128,737	482,741
1968	334,849	90,070	56,765	149,389	631,073
1969	317,521	99,894	72,778	205,899	696,092
1970	283,663	130,564	57,531	185,605	657,363
1971	399,956	95,914	33,072	257,836	786,778
1972	537,337	135,532	47,939	265,516	986,324
1973	283,672	161,441	73,886	243,668	762,467
1974	288,780	115,417	53,389	298,284	755,870
1975	281,557	73,720	43,618	198,851	587,728
1976	457,228	107,291	47,397	191,307	803,223
1977	759,436	134,731	83,750	224,912	1,202,829
1978	847,794	330,069	103,257	267,098	1,548,218

Figure 15

ANNUAL VALUE OF ALL NEW CONSTRUCTION IN THE
TWIN CITIES METROPOLITAN AREA, 1960-1978



APPENDIX B
SIC Classifications

SIC Classifications

Standard Industrial Classification (SIC): A classification of industries by activity which has been developed by the U.S. Bureau of the Budget. The SIC code is a number that refers to an industrial category. The SIC numbers included in this study, with the function they represent, are shown below:

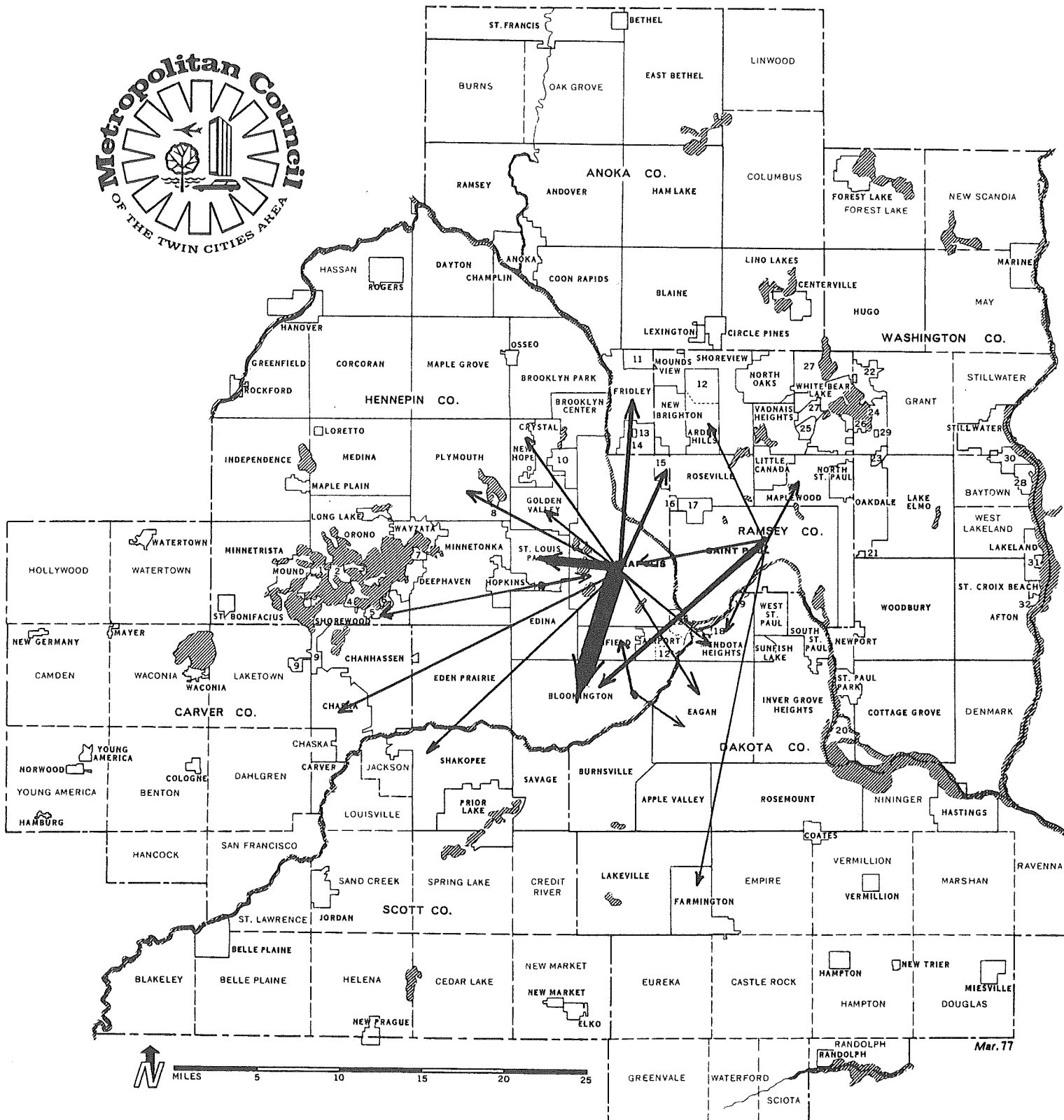
- 19-39 - manufacturing
 - 19 - ordnance and accessories
 - 20 - food and kindred products
 - 21 - tobacco
 - 22 - textile mill products
 - 23 - apparel
 - 24 - lumber and wood products (except furniture)
 - 25 - furniture and fixtures
 - 26 - paper
 - 27 - printing, publishing
 - 28 - chemicals
 - 29 - petroleum refining
 - 30 - rubber and plastic products
 - 31 - leather and leather products
 - 32 - stone, clay, glass, and concrete products
 - 33 - primary metals
 - 34 - fabricated metal products (except ordnance, machinery, and transportation equipment)
 - 35 - machinery (except electrical)
 - 36 - electrical machinery
 - 37 - transportation equipment
 - 38 - professional, scientific instruments, photographic and optical, watches and clocks
 - 39 - miscellaneous manufacturing
- 40-49 - transportation, communication, electric, gas, and sanitary services
- 50 - wholesale trade

APPENDIX C

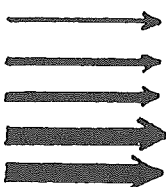
Industrial Migration Maps
1963-1977

Figure 16

INDUSTRIAL MIGRATION 1963



MOVES



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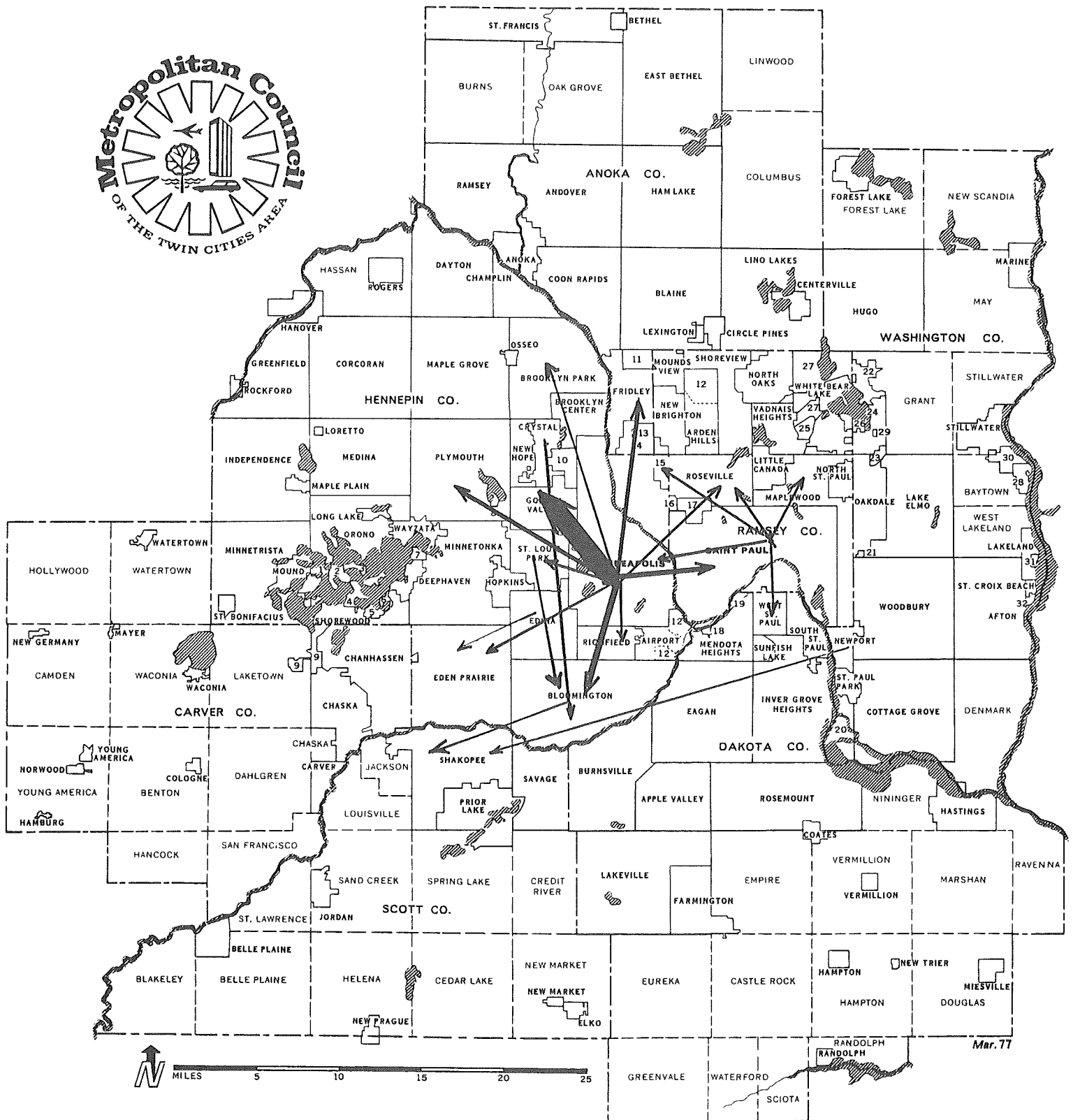
TWIN CITIES METROPOLITAN AREA Political Boundaries, 1977

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| 9 VICTORIA | 17 FALCON HEIGHTS | 25 GEM LAKE |
| 10 ROBBINSDALE | 18 MENDOTA | 26 BIRCHWOOD |
| 11 SPRING LAKE PARK | 19 LILYDALE | 27 WHITE BEAR |
| 12 U. S. GOVT. | 20 GREY CLOUD | 28 BAYPORT |
| 13 HILLTOP | 21 LANDFALL | 29 WILLERNIE |
| 14 COLUMBIA HEIGHTS | 22 DELLWOOD | 30 OAK PARK HEIGHTS |
| 15 ST. ANTHONY | 23 PINE SPRINGS | 31 LAKELAND SHORES |
| 16 LAUDERDALE | 24 MANTOMEDI | 32 ST. MARY'S POINT |

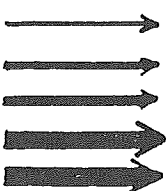
ANOKA — County Boundary
ORONO — Municipal Boundary
CAMDEN — Township Boundary

Figure 17

INDUSTRIAL MIGRATION 1964



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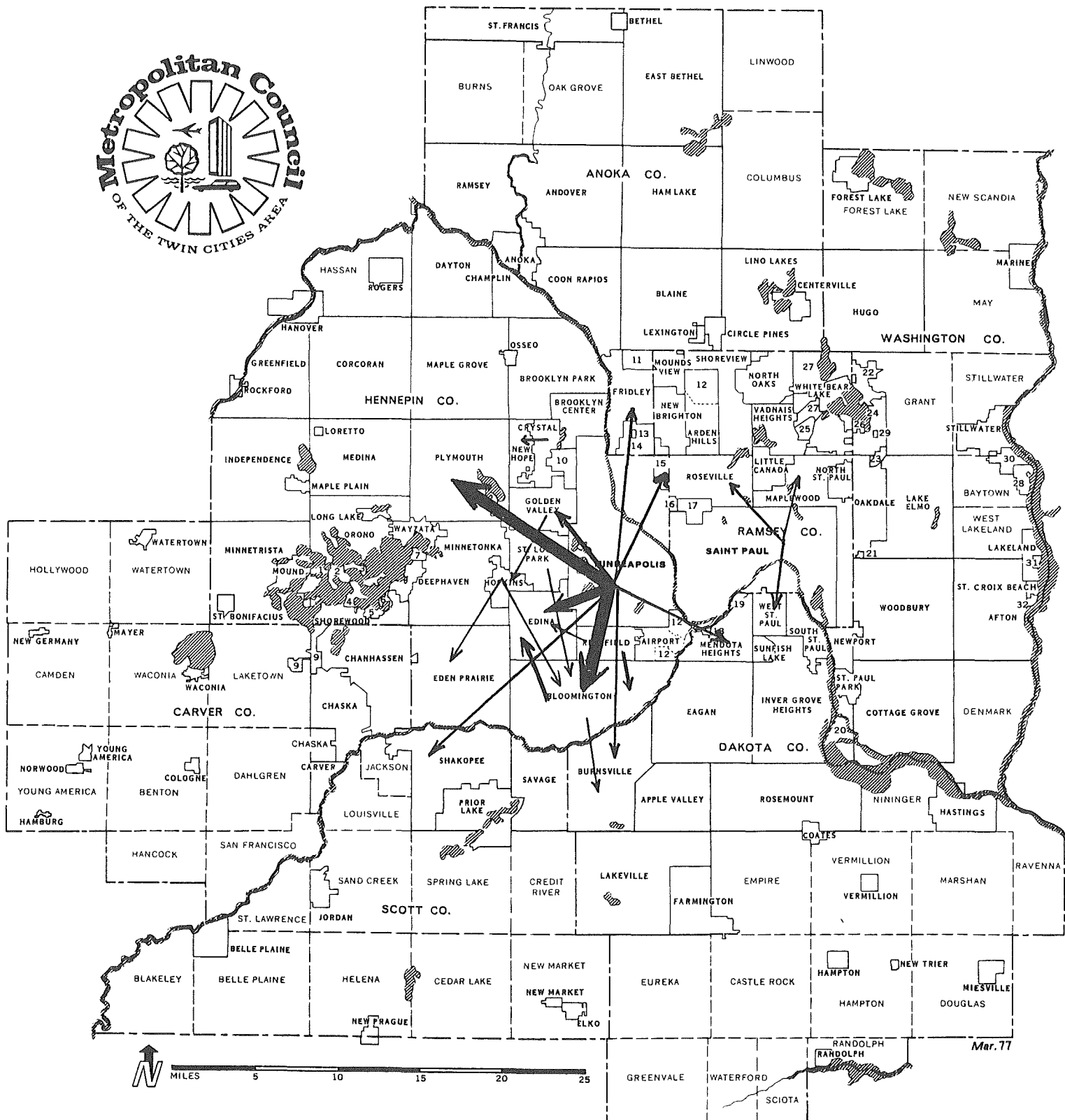
TWIN CITIES METROPOLITAN AREA Political Boundaries, 1977

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| 15 ST. ANTHONY | 23 PINE SPRINGS | 31 LAKELAND SHORES |
| 16 LAUDERDALE | 24 MAHOMME | 32 ST. MARY'S POINT |

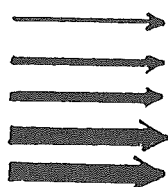
- ANOKA** — County Boundary
ORONO — Municipal Boundary
CAMDEN — Township Boundary

Figure 18

INDUSTRIAL MIGRATION 1965



MOVES



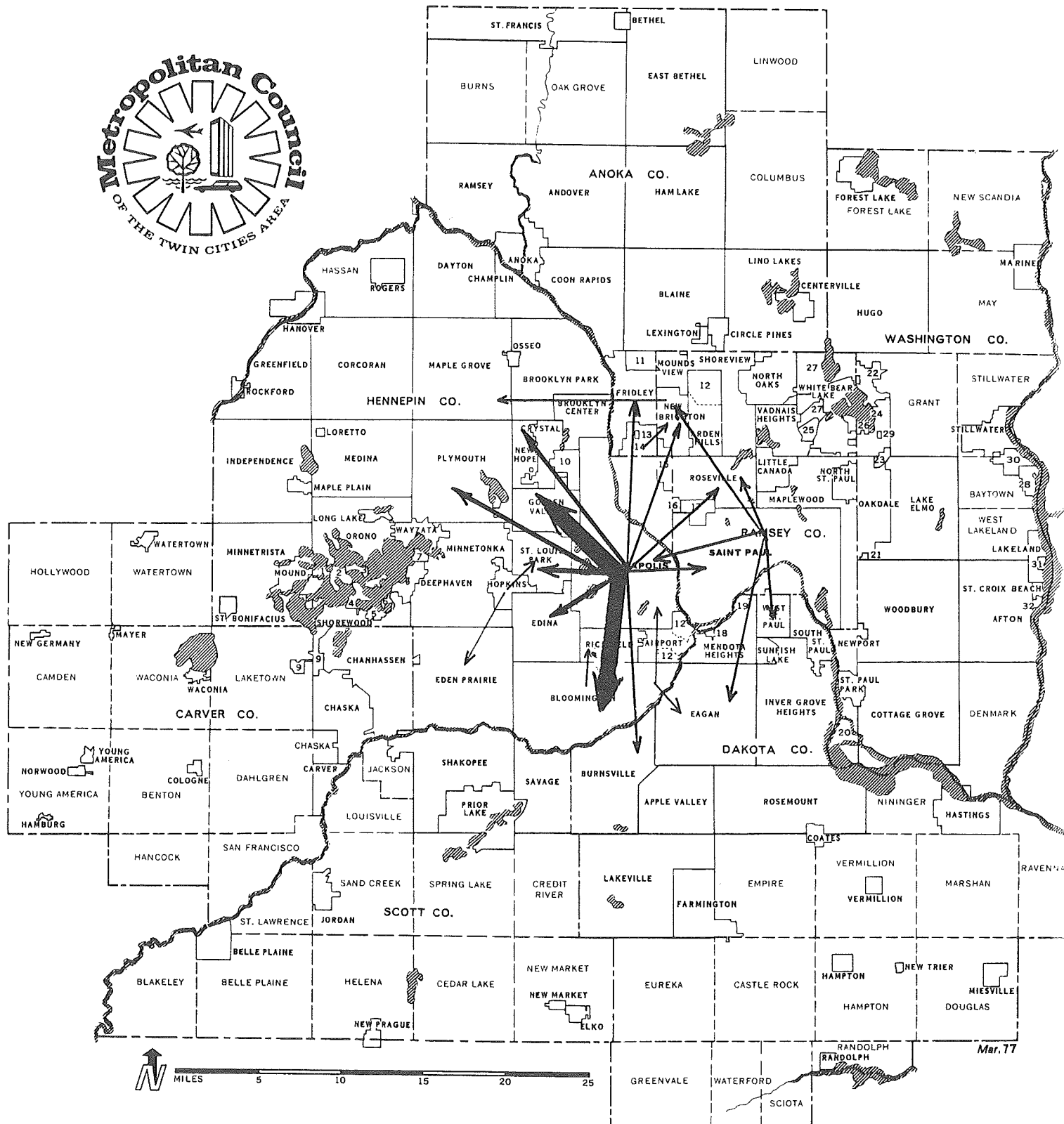
TWIN CITIES METROPOLITAN AREA Political Boundaries, 1977

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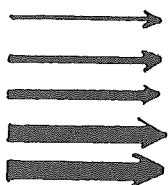
ANOKA — County Boundary
ORONO — Municipal Boundary
CAMDEN — Township Boundary

Figure 19

INDUSTRIAL MIGRATION 1966



MOVES



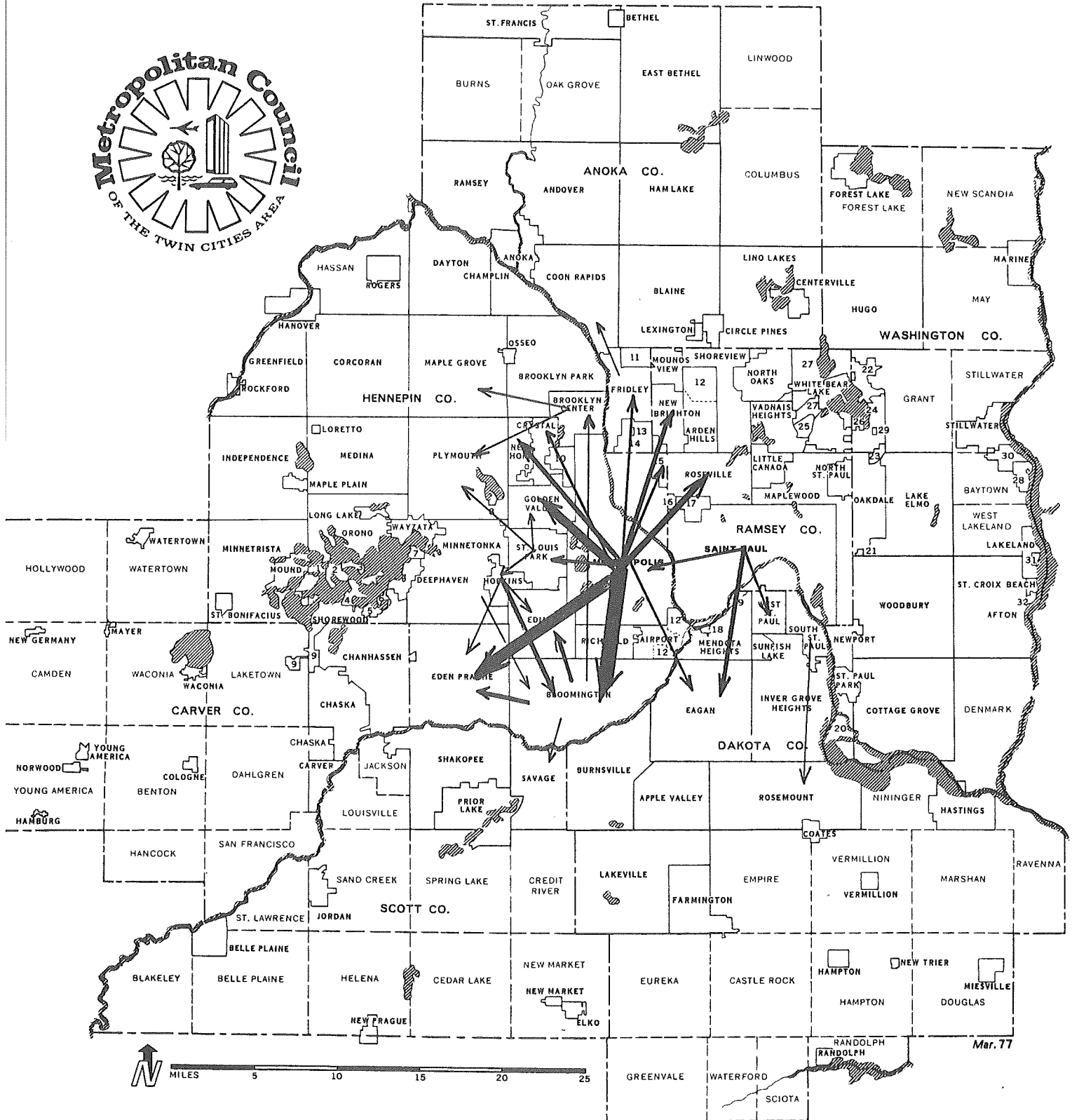
TWIN CITIES METROPOLITAN AREA Political Boundaries, 1977

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| 9 VICTORIA | 17 FALCON HEIGHTS | 25 GEM LAKE |
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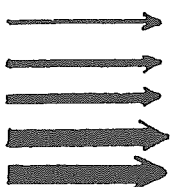
ANOKA — County Boundary
ORONO — Municipal Boundary
CAMDEN — Township Boundary

Figure 20

INDUSTRIAL MIGRATION 1967



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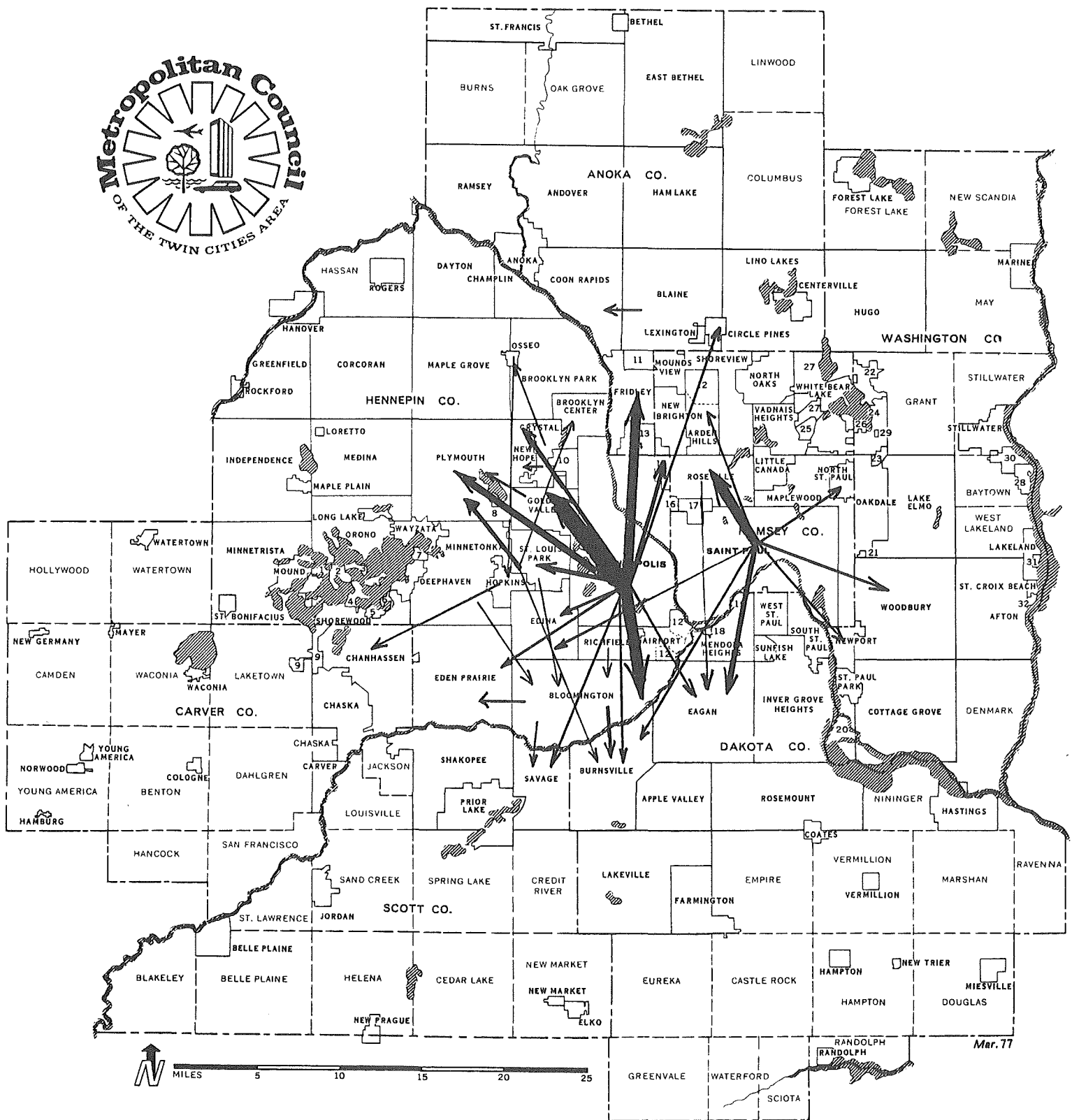
TWIN CITIES METROPOLITAN AREA Political Boundaries, 1977

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| 9 VICTORIA | 17 FALCON HEIGHTS | 25 GEM LAKE |
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| 16 LAUDERDALE | 24 MAHOMETE | 32 ST. MARY'S POINT |

- ANOKA — County Boundary
ORONO — Municipal Boundary
CAMDEN — Township Boundary

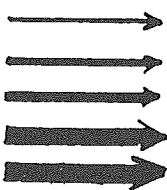
Figure 21

INDUSTRIAL MIGRATION 1968



TWIN CITIES METROPOLITAN AREA Political Boundaries, 1977

MOVES



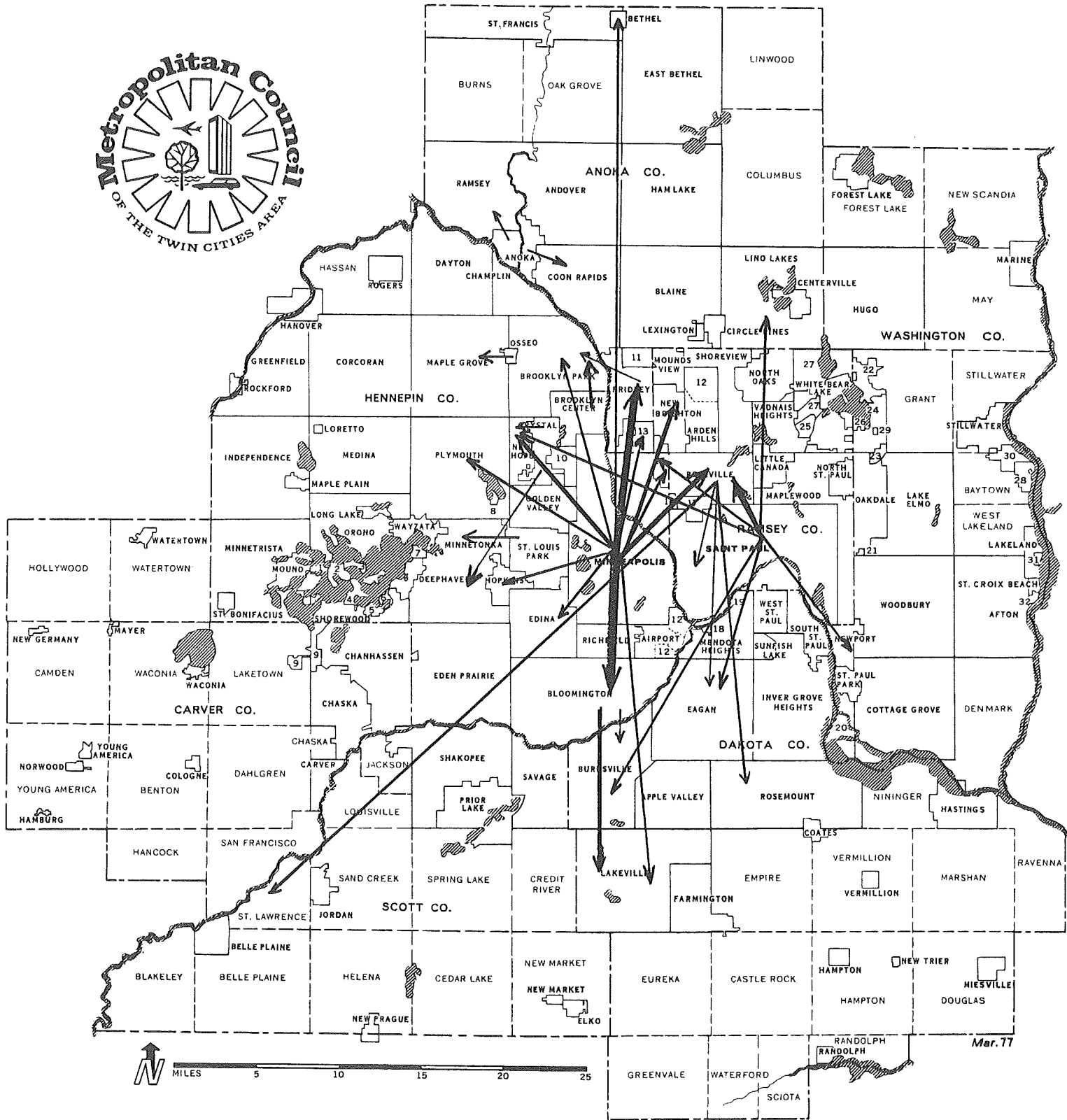
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| 9 VICTORIA | 17 FALCON HEIGHTS | 25 GEM LAKE |
| 10 ROBBINSDALE | 18 MENDOTA | 26 BIRCHWOOD |
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| 12 U. S. GOVT. | 20 GREY CLOUD | 28 BAYPORT |
| 13 HILLTOP | 21 LANDFALL | 29 WILLERNIE |
| 14 COLUMBIA HEIGHTS | 22 DELLWOOD | 30 OAK PARK HEIGHTS |
| 15 ST. ANTHONY | 23 PINE SPRINGS | 31 LAKELAND SHORES |
| 16 LAUDERDALE | 24 MAHTOMEDI | 32 ST. MARY'S POINT |

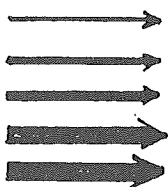
ANOKA — County Boundary
ORONO — Municipal Boundary
CAMDEN — Township Boundary

Figure 22

INDUSTRIAL MIGRATION 1969



MOVES



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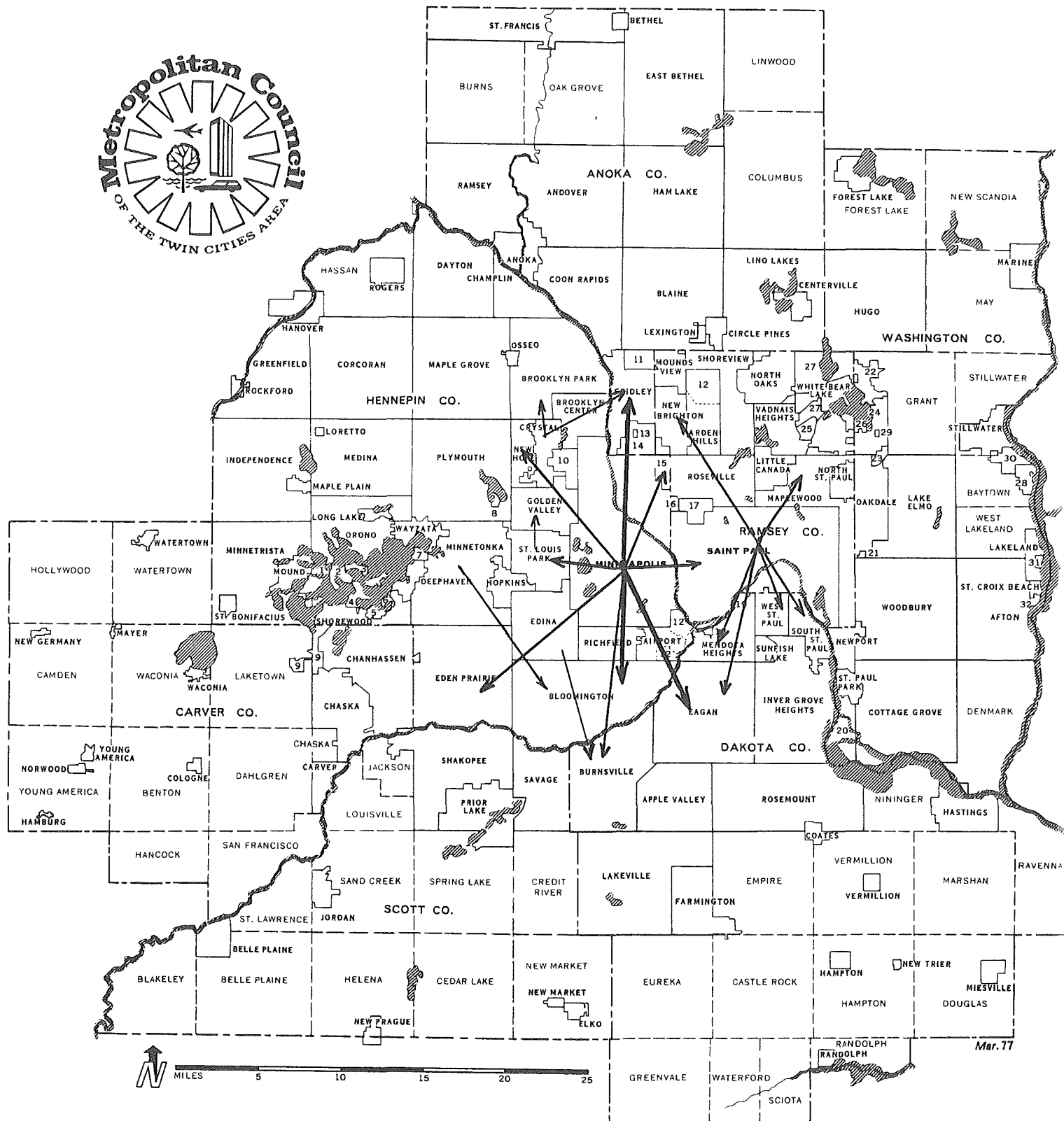
TWIN CITIES METROPOLITAN AREA Political Boundaries, 1977

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| 15 ST. ANTHONY | 23 PINE SPRINGS | 31 LAKELAND SHORES |
| 16 LAUDERDALE | 24 MAHOMETDI | 32 ST. MARY'S POINT |

- ANOKA** — County Boundary
ORONO — Municipal Boundary
CAMDEN — Township Boundary

Figure 23

INDUSTRIAL MIGRATION 1970



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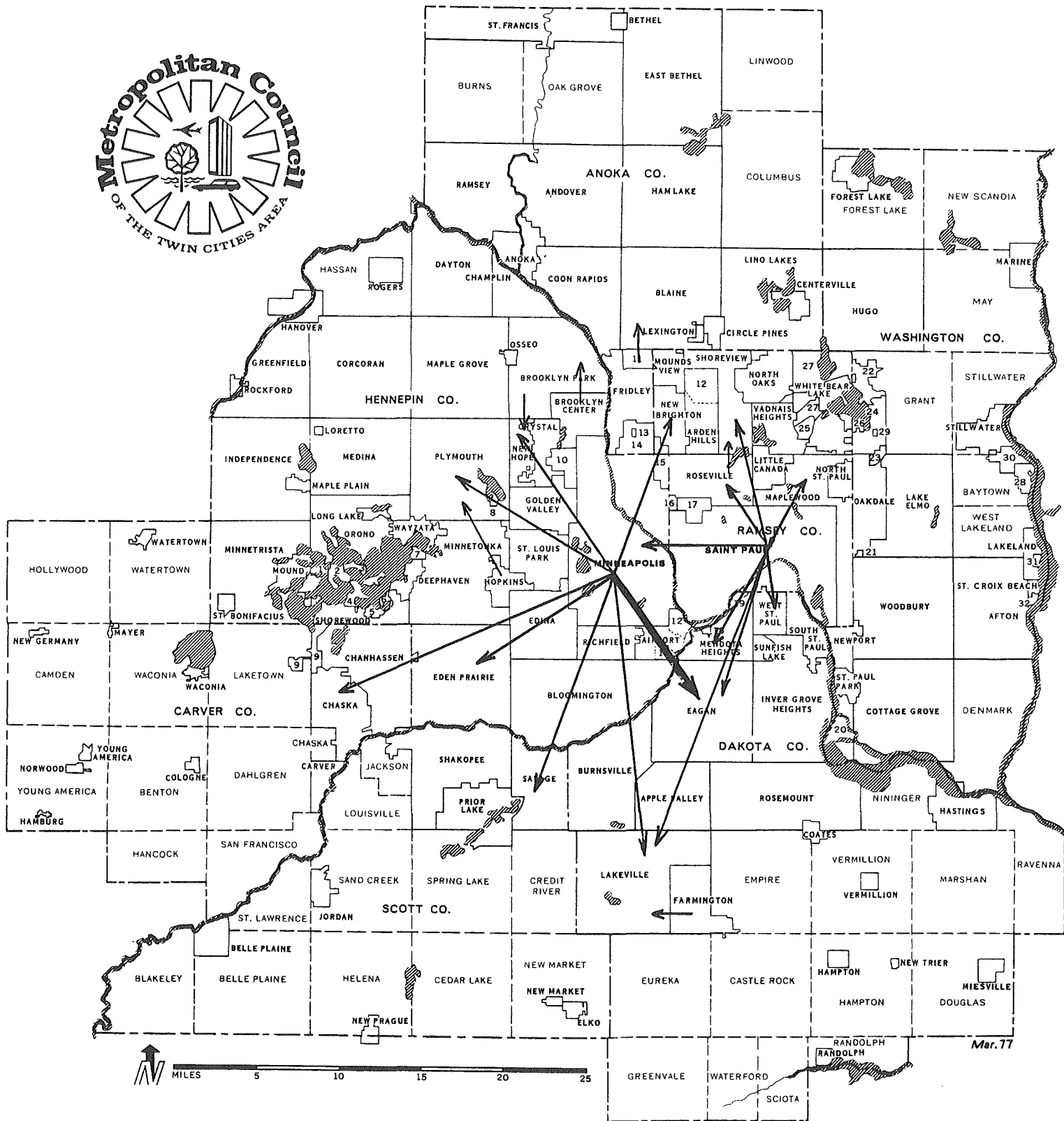
TWIN CITIES METROPOLITAN AREA Political Boundaries, 1977

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| 10 ROBBINSDALE | 18 HENDOTA | 26 BIRCHWOOD |
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| 12 U. S. GOVT. | 20 GREY CLOUD | 28 BAYPORT |
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| 14 COLUMBIA HEIGHTS | 22 DELLWOOD | 30 OAK PARK HEIGHTS |
| 15 ST. ANTHONY | 23 PINE SPRINGS | 31 LAKELAND SHORES |
| 16 LAUDERDALE | 24 MONTMEDI | 32 ST. MARY'S POINT |

- ANOKA — County Boundary
 OROHO — Municipal Boundary
 CAMDEN — Township Boundary

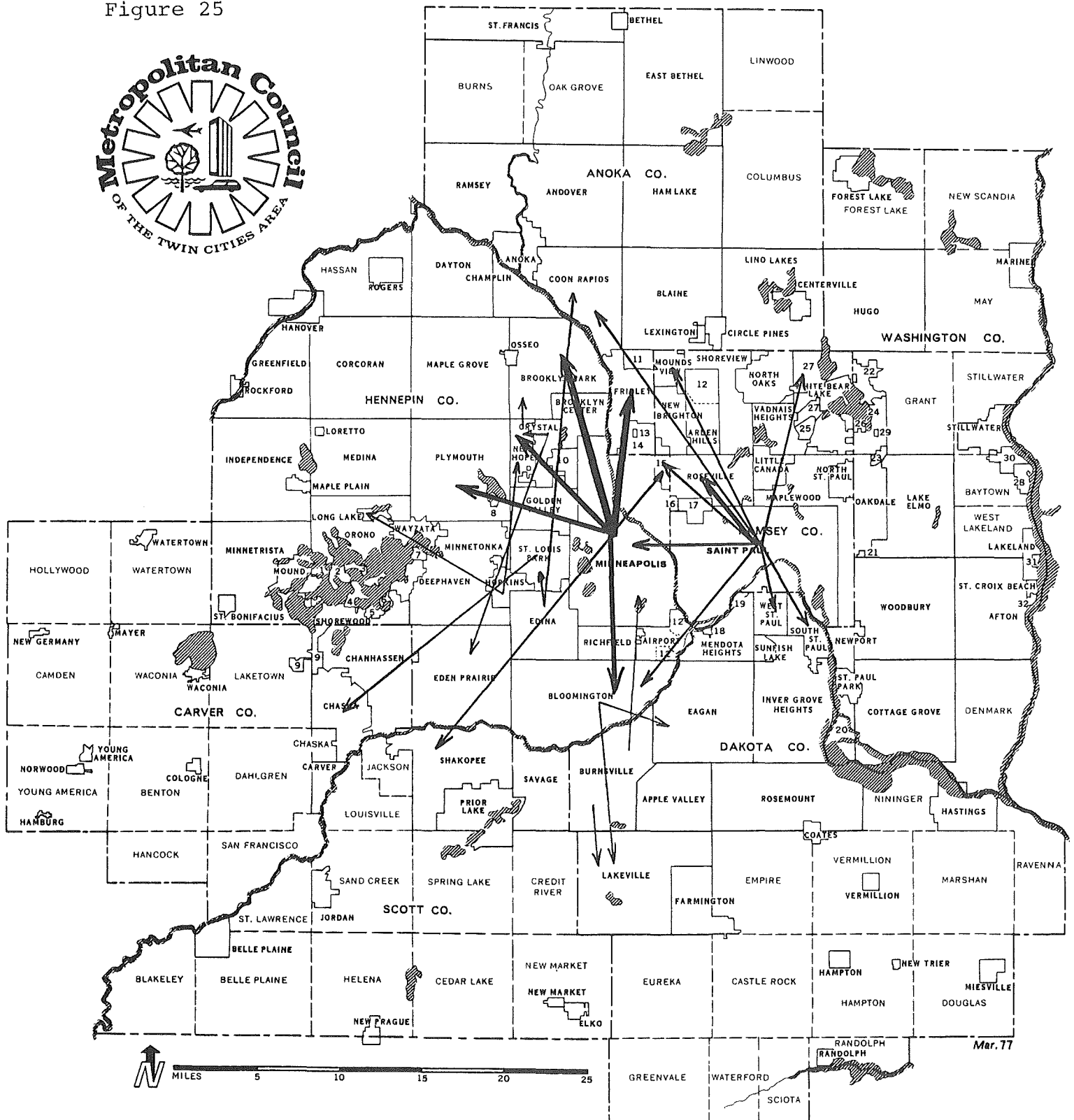
Figure 24

INDUSTRIAL MIGRATION 1971



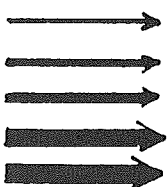
INDUSTRIAL MIGRATION 1972

Figure 25



TWIN CITIES METROPOLITAN AREA Political Boundaries, 1977

MOVES



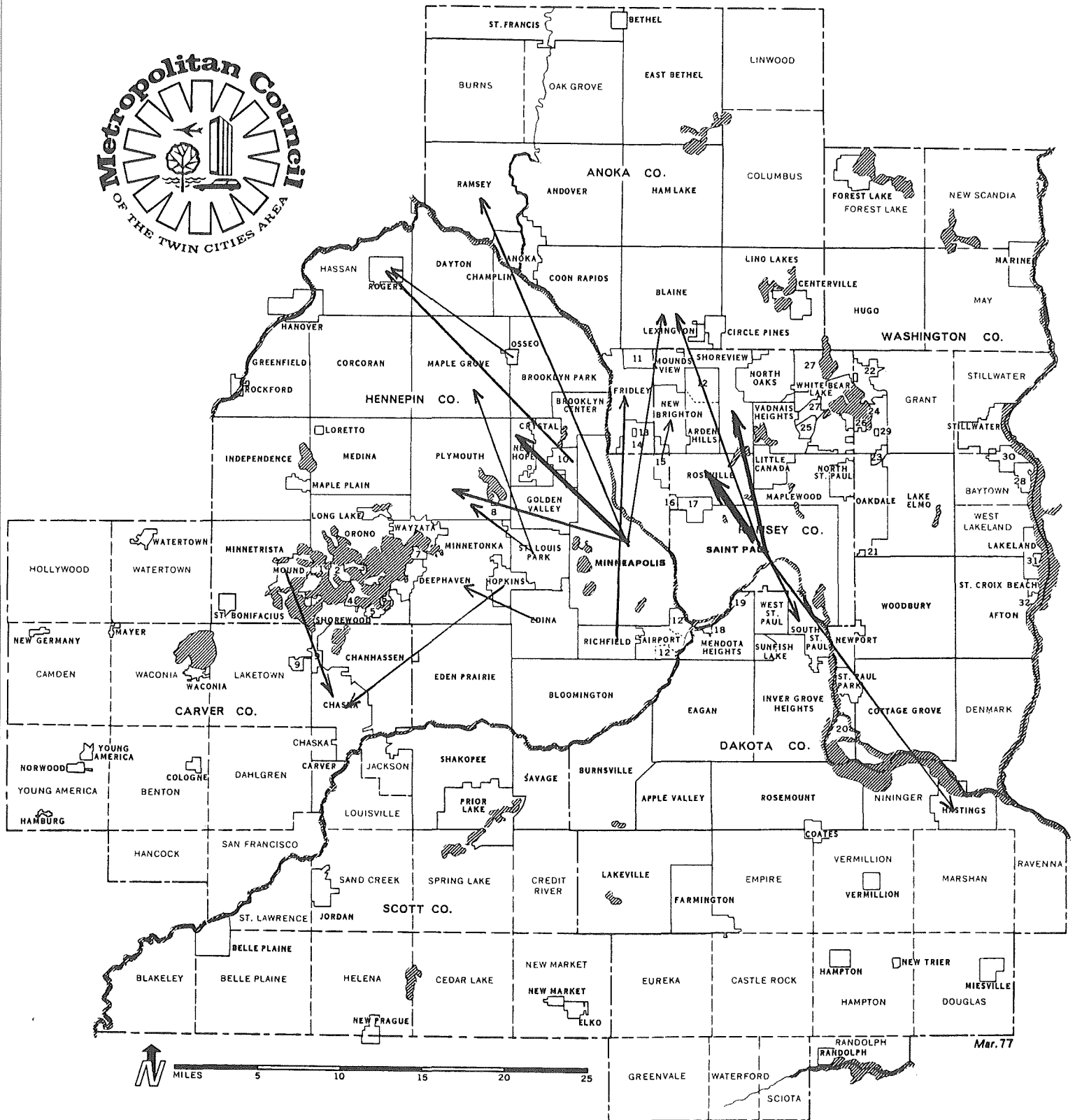
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| 10 ROBBINSDALE | 18 MENDOTA | 26 BIRCHWOOD |
| 11 SPRING LAKE PARK | 19 LILYDALE | 27 WHITE BEAR |
| 12 U. S. GOVT. | 20 GREY CLOUD | 28 BAYPORT |
| 13 HILLTOP | 21 LANDFALL | 29 WILLERNIE |
| 14 COLUMBIA HEIGHTS | 22 DELLWOOD | 30 OAK PARK HEIGHTS |
| 15 ST. ANTHONY | 23 PINE SPRINGS | 31 LAKELAND SHORES |
| 16 LAUDERDALE | 24 MAHYTOMEE | 32 ST. MARY'S POINT |

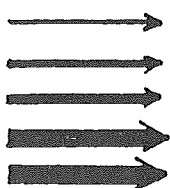
ANOKA — County Boundary
ORONO — Municipal Boundary
CAMDEN — Township Boundary

Figure 26

INDUSTRIAL MIGRATION 1973



MOVES



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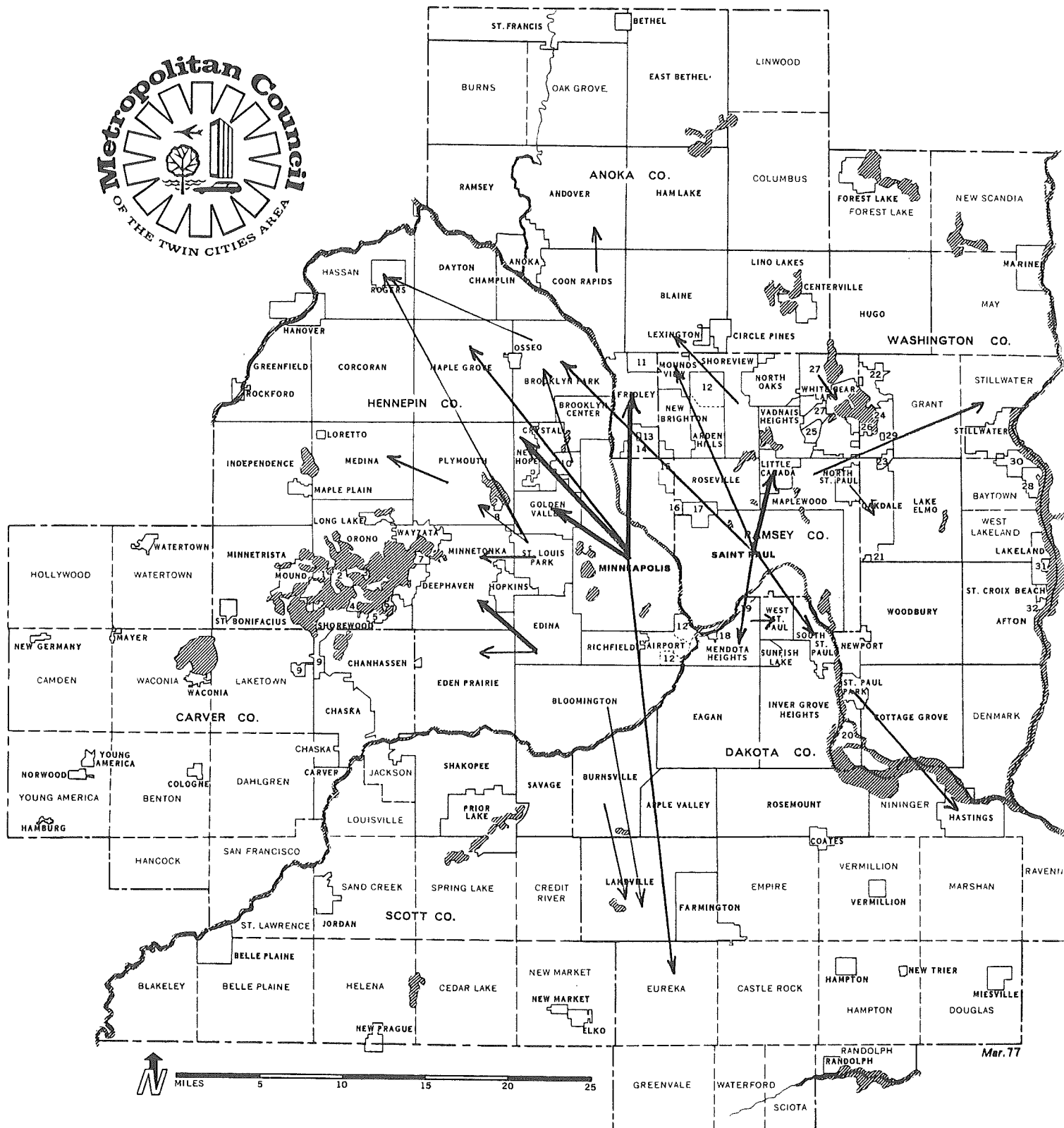
TWIN CITIES METROPOLITAN AREA Political Boundaries, 1977

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| 10 ROBBINSDALE | 18 MENDOTA | 26 BIRCHWOOD |
| 11 SPRING LAKE PARK | 19 LILYDALE | 27 WHITE BEAR |
| 12 U. S. GOVT. | 20 GREY CLOUD | 28 BAYPORT |
| 13 HILLTOP | 21 LANDFALL | 29 WILLERNIE |
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| 15 ST. ANTHONY | 23 PINE SPRINGS | 31 LAKELAND SHORES |
| 16 LAUDERDALE | 24 MAHOMETI | 32 ST. MARY'S POINT |

ANOKA — County Boundary
ORONO — Municipal Boundary
CAMDEN — Township Boundary

Figure 27

INDUSTRIAL MIGRATION 1974



TWIN CITIES METROPOLITAN AREA Political Boundaries, 1977

Figure 28

INDUSTRIAL MIGRATION 1975

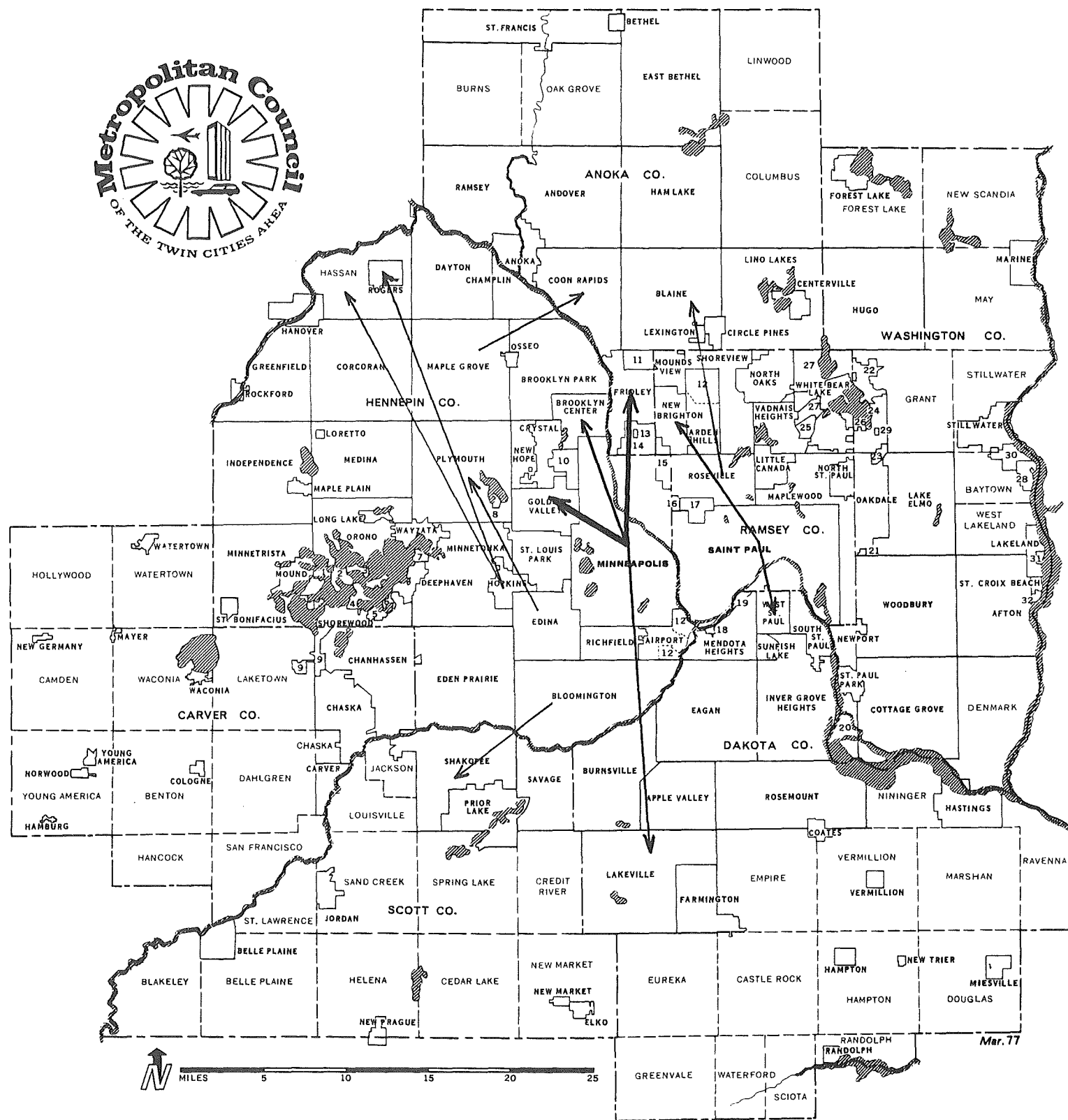


Figure 29

INDUSTRIAL MIGRATION 1976

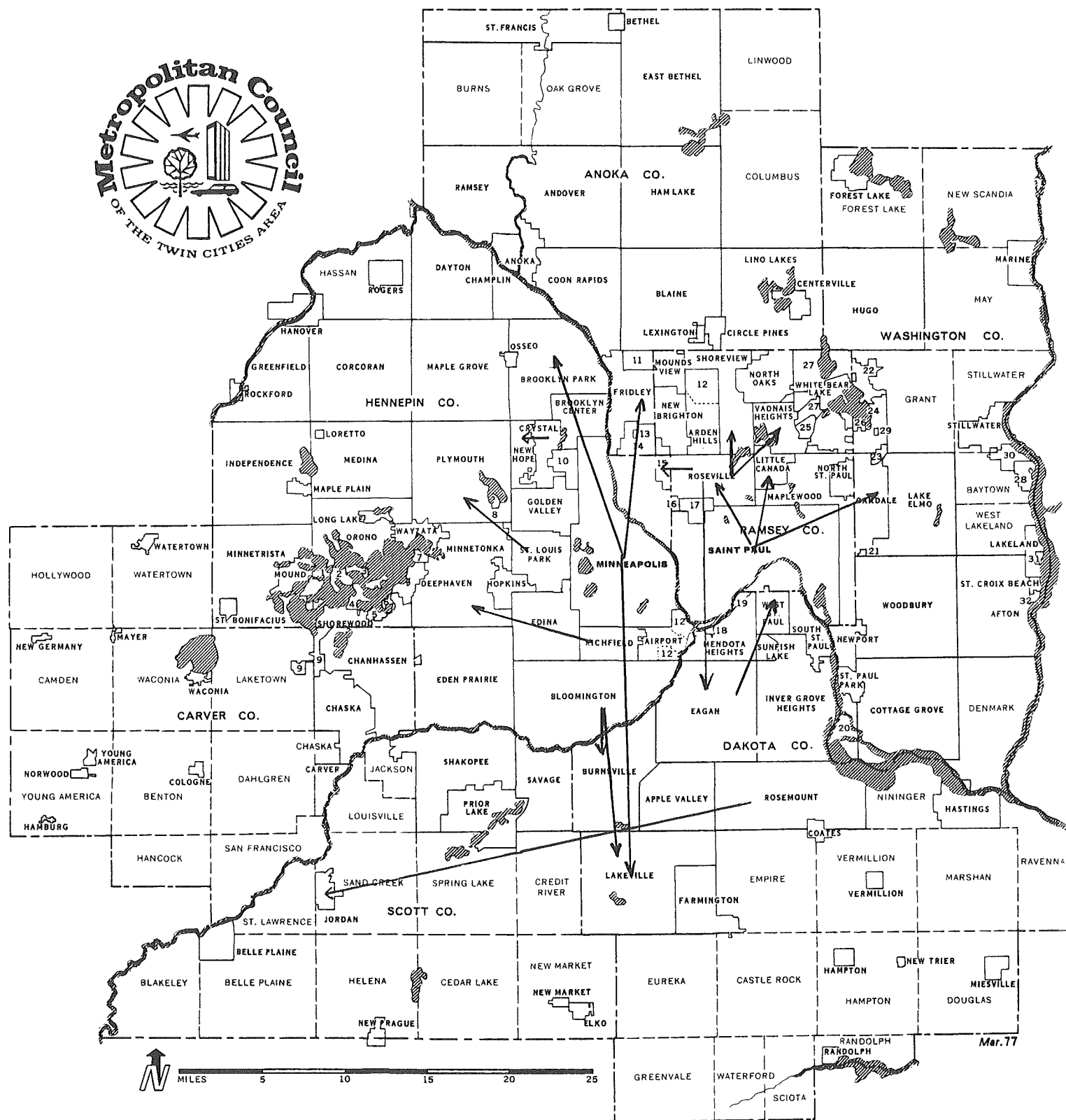
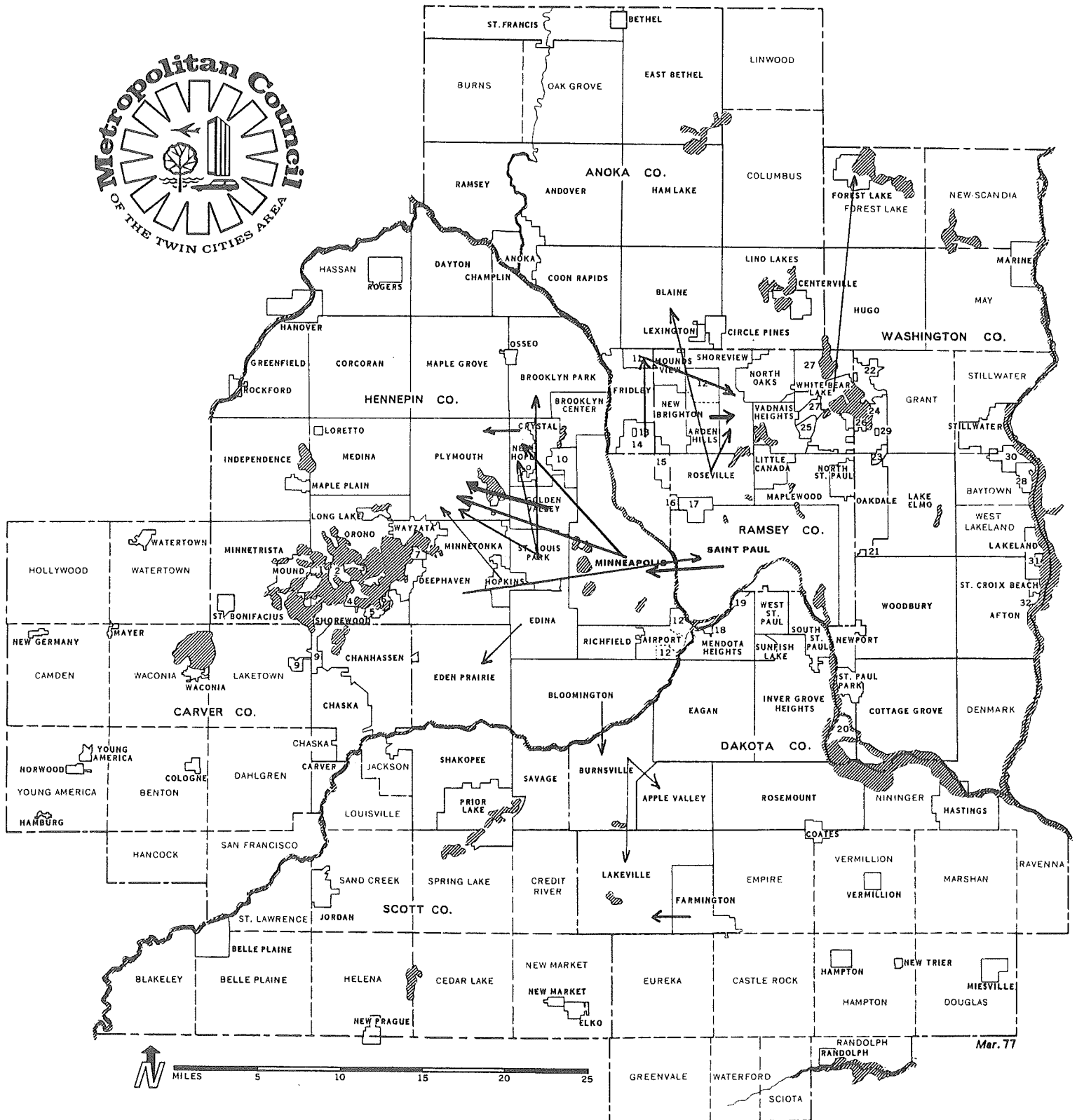
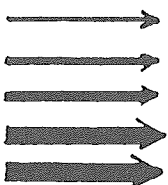


Figure 30

INDUSTRIAL MIGRATION 1977



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TWIN CITIES METROPOLITAN AREA Political Boundaries, 1977

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| 9 VICTORIA | 17 FALCON HEIGHTS | 25 GEM LAKE |
| 10 ROBBINSDALE | 18 MENDOTA | 26 BIRCHWOOD |
| 11 SPRING LAKE PARK | 19 LILYDALE | 27 WHITE BEAR |
| 12 U. S. GOVT. | 20 GREY CLOUD | 28 BAYPORT |
| 13 HILLTOP | 21 LANDFALL | 29 WILLERNIE |
| 14 COLUMBIA HEIGHTS | 22 DELLWOOD | 30 OAK PARK HEIGHTS |
| 15 ST. ANTHONY | 23 PINE SPRINGS | 31 LAKELAND SHORES |
| 16 LAUDERDALE | 24 MANTOMEDI | 32 ST. MARY'S POINT |

- ANOKA** — County Boundary
- ORONO** — Municipal Boundary
- CAMDEN** — Township Boundary

APPENDIX D
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APPENDIX E
Transportation Time Line Maps

TWENTY MINUTE TIME LINE FOR EDEN PRAIRIE

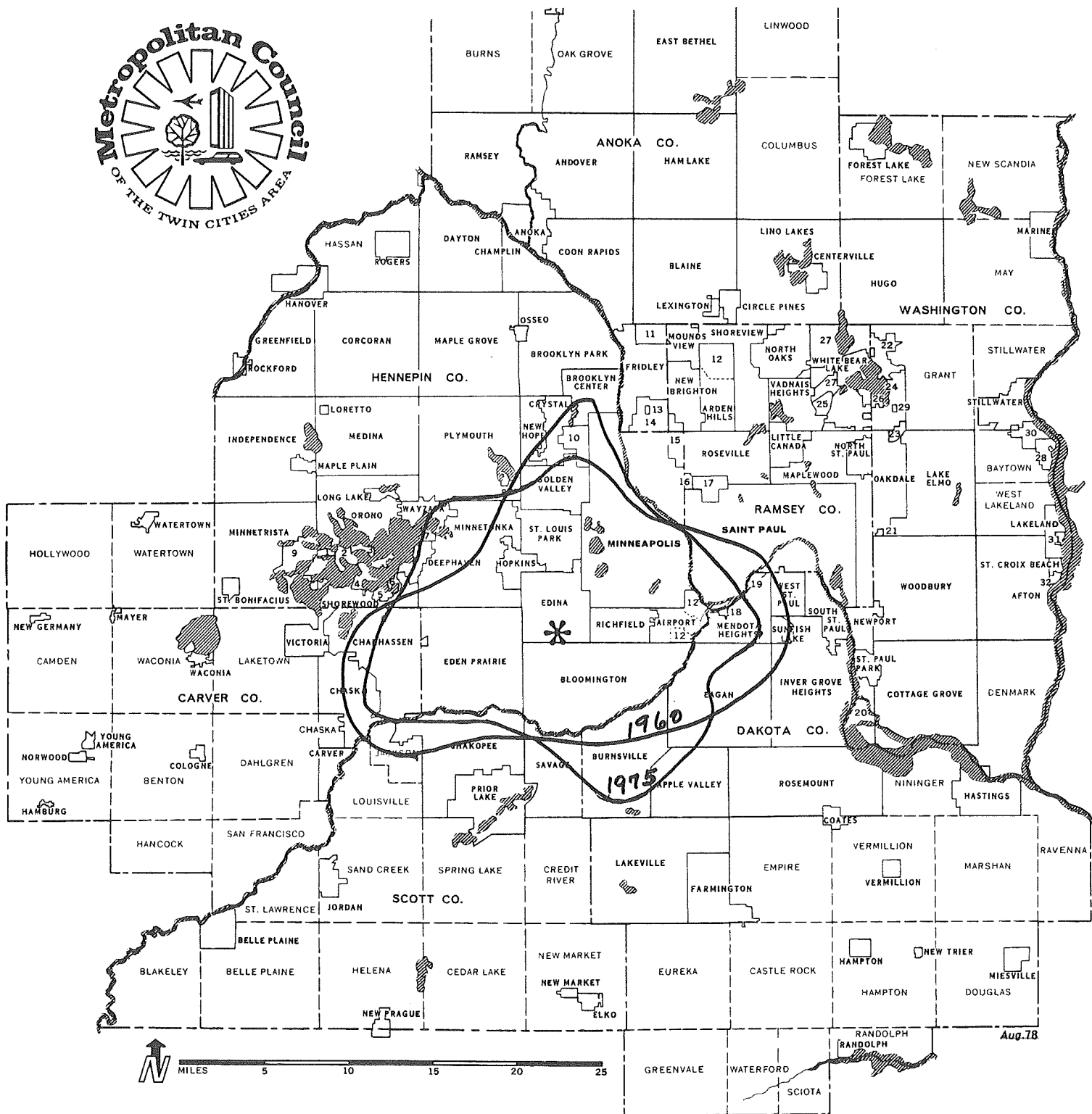


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| 1 SPRING PARK | 9 MOUND | 17 FALCON HEIGHTS | 25 GEM LAKE |
| 2 ORONO | 10 ROBBINSDALE | 18 HENDOTA | 26 BIRCHWOOD |
| 3 MINNETONKA BEACH | 11 SPRING LAKE PARK | 19 LILYDALE | 27 WHITE BEAR |
| 4 TONKA BAY | 12 U. S. GOV'T. | 20 GREY CLOUD | 28 ARROYO |
| 5 EXCELSIOR | 13 HILLTOP | 21 LANDFALL | 29 WILLERNIE |
| 6 GREENWOOD | 14 COLUMBIA HEIGHTS | 22 DELLWOOD | 30 OAK PARK HEIGHTS |
| 7 WOODLAND | 15 ST. ANTHONY | 23 PINE SPRINGS | 31 LAKELAND SHORES |
| 8 MEDICINE LAKE | 16 LAUDERDALE | 24 MANTOMEDI | 32 ST. MARY'S POINT |

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Figure 32

TWENTY MINUTE TIME LINE FOR EDINA

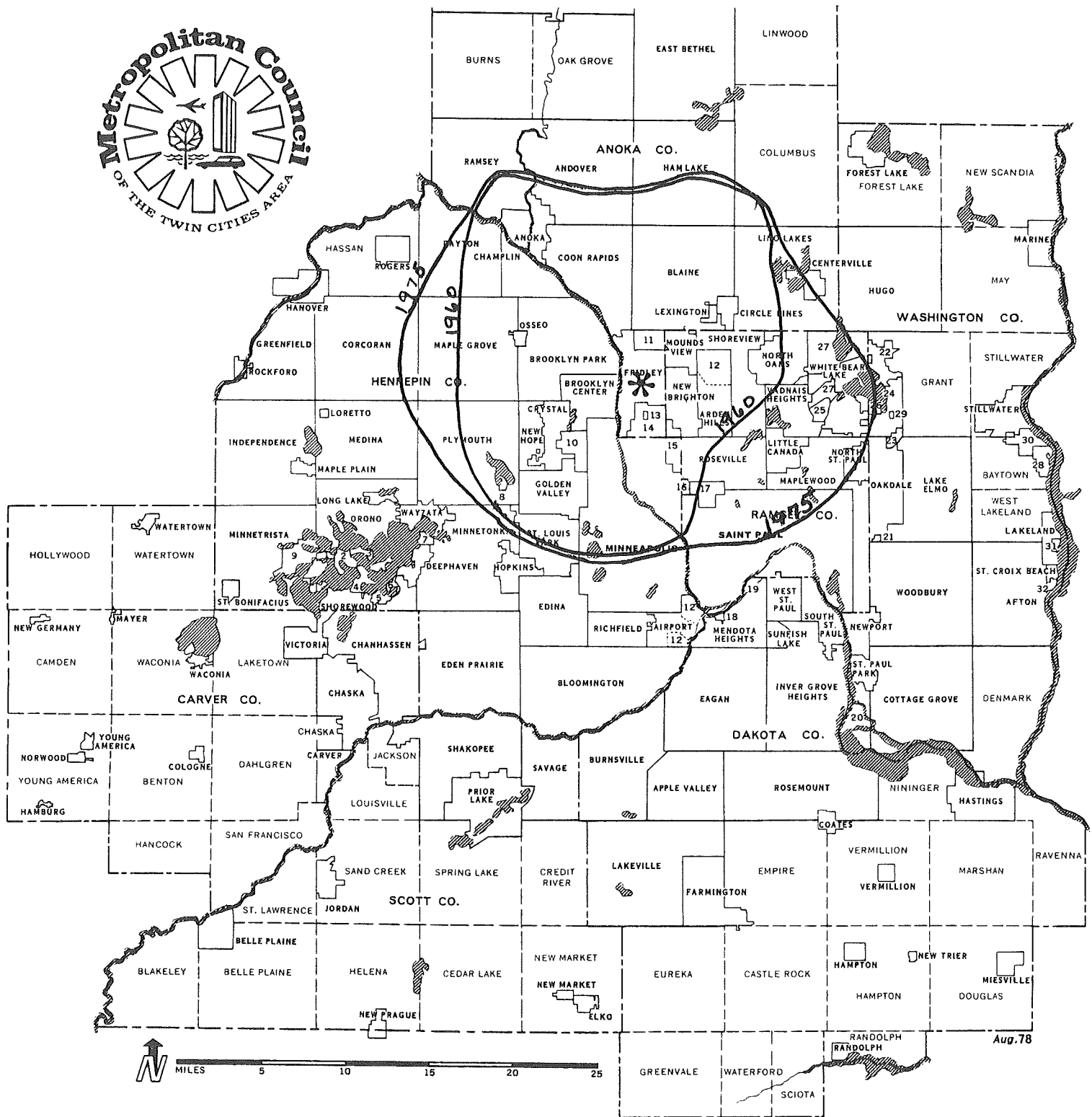


**TWIN CITIES METROPOLITAN AREA
Political Boundaries, 1978**

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| 1 SPRING PARK | 9 MOUND | 17 FALCON HEIGHTS | 25 GEM LAKE |
| 2 ORONO | 10 ROBBINSDALE | 18 MENDOTA | 26 BIRCHWOOD |
| 3 MINNETONKA BEACH | 11 SPRING LAKE PARK | 19 LILYDALE | 27 WHITE BEAR |
| 4 TONKA BAY | 12 U. S. GOVT. | 20 GREY CLOUD | 28 BAYPORT |
| 5 EXCELSIOR | 13 HILLTOP | 21 LANDFALL | 29 WILLERNIE |
| 6 GREENWOOD | 14 COLUMBIA HEIGHTS | 22 DELWOOD | 30 OAK PARK HEIGHTS |
| 7 WOODLAND | 15 ST. ANTHONY | 23 PINE SPRINGS | 31 LAKELAND SHORES |
| 8 MEDICINE LAKE | 16 LAUDERDALE | 24 MAHOMETI | 32 ST. MARY'S POINT |

Figure 33

TWENTY MINUTE TIME LINE FOR FRIDLEY



TWIN CITIES METROPOLITAN AREA Political Boundaries, 1978

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| 1 SPRING PARK | 9 MOUND | 17 FALCON HEIGHTS | 25 GEN LAKE |
| 2 ORONO | 10 ROBBINSDALE | 18 MENDOTA | 26 BIRCHWOOD |
| 3 MINNETONKA BEACH | 11 SPRING LAKE PARK | 19 LILYDALE | 27 WHITE BEAR |
| 4 TORNA BAY | 12 U. S. GOVT. | 20 GREY CLOUD | 28 BAYPORT |
| 5 EXCELSIOR | 13 HILLTOP | 21 LANDFALL | 29 WILLERIE |
| 6 GREENWOOD | 14 COLUMBIA HEIGHTS | 22 DELLWOOD | 30 OAK PARK HEIGHTS |
| 7 WOODLAND | 15 ST. ANTHONY | 23 PINE SPRINGS | 31 LAKELAND SHORES |
| 8 MEDICINE LAKE | 16 LAUDERDALE | 24 MAHOMETE | 32 ST. MARY'S POINT |

ANOKA — County Boundary
ORONO — Municipal Boundary
CAMDEN — Township Boundary

Figure 34

TWENTY MINUTE TIME LINE FOR MENDOTA HEIGHTS



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| 1 SPRING PARK | 9 MOUND | 17 FALCON HEIGHTS | 25 GEM LAKE |
| 2 ORONO | 10 ROBBINSDALE | 18 MENDOTA | 26 BIRCHWOOD |
| 3 MINNETONKA BEACH | 11 SPRING LAKE PARK | 19 LILYDALE | 27 WHITE BEAR |
| 4 TONKA RAY | 12 U. S. GOVT. | 20 GREY CLOUD | 28 BAYPORT |
| 5 EXCELSIOR | 13 HILLTOP | 21 LANDFALL | 29 WILLERNIE |
| 6 GREENWOOD | 14 COLUMBIA HEIGHTS | 22 DELLWOOD | 30 OAK PARK HEIGHTS |
| 7 WOODLAND | 15 ST. ANTHONY | 23 PINE SPRINGS | 31 LAKELAND SHORES |
| 8 MEDICINE LAKE | 16 LAUDERDALE | 24 MAHOMETDI | 32 ST. MARY'S POINT |

ANOKA — County Boundary
 ORONO — Municipal Boundary
 CAMDEN — Township Boundary

Figure 35

TWENTY MINUTE TIME LINE FOR ROSEVILLE

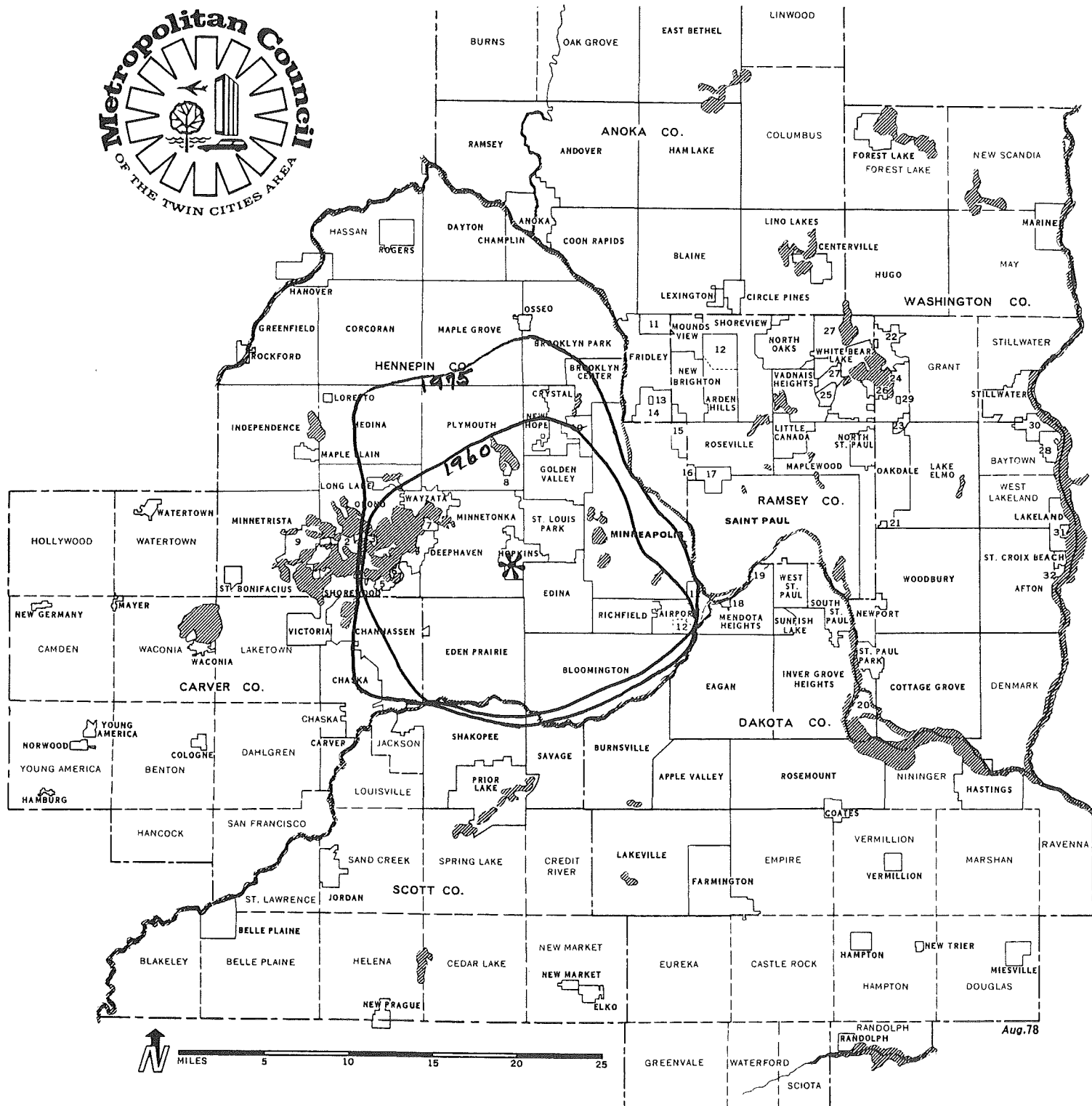


TWIN CITIES METROPOLITAN AREA Political Boundaries, 1978

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| 1 SPRING PARK | 9 MOUND | 17 FALCON HEIGHTS | 25 GEM LAKE |
| 2 OROHO | 10 ROBBINSDALE | 18 MENDOTA | 26 BIRCHWOOD |
| 3 MINNETONKA BEACH | 11 SPRING LAKE PARK | 19 LILYDALE | 27 WHITE BEAR |
| 4 TONKA BAY | 12 U. S. GOVT. | 20 GREY CLOUD | 28 BAYPORT |
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| 6 GREENWOOD | 14 COLUMBIA HEIGHTS | 22 DELLWOOD | 30 OAK PARK HEIGHTS |
| 7 WOODLAND | 15 ST. ANTHONY | 23 PINE SPRINGS | 31 LAKELAND SHORES |
| 8 MEDICINE LAKE | 16 LAUDERDALE | 24 MAHTOMEDI | 32 ST. MARY'S POINT |

Figure 36

TWENTY MINUTE TIME LINE FOR HOPKINS



TWIN CITIES METROPOLITAN AREA Political Boundaries, 1978

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| 1 SPRING PARK | 9 MOUND | 17 FALCON HEIGHTS | 25 GEM LAKE |
| 2 ORONO | 10 ROBBINSDALE | 18 MENDOTA | 26 BIRCHWOOD |
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