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DRAFT

ENVIRONMENTAL IMPACT STATEMENT

US-12/I-394

Between SR-101 and I-94

in Wayzata, Minnetonka, Saint Louis Park, Golden Valley, and Minneapolis

Hennepin County **Minnesota**



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U.S. Highway 12

from SR-101 to I-494

and

Interstate Highway 394

from I-494 to I-94

in Wayzata, Minnetonka, Saint Louis Park,

Golden Valley, and Minneapolis

Hennepin County

Minnesota Project I-394-6(1)226

State Projects 2714 and 2789-01

ADMINISTRATIVE ACTION

DRAFT ENVIRONMENTAL IMPACT STATEMENT

The State of Minnesota

Department of Transportation

Submitted pursuant to Minnesota Statutes 116D.01 et seq.

March 19, 1982
date

Francis C. Marshall
Assistant Commissioner
Minnesota Department of Transportation

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ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ADT	average daily traffic
BNR	Burlington Northern Railroad
BOD	biological oxygen demand
CAC	Citizens Advisory Committee
CaCl	calcium chloride
CBD	central business district
C-D	collector-distributor (road)
CEQ	Council on Environmental Quality
CFS	cubic feet per second
Cl	chloride
CNW	Chicago and Northwestern (railroad)
CO	carbon monoxide
COD	chemical oxygen demand
COE	Corps of Engineers
CR-	County Road
Cu	copper
dBA	decibels
DEIS	Draft Environmental Impact Statement
DNL	design noise level
DOA	Department of Agriculture
DOT	Department of Transportation
DSR	Design Study Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FEIS	Final Environmental Impact Statement
FHPM	Federal-Aid Highway Program Manual
FHWA	Federal Highway Administration
HC	hydrocarbons
HEW	Health, Education, and Welfare (Department)
HNTB	Howard, Needles, Tammen and Bergendoff
HOV	high occupancy vehicle
I-	Interstate (highway)
ISC	Interstate Study Committee
kg	kilogram
l	litre
LRT	light rail transit

ABBREVIATIONS
(continued)

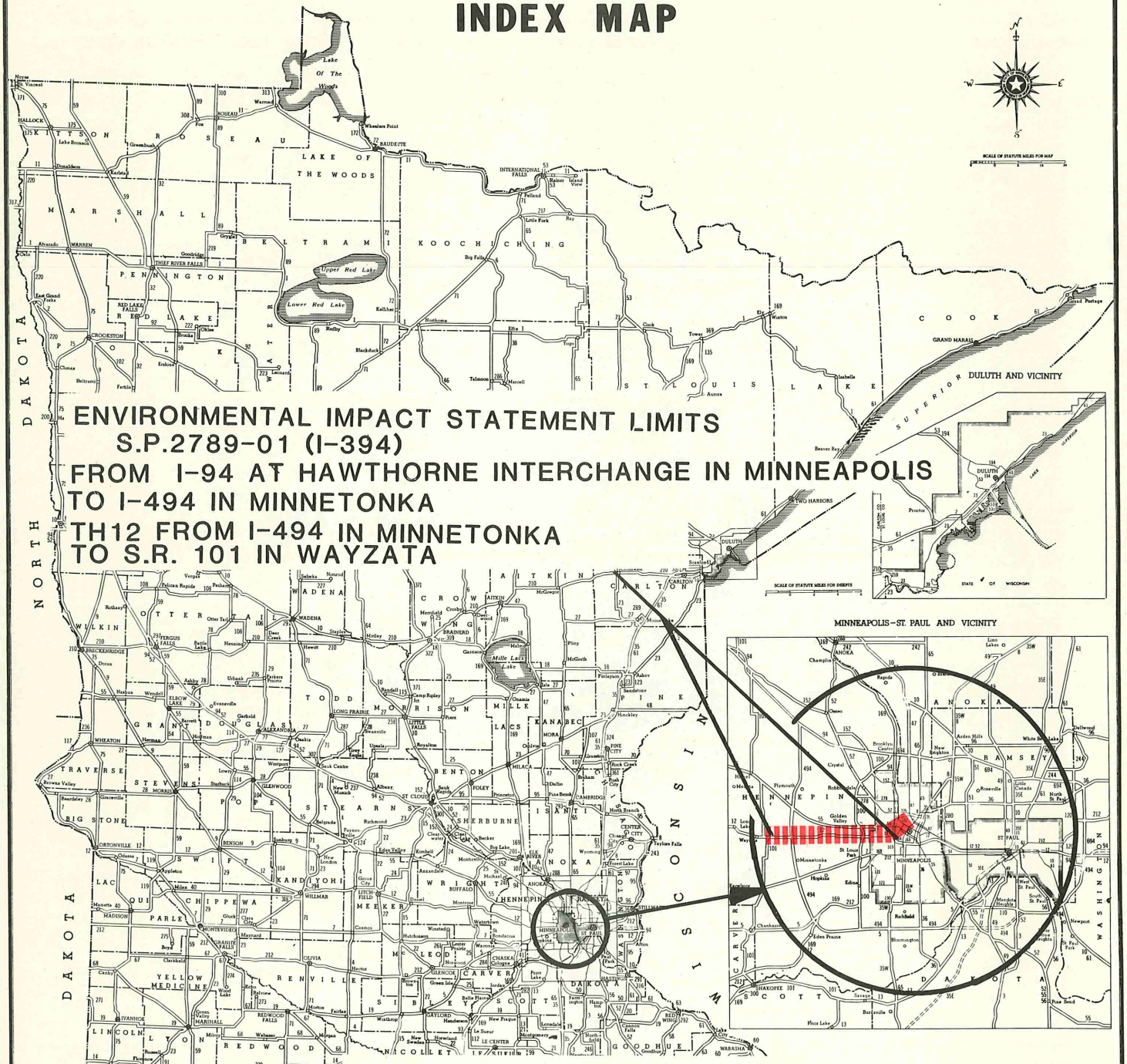
m^3	cubic meter
MC	Metropolitan Council
MHD	Minnesota Highway Department
MHS	Minnesota Historical Society
mg/l	milligram per litre
Mn/DOT	Minnesota Department of Transportation
MN & S	Minneapolis, Northfield, and Southern (railroad)
MPCA	Minnesota Pollution Control Agency
MPIRG	Minnesota Public Interest Research Group
MPO	Metropolitan Planning Organization
MPRB	Minneapolis Park and Recreation Board
MTC	Metropolitan Transit Commission
NaCl	sodium chloride
NO_3-N	nitrate
NOx	oxides of nitrogen
Pb	lead
PCA	Pollution Control Agency
PMB	Project Management Board
PO_4	ortho phosphorus
ppm	part per million
SEE	social, economic, and environmental (effects)
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SPAR	Systems Planning Analysis Report
SR-	State Road
TAB	Transportation Advisory Board
TAC	Technical Advisroy Committee
TAR	Traffic Analysis Report
TH-	Through Highway
TIP	Transportation Improvement Program
TMC	Traffic Management Center
TSM	traffic systems management
TSP	total suspended particulates
ug	microgram
ug/m^3	micrograms per cubic meter
US-	United States (highway)
USGA	United States Golf Association
VMT	vehicle miles traveled
Zn	zinc

STATE OF MINNESOTA

DEPARTMENT OF TRANSPORTATION

WORK MAP

INDEX MAP


Lake Of The Woods
KITTSON
ROSEAU
LAKE OF THE WOODS
MARSHALL
BELTRAMI
KOOCHICHING
PENNINGTON
RED LAKE
POLK
CROOKSTON
THIEF RIVER FALLS
RED LAKE FALLS
Upper Red Lake
Lower Red Lake
INTERNATIONAL FALLS
Big Falls
Northome
Blackduck
Kelliher
Ray
Little Fork
Littlefork
Mizpah
Bemidji
Cass Lake
Walker
Hackensack
Akeley
Park Rapids
Detroit Lakes
Fergus Falls
Alexandria
Brainerd
Aitkin
Crosby
Deerwood
Pine River
Backus
Hackensack
Remer
Cohasset
Grand Rapids
Nashwauk
Keewatin
Hibbing
Virginia
Eveleth
Gilbert
Mountain Iron
Chisholm
Buhl
Aurora
Hoyt Lakes
Babbitt
Ely
Winton
Tower
Soudan
Orr
Cook
Grand Portage
GRAND MARAIS
ST LOUIS
LAKE
SUPERIOR
DULUTH AND VICINITY
DULUTH
TWO HARBORS
Proctor
Scanlon
Carlton
Wrenshall
Cloquet
Esko
Barnum
Moose Lake
Sandstone
Hinckley
Mille Lacs Lake
Onamia
Isle
Milaca
Princeton
Elk River
Zimmerman
Becker
Big Lake
Monticello
Buffalo
Delano
Rockford
Maple Lake
Annandale
Howard Lake
Waverly
Watertown
Mayer
Norwood
Young America
Chaska
Carver
Waconia
Victoria
Chanhassen
Eden Prairie
Minnetonka
Hopkins
Edina
Bloomington
Richfield
Golden Valley
Plymouth
Champlin
Anoka
Ramsey
Coon Rapids
Fridley
Columbia Heights
New Brighton
Mounds View
Arden Hills
Roseville
Lauderdale
Falcon Heights
Lexington
Circle Pines
Lino Lakes
Blaine
Spring Lake Park
Hilltop
Shakopee
Prior Lake
Savage
Burnsville
Apple Valley
Rosemount
Farmington
Lakeville
Hastings
Cottage Grove
Inver Grove Heights
South St Paul
West St Paul
Mendota Heights
Eagan
Newport
Hampton
Dakota
Scott
Carver
Wright
Sherburne
Isanti
Chisago
Pine
Kanabec
Mille Lacs
Morrison
Todd
Wadena
Otter Tail
Becker
Clay
Wilkin
Traverse
Big Stone
Stevens
Pope
Stearns
Benton
Douglas
Grant
Swift
Kandiyohi
Meeker
Renville
Yellow Medicine
Lincoln
Lyon
Redwood
Pipestone
Murray
Cottonwood
Rock
Nobles
Jackson
Lac Qui Parle
Chippewa
Parle
Madison
Lincoln
Sibley
Nicollet
Le Sueur
Rice
Goodhue
Wabasha
Olmsted
Winona
Houston
Fillmore
Mower
Freeborn
Albert Lea
Austin
Rochester
Dodge
Steele
Waseca
Blue Earth
Faribault
Martin
Watonwan
Cottonwood
Jackson
Nobles
Rock
Pipestone
Murray
Lincoln
Lyon
Redwood
Renville
Yellow Medicine
Chippewa
Lac Qui Parle
Big Stone
Swift
Kandiyohi
Meeker
Wright
Hennepin
Ramsey
Washington
Carver
Scott
Dakota

SUMMARY

SUMMARY

Minnesota Department of Transportation

Administrative Action

Environmental Statement

(X) Draft

( ) Final

For further information regarding the proposed action and/or this statement, contact:

District Engineer
Minnesota Department of Transportation
Operations Division, Golden Valley District Five
2055 North Lilac Drive
Golden Valley, Minnesota 55422
telephone (612) 545-3761, extension 132

THE PROPOSED ACTION

The proposed major action is the construction of 10.2 miles of freeway from the western suburbs to downtown Minneapolis. This freeway will include a 1.5 mile segment of US-12 between SR-101 in Wayzata and I-494 in the second-tier western suburb of Minnetonka, and an 8.7 mile segment of I-394 between there and I-94 at the western edge of the Minneapolis central business district (CBD). The Federal Highway Administration (FHWA) will participate in the funding of the 8.7 mile I-394 segment, up to 90 percent of the cost, as provided by the Interstate program. Federal participation in the funding of the new 1.5 mile US-12 segment has not yet been determined.

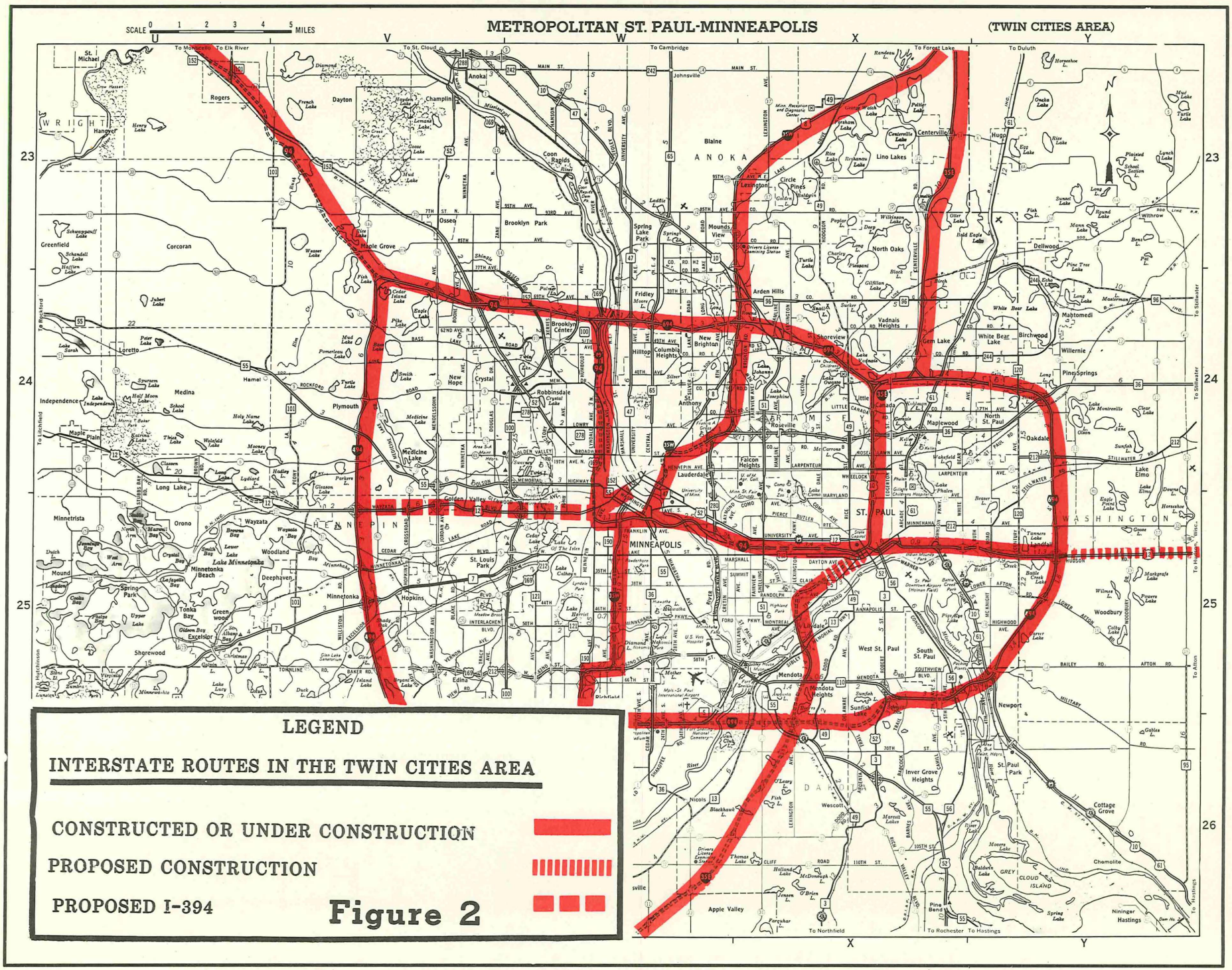
The freeway will follow the east-west alignment of existing US-12, and pass through the western first-tier suburbs of Saint Louis Park and Golden Valley as well as through Wayzata, Minnetonka, and Minneapolis. The Location Map on the next page illustrates the route.

Between SR-101 and SR-100, the proposed road will be a six-lane freeway with the inside lanes identified as standard diamond lanes for high occupancy vehicles (buses, vanpools, and carpools) during rush hours. Between SR-100 and I-94 near the Minneapolis CBD, the road will be a six-lane freeway with the two inside lanes being reversible and physically separated from the oxter lanes. The reversible lanes will operate eastward toward the city in the morning and westward toward the suburbs in the afternoon and evening.

Priority use of the reversible lanes east of SR-100 will initially be given to high occupancy vehicles. If the lanes are significantly underused, management techniques will be employed to allow other vehicles access to the lanes. In any case, a high level of service will be maintained in the lanes to promote ride-sharing.

Cloverleaf-type interchanges will connect I-394 to the principal and intermediate arterials of I-494, CR-18, and SR-100. Other interchanges will be spaced to serve local needs. Collector-distributor (C-D) roads will improve the capacity and safety of many of the interchanges.

LOCATION MAP


METROPOLITAN ST. PAUL-MINNEAPOLIS
(TWIN CITIES AREA)
SCALE 0 1 2 3 4 5 MILES
U V W X Y
23 24 25 26
To Monticello
To Elk River
To St. Cloud
To Cambridge
To Forest Lake
To Duluth
To Rockford
To Litchfield
To Stillwater
To Hudson, Wisc.
To Afton
To Hastings
To Northfield
To Rochester
Minneapolis
St. Paul
Lake Minnetonka
Anoka
Blaine
Coon Rapids
Brooklyn Park
Brooklyn Center
Maple Grove
Plymouth
Minnetonka
Hopkins
Edina
Bloomington
Eden Prairie
Richfield
Golden Valley
New Brighton
Mounds View
Arden Hills
Shoreview
Roseville
Falcon Heights
Lauderdale
Medicine Lake
Robbinsdale
Crystal
New Hope
Osseo
Champlin
Dayton
Rogers
Corcoran
Greenfield
Independence
Medina
Loretto
Hamel
Maple Plain
Long Lake
Minnetrista
Orono
Wayzata
Mound
Spring Park
Tonka Bay
Excelsior
Shorewood
Deephaven
Minnetonka Beach
Woodland
Greenwood
Minnetonka
St. Louis Park
Hopkins
Edina
Mendota
Mendota Heights
Eagan
Apple Valley
West St. Paul
South St. Paul
Inver Grove Heights
Newport
St. Paul Park
Cottage Grove
Hastings
Nininger
Chemolite
Pine Bend
Lino Lakes
Centerville
Circle Pines
North Oaks
Vadnais Heights
Gem Lake
White Bear Lake
Birchwood
Dellwood
Mahtomedi
Willernie
Pine Springs
Oakdale
North St. Paul
Maplewood
Little Canada
Lake Elmo
Woodbury
Landfall
Lexington
Columbia Heights
Fridley
Spring Lake Park
Circle Pines
Centerville
Hugo
Withrow
Wilkinson Lake
Poplar L.
Deep L.
Turtle Lake
Charley Lake
Pleasant L.
Gilfillan Lake
Otter Lake
Bald Eagle Lake
Sucker L.
Snail L.
Vadnais L.
Gem Lake
Wabtomedi
Willernie
Pine Springs
Oakdale
Lake Elmo
Woodbury
Landfall
Sunfish Lake
Battle Creek Lake
Indian Mounds Park
Mississippi River
Minnesota River
Crow River
Rush River
Elm Creek
Bassett Creek
Shingle Creek
Coon Creek
Rice Creek
Long Lake
Pike Lake
Eagle Lake
Cedar Island Lake
Fish Lake
Weaver Lake
Mud Lake
Pioneer Creek
Lake Sarah
Pierson Lake
Half Moon Lake
School Lake
Holy Name Lake
Medicine Lake
Parkers Lake
Gleason Lake
Lydiard Lake
Hadley Lake
Wolsfeld Lake
Mooney Lake
Twin Lake
Katrina Lake
Peter Lake
Schoenpauff Lake
Schandell Lake
Haffern Lake
Jobert Lake
Diamond Lake
French Lake
Hayden Lake
Lemans Lake
Goose Lake
Mud Lake
Henry Lake
Crow Hassan Park Reserve
Lake Johanna
Lake Owasso
Lake Josephine
Lake Gervais
Lake Phalen
Lake Como
Lake Monodnock
Lake Valentine
Lake Owasso Children's Home
Lake Dr Montreville
Clear Lake
Olson Lake
Jane Lake

The frontage road system will be improved. Bridges and underpasses for both vehicles and pedestrians will improve traffic circulation, and link neighborhoods and commercial areas on each side of the freeway.

Park-and-ride sites will be built to encourage carpooling, vanpooling, and the use of public transit buses. Ramps will be built at SR-100, I-94, and the Third Avenue Distributor to exclusively serve the reversible lanes. The Traffic Management Center (TMC) will monitor all traffic and meter all of the entrance ramps to provide a smooth traffic flow.

US-12/I-394 will be built to contemporary design standards to promote safety and efficient passage, and to meet the higher environmental standards of today. Through much of the parkland and residential areas, the freeway will be depressed to reduce noise and visual impact. Noise abatement walls or mounds will be built where appropriate.

The 9.6 mile length of I-394 was authorized to be added to the Interstate Highway system on December 13th, 1968. The 8.7 mile segment discussed in this Draft Environmental Impact Statement (DEIS) will connect to the Third Avenue Distributor, a 0.9 mile segment in downtown Minneapolis, between I-94 and Washington Avenue.

ACTIONS REQUIRED BY FEDERAL AGENCIES

Because this project may alter drainage patterns and water quality within the Bassett Creek and Minnehaha Creek watersheds, permits will be required from the U.S. Army Corps of Engineers (COE).

The Federal Highway Administration, as co-participant in this action, must also approve the project at various stages of its development.

THE MAJOR IMPACTS

Implementation of the proposed action will result in the following impacts:

Transportation

The proposed freeway will allow a significant improvement in the safe and efficient movement of people and goods between downtown Minneapolis and the highly developed western suburbs. The new freeway will be less congested and safer than the existing highway, and will reduce travel times. It will also benefit outlying communities to the west which use the corridor to transport goods to markets and shipping points in Minneapolis and Saint Paul. The new freeway will sever certain existing routes across the corridor, improve others by separating the grades, and alter some local traffic patterns.

Social

Preliminary estimates indicate that approximately 63 homes are likely to be acquired for right-of-way purposes, with another 20 possible. Studies indicate that an ample supply of comparable replacement housing exists to enable the persons and families displaced to relocate in their same communities if they so desire. No competing displacement projects are under way or anticipated in the study area.

Relocation assistance will be provided. No sensitive groups such as the elderly, illiterate, or handicapped will be affected by the proposed project.

Economic

Preliminary estimates also indicate that approximately 37 buildings housing 46 businesses will be acquired for right-of-way purposes. Studies indicate that an ample supply of commercial space is available to accommodate relocation in the same areas. Again, relocation assistance will be provided.

The taking of land, homes, and businesses for highway right-of-way will cause an initial loss of tax base in the study area communities. This initial loss is expected to be offset by a longer-term gain in tax base due to an increase in commercial property values along the highway corridor.

Parklands (Federal "Section 4(f)" Lands)

The proposed project will require permanently, approximately 0.7 acres from Brookview Golf Course and 2.0 acres from the Brownie Lake parkland. Temporarily, for construction, it will also require about two acres from Theodore Wirth Park and another two from Brownie. Approximately 4.4 acres of existing highway right-of-way adjacent to Wirth Park will be given to the Minneapolis Park and Recreation Board (MPRB) as replacement land.

A Draft Section 4(f) Evaluation, a federal requirement documenting that there is no feasible and prudent alternative to the use of these parklands, has been processed; a final version will accompany the federal FEIS.

Construction Impacts

The construction of US-12/I-394 will take an estimated five years and cause major impacts. Construction will be staged, so no one area should be affected for more than two years. The impacts will be those typical of a major urban highway construction project. Some may be more severe because traffic must be maintained.

Air quality will be affected by exhaust and dust. Noise will be generated by trucks and construction equipment. Water quality could be affected by concrete mixing operations, material spills, and erosion. All of these forms of pollution will be minimized, contained, and mitigated as far as possible.

Detours and bypasses will be provided, but traffic will be severely disrupted. Delay and congestion will be unavoidable because of the need to maintain traffic in the corridor during construction. Some motorists may seek alternate routes, some of which will be suitable and others, such as local streets, not. Mn/DOT will make every effort to maintain traffic in an appropriate pattern.

Impacts That Will Be Mitigated

The project will cause adverse noise, visual, wetland, and water quality impacts, but they will be mitigated.

Areas of No Significant Impact

The project will not cause significant adverse impacts on air quality, floodplains, vegetation, wildlife, endangered species, land use, prime and unique farmland, historic and cultural features, or energy use. It will not have significant secondary impacts.

UNRESOLVED ISSUES

The Bryn Mawr Neighborhood Association objects to the Penn Avenue interchange. They propose that we delete the ramps and build only the bridge over I-394, plus a connector road eastward to the Wayzata Boulevard half-diamond interchange, for partial access. This connector would bridge a set of railroad tracks and then pass under I-394. If the City of Minneapolis supports this change, Mn/DOT will consider it.

No other unresolved issues exist. The location, alignment, and geometrics of the freeway have been determined, subject to reevaluation after the design public hearing.

ALTERNATIVES

Seven location alternates plus the limited improvement and the no-build alternatives were considered. The limited improvement alternative is also the traffic systems management (TSM) alternate. All of the routes had the Hawthorne Interchange with I-94 as the eastern terminus, and extended westward to I-494.

The selected alternate, number 2, follows the existing US-12 corridor. The no-build option (alternate 4) and the limited improvement alternate also would have retained US-12 as the major traffic route of the area, but with only limited improvements, or none. The other routes are shown on the Alternate Routes Map on page 65.

Route Alternates

Six other alternate routes between SR-55 on the north and SR-7 on the south were studied. Each was dismissed for various reasons including adverse social, economic, and environmental (SEE) impacts, operational problems, and excessive intrusion into the parklands surrounding Brownie and Cedar Lakes and along Bassett and Minnehaha Creeks.

The No-Build Alternate

The no-build alternate, number 4, would not solve the existing or future transportation or environmental problems of US-12 and the area it serves. In comparision to the result of constructing Alternate 2, the traffic noise would increase and the air quality would decrease as US-12 became more clogged with the predicted traffic.

The Limited Improvement (TSM) Alternative

The limited improvement or TSM alternative would have been an upgrading of US-12, on its existing alignment and grade, to improve capacity, operation, and safety. It would have minimized right-of-way needs and construction disruption, but good design would

have been compromised and the road would have been inferior in terms of capacity, level of service, safety, and environmental effects. Its capacity would be inadequate beofre the year 2000. For all of these reasons, it was eliminated from further consideration.

The LRT Alternate

The light rail transit (LRT) alternate was studied by the MC at the direction of the state legislature. Five different routes, one of them the I-394 corridor, were examined. The MC recommended, in April of 1981, that only the route along University Avenue between the CBD's of Minneapolis and Saint Paul be studied further for feasibility.

Their report concluded that building any LRT system would be slow and costly; that federal funding was unlikely; and that other monies would be needed. A line in a low-density area such as the I-394 corridor would need an expensive collection and distribution system. For the I-394 corridor specifically, the MC report concluded that buses would be more cost efficient than LRT.

STATE GOVERNMENT AND MULTI-STATE RESPONSIBILITIES

There is no impact on state government as a result of any federal controls associated with this action. The action will have no effect on adjacent states or on any multi-state responsibilities.

(NOTE: pages 23 and 24 have been deleted.)

PURPOSE OF AND NEED FOR THE ACTION

THE EXISTING TRANSPORTATION NETWORK

The Study Area

The I-394 study area, as defined in the DEIS, is bounded by the SR-55 corridor on the north and the SR-7 corridor on the south, and extends from the Minneapolis CBD on the east to the Lake Minnetonka area on the west. The project corridor is along existing US-12, an east-west route, between SR-101 in Wayzata and I-94 in Minneapolis. This area has one of the major transportation problems of the Twin City (Minneapolis and Saint Paul) metropolitan area. Although the main cause of this traffic problem is the number of trips between the western suburbs and downtown Minneapolis, the problem is compounded by both trips beyond the study area and an increase in local travel within the area. The existing highway network of the study area consists of roads that are classified by the Metropolitan Council (MC), the planning agency of the Twin City area, as principal, intermediate, and minor arterials; and as collectors and local roads. The principal and intermediate arterials are also known as the primary system. The existing highway network is illustrated by the map on page 29.

The Primary System

The primary highway system is designed to serve high-speed regional traffic and to provide linkage to major activity centers within the metropolitan area. SR-55, SR-12, and SR-7 are the primary east-west highways in the study area, providing access to Minneapolis from the western suburbs and from central and western Minnesota. I-494 on the west, CR-18 in the center, and SR-100 toward the east are the primary north-south highways in the area. Although these three do not serve Minneapolis directly, they do carry much of the suburban traffic bound for the city. I-94 is at the east edge of the project. The MC classifies US-12/I-394, I-494, and I-94 as principal arterials, and the others as intermediate arterials.

All of the traffic volumes discussed in this section are 1980 counts.

US-12

From I-94 at the western edge of downtown Minneapolis, US-12 (also commonly called Wayzata Boulevard) extends westward generally along the boundary between Golden Valley and Saint Louis Park, through Minnetonka and Wayzata, and across the state to South Dakota. This highway is the major connector between Minneapolis, the western suburbs, and west-central Minnesota. In Minneapolis, it is a six-lane freeway. To the west, as far as Wayzata, it is a four-lane divided expressway. Around Wayzata, it is a six-lane freeway; beyond, to the west, it is a two-lane rural highway. Traffic volumes between Wayzata and Minneapolis are high; congestion is common, particularly during rush hour; the average daily traffic (ADT) on various segments ranges from 37,300 to 82,500 as of 1980.

SR-55

SR-55 extends westward from the Minneapolis CBD through north Minneapolis and Golden Valley, then northwestward through Plymouth and across the state to North Dakota. Although it serves downtown and north Minneapolis, it does not provide fast and free-flowing service. In the CBD it is located on Seventh and Eighth Streets, a one-way pair with signals at every intersection. In north Minneapolis, it is a divided road with numerous intersections, many signalized. West of the city, it is a four-lane divided expressway with several signalized intersections. Its ADT ranges from 18,800 near I-494 to 34,900 just west of SR-100. East of SR-100, the ADT is less. Because of its stop-and-go traffic near the CBD, some drivers from the SR-55 corridor prefer to enter the city via US-12. In Minneapolis, SR-55 is about a mile north of US-12; this separation increases to about 2.7 miles at I-494 in Plymouth.

SR-7

SR-7 originates near Lake Calhoun in southwest Minneapolis, and extends southwestward through Saint Louis Park, Hopkins, Minnetonka, and Excelsior, then westward across the state until it joins US-12 at the South Dakota border. In the study area, only a part of the route is a four-lane divided expressway. Part of the suburban length has four lanes with no median or divider between the two directions of traffic. In Minneapolis it is on a city

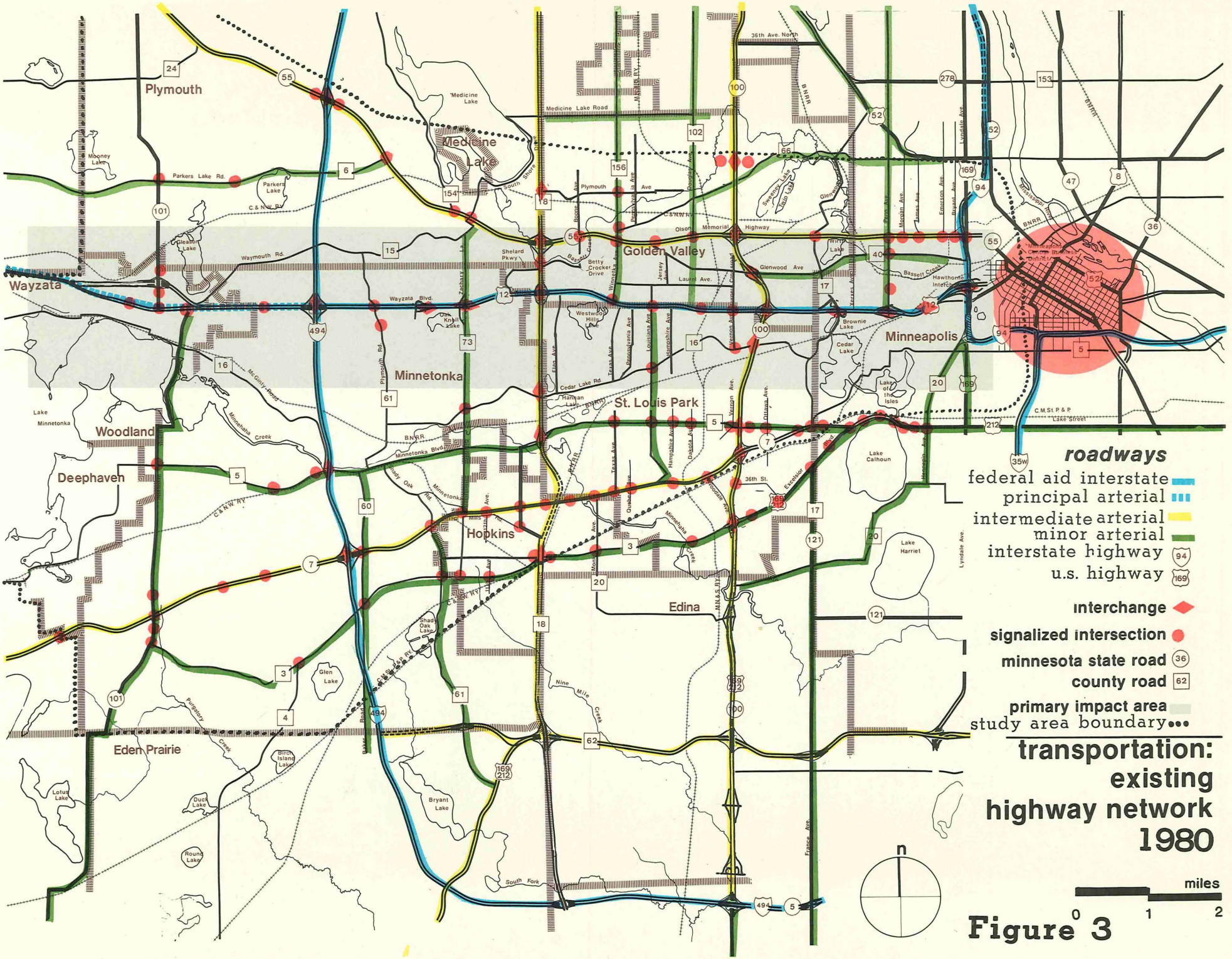

Plymouth
Medicine Lake
Golden Valley
Wayzata
Minneapolis
Minnetonka
St. Louis Park
Woodland
Deephaven
Hopkins
Edina
Eden Prairie
roadways
federal aid interstate
principal arterial
intermediate arterial
minor arterial
interstate highway
u.s. highway
interchange
signalized intersection
minnesota state road
county road
primary impact area
study area boundary
transportation: existing highway network 1980
miles
0
1
2
n

Figure 3

street (Lake Street) that provides no free-flow route to either the CBD or to other primary highways. Because of this, many trips that originate along SR-7 also enter the city on US-12. Its highest ADT is 33,500, near I-494, and is less closer to town. East of SR-100, its ADT decreases to 18,300. Spacing between SR-7 and US-12 varies from about 1.5 miles in the city to about 3.3 miles at I-494 in Minnetonka.

I-494

Interstate 494, part of the ring-route around the Twin Cities, is a north-south roadway in the cities of Plymouth and Minnetonka in the western part of the I-394 study area. I-494 in this area is about nine miles west of the Minneapolis CBD. It is a four-lane interstate freeway with a depressed grass median. Traffic volumes are well below capacity, the accident rate is low, and it operates well. The ADT is 35,300 just north of US-12 and 42,300 to the south.

CR-18

Three miles east of I-494, County Road (CR) 18 extends north and south across the western metropolitan area. North of US-12, it is a four-lane divided freeway for seven miles. South of US-12, CR-18 is a freeway for only two miles, then temporarily follows local streets. Soon, CR-18 will be a freeway for its entire distance within the interstate ring-route. On the freeway segment, near US-12, the facility operates well but does become congested during peak traffic hours. It has an ADT of 48,400 to the north and 37,000 to the south of US-12.

SR-100

Another three miles east, SR-100 passes north and south through Golden Valley and Saint Louis Park. It is a four-lane divided expressway, part of an old ring-route that once encircled the then-smaller Twin City metropolitan area. Traffic on SR-100 is extremely heavy, beyond any other highway in the study area except US-12 itself. In the vicinity of US-12, it had a 1980 ADT of 66,500.

Because of the lack of a logical eastern terminus for SR-7, much of its traffic detours along SR-100 to US-12. Hence, this section of SR-100 is overloaded and the US-12/SR-100 interchange has one of the highest traffic concentrations in the metropolitan area.

I-94

At the eastern end of the project, near the CBD, I-94 extends eastward to Saint Paul and northward through Minneapolis. It is an Interstate freeway with at least three lanes in each direction (except through some interchanges) in the city. The eastern segment has been open for years and carries large volumes of traffic; the ADT just east of US-12 is 61,600. The northern segment opened only in 1981 and, as yet, carries a low traffic volume. The next segment to the north is now being built. When opened in 1983 or 84, it will connect to a completed section of I-94 that extends through the northwest suburbs and westward all the way across Minnesota and North Dakota. A pair of connectors from the north segment to the CBD is also being built. When both I-94 and the connectors are completed, the north segment of I-94 will also carry large volumes of traffic.

The Secondary System

The secondary roadway system consists of minor arterials and collectors. The purpose of this system is to collect motorists from local streets and allow them to travel at medium speeds to destinations within the area or to the primary system for destinations beyond the area. Secondary roadways serve local traffic needs and function as a connecting network between communities and major traffic generators in the area. A major problem with this system is the incompatibility between the function of the roadway and the use of the adjacent land. Several of the secondary roadways have evolved from local residential streets to arterial roads with large traffic volumes. Many are serving both as secondary roads and as local streets.

The Local Street System

The function of the local street system is to accommodate vehicular traffic, at low speeds, for short distances within the area and to the secondary or primary network. Although not intended for long trips, the local street system is very extensive and accommodates a large total volume of traffic. The street network provides the ultimate access to almost all of the residences in the study area, and to many of the businesses, schools, parks, and

churches. All streets in the study area not mentioned as part of the primary or secondary systems are considered to be part of the local street system.

The Public Transit System

The public transportation system for the entire Twin City metropolitan area is a network of bus lines operating in mixed traffic on roadways. In the study area, the buses operate mostly on the primary and secondary highway systems, with few routes on local streets. Current transit routes follow the east-west radials from downtown Minneapolis; no north-south routes span the study area.

Neither the MC nor the Metropolitan Transit Commission (MTC) have any plans for a different type of mass transit system, such as a fixed-rail system, in the study area or, for that matter, any part of the twin city area. (A fixed-rail transit line on University Avenue, between the Minneapolis and Saint Paul CBD's, is now being studied.) In this metropolitan area, buses operating on roadways offer more flexibility of service and are more practical and econimical than any other mass transit form. The Twin City metropolitan area has a relatively low population density and is spread over a wide area.

Only about four percent of all person-trips for all 24 hours in the Twin City area are now made by mass transit. The MTC hopes to increase this percentage to between six and ten percent by 1990.

Transportation Demand

Traffic on US-12, the route of I-394, has steadily increased over the years. On the section between SR-100 and downtown Minneapolis, it has more than doubled in the last decade. The following table illustrates the historic ADT on US-12 over the years. The figures represent the maximum volumes within each of the four segments.

TABLE 1: HISTORIC ADT ON US-12

	SR-101 to I-494	I-494 to CR-18	CR-18 to SR-100	SR-100 to I-94
1966	21,150	22,300	29,500	37,800
1968	25,800	25,700	32,300	33,000
1970	27,400	27,300	35,000	41,000
1972	28,510	34,500	47,200	60,800
1974	34,380	32,200	49,400	71,900
1976	36,250	34,700	50,150	76,400
1978	39,900	40,800	53,500	80,800
1980	41,200	43,000	57,500	82,500

The Mn/DOT Office of Systems Planning has forecast the year 2000 traffic for the same section of improved US-12/I-394 in their System Planning Analysis Report (SPAR) M-253 and in their Traffic Analysis Reports (TAR) M-250 and M-250A. They have also forecast the year 2000 traffic on existing US-12, if it were not improved, in TAR M-241. These documents are available for review at the Mn/DOT District Five Office in Golden Valley. The forecasts are summarized below. Again, the figures represent the highest average within each segment.

TABLE 2: FORECAST ADT ON US-12 OR I-394

	SR-101 to I-494	I-494 to CR-18	CR-18 to SR-100	SR-100 to I-94
US-12 if I-394 is not built	48,500	53,800	72,000	102,000
I-394 if built	49,100	54,720	78,720	102,420

The figures on the following pages show the ADT on the major roads in the study area. Figure 4 shows the existing traffic volumes as of 1980. Figure 5 shows the predicted volumes for the year 2000 if US-12/I-394 is built. Figure 6 shows the predicted volumes for the year 2000 if US-12/I-394 is not built, and existing US-12 remains in operation.

These predicted volumes for the build and no-build alternates are also drawn from SPAR M-253 and TAR M-241, respectively.

The Mn/DOT Traffic Management Center, in 1976, studied travel times on US-12 and compared them with travel times on I-35W, a freeway leading to downtown Minneapolis from the south. The average rush hour travel speed on US-12 was 36 miles per hour; the equivalent speed on I-35W was 49 miles per hour. Both speeds were with the peak directional flow of the traffic, averages of both the morning-inbound and evening-outbound flows. The ADT on the segments of US-12 ranged from 31,400 to 76,400, for an average ADT of about 56,700, or 14,175 per lane. The ADT on I-35W ranged from 102,985 to 116,250, for an overall average of about 17,700 per lane on the six-lane portion and 14,175 per lane on the eight-lane section. Per lane, freeway I-35W carries as many or substantially more vehicles as US-12 more than 35 percent faster.

Improving US-12 to a freeway will permit shorter travel times by reducing congestion and eliminating stop-and-go operation. This improvement will also increase capacity by adding the diamond and reversible lanes. They will not only add to the vehicular capacity but will have an even greater impact on the people-carrying capacity of the freeway.

In view of the forecast of future traffic demand, this increase in capacity is essential. US-12 now operates at its capacity for several hours each day, during the morning and evening rush hours, and near its capacity for most of the rest of the day. Increased traffic demand will increase the number of hours that the highway operates at its capacity and traffic is moving at a slow, stop-and-go pace.

Safety

During the five year period from 1976 through 1980, the section of US-12 to be reconstructed had an accident rate of 4.0 accidents per million vehicle miles. Adjusted to take into consideration the more serious accidents that resulted in injury or death, the severity rate was 8.0. This severity rate is weighted to count a property damage accident as one, a personal injury accident as four, and a fatal accident as ten.

During just 1980, this section of US-12 had an accident rate of 3.4 and a severity rate of 7.4. For the same year, Interstate freeways in the Golden Valley District had accident rates that ranged from 0.4 to 3.4; the average was 1.8. The severity rates ranged from 0.9 to 6.6; the average was 3.4. The Golden Valley District of Mn/DOT oversees the highways of Minneapolis and its suburbs; it includes all or large parts of five counties, and totals nearly two thousand square miles.

The actual accident rate along US-12 varies widely along different segments, from 1.5 to 4.8. The table on page 49 shows the ADT and the accident rates by segments, for the year 1980.

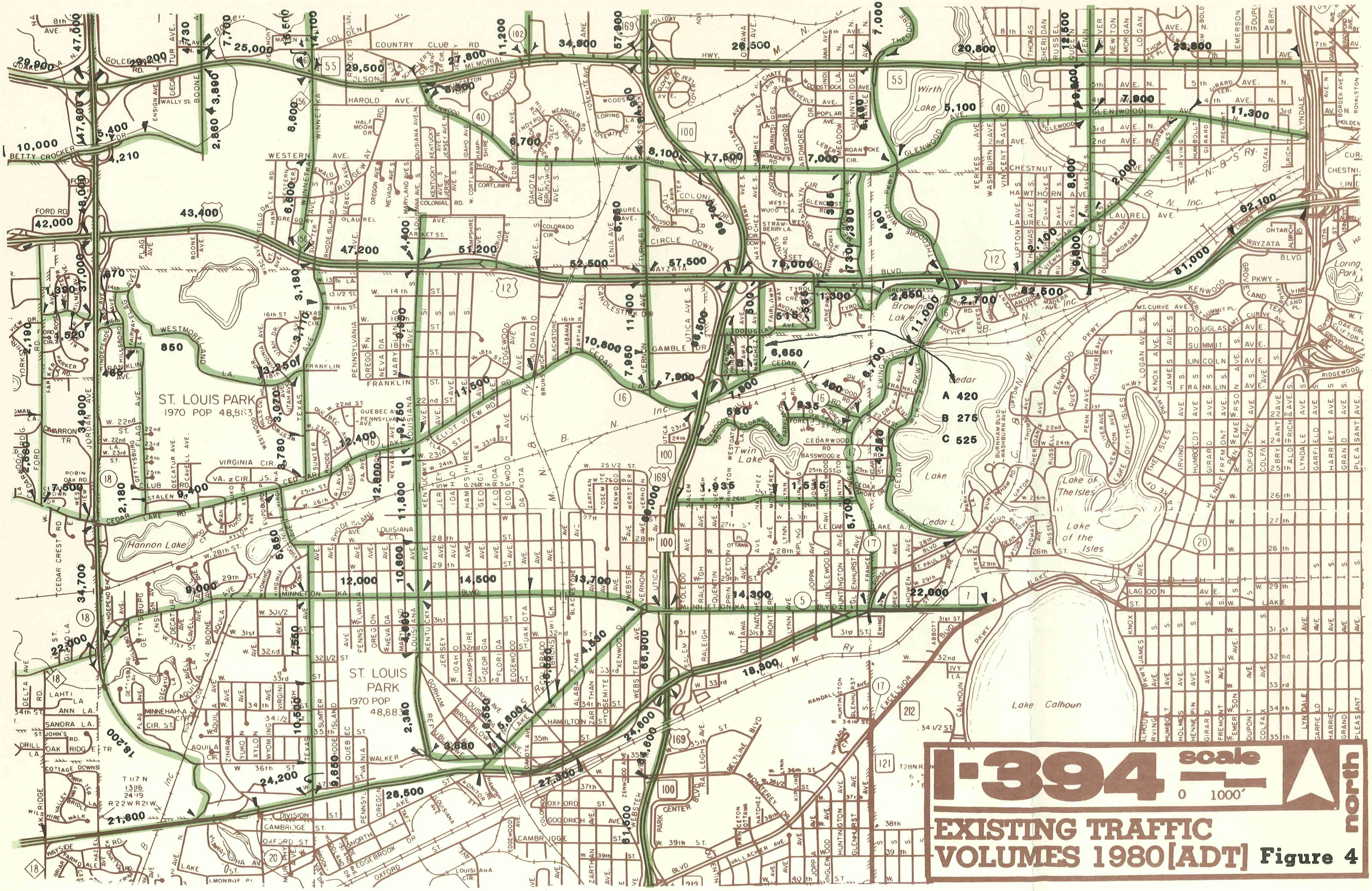
1. I.E. CIRCLE DR.
2. MINNETONKA BLVD.
3. GRAND AVE.
4. WOOD DALE AVE.
5. BYRONDALE AVE.
6. GARDNER ST.

MINNETONKA
1975 POP 38,800

WOODLAND
1970 POP 544

HOPKINS
1970 POP 13,428

Wayzata Bay
Lake Minnetonka
Lake Minnetonka
Lake Marion
Lake Louise
Shavers Lake
Libbs Lake
Windsor Lake
Gleason Lake
Hadley Lake
Grays Bay
Minnehaha Cr.
Minnehaha Creek
Banta Pt.
Cedar Point
Breezy Point
Cedar Lake


ST. LOUIS PARK
1970 POP 48,883
ST. LOUIS PARK
1970 POP 48,883
Hannon Lake
Twin Lake
Cedar Lake
Lake of The Isles
Lake of the Isles
Lake Calhoun
Wirth Lake
Browns Lake
Cedar
A 420
B 275
C 525
I-394 scale 0 1000'
north
EXISTING TRAFFIC VOLUMES 1980 [ADT] Figure 4

1. E. CIRCLE DR
2. MINNETONKA BLVD.
3. GRAND AVE.
4. WOODDALE AVE
5. BYRONDALE AVE.
6. GARDNER ST.

Hadley Lake
Gleason Lake
Wayzata Bay
Lake Minnetonka
Cedar Point
Breezy Point
Grays Bay
Bonta Pt
Lake Marion
Shavers Lake
Libbs Lake
Lake Louise
Minnehaha Creek
Minnehaha Cr

MINNETONKA
1975 POP 38,800

WOODLAND
1970 POP 544

HOPKINS
1970 POP 13,428

T 118 NR 22 W
32 | 33
5 | 4
T 117 N

T 117 N R 22 W
7 | 8
18 | 17

T 117 N R 22 W
10 | 11
14 | 15

24,780
27,500
17,000
16,500
43,000
49,100
40,900
54,720
49,700
54,180
55,600
15,000
12,700
23,660
12,000
10,200
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,500
1,900
1,000
57,520
47,000
46,480
43,500
34,500
25,800
34,000
11,000
10,500
10,000
9,500
9,400
9,100
8,500
7,750
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1,000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50

ST. LOUIS PARK
1970 POP 48,883

ST. LOUIS PARK
1970 POP 48,883

Lake Calhoun

Lake of The Isles

Cedar Lake

Twin Lake

Wirth Lake

Brownie Lake

Cedar
A 725
B 275
C 300
D 275

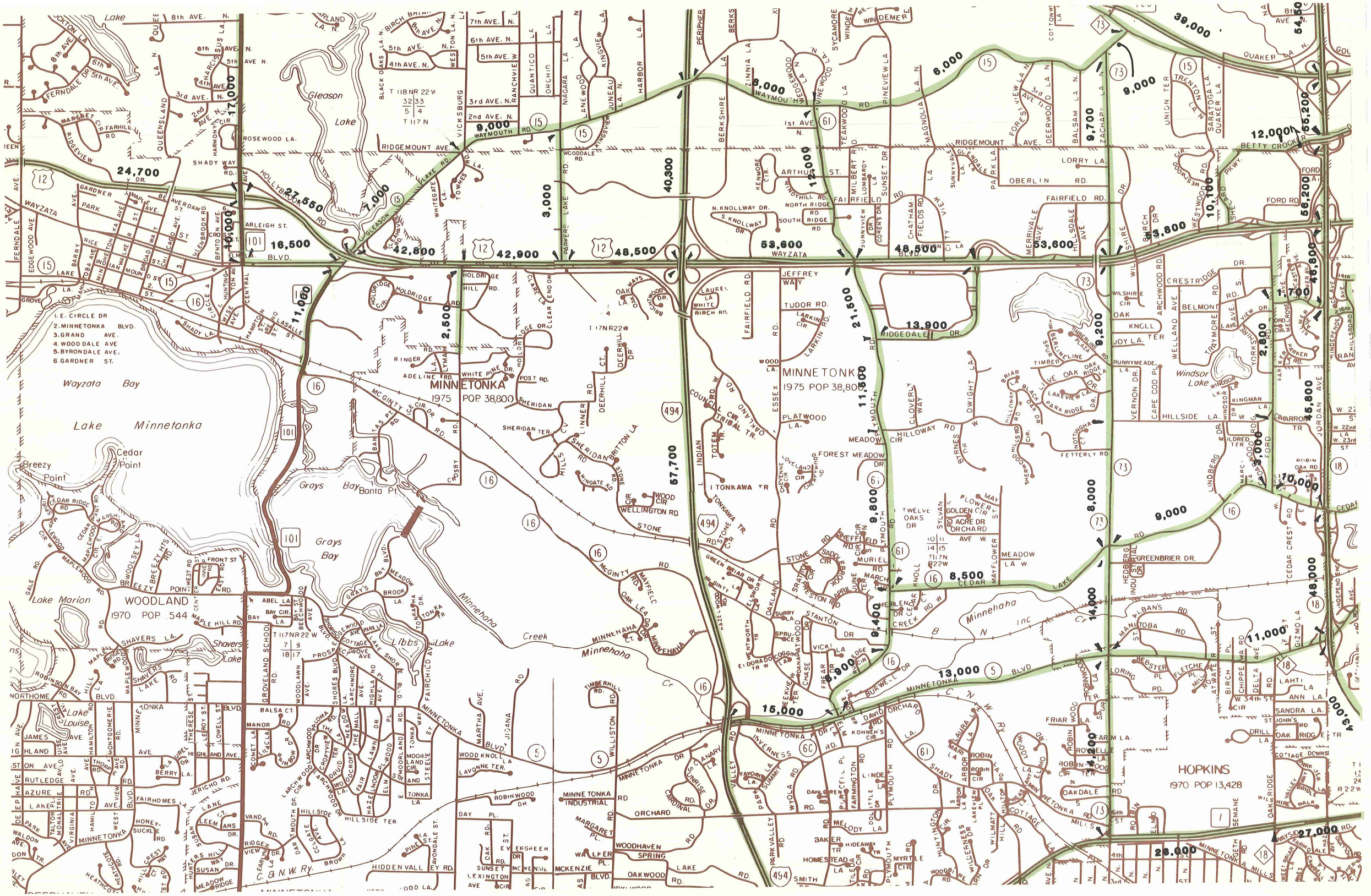
I-394

scale 0 1000'

north

BUILD TRAFFIC VOLUMES 2000 [ADT]

Figure 5


MINNETONKA
1975 POP 38,800
WOODLAND
1970 POP 544
HOPKINS
1970 POP 13,428
Lake Minnetonka
Wayzata Bay
Grays Bay
Lake Marion
Shavers Lake
Libbs Lake
Lake Louise
Windsor Lake
Gleason Lake
Minnehaha Creek
Minnehaha Cr
Bonta Pt
Cedar Point
Breezy Point
C.N.W. Ry.
I. E. CIRCLE DR
2. MINNETONKA BLVD.
3. GRAND AVE.
4. WOOD DALE AVE
5. BYRONDALE AVE.
6. GARDNER ST.
T 118 NR 22 W
32 33
5 4
T 117 N
T 117 NR 22 W
7 8
18 17
T 117 N R 22 W
10 11
14 15
T 117 N R 22 W
24,700
27,550
42,800
42,900
48,500
53,600
40,300
67,700
21,500
13,900
9,000
6,000
39,000
55,200
12,000
56,200
45,800
48,000
43,000
27,000
29,000
15,000
14,000
11,000
10,000
8,500
8,000
7,000
3,000
2,500
1,700
1,000

ST. LOUIS PARK
1970 POP 48,883

ST. LOUIS PARK
1970 POP 48,883

Hannon Lake

Cedar Lake

Lake of The Isles

Lake of the Isles

Lake Calhoun

Brownie Lake

Loring Park Lk.

Wirth Lake

M. N. & S. Ry.

C. N. W. Ry

W. B. & N. Inc.

S. B. & N. Inc.

Figure 6

I-394 scale C 1000'

north

NO-BUILD TRAFFIC VOLUMES 2000 [ADT]

TABLE 3: 1980 ACCIDENT RATES ON US-12

	ADT	accident rate*	severity rate*
SR-101 to I-494	39,401	2.5	5.4
I-494 to Plymouth Road	43,000	2.3	4.5
Plymouth Road to CR-18	39,373	2.0	4.1
CR-18 to Pennsylvania Avenue	44,160	2.9	5.5
Pennsylvania Avenue to Colorado Avenue	49,894	4.8	11.3
Colorado Avenue to SR-100	56,556	3.4	7.1
SR-100 to Theodore Wirth Parkway	82,500	1.5	3.0
Theodore Wirth Parkway to I-94	74,801	3.2	6.3

*These accident rates do not include accidents on interchange ramps and loops.

An earlier study, of the years 1974 and 1975, compared the accident rates of US-12 and all freeways in the Golden Valley District. The section of US-12 used in this study was the four-lane expressway between I-494 and Theodore Wirth Parkway, so did not include the freeway segment in Minneapolis. The freeways are representative of the type of highway planned as I-394. The results were as follows.

TABLE 4: ACCIDENT RATES ON US-12 COMPARED TO AREA FREEWAYS

	ADT	accident rate
four- and six-lane rural freeway	20,400	0.74
four- and six-lane urban freeway	50,300	1.80
US-12 (four-lane expressway)	41,000	5.09

It is apparent that existing US-12 is considerably more dangerous than either a rural freeway or an urban freeway with even more traffic.

Another study, made in 1976, compared the safety of the same section of US-12 to another major radial route leading to the Minneapolis CBD, I-35W to the south. I-35W is a six- and eight-lane Interstate freeway that carries almost double the traffic of US-12 when both are averaged for the entire lengths of the sections compared. The section of I-35W used for comparison is 4.5 miles long, from its junction with CR-62 to the downtown exits. The results were as follows.

TABLE 5: ACCIDENT RATES ON US-12 COMPARED TO I-35W

	US-12	I-35W
average ADT	44,380	113,635
property damage accidents	1,115	753
personal injury accidents	519	223
fatal accidents	7	3
accident rate	4.30	1.74
severity rate	8.54	2.97

A comparison of the same two road sections for the three years 1973 through 1975 shows similar results; that is, US-12 is between two and three times more dangerous than its freeway counterpart. Over that three year span, US-12 had four fatal accidents and I-35W had two.

Three of the intersections along US-12 are among the six worst in the Golden Valley District, in terms of numbers of accidents as of 1980. They are the US-12 intersections with Louisiana Avenue, Plymouth Road, and Turners Crossroad. All three are signalized, channelized, and have turn lanes.

One of the most important reasons to improve this highway is to improve its safety and to bring it up to the level attainable only on a controlled access freeway with no at-grade intersections. It seems evident that improving expressway US-12 to freeway US-12/I-394 will reduce accidents and the resultant loss of property, health, and life.

Social and Economic Development

The area to be served by I-394 has developed rapidly and extensively, and future growth is certain. The MC issued, in April of 1977, revised forecasts of population, households, and employment. The revised forecasts for the communities to be served by I-394 are included and discussed in the Social Characteristics section of this report.

population

In summary, Minneapolis and the first tier suburbs of Golden Valley and Saint Louis Park are expected to have a nearly stable population until the year 2000, at least. During this same time, Minnetonka and Wayzata are expected to substantially increase their populations, and the population of Plymouth is expected to almost double.

households

In all six communities, an increase in the number of households is projected. These increases range from less than two percent in Saint Louis Park to about 75 percent in Plymouth.

employment

The number of persons employed is expected to remain stable in Minneapolis, Saint Louis Park, and Wayzata; and increase about ten percent in Golden Valley, 25 percent in Minnetonka, and 35 percent in Plymouth by the year 2000.

The increasing numbers of people, homes, and jobs in the I-394 study area will increase the transportation demand and the need for an improved facility along the I-394 corridor.

Federal Legislation

The Federal Aid Highway Act of 1956 proposed the construction of the National System of Interstate Highways. The I-394 route was added to the system later, in 1968, because of the need for an east-west radial to the west of Minneapolis. Land use planning, by both the local communities and the Metropolitan Council, has been based, in part, on the assumption of eventual completion of this freeway link.

State Legislation

In 1976 the Minnesota Legislature approved the construction of a six-lane highway along the I-394 corridor, within the existing right-of-way insofar as possible. The state law also directed the Commissioner of Highways (now Transportation) to prepare an Environmental Impact Statement and to proceed with other necessary planning. This planning is to consider all feasible and prudent alternate routes and design features without regard to the necessity of further legislative approval. The planning is to consider mitigation of adverse environmental effects, and the recommendations of the Metropolitan Council, the Transportation Advisory Board (TAB), and the Interstate Study Committee (ISC). The TAB is appointed by the MC to advise them on various transportation issues. The ISC was established by the Legislature to study all uncompleted interstate freeways in the Twin City area and to make recommendations to the Legislature regarding their completion; they recommended building I-394. Both groups were comprised mostly of local officials.

The Metropolitan Council Plan

The MC was established by the Minnesota Legislature in 1967 to coordinate the planning and development of the Twin City metropolitan area, which is comprised of seven counties, 50 townships, 138 municipalities, 49 school districts, five regional agencies, and 22 special purpose districts. The Governor has designated the MC as the Metropolitan Planning Organization and the A-95 Clearinghouse Agency, and it also serves as the 3-C Planning Agency for the metropolitan area. The area under the jurisdiction of the MC totals about three thousand square miles and has a population approaching two million.

The MC has developed a plan for the orderly growth of the area. This plan is known as the Metropolitan Development Guide/Policy Plan, and includes a chapter on recommended transportation planning and policies. The Transportation Chapter, published in July of 1976, lists I-394 as a major construction needed to complete the 1990 Metropolitan Highway System. Their plan for this system shows I-394 as a principal arterial to accommodate long trips at relatively high speed. They further identify a principal

arterial as "a fully controlled-access roadway that does not provide direct access to adjacent development - in other words, a freeway."

This same Transportation Chapter also includes a 1990 Transit Plan that calls for express transit service along I-394 to the downtown Minneapolis metro center. This service, the highest level of service planned for the metropolitan area, would provide priority treatment for express transit ranging from metering with special access ramps to, possibly, exclusive lanes for transit. This same highest-level transit service is called for on other, existing, high-volume interstate freeways in the area: I-35W south of Minneapolis, I-35E north of Saint Paul, I-94 east of Saint Paul, and I-94 between the two cities.

West of I-494, the Transit Plan calls for transit moving in mixed traffic.

The Transit Plan calls for the transit vehicles to be buses vanpools and carpools, and states that "No fixed guideway for the exclusive use of transit (buses and automated or semi-automated technologies) is to be provided for regional or sub-regional service." In 1981 the Plan was amended to eliminate this prohibition, for the the purposes of holding a public hearing regarding light rail transit (LRT),

Modal Interrelationships

This freeway will serve personal passenger cars, trucks, vans, intracity buses, and intercity buses. Buses, vanpools, and carpools will have priority access to the freeway and to the reversible lanes. This express transit, operating under preferential conditions on an improved roadway, should attract riders from their private vehicles. Computer matching of potential carpool users, similar to the system already used in the Twin City area, should encourage shared rides. Park-and-ride sites will enable drivers to leave their cars in the suburbs and bus or carpool into the city.

Although not within this highway section, three large municipal parking ramps are proposed adjacent to the Third Avenue Distributor section of I-394, at the edge of the CBD. These garages would also serve as bus transfer stations, encouraging the automobile users to park there and transfer to downtown bus lines and enabling bus riders to conveniently transfer to other lines. The garages would also be within easy walking distance of the CBD. The garages are part of a series of parking ramps the city is building around the perimeter of the CBD to reduce automobile traffic in downtown Minneapolis, with its attendant land use and air quality benefits. These garages would have direct access via ramps to the Third Avenue Distributor section of I-394, northeast of the Hawthorne Interchange.

System Linkage

The original concept for the interstate system in this metropolitan area called for a ring route (I-494 and I-694) around the periphery, radial routes to the Minneapolis and Saint Paul CBD's, and a connection between the cities (I-94). The Saint Paul radials were to be I-35E to the north and south, and I-94 to the east. The Minneapolis radials were to be I-35W to the northeast and south, and I-94 to the northwest. Most of these freeways, but not all, now exist. Those not yet completed are either under construction or still being planned.

Interstate 394 was designated as part of the system in 1968, to serve as the logical western radial from downtown Minneapolis.

The proposed freeway section of US-12 between SR-101 and I-494 will serve as a link between I-394 and an already-built freeway section of US-12 that bypasses the urban area of Wayzata. US-12 leads to the far western suburbs around Lake Minnetonka and is a major route to central and western Minnesota. This highway is one of the most important transportation links between the agriculture of the west and the markets and distribution centers of the Twin Cities. Upgrading the existing highway to a freeway should also relieve some of the traffic pressure on the other two western arterials, SR-55 and SR-7, and on SR-100 between these two roads.

Social, Economic, and Environmental Effects on Not Building I-394

To not build I-394 would subject the western suburbs, and also Minneapolis, to continued and increasing traffic problems. Congestion would increase; traffic would slow and travel times increase; accidents would increase. These adverse effects would apply not only to private cars, but to buses, the only public transportation in the area. Increased congestion and stop-and-go traffic would further increase air pollution and noise levels, even beyond that to be expected just from the increasing number of vehicles.

As traffic continued to increase and congestion on US-12 became worse, more traffic would be forced to other routes, worsening their congestion and introducing increased air pollution and noise problems to new areas. Some traffic would choose to use minor arterials and collectors that were never intended to accommodate long trips or fast traffic.

Failure to provide an adequate transportation system will eventually discourage the interchange of people between the affluent western suburbs and the central city. Ultimately, this would be to the economic and cultural detriment of both. Interstate 394 will be the most essential part of the west suburban/Minneapolis transportation network.

The construction of I-394 will offer the opportunity to reduce these adverse impacts, both those now present and those foreseen for the future. I-394 will be a vastly better highway than existing US-12; traffic will flow more freely, travel times will be reduced, and safety will be improved. Public transportation on the new route will be quicker and more attractive to potential patrons. The free-flowing traffic will reduce air pollution. The noise problem will be mitigated by the inclusion of noise walls and other design features. The noise levels in residential and park areas will be reduced from those presently experienced. I-394 will keep the traffic that might otherwise be forced to use less appropriate minor roads, reducing environmental problems along those routes.

Even prior to 1920, this corridor had a concrete roadway, though only 14 to 16 feet wide. In 1921 it was designated as US Highway 12, and was widened to 27 feet between Minneapolis and CR-18 In 1926 the western end, between CR-18 and Wayzata, was widened to 28 feet. Early names for this road included Superior Boulevard and, later, Wayzata Boulevard.

In 1939 the section from the Minneapolis Northfield and Southern (MN&S) railroad tracks, in Saint Louis Park, and near downtown Minneapolis was reconstructed as a four-lane divided expressway with interchanges at SR-100 and Theodore Wirth Parkway. In 1952 the western end, between the railroad and Wayzata, was rebuilt as a similar expressway. Subsequent improvements have included widening; additional lanes in the Minneapolis segment; turn lanes; traffic signals at major intersections; miscellaneous safety and capacity improvements; and interchanges with new I-494, new Ridgedale Drive, CR-73, upgraded CR-18, Penn Avenue, Wayzata Boulevard, and new I-94. Many of these improvements were, in effect, TSM projects.

By the 1960's, steadily increasing development and traffic along the corridor made it evident that further upgrading to a freeway would be necessary to adequately serve the transportation needs of the area and its residents. In December of 1968, it was added to the Federal Aid Interstate System as I-394.

In March of 1970 the Minnesota Highway Department (MHD), now the Minnesota Department of Transportation, retained the engineering consulting firm of Howard, Needles, Tammen and Bergendoff (HNTB) to study the needs for this project. That June, they submitted to the MHD a comprehensive program direction report which made recommendations regarding scope, procedures, organization, public participation, and personnel. In November, they were again retained to perform a location study, which they submitted to the MHD in March of 1971. That study, entitled "Corridor Location Study: Trunk Highway 394 - Stage 1 - Feasible Corridors", recommended further

study of four alternatives, each of which began at the Hawthorne Interchange with I-94 in Minneapolis and terminated at the US 12/I-494 interchange in Minnetonka. Alternates 5 through 8 were dismissed.

In 1970, the MHD established two committees to provide direction and technical input. The first was the Technical Advisory Committee (TAC), which included representatives from the MHD, FHWA, MC, MTC, Hennepin County Highway Department, and the Hennepin County League of Municipalities. The second was the Administrative Committee, comprised of members from the MHD, FHWA, MC, and the MTC.

By June of 1971 it became apparent that more communication with the public was necessary, so the Administrative Committee proposed the establishment of a Citizens Advisory Committee (CAC) to provide for public input into the decision making process. The CAC was comprised of representatives from the affected cities of Minneapolis, Golden Valley, Saint Louis Park, Minnetonka, Plymouth, and Wayzata, and from the Greater Metropolitan Federation, a twin cities-wide organization of citizens groups.

At the recommendation of the CAC, the Administrative Committee was reorganized in March of 1972 as the Project Management Board (PMB), comprised of representatives of the MHD, MC, MTC, and the CAC.

Also at the recommendation of the CAC, a supplemental transit study of the I-394 corridor was begun early in 1972 by the consulting firm of Simpson and Curtin. Their study was closely coordinated with the highway study. The short-range transit plan was completed in December of 1972, and the long-range plan was completed in July of 1973.

Midwest Planning and Research, Incorporated, a subconsultant to HNTB, submitted a report entitled "TH 394 Corridor Location Study Attitude Survey" to the MHD in November of 1972.

Since the early stages of the project, the highway agencies have attempted to maintain a dialog with the public so that each could be aware of the other's needs and concerns. A community participation program was developed by the MHD to inform the public of the planning and development process leading to I-394, and to identify the public issues and concerns. This was done by public meetings, newspaper articles, telephone interviews, and personal discussion. This first phase was completed in December of 1971.

The second phase was to maintain communication between the public and the highway agencies, and to receive and consider opinions and ideas from the public. To this end, informal meetings were held with representatives from neighborhoods, businesses and civic organizations. Occasional public meetings were held to report progress. In Saint Louis Park, the MHD participated in the publication of a special newsletter regarding I-394 that was mailed to every residence, and in an information booth about I-394 at the City's annual exposition.

The Federal DEIS was completed in December of 1973 and made available the following month. The location public hearing was held on February 27, 1974. After review of the comments, Alternate 2 (the general location of existing US-12) was chosen by the Commissioner of Highways as the preferred alternate.

The public often had misconceptions of what the project really was and what its effect would really be on its neighborhoods. Opposition hardened over the years, and eventually manifested itself as political pressure.

In May of 1975, the Minnesota Legislature imposed a moratorium on all work, including preliminary engineering and environmental studies, on I-394 and certain other highway projects in the Twin City metropolitan area. In April of 1976, the legislature lifted most of the restrictions, allowing work to be resumed considering the recommendations of the MC, the TAB, and the ISC.

In 1978 Mn/DOT began preparing new geometric layouts, this time with the assistance of four Task Forces comprised of citizens and officials representing Minneapolis, Golden Valley, Saint Louis Park, Minnetonka, Plymouth, Wayzata, the Minneapolis Park and Recreation Board, and Hennepin County. Each Task Force was concerned with the details of a separate segment of the route. They provided ideas and opinions that insured that the freeway design was as acceptable as possible to the communities along the route. The Task Forces also relayed the transportation concerns back to the community at large, and formed a valuable link between the citizens and Mn/DOT.

In addition to the Task Force meetings, more than a dozen public meetings were held in schools and other public buildings to explain the proposal to the neighbors and to receive their comments. Neighborhood residents were notified by mail, and hundreds attended the meetings. Despite the communication between the citizens and Mn/DOT, the proposal to build I-394 and how to build it remained controversial.

The various communities had different opinions as to even the basic configuration of the freeway. The key issues were public transit and access to the freeway. They could not reach a consensus. No agreement could be made between the communities and Mn/DOT, or even between the communities.

On December 5th, 1980, Mn/DOT Commissioner Braun referred the I-394 controversy to the Metropolitan Council for resolution. Citing significant disagreement between the various involved communities and agencies over the design of I-394, and the lack of any clear consensus, he asked that they solve the problem by initiating the process described in Minnesota Statutes Chapter 161.17, Subdivision 2. This law gives the responsibility for resolving transportation policy issues and differences in the Twin City Metropolitan Area to the Metropolitan Council. They accepted this responsibility and made a thorough study of the controversy and the problem, including cost-effectiveness, and gave due consideration to public opinion including that expressed at public meetings. On June 25th, 1981, the Metropolitan Council recomended the design described in this report.

Steps yet to be taken include the processing of the Federal FEIS; the Design Public Hearing; the writing and processing of the State FEIS and the Design Study Report (DSR); final detail design; right-of-way acquisition; and construction. Mn/DOT will begin right-of-way acquisition in 1983, and the first phase of construction in 1986.

ALTERNATIVES INCLUDING THE PROPOSED ACTION

The "Corridor Location Study: Interim Report" of November 1973 (a copy of this document is available for review at the Mn/DOT District Five Office) identified seven distinct alternate routes plus the limited improvement and the no-build alternatives. These alternatives were analyzed in relation to traffic service, community opinion, and social, economic, and environmental impact. All but four of these alternates were dismissed before the DEIS was published in January 1974. After the MHD considered the response to the DEIS and to the public hearing of February, 1974, the Commissioner of Highways selected Alternate 2 as the preferred alternate.

The alternate routes are illustrated by Figure 6A, on page 65.

ROUTES DISMISSED BEFORE THE DEIS

A description of the other alternatives and the reasons for their dismissal are discussed in this section.

As a result of the Stage One Study, five of the nine alternatives were dismissed from further study for various reasons. Those dismissed at that time were referred to as Alternates 5, 6, 7, 8, and Limited Improvement. A brief discussion of each follows.

Alternate 5

Alternate 5 had its eastern terminus at the Hawthorne Interchange with I-94 in Minneapolis and extended westward along inplace US-12 to about Penn Avenue. From there it paralleled the Burlington Northern Railroad route southwestward through Minneapolis, Saint Louis Park, and Minnetonka to I-494.

This alternate was eliminated from further consideration after study showed that this corridor would have required the taking of more than 200 homes and would have adversely affected parts of Minnehaha Creek and the proposed linear park system along the creek.

Alternate 6

Alternate 6 also began at the Hawthorne Interchange and followed US-12 to about Penn Avenue, but then turned southwestward along the Chicago and Northwestern Railroad route, between Cedar Lake and Lake of the Isles, to SR-7. It then followed SR-7 westward to I-494, via Saint Louis Park, Hopkins, and Minnetonka.

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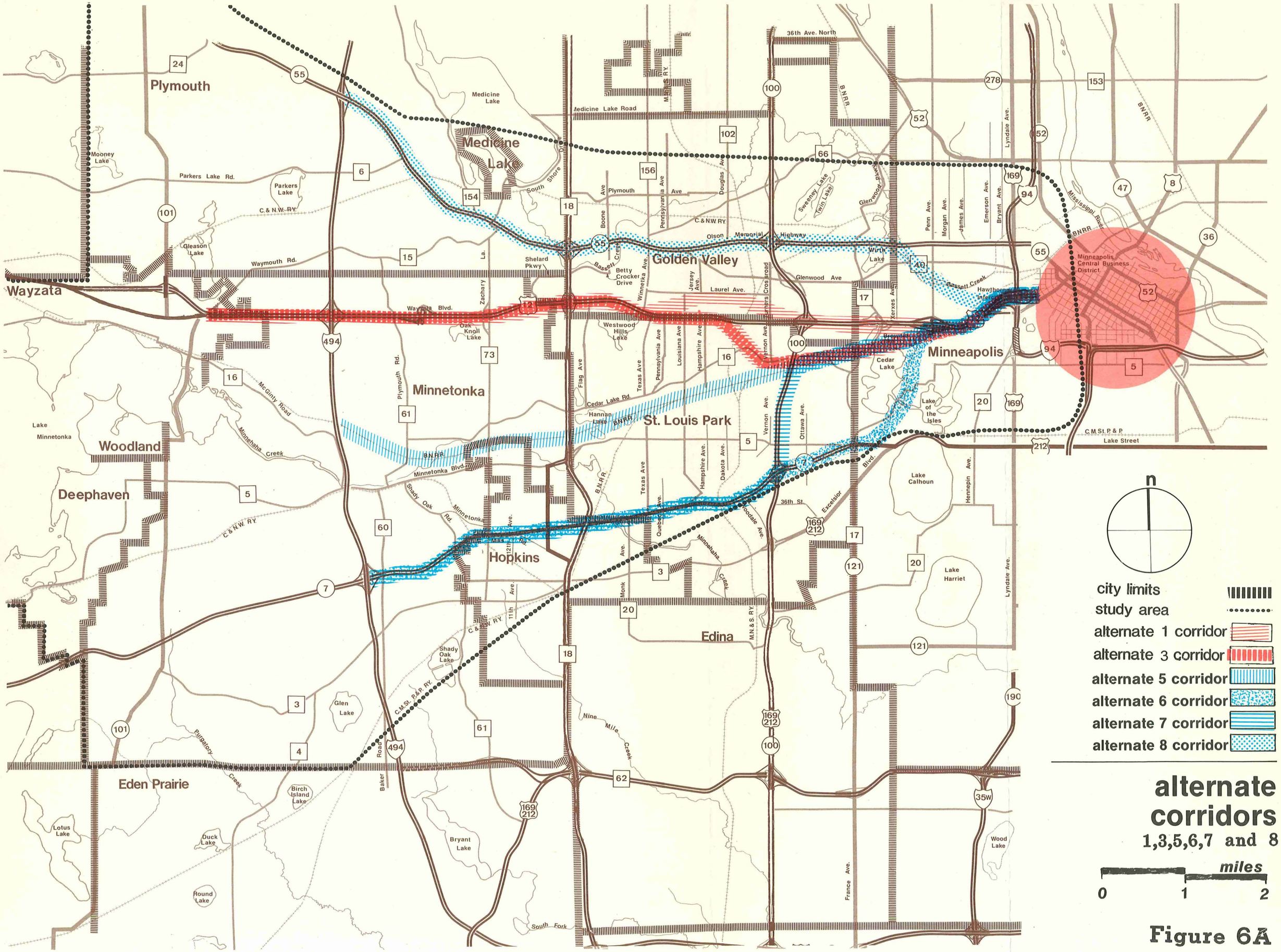

Plymouth
Medicine Lake
Wayzata
Golden Valley
Minneapolis
Minnetonka
St. Louis Park
Woodland
Deephaven
Hopkins
Edina
Eden Prairie
Minneapolis Central Business District
Lake Minnetonka
Mooney Lake
Parkers Lake
Gleason Lake
Oak Knoll Lake
Westwood Hills Lake
Hannan Lake
Cedar Lake
Lake of the Isles
Lake Calhoun
Lake Harriet
Shady Oak Lake
Glen Lake
Birch Island Lake
Lotus Lake
Duck Lake
Round Lake
Bryant Lake
Wood Lake
Sweeney Lake
Twin Lake
Wirth Lake
Medicine Lake Road
36th Ave. North
Parkers Lake Rd.
Waymouth Rd.
Wayzata Blvd.
Minnetonka Blvd.
Cedar Lake Rd.
Lake Street
36th St.
Olson Memorial Highway
Glenwood Ave
Laurel Ave.
Plymouth Ave
Shelard Pkwy
Betty Crocker Drive
McGinty Road
Minnehaha Creek
Purgatory Creek
Nine Mile Creek
Bassett Creek
Mississippi River
South Fork
B.N.R.R.
C.M.St.P.&P.
C.&N.W.RY.
M.N.&S.RY.
Hawthorne Interchange
Brownie Interchange
north
city limits
study area
alternate 1 corridor
alternate 3 corridor
alternate 5 corridor
alternate 6 corridor
alternate 7 corridor
alternate 8 corridor
alternate corridors
1,3,5,6,7 and 8
miles
0
1
2

Figure 6A

This alternative would not have provided the capacity, safety, or operational efficiency of the selected alternative. Partly because it would be at the same grade as the surrounding development, it would increase noise and be a visual intrusion. Traffic patterns in the adjacent commercial areas and residential neighborhoods would remain poor because of the random frontage road pattern. This would have had dampening effect on the many businesses along US-12, and hindered police and fire department response to emergencies in the neighborhods. Increasing traffic would have pressured more of it to the local street system, much of it residential. These residents would have been subjected to additional noise and safety problems. Public transit would have been discouraged because of the absence of any priority bus access or park-and-ride sites.

The limited improvement alternative would have cost almost as much as an Interstate freeway, but would not have qualified for Interstate funding.

Because of all these adverse social, economic, and environmental impacts, the limited improvement alternative was eliminated from further consideration.

ROUTES DISMISSED AFTER THE FEDERAL DEIS

Alternate routes 1, 2, and 3 and the no-build option (alternate 4) were further analyzed after publication of the Federal DEIS. The comments on the DEIS and the comments from the public hearing were considered at this time. Alternate 2 was selected as the preferred alternate. Routes 1 and 3, discussed here, were eliminated from further consideration.

Alternate 1

The eastern terminus of alternate 1 was at the Hawthorne Interchange with I-94 in Minneapolis. From there it followed the existing US-12 corridor westward to I-494 in Minnetonka, but had a split alignment between Penn and Winnetka Avenues, a distance of almost four miles. The westbound lanes continued to follow the inplace US-12 corridor to about SR-100, then angled to a new alignment about 1500 feet north of US-12, then angled back down to US-12 at Winnetka. Coming back toward town, the

eastbound lanes followed the US-12 corridor to about Florida Avenue, the angled southward to follow a new alignment approximately following Cedar Lake Road and the Burlington Northern Railroad tracks. These lanes would be as much as 3000 feet south of inplace US-12; the section parallel to the tracks would angle slightly northward and rejoin the lanes at Penn Avenue.

This alternate would displace about 80 homes and 30 apartment units, the Crystal Lake Nursing Home, and about 45 businesses employing nearly 1000 people. Six residential neighborhoods would be physically divided by the freeway. About one-and-one-half acres of parkland and over 85 acres of wildlife habitat would be taken for right-of-way.

Even with noise barriers, this alternate would expose nearly 900 residences to increased noise levels, and over 100 of them to noise levels above the maximum federal standard of 70 dBA for 10 percent of the time.

The separated alignment of the two directions could cause severe operational problems. These problems could include complicated frontage road operation, slow response time for emergency vehicles, higher cost, and longer construction time. This alignment would also complicate and discourage public transit because transit stops and park-and-ride sites could not be located to serve both initial and return trips.

These problems, together with the severe social, economic, and environmental impacts, caused the dismissal of this alternate.

Alternate 3

Alternate 3 would extend from the Hawthorne Interchange to I-494 along the route of inplace US-12, except for following a new three mile long southern alignment between Penn and Hampshire Avenues. Between Penn and Hampshire it would follow the route of the Burlington Northern Railroad and Cedar Lake Road.

One variation of this alternate would intrude on the Blackstone neighborhood. A second cariation would avoid this neighborhood but displace the Honeywell plant in Golden Valley.

This alternate would displace between 60 and 90 homes, about 25 apartment units, and about 40 businesses employing 550 people. The variation that would displace Honeywell would disturb another 1000 employees. Four residential neighborhoods would be divided. More than two acres of parkland and between 55 and 70 acres of wildlife habitat would be taken for right-of-way.

With noise barriers, this alternate would still expose as many as 550 homes to noise levels in excess of the federal standards.

Alternate 3 was dismissed because of its disruption to neighborhoods, parklands, and wildlife habitat; because of the great amount of right-of-way required; and because of the resultant economic impact to the affected communities.

THE NO-BUILD ALTERNATIVE

Alternate 4 was the no-build option, a useful tool in the decision-making process as it allows a comparison of the consequences of either taking an action or of not taking an action. This alternative would leave US-12 basically as it is now. Although minor safety improvements would continue to be made, no major improvements would be made in the foreseeable future.

Traffic on the most heavily traveled section of US-12 (between SR-100 and the Hawthorne Interchange) doubled in the ten years between 1970 and 1980, to an ADT of 82,500. Traffic on all segments of US-12 has increased dramatically, and projections are that traffic will continue to increase. By the year 2000, the segment between SR-100 and the Hawthorne Interchange is expected to have an ADT of 102,000.

This increased traffic on an inadequate road, US-12 as it now exists, would compound congestion. This congestion, along with the additional traffic volume, would increase noise levels and air pollution, probably increase the accident rate, and cause problems of access to adjacent development. Some of the traffic that should logically use the US-12/I-394 corridor would find other less suitable routes on minor arterials, collectors, and even local streets, none of which were designed or intended for long distance travel. Although this seeking out of other routes would relieve some of the traffic and environmental problems along US-12, the adverse effects would merely be displaced to other roads and other neighborhoods that may be even more sensitive to them.

To not build I-394 would not displace any homes or businesses and would not require any parkland or wildlife habitat. The adverse effects of the inadequate transportation facility, however, would cause a decline in the attractiveness of these same properties and much of the adjacent land as well. The traffic problems of congestion and access would eventually have an adverse economic impact on both commercial and residential development, both that adjacent and that development farther away but still within the area dependent on US-12 as the primary transportation corridor.

Noise is even now a problem because of the lack of abatement and the high traffic volumes and congestion. As volumes and congestion increased, noise would increase. More than 1500 homes, as well as all other developed and undeveloped lands along the corridor, would be subjected to increasing noise. This noise, together with increasing air pollution, would cause a further decline in the aesthetics and usefulness of the residential neighborhoods, wildlife habitat and open space, and the parklands.

Alternate 4, the option not to build, was rejected for all of these reasons. A decision to do nothing would not solve any of the many problems now associated with the existing highway, US-12. As traffic increased, the problems and adverse effects would also increase and be intensified.

Early in 1980, the Minnesota Legislature directed the Metropolitan Council to conduct a feasibility study of light rail transit (LRT) in the Twin City Metropolitan Area. The study was conducted by a consultant engineering firm, Sanders & Thomas, Incorporated, in association with the Midwest Research Institute and The Cosmis Corporation. Their study was completed in March of 1981, and the Metropolitan Council published their conclusions and recommendations the following month.

The study was supervised by a Project Management Team composed of representatives of the MC, MTC, AND Mn/DOT. Five alignments in four general transportation corridors were analyzed: west and southwest of the Minneapolis CBD; northwest of the same CBD; northeast of the Saint Paul CBD; and between the two CBD's.

Some strong conclusions were drawn from the study. One was that an access system to collect and distribute passengers to and from an LRT line could be very expensive, particularly where development was not dense. Another was that building an LRT system would be a slow process; that it was unlikely that federal funds would be available; and that new sources of funds for an LRT line would be needed.

In a comparision of LRT with buses, specifically addressing the I-394 corridor, the Metropolitan Council report concluded

> "Under conditions similar to those existing in the West alignment, HOV lanes would be more cost efficient than an LRT line while providing similar levels of accessibility for the residents of the corridor."

The Metropolitan Council later recommended that the HOV lanes take the form of diamond lanes to the west of SR-100 and reversible lanes to the east, between SR-100 and the CBD.

The Metropolitan Council final report recommended that a more detailed study of LRT be made, but only of the one corridor between the CBD's of Minneapolis and Saint Paul. This corridor was judged the one more promising for LRT.

THE PROPOSED PROJECT

Location

The proposed freeway that is discussed in this statement will be located on the present route of US-12, between the Lake Minnetonka western suburb of Wayzata and the west edge of the Minneapolis CBD. The upgraded section of US-12 will extend from the east junction of SR-101 in Wayzata to I-494 in the City of Minnetonka. The I-394 section will extend from there to the Hawthorne Interchange with I-94 in Minneapolis. This east-west route will be about 10.2 miles long, 1.5 miles of it the improved US-12 and 8.7 miles of it the new I-394. The proposed route, geometrics, and profile are shown in Figure 8 on pages 76 and 77.

Lanes and Geometrics

through lanes

The freeway will have at least two continuous general-purpose lanes for mixed traffic in each direction for its entire length.

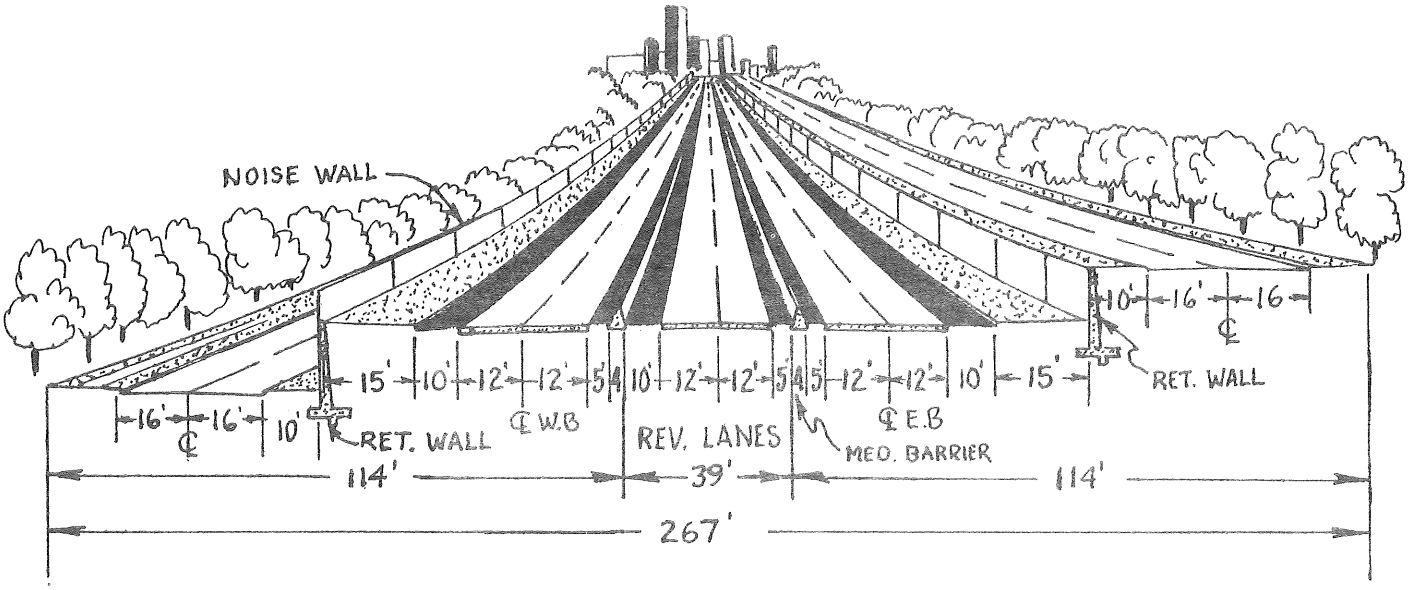
diamond lanes

The western section of the freeway, between SR-101 and SR-100, will have a total of three lanes in each direction. The two inside lanes, next to the median barrier, will be designated as diamond lanes. These lanes, one in each direction, will be for the preferential use of high-occupancy vehicles such as buses, vanpools, and carpools during peak traffic periods. A typical section is shown in Figure 7 on the following page. At the west end, near SR-101, the through lanes and diamond lanes will be transitioned into three conventional through lanes in each direction to match the completed section of US-12 in Wayzata. At the east end, near SR-100, the diamond lanes will be transitioned into reversible lanes.

reversible lanes

The eastern section of the freeway, between SR-100 and the CBD, will have two reversible lanes for the preferential use of the high-occupancy vehicles. These lanes will be in the center, separated by median barriers from the two general-purpose lanes in each direction. A typical section is also shown in Figure 7. At the east end, they will connect to and transition into the Third Avenue Distributor segment of I-394. The reversible lanes will operate inbound toward the CBD in the morning, and outbound toward the suburbs in the afternoon and evening.

I-394 TYPICAL SECTION EAST OF TH.100



I-394 TYPICAL SECTION WEST OF TH.100

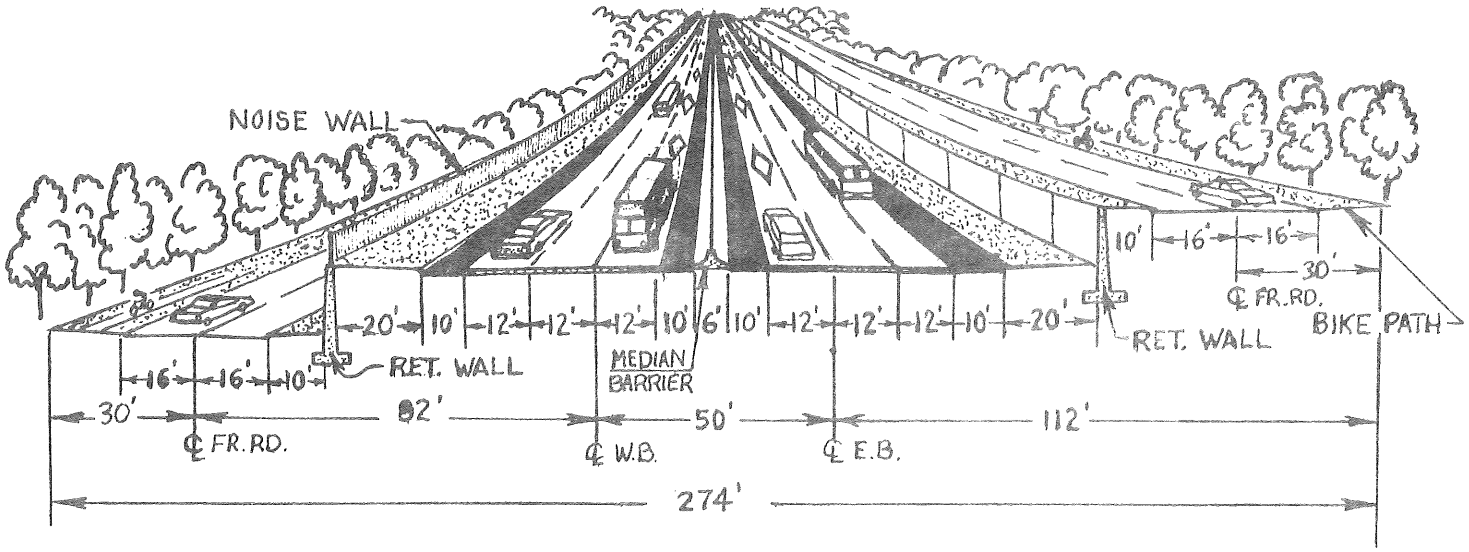
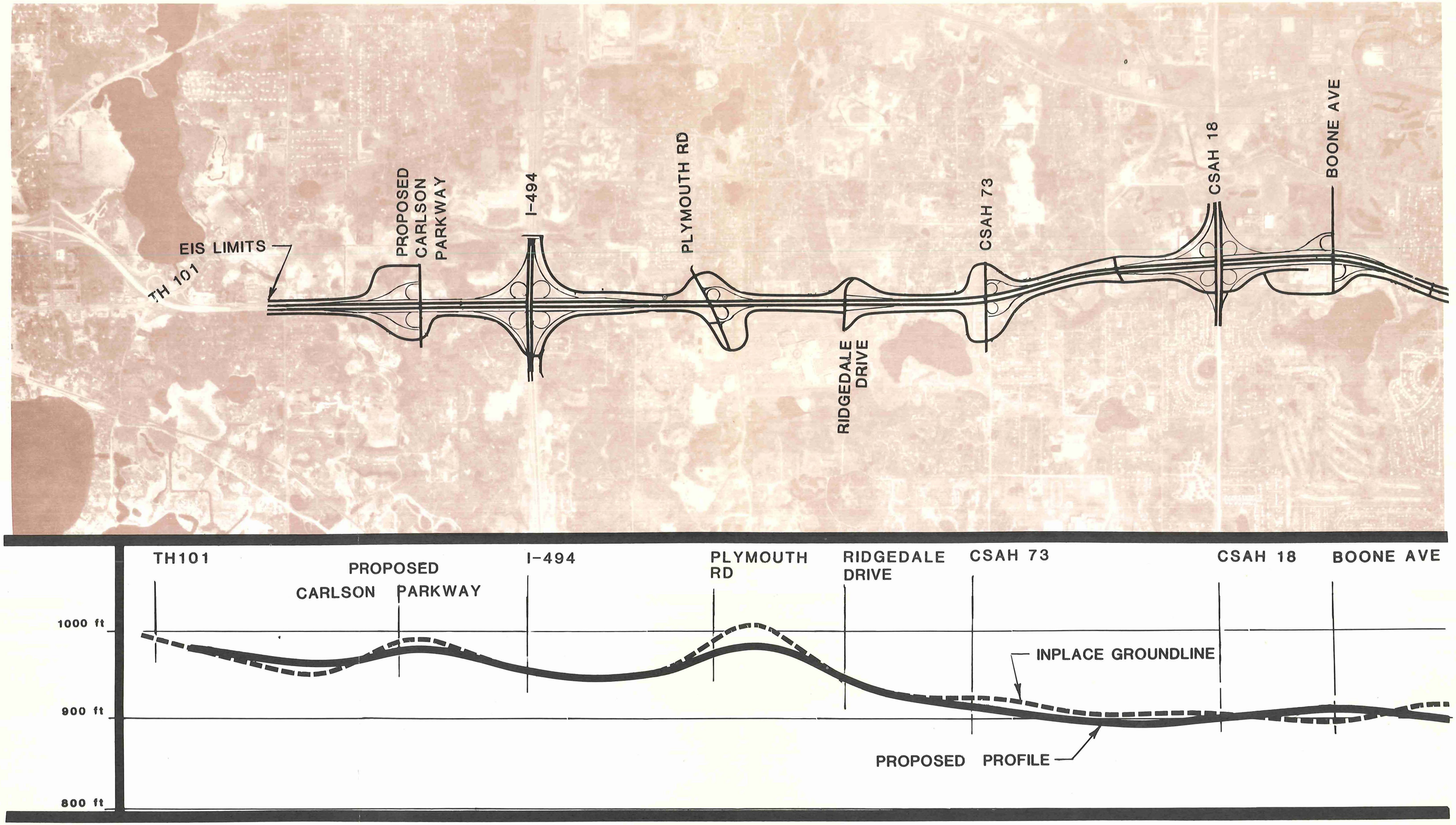
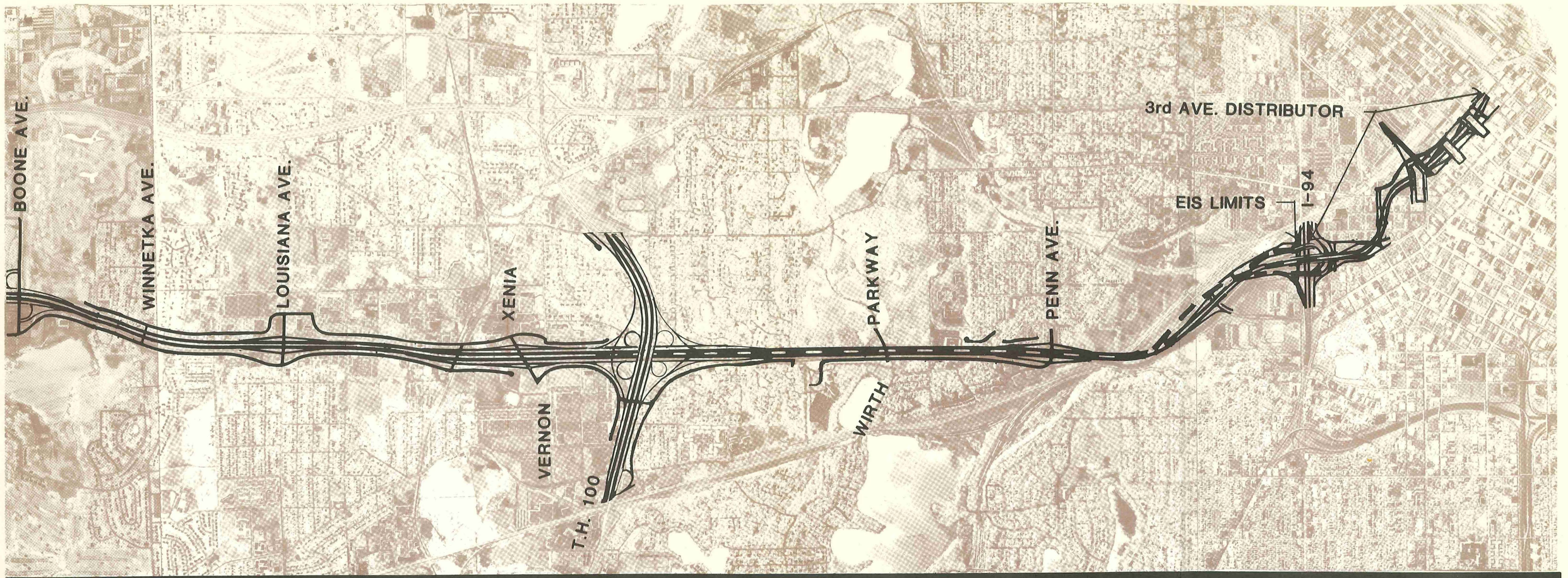
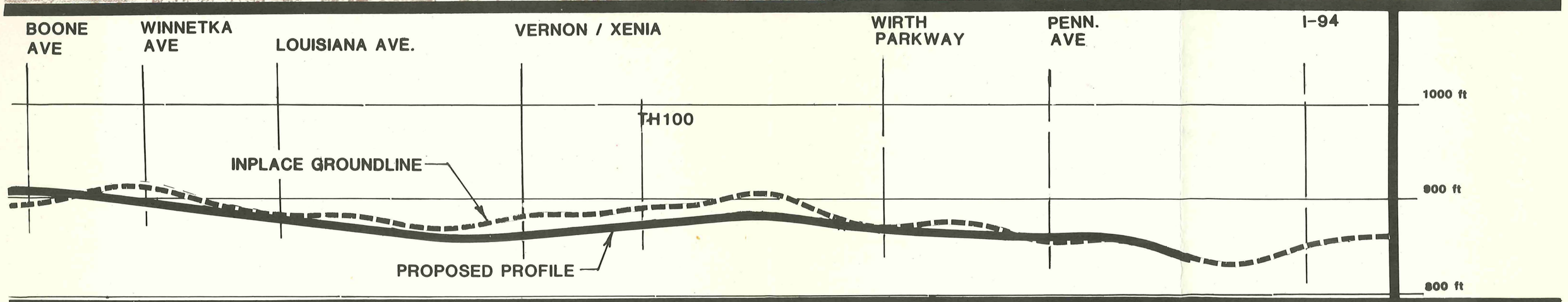


Figure 7


EIS LIMITS
TH 101
PROPOSED CARLSON PARKWAY
I-494
PLYMOUTH RD
RIDGEDALE DRIVE
CSAH 73
CSAH 18
BOONE AVE
TH101
PROPOSED CARLSON PARKWAY
I-494
PLYMOUTH RD
RIDGEDALE DRIVE
CSAH 73
CSAH 18
BOONE AVE
1000 ft
900 ft
800 ft
INPLACE GROUNDLINE
PROPOSED PROFILE





I-394

1":2000' Horiz.
1":100' Vert.

Figure 8

PROPOSED GEOMETRICS AND PROFILE

north

The reversible lanes will also connect to I-94 to the east to serve those destined beyond the CBD. This connection will make the lanes of value to those whose destinations are, among other places, the University of Minnesota, the Midway district, and downtown Saint Paul.

traffic management options

Mn/DOT expects that three persons per vehicle will constitute a carpool for the purpose of using the diamond and reversible lanes. The definition of a carpool can be adjusted according to the demand, and to keep the preferential lanes from becoming congested.

Priority use of the diamond lanes and the reversible lanes east of SR-100 will initially be given to high-occupancy vehicles. If the lanes are significantly underused, management techniques will be employed to allow certain other vehicles access to the lanes. In any case, a high level of service will be maintained in the lanes to promote ridesharing.

compliance

Compliance of carpools and vanpools can be checked and enforced on the reversible lanes by stationing a police or highway patrol officer at any point, as all vehicles on these lanes must traverse the entire length.

C-D roads

Auxiliary lanes for merging and weaving traffic movements will be included with all interchanges. At all cloverleaf-type interchanges, and where interchanges are closely spaced, Collector-Distributor (CD) roads will keep the slower merging and weaving traffic separated from the faster traffic on the through lanes.

Specifically, along US-12/I-394, one pair of C-D roads will serve the Carlson Parkway and I-494 interchanges; another pair will serve the CR-18 and Boone Avenue interchanges; and a third pair will serve the interchanges at Xenia and Vernon Avenues and at SR-100. C-D roads will also be built along the through lanes of SR-100 where it interchanges with I-394, Glenwood Avenue, and Cedar Lake Road.

Right-of-Way

The new freeway will be built on the present US-12 corridor, so will make use of the existing right-of-way as much as possible. The existing right-of-way ranges from 180 to 300 feet, excluding interchanges.

The new right-of-way requirements will be determined by the geometrics, grade, frontage road locations, noise abatement requirements, and interchange configurations. Although these requirements cannot be precisely determined until the final design is underway, a range of from 267 to 350 feet is probable for most of the project length. This range will include the frontage roads, but additional width will be needed for the interchanges. The total right-of-way to be acquired is approximately 133 acres.

Grade

The grade of a freeway has an important effect on its noise and visual impact. A depressed roadway, one that is lower than the surrounding terrain, is quieter and less visible, but is usually more costly and requires more right-of-way than one that is at the same level as the existing ground.

This freeway will be depressed below the elevation of the surrounding terrain for part of its length, particularly through residential neighborhoods and parklands, to make it less obtrusive. However, the areas in which it can be depressed, and the depth to which it can be depressed, will be limited by the water table.

retaining walls

In areas where it is especially desirable to minimize right-of-way, for example to save parklands and residential and commercial property, vertical retaining walls will be built instead of the more customary backslopes or fillslopes.

Interchanges and Access

Access to and from this freeway, including the reversible lanes, will be limited to interchanges and, of course, the two ends. The existing interchanges with intersecting freeways I-494, CR-18, SR-100, and I-94 will be perpetuated with modifications. Local land-access interchanges will be built or rebuilt at nine locations. Access to and

from the reversible lanes will be provided at the diamond lanes of I-394 (west of SR-100), SR-100, Wayzata Boulevard, I-94 to the east, the Third Avenue Distributor to the CBD, and possibly at Vernon and Xenia Avenues.

Many of the interchanges will include separate ramps to give priority access to buses, vanpools, and carpools. Some of the park-and-ride sites will be near the priority access ramps.

Not all of the interchanges connect directly to US-12/I-494. Six of the interchanges connect instead to three pairs of collector-distributor (C-D) roads. The Carlson Parkway and I-494 interchanges connect to one pair; CR-18 and Boone Avenue to the second pair; and the Xenia/Vernon and SR-100 interchanges connect to a third pair of C-D roads.

The interchanges have been planned to accommodate existing traffic and future development. They have been planned jointly with the local communities to meet their present needs and to be compatible with their city planning.

freeway-to-freeway interchanges

The cloverleaf-type interchanges with I-494, CR-18, and SR-100 will be perpetuated but totally reconstructed. The directional interchange with I-94 will be modified.

I-494 will pass over I-394, as it now does with US-12. The interchange will be rebuilt to accommodate C-D roads on I-394.

CR-18 will also pass over I-394, as now. The cloverleaf will be expanded to accommodate the C-D roads on I-394, and to provide better and safer geometrics.

SR-100 will pass over I-394, a reversal of the present situation, so that I-394 can be depressed through the Tyrol Hills residential neighborhoods. The new interchange will also accommodate the reversible lanes on I-394 and the C-D roads on both highways, and provide superior alignment.

The Hawthorne Interchange with I-94 will be modified; the major change will be the addition of the reversible lanes leading to I-94 to the east.

land-access interchanges

The four major interchanges mentioned above do not give access to the areas adjacent to the freeway, but connect to other major highways. Intermediate interchanges are needed to give this access to adjacent areas. The locations and configurations have been determined by traffic and community needs, yet limited by the need for adequate distance between interchanges. The corridor is highly developed, and still developing. Both the commercial and residential neighbors require adequate access.

Nine land-access interchanges will be built. One, at Wayzata Boulevard, now exists but will be modified. Three others, at Ridgedale Drive, CR-73, and Penn Avenue, also now exist but will be totally reconstructed. The other five are at, or near, existing at-grade intersections with US-12. From west to east, the nine are as follows:

Carlson Parkway will be a new road in the vicinity of existing Parkers Lake Road, to the west of I-494. It will bridge over new US-12. The interchange will be a folded diamond, with the ramps in the western quadrants.

Plymouth Road (CR-61), an existing route to the east of I-494, will bridge over I-394. The interchange will be a folded diamond, with the ramps in the eastern quadrants.

Ridgedale Drive will pass under I-394 and have a half-diamond interchange, to the east.

Hopkins Cross Road (CR-73) will bridge over I-394 and have a folded diamond interchange with the ramps in the eastern quadrants.

Boone Avenue will be a new road in the vicinity of I-394, and will pass under the freeway. The interchange will be a folded diamond, with the ramps in the northwest and southeast quadrants.

Louisiana Avenue will bridge over I-394 and have a full diamond interchange.

A bridge over I-394 will connect Xenia Avenue on the north side to Vernon Avenue on the south. This crossroad will connect to the freeway via a full diamond interchange. The existing intersection in this area is at Turners Crossroad on the north and Vernon Avenue on the south.

The existing interchange at Theodore Wirth Parkway will be closed in accord with the wishes of the Minneapolis Park and Recreation Board. The parkway will continue to pass over I-394, on a new bridge.

The existing diamond interchange with Penn Avenue (CR-2) will be reconstructed with the same configuration, with Penn bridging I-394.

The existing half-diamond interchange with Wayzata Boulevard, near I-94 and the CBD, will be slightly modified.

Third Avenue Distributor

The Third Avenue Distributor, beyond the limits of the project being discussed in this DEIS, will constitute the designated eastern end of I-394. Only about a mile long, to the northeast of the Hawthorne Interchange with I-94, it will distribute the traffic into and out of the downtown street network and proposed parking facilities. The FEIS regarding the Third Avenue Distributor was published in 1973.

reversible lane access

The two reversible lanes will be express lanes between the SR-100 area on the west and the area of the Hawthorne Interchange with I-94 and the Third Avenue Distributor on the east. No intermediate access points will be provided.

At the west end, the two reversible lanes will be divided and transitioned into the two inside diamond lanes of I-394 to the west. The cloverleaf-type interchange with SR-100 will include special ramps and loops to give access between the reversible lanes and SR-100 both to the north and the south. Moveable barriers will direct the traffic to the proper lanes and keep it out of the opposing traffic.

At the east end, the reversible lanes will be divided and transitioned into the Third Avenue Distributor segment of I-394, leading to and from the downtown street network and parking facilities. The Hawthorne Interchange will also include special ramps to give access between the reversible lanes and I-94 to the east, but not to the north. A ramp will connect the reversible lanes to Wayzata Boulevard.

Frontage Road System

Frontage roads will parallel the freeway for most of its length, but will not be continuous for the entire distance. These roads will provide access to businesses, public facilities, and residential neighborhoods along the freeway.

By being discontinuous, they will not provide an alternate route to the freeway itself for longer trips. Such use would interfere with the traffic for which they were intended, and bring additional noise and air pollution to the neighborhoods adjacent to the freeway.

Existing roads will be used in some places, and modified or reconstructed in others. Other frontage roads will be new. All frontage roads will be designed for two-way traffic.

west of SR-100

The proposed Carlson Center (described on page 140) will be in the northern quadrants of the I-394/I-494 interchange. The traffic system within the center will be determined by the private developer. The north frontage road will use the existing bridge over I-494, and extend eastward to CR-18 where it will turn northward and end at Betty Crocker Drive. Another segment of the north frontage road will resume at the entrance, on the east side, to Brookview Golf Course, and extend eastward past Xenia Avenue, with a cul-de-sac just west of SR-100.

The south frontage road will begin at Crosby Road near the west end of the project, cross over I-494 on an existing bridge, and extend eastward to Plymouth Road (CR-61). Ridgedale Center, a large regional shopping center, is to the east of Plymouth Road; Ridgedale Drive, inplace, passes around the south and east sides of the center. The frontage road will resume at Ridgedale Drive and continue eastward, passing under CR-18, past Vernon Avenue, then turn south and parallel SR-100 to Cedar Lake Road (CR-16).

In short, the frontage road system and nearby connecting routes will extend more than five and one-half miles from west of I-494 to just west of SR-100. This system will include the Carlson Center roads, Ridgedale Drive, Betty Crocker Drive, and Boone Avenue as well as the actual frontage road themselves. The only physical interruption in this section will be on the north frontage road at Brookview Golf Course; crossovers and the south frontage road will still serve the traffic.

east of SR-100

The south frontage road will resume at the interchange of SR-100 and Cedar Lake Road, and extend northward parallel to SR-100 and eastward parallel to I-394, ending in South Tyrol Hills to the west of France Avenue. It will be connected to the south frontage road to the west of SR-100 by an underpass beneath SR-100. At France Avenue, the south frontage road will resume and extend eastward under Theodore Wirth Parkway to Penn Avenue (CR-2). A loop will give an indirect connection to Wirth Parkway.

There will be no continuous north frontage road to the east of SR-100. The existing sections will be removed in some areas and rebuilt in others, as recommended by the local communities.

Tyrol Hills

The Tyrol Hills neighborhoods, just east of SR-100 in Golden Valley, present a special problem that will be resolved in accordance with the wishes of the neighborhoods and the city. Neither North nor South Tyrol Hills will have direct access to I-394. North Tyrol residents will have access to the transportation network via Glenwood Avenue, east and west. South Tyrol will have access to the transportation network via the frontage road, east and west.

crossovers

The north and south frontage roads will be linked by numerous bridges and underpasses to facilitate traffic movement. Each frontage road will intersect every north-south road that forms a land-access interchange with US-12/I-394: Carlson Parkway, Plymouth Road, Ridgedale Drive, CR-73, Boone Avenue, Louisiana Avenue, Xenia/Vernon Avenues, and Penn Avenue. Each of these crossroads will form a circulation route between the two sides. These do not, of course, include freeways I-494, CR-18, nor SR-100.

Three other crossovers will be built to perpetuate existing traffic routes. These bridges will be at Shelard Parkway, Winnetka Avenue, and Theodore Wirth Parkway. Shelard and Winnetka will permit circulation between the two frontage roads.

ring-road

In the vicinity of CR-18, the frontage roads will connect to existing and new roads to form a ring-road system to serve the extensive development of the area, including the General Mills corporate headquarters and the Shelard commercial and residential complex. This system will cross freeways CR-18 and I-394 on the existing Betty Crocker Drive bridge to the north, on a new bridge at Shelard Parkway to the west, through a new frontage road underpass to the south, and through a new underpass at Boone Avenue to the east. This system includes a new section of Boone Avenue between I-394 and Betty Crocker Drive.

Railroad Bridges

The existing railroad crossing separations with US-12 will be maintained with I-394. A bridge will carry the Minneapolis, Northfield and Southern Railway over I-394 just west of Vernon Avenue in Saint Louis Park, and another will carry I-394 over the Burlington Northern line and the Chicago and North Western line just east of Penn Avenue in Minneapolis.

Transit Facilities

diamond and reversible lanes

The standard transit mode within the Twin City metropolitan area is buses in mixed traffic. No plans currently exist for any other mode in the study area. Along this corridor, however, after the buses have collected the passengers they will be able

to enter the diamond and reversible lanes via priority-access ramps and make an express trip to or from the Minneapolis CBD, or I-94 for more distance destinations. The express lanes will operate at considerably faster speeds than the regular lanes, which should encourage bus patronage.

park-and-ride sites

Park-and-ride sites will be built to accommodate those who want to drive there and then finish their trip by bus. These sites will also serve as a meeting area for those who are in a vanpool or carpool.

Park-and-ride lots now exist in Wayzata, at Ridgedale Center, and at CR-73. Other likely sites along the corridor include the proposed Carlson Center at Parkers Lake Road, and in the vicinity of CR-18, Boone, and Louisiana Avenues. Other sites will be considered. They would not necessarily have to be adjacent to I-394 to serve their purpose. The location and design of these facilities will be coordinated with the MTC.

Safety Features

The US-12/I-394 freeway will meet contemporary safety standards. The designers will consider such traditional concerns as adequate sight distance, moderate grades, and reasonable curvature both on mainlines and on interchange ramps and loops. Adequate weaving distances will be provided, by collector-distributor roads where needed.

In addition, the following specific safety features will be included.

shoulders

Full shoulders, from five to ten feet wide, will be provided on both sides of each set of through lanes and on both sides of the reversible lanes.

clear zone

A variable width clear zone, as called for by AASHTO (American Association of State Highway and Transportation Officials) safety standards, will generally be provided between the right edge of the through lanes and the nearest obstruction such as retaining walls or noise-abatement walls. The ten-foot shoulders will be a part of the clear zone. The purpose of this zone is to allow an out-of-control vehicle to regain control, or to slow or stop, before striking any fixed appurtenance along the road.

Some bridge piers may have to be placed within this clear zone because of the need to space them at reasonable distances. All such piers will have some type of barrier to protect errant vehicles.

barriers

Concrete median barriers between the opposing lanes and between the directional and reversible lanes will separate opposing traffic for the entire length of the freeway. The barrier faces will be shaped to minimize damage and loss of control to vehicles that strike it. They will be similar to what is commonly known as the "New Jersey" barrier.

All bridge piers, heavy sign posts, and other fixed objects that could be hit by errant vehicles will be protected by similar concrete barriers or by plate-beam guardrail. The leading edges of all such barriers will slope down to the ground so that the barrier itself will not be a dangerous obstacle. Energy absorbing devices may be used where appropriate.

Lighter weight sign posts will be of break-away design. If hit by a vehicle, the posts will give way in a planned manner to minimize damage to the vehicle.

lighting

The freeway will be illuminated, possibly for its entire length.

The light standards will be placed so as to minimize the chances of their being knocked down by out-of-control vehicles. Any lights that must be placed in a location where they could be struck will be equipped with a break-away base, so as to minimize damage to the striking vehicle.

Traffic Management

The traffic on US-12/I-394, from SR-101 in Wayzata to the Third Avenue Distributor in downtown Minneapolis, will be surveyed and managed from the existing Traffic Management Center at the edge of the CBD. The entire scope and details of the traffic management strategies have not yet been determined, but they will include a closed-circuit television system, an automated vehicle detector system, and ramp metering.

closed-circuit television system

The TMC staff will be able to observe the entire length of I-394 via a closed-circuit television system consisting of a series of remote cameras mounted on poles at strategic locations to provide continuous coverage. The cameras will tilt and turn, and be equipped with zoom lenses. These adjustments will be made by remote control from the TMC.

The flexibility of this system will enable the TMC personnel to view and investigate accidents and other traffic disturbances, and to quickly dispatch the State Patrol or other emergency help to the scene, if needed.

This system will be similar to the existing television surveillance system that has been operating successfully for several years on I-35W, a radial freeway extending south from the Minneapolis CBD.

vehicle detector system

An extensive system of vehicle detectors will also be incorporated to measure the traffic flow and automatically alert the staff to potential problems as they arise, before they become disruptive. These detectors will be located as needed in the various ramps as well as in the through, diamond, and reversible lanes.

Again, this system will be similar to one which now works most effectively on I-35W.

ramp metering

All entrance ramps to the through lanes will have a metering system to limit and control the rate of traffic entering the system. These meters will normally operate only during peak traffic periods, allowing vehicles to proceed only at intervals which will allow them to merge smoothly with the mainline flows. When mainline traffic begins to become unstable, the TMC staff can alleviate the problem by reducing the flow of entering vehicles at selected access points.

Access to the reversible lanes should not involve any significant wait. Access to the through lanes will be limited by the need to maintain a stable flow, and may be delayed, although queing is not expected to be a problem. The through lanes, as opposed to the reversible lanes, will be permitted to operate at a slower but steady pace during peak hours.

A similar ramp metering system now works well on the section of I-35W mentioned above.

Pedestrian and Bicycle Facilities

crossing the corridor

Pedestrians and bicyclists now cross US-12 on roadway bridges with sidewalks, on pedestrian bridges, along underpasses, at signalized intersections, and at uncontrolled intersections and other convenient locations. Pedestrian and bicycle traffic is generated by the residential neighborhoods and commercial areas that line both sides of the highway, and includes, among others, bus riders, users of the recreational trail systems, and users of the numerous parks near the highway.

New pedestrian facilities will be included in this project to allow the continued free movement of pedestrians and bicyclists across the highway corridor. Specific facilities are outlined below.

on roadway bridges

Sidewalks will be included on the bridges over US-12/I-394 at Carlson Parkway, Plymouth Road, CR-73, Shelard Parkway, Winnetka Avenue, Louisiana Avenue, Vernon/ Xenia Avenues, Theodore Wirth Parkway, and Penn Avenue. These walkways will also extend along the roadways approaching the bridges. The existing bridges at CR-73, Wirth Parkway, and Penn Avenue, all of which will be replaced, now include sidewalks. The Carlson Parkway bridge will replace the existing signalized intersection at Oakland Road, about 500 feet west. The Shelard Parkway site is now an uncontrolled pedestrian crossing. The other four bridges will replace signalized intersections.

Several of the new bridges will be near present or proposed park-and-ride sites, so will serve bus patrons who must cross the freeway by foot to get to their cars. Several will be near the many parks along the corridor, so will serve pedestrians traveling between home and park. The Wirth Parkway bridge will include a separate bicycle trail to be consistent with the separate pedestrian and bicycle paths through the park system.

along underpasses

The existing pedestrian and bicycle route across US-12 at the Ridgedale Drive underpass will be perpetuated by the inclusion of a sidewalk with the new underpass. This route serves Ridgedale center.

The new underpass at Boone Avenue will include a walkway to accommodate pedestrian and bicycle movement across the freeway and to perpetuate the Golden Valley trail system. This walk will extend north, along the new section of Boone Avenue, to Betty Crocker Drive.

The existing sidewalk under US-12 at Wayzata Boulevard will be replaced if it is disturbed by construction. This walk leads to an inplace pedestrian bridge over railroad tracks, and links the parklands of the Parade Grounds and Bryn Mawr Meadows.

pedestrian bridges

The existing pedestrian bridges over US-12 at June Avenue and at Cedar Lake Road will be replaced. The first links North and South Tyrol Hills; the second links the north and south sections of Bryn Mawr.

A new pedestrian bridge may be built near Florida Avenue. Pedestrians now cross US-12 there at a signalized intersection.

The existing pedestrian bridge and sidewalk east of Penn Avenue will be removed by the construction of I-394, so will be replaced. This walkway crosses over the railroad tracks and under US-12, and links the Bryn Mawr neighborhood, the Kenwood neighborhood, and the Bryn Mawr Meadows parkland.

along the corridor

Sidewalks and trails to accommodate pedestrians and bicyclists will be built along some of the frontage and other new roads associated with this project. These walks will replace existing facilities, provide for safe pedestrian movement along the more heavily traveled roads, and perpetuate the recreational trail systems of the various cities.

Walkways will be built along the north frontage road between I-494 and Plymouth Road, and between City View Lane and Ridgedale Drive; they will perpetuate the Minnetonka trail system as well as serve the local businesses. Sidewalks will be built along the south frontage road between Shelard Parkway and Boone Avenue, which includes the segment that passes under CR-18, and along the south frontage road connection that passes under SR-100.

A trail on the north side, between Wirth Parkway and Upton Avenue, will replace the existing frontage road which will be removed. A sidewalk will be built along the three-block north frontage road between Mount View and Queen Avenues, in a residential neighborhood.

The existing Glenwood Avenue bridge over SR-100, which will be replaced, now has a sidewalk. The new bridge will also have a sidewalk to petpetuate this essential pedestrian link across SR-100.

possible additions

Other sidewalks may be needed because of the increased reliance of both vehicular and pedestrian traffic on the frontage road system, but their necessity has not yet been determined. Those under consideration include walks along the following frontage roads: north, between Plymouth Road and City View Lane; north and/or south, between Ridgedale Drive and CR-73, CR-73 and Shelard Parkway, Boone and Louisiana Avenues, and and between Louisiana and Vernon Avenues; south, in Tryol Hills; and south, between the Prudential Building and Penn Avenue.

Environmental Design Features

The entire freeway will be designed so that its impact on the environment will be minimized as much as possible. Many potential adverse environmental effects will be mitigated by specific design features. Some of these mitigation measures are outlined in the following paragraphs.

location

The location of the freeway on the present route of US-12 will make use of existing right-of-way. Careful alignment and geometrics have reduced the need for additional right-of-way and have saved the adjacent land and development to the extent possible.

grade

The freeway will be depressed below the surrounding ground level through Theodore Wirth Park and most of the residential areas. Most of the rest of the freeway will be near the surrounding ground level. Interchanges will have only two levels. These features will lessen the conspicuousness of the freeway, both visually and in terms of noise.

noise abatement

Noise abatement measures will be taken where appropriate, through parklands and residential neighborhoods. Noise abatement walls or earthen mounds will be built to bring the noise levels, adjacent to the freeway, to within FHWA design noise levels in most places. This abatement, in many places, will reduce the noise levels from what is currently being experienced along existing US-12.

Walls will be built in most places, as they will require less right-of-way than mounding. Where right-of-way is less critical, earthen mounds may be built instead. Walls and mounds may also be combined, for aesthetic reasons, where space is available but limited. The locations of the planned noise abatement features are shown on Figure 29 on pages 197 through 209.

The backsides of the walls, facing parklands and residential neighborhoods, tend to be monotonous and austere. Many people consider them to be eyesores, discordant with the setting. To relieve their severe appearance, the side away from the freeway will be appropriately landscaped.

The walls will be designed to make them reasonably attractive, and acceptable to the residents behind them. Where neighborhood residents clearly agree to reject noise abatement walls, they will not be built.

A more detailed discussion of noise abatement is in the Noise Impact section of this document.

landscaping

Landscaping will be done in many places where the freeway without landscaping would cause an adverse visual impact. These places include the freeway boundary with parklands and residential neighborhoods. Some of these boundaries will be marked by noise abatement walls and/or retaining walls that face the park or neighborhood. The adverse effect of these large and monotonous structures will be relieved by the judicious planting of trees, shrubs, and so forth. Other boundaries between the freeway and its neighbors will not be marked by any structure, and the freeway could be visually intrusive. Landscaping of these areas will minimize the intrusion and preserve the character of the park or residential neighborhood.

In other places, landscaping will primarily serve other functions: to control erosion, to reduce maintenance on the steep slopes around bridge abutments, and to screen unwanted views that could be distracting to the motorists. This landscaping will also have, of course, an aesthetic value.

fencing

The fencing that delineates the right-of-way may be vinyl-coated to make it darker and less conspicuous than a bare metal fence. The darker fence would blend better with its suburban setting.

architectural treatment

Large concrete structures such as retaining walls and bridge abutments will receive simple architectural treatments such as grooving or texturing to relieve the monotony of their large, otherwise plain, surfaces.

drainage

A subsurface storm sewer system will be built to drain the freeway and related roads. The system will be designed and sized for greater capacity and control than is provided by the existing open-ditch system. Several detention ponds will be built to reduce peak runoff. Storm sewers will accommodate a 10-year frequency storm, with capacity at low points for a 50-year frequency storm. Detention ponds will be designed so that no significant flood damage potential exists for a 100-year frequency storm.

The local communities will participate in the cost of drainage systems that are designed to also carry storm runoff from their local streets.

At the request of the Minneapolis Park and Recreation Board, I-394 drainage will be diverted from Brownie Lake to a ponding area to be built near Penn Avenue. The ponding area will drain into an existing storm sewer conduit along Morgan Avenue, and thence into Bassett Creek.

Cost and Participation

The current cost estimate of the US-12/ I-394 project, from the east junction of SR-101 in Wayzata to the Hawthorne Interchange with I-94 in Minneapolis, is $70 million for right-of-way plus $180 million for construction. The estimate was made in 1981, so is based on 1981 costs and does not reflect future inflation.

Federal participation in the cost of some of the features of the project has not yet been determined. This participation will be determined later, after careful analysis.

AFFECTED ENVIRONMENT

The Study Area

The US-12/I-394 study area is bounded approximately by the Minneapolis CBD on the east, the Lake Minnetonka area on the west, the SR-55 corridor on the north, and the SR-7 corridor on the south. The study area widens from three miles in Minneapolis to over ten miles in the western suburbs, and extends two miles west of the project site. It is illustrated by the Metropolitan Setting, Figure 9, on page 101.

The Primary Impact Area

The primary impact area is an approximately two-mile wide strip along the US-12/I-394 corridor. It, too, extends two miles west of the project. The Metropolitan Setting Figure also illustrates this primary impact area.

The Freeway Corridor

The freeway corridor is along a 10.2 mile segment of US-12, an east-west route between SR-101 in the western suburb of Wayzata and I-94 at the western edge of the Minneapolis CBD. This DEIS is primarily concerned with the project corridor itself, and the lands immediately adjacent.

NATURAL FEATURES

Topography and Land Use

The US-12/I-394 corridor is gently rolling and traverses approximately 10.2 miles of developed urban area interspersed with wetlands and lakes. The west end of the project corridor contains the most relief. Many former wetlands have been filled and are now occupied by buildings, roads and parking lots. Remaining undeveloped sites along the proposed freeway are mainly wetlands and small areas of upland predominated by grasses and forbs.

Climate

The U.S. Weather Bureau at the Minneapolis-Saint Paul International Airport is the official station for recording climatological conditions in the project area. It is located approximately 10 miles southeast of the I-394 corridor. Compiled data shows that the coldest month is January, with mean daily maximum and minimum temperatures of 22.4 and 2.3 degrees (°F). The warmest month is July with mean daily maximum and minimum temperatures of 83.9 and 60.7 degrees

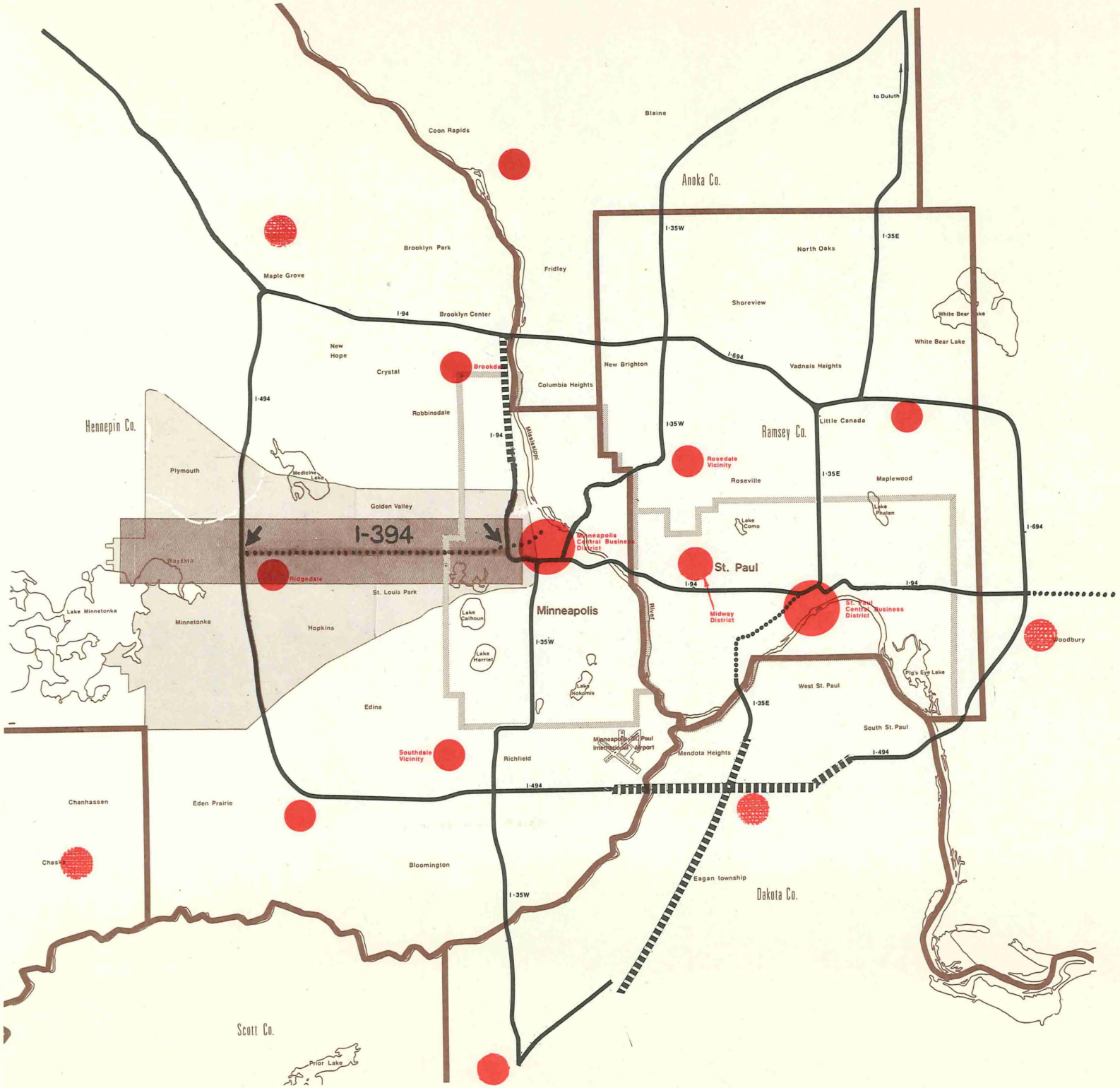
Average annual precipitation in the project area is approximately 25 inches. (Included in this figure is an average annual snowfall of 40.3 inches.) June is the wettest month, with 4.00 inches of precipitation, and January the driest, with .70 inches. Nearly 64 percent of the average annual precipitation occurs from May to September.

Geology and Soils

The entire project area is underlain by layers of sedimentary bedrock having varying porosity and permeability. These layers of bedrock slope toward the center of the Twin Cities area. A similar pattern exists in the north-south direction, creating a saucer shaped bedrock structure known as the Twin Cities Basin. Overlaying the bedrock is unconsolidated sediment known as glacial drift. The I-394 roadway corridor is located on glacial drift which overlies the west flank of the Twin Cities Basin. Figure 10 on pages 104 and 105 provides a cross-sectional view of glacial drift, bedrock, and groundwater table beneath the Twin Cities area. The top of the bedrock structure is delineated by hash marks pointing to the bedrock.

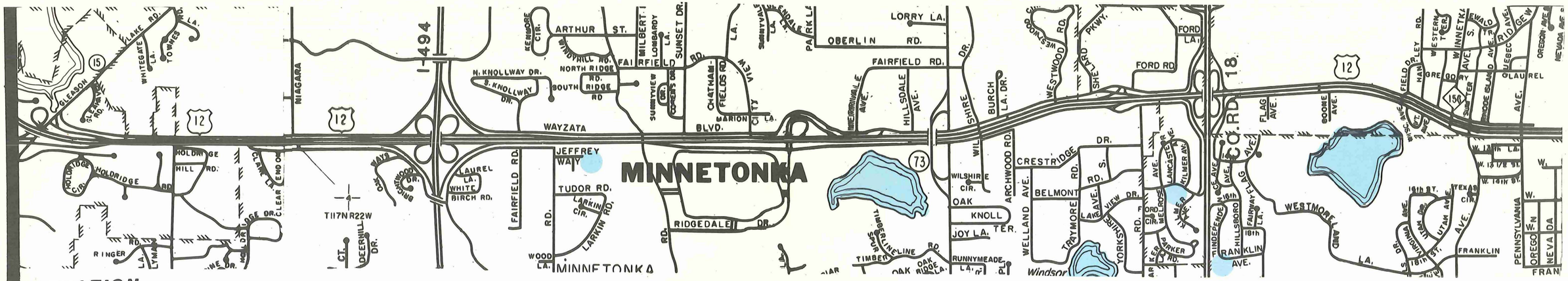
Four major types of glacial drift soils exist in the highway corridor. These include plastic soils, predominantly granular soils, lake soils, and mixed plastic/granular soils. A key in the lower right hand corner of Figure 10 describes each soil type. For more detailed soils information refer to the soil survey for Hennepin County, Minnesota (Lueth, 1974).

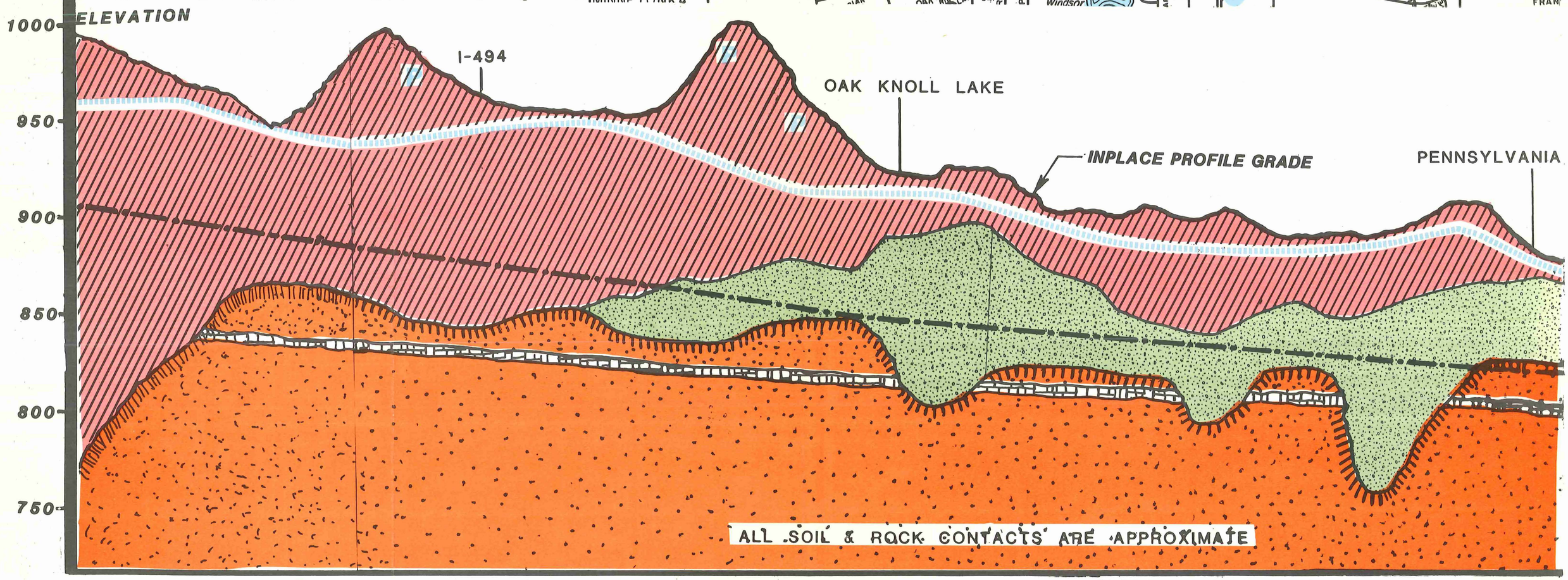
Figure 11 on page 107 illustrates some of the characteristics of the soils in the study area.



source: Twin Cities Metropolitan Council Development Guide, revised, 1980

Figure 9





GLENWOOD SHALE

ST. PETER SANDSTONE

TOP OF BEDROCK

MUNICIPAL WELLS

POTENTIOMETRIC SURFACE PRAIRIE DU CHIEN-JORDAN

WATERTABLE

P PERCHED WATER

PREDOMINATLY PLASTIC SOILS (CLAY, CLAY LOAM TILL, SANDY LOAM TILL)

PREDOMINANTLY GRANULAR SOILS (SAND, SAND & GRAVEL, LOAMY SAND)

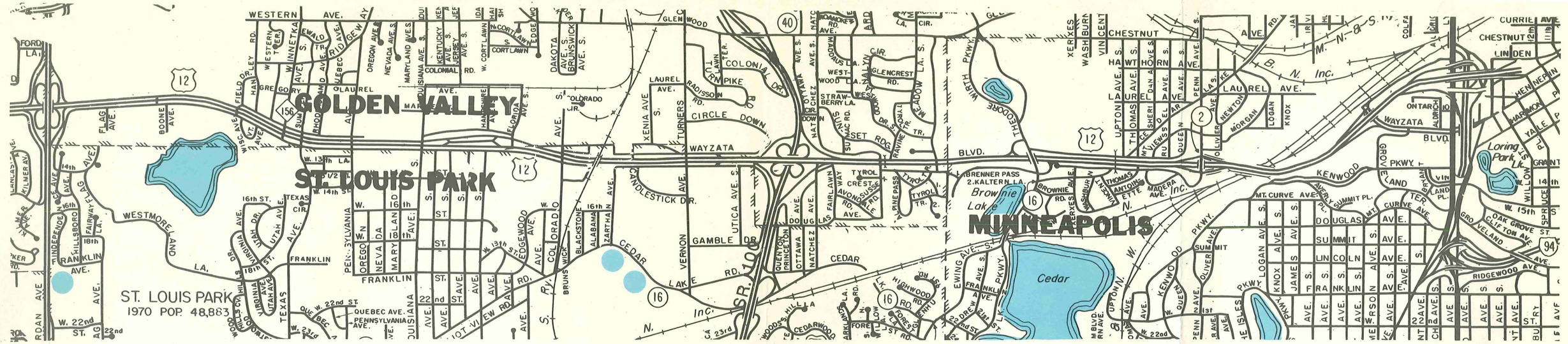
NEAR SURFACE PEAT DEPOSITS ARE NOT SHOWN

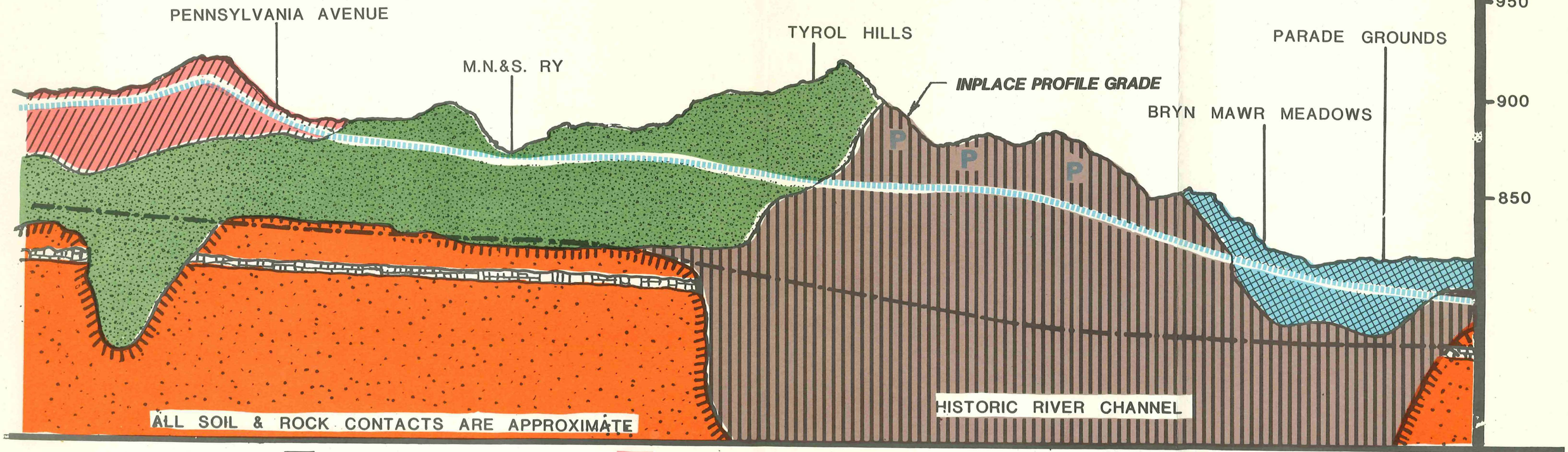
GEOLOGY & GROUND WATER HYDROLOGY

I-394

scale 1"-2000'

North





GLENWOOD SHALE

ST. PETER SANDSTONE

TOP OF BEDROCK

MUNICIPAL WELLS

POTENTIOMETRIC SURFACE PRAIRIE DU CHIEN-JORDAN

WATERTABLE

P PERCHED WATER

PREDOMINATLY PLASTIC SOILS (CLAY, CLAY LOAM TILL, SANDY LOAM TILL)

PREDOMINANTLY GRANULAR SOILS (SAND, SAND & GRAVEL, LOAMY SAND)

LAKE SOILS (CLAY, SILTY CLAY, PEAT)

MIXED PLASTIC & GRANULAR SOILS

NEAR SURFACE PEAT DEPOSITS ARE NOT SHOWN

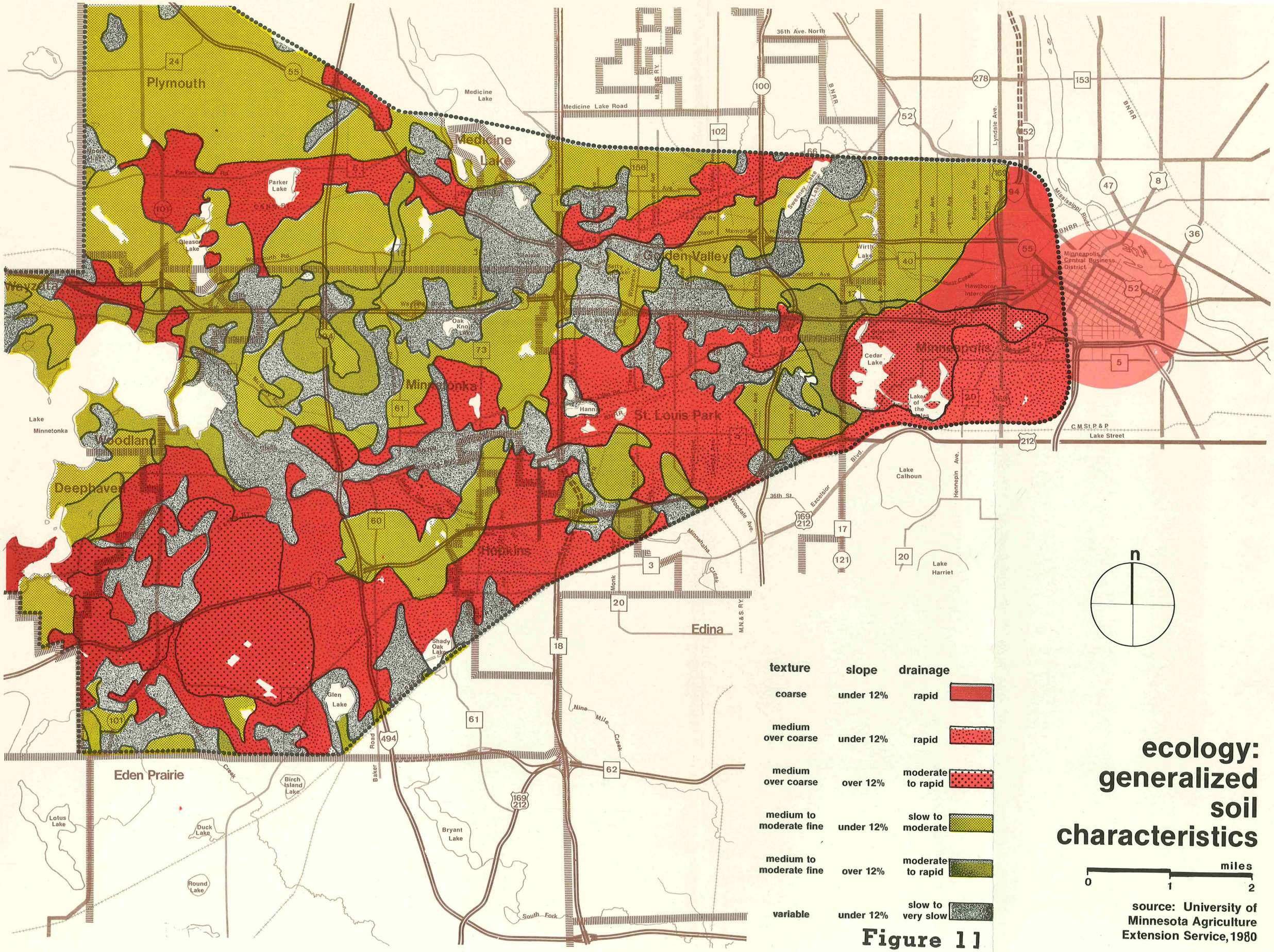
GEOLOGY & GROUND WATER HYDROLOGY

I-394

scale 1"-2000'

north

Figure 10



texture	slope	drainage
coarse	under 12%	rapid
medium over coarse	under 12%	rapid
medium over coarse	over 12%	moderate to rapid
medium to moderate fine	under 12%	slow to moderate
medium to moderate fine	over 12%	moderate to rapid
variable	under 12%	slow to very slow

Figure 11

ecology: generalized soil characteristics

miles
0 1 2

source: University of Minnesota Agriculture Extension Service, 1980

Groundwater is defined as free water which is stored and moves slowly beneath the land surface. In the project area, two contiguous groundwater systems exist. In the deeper bedrock system, water is stored in porous bedrock layers known as aquifers. The Prairie du Chien Group and Jordan Sandstone (see Figure 10) comprise the Prairie du Chien-Jordan Aquifer which produces 75 percent of the groundwater used in the Twin Cities (Nortvitch, 1973). The St. Peter Sandstone is a less important aquifer which provides groundwater for limited domestic, commercial and industrial use. In general, bedrock beneath the highway corridor is saturated with groundwater. Impervious bedrock usually overlies the deeper bedrock aquifers, separating this system from the shallower near-surface system.

The near-surface groundwater system is located in the glacial drift. Wetlands, lakes, creeks, rivers and springs are usually surface expressions of the groundwater elevation or water table. These water bodies are in equilibrium with the groundwater. The water table lies close to the surface along most of the proposed alignment. Refer to Figure 10. Near-surface groundwater is usually used only for domestic drinking and watering.

Water may also be held above the true water table by underlying plastic soils. This condition is known as perched water. Perched water may be encountered in hilly areas with an abundance of plastic soils.

In general, the bedrock and near-surface groundwater moves toward the Mississippi River. Surface water entering the upper groundwater system will migrate vertically until it reaches the water table and then moves laterally toward the river.

The location of municipal groundwater wells near the proposed alignment are shown on Figure 10. All are deep bedrock wells which draw water from either the Prairie du Chien-Jordan Aquifer or a deeper aquifer. Numerous other wells of varying use and depth exist along the corridor. Most of these non-municipal wells probably draw water from bedrock but some shallow domestic wells draw from glacial drift.

Vegetation and Wildlife

The major remaining areas of natural vegetation and wildlife habitat in the highly urbanized I-394 corridor are mainly associated with lakes and wetlands. The only upland habitat areas adjacent to I-394 are mature oak stands in Theodore Wirth Park and in the northeast quadrants of the US-12/SR-100 and US-12/I-494 interchanges. Wildlife characteristics of wetland areas are discussed in the wetland section. Upland wildlife species include ring-necked pheasants, cottontail rabbits, raccoons, skunks, grey squirrels, and various small mammals, songbirds, amphibians and reptiles. White-tailed deer intermittently use wooded areas and wetland areas; however, residential and commercial development have displaced them from virtually the entire corridor.

Surface Water

water study area

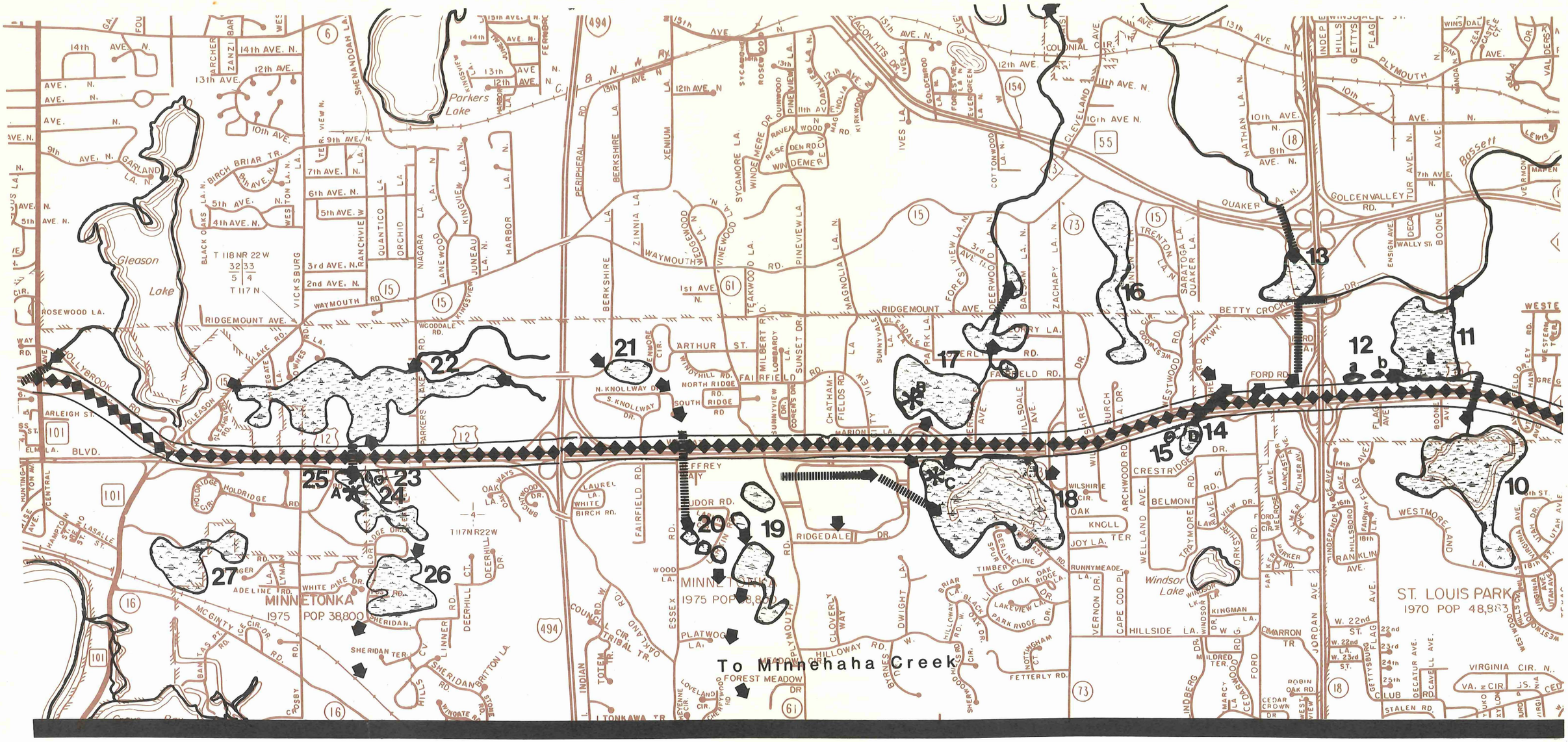
An inventory and evaluation was made of all aquatic areas (i.e., lakes, streams and wetlands) located within 1/2 mile of existing US-12. A U.S. Geological Survey quadrangle map, current aerial photos and direct field observation were used to locate and identify these aquatic areas. The water study area extends for 11 miles along US-12 from Lyndale Avenue in Minneapolis to SR-101 in Wayzata (Figure 13, pages 112 and 113). The mile-wide study area assured that all aquatic areas were examined that could conceivably receive direct drainage from proposed I-394 even if present drainage patterns are altered by construction.

lakes

Three lakes are in the water study area (Figure 13): Gleason Lake (160 acres), Brownie Lake (9 acres), and Cedar Lake (175 acres). Spring Lake, Birch Pond, Westwood Lake, and Ridgedale Marsh are considered wetlands, and discussed in that section.

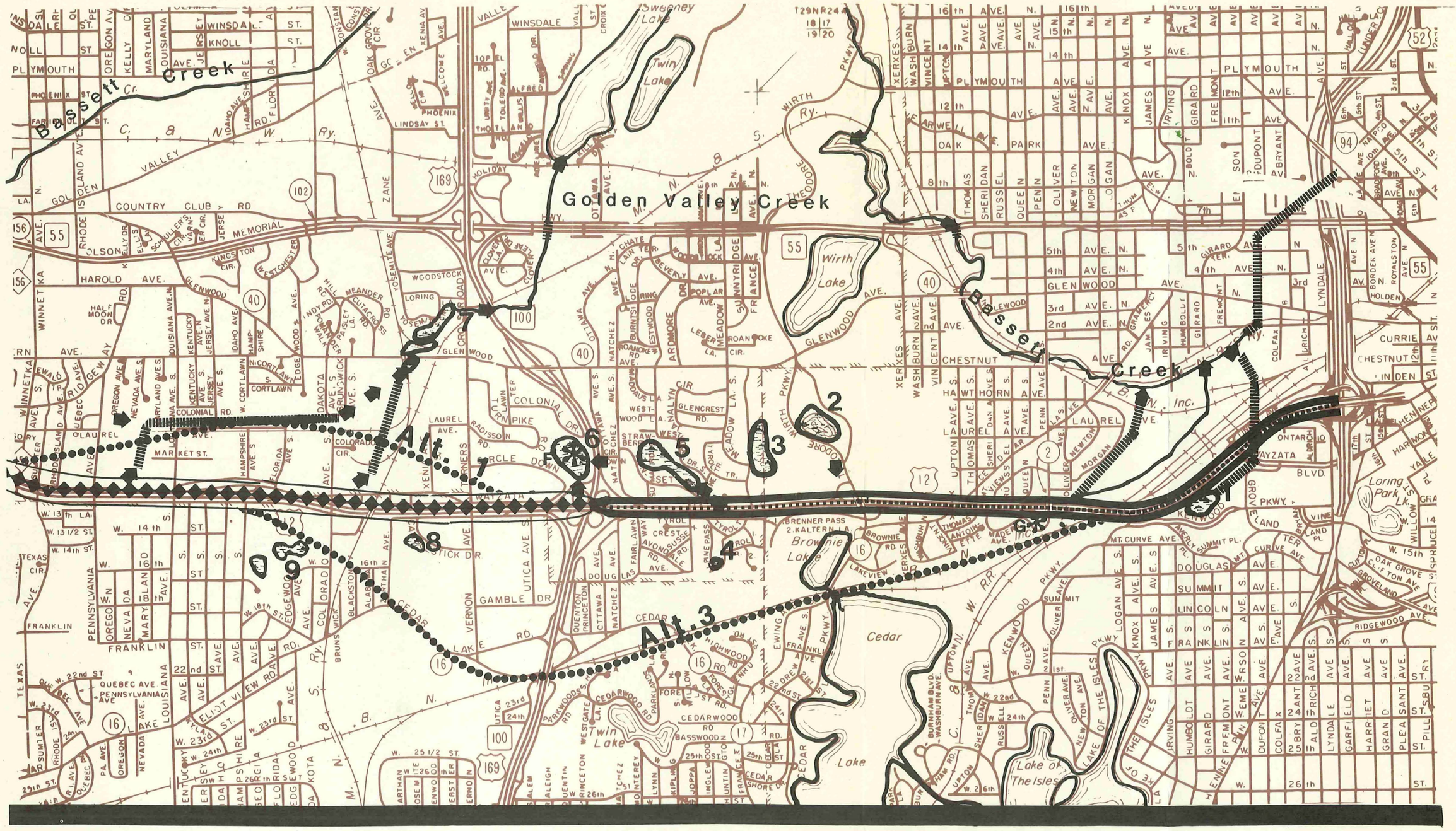
watercourses

Five major creeks are in the water study area. Bassett Creek begins about a mile north of Medicine Lake, flows through the lake, and meanders eastward about 12 miles through north Minneapolis to the Mississippi River. Minnehaha Creek meanders eastward about 20 miles from Grays Bay of Lake Minnetonka to the Mississippi, through south Minneapolis. Golden Valley Creek begins in a low area just north of US-12



LEGEND

- Wetlands (1-27)
- Creek or Ditch
- Culvert or Conduit
- ✱(A-G) Proposed Pond
- Direction of flow
- Reversible Lanes
- Diamond Lanes
- Original Alternate Routes


Golden Valley Creek
Bassett Creek
Alt. 1
Alt. 3
Sweeney Lake
Twin Lake
Wirth Lake
Brownie Lake
Cedar Lake
Lake of The Isles
Twin Lake
Loring Park Lk.
T29NR24W
18 17
19 20
C. & N. W. Ry.
M. & St. L. Ry.
M. P. R.R.
B. & O. R.R.
Golden Valley Rd.
Country Club Rd.
Memorial Hwy.
Glenwood Ave.
Colonial Rd.
Laurel Ave.
Cedar Lake Rd.
Cedarwood Rd.
Franklin Ave.
Hennepin Ave.
Lake of the Isles Pkwy.
Kenwood Pkwy.
Mt. Curve Ave.
Summit Ave.
Lincoln Ave.
Douglas Ave.
Wayzata Blvd.
Ridgewood Ave.
Oak Grove Cliff
Groveland
Burnham Blvd.
Washburn Ave.
Upton Ave.
Thomas Ave.
Sheridan Ave.
Russell Ave.
Queen Ave.
Penn Ave.
Oliver Ave.
Newton Ave.
Morgan Ave.
Logan Ave.
Knox Ave.
James Ave.
Irving Ave.
Humboldt Ave.
Girard Ave.
Fremont Ave.
Dupont Ave.
Colfax Ave.
Aldrich Ave.
Lyndale Ave.
Garfield Ave.
Harriet Ave.
Grand Ave.
Pleasant Ave.
Bryant Ave.
Fremont Ave.
Emerson Ave.
Fernando Ave.
Girard Ter.
Glenwood Ter.
Chestnut Ave.
Linden St.
Currie Ave.
Lyndale
Holden
Border Ave.
Royalston Ave.
Ontario
Aldrich
Willow
Spruce
Vine
Land Pl.
Brenner Pass
Kaltern La.
Lakeview
Brownie Rd.
Cedarwood Rd.
Bassewood Rd.
Westgate La.
Parkwoods Rd.
Ewing Ave.
Franklin Ave.
Highwood Rd.
Fore Rd.
Pine Pass
Tyrol Trail
Tyrol Crest
Avondale Rd.
Fairlawn Way
Quenton
Princeton
Ottawa
Matchez
Natchez
Utica Ave.
Vernon Ave.
Gamble Dr.
Stick Dr.
Cedar Lake Rd.
Cedar Shore Dr.
Cedar Lake Ter.
Cedar Lake Pkwy.
Parkland La.
Westgate La.
Twin Lake
Cedar Lake
Lake of The Isles
Lake of the Isles Pkwy.
The Isles
Lake Shore Dr.
Lake Shore Ter.
Lake Shore Blvd.
Lake Shore Pl.
Lake Shore Ct.
Lake Shore Cir.
Lake Shore Ln.
Lake Shore Rd.
Lake Shore Ave.

between Pennsylvania and Louisiana Avenues, and flows northeast through wetland 7 to Sweeney Lake. An unnamed creek flows north from wetland 17 to the southwest bay of Medicine Lake. Gleason Creek flows beneath US-12 from Gleason Lake southwest to Wayzata Bay to Lake Minnetonka.

Numerous smaller creeks, drainage ditches, culverts and poorly defined flowages occur in the study area. These watercourses may transport drainage from I-394. Their general direction of flow is shown by arrows on Figure 13.

A study of the Flood Insurance maps for the communities along proposed US-12/ I-394 shows that floodplains are associated with both Bassett and Minnehaha Creeks and their tributaries. Only the Bassett Creek floodplain approaches I-394; it will be encroached upon by the highway at three locations, corresponding to wetlands 11, 17, and 18 as illustrated in Figure 13.

Wetlands

The study area contains 27 wetlands (Figure 13) totaling 582.1 acres (Table 6). Wetlands were classified according to Wetlands of the United States (U.S. Fish and Wildlife Service, Circular 39) and Classification of Wetland and Deepwater Habitats. See the Wetland Finding in the Appendix of this document for descriptions of the classification systems.

TABLE 6: Area and classification of each wetland, 1 through 27 (see Figure 13)

Wetland Number	Area (Acres)	Circular 39 U.S. Fish and Wildlife Service (Type)	Classification of Wetlands and Deep-water Habitats of the U.S. (Codes)
1 (Spring Lake)	4	4	PEM5
2 (Birch Pond)	7	4	PEM5
3	6	7	PFO2
4	0.4	5	POW
5	8	4	PEM5
6	7	3	PEM3
7	8	3	PEM3
8	2	5	POW
9	4	3	PEM3
10 (Westwood Lake)	74	4	PEM5
11	43	1/6/7	PSS1
12a	0.8	5	POW
12b	0.3	5	POW
13	25	3	PEM3
14	4	3	PEM3
15	1	3	PEM3
16	34	2	PEM1
17	54	3	PEM3
18 (Ridgedale Marsh)	105	4	PEM5
19	22	2	PEM1
20	2	5	POW
21	5	3	PEM3
22	91	3	PEM3
23	0.6	5	POW
24	0.5	5	POW
25	15	2	PEM1
26	29	3	PEM3
27	31	3	PEM3
	582.1 total		

Wildlife Habitat Evaluation

Wildlife habitat value of each wetland in the study area was evaluated using a technique developed by Larson (1976). The standard for evaluation is maximum wildlife production and diversity. Ten criteria were numerically rated for each wetland to produce a total score for wildlife productivity and diversity. The lowest possible score is 36 and the highest is 108. The ten criteria were type richness, dominant type, size, plant life-form richness, site type, surrounding habitat, cover type, vegetative interspersion, relationship to other wetlands and water chemistry.

The wildlife habitat evaluation scores for all wetlands in the study area are listed from highest to lowest value in Table 7. The 27 wetlands ranged from a high score of 80.5 to a low score of 40.0. To aid analysis of wetland values, wetlands were grouped into four arbitrary categories having similar scores. These were excellent, good, fair to good and poor to fair.

wetlands of excellent value

Wetland 18 (Ridgedale Marsh) and 10 (Westwood Lake) were the only wetlands having excellent value for wildlife. Both are large marshes with extensive areas of open water. This is prime waterfowl habitat used for nesting, feeding and resting during migration. These wetlands are used by mallards, blue-winged teal, wood ducks, Canada geese, grebes, coots, rails, herons, blackbirds, muskrat, mink and raccoon. During August of 1976, 500 to 600 waterfowl were observed on Westwood Lake and 125 to 200 on Ridgedale Marsh. Much larger numbers could be expected during migration periods.

Ridgedale Marsh has extensive beds of submerged aquatic vegetation which make it more valuable for wildlife than Westwood Lake which lacks submergent vegetation. Ridgedale Marsh supports 10 species of aquatic plants, seven of which have fair to excellent value as waterfowl food. Submergent vegetation provides habitat for invertebrates, amphibians and minnows which are food for many wildlife species. Westwood Lake produces a heavy algae bloom which may prevent the growth of aquatic plants because the algae competes for available nutrients and light.

wetlands of good value

Wetlands 11, 16, 22 and 27 have good value for wildlife. Wetland 11 offers many unique benefits to wildlife due to the high diversity of habitat types it contains. Areas of lowland hardwoods and shrubs (including red osier dogwood, elm, maple, willow, aspen, hawthorn, and blackcherry) are interspersed with wet lowland areas of sedge or grass and upland ground cover of stinging nettle and jewelweed. A small remnant strand of mature tamaracks are found near the center of the wetland. This area is utilized by a variety of wildlife for feeding, nesting, shelter, and winter cover. Species include deer, skunk, raccoon, ringnecked pheasants, and a wide variety of songbirds.

The remaining wetlands are composed of a mixture of shallow marsh and upland plants including emergents, shrubs, trees, grass and, during wet years, shallow areas of open water. Compared with other shallow marshes in the study area these wetlands scored higher for wildlife because of their larger size, their greater vegetative interspersion and their surrounding habitats of forest and agriculture. Common wildlife species are ringnecked pheasants, cottontail rabbits, raptors, blackbirds, songbirds and muskrats. Waterfowl use these wetlands for nesting and for feeding and rearing of young when shallow water is available.

wetlands of fair to good value

Two deep marshes (wetlands 1, 5) and five shallow marshes (wetlands 6, 7, 13, 17, 26) have fair to good value for wildlife. These wetlands had medium scores because of their small size, low plant diversity, poor vegetative interspersion and partially urbanized surroundings. These wetlands are used by the same wildlife species as higher valued wetlands. However, their density and variety of wildlife is less. Open water portions of these wetlands can provide rest areas for significant numbers of migrating waterfowl during spring and fall.

wetlands of poor to fair value

The remaining wetlands have poor to fair value for wildlife. Wetlands 19 and 25 are dominated by grass-like meadow plants which support a low diversity of wildlife. Vegetation includes forbs, trees and shrubs.

TABLE 7: Evaluation scores for wildlife production and diversity calculated for study area wetlands (Larson, 1976).

Wetlands	Evaluation Score	Verbal Rating
18 (Ridgedale Marsh)	80.5	Excellent Value
10 (Westwood Lake)	73.0	
11	69.5	Good Value
27	67.5	
22	63.5	
16	62.5	
13	60.0	Fair to Good Value
1 (Spring Lake)	59.5	
5	59.0	
17	58.5	
7	58.5	
26	58.0	
6	58.0	
21	55.5	Poor to Fair Value
24	55.0	
19	55.0	
2 (Birch Pond)	54.0	
25	53.5	
14	51.5	
9	50.0	
3	49.0	
23	44.0	
15	43.5	
8	43.0	
4	42.5	
20	41.0	
12a	40.0	
12b	40.0	

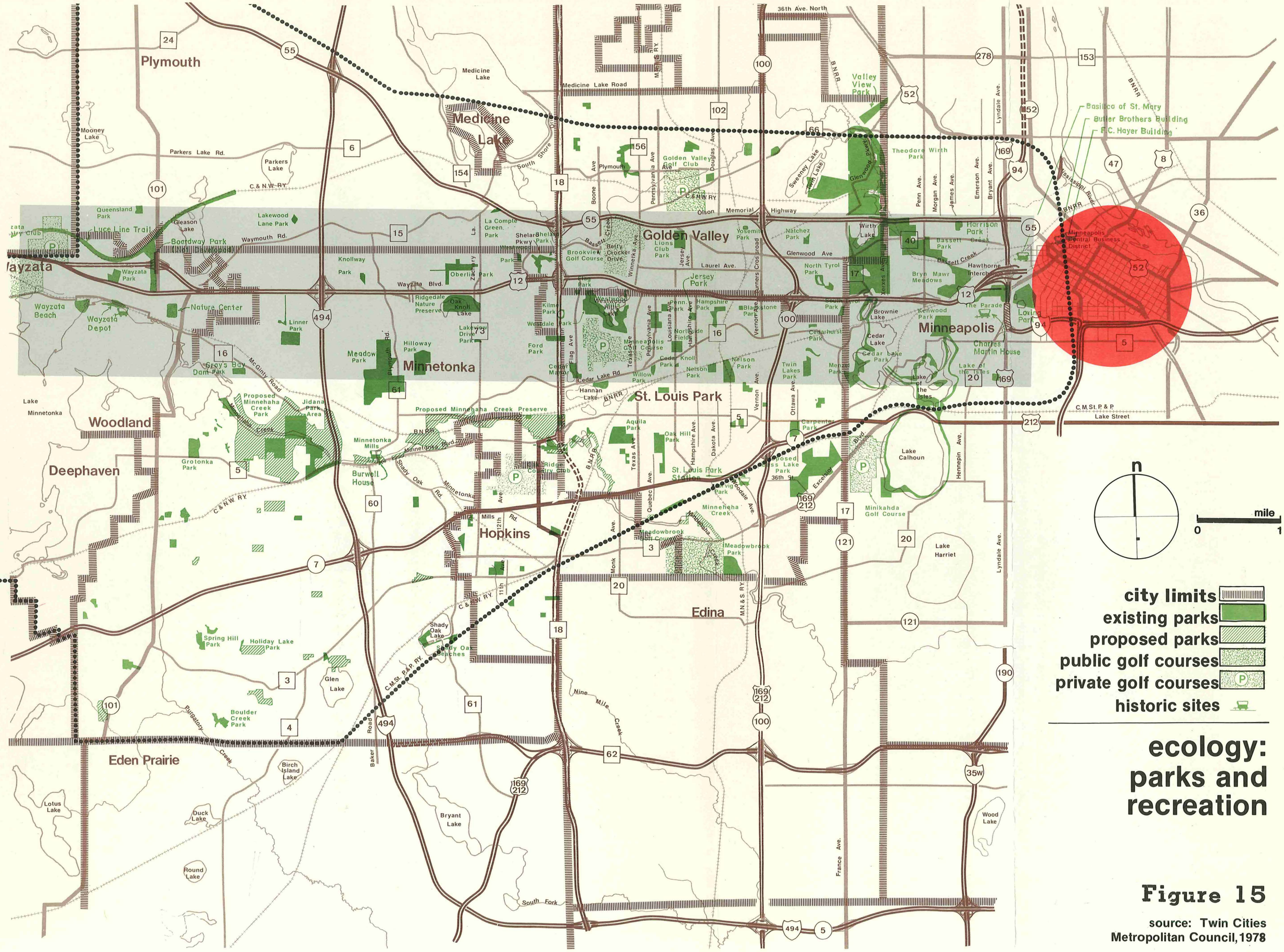
The Federal DEIS lists 142 units of designated open space within the study area. They are of all sizes, and range from natural undeveloped parks to neighborhood playgrounds to complex multi-purpose facilities. The parks are shown on the Parks and Recreation Map, Figure 15 on page 121. Several of these parks are adjacent to the I-394 corridor, or close enough to influence or limit its design.

The Ridgedale Nature Preserve is a natural environment surrounding Oak Knoll Lake (also known as Ridgedale Marsh) in the City of Minnetonka, and the Westwood Hills Nature Center is a similar lakeside area in Saint Louis Park. I-394 will not encroach on either of these areas, as ample right-of-way already exists or can be obtained from private owners.

Bryn Mawr Meadows and The Parade, both in Minneapolis near the Hawthorne Interchange, are athletic fields for softball and other space-requiring sports. The Parade also has a football stadium and tennis courts. These two parks will restrict I-394 to the present US-12 right-of-way in this area.

Brookview Public Golf Course, in Golden Valley, is adjacent to the I-394 corridor. A small strip of the course will be needed for a C-D road and a ramp to the Boone Avenue interchange. This loss will only slightly affect one tee.

Theodore Wirth Park, in Minneapolis, is a large park of about 770 acres with many types of facilities ranging from an 18-hole golf course to secluded woods. The I-394 corridor is at the south edge of the park, on the route of existing US-12. Heavily wooded hills border the highway, and a small pond and large wildflower garden are set in the woods beyond. A small amount of this park will be needed temporarily to build the approach to the new Theodore Wirth Parkway bridge over I-394. The land will be returned to the park after construction. The removal of the north frontage road and the interchange between the parkway and US-12 will allow some of the existing highway right-of-way to be added to the park.


Plymouth
Medicine Lake
Golden Valley
Minneapolis
Minnetonka
St. Louis Park
Woodland
Deephaven
Hopkins
Edina
Eden Prairie
Wayzata
Medicine Lake Road
Parkers Lake Rd.
Waymouth Rd.
Wayzata Blvd.
Hennepin Ave.
Lake Street
Minneapolis Central Business District
Basilica of St. Mary
Butler Brothers Building
P.C. Hayer Building
Mississippi River
Lake Minnetonka
Lake Calhoun
Lake Harriet
Bryant Lake
Nine Mile Creek
South Fork
Proposed Minnehaha Creek Preserve
Proposed Minnehaha Creek Park
Jidana Park Area
Burwell House
Minnetonka Mills
Spring Hill Park
Holiday Lake Park
Glen Lake
Boulder Creek Park
Shady Oak Lake
Shady Oak Beaches
Birch Island Lake
Lotus Lake
Duck Lake
Round Lake
Wood Lake
Golden Valley Golf Club
Brookview Golf Course
Meadowbrook Golf Course
Minneapolis Golf Course
Theodore Wirth Park
Bryn Mawr Meadows
Loring Park
Lake of the Isles
Cedar Lake
Minikahda Golf Course
Meadowbrook Park
Minnehaha Creek
Bassett Creek
Cedar Lake Park
Nelson Park
Willow Park
Aquila Park
Oak Hill Park
Carpenter Park
Cedarhurst Park
Jersey Park
Westwood Hills Park
Kilmer Park
Ridgedale Nature Preserve
Oak Knoll Park
Lakeview Drive Park
Hilloway Park
Meadow Park
Ford Park
Linner Park
Wayzata Beach
Wayzata Depot
Nature Center
Queensland Park
Lucie Line Trail
Gleason Lake
Boardway Park
Lakewood Lane Park
Knollway Park
Oberlin Park
La Compte Green Park
Shelard Park
Lions Club Park
Natchez Park
Yosemite Park
North Tyrol Park
Harrison Park
Bassett Park
Hawthorne Interch.
The Parade
Kenwood Park
Brownie Lake
Cedar Lake Park
Charles Martin House
Twin Lakes Park
Menzel Park
Hampshire Park
Blaisdell Park
Northside Field
Vernon Corners
Sweeney Lake
Twin Lake
Glenwood Parkway
Valley View Park
Mooney Lake
Parkers Lake
Grotonka Park
Proposed Bass Lake Park
St. Louis Park Station
Minnehaha Creek
Meadowbrook Golf Course
Minikahda Golf Course
Lyndale Ave.
Penn Ave.
Morgan Ave.
James Ave.
Emerson Ave.
Bryant Ave.
Xerxes Ave.
Vernon Ave.
Ottawa Ave.
Texas Ave.
Dakota Ave.
Quebec Ave.
Monk
Boone Ave
Douglas Ave
Pennsylvania Ave
Jersey Ave.
Zachary La.
Plymouth Rd.
Hampshire Ave.
Louisiana Ave.
Excelsior Blvd.
Minnetonka Blvd.
Shady Oak Rd.
Baker Road
Purgatory Creek
McGinty Road
Parkers Lake Rd.
Medicine Lake Road
Plymouth Ave
Olson Memorial Highway
Glenwood Ave
Laurel Ave.
Wayzata Blvd.
Waymouth Rd.
Knollway
Hannan Lake
Cedar Lake Rd
Cedar Knoll
Cedar Manor
Westwood Hills
Ridgedale
Oak Knoll Lake
Lake of the Isles
Lake Minnetonka
Minnetonka Country Club
Minnetonka Mills
Mills 12th Rd.
11th
Cross Road
Jersey
Zachary
Lake
Park
Ave
Rd.
Blvd.
Creek
Lake
Mills
Hopkins
Edina
Deephaven
Woodland
Eden Prairie
Plymouth
Minneapolis
St. Louis Park
Golden Valley
Medicine Lake
Minnetonka
Wayzata
C & N.W. RY.
M.N.& S. RY.
C.M.St.P.& P. RY.
B.N.R.R.
Olson Memorial Highway
Glenwood Ave
Laurel Ave.
Wayzata Blvd.
Waymouth Rd.
Hennepin Ave.
Lake Street
Lyndale Ave.
France Ave.
Nine Mile Creek
South Fork
Baker Road
Purgatory Creek
McGinty Road
Parkers Lake Rd.
Medicine Lake Road
Plymouth Ave
Hannan Lake
Cedar Lake Rd
Minnetonka Blvd.
Shady Oak Rd.

Brownie Lake is to the south of the corridor, across from Wirth Park. It is a small lake, surrounded by wooded slopes. Its parkland is a natural open space for passive use. A small strip of the parkland will be needed for the mainline, a frontage road, and the Wirth Parkway bridge. Some additional land will be needed temporarily for construction, especially of the bridge approach, but will be returned to the park.

Other small parklands adjacent or close to the US-12/I-394 corridor are Knollway Drive Park and Oberlin Park in Minnetonka; Shelard Park, Kilmer Lake Park, and "Flag" Park in Saint Louis Park; North Tyrol Park in Golden Valley; and Kenwood Parkway in Minneapolis. All will be completely avoided by careful alignment and design.

New US-12 and I-394 will pass within the corporate limits of the Cities of Wayzata, Minnetonka, Saint Louis Park, Golden Valley, and Minneapolis. Plymouth will also be directly affected due to its proximity to the freeway. Some of the social characteristics of these communities are itemized and briefly discussed here.

Metropolitan Council Projections

The population, household, and employment projections shown in the following tables were developed by the Metropolitan Council staff and issued in February of 1978.

population

The populations of the eastern communities of Minneapolis, Golden Valley, and Saint Louis Park have decreased in the last decade but are expected to be nearly stable through the year 2000. Wayzata has been stable but is expected to grow. Minnetonka has grown steadily, and the trend is expected to continue. Plymouth has grown dramatically in the last decade, and this trend is also expected to continue. By the year 2000, Plymouth is expected to be the largest of these five suburbs.

TABLE 8: POPULATION

	1970	1980	1990	2000
Minneapolis	434,000	370,951	375,000	380,000
Golden Valley	24,246	22,775	23,500	23,000
Saint Louis Park	48,883	42,931	42,800	42,000
Minnetonka	35,776	38,683	42,700	45,500
Plymouth	18,077	31,615	43,500	54,000
Wayzata	3,700	3,621	4,200	4,200

The number of households in all six communities is expected to increase, with the larger increases in the western communities of Minnetonka and Plymouth.

TABLE 9: HOUSEHOLDS

	1970	1980	1990	2000
Minneapolis	161,080	168,859	171,500	174,000
Golden Valley	6,533	7,690	8,400	8,500
Saint Louis Park	15,778	18,055	18,600	18,700
Minnetonka	9,085	13,231	15,000	16,100
Plymouth	4,507	11,039	15,500	19,000
Wayzata	1,264	1,674	1,700	1,800

employment

Employment is expected to stay level in Minneapolis and Saint Louis Park, and increase in the other communities. Again, the largest increases are expected in Minnetonka and Plymouth.

TABLE 10: EMPLOYMENT

	1970	1980	1990	2000
Minneapolis	290,324	272,733	280,000	285,000
Golden Valley	18,985	29,338	30,000	32,000
Saint Louis Park	30,788	33,170	32,000	33,000
Minnetonka	5,736	17,265	20,000	22,000
Plymouth	6,587	19,203(1)	21,000	26,000
Wayzata	2,350	5,151(2)	4,000	5,000

(1) Includes the small adjacent community of Medicine Lake, with an estimated employment of 100 or less.

(2) The MC advises that this figure may well be in error, too high.

Age Distribution

The table below illustrates that the population tends to be oldest in the city and youngest in Golden Valley, Minnetonka, and Plymouth. These percentages are based on 1970 census data (the 1980 data is not yet available). We assume that, on a percentage basis, the younger group has decreased and the older group has increased in the past decade. This assumption is consistent with national trends and is confirmed by numerous school closings.

TABLE 11: AGE GROUPS

	under 18	over 65
Calhoun-Isles*	20%	12%
Golden Valley	40%	5%
Saint Louis Park	32%	9%
Minnetonka	43%	5%
Plymouth	42%	4%
Wayzata	33%	11%

*The Minneapolis community that includes the Bryn-Mawr neighborhood.

Minorities

The table below illustrates the low numbers of minority groups living in the neighborhoods and communities along the freeway corridor. These figures are based on 1980 census data. The minorities are those who identified themselves as other than white, or of Spanish origin, on the census forms.

TABLE 12: MINORITIES

	total population	minority population	percentage
Calhoun-Isles	30,779	616	2.0%
Golden Valley	22,775	857	3.8%
Saint Louis Park	42,931	1,145	2.7%
Minnetonka	38,683	831	2.1%
Plymouth	31,615	1,073	3.4%
Wayzata	3,621	46	1.3%
Hennepin County	941,411	69,045	7.3%

Neighborhoods

The neighborhoods of the study area are illustrated by the Neighborhoods Figure 16 on page 127. The eastern neighborhoods are more compact and have historic boundaries that usually follow existing natural or manmade barriers such as lakes or roads. To the west, many neighborhoods are not as clearly delineated but have been established as a convenient means of referring to a specific geographic area.

All of the residential neighborhoods along the freeway corridor are predominantly middle or upper-middle class. Most of the residences are single-family homes, and most of them are owner-occupied. The Shelard Park area is an exception; as a multiple-use development, all of its residences are multiple family, either rental apartments or privately-owned condominiums.

The Tyrol Hills neighborhoods are characterized by steep hills, ravines, open space, and woods. The Minnetonka neighborhoods have a low density of development, and much open space.

There are no known groups requiring special consideration along the freeway corridor.

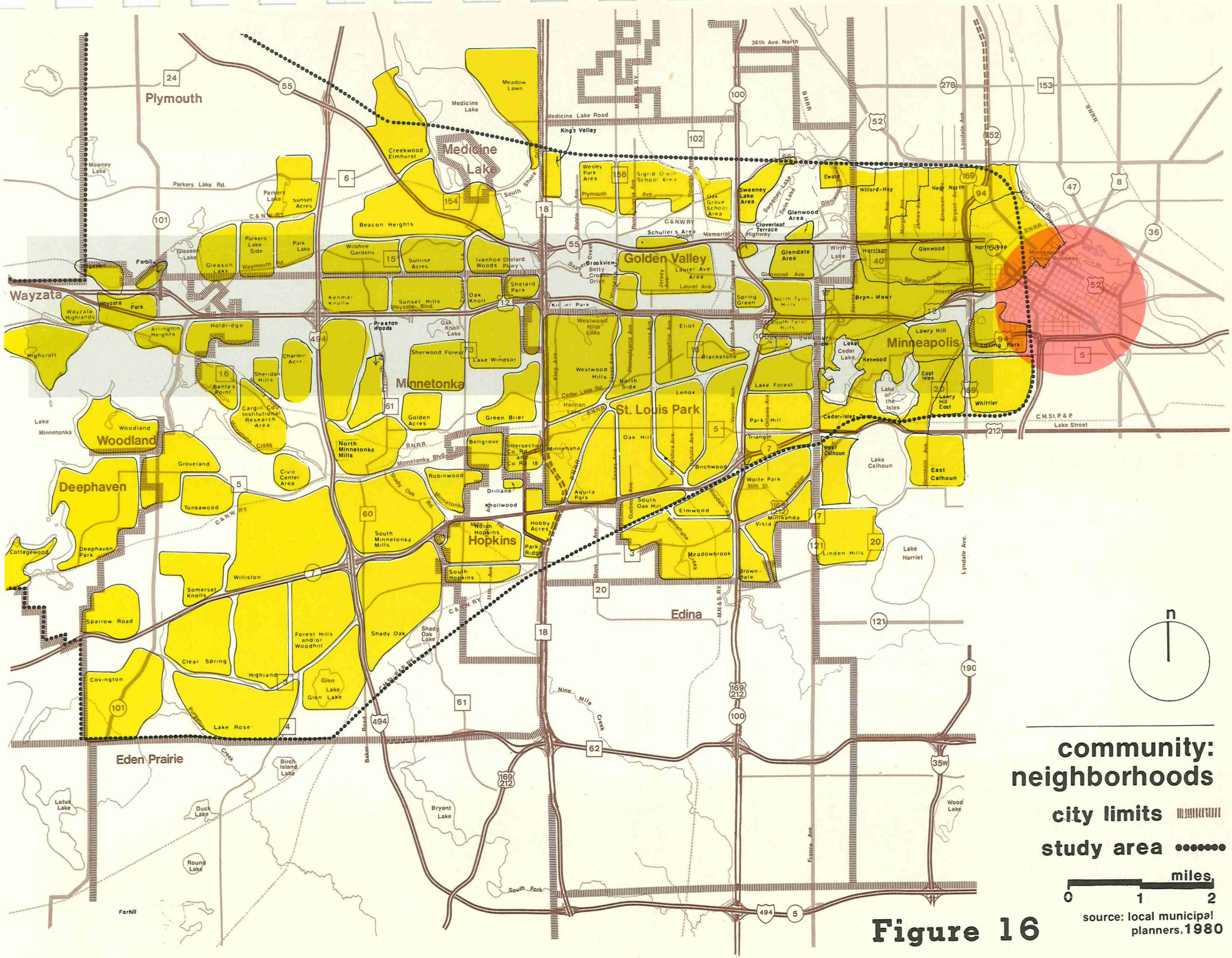

Plymouth
Medicine Lake
Golden Valley
Wayzata
Minnetonka
Minneapolis
St. Louis Park
Hopkins
Edina
Eden Prairie
Woodland
Deephaven
Lake Minnetonka
Lake Calhoun
Lake Harriet
Lake Rose
Shady Oak Lake
Glen Lake
Bryant Lake
Duck Lake
Round Lake
Lotus Lake
Birch Island Lake
Wood Lake
Nine Mile Creek
South Fork
Bassett Creek
Minnehaha Creek
Minnehaha
Lake Street
Medicine Lake Road
Parkers Lake Rd.
Minnetonka Blvd.
Hennepin Ave.
Lyndale Ave.
Excelsior Blvd.
Cedar Lake Rd.
Glenwood Ave.
Olson Memorial Highway
Cloverleaf Terrace Highway
Schuller's Area
Sweeney Lake Area
Glenwood Area
Glendale Area
Laurel Ave Area
Wesley Park Area
Sigrid Olson School Area
Oak Grove School Area
Willard-Hay
Near North
North Side
Harrison
Bryn-Mawr
Lowry Hill
Lowry Hill East
East Isles
Kenwood
Lake of the Isles
Cedar-Isles-Dean
Lake Forest
Park Hill
Triangle
West Calhoun
East Calhoun
Linden Hills
Minikahda
Wolfe Park
Meadowbrook
Brownsdale
Aquila Park
Hobby Acres
Park Ridge
South Hopkins
North Hopkins
South Oak Hill
Oak Hill
Birchwood
Elmwood
Lenox
Blackstone
Elliot
Westwood Hills
Westwood Hills Lake
North Side
Hannan Lake
Green Brier
Golden Acres
North Minnetonka Mills
South Minnetonka Mills
Bellgrove
Robinwood
Drillane
Knollwood
Intersection Co. Rd. and Co. Rd. 18
Civic Center Area
Cargill Corporate Institutional Research Area
Groveland
Tonkawood
Deephaven Park
Cottagewood
Somerset Knolls
Williston
Sparrow Road
Forest Hills and/or Woodhill
Shady Oak
Highland
Clear Spring
Covington
Glen Lake
Lake Rose
Eden Prairie
Preston Woods
Sherwood Forest
Lake Windsor
Oak Knoll Lake
Oak Knoll
Ivanhoe Shelard Woods Park
Shelard Park
Sunrise Acres
Wilshire Gardens
Sunset Hills
Kenmar Knolls
Beacon Heights
Creekwood Elmhurst
Meadow Lawn
Parkers Lake Side
Parkers Lake Sunset Acres
Park Lake
Gleason Lake
Wayzata Highlands
Wayzata Park
Arlington Heights
Holdridge
Highcroft
Sheridan Hills
Charlson Acres
Banta's Point
Forbill
Ridgewood
Mooney Lake
Spring Green
North Tyrol Hills
South Tyrol Hills
Kenwood Parkway
Kenwood Terrace
Lowry Park
Whittier
Lake Calhoun
Lake of the Isles
Cedar Lake
Lake Harriet
Minneapolis Central Business
Glenwood
North Side
Wirth Lake
Ewald
Plymouth
Queen Ave
Dupont Ave
Bryant Ave
Emerson Ave
Girard Ave
Humboldt Ave
Irving Ave
Knox Ave
Lyndale Ave
Morgan Ave
Newton Ave
Oliver Ave
Penn Ave
Queen Ave
Russell Ave
Sheridan Ave
Upton Ave
Vincent Ave
Xerxes Ave
Zenith Ave
Zachary Lane
Yosemite Ave
Vernon Ave
Toledo Ave
Sumner Ave
Quebec Ave
Nevada Ave
Minnesota Ave
Louisiana Ave
Hampshire Ave
Flag Ave
Excelsior Blvd
Minnetonka Blvd
Lake Minnetonka
Bassett Creek
Minnehaha Creek
Nine Mile Creek
South Fork
Bryant Lake
Duck Lake
Round Lake
Lotus Lake
Birch Island Lake
Wood Lake
Lake Rose
Shady Oak Lake
Glen Lake
Lake Calhoun
Lake Harriet
Lake of the Isles
Cedar Lake
Lake Windsor
Lake Forest
Lake Street
C.M.St.P.&P.
M.N.&S.Ry.
C.&N.W.Ry.
B.N.R.R.
Farhill
Forbill
Ridgewood
Mooney Lake
Parkers Lake Rd.
Medicine Lake
Medicine Lake Road
King's Valley
Creekwood Elmhurst
Meadow Lawn
Beacon Heights
Parkers Lake Sunset Acres
Parkers Lake Side
Park Lake
Gleason Lake
Wayzata Highlands
Wayzata Park
Arlington Heights
Holdridge
Highcroft
Sheridan Hills
Charlson Acres
Banta's Point
Preston Woods
Sherwood Forest
Lake Windsor
Oak Knoll Lake
Oak Knoll
Ivanhoe Shelard Woods Park
Shelard Park
Sunrise Acres
Wilshire Gardens
Sunset Hills
Kenmar Knolls
Wesley Park Area
Sigrid Olson School Area
Oak Grove School Area
Sweeney Lake Area
Glenwood Area
Glendale Area
Laurel Ave Area
Willard-Hay
Near North
North Side
Harrison
Bryn-Mawr
Lowry Hill
Lowry Hill East
East Isles
Kenwood
Lake of the Isles
Cedar-Isles-Dean
Lake Forest
Park Hill
Triangle
West Calhoun
East Calhoun
Linden Hills
Minikahda
Wolfe Park
Meadowbrook
Brownsdale
Aquila Park
Hobby Acres
Park Ridge
South Hopkins
North Hopkins
South Oak Hill
Oak Hill
Birchwood
Elmwood
Lenox
Blackstone
Elliot
Westwood Hills
Westwood Hills Lake
North Side
Hannan Lake
Green Brier
Golden Acres
North Minnetonka Mills
South Minnetonka Mills
Bellgrove
Robinwood
Drillane
Knollwood
Intersection Co. Rd. and Co. Rd. 18
Civic Center Area
Cargill Corporate Institutional Research Area
Groveland
Tonkawood
Deephaven Park
Cottagewood
Somerset Knolls
Williston
Sparrow Road
Forest Hills and/or Woodhill
Shady Oak
Highland
Clear Spring
Covington
Glen Lake
Lake Rose
Eden Prairie
Preston Woods
Sherwood Forest
Lake Windsor
Oak Knoll Lake
Oak Knoll
Ivanhoe Shelard Woods Park
Shelard Park
Sunrise Acres
Wilshire Gardens
Sunset Hills
Kenmar Knolls
Beacon Heights
Creekwood Elmhurst
Meadow Lawn
Parkers Lake Side
Parkers Lake Sunset Acres
Park Lake
Gleason Lake
Wayzata Highlands
Wayzata Park
Arlington Heights
Holdridge
Highcroft
Sheridan Hills
Charlson Acres
Banta's Point
Forbill
Ridgewood
Mooney Lake
Spring Green
North Tyrol Hills
South Tyrol Hills
Kenwood Parkway
Kenwood Terrace
Lowry Park
Whittier
Lake Calhoun
Lake of the Isles
Cedar Lake
Lake Harriet
Minneapolis Central Business
Glenwood
North Side
Wirth Lake
Ewald
Plymouth
Queen Ave
Dupont Ave
Bryant Ave
Emerson Ave
Girard Ave
Humboldt Ave
Irving Ave
Knox Ave
Lyndale Ave
Morgan Ave
Newton Ave
Oliver Ave
Penn Ave
Queen Ave
Russell Ave
Sheridan Ave
Upton Ave
Vincent Ave
Xerxes Ave
Zenith Ave
Zachary Lane
Yosemite Ave
Vernon Ave
Toledo Ave
Sumner Ave
Quebec Ave
Nevada Ave
Minnesota Ave
Louisiana Ave
Hampshire Ave
Flag Ave
Excelsior Blvd
Minnetonka Blvd
Lake Minnetonka
Bassett Creek
Minnehaha Creek
Nine Mile Creek
South Fork
Bryant Lake
Duck Lake
Round Lake
Lotus Lake
Birch Island Lake
Wood Lake
Lake Rose
Shady Oak Lake
Glen Lake
Lake Calhoun
Lake Harriet
Lake of the Isles
Cedar Lake
Lake Windsor
Lake Forest
Lake Street
C.M.St.P.&P.
M.N.&S.Ry.
C.&N.W.Ry.
B.N.R.R.
Farhill
n
community: neighborhoods
city limits
study area
miles
0 1 2
source: local municipal planners, 1980

Figure 16

INSTITUTIONS AND SERVICES

Schools

The freeway corridor spans or borders four school districts. The two districts serving Golden Valley, Minnetonka, Plymouth, and Wayzata are now divided by US-12. This division requires school buses to cross the highway many times, sometimes on bridges but often through at-grade intersections. The total enrollment of the four districts was approximately 61,550 for the school year 1979-80; two-thirds of this enrollment was from Minneapolis. The total is expected to decrease by 14 percent by school year 1982-83.

No schools are adjacent to the freeway corridor. Twenty-one are within about a mile, having a combined enrollment of about 13,000. These twenty-one include fifteen public elementary and junior high, two public high, three private elementary, and one private high school. The schools are shown on the Community Facilities: Schools and Libraries Figure 17 on page 131.

Libraries

Each of the communities along the freeway corridor has public libraries, but none are adjacent to US-12. A new 200-thousand volume regional library near Ridgedale Center is now being built and is to open in 1982. It is intended to serve patrons from all of the western suburbs of Minneapolis, and will benefit by good access to the primary highway system. The libraries are also shown on Figure 17.

Churches

Approximately forty churches are located in the primary impact area. Only two are adjacent to the freeway corridor; neither will be taken nor adversely affected by it. Oak Knoll Lutheran Church is near CR-73; Minnetonka Seventh Day Adventist Church is near Parkers Lake Road. The churches are shown on the Community Facilities: Hospitals, Religious Institutions, and Community Centers Figure 18 on page 133.

Hospitals

No hospitals are along the freeway corridor or even in the primary impact area. The nearest hospitals are shown on Figure 18.

Nursing Homes

Thirteen nursing homes are in the primary impact area, but only two are near the freeway corridor: Hillcrest is on the south side of US-12, west of I-494; Weldwood is on Turner's Crossroad, a block or two north of US-12.

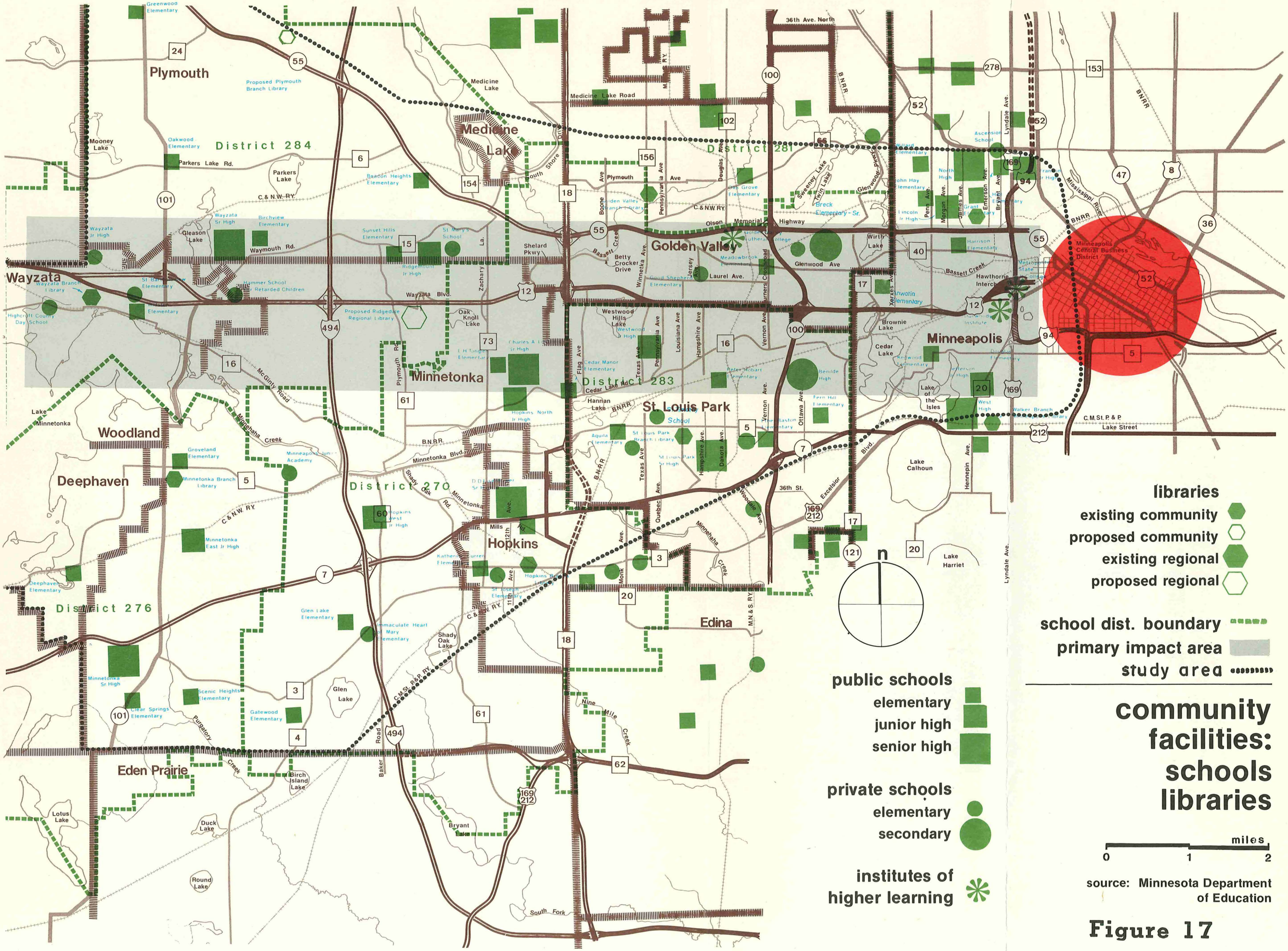
Community and Cultural Centers

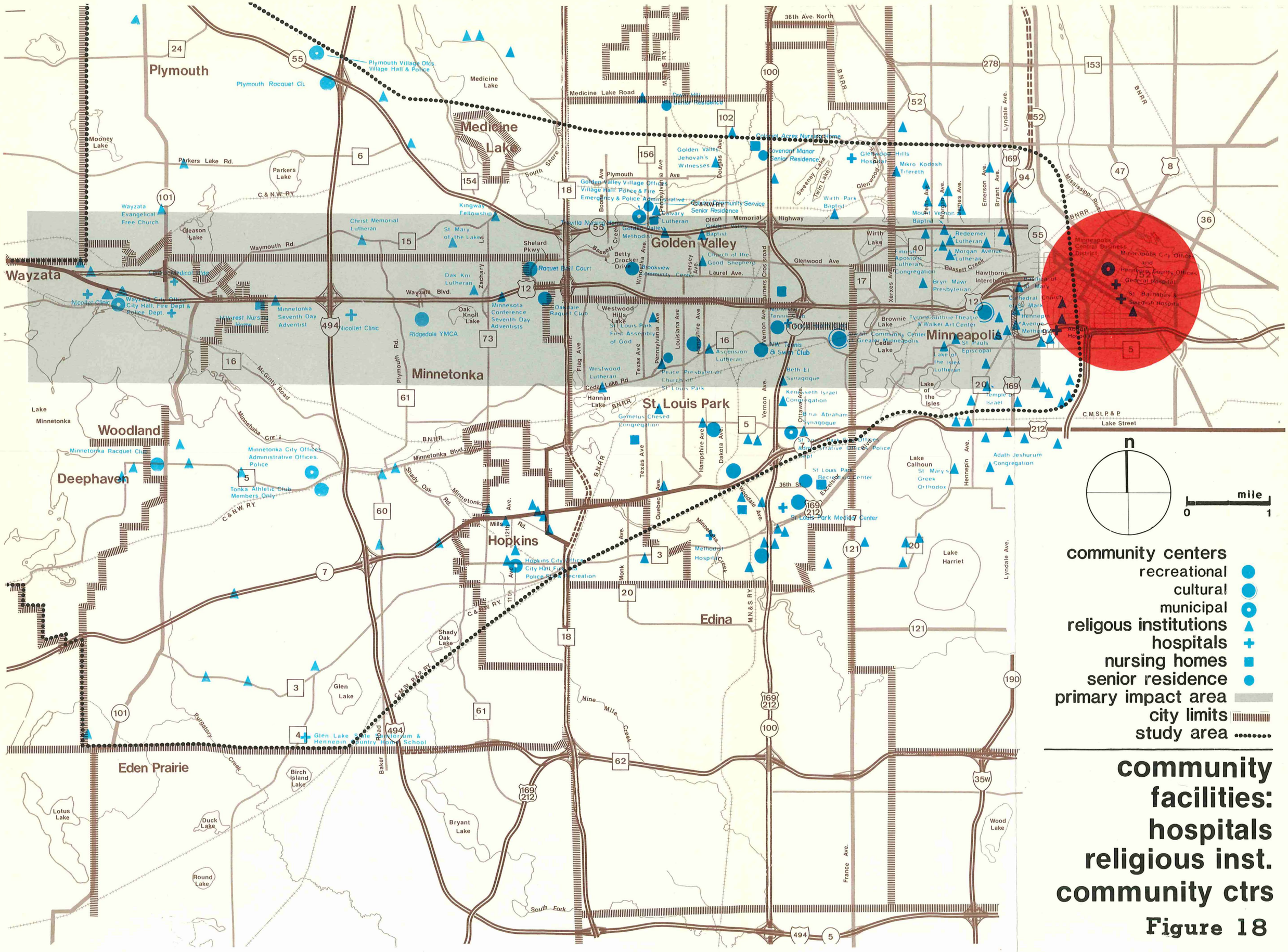
Many of the schools, libraries, and churches mentioned above also serve as community centers. Other community and cultural centers along the freeway corridor include the Walker Art Center and the Tyrone Guthrie Theater in Minneapolis; the Brookview Community Center in Golden Valley; the Jewish Community Center and the Westwood Hills Environmental Education Center in Saint Louis Park; and the YMCA and Ridgedale Shopping Center in Minnetonka. These and other community centers are also shown on Figure 18 on page 133.

Parks and Recreational Centers

The parks along the freeway corridor were described under the NATURAL FEATURES section of this report, on page 120, entitled Designated Open Space, and shown on the Parks and Recreation Figure 15 on page 121. To reiterate, the parklands along the corridor are Knollwood Drive Park, Oberlin Park, and Ridgedale Nature Preserve in Minnetonka; Shelard Park, Kilmer Lake Park, "Flag" Park, and Westwood Hills Nature Center in Saint Louis Park; Brookview Golf Course and North Tyrol Park in Golden Valley; Theodore Wirth Park in Golden Valley and Minneapolis; and Brownie Lake, Bryn Mawr Meadows, Kenwood Parkway, and The Parade in Minneapolis.

Other recreational centers along the corridor include the Minneapolis Tennis Club and the Parade Ice Garden in Minneapolis; the Northstar Tennis Club in Saint Louis Park; and the Minnetonka and Oakdale Racquet Clubs and the Tonka Athletic Club in Minnetonka.


Plymouth
Medicine Lake
Golden Valley
Wayzata
Minnetonka
Minneapolis
St Louis Park
Hopkins
Woodland
Deephaven
Eden Prairie
Edina
District 284
District 281
District 283
District 270
District 276
Minneapolis Central Business District
Lake Minnetonka
Lake Calhoun
Lake of the Isles
Cedar Lake
Brownie Lake
Hannan Lake
Westwood Hills Lake
Oak Knoll Lake
Shady Oak Lake
Glen Lake
Bryant Lake
Birch Island Lake
Duck Lake
Round Lake
Lotus Lake
Mooney Lake
Gleason Lake
Parkers Lake
Wirth Lake
Sweeney Lake
Twin Lake
Lake Harriet
Medicine Lake Road
36th Ave. North
Plymouth
Lake Street
C.M.St.P.&P.
B.N.R.R.
C.&N.W.RY.
M.N.&S.RY.
Mississippi River
Minnetonka Blvd.
Bassett Creek
Minnehaha Creek
Nine Mile Creek
Purgatory Creek
Shelard Pkwy
Glenwood Ave
Olson Memorial Highway
Hawthorne Interch.
Proposed Plymouth Branch Library
Proposed Ridgedale Regional Library
Greenwood Elementary
Oakwood Elementary
Parkers Lake Rd.
Baacon Heights Elementary
Birchview Elementary
Wayzata Sr High
Wayzata Jr High
Waymouth Rd.
Sunset Hills Elementary
St Mary's School
Ridgemount Jr High
Wayzata Blvd.
Zachary La.
Wayzata Branch Library
Highcroft Country Day School
Hammer School for Retarded Children
Oak Knoll Elementary
Charles A Lindbergh Sr High
L H Tanglen Elementary
Plymouth Rd.
McGinty Road
Groveland Elementary
Minnetonka Branch Library
Minnetonka Junior Academy
Minnetonka East Jr High
Deephaven Elementary
Minnetonka Sr High
Scenic Heights Elementary
Clear Springs Elementary
Gatewood Elementary
Glen Lake Elementary
Immaculate Heart of Mary Elementary
Hopkins North Jr High
Hopkins West Jr High
Hopkins Sr High
Hopkins Branch Library
Katherine Curren Elementary
St Joseph Elementary
Eden Prairie Sr High
Eden Prairie Elementary
Cedar Manor Elementary
Good Shepherd Lutheran Elementary
Meadowbrook Elementary
Betty Crocker Drive
Laurel Ave.
Turners Crossroad
Westwood Jr High
Peter Hobart Elementary
Aquila Elementary
St Louis Park Branch Library
St Louis Park Sr High
Benilde High
Fern Hill Elementary
The Basilica School
Dakota Ave.
Ottawa Ave.
Quebec Ave.
Woodale Ave.
Hennepin Ave.
Excelsior Blvd.
36th St.
Golden Valley Branch Library
Golden Valley Lutheran College
Douglas Ave
Boone Ave
Pennsylvania Ave
Winnetka Ave.
Jersey Ave.
Flag Ave
Texas Ave
Louisiana Ave
Hampshire Ave
Vernon Ave
Xerxes Ave
Lyndale Ave.
Ascension School
Willard Elementary
John Hay Elementary
Lincoln Jr High
North High
Penn Ave.
Morgan Ave.
James Ave.
Grant Elementary
Emerson Ave.
Bryant Ave.
Harrison Elementary
Metropolitan State College
Franklin Jr High
Walker Branch Library
West High
Kenwood Elementary
Jefferson Jr High
Dunwoody Institute
Glenwood Park Elementary
Breck Elementary - Sr.
Grove Elementary
Meadowbrook Golf Course
Shoreview Elementary
Lake Grove Elementary
Medicine Lake
South Shore Dr.
Mills Rd.
12th Ave.
11th Ave.
Monk Ave.
Minnehaha Creek
Lake Harriet
Lyndale Ave.
Baker Road
Nine Mile Creek
South Fork
Birch Island Lake
Bryant Lake
Lake Calhoun
Lake of the Isles
Lake Harriet
Wirth Lake
Brownie Lake
Cedar Lake
Hannan Lake
Westwood Hills Lake
Oak Knoll Lake
Shady Oak Lake
Glen Lake
Duck Lake
Round Lake
Lotus Lake
Mooney Lake
Gleason Lake
Parkers Lake
Sweeney Lake
Twin Lake
Lake Harriet
Medicine Lake
Bassett Creek
Minnehaha Creek
Nine Mile Creek
Purgatory Creek
Baker Road


Plymouth
Medicine Lake
Golden Valley
Minneapolis
St. Louis Park
Hopkins
Edina
Wayzata
Minnetonka
Woodland
Deephaven
Eden Prairie
Lake Minnetonka
Lake Street
Plymouth Village Offices, Village Hall & Police
Plymouth Racquet Clb
Golden Valley Village Offices, Village Hall, Police & Fire, Emergency & Police Administrative
Golden Valley Community Service Senior Residence
Covenant Manor Senior Residence
Colonial Acres Nursing Home
Glenwood Hills Hospital
Minneapolis Central Business District
Minneapolis City Offices and Hennepin County Offices
General Hospital
St. Barnabas & Swedish Hospital
Nicollet Clinic
Wayzata City Office, City Hall, Fire Dept & Police Dept.
Ridgedale YMCA
Oakdale Racquet Club
Minnetonka Seventh Day Adventist
Minnesota Conference Seventh Day Adventists
Minnetonka Racquet Club
Minnetonka City Offices, Administrative Offices, Police
Tonka Athletic Club Members Only
Hopkins City Offices, City Hall, Fire, Police & Recreation
Glen Lake Sanitarium & Hennepin County Home School
St. Louis Park Medical Center
Methodist Hospital
Tyrone Guthrie Theatre & Walker Art Center
Lake Calhoun
Lake Harriet
Lake of the Isles
Bassett Creek
Nine Mile Creek
Minnehaha Creek
Purgatory Creek
Shady Oak Lake
Glen Lake
Birch Island Lake
Lotus Lake
Duck Lake
Round Lake
Bryant Lake
Wood Lake
Medicine Lake Road
Wayzata Blvd.
Minnetonka Blvd.
Lake Street
C.M.St.P.&P.
B.N.R.R.
C.&N.W.Ry.
M.N.&S.Ry.
Plymouth Rd.
Hennepin Ave.
Lyndale Ave.
France Ave.
Xerxes Ave.
Vernon Ave.
Hampshire Ave.
Louisiana Ave.
Texas Ave.
Dakota Ave.
Woodale Ave.
Monk Ave.
Quebec Ave.
Ottawa Ave.
Flag Ave.
Boone Ave.
Douglas Ave.
Pennsylvania Ave.
Winnetka Ave.
Jersey Ave.
Zachary Ln.
Turners Crossroad
Glenwood Ave
Highway 55
Olson Memorial Highway
Golden Valley Rd.
Plymouth Ave
Medicine Lake Rd.
Parkers Lake Rd.
Waymouth Rd.
Shelard Pkwy
Cedar Lake Rd.
Hannan Lake
Westwood Hills
Betty Crocker Drive
Laurel Ave.
36th Ave. North
Lake Minnetonka
Mooney Lake
Parkers Lake
Gleason Lake
Oak Knoll Lake
Hennepin Ave. Methodist
Redeemer Lutheran
Morgan Avenue Lutheran
Bryn Mawr Presbyterian
Mount Vernon Baptist
Wirth Park Baptist
Wirth Lake
Brownie Lake
Cedar Lake
Lake of the Isles Lutheran
St. Pauls Episcopal
Temple of Israel
Adath Jeshurum Congregation
St. Mary's Greek Orthodox
Beth El Synagogue
Kenesseth Israel Congregation
Sinai Abraham Synagogue
Gomelus Chesed Congregation
Peace Presbyterian Church of St. Louis Park
Westwood Lutheran
St. Louis Park First Assembly of God
Ascension Lutheran
NW Tennis & Swim Club
Cedar Lake Community Center
Greater Minneapolis
Olivet Congregational Church
Cathedral Church of St. Mark
Hennepin Avenue Methodist
Abbott Hospital
Church of the Good Shepherd
Calvary Lutheran
Golden Valley Baptist
Golden Valley Methodist
Golden Valley Jehovah's Witnesses
Finnish Apostolic Lutheran Congregation
Hawthorne Interchange
Lyndale Ave.
Emerson Ave.
Bryant Ave.
Penn Ave.
Mississippi River
Sweeney Lake
Twin Lake
Glenwood
Shady Oak Rd.
Minnetonka Blvd.
Mills
12th
11th
Ave.
Rd.
Baker Road
Nine Mile Creek
South Fork
Lake Harriet
Lyndale Ave.
Excelsior Blvd.
St. Louis Park Recreation Center
St. Louis Park Administrative Offices & Police
Dept.
Raquet Ball Court
Brookview Community Center
Oak Knoll Lutheran
Minnetonka Seventh Day Adventist
Nicollet Clinic
Interest Nursing Home
Medical Bldg.
Christ Memorial Lutheran
Kingway Fellowship
St. Mary of the Lake
Pavilla Nursing Home
Golden Valley Lutheran
Olivet Congregational
Cathedral Church of St. Mark
Hennepin Avenue Methodist
Abbott Hospital
Temple of Israel
Adath Jeshurum Congregation
St. Mary's Greek Orthodox
Lake Calhoun
Lake Harriet
Lake of the Isles
Lake of the Isles Lutheran
St. Pauls Episcopal
Tyrone Guthrie Theatre & Walker Art Center
Minneapolis Central Business District
Minneapolis City Offices and Hennepin County Offices
General Hospital
St. Barnabas & Swedish Hospital

Historic Sites

No sites on the National Register of Historic Places are adjacent to the freeway corridor. Nearby sites in the suburban communities along the corridor are the Wayzata Depot; the Saint Louis Park Station, in Jorvig Park; and the Burwell House in Minnetonka Mills, now a part of the city of Minnetonka. All of these sites are at least a mile from the freeway corridor.

In Minneapolis, the Charles Martin House is in the Kenwood neighborhood. Two of three blocks from the I-394 corridor, this site is quite remote because of its high location on Lowry Hill and the lack of nearby street access to the freeway.

These historic sites and others in the vicinity are shown on the Parks and Recreation Figure 15 on page 121.

Fire and Police Protection

Each community along the freeway corridor has its own fire and police departments. Existing US-12 divides the service area in each case. Three fire stations and one police headquarters are within the primary impact area, but none are adjacent to the highway corridor.

The stations and service areas are shown on the Fire and Police Protection Figure 19 on page 137.

The vast majority of the primary study area is protected by a five-minute response time by both fire and police departments. One exception, with a ten-minute response time for fire protection, is the area in Minneapolis that is south of US-12 and west of Cedar Lake. It is served by a fire station north of US-12; the Penn Avenue and/or Wirth Parkway bridges spanning US-12 are essential to maintain this service.

Utilities

The entire study area is urbanized and is served by the usual urban utilities of electric power, natural gas, phone service, water, and storm and sanitary sewer systems. Minneapolis and Golden Valley obtain their water from the Mississippi River, but the other communities obtain their supplies from wells. Some residential and commercial users have their own wells. The storm sewers ultimately empty into the Mississippi River and Bassett and Minnehaha Creeks. The sanitary systems empty, after treatment, into the Minnesota and Mississippi Rivers.

Although some of these utilities will be relocated, none should be disrupted by the construction or operation of US-12/ I-394.

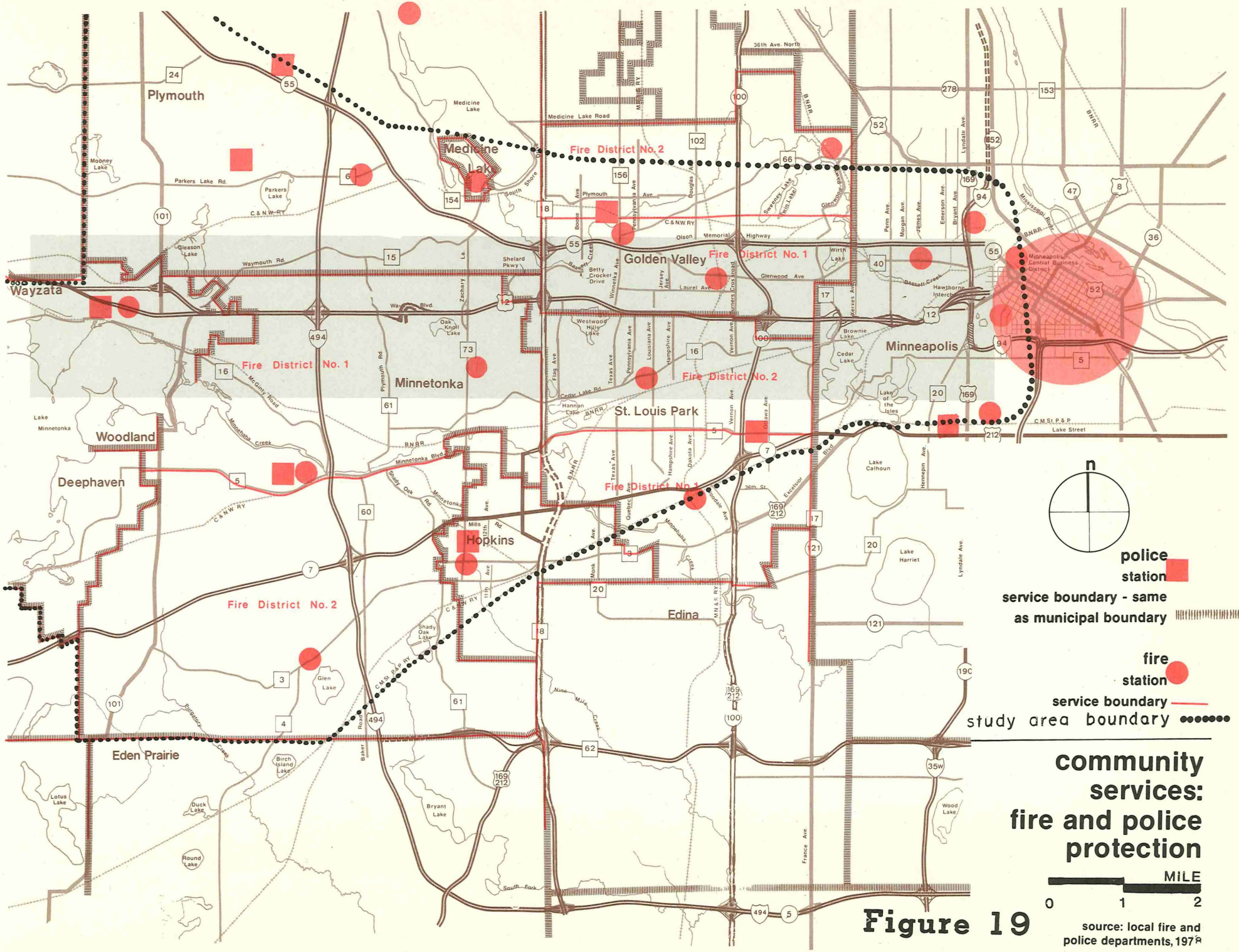

Plymouth
Medicine Lake
Golden Valley
Minneapolis
Wayzata
Minnetonka
St. Louis Park
Woodland
Deephaven
Hopkins
Edina
Eden Prairie
Fire District No. 1
Fire District No. 2
Fire District No. 1
Fire District No. 2
Fire District No. 1
Fire District No. 2
police station
service boundary - same as municipal boundary
fire station
service boundary
study area boundary
community services: fire and police protection
MILE
0 1 2
source: local fire and police departments, 1978

Figure 19

Existing US-12 serves as a major economic corridor. Major office, commercial, and industrial development has occurred along this route in the past twenty-five years. Early development created the demand for more service and amenities, which led to continuing development. The many businesses along US-12 reinforce and serve each other and also serve the nearby residential neighborhoods, the entire western sector of the metropolitan area, and, to some extent, all of the metro area and even beyond.

The major developments are shown on the Commercial and Office/Industrial Development Figure 20 on page 141.

Large Employers

Among the larger individual employers along US-12 are Prudential, Gambles, Honeywell, and General Mills. The North Central Home Office of the Prudential Insurance Company is located along the segment in Minneapolis, and employs more than 1500 people. The Saint Louis Park segment serves the Gamble-Skogmo administrative office with its 1200 employees, and the Honeywell manufacturing facility that employs about 1000 people. The corporate headquarters of General Mills is located along the Golden Valley segment of the corridor; it now employs about 2000 people, with employment eventually expanding to as many as 3500. In addition, about 150,000 people visit this institution each year.

Shelard Park

Shelard Park is a multi-purpose development in Saint Louis Park, in the northwestern quadrant of the US-12/CR-18 interchange. This development includes three prime office buildings, two of eight floors and one of twenty; several large restaurants; a three-theater complex; a 400-unit apartment complex; and a condominium development. Eventually there may be as many as 1500 apartment units on this 88 acre site. A hotel is also planned.

Ridgedale Center

Ridgedale Shopping Center, at US-12 and Plymouth Road in Minnetonka, has four major department stores and about a hundred smaller shops in its approximately one-million square feet. This center is on an 85-acre site with staellite development including three other shopping centers. It is expected to eventually generate as many as 63,500 vehicle trips per day.

Carlson Center

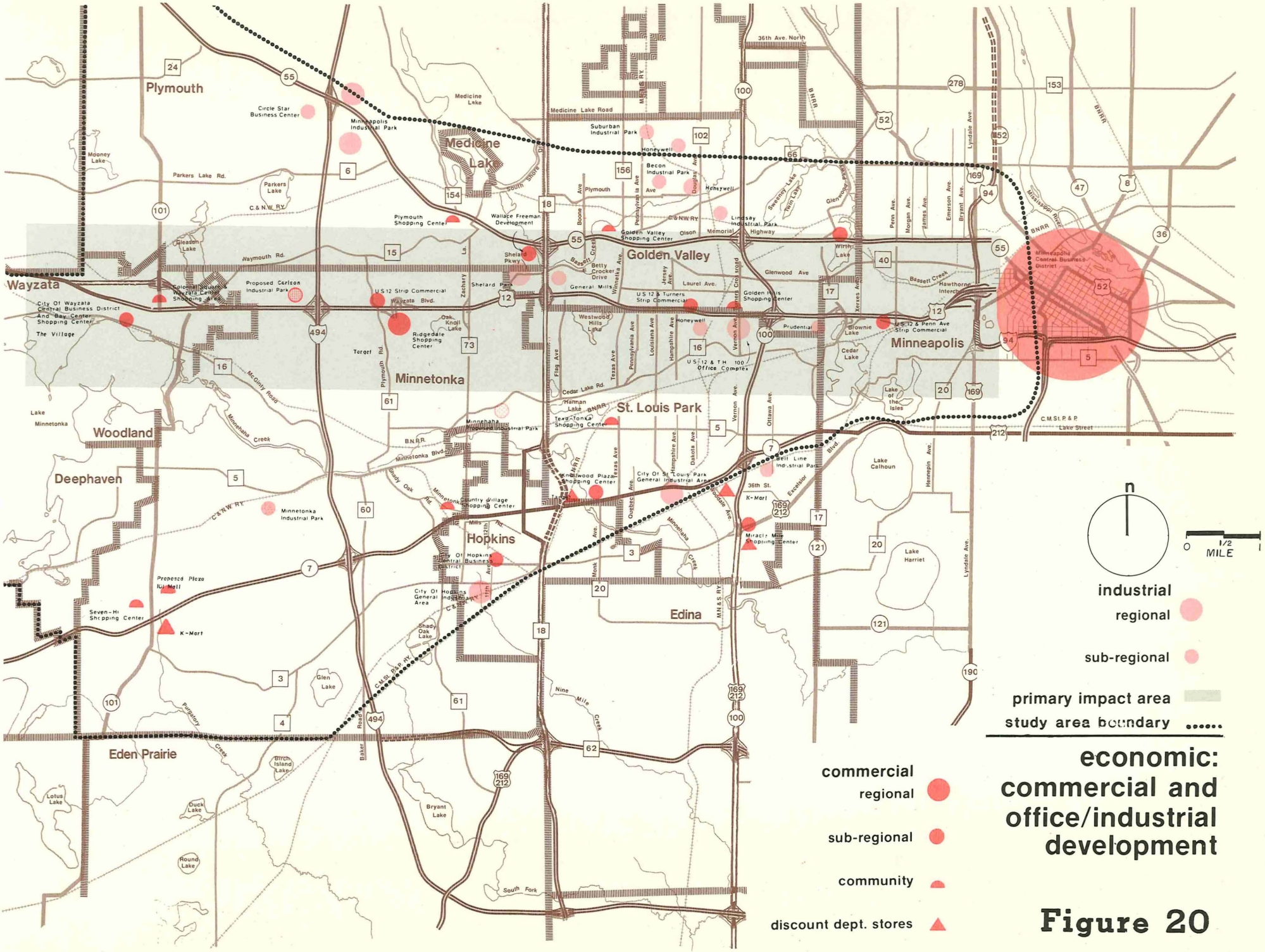
Though not yet built, Carlson Center is planned as a multi-purpose complex on over 300 acres in Plymouth and Minnetonka. It will be adjacent to US-12 on the north side, and on both sides of I-494. The complex will include low, medium, and high-density residential areas as well as office, commercial, recreational, warehouse, and industrial areas. The Carlson Company will have their corporate headquarters there, and also a hotel and conference center.

Smaller Employers

Aside from these large employers and business centers, much of US-12 is lined with many types of offices, shops, restaurants, theaters, service stations, banks, stores, motels, auto dealerships, and other businesses.

Downtown Development

US-12 serves not only the suburbs but, of course, the Minneapolis CBD. Despite the suburban development, the CBD is thriving. Many large new office buildings, hotels, and condominiums are now being planned, built, or completed in the CBD. Two very large developments are also now being built: the Pillsbury-First Bank complex and the City Center. The Pillsbury-First Bank complex covers one city block and is comprised of two atrium-connected office towers, one 22 and one 40 storys tall. The City Center is an office/retail/hotel complex that will cover one and one-half city blocks and will feature a 50-floor office tower. Also, the Hubert H. Humphrey Metrodome, a sixty-thousand seat domed stadium at the east edge of the CBD, will be open in the spring of 1982 for the Twins and the Vikings.


Plymouth
Wayzata
Golden Valley
Minneapolis
Minnetonka
St. Louis Park
Hopkins
Edina
Eden Prairie
Woodland
Deephaven
Medicine Lake
industrial
regional
sub-regional
primary impact area
study area boundary
commercial
regional
sub-regional
community
discount dept. stores
economic: commercial and office/industrial development
Figure 20

Labor Force

Of the six communities directly affected by I-394, Minneapolis, Golden Valley, Saint Louis Park and Wayzata are considered labor import areas because they contain more jobs than labor force. Substantially more people commute into these cities to work than commute out. Plymouth is considered balanced; its employment base is approximately equal to its labor force. Minnetonka is considered a labor export area, with more workers than jobs.

LAND USE PLANNING

Planning and development of the seven county metropolitan area is coordinated by the Metropolitan Council, an agency created for that purpose in 1967 by the Minnesota Legislature. The Legislature also charged the Council with the preparation of a comprehensive development guide for the metropolitan area, and the Governor designated the Metropolitan Council as the official Metropolitan Planning Organization. The Metropolitan Development Guide adopted by the Council consists of policy statements, goals, standards, and programs which serve as a regional plan for the physical, social, and economic development, both public and private, of the area. In most cases, the specifics of the plan are left to the individual communities.

Comprehensive municipal planning is a relatively new activity for the communities, except Minneapolis, in the study area. All of the municipalities, however, have either developed comprehensive plans or are in the process of developing or revising such plans. The Land Use Planning Act of 1976 required that all of the 189 municipalities and townships in the metropolitan area must develop and submit their plans to the Metropolitan Council for a consistency finding with the Development Framework. The Metropolitan Council has the authority to modify these municipal plans if they are not consistent with metropolitan-wide planning.

The Metropolitan Development Guide does call for limiting future urban development to areas where the essential services such as water and sewers are already inplace or planned. The intent is to keep urban development concentrated around the central area where it can be most efficiently served

by the various necessary urban systems, as opposed to letting it spread randomly throughout the entire area. Random urban development spread over an unnecessarily wide area would greatly multiply the cost in both money and natural resources of providing the necessary services such as transit, roads, and sewer systems.

The Existing and Future Land Use Figures 21 and 22 on pages 145 and 147 show development patterns.

Existing Land Use

Currently, less than half of the total study area is either vacant land or farmland. In the older suburbs of Golden Valley, Saint Louis Park, and Hopkins, vacant and agricultural lands account for only about one-fifth of the area. The farm land consists of small truck-farms and hobby farms, not large farms. There is no prime agricultural land within the study area.

Most of the rural and undeveloped land is in the newer suburbs to the west. It comprises from about three-tenths of Minnetonka to four-tenths of Deephaven and Woodland.

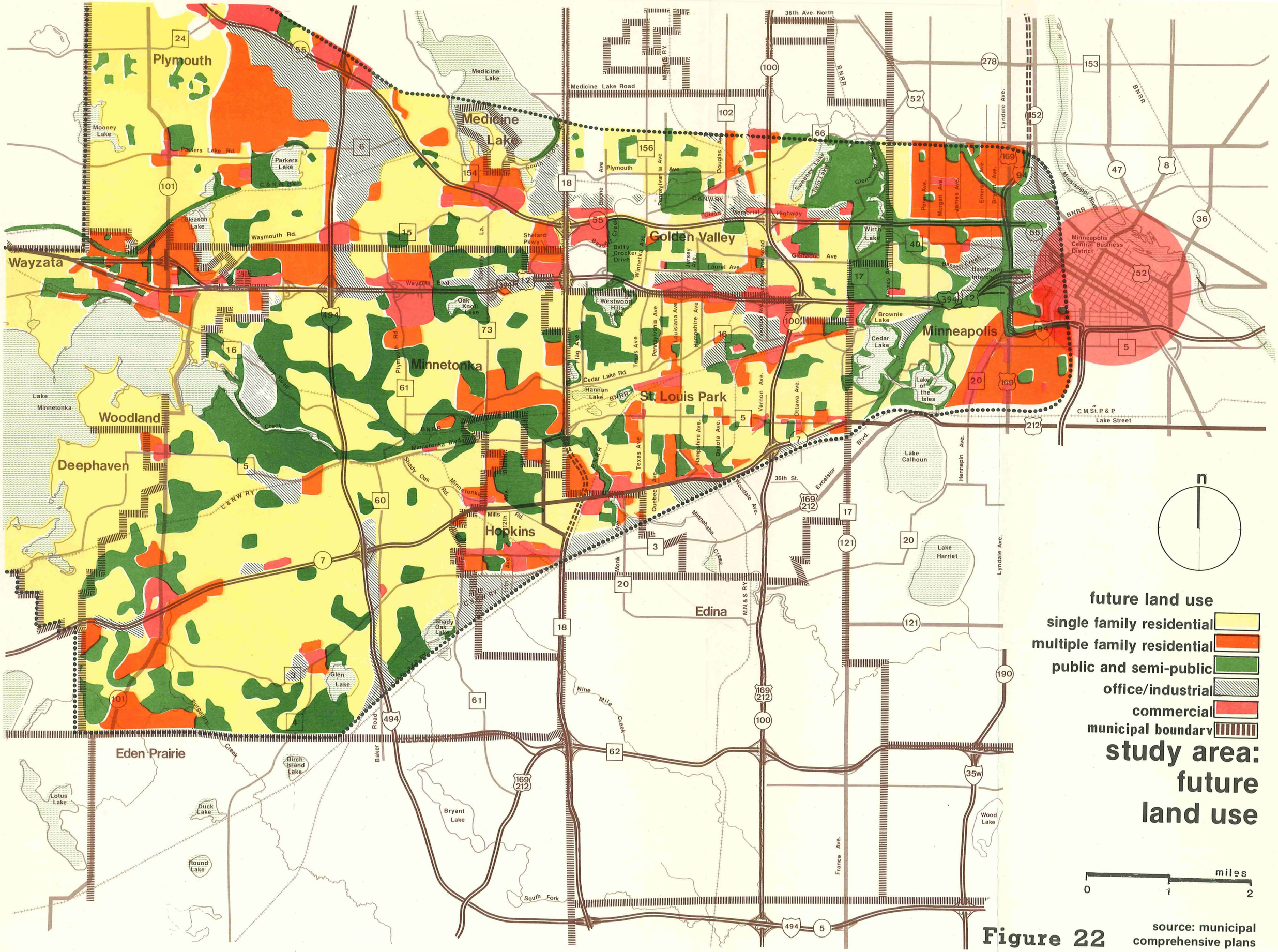
Most of the commercial and industrial land uses in the study area are concentrated along the major transportation arteries: I-494, US-12, SR-100, SR-55, SR-7, and CR-18. Commercial and industrial land use currently comprises about seven percent of the total study area.

Future Land Use

The future land use plans of the various communities generally call for the preservation of existing single-family residential areas, development of multiple-family units near or in conjunction with major activity centers, and continued concentration and expansion of commercial and industrial areas along the major transportation corridors.

The entire study area is already within the Urban Service Area, so will urbanize whether I-394 is built or not. That is what the Metropolitan Council calls for and plans for. Almost all of the urban systems already exist in the area. Urbanization of this area will save resources and money compared to the development of the more

Plymouth
Medicine Lake
Golden Valley
Minneapolis
Minneapolis Central Business District
Wayzata
Minnetonka
St. Louis Park
Woodland
Deephaven
Hopkins
Edina
Eden Prairie
Medicine Lake Road
36th Ave. North
Parkers Lake Rd.
Waymouth Rd.
Wayzata Blvd.
Cedar Lake Rd.
Minnetonka Blvd.
Shady Oak Rd.
Mills 121th Rd.
Lake Minnetonka
Mooney Lake
Parkers Lake
Loleason Lake
Oak Knoll
Westwood Hills
Brownie Lake
Cedar Lake
Lake of the Isles
Lake Calhoun
Lake Harriet
Hannan Lake
Shady Oak Lake
Glen Lake
Birch Island Lake
Lotus Lake
Duck Lake
Round Lake
Bryant Lake
Wood Lake
Nine Mile Creek
Purgatory Creek
Minnehaha Creek
South Fork
Plymouth Rd.
Zachary La.
Winnetka Ave.
Douglas
Penn Ave
Morgan Ave
Lyndale Ave.
Emerson Ave.
Bryant Ave.
Hennepin Ave.
Texas Ave
Vernon Ave.
Ottawa Ave.
Quebec Ave.
Woodale Ave.
Excelsior Blvd.
36th St.
Lake Street
Monk
France Ave.
Baker Road
Mississippi River
BNRR
C.M.St.P.&P.
C.&N.W.RY.
M.N.&S.RY.
C.St.P.M.&O.
Sweeney Lake
Wirth Lake
Glenwood Ave
Olson Memorial Highway
Theodore Wirth Parkway
Crosstown Freeway
Shelard Pkwy
Betty Crocker Drive
Brooks Ave.
Brooklyn Blvd.
Louisiana Ave
Hampshire Ave.
Flag Ave.
Meadowbrook Golf Course
Lake Minnetonka Regional Park
Theodore Wirth Regional Park
Glen Lake Golf Course
Minnehaha Park
Minnehaha Falls
Minnehaha Parkway
Lake Harriet Rose Garden
Lake Harriet Bandshell
Lake Harriet Band Shell
Lake Harriet Boat Rental
Lake Harriet Bird Sanctuary
Lake Harriet Children's Zoo
Lake Harriet Peace Garden
Lake Harriet Rose Garden
Lake Harriet Trail
Lake Harriet Trailhead
Lake Harriet Trailhead Parking
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Plymouth
Medicine Lake
Medicine Lake Road
36th Ave. North
Golden Valley
Wayzata
Minnetonka
Minneapolis
St. Louis Park
Woodland
Deephaven
Hopkins
Edina
Eden Prairie
Lake Minnetonka
Mooney Lake
Parkers Lake
Gleason Lake
Oak Knoll Lake
Westwood Hills Lake
Brownie Lake
Cedar Lake
Lake of the Isles
Lake Calhoun
Lake Harriet
Glen Lake
Shady Oak Lake
Birch Island Lake
Lotus Lake
Duck Lake
Round Lake
Bryant Lake
Wood Lake
Minneapolis Central Business District
Hawthorne Interchange
Glenwood Ave
Laurel Ave
Cedar Lake Rd.
Minnetonka Blvd.
Shelard Pkwy
Waymouth Rd.
Plymouth Ave
Lyndale Ave.
Hennepin Ave.
Excelsior Blvd.
36th St.
Lake Street
C.M.St.P.&P.
B.N.R.R.
C.&N.W.RY.
M.N.&S.RY.
Nine Mile Creek
Minnehaha Creek
Bassett Creek
Missisippi River
Memorial Highway
Olson Memorial Highway
Penn Ave.
Morgan Ave.
James Ave.
Emerson Ave.
Bryant Ave.
Lyndale Ave.
Sweeney Lake
Twin Lake
Betty Crocker Drive
Winnetka Ave.
Jersey Ave.
Texas Ave
Pennsylvania Ave
Louisiana Ave
Hampshire Ave.
Vernon Ave.
Ottawa Ave.
Dakota Ave.
Quebec Ave.
Woodale Ave.
Douglas Ave
Broadway
Flag Ave
Plymouth Rd.
Baker Road
France Ave.
Zane Ave.
Mills Rd.
12th
Shelard Pkwy
Wayzata Blvd.
Glenwood Ave
Laurel Ave
Cedar Lake Rd.
Minnetonka Blvd.
Shady Oak Rd.
Mooney Road
Rush Creek
Purgatory Creek
South Fork
Nine Mile Creek
Minnehaha Creek
Bassett Creek
Missisippi River
B.N.R.R.
C.&N.W.RY.
M.N.&S.RY.
C.M.St.P.&P.
Lake Street
Excelsior Blvd.
36th St.
Hennepin Ave.
Lyndale Ave.
France Ave.
Baker Road
Plymouth Rd.
Flag Ave
Broadway
Douglas Ave
Quebec Ave.
Woodale Ave.
Minnehaha Creek
Nine Mile Creek
South Fork

remote areas to the west and elsewhere. Concentration of urban development is intended to minimize urban sprawl and to save the valuable open space around the cities.

I-394 and Land Use

The construction of I-394 may accelerate development in both the study area and in areas to the west along US-12. However, since I-394 will be an upgraded replacement on the site of US-12, the generated development will continue to follow the same patterns that now exist, influenced by the existing transportation facilities, consistent with the Metropolitan Council's Development Framework Plan.

The Metropolitan Council supports the construction of I-394 as a necessary transportation facility to serve the rapidly growing western suburbs. The following is an excerpt from the Report of the Physical Development Committee: Referral Report Number 71-73 (Reconsidered) as it was amended and adopted by the Metropolitan Council on May 23, 1974, in response to the publication of the Federal DEIS.

> The Physical Development Committee unanimously passed the following motions and recommends their adoption by the Council:
>
> 1) a) Under its review and comment authority on the EIS for this project and its A-95 review authority, the Council recommends that this project proceed subject to comments contained on pages 13 through 19 of the staff report to the Physical Development Committee.
>
> b) Under the 1974 Metropolitan Reorganization Act, the Council has reviewed this proposal and finds it consistent with the Metropolitan Development Guide.
>
> c) Under Session Laws 1974, Chapter 574, the Council finds a need to provide exclusive lanes for buses and multi-passenger vehicles within this project.

2) There is a need for a freeway between I-94 in Minneapolis and I-494 in Minnetonka and it should be constructed along Highway 12.

3) The Council further recognizes that the I-394 project is included in the Council's 1980 Principal Arterial Plan of the Development Guide and therefore requests the Department of Highways to place high priority upon this project, with the objective of I-394 being operational by 1980.

4) Based on present information the freeway should be financed with Federal Interstate funds but this decision will be reevaluated by the Metropolitan Council prior to July 1, 1975. [This has not changed.]

5) Finding that the recommendations of the Physical Development committee are essentially consistent with the adopted resolution of the I-394 Citizens Advisory Committee.

6) The Metropolitan Council requests the Minnesota Department of Highways, the Metropolitan Transit Commission, the Federal Government and other affected agencies and governments to specifically follow all the Council's adopted policies in the design of Interstate 394, and particularly the Transportation Guide Chapter.

Since the addition of I-394 to the Interstate System in 1968, and especially since the selection of the US-12 corridor for its route in 1974, all of the cities along the route have made their plans on the assumption that US-12 would be upgraded to a freeway. Even those opposed to I-394 in part or in total recognized the need for an improved Highway 12. Civic planning, therefore, including the planning of street systems and the planning of public and commercial development along the corridor, has been done taking into account that the existing highway would eventually be a freeway, whether its designation was to be I-394 or US-12.

Mn/DOT has developed the project in cooperation with city officials, the task forces, and, through public meetings, the citizens themselves. The Metropolitan Council and the Metropolitan Transit Commission have also assisted in the planning.

Mn/DOT has taken into account the preferences of the cities for the locations and the layouts of the land-access interchanges. The cities have reserved space along US-12 for future interchanges at the busy intersections of Plymouth Road, Louisiana Avenue, and Vernon/Xenia Avenues. Carlson Properties, the cities of Plymouth and Minnetonka, and Mn/DOT have all participated in the planning of the Carlson Parkway interchange.

A further example of joint development is the selection of Boone Avenue as the location for a critically needed land-access interchange.* Over the years of project development, Mn/DOT has worked very closely with the City of Golden Valley in identifying their needs and incorporating them into the preliminary plans. Early studies indicated that Winnetka Avenue was the best location for a land access interchange in this area. However, in the course of their land use planning, Golden Valley has determined that Boone Avenue would be a more appropriate location. This interchange will then better serve the needs of the office/commercial complex to

*Other than the freeway-to-freeway interchange at CR-18, there is no access to adjacent development between Louisiana Avenue and CR-73, a distance of about 2.5 miles.

the south and the General Mills, Shelard Park, Brookview Recreation area to the north. Through this cooperative effort, the Boone Avenue interchange will then alleviate a potentially devastating traffic circulation problem within the City of Golden Valley.

Golden Valley made a traffic impact study which included recommendations regarding the frontage road system; most of the recommendations were adopted by Mn/DOT. The location and layout of the frontage road systems in the other cities has also been done with their cooperation to meet their needs.

The Golden Valley Park and Recreation Department and the Minneapolis Park and Recreation Board have had numerous opportunities to review the proposals and have made many recommendations, most of which have been incorporated into the design of the project.

ENVIRONMENTAL CONSEQUENCES

AIR QUALITY IMPACT

Federal Air Quality Requirements

Air Quality is a continuing item of concern at local, state and national levels. The Air Pollution Control Act of 1955, the Clean Air Act of 1963 and the Air Quality Act of 1967 provided technical advice, grants and some controls under the direction of the Department of Health, Education and Welfare (HEW). The 1970 Presidential Reorganization Plan No. 3 put air quality concerns under the direction of the EPA. The 1970 Clean Air Act Amendments expanded the Federal Government's EPA involvement in air quality and required State Implementation Plans (SIP's) from each state to demonstrate how the state planned to meet and maintain the air quality standards.

The 1970 Federal-Aid Highway Act led to the Federal Highway Administration's (FHWA) issuance of Federal Aid Highway Program Manual (FHPM) 7-7-9 air quality guidelines. FHPM 7-7-9 requires that air quality considerations follow certain procedures in order to assure that the planning, location and construction of highways are consistent with the approved SIP.

I-394 Air Quality History

On March 20, 1974, the U.S. Environmental Protection Agency (EPA) reviewed the Federal Draft Environmental Impact Statement (DEIS) for proposed US-12/I-394. Their comments on the DEIS indicated "a potential for significant air quality impacts and violation of the Transportation Control Plan for the Minneapolis Central Business District." After significant changes in the state-of-the-art, Mn/DOT submitted a revised air quality analysis contained in its July, 1977 Air Quality Report. Addendums to this report were sent out in September, 1977 and again in January, 1978.

The 1977 report, with addendums, was reviewed by both the EPA and the Minnesota Pollution Control Agency (MPCA). All

but two issues were resolved in the revised report. Those two issues were:

1. Park-and-ride facilities along with high-occupancy-vehicle-lanes should be considered in the design of the freeway.

2. The analysis contained in the report did not reflect current changes that were taking place in motor vehicle emissions factors.

On December 6, 1979, air quality personnel from Mn/DOT met with air quality personnel from MPCA to discuss the preparation of a new air quality report. Some of the topics discussed during this prior consultation were park-and-ride-sites, critical receptor locations, high-occupancy-vehicle-lanes, time frame of report, and background monitoring data.

In November, 1980, Mn/DOT completed another, more detailed Air Quality Report and submitted it to FHWA for review and comment. Upon completion of their review, FHWA requested submittal of the report to the appropriate air quality agencies (EPA and MPCA). However, further submittal was delayed pending recommendations from the Metropolitan Council on specific matters concerning the overall design of I-394. Also, in February, 1981, EPA published a revised emission rates table (Mobile II). The 1980 Air Quality Report was updated and submitted to EPA and MPCA in October, 1981. Their comments on the Report, along with Mn/DOT's response, are included on the following pages. Briefly, EPA agrees "with the findings of the Air Quality Report that the completion of I-394/US-12 will not violate Ambient Air Quality Standards."

A copy of the Air Quality Report is available for review at the Mn/DOT Golden Valley District Five Office.

In compliance with Minnesota State Regulation APC 19, Permits for Indirect Sources, an application for an indirect source permit will be applied for prior to construction.

The remainder of this air quality section will summarize the methodology and results of the updated 1980 Air Quality Report.

Federal and State ambient air quality standards are listed on page 177 of this section.

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION V
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO ATTENTION OF:

Mr. Richard Braun
Commissioner
Minnesota Department of Transportation
Transportation Building
St. Paul, Minnesota 55155

RE: 74-006-424
(81131)

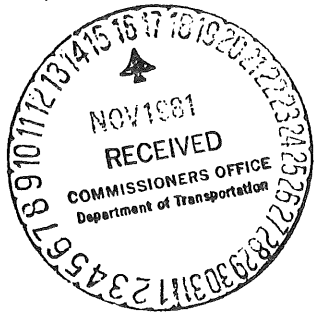
Dear Mr. Braun:

We have completed our review of the Air Quality Report for I-394/US-12, Hennepin County, Minnesota. Your letter of September 29, 1981, requested our comments on the Air Quality Report and the design plans for I-394/US-12.

The Air Quality Report was one of the most thorough analyses we have reviewed. Information on the location and selection of receptors, determination of background concentrations, and the evaluation of future air pollutant levels were all well prepared and well organized in the report. The conclusions which were reached in regard to the potential air quality impacts are appropriate and based upon a reasonable assessment of the data. We agree with the finding of the Air Quality Report that the completion of I-394/US-12 will not violate Ambient Air Quality Standards.

Three design changes have been included as additional mitigative measures to assure attainment of the air quality standards. The exclusive entrance ramps and diamond lanes should encourage car and van pools and reduce traffic volumes. Sites for park-and-ride facilities are still being evaluated at this time. These sites should be easily accessable to the I-394/US-12 and local streets to serve the maximum number of persons. We would appreciate being kept informed on the progress in the selection of the park-and-ride sites.

The only concern which we have in regard to potential air quality effects are those which may occur during construction. The Air Quality Report did not discuss how traffic will be maintained during the construction period, the number of years required to complete the project, or the effects upon air quality during the construction phase. The Supplemental Draft Environmental Impact Statement should include information on these impacts and the detour routes which will be used. An analysis of the air quality for the construction phase may help locate detour routes and avoid adverse impacts at sensitive receptor sites.



We appreciate the opportunity to review this Air Quality Report. Again, our complements to you and your staff for putting together such a thorough analyses. If you have questions in regard to our comments, you may contact Mr. Bill Franz at 312/886-6687.

Sincerely yours,

Barbara Taylor Backley

Barbara Taylor Backley, Chief
Environmental Impact Review Staff
Office of Environmental Review

The proposed project will be constructed in stages and will take approximately 5 years to complete. Staging will be scheduled so that no one section of roadway will be under construction for more than one half of the total construction period. No official detours are anticipated for mainline traffic which will be maintained within the corridor, most likely on one-way frontage roads, during construction.

Fugitive dust (particulates) will be controlled on this project by means of construction adherence to applicable Mn/DOT construction specifications, the project's special provisions, and MPCA regulations. Control measures will include water spraying, calcium chloride applications, and street sweeping.

No significant increase of carbon monoxide concentrations are anticipated during the construction period of this project. A CO analysis was made of the project corridor (along US-12) for the year 1986. It was assumed that mainline traffic would be split using future frontage roads. No violations of the standards were found. No detour will be required due to air quality concerns.

Minnesota Pollution Control Agency

January 5, 1981 82

Mr. Richard Braun, Commissioner
Minnesota Department of Transportation
Transportation Building
St. Paul, Minnesota 55155

Dear Commissioner Braun:

Thank you for providing us the opportunity to review and comment on the Air Quality Report for I-394. Since the Air Quality report and supplements discuss only preliminary designs, the staff is unable to make a final consistency determination.

However, the staff's preliminary determination is that the project would not be inconsistent with the State Implementation Plan provided transit measures (such as high occupancy vehicle lanes and Park/Ride) are included in the design and that the Third Avenue parking facility is completed prior to the completion of I-394. Since the Twin Cities area has been designated nonattainment for carbon monoxide, it is imperative that the proposal include transit measures to insure the attainment of ambient standards.

When it is time to apply for an indirect source permit, both the I-394 project and the Third Avenue Distributor must be included in that application. Please call Susanne Pelly, Transportation Planner, at 296-7739 if you have any questions.

Yours truly,

Louis J. Breimhurst
Executive Director

LJB:jms

cc: David Koski, City Minneapolis
William Crawford, District 5, Mn/DOT
Jim Woodruff, District 5, Mn/DOT
Jim Halvorson, Mn/DOT
Lynn Takemoto, Metropolitan Council
Susanne Pelly, PCA

Phone: 296-7301
1935 West County Road B2, Roseville, Minnesota 55113-2785
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Response to MPCA Letter

Transit provisions for I-394 are included in the design. Those provisions include reversible lanes and diamond lanes which will give priority to high-occupancy-vehicles such as buses, carpools, and vanpools during peak hours. Also included in the project are park-and-ride sites.

The I-394, Third Avenue Distributor has been designed to accommodate 3 proposed parking facilities. The proposed parking facilities are to be constructed by the City of Minneapolis. The following construction/completion schedule is planned:

1. 5th Street Garage - 1984
2. 7th Street Garage - 1986
3. 4th Street Garage - 1988

Carbon Monoxide Analysis

method of analysis

The EPA's interactive computer dispersion model, HIWAY II, was used in determining carbon monoxide (CO) concentrations at all project receptors. HIWAY II is based on a numerical integration along the line source of a simple Gaussian point-source plume.

rates and adjustment factors for vehicular emissions

Vehicular emission rates and emission adjustment factors were derived from EPA's "Guidelines For Air Quality Maintenance Planning and Analysis, Volume 9 (revised), Evaluating Indirect Source, September, 1978." Emission rates were based on the updated (December, 1977) Modal Emissions Model (Kunselman, 1974). The adjustment factors were based on "AP-42, Mobile Source Emission Factors (1978)." The more recent EPA Mobile II (February, 1981) emission rates were applied to the build alternative receptor (#8) having the highest CO concentrations from the original Mobile I analysis contained in the November, 1980 Air Quality Report. Results from both Mobile I and Mobile II analyses are documented in the report. There are no violations of the standards.

assumptions

Predicting CO concentrations at various locations (receptors) for 1990, 2000 and 2010 required many assumptions. "Worst-case" assumptions were used to assure predictions would be conservative on the

high side. "Worst-case" assumptions included low wind speed (one meter per second), neutral atmospheric stability (class D), and a 20°F ambient temperature. Worst case assumptions were also made for wind angle, traffic volume, traffic speed, signal timing, and percent of cold starts. These factors differ at each receptor, and the assumptions are listed with the individual receptors in the appendix of the 1980 Air Quality Report.

traffic

Forecasted traffic volumes used for the project analysis were prepared by the Traffic Forecast Section of Mn/DOT and are contained in their Systems Planning and Analysis Report, M253. M253 contains the estimated year 2000 traffic volumes with adjustment factors for the years 1990 (0.875) and 2010 (1.125). Also contained in M253 is a factor (0.60) for obtaining high consecutive eight-hour volumes. This factor was applied to given average daily traffic (ADT) counts.

background

Background concentrations are those concentrations which already exist in the area without the influence of the local traffic. Background concentrations must be added to the concentrations expected from the roadway under consideration in order to determine total concentrations at a given location. While background concentrations will, in most cases, be a minor part of one-hour totals, they will in many cases be the major portion of an eight-hour total.

The following background concentrations were added to the results of the US-12/I-394 analysis to obtain the total concentrations shown on Figures 23 and 24. These background concentrations were derived from two separate 14-day monitoring projects conducted during the fall of 1979.

TABLE 13: AIR QUALITY BACKGROUNDS

Year	Section	1-hour	8-hour
1990	West of SR-100	1.5 ppm*	1.1 ppm
	East of SR-100	4.0 ppm	2.2 ppm
2000	West of SR-100	1.4 ppm	1.0 ppm
	East of SR-100	3.8 ppm	2.1 ppm
2010	West of SR-100	1.6 ppm	1.1 ppm
	East of SR-100	4.3 ppm	2.4 ppm

*parts per million.

receptors

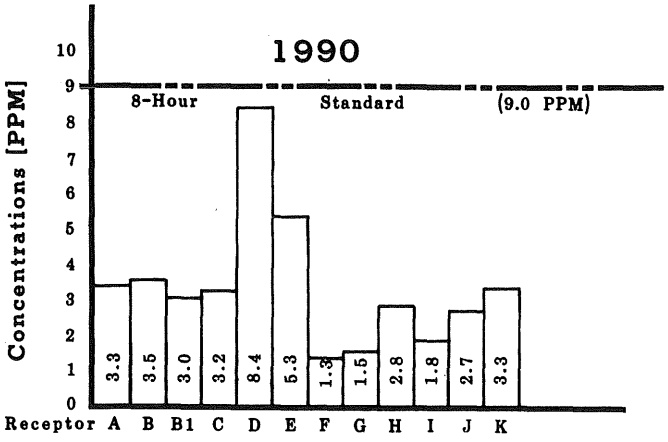
A receptor, as defined for air quality analysis contained in this section, means any reasonable location a person could be expected to occupy for a one or eight-hour period. Build and no-build alternative receptors were analyzed along and within the US 12/I-394 corridor. All receptors were selected at locations where the highest CO concentrations could be expected (critical locations). The air quality study of a proposed project requires the analysis of those locations considered most critical for each alternative. For that reason, receptors considered critical for a no-build alternative may not be considered critical, or may even be removed, under the proposed build alternative. Build and no-build alternative receptors are often selected at different locations.

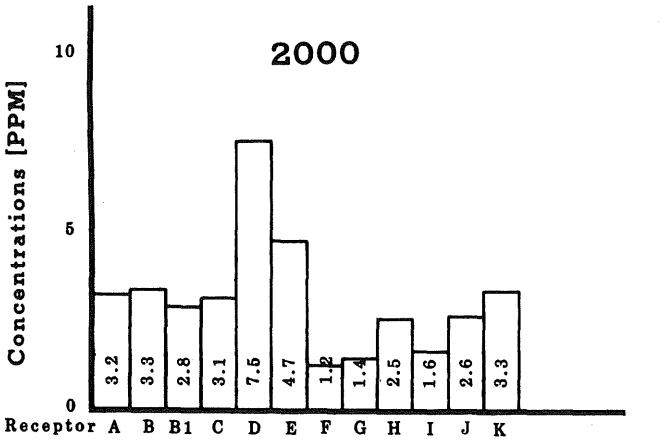
The receptor locations selected for this project analysis can be seen on Figures 25 and 26, on pages 170 through 175.

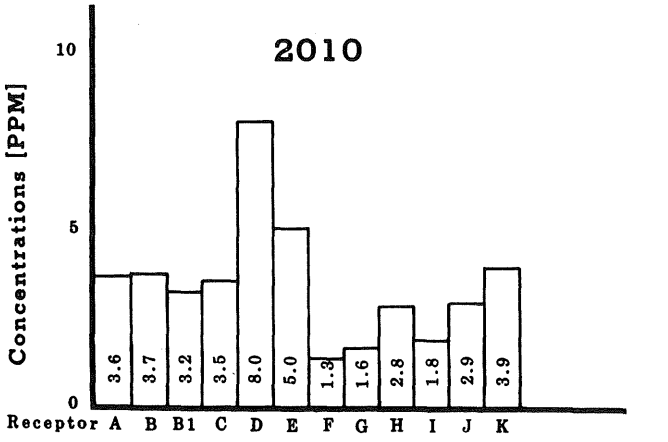
Neither build nor no-build analyses revealed any violations of federal or state standards by 1990. The highest eight-hour CO concentration for the no-build alternative was 8.4 ppm occurring at the intersection of Turners Crossroad and US-12 (receptor D). The highest eight-hour concentration for the build alternative was 7.9 ppm, also occurring at Turners Crossroad and US-12/I-394 (receptor No. 8). Standards for eight-hour concentrations are 9.0 ppm. All one-hour concentrations were well below standards. For results of entire project analysis, see Figures 23 and 24 on pages 165 and 167.

RESULTS OF 8-HOUR CO ANALYSIS★

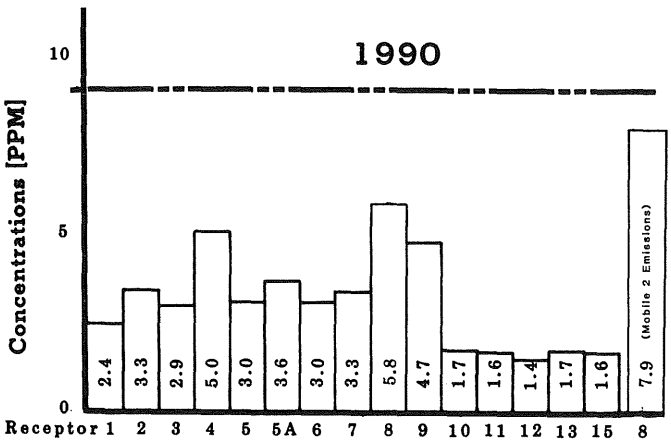
NO-BUILD

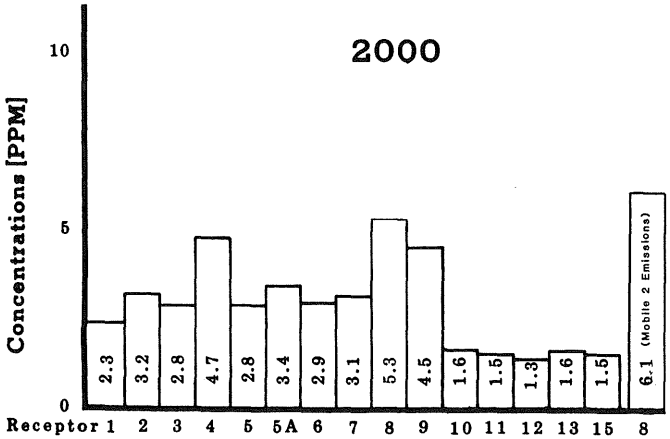


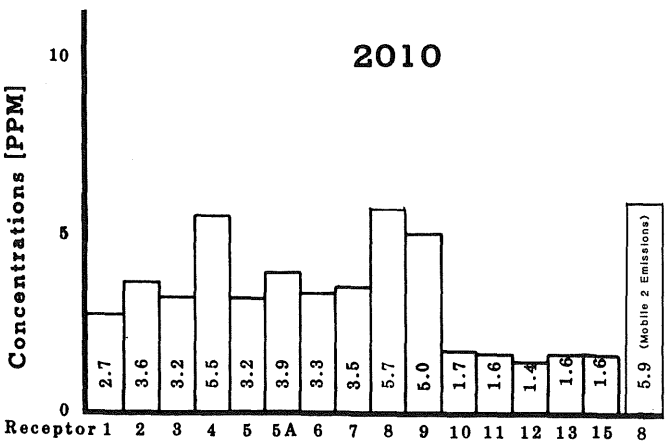




BUILD



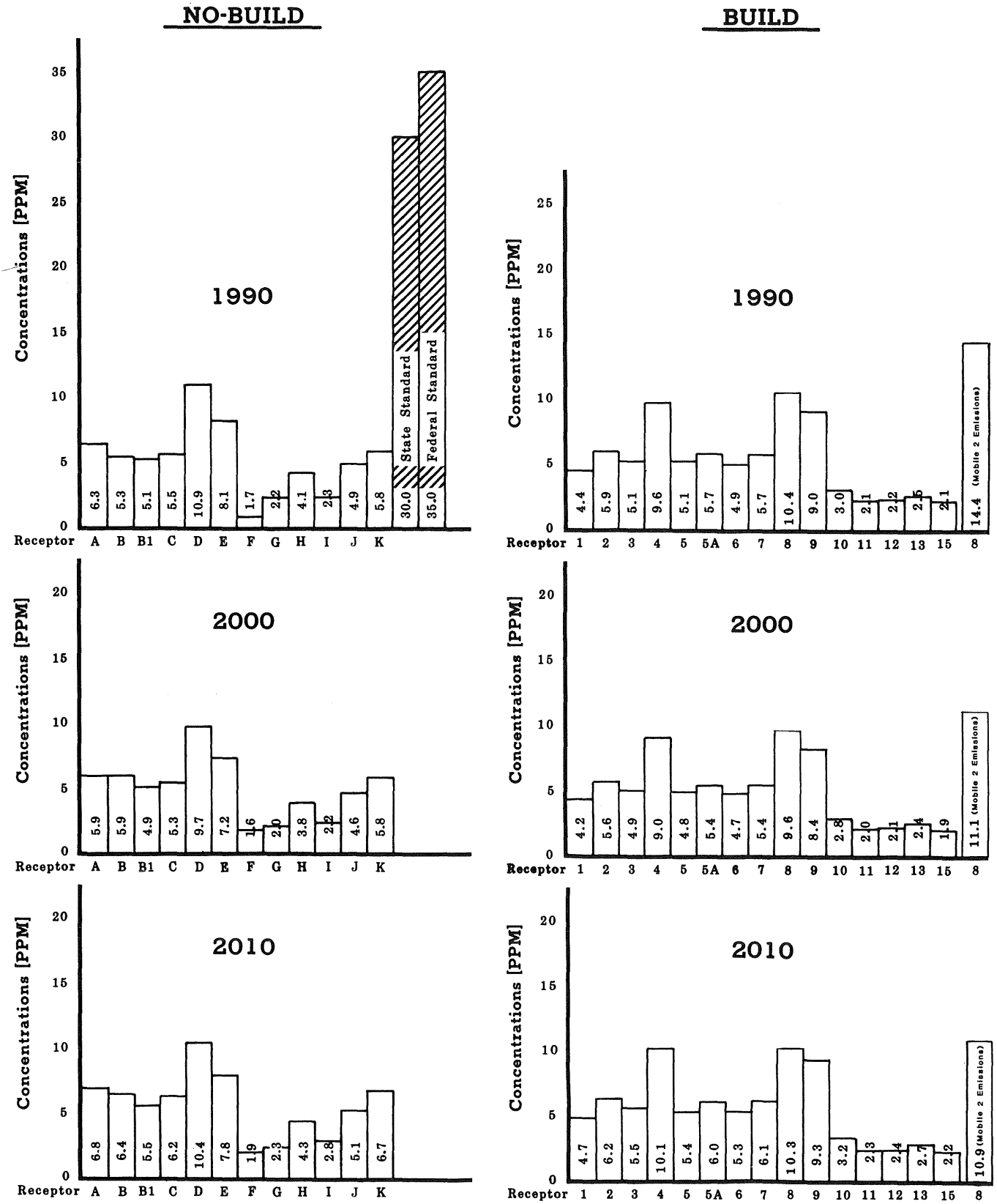




★ Background Concentrations Included

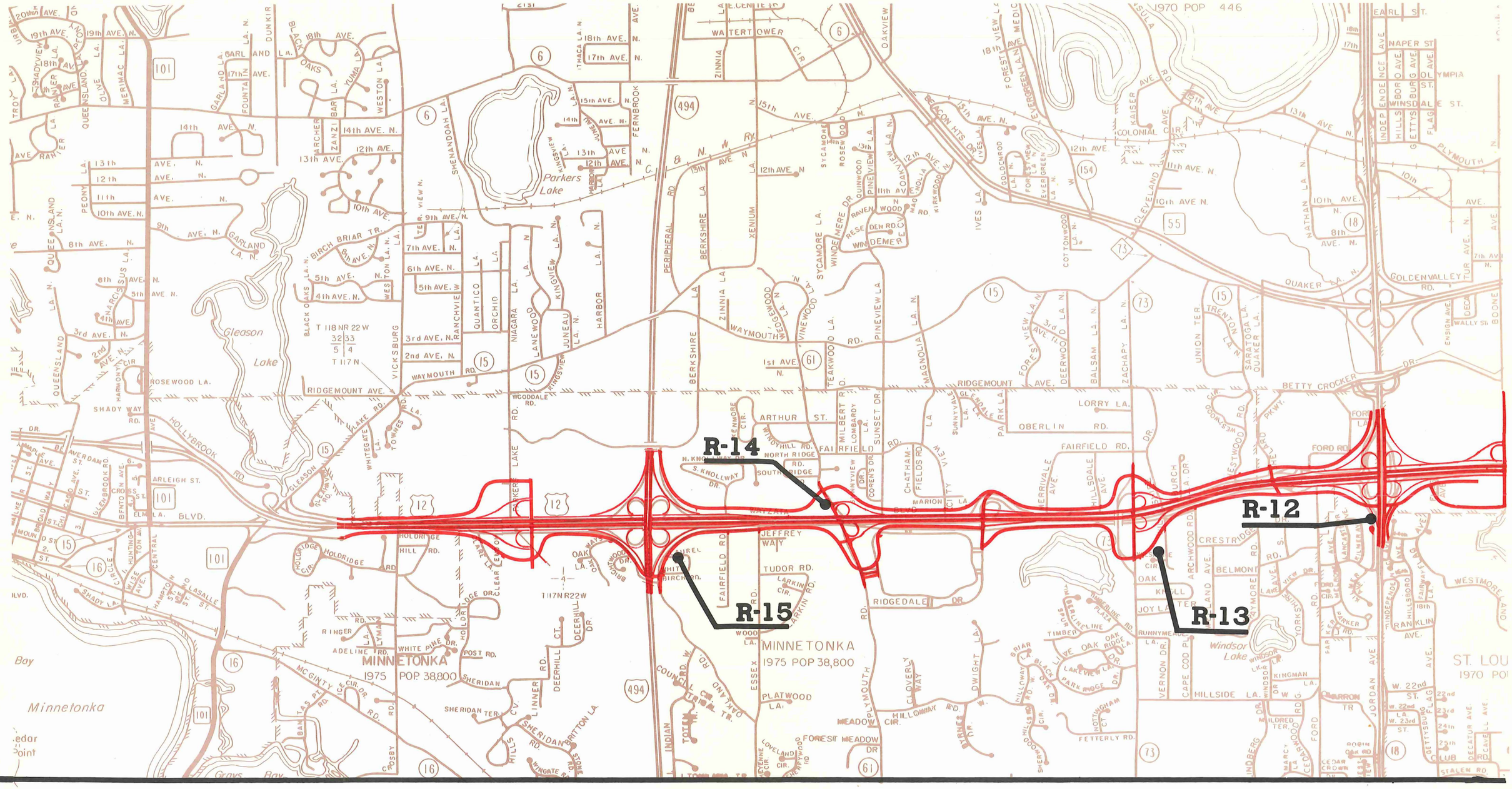
FIGURE 23

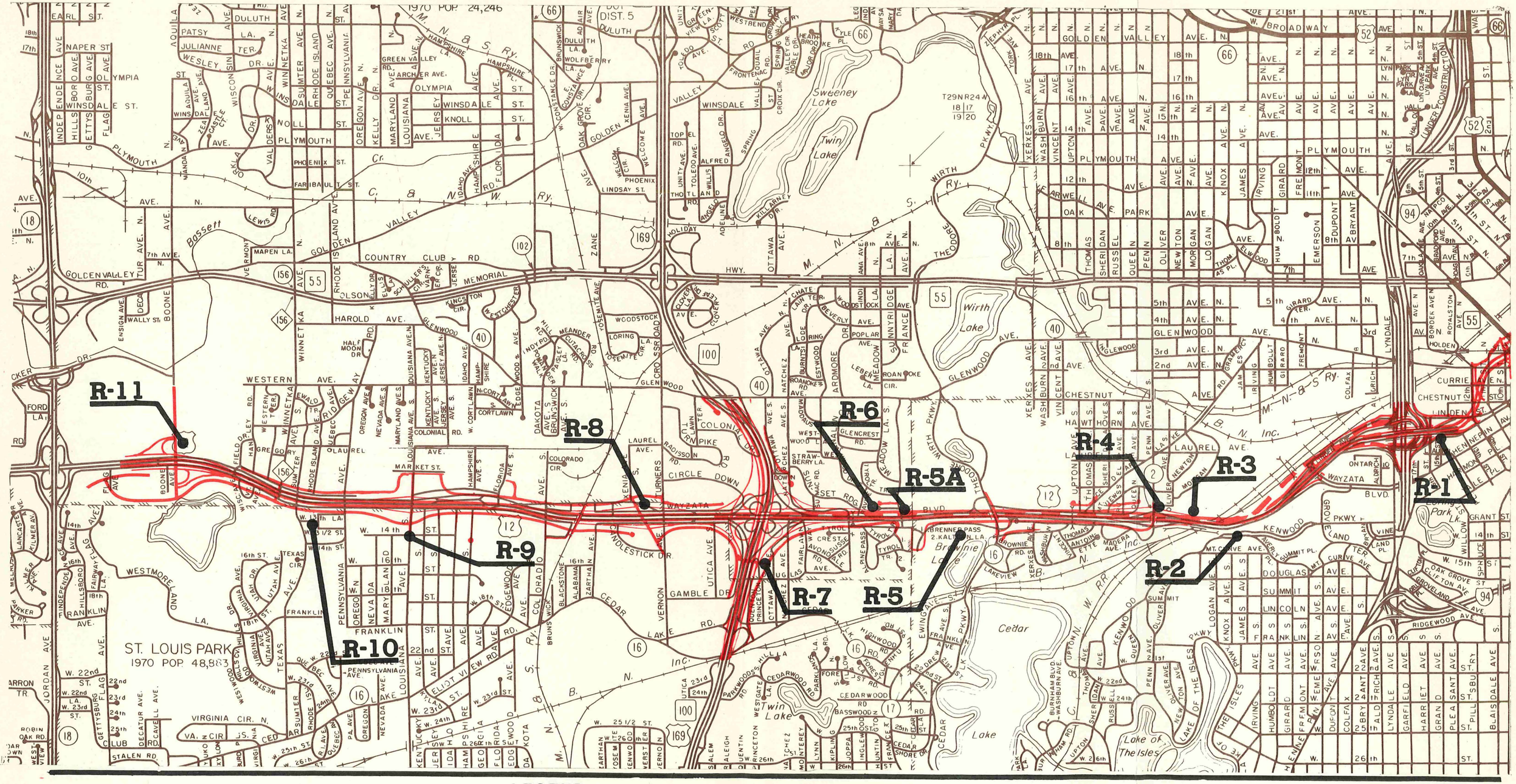
RESULTS OF 1-HOUR CO ANALYSIS★



★ Background Concentrations Included

FIGURE 24


R-14
R-15
R-12
R-13
MINNETONKA
1975 POP 38,800
MINNETONKA
1975 POP 38,800
Parkers Lake
Gleason Lake
Windsor Lake
Minnetonka Bay
Grays Bay
T 118N R 22W
T 117N R 22W
1970 POP 446
ST. LOU
1970 PO



LEGEND

- REVERSIBLE LANES
- TRAFFIC LANE
- RECEPTOR LOCATIONS

Figure 25

AIR QUALITY

I-394

[BUILD]

scale 0 1000' 2000'

north

R-H

R-G

R-F

MINNETONKA
1975 POP 38,800

MINNETONKA
1975 POP 38,800

1970 POP 446

ST. LOU
1970 PO

Gleason Lake

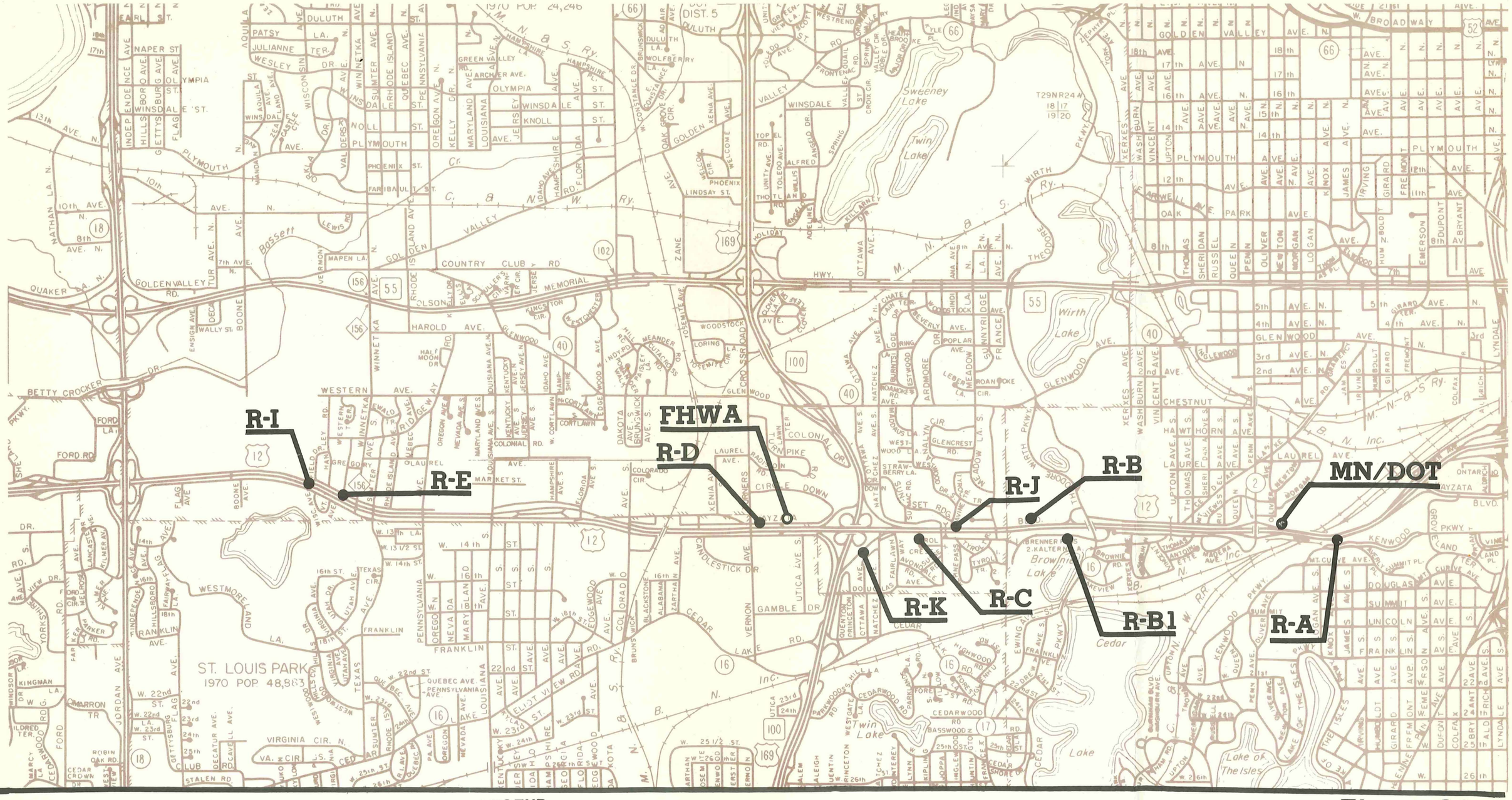
Parkers Lake

Windsor Lake

Minnetonka Bay

T 118 N R 22 W

T 117 N R 22 W



LEGEND

- ○ *MONITOR LOCATIONS*
- ● *RECEPTOR LOCATIONS*

Figure 26

AIR QUALITY [NO BUILD]

I-394

scale 0 1000' 2000

north

Figure AQ-1

TABLE 14: FEDERAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Standard	
Carbon Monoxide	9 ppm	Maximum 8-hour concentration not to be exceeded more than once per year.
	35 ppm	Maximum 1-hour concentration not to be exceeded more than once per year.
Ozone	0.12 ppm	Maximum 1-hour concentration not to be exceeded more than once per year.
Hydrocarbons	0.24 ppm	Maximum 3-hour concentration (6-9 AM) not to be exceeded more than once per year.
Nitrogen Dioxide	0.05 ppm	Maximum annual arithmetic mean.
Lead	1.5 ug/m^3	Maximum arithmetic mean averaged over a calendar quarter.

TABLE 15: STATE AMBIENT AIR QUALITY STANDARDS

Pollutant	Standard	
Carbon Monoxide	9 ppm	Maximum 8-hour concentration not to be exceeded more than once per year.
	30 ppm	Maximum 1-hour concentration not to be exceeded more than once per year.
Photochemical Oxidents	0.07 ppm	Maximum 1-hour concentration not to be exceeded more than once per year.
Hydrocarbons	0.24 ppm	Maximum 3-hour concentration (6-9 AM) not to be exceeded more than once per year.
Nitrogen Oxides	0.05 ppm	Maximum annual arithmetic mean.

Lead (Pb)

On October 5, 1978, the EPA established a national ambient air quality standard for airborne lead (Pb) concentrations. The standard was set at 1.5 micrograms lead per cubic metre ($ugPb/m^3$) of air, averaged over a calendar quarter. This standard was set to protect the most sensitive part of our population, children, infants up to five years old*.

Currently motor vehicle emissions constitute the major source of lead emissions to the atmosphere. Lead primarily affects red blood cells, the central and peripheral nervous systems, soft tissues such as liver and kidney, and bone.

The EPA has imposed a phaseout of lead additives in gasoline. Compared to the 1975 lead levels, 89 percent of the gasoline will be lead-free by 1985 and 92 percent will be lead free by 1995. With that amount of reduction, lead emissions from the motor vehicle will be insignificant.

project lead analysis

1990 (estimated time of project completion, plus one year) was considered the critical year for the project lead analysis. The results of the 1990 analysis showed minimal amounts of lead concentrations. Future years, such as 1995 or 2000 would be even less.

Although there are no validated line-source models available for estimating lead concentrations along highway corridors, there is a graph-type procedure based on a January 31, 1978 FHWA memorandum**. This procedure was used for the US-12/I-394 build/no-build alternative project air quality lead analyses. The MPCA has reviewed and concurred with this procedure.

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*U.S. Department of Transportation, Memorandum, January 31, 1978.

**FHWA memorandum "Proposed National Ambient Air Quality Standard for Lead" with attachments, January 31, 1978.

background lead concentrations

Two separate analyses must be made to determine total airborne pollutant concentrations at selected receptors. Concentrations resulting from traffic using proposed roadways must be added to concentrations occurring without the influence of those roadways (background concentrations).

Local monitoring is the most accepted means for obtaining background data. The MPCA monitored airborne lead concentrations in the Minneapolis CBD during 1979. Their monitor was located on a roof top between Hennepin and Nicollet Avenues on 3rd Street South. Although not in the project corridor itself, the background data was considered valid for the eastern portion (SR-100 to I-94) of the project.

Information received from MPCA in August, 1980 indicated that the high 1979 quarterly average was 0.75 micrograms per cubic meter (ug/m). Although this included concentrations from local roadways the total amount was used as background. Also, MPCA concurred that a concentration of 0.4 ug/m^3 would be a conservative background estimate for the portion of the project west of SR-100.

Because of the federal phase-out program, the above mentioned background concentrations were reduced by 91 percent to obtain a 1990 background figure.

1990 Lead Background

East of TH 100: $0.75 \times 91\% = 0.07$ ug/m^3
West of TH 100: $0.4 \times 91\% = 0.04$ ug/m^3

receptors

Sixteen receptor sites (eight build and eight no-build) were analyzed along the project route. Receptors were selected at locations that would be subjected to the greatest amounts of lead build up. Care was taken in selecting sites located near high volume intersections, through sections, and areas of environmental interest such as parklands. See layouts on Figures 25 and 26 for receptor locations.

results of project lead analysis

All 1990 project lead analyses for both build and no-build alternatives estimated lead concentrations to be far below the standard 1.5 micrograms per cubic meter as set by the U.S. Environmental Protection Agency. For example, the highest no-build lead concentration (background included) is estimated to be 0.24 ug/m^3 around the Brownie Lake Park area (receptor B1). The highest build concentration is estimated to be 0.33 ug/m^3 around the Brookview Golf Course area (receptor No. 11).

For results of the complete project lead analysis see Figure 27, on page 181.

It is concluded that the area adjacent to the project will not be adversely affected by lead pollution attributable to the motor vehicle.

Total Suspended Particulates (Fugitive Dust)

The seven county Minneapolis/St. Paul area has been designated a non-attainment area for total suspended partiulates (TSP).

At present, Mn/DOT is cooperating with the MPCA in the study of highway related construction as a nontraditional source of fugitive dust. This study will be used to aid the MPCA in their development of control strategies for construction activities. Mn/DOT will assist, wherever possible, in the attainment of the TSP standards. Mn/DOT will comply with MPCA rules and regulations, such as APC 6, in the construction and operation of this facility.

Mesoscale Analysis

The following data was prepared by the Transportation Forecasts Section of Mn/DOT.

The gross emissions (mesoscale) analyses analyzed CO, hydrocarbons (HC), and oxides of nitrogen (NOx) in weighted units of kilograms per day (kg/day). The analysis included both build and no-build alternatives within three geographic areas:

1. Project corridor.
2. Minneapolis Central Business District (CBD).
3. The seven-county metropolitan area.

Geographic areas one and two are pictured in Figure 28, on page 183.

Project Lead Analysis Results

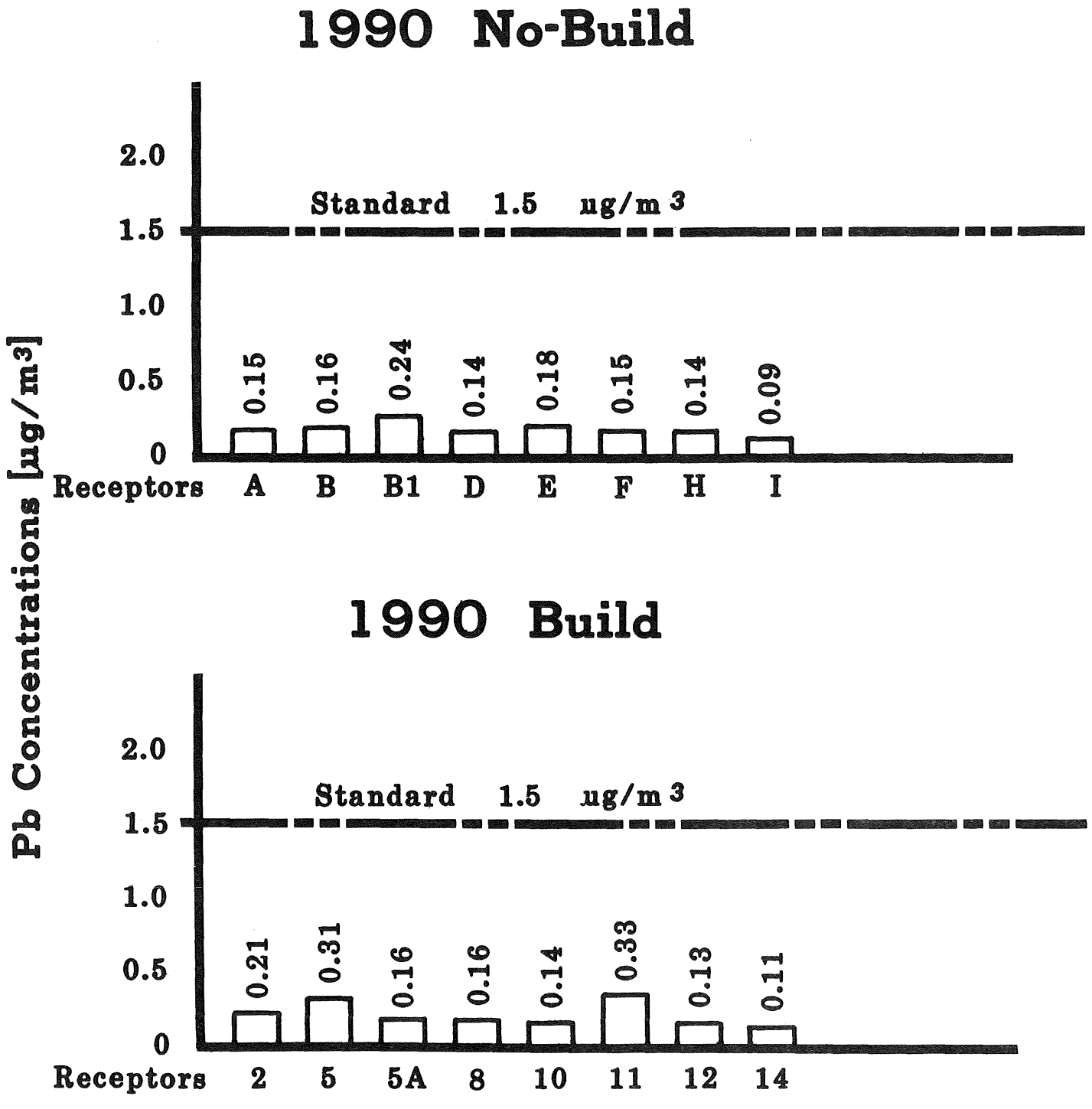
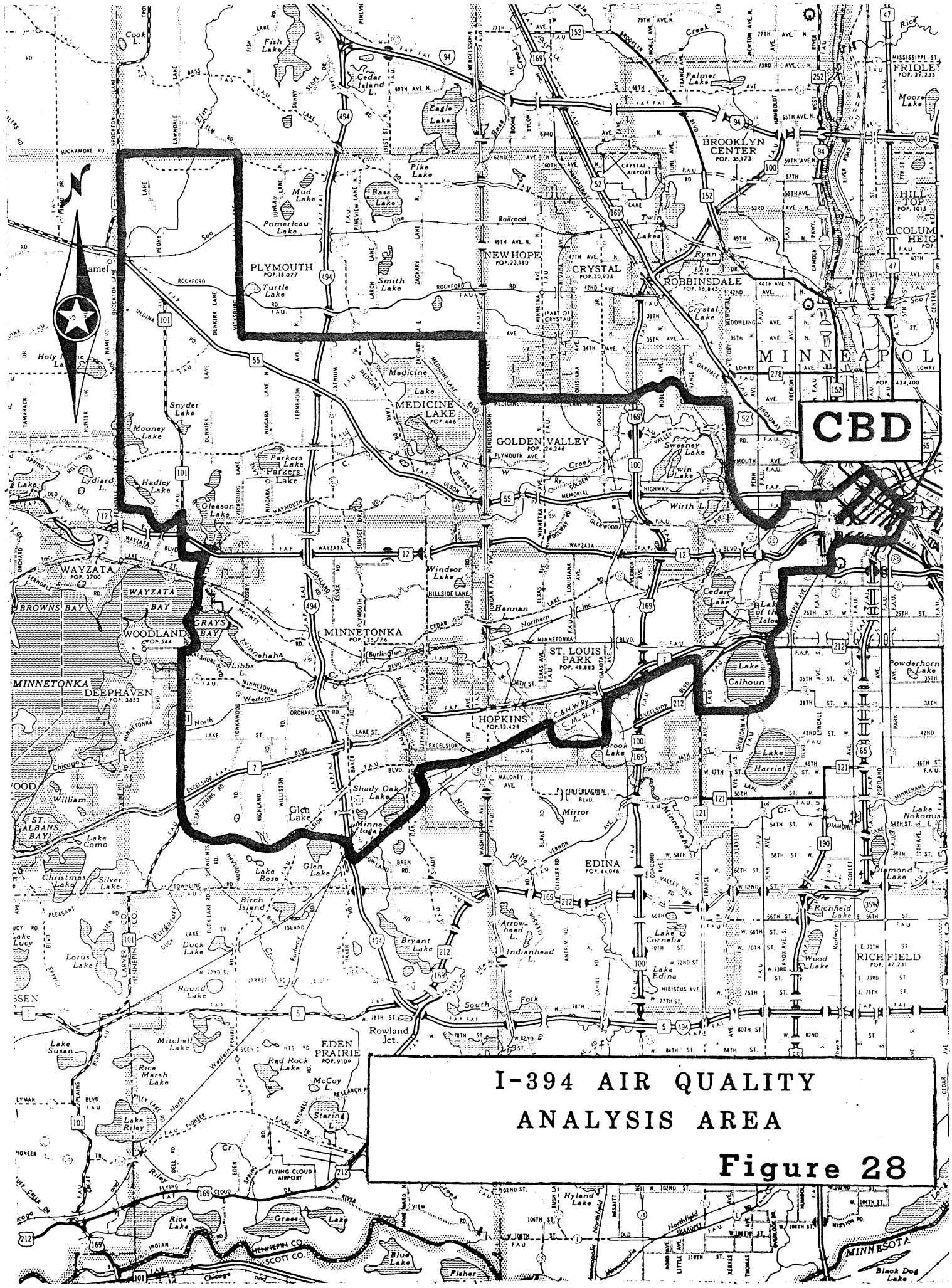


Figure 27


CBD
I-394 AIR QUALITY
ANALYSIS AREA
Figure 28
PLYMOUTH
POP. 18,077
NEW HOPE
POP. 23,180
CRYSTAL
POP. 30,925
BROOKLYN CENTER
POP. 35,173
ROBBINSDALE
POP. 16,845
MINNEAPOLIS
POP. 434,400
GOLDEN VALLEY
POP. 24,246
MEDICINE LAKE
POP. 446
WAYZATA
POP. 3700
WOODLAND
POP. 544
MINNETONKA
POP. 35,776
DEEPHAVEN
POP. 3853
ST. LOUIS PARK
POP. 48,883
HOPKINS
POP. 13,428
EDINA
POP. 44,046
EDEN PRAIRIE
POP. 9109
RICHFIELD
POP. 47,231
FRIDLEY
POP. 29,233
HILLTOP
POP. 1018
COLUMBIA HEIGHTS
POP.
Cook L.
Fish Lake
Cedar Island L.
Eagle Lake
Pike Lake
Bass Lake
Mud Lake
Pomerleau Lake
Turtle Lake
Smith Lake
Medicine Lake
Snyder Lake
Mooney Lake
Parkers Lake
Lydiard L.
Hadley Lake
Gleason Lake
Windsor Lake
Hannan
Northern
Twin Lakes
Sweeney Lake
Cedar Lake
Lake of the Isles
Lake Calhoun
Lake Harriet
Brook Lake
Shady Oak Lake
Glen Lake
Minnetonka
Lake Como
Christmas Lake
Silver Lake
Lake Rose
Birch Island L.
Duck Lake
Lotus Lake
Round Lake
Mitchell Lake
Rice Marsh Lake
Lake Susan
Red Rock Lake
McCoy L.
Staring L.
Lake Riley
Bryant Lake
Arrowhead L.
Indianhead L.
Lake Cornelia
Lake Edina
Wood Lake
Richfield Lake
Mirror L.
Nine Mile Cr.
Minnehaha Cr.
Rowland Jct.
South Fork
Rice Lake
Grass Lake
Blue Lake
Fisher
Hyland Lake
Black Dog Lake
Lake Nokomis
Diamond Lake
Powderhorn Lake
Lake Minnetonka
Lake Minnetonka
Lake Minnetonka

Emissions were calculated using the SAPOLLUT-SAPLSM pollution package* for the four freeway lanes. The emissions calculations for the reversible lanes were computed manually and added to get total emissions. For the build condition, US-12/I-394 was modeled with the Third Avenue Distributor constructed. For the no-build condition, the present US-12 roadway with no Third Avenue Distributor was modeled.

The emissions were calculated according to vehicular emissions factors published by the U.S. EPA**. The EPA Mobile 1 computer program, which based on this EPA document, was used to make the calculations. Ambient air temperatures used in the calculation are 20°F fall and winter temperatures for CO, and 75°F summer temperatures for HC and NOx. No vehicular inspection maintenance program is assumed in these calculations.

For more information, please refer to the 1980 Air Quality Report.

results

Results of the analysis are shown in Tables 1, 2 and 3 for the years 1990, 2000 and 2010. The results show reductions in HC and CO with the Build alternate. The NOx emissions are higher with the Build alternate except in the CBD where NOx is lower with the Build alternate.

The lowest emissions occur in 1990 compared to 2000 and 2010 for all areas except in the Minneapolis CBD where the HC and CO emissions are lowest in the year 2000. The emissions rates from vehicles will have reached a very low level by 1990. Therefore, there is only a small improvement between 1990 and the year 2000, and no improvement after the year 2000. The expected increases in vehicle miles traveled (VMT) throughout the

*Estimating the Impact on Air Quality due to vehicular emissions resulting from a traffic assignment FHWA, February 1975.

**Mobile Source Emissions Factors: For low altitudes only (EPA-400/9-78-006, March 1978.

period results in higher area emissions in most cases as noted above. However, the area emissions are less than those in 1982 when the Federal Pollutant Standards are to be met. In 1982 the 7-county area emissions of HC are expected to be 116,900 kg/day compared to 57,860 kg/day in 1990, 60,910 kg/day in 2000 and 71,870 kg/day in 2010.

TABLE 16: AIR QUALITY COMPARISIONS

Year 1990 Emissions (kg/day)				
Pollutant	City Area	Build	No-Build	Difference - Build Versus No-Build
HC	Corridor	4,530	4,650	- 2.6%
	Mpls. CBD	352	359	- 1.9%
	7-County	57,860	58,010	- 0.3%
NOx	Corridor	8,630	8,350	+ 3.4%
	Mpls. CBD	234	238	- 1.7%
	7-County	89,510	89,240	+ 0.3%
CO	Corridor	55,200	55,970	- 1.4%
	Mpls. CBD	4,080	4,170	- 2.2%
	7-County	691,320	692,390	- 0.2%

TABLE 17: AIR QUALITY COMPARISONS

Year 2000 Emissions (kg/day)				
Pollutant	City Area	Build	No-Build	Difference - Build Versus No-Build
HC	Corridor	4,870	5,000	- 2.6%
	Mpls. CBD	342	349	- 2.0%
	7-County	60,910	61,060	- 0.2%
NOx	Corridor	9,700	9,380	+ 3.4%
	Mpls. CBD	223	227	- 1.8%
	7-County	99,460	99,160	+ 0.3%
CO	Corridor	57,500	58,300	- 1.4%
	Mpls. CBD	3,680	3,760	- 2.1%
	7-County	712,700	713,800	- 0.2%

TABLE 18: AIR QUALITY COMPARISIONS

Year 2010 Emissions (Kg/day)				
Pollutant	City Area	Build	No-Build	Difference - Build Versus No-Build
HC	Corridor	5,890	6,050	- 2.6%
	Mpls. CBD	359	366	- 1.9%
	7-County	71,870	72,050	- 0.2%
NOx	Corridor	11,740	11,350	+ 3.4%
	Mpls. CBD	234	238	- 1.7%
	7-County	117,360	117,010	+ 0.3%
CO	Corridor	69,580	70,540	- 1.4%
	Mpls. CBD	3,860	3,950	- 2.3%
	7-County	841,000	842,300	- 0.2%

Conclusion

Based on the air quality analysis, Mn/DOT has concluded that proposed US-12/I-394 will be in conformance with the Air Quality Control Plan for Transportation as contained in the revised State Implementation Plan. This conclusion was made because a thorough analysis revealed no violations of either Federal or State established air quality standards. Construction of the proposed facility will aid in the overall reduction of CO and hydrocarbon emissions within the seven county metropolitan area.

This project is in an air quality nonattainment area which has transportation control measures in the State Implementation Plan (SIP) which was approved by the Environmental Protection Agency in June, 1980. The transportation plan is being reviewed by the Federal Highway Administration. The plan will conform to the SIP. The transportation improvement program (TIP) conforms to the SIP. This project was included in the plan and will be included in the TIP, both conforming to the SIP. Therefore, pursuant to 23, CFR 770, this project conforms to the SIP.

This project is consistent with the 1990 Transportation Policy Plan as established and adopted by the Metropolitan Council. Construction and operation of this project will comply with state air quality rules and regulations.

An Indirect Source Permit will be applied for from the PCA prior to construction.

This project is considered to be a Type 1A project (construction or reconstruction of a highway section with full or partial access control) as defined in Federal-Aid Highway Program Manual (FHPM) 7-7-3.

Noise level predictions were obtained for the year 2000 for both the build and no-build alternatives through the use of the FHWA Noise Prediction Model. Existing (or ambient) noise levels were obtained by actual field measurements during the summer of 1978. In Table 21 both the "build" and "no-build" alternative noise levels for the year 2000 are shown, plus the existing noise levels.

The year 2000 noise analysis represents "worst case" conditions for both "build" and "no-build" alternatives. For the daytime predictions, traffic volumes used represent design hourly volume of trucks and the lower of design hourly volume or level of service "C" volumes for autos.

Permitted noise levels vary with the type of land use predominating within an area. Both the Federal government and the State of Minnesota have adopted regulations aimed at controlling noise pollution. The Federal Design Noise Levels are shown in Table 19, as follows:

TABLE 19: DESIGN NOISE LEVEL/LAND USE RELATIONSHIPS----FHWA

Land Use Category	Design Noise Level - L_{10}	Description of Land Use Category
A	60 dBA (exterior)	Tracts of lands in which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks, or open spaces which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	70 dBA (exterior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, picnic areas, recreation areas, playgrounds, active sports areas and parks.
C	75 dBA (exterior)	Developed lands, properties or activities not included in categories A and B above.
D	n/a	Undeveloped lands.
E	55 dBA (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries hospitals and auditoriums.

The Minnesota Pollution Control Agency's (PCA) standards for noise level control are:

TABLE 20: NOISE LEVEL STANDARDS----MPCA**

Classification	Land Use	Daytime Noise Level (7 AM to 10 PM)	Nighttime Noise Level (10 PM to 7 AM)
NAC*-1	Residential	L_{10} of 65 dBA	L_{10} of 55 dBA
NAC-2	Commercial	L_{10} of 70 dBA	L_{10} of 70 dBA
NAC-3	Industrial	L_{10} of 80 dBA	L_{10} of 80 dBA

*Noise Area Classification.

**MPCA standards are not applicable to Interstate highways. These standards are given only for information.

EXISTING and FUTURE EXTERIOR NOISE LEVELS — Daytime and Nighttime

Table 21

Noise Susceptible Area	Predominant Land Use	Number of Structures or Activity Centers in Area	Assumed Receptor Location (Distances are from Edge of Roadway) Boundary Limits	Distance(ft)	Applicable FHWA L_{10} Design Noise Level	Daytime[1] MPCA Noise Level Standard L_{10}	Daytime[1] MPCA Noise Level Standard L_{50}	Nighttime[1] MPCA Noise Level Standard L_{10}	Nighttime[1] MPCA Noise Level Standard L_{50}	Existing Noise Level in dBA Monitored L_{10}	Existing Noise Level in dBA Monitored L_{50}	Noise[2] Abatement Planned	Future Traffic Noise Levels in dBA-Year 2000 Predicted: Build Alternative, Without Noise Abatement L_{10}	Build Alternative, Without Noise Abatement L_{50}	Build Alternative, With Noise Abatement L_{10}	Build Alternative, With Noise Abatement L_{50}	No Build Alternative L_{10}	No Build Alternative L_{50}	Exception Needed
1	Parkland	2	I-94 to	100-170	70	70	65	70	65	63-74	60-72	YES	73		70		73-75		
	School	1		200	70	70	65	70	65	NONE TAKEN		NO	69	N/A	N/A	N/A	70	N/A	NO
	Residential	42	Morgan Ave.	50-200	70	65	60	55	50	66-67	62-64	YES	72-73		70		67-73		
2	Commercial	4	Morgan Ave. to Thomas Ave.	140	75	70	65	70	65	74	70	NO	70	N/A	N/A	N/A	77	N/A	NO
3	Residential	27	Thomas Ave. to	100-130	70	65	60	55	50	61-74	55-71	YES	70-76		70		72-73		
	Commercial	4	Theodore Wirth Pkwy.	90	75	70	65	70	65	74	71	NO	74	N/A	N/A	N/A	75	N/A	NO
4	Parkland	1	Theodore Wirth Pkwy. to East prop. line of Prudential Life Insurance Company	200-400	70	70	65	70	65	52-62	50-57	YES[3]	59-72	N/A	70	N/A	70	N/A	NO
5	Commercial	1	East prop. line of Prudential Life Insurance Company to France Ave.	200	75	70	65	70	65	59	56	NO	65	N/A	N/A	N/A	70	N/A	NO
6	Residential	45	France Ave. to Cedar Ave. (on T.H. 100)	80-230	70	65	60	55	50	54-70	52-67	YES	69-78	N/A	70	N/A	69-76	N/A	NO
7	Commercial	33	Cedar Ave. to Pennsylvannia Ave.	60-325	75	70	65	70	65	62-68	59-63	NO	61-74	N/A	N/A	N/A	69-73	N/A	NO
8	Commercial	4	Pennsylvannia Ave. to	70-90	75	70	65	70	65	68	62	NO	72		N/A		72		
	Residential	19	1/2 block west of Wisconsin Ave.	65-165	70	65	60	55	50	70-72	65-68	YES	72 76	N/A	70	N/A	71-72	N/A	NO
9	Residential	20	1/2 block west of	80-230	70	65	60	55	50	58-63	53-60	YES	65-75		70		73		
	Commercial	6	Wisconsin Ave. to 16th Ave.	100-150	75	70	65	70	65	63-71	60-68	NO	68-70	N/A	N/A	N/A	69-70	N/A	NO
	Parkland	1	on CSAH 18	700	70	70	65	70	65	58	56	NO	60		N/A		63		
10	Residential	25	16th Ave. to	80-530	70	65	60	55	50	66-70	62-65	YES	63-76		70		64-73		
	Commercial	7	1/2 block east of	100-170	75	70	65	70	65	68	64	NO	68-71	N/A	N/A	N/A	69-70	N/A	NO
	Church	1	Archwood Road	130	70	70	65	70	65	65	62	NO	68		N/A		67		
11	Commercial	10	1/2 block east of	100-150	75	70	65	70	65	58-68	54-64	NO	67-74		N/A		61-70		
	Parkland	1	Archwood Road to 1/2 block	100	70	70	65	70	65	66	62	NO	68	N/A	N/A	N/A	67	N/A	NO
	Vacantland		east of Fairfield Road		NO STANDARDS →					NONE TAKEN		NO	N/A		N/A		N/A		
12	Residential	6	1/2 block east of Fairfield Road to White Birch Road (on I-494)	300-500	70	65	60	55	50	58-61	55-58	NO	69	N/A	N/A	N/A	68	N/A	NO
13	Residential	32	I-494 to 800 ft. west	100-400	70	65	60	55	50	59-71	56-66	YES	64-74		70		63-71		
	Church	1	of Holdridge Ave.	140	70	70	65	70	65	59	56	NO	64	N/A	N/A	N/A	68	N/A	NO

1. MPCA Standards not applicable to Interstate Highways
2. Final determination to be made later based on cost-effectiveness and public acceptance.
3. 5-6ft. Visual and Noise Barrier

EXISTING and FUTURE EXTERIOR NOISE LEVELS Daytime and Nighttime

Table 21

Noise Susceptible Area	Predominant Land Use	Number of Structures or Activity Centers in Area	Assumed Receptor Location (Distances are from Edge of Roadway) Boundary Limits	Distance(ft)	Applicable FHWA L_{10} Design Noise Level	Daytime[1] MPCA Noise Level Standard L_{10}	Daytime[1] MPCA Noise Level Standard L_{50}	Nighttime[1] MPCA Noise Level Standard L_{10}	Nighttime[1] MPCA Noise Level Standard L_{50}	Existing Noise Level in dBA Monitored L_{10}	Existing Noise Level in dBA Monitored L_{50}	Noise[2] Abatement Planned	Future Traffic Noise Levels in dBA-Year 2000 Predicted: Build Alternative, Without Noise Abatement L_{10}	Build Alternative, Without Noise Abatement L_{50}	Build Alternative, With Noise Abatement L_{10}	Build Alternative, With Noise Abatement L_{50}	No Build Alternative L_{10}	No Build Alternative L_{50}	Exception Needed
14	Commercial	12	Holdridge Ave. to I-494	100-200	75	70	65	70	65	66-70	60-64	NO	67-70	N/A	N/A	N/A	67-72	N/A	NO
15	Residential	7	I-494 to 300 ft. west of Horn Drive	600-750	70	65	60	55	50	59	57	NO	61	N/A	N/A	N/A	61	N/A	NO
16	Commercial	21	300 ft. west of Horn Drive	120-170	75	70	65	70	65	67-70	62-65	NO	70-71	N/A	N/A	N/A	68-71	N/A	NO
	Church	1	to CSAH 73	200	70	70	65	70	65	70	65	NO	70		N/A		68		
	Vacantland				NO STANDARDS →					NONE	TAKEN	NO	N/A		N/A		N/A		
17	Vacantland		CSAH 73 to		NO STANDARDS →					NONE	TAKEN	NO	N/A		N/A		N/A		
	Commercial	11		100-400	75	70	65	70	65	59-72	56-67	NO	64-70	N/A	N/A	N/A	66-72	N/A	NO
	Parkland	1	CSAH 18	300	70	70	65	70	65	62	59	NO	65		N/A		66		
18	Commercial	1	CSAH 18 to Boone Ave.	350-700	75	70	65	70	65	63	60	NO	62-66	N/A	N/A	N/A	67	N/A	NO
19	Parkland	1	Boone Ave. to	100-150	70	70	65	70	65	62-66	57-62	YES	71-72		70		69-71		
	Commercial	1		170	75	70	65	70	65	70	67		72	N/A	70	N/A	71	N/A	NO
	Residential	8	Rhode Island	100-280	70	65	60	55	50	69-70	64	YES	71-72		70		67-71		
20	Commercial	29	Rhode Island to Circle Downs Road	100-200	75	70	65	70	65	62-69	56-63	NO	67-73	N/A	N/A	N/A	66-73	N/A	NO
21	Residential	10	Circle Downs Road to Glenwood Ave. (on T.H. 100)	80-200	70	65	60	55	50	56-59	54-56	YES	73-77	N/A	70	N/A	69-75	N/A	NO
22	Residential	34	Glenwood Ave. to	100-210	70	65	60	55	50	58-70	56-64	YES	69-75		70		69-75		
	Parkland	1	France Ave.	150	70	70	65	70	65	60	57	YES[4]	65	N/A	63	N/A	69	N/A	NO
23	Parkland	1	France Ave. to Xerxes Ave. (Theodore Wirth Park)	90-140	70	70	65	70	65	65-66	60	YES	70-78	N/A	70	N/A	68-75	N/A	NO
24	Commercial	1	Theodore Wirth Park to 1/2 block west of Upton Ave.	100	75	70	65	70	65	71	68	YES[5]	73	N/A	70	N/A	74	N/A	NO
25	Residential	17	1/2 block west of Upton Ave. to	90-180	70	65	60	55	50	62-74	59-67	YES	71-74		70		71-78		
	Parkland	1	Logan Ave.	160	70	70	65	70	65	63	59	YES[3]	68	N/A	68	N/A	73	N/A	NO
26	Railroad Yards		Logan Ave. to	150-400	NoStand.	80	75	80	75	NONE	TAKEN	NO	64-73		N/A		73		
	Commercial	1	I-94	320	75	70	65	70	65	72	68	NO	72	N/A	N/A	N/A	72	N/A	NO

4. Park is in between residential neighborhoods and is listed separately for State EIS purposes only
5. Barrier height needed for the adjacent residential receptors

It should be noted that although state noise standards exist, they are technically not applicable to Interstate highways due to action by the 1981 State Legislature. Although discussions contained in this section consider only the FHWA Design Noise Levels (DNL), achievement of state standards will be considered on a case-by-case basis and may be incorporated into the project if cost-effective and desirable. Any such analysis will be documented in the Final Noise Report, which will be prepared during the detail design phase of project development.

Anticipated Impacts

Existing land use along the project corridor is a mixture of residential, parklands, commercial, industrial and small amounts of undeveloped lands. For purposes of analysis, the corridor was divided into 26 areas of generally homogenous land use, as depicted in Figure 29 (N1-N7) and Table 21.

In each area, the measured existing noise level is shown as well as the year 2000 predictions for both the "build" and "no-build" alternatives. It should be noted that predicted noise levels are usually higher than actual measured noise levels because "worst case" conditions are used for predictions. Thus, the impacts noted under both the "build" and "no-build" conditions tend to be overstated.

build alternative

Under the "build" alternative, where warranted, and cost-effective noise abatement will be provided in residential and park areas to reduce noise levels to or below applicable FHWA DNL's. However, no abatement is planned in commercial or industrial areas. The area-by-area analysis is reflected in Table 21. The Final Noise Report, which will be prepared at a later date, will reflect specific noise abatement requirements to be included in the project.

In the event it is found that applicable DNL's cannot be achieved, requests for "exceptions" will be documented in that report. However, at this time, it appears that no exceptions will be required.

no build alternative

Under the "no-build" alternative noise levels throughout the corridor will tend to increase, and in many cases, will exceed applicable standards. No noise abatement would be provided under this alternative. The results of this analysis are shown in Table 21.

Exceptions to FHWA Design Noise Levels

As mentioned previously, under the "Build" alternative with planned abatement, it appears that noise levels throughout the corridor will be in compliance with applicable FHWA Design Noise Levels. Exceptions may be requested on the basis of excessive cost, unfeasibility, or the public not wanting abatement structures. This will be studied in more detail and documented in the Final Noise Report, which will be prepared prior to construction.

Construction Noise

Construction activities are expected to last approximately 5 construction seasons. Although no one area should be exposed to construction noise for the full 5 years, each area will probably be impacted from time to time during each of those years. Most of the construction noise impacts will affect residents and businesses within the cities of Minneapolis, Golden Valley, Minnetonka, Wayzata and Saint Louis Park where I-394 will be depressed for much of its length. Throughout the project length, activities such as earth moving, trucks hauling, pile-driving, and grading operations will contribute to the construction noise impact.

There may be certain areas where the proposed noise abatement barriers can be constructed early in the construction stage to help alleviate the construction noise impact. This will be studied during the design stage and these areas identified in the Final Noise Analysis Report.

All of the affected municipalities have adopted noise control ordinances which will also help to minimize the impact. Most are similar to Saint Louis Park's ordinances which is basically a nuisance ordinance limiting hours of noisy construction to between the hours of 6:30 AM and 10:30 PM, Monday through Saturday, and no construction on Sunday without City approval. Minneapolis,

I-394

scale ft 0 250 500

north

NOISE ANALYSIS

Fig. N1

1978 AMBIENT NOISE LEVEL	00
2000 PREDICTED NOISE LEVEL	00
AREA BOUNDARIES	
AREA IDENTIFICATION NUMBER	00
PLANNED NOISE ABATEMENT	

C.S.A.H. 15

63 67 70 68 69 70 66 67 65 69

14

Parkers Lake Rd.

71 68 70 70 69 70 59 64 52 63 64 69 68 63 70 65 70

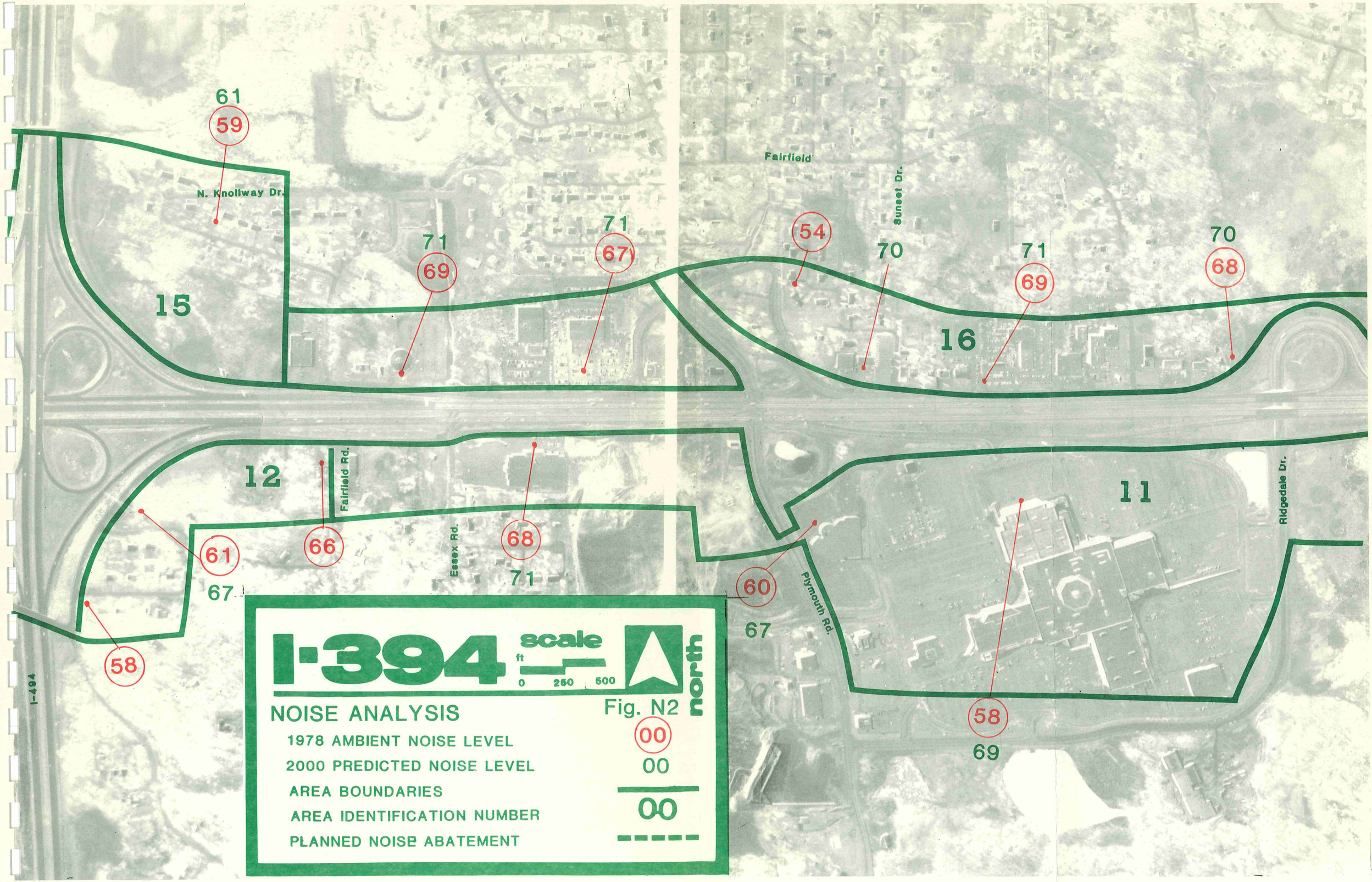
13

Holdridge Circle

Crosby Rd.

Linner Rd.

I-494


61
59
N. Knollway Dr.
15
71
69
71
67
Fairfield
Sunset Dr.
54
70
71
69
70
68
16
12
Fairfield Rd.
61
66
Essex Rd.
68
71
67
58
60
67
Plymouth Rd.
11
Ridgedale Dr.
58
69
I-494
I-394
scale
ft
0
250
500
north
NOISE ANALYSIS
Fig. N2
1978 AMBIENT NOISE LEVEL
00
2000 PREDICTED NOISE LEVEL
00
AREA BOUNDARIES
AREA IDENTIFICATION NUMBER
00
PLANNED NOISE ABATEMENT

I-394

scale ft 0 250 500

north

NOISE ANALYSIS

Fig. N3

1978 AMBIENT NOISE LEVEL	(00)
2000 PREDICTED NOISE LEVEL	00
AREA BOUNDARIES	———
AREA IDENTIFICATION NUMBER	00
PLANNED NOISE ABATEMENT	- - - - -

Shelard Pkwy.

Merrivale Rd.

Wilshire Dr.

Westwood Rd.

Hillsdale Ave.

C.S.A.H. 73

Ford Rd.

16

17

10

11

70 (70)

70

64 (59)

70 (71)

70 (71)

65 (62)

69

72

67 (62)

66

68

60

61

67

74

68

71

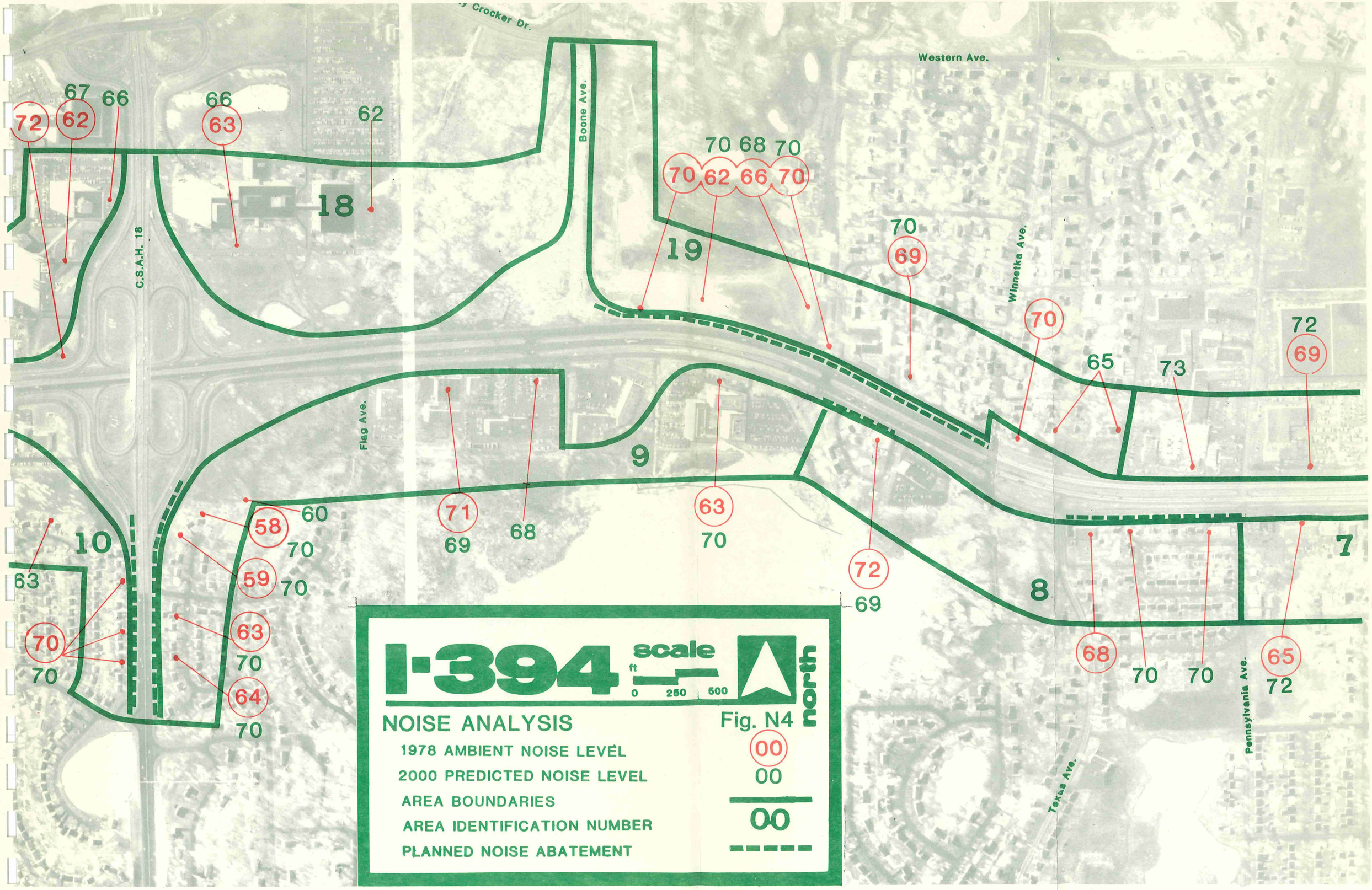
65

68

63

70

70


Crocker Dr.
Western Ave.
Boone Ave.
C.S.A.H. 18
Flag Ave.
Winnetka Ave.
Pennsylvania Ave.
Texas Ave.
18
19
9
10
8
7
72 67 62 66 66 63 62
70 70 62 68 66 70 70
70 69
70
65
73
72 69
71 69
68
63 70
72 69
63
70
58 60 70
59 70
63 70
64 70
68
70
70
65 72
I-394
scale
ft
0 250 500
north
NOISE ANALYSIS
Fig. N4
1978 AMBIENT NOISE LEVEL
2000 PREDICTED NOISE LEVEL
AREA BOUNDARIES
AREA IDENTIFICATION NUMBER
PLANNED NOISE ABATEMENT

I-394

scale ft 0 250 500

north

NOISE ANALYSIS

Fig. N5

1978 AMBIENT NOISE LEVEL	00
2000 PREDICTED NOISE LEVEL	00
AREA BOUNDARIES	
AREA IDENTIFICATION NUMBER	00
PLANNED NOISE ABATEMENT	

Glenwood Ave.

T.H. 100

Turners Crossroad

Xenia Ave.

Market St.

Florida Ave.

Circle Down

W.14th St.

Colorado Ave.

W.16th St.

Vernon Ave.

Louisiana Ave.

20

7

67 63

71 68

73 62

68 65

73 66 58

73 70 65 59

65 67

68

64

70

68

63 68

61 64

I-394

scale ft 0 250 500

north

NOISE ANALYSIS

Fig. N6

1978 AMBIENT NOISE LEVEL	00
2000 PREDICTED NOISE LEVEL	00
AREA BOUNDARIES	
AREA IDENTIFICATION NUMBER	00
PLANNED NOISE ABATEMENT	

Glenwood Ave.
T.H. 100
Parkview Ter.
Theodore Wirth Pkwy.
Sunset Ridge
Tyrol Trail
Cedar Lake Rd.
Avondale Rd.
June Ave.
Douglas Ave.
T.H. 100

I-394

scale 0 250 500

north

NOISE ANALYSIS

Fig. N7

1978 AMBIENT NOISE LEVEL	(00)
2000 PREDICTED NOISE LEVEL	00
AREA BOUNDARIES	———
AREA IDENTIFICATION NUMBER	00
PLANNED NOISE ABATEMENT	- - - - -

Upton Ave.
Thomas Ave.
Queen Ave.
Cedar Lake Rd.
Oliver Ave.
Laurel Ave.
Glenwood Ave.
I-94
B.N. Inc.
Madera Ave.
Mt. Curve Ave.
Kenwood Pkwy.
Wayzata Blvd.
Lyndale Ave.
Hennepin Ave.

70 70 70 70 70 70 70 70
71 73 71 74 62 73 69 62

68

25

64 68 73

26

72 72

69

1

63 70

3

2

70 70 74

67 66 67

67 74
70 70

on the other hand, has a very rigid noise control ordinance which essentially limits the hours of construction to between 7:00 AM and 6:00 PM. This ordinance also sets decibel limits on certain activities such as jack hammering and pile driving. State forces will give full cooperation to the city inspection forces in enforcing these ordinances.

Coordination With Local Officials

Mn/DOT has furnished all Cities, Counties and Regional Development Commissions in Minnesota with copies of "The Audible Landscape." This handbook provides guidance for land use planning, plat layout and building design for compatible development near traffic noise. Additional copies are available upon request.

Proposed plats for land adjacent to all Minnesota state highways are submitted to the Department for review prior to plat approval. When potential for noise impact is identified in the review process, it is noted in the review comments to insure that the approving authority is aware of an existing or potential noise impact on proposed noise sensitive areas. A Mn/DOT strategy will discourage incompatible development along a highway by disclaiming any responsibility for protecting this development from noise impacts. This strategy is consistent with FHPM 7-7-3 (May 24, 1976) which disclaims federal noise abatement responsibility (in most instances) for development planned after the date of public knowledge of a highway project.

Drainage

Proposed I-394 will be located within the Bassett Creek and Minnehaha Creek Watersheds (Figure 13, pages 112-113). Neither creek is crossed by the alignment. Approximately 80 percent of surface runoff from US-12 flows north into the Bassett Creek Watershed, while the rest moves south into the Minnehaha Creek Watershed.

Bassett Creek and Minnehaha Creek Watersheds

The Bassett Creek Watershed is approximately 43 square miles and is mostly urban. The creek's source is approximately one mile north of Medicine Lake. Bassett Creek discharges into Medicine Lake, outlets from the south end of Medicine Lake and meanders approximately 10.5 miles until it enters an underground conduit in Minneapolis. The creek is conveyed by conduit for 1.5 miles to its final outlet into the Mississippi River.

Minnehaha Creek Watershed is approximately 184 square miles and contains numerous wetlands and extensive urban development. Minnehaha Creek meanders for approximately 20 miles from its source, in Lake Minnetonka, to the Mississippi River.

drainage modification

The direction of drainage flow from US-12 is shown in Figure 13. US-12/I-394 will have essentially the same drainage patterns with several modifications. These include improvement of existing storm sewers, construction of ponds to contain highway runoff, and diversion of I-394 runoff from Brownie Lake. Construction of storm sewers and ponding areas is essential to accommodate runoff that will be generated by I-394. New storm sewers will be built along Colorado Avenue and Louisiana Avenue. The storm sewers near Colorado and Louisiana Avenues will discharge into wetland 7 (a series of ponds) which outlet into Sweeney Lake. (Figure 13). Storage ponds will serve to reduce peak flows of I-394 runoff and to settle suspended sediment.

diversion of I-394 from Brownie Lake

At the request of the Minneapolis Park Board, runoff from I-394 will be diverted from Brownie Lake. Potential impacts of highway runoff on Brownie Lake were previously analyzed and discussed in the I-394 Water Resources Assessment, which is available for review at the Mn/DOT District 5, Golden Valley office.

To accomplish diversion of I-394 runoff from Brownie Lake, the runoff will be channeled to Pond G near Penn Avenue (Figure 13). This pond will be constructed to reduce peak flows of highway runoff. The pond will outlet into an existing conduit along Morgan Avenue and then into Bassett Creek.

Water Quality

Street surface runoff has been identified as a significant contributor of water pollutants, especially heavy metals (Sartor and Boyd 1972, Pitt and Amy 1973, Shaheen 1975). The major pollutants which have been found in highway runoff include the following:

pollutant sources

1. Particulate matter generated by erosion during construction, winter sanding activities, accumulation of dust, litter, and wear of the roadway itself.

2. Chloride from the application of highway deicing chemicals.

3. Pollutants associated with motor vehicle emissions and the wear of tires and mechanical parts.

   a) Metals such as lead, zinc and copper.
   b) Petroleum product residues such as rubber, grease and oil.

4. Other pollutants.

   a) Pesticides and herbicides.
   b) Plant nutrients such as nitrogen and phosphorous.

These other pollutants result from the normal accumulation of dust and dirt on paved surfaces. Many of the pollutants such as nutrients, oxygen-demanding substances and pesticides adhere to or are associated with particulate matter (Sartor and Boyd, 1972).

quality of freeway runoff

The impact I-394 runoff will have on receiving waters, such as Bassett Creek and Minnehaha Creek, is reflected by the average concentrations of pollutants in the runoff and volume of runoff produced. Table 22 shows the concentrations of suspended solics, BOD, COD, ortho-phosphorus, nitrate, chloride, lead, copper and zinc in freeway runoff and in urban stormflow from typical urban surroundings. We anticipate that the average concentrations of pollutants in the runoff from the roadway surface and surrounding right-of-way would be most similar to those obtained in St. Paul, Minnesota, and Milwaukee, Wisconsin study sites.

TABLE 22

Average Pollutant Concentrations in Urban Stormflow and Freeway Runoff (mg/l)									
Runoff Source*	Total Suspended Solids	BOD	COD	Ortho P hosphorus (PO_4)	Nitrate (NO_3-N)	Chloride (CL)	Lead (Pb)	Copper (Cu)	Zinc (Zn)
Urban Stormflow[1] Windsor, Ontario	390	16.9	-	.39	.85	-	-	-	-
Urban Stormflow[1] Racine, Wisc.	179	89.6	-	-	-	-	-	-	-
Urban Stormflow[2] Lincoln, Nebraska	828	22.1	156.4	.16	.85	-	-	-	-
Freeway I-94[2] St. Paul, MN	79	16.0	54	-	.43	11	.410	.027	.140
Freeway I-794[3] Milwaukee, Wisc.	138	-	105	.31	-	63	1.50	.10	.35
Freeway (Hwy. 45)[3] Milwaukee, Wisc.	396	-	120	.48	-	229	.78	.08	.39

*Winter samples not represented.

[1]Huber, W.C. 1979. Urban Rainfall-Runoff-Quality Data Base. EPA-600/8-79-004.

[2]Pederson, D.H. 1979. Unpublished data, Minnesota Department of Transportation, Water Quality Unit.

[3]Envirex, 1981. Characteristics of Runoff from Operating Highways. FHWA/RD-81/045.

The preceeding table provides some evidence suggesting that freeway runoff contains lower concentrations of suspended solids, oxygen demanding substances and nutrients, such as orthophosphorous, than urban runoff. Comparing the pollutant concentrations found in runoff from the Saint Paul freeway to runoff from the Milwaukee sites shows that concentrations of these parameters from Saint Paul are lower. It is expected that runoff from I-394 will be more similar to the Saint Paul site than the Milwaukee site becasue of geographic and design similarities.

quality of Bassett Creek

The average concentrations of pollutant constituents in freeway runoff and urban stormflow may also be compared to the average concentations of pollutant constituents in Bassett Creek. Bassett Creek will receive much of the runoff from I-394. Table 23 shows average concentrations of total suspended solids, BOD, COD, chloride, lead, copper and zinc for Bassett Creek in the I-394 corridor.

quality of Minnehaha Creek

Water quality data for Minnehaha Creek is less comprehensive than that available for Bassett Creek. Available data is indicated in Table 23. Minnehaha Creek will receive indirect runoff from I-394. Drainage from I-394 will enter a series of wetlands and ponds prior to discharge into the creek.

MPCA classification

The Minnesota Pollution Control Agency classifies Bassett Creek as 2B, 3C, 4A, 4B, 5 and 6. The classification system is based on use and maintenance of the ambient quality of receiving waters. The six major uses are:

1. Domestic Consumption.
2. Fisheries and Recreation.
3. Industrial Consumption.
4. Agriculture and Wildlife.
5. Navigation and Waste Disposal.
6. Other uses.

Minimum chemical and biological quality standards are denoted by the letters A through D. Classification A is most restrictive (represents highest quality receiving waters) and D is least restrictive. Minnehaha Creek which will also receive indirect runoff from I-394, is classified the same as Bassett Creek. Applicable water quality standards are given in Table 23.

TABLE 23

Average Pollutant Concentrations in Bassett and Minnehaha Creeks (mg/l)

Sample Site	Total Suspended Solids	BOD	COD	Chloride (Cl)	Lead* (Pb)	Copper* (Cu)	Zinc* (Zn)
Bassett Creek[1] near intersection of Golden Valley Rd. and Theodore Wirth Parkway	19.5	30.3	25.1	67.0	.05	.05	.02
Bassett Creek[1] near Boone Avenue	27.7	3.4	21.8	74.3	.12	.05	.01
Minnehaha Creek[2] at Hiawatha Avenue	9.7	-	-	64.8	-	-	-
MPCA Water Quality Standards for Bassett Creek	-	-	-	250	.05	.01	-

*Average Concentration less than indicated value.

[1]Minnesota Department of Transportation, Water Quality Unit. 1980. Water Quality Base Line Data for Bassett Creek.

[2]E.A. Hickok and Associates - Water Quality Data for 1978-1970.

operational impacts

I-394 will increase the amount of runoff generated in the project corridor by increasing the area of impervious surface. The pollutant load delivered to Bassett Creek and other receiving waters will probably not increase significantly because the concentrations of pollutants generated by freeway surfaces are comparable to or less than that of stormflow from the surrounding urban watershed.

minimization of harm-ponding areas

Ponding areas will be provided for highway drainage prior to discharge into receiving waters. Ponding areas provide the best means of reducing peak runoff volumes from I-394 and improving water quality through sedimentation. Sedimentation of particulates in ponds can remove up to 65 percent of the suspended solids, 50 percent of the BOD, 47 percent of the total phosphate and 62 percent of the lead (Whipple, 1980).

de-icing salt

De-icing salt applied by Mn/DOT, District 5, is typically 98 percent soldium chloride (NaCl) and 2 percent calcium chloride (CaCl). Approximately 8 tons per lane mile of de-icing salt would be applied to I-394 each winter.

de-icing salt impacts on biota

Sodium Chloride is a fairly benign pollutant and can be tolerated by most organisms at very high concentrations. Lethal concentrations were noted in fish when concentrations reached 8000 mg/l (Clemens and Jones, 1954), in fish fry at a level of 3800 mg/l (Edminister and Gray, 1948) and in invertebrates at 3000 mg/l (Anderson, 1948); Clemens and Jones, 1954). Concentrations of 2000 mg/l have been shown to affect development of fish eggs (Doudoroff and Katy 1953). Much lower concentrations (50 mg/l) are thought to change the species composition of aquatic plants (Peterson 1974).

Mn/DOT research has shown that concentrations of chloride seldom exceed 250 mg/l in stormflow from an urban freeway. Snowmelt runoff contains much higher chloride concentrations, which are dependent on flow rate. At flow rates less than .04 CFS (cubic feet per second) the median chloride concentration is 7000 mg/l. At flow rates greater than 0.1 CFS the median chloride concentration is 850 mg/l (Howard 1981). This data shows that chloride concentrations decreases as flow rate increases. Ponding

areas will collect and hold the initial low flows of snowmelt events. Thus, high chloride concentrations will be diluted in storm water ponds prior to discharge to receiving waters.

minimizing harm from de-icing salt

Limiting the amount of salt applied to highways will minimize the amount of salt which can enter surface waters. Mn/DOT instituted a program which reduced the amount of salt used on state highways without sacrificing the safety of motorists. Since 1970 there has been a 42 percent decrease (5 year average) in the amount of salt applied to highways in the Minneapolis-Saint Paul area. I-394 will receive minimum amounts of de-icing salts to maintain safe driving conditions.

impacts on heavy metals on biota

Heavy metals contained in urban runoff and freeway runoff could be potentially toxic to aquatic biota. However, not enough is known regarding the toxicity of heavy metals to completely assess their effect on aquatic ecosystems. There is evidence indicating that the mineral content (hardness) of surface waters limits toxicity of heavy metals to fish (Lloyd, 1960; Warren, 1971). The mean lethal concentrations of lead, copper and zinc to rainbow trout increase as a function of water hardness (EPA, 1972). In other words, the harder the water the higher the dosage of heavy metals required to cause mortality of rainbow trout. Because surface waters adjacent to the I-394 corridor are quite hard (100-150 mg/1 total alkalinity), it is unlikely that heavy metals in highway runoff will be toxic to fish.

hazardous spills

Should a spill of hazardous or toxic materials occur, it is imperative that the spill be contained prior to entering sensitive receiving waters. To insure this, highway runoff will be directed into ponding areas, with outlet controls, so that spills can be contained. Where wildlife mitigation ponds are proposed, highway runoff will first be directed to a sediment removal basin/spill containment pond, before entering the wildlife pond.

construction impacts

Degradation of water quality during construction of I-394 can occur from three primary sources:

1. Wastewater from concrete mixing operations.
2. Accidental spills of petroleum products or other substances.
3. Erosion of exposed earth during runoff events.

In order to minimize impacts from the first two sources, Mn/DOT enforces pollution control measures described in Standard Specification 1717 for Highway Construction concerning air and water pollution. However, erosion from exposed soil during construction is probably the most potentially serious source of pollution.

pesticides

The term pesticides implies any substance used to destroy or repel any pest. Pest, referred to previously, includes plants, animals, insects, etc. Pesticides used by the Mn/DOT are generally limited to herbicides (weed control chemicals).

Herbicides are used along highway right-of-ways to control noxious weeds (control of noxious weeds is required by law) and as a tool in vegetation management. Herbicide use is limited to spot spraying (identifying the target and using the proper herbicide on the target). The main herbicides used are 2, 4-D for broad-leaf weeds, 2, 4D, and 2, 4 DD for brush control, Picloram for Canada thistle and Dalapon for cattails. All herbicides are applied by or under the supervision of a licensed pesticide applicator. Due to the limited amount of herbicide use and because many of these herbicides bio-degrade, the impact on aquatic areas will be negligible.

soils and erosion control

A detailed analysis of soils within approximately 4,000 feet of I-394 was conducted. Two sources of information were used in making this analysis they were: the Hennepin County Soil Survey and Direct Field Observation of the US-12 alignment.

erosion potential

Figure 30 on page 223 depicts areas of natural erosion potential. Steep slopes and soils of a texture and structure which are likely to erode are shown in solid tones. Many soils in the I-394 corridor become easily eroded when the slope is greater than 6 percent. Subsoils in the I-394 corridor are generally less permeable than the surface soils. Increased exposure of the less permeable subsoils will result in increased potential for runoff and erosion.

Dashed lines on Figure 30 outline potential cut and fill areas that will likely produce erosion problems. These areas will receive special treatment to prevent erosion on steep slopes during and after construction.

erosion control

Permanent, temporary and administrative controls will be used to minimize erosion. Permanent control measures include items such as replacement of topsoil, seed, sod and rock riprap. Seed, sod and topsoil are used to reestablish vegetation after construction. Vegetative cover is the best permanent means of controlling and reducing erosion in large exposed areas. Permanent erosion control measures are included in the construction plans by the designer and it is the project engineer's responsibility to see they are implemented. Temporary controls of erosion include items such as bale ditch checks, earth diversions, bale diversions, and temporary sediment basins. Mn/DOT specification 1803.5 defines erosion control procedures and responsibilities. Also the contractor will be required to submit an erosion control plan prior to construction.

Ground Water

ground water quality impacts

Ground water quality is dependent upon the quality of water entering the system and upon physical and chemical characteristics of the drift or bedrock through which the ground water moves. Granular soils allow relatively free movement with minimal infiltration or adsorption of pollutants. An increase in fine grained material reduces movement and increases the filtering capabilities of the soil. Plastic soils tend to restrict or inhibit movement.

As noted in the Water Quality section of this document, the concentration of pollutants generated by the freeway surface of I-394 will not increase significantly from concentrations in runoff from existing US-12. Runoff from I-394 which enters the ground water system would be similar in quality to that which already enters the system.

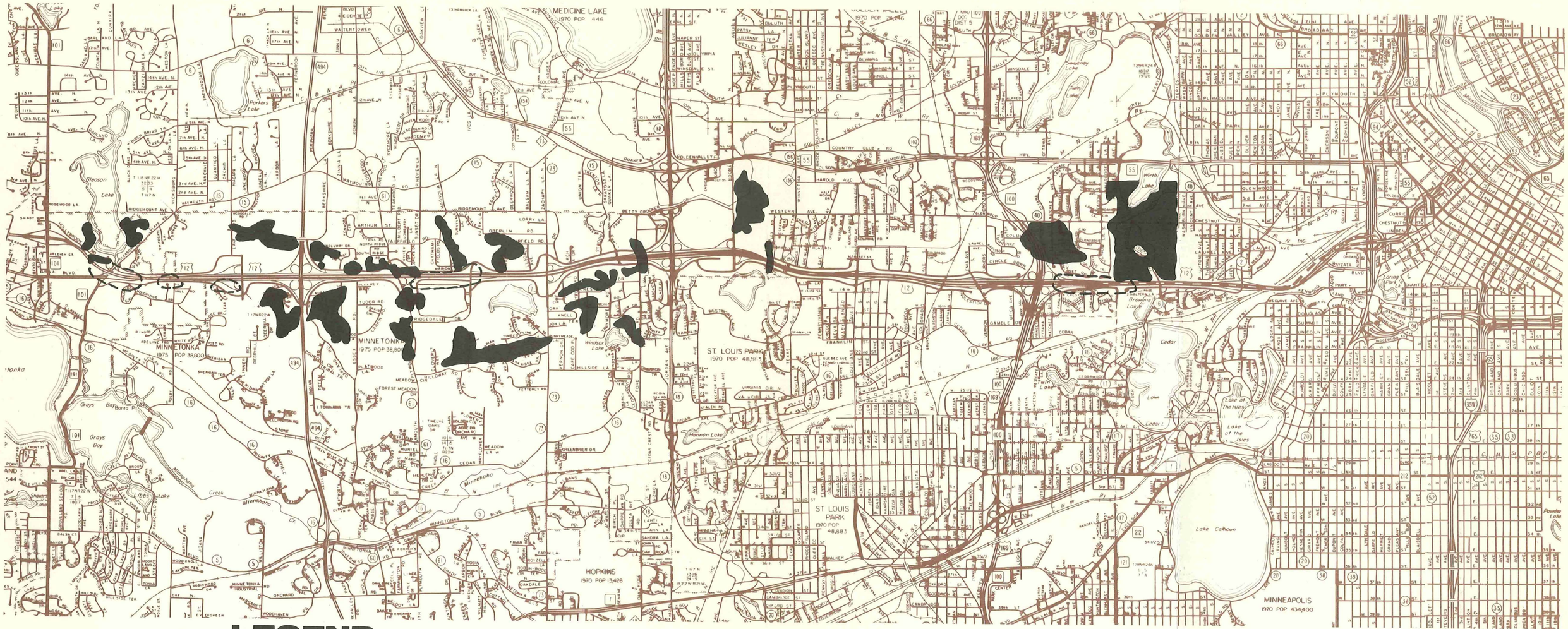
Of the pollutants present in highway runoff, deicing salt has the potential of being present in high concentrations of shallow ground water near the alignment. Studies, however, have indicated that these high concentrations generally are not detected more than 50 feet from the roadway. High concentrations of sodium chloride are very rarely detected 100 feet from the area of application.

Since I-394 is an urban design roadway and most of the wells adjacent to I-394 are either deep bedrock wells or more than 100 feet from the alignment, the potential for contamination of wells by deicing salts and other highway pollutants is low. Only in the Holdridge area of Wayzata are there shallow drift wells within 100 feet of the road surface. Soil borings in this area indicate the presence of predominantly plastic soils. The soils will help to inhibit the entrance and movement of highway runoff into the ground water.

dewatered zones

To prevent unsafe driving conditions, frost heave and early roadway deterioration, engineering standards require ground water to be at least five feet below road grade. For this project, noise level standards require the lowering of the existing grade along sections of I-394. This grade reduction will bring the grade of I-394 to the ground water in numerous locations. These areas will need to be dewatered.

Potential impacts of dewatering include the reduction of the water level in nearby lakes and wetlands and in shallow wells adjacent to the alignment. These potential impacts have been analyzed in the study area. Table 24 illustrates available data regarding surface elevations of wetlands and lakes identified in the study area, ground water elevations and the elevations



LEGEND

SLOPES (6 to 35%) WITH ERODIBLE SOILS

CUT AND FILL AREAS LIKELY TO ERODE IF PRESENT GRADE IS RETAINED

WATER RESOURCES

I-394

scale ft 0 4,000

north

SOIL EROSION POTENTIAL

Figure 30

of proposed grade adjacent to these water bodies. This information, as well as data from soil borings taken along the alignment, indicate that dewatering will have a minimal impact upon the surface elevations of most wetlands in the study area. Wetlands with surface elevations below elevation of the proposed grade will not be affected by dewatering. Elevations of wetlands 3, 8 and 9 are above elevation of ground water. These wetlands are apparently perched and will not be affected by dewatering. Construction of the frontage road adjacent to wetland 10 will be two feet above the wetland which is at 889 feet. Elevation of I-394 at this location is 913 feet. Dewatering will probably not be needed at this location. Dewatering is also not being planned adjacent to wetlands 11, 12a and 12b. A perched ground water condition presently exists between wetlands 17 and 18. The relationship between these wetlands and the ground water is not expected to be significantly altered with construction of I-394. Only wetlands 19a, 19b and 20 have the potential of being affected by dewatering, however, soil borings indicate the presence of plastic soils in the area which will reduce effects of dewatering.

The potential that dewatering may affect water levels in shallow wells close to I-394 is minimal. According to available information, water wells adjacent to areas which may need dewatering are deep bedrock wells. Areas where shallow drift wells are adjacent to the road should not require dewatering.

Dewatering would be accomplished by providing additional gravity storm sewer systems or increasing the capacity of the freeway drainage system. The extent and location of all dewatered zones will be determined prior to construction of I-394.

TABLE 24

Elevations of wetlands 1 through 27, adjacent ground water and proposed grade (in feet).

Wetland Number	Wetland Elevation	Ground Water Elevation	Existing Grade Elevation	Proposed Grade Elevation
1	816	N/A	840	840
2	844	N/A	880	873/869*
3	874	864(2)	906	883
4	852	N/A	909	909/882*
5	841	N/A	898	905/879*
6	854	867	880	874
7	849	870	881	869.5
8	879	870	881	868.5
9	879	870	887 to 890	8 80/894*
10	889	889	895 to 900	8 89 to 913
11	889	890	893	910
12a	889	890	894	910
12b	889	890	8 94	911
13	889	906	904 to 909	898 to 900
14	898	N/A	9 03	903
15	898	898	904	906
16	898	901	910	910
17	914	917	9 20 to 930	926 to 965
18	916	917	920 to 930	921 to 965
19a	997	993	1004	1003/984*
19b	952	913	956 to 970	955 to 971
20	953	950	9 55	955
21	949	951	957	956.5
22	941	N/A	970	973/965*
23	940	N/A	949	957/949*
24	940	N/A	9 49	955/949*
25	940	N/A	947	954/947*
26	940	N/A	947	954/947*
27	940	N/A	930	977

N/A information not available.

*split grade

(2) Ground water elevation in the area varies from 840 to 868.

The US-12/I-394 project has been examined for floodplain involvement in accordance with Executive Order 11988.

National Flood Insurance Program maps and contour mapping were examined for the cities of Minneapolis, Saint Louis Park, Golden Valley, Minnetonka, and Wayzata.

Construction of the I-394 project will result in three encroachments into the designated floodplains of Bassett Creek, but none into the Minnehaha Creek floodplains. The first encroachment is located in Golden Valley, north of the proposed Boone Avenue Interchange (see Figure 31 on page 229). The construction of the westbound on and off ramps of the interchange and the extension of Boone Avenue South, north to Betty Crocker Drive, will result in a 2100 foot encroachment into the Bassett Creek floodplain.

The second encroachment is located in Minnetonka, south of I-394, along the north edge of Ridgedale Marsh (see Figure 32, on page 231). The construction of a frontage road will result in an encroachment into the floodplain associated with Ridgedale Marsh.

The third encroachment is located in Minnetonka, north of I-394, in the northeast quadrant of the Ridgedale Drive interchange (again, see Figure 32). Reconstruction of this interchange will result in the placement of 750 cubic yards of fill into the floodplain associated with wetland 17.

Each of these floodplains is also a wetland. The benefits of these wetland-floodplains were discussed in the previous section.

Mainline I-394 does not encroach into any floodplain. The only alternative to avoid floodplain encroachments is to not build the westbound half of the Boone Avenue interchange, the north extension of Boone Avenue South, the frontage road between Ridgedale Drive and CR-73, and the Ridgedale Drive Interchange. This would cause loss of access to I-394, and considerable indirection of travel. This is not a practicable alternative.

Furthermore, these floodplain encroachments are not significant for the following reasons:

I. No significant potential for termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route.

A. The roadway grade profile of I-394 is above the 100-year flood elevations.

B. The roadway profile of Boone Avenue South shows that the southern end of the avenue under I-394 will be 2 feet under water in the 100-year flood. This is not significant because other transportation routes are available for emergency vehicles, such as I-394, CR-18, and Betty Crocker Drive.

C. The roadway profile of the I-394 frontage road through Ridgedale Marsh is above the 100-year flood elevation. The 100-year flood elevation of the Ridgedale Marsh is 919.5. The low point of the frontage road through the marsh is above the 100-year flood.

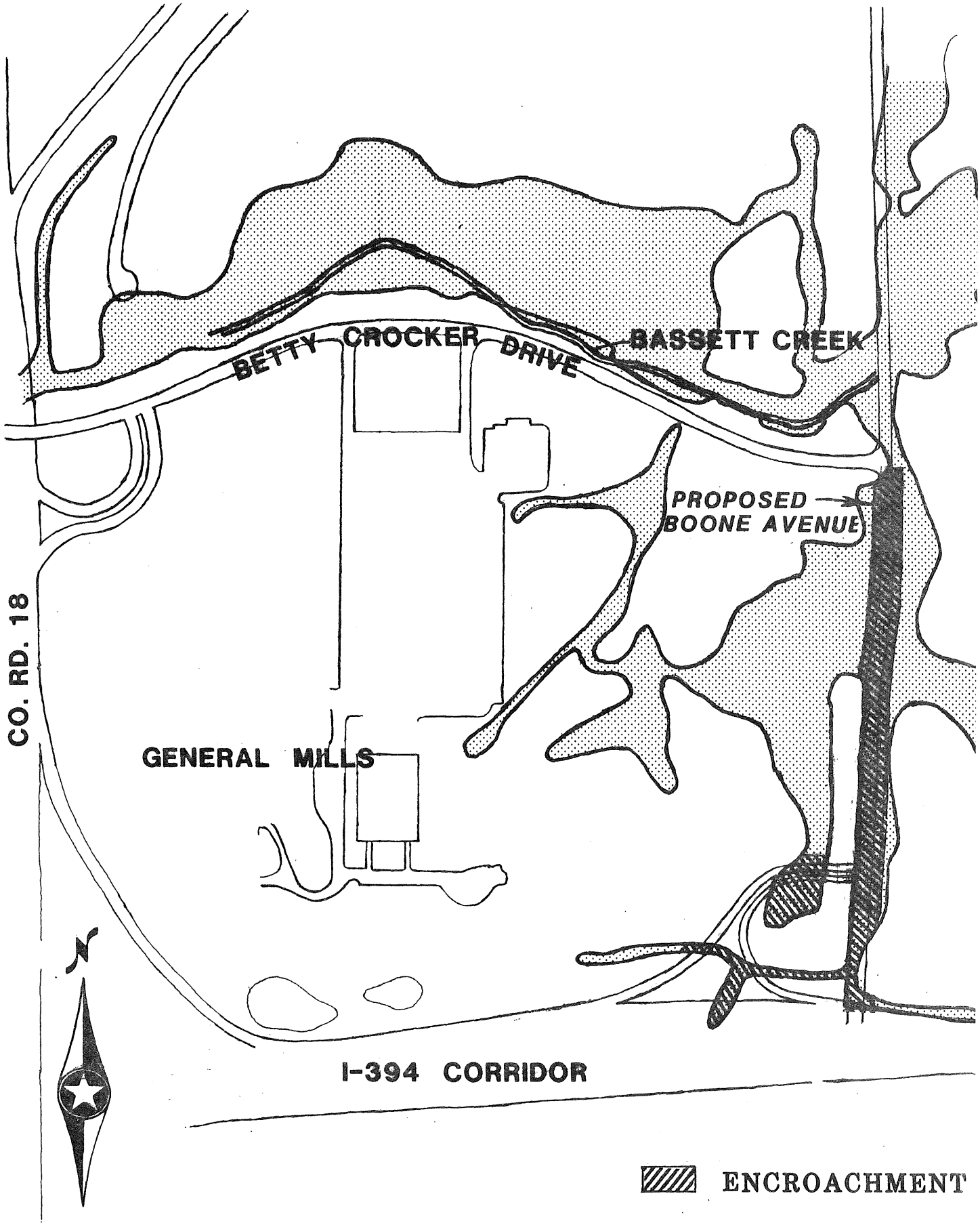
D. The roadway profile of the Ridgedale Drive interchange adjacent to Wetland 17 is also above the 100-year flood.

II. No significant adverse impact on natural and beneficial floodplain values will result.

A. Contractors will adhere to Mn/DOT erosion control specification (1803.5) and to any additional contractural erosion specifications to minimize impacts to Ridgedale Marsh (wetland 18) and the Boone Avenue South floodplain.

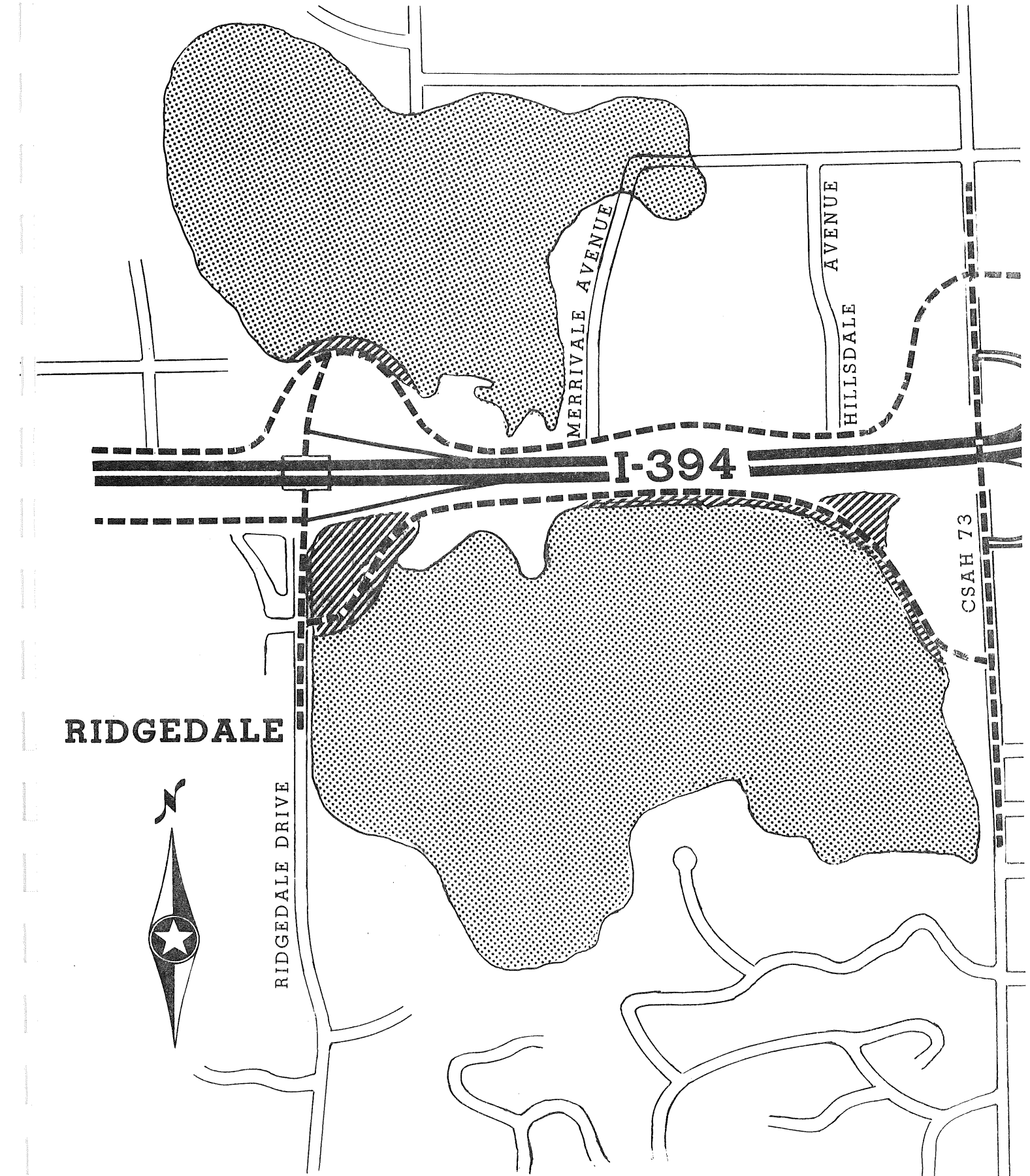
B. All disturbed areas shall be seeded (except sodded areas) with the appropriate seed and mulched.

C. Wetland impacts at Ridgedale Marsh (wetland 18) and the Boone



BOONE AVENUE SOUTH
FLOOD PLAIN ENCROACHMENT

Figure 31



RIDGEDALE MARSH & VICINITY
FLOOD PLAIN ENCROACHMENT

FLOOD PLAIN (100 YEAR)

ENCROACHMENT

Figure 32

Avenue South floodplain will be adequately mitigated. (Refer to Wetland Section, Measures to Minimize Harm).

III. No significant risk, such as increased flooding of property or hazard of life will result from this project.

A. Approximately 2,200 cubic yards of fill will be placed in the Boone Avenue South floodplain. This is equivalent to 1.38 acre feet of lost flood storage. Mn/DOT plans to construct several ponds west of Boone Avenue South to provide flood storage equal to or greater than that lost.

B. Approximately 3,300 cubic yards of fill will be placed in the Ridgedale Marsh floodplain. This is equivalent to 2.04 acre feet of lost flood storage.

Because of the lack of feasible space to provide compensating storage at Ridgedale Lake, Mn/DOT plans to provide flood storage on the north side of I-394 and Ridgedale Drive. The flood storage pond(s) will be equal to or greater in storage capacity than that lost at Ridgedale Marsh.

C. Approximately 750 cubic yards of fill will be placed in wetland 17. This is equivalent to 0.47 acre feet of lost flood storage.

Mn/DOT plans to provide flood storage on the north side of I-394 and west of Ridgedale Drive. The flood storage pond will be equal to or greater in storage capacity than the combined storage lost at Ridgedale Marsh and wetland 17.

IV. The proposed construction of Boone Avenue South, the I-394 frontage road through Ridgedale Marsh, and the Ridgedale Drive interchange through wetland 17 should not support potential incompatible floodplain development because the cities of Golden Valley and Minnetonka have zoning ordinances that regulated floodplain development.

Based on the above assessment, the proposed construction of Boone Avenue South, the Ridgedale Drive interchange and the I-394 frontage road through Ridgedale Lake are not expected to have any significant impact on a community's only evacuation route; are not expected to have any significant impact on natural and beneficial floodplain values; are not expected to significantly increase the risk of flooding; and are not expected to support incompatible floodplain development.

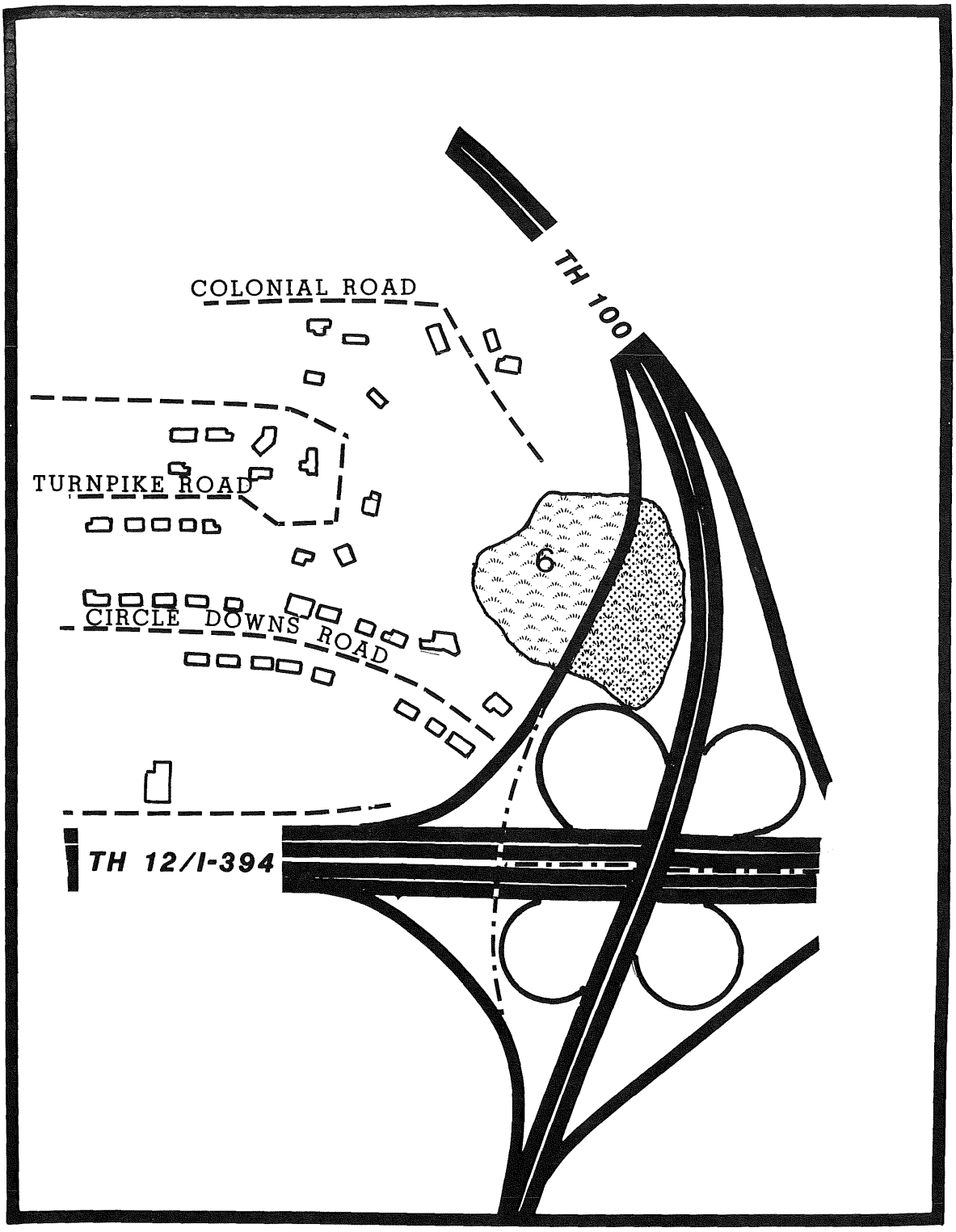
Wetlands

Of the study area's 27 wetlands totaling 582.1 acres, portions of only five wetland basins will be filled by the construction of US-12/I-394. A total of 18.2 wetland acres will be filled.

A separate Wetlands Finding has been prepared and is included in the Appendix of this document. Letters from the U.S. Fish and Wildlife Service and Minnesota Department of Natural Resources are included in that section. The wetlands are also inventoried in the Natural Features discussion of the AFFECTED ENVIRONMENT section of this document.

Wetland 6, a seven-acre type-3 wetland will have up to 4.9 acres filled as a result of constructing the I-394/SR-100 interchange (Figure 33 page 235). The remaining wetland, plus some additional upland area, will be used for stormwater storage. This will change the wetland classification from a type 3 emergent marsh to a type 5 open water pond. Considerable fluctuation in water level is expected due to reduced size and increased runoff. Wildlife use by resident and nesting species will decrease, while seasonal use by waterfowl will increase.

Wetland 11 is a highly diverse, 41 acre, type 1, 6, 7 wetland. Construction of the Boone Avenue South extension and interchange will fill 10.9 acres of this wetland (Figure 34 page 237). The area to be filled is dominated by elm, cottonwood, maple, dogwood and hawthorn. The unique stand of tamarack will not be disturbed. This wetland offers very good habitat for a variety of wildlife species such as deer, raccoon, skunk, ring-necked pheasant, and a variety of songbirds. Removal of approximately 25 percent of the



I-394 WETLANDS IMPACT

WETLAND

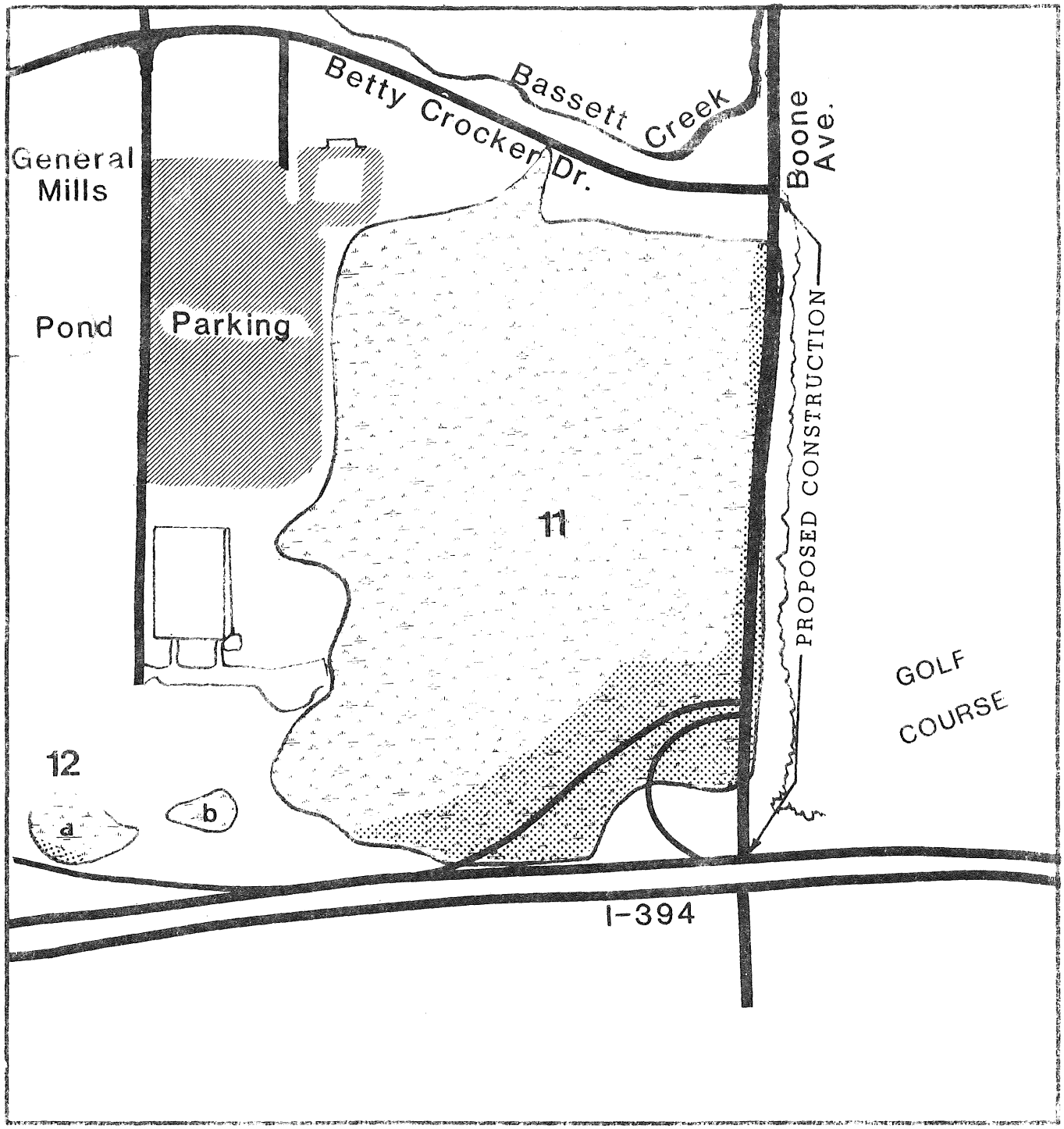
AREA OF FILL

PRIVATE RESIDENCES

WETLAND # 6

NORTH

Figure 33



I-394 WETLANDS IMPACT

WETLAND

ENCROACHMENT

WETLANDS # 11 & 12a

Figure 34

NORTH

available habitat will reduce but not eliminate the wildlife value of the remaining wetland. Stormwater storage ponds may be constructed in this wetland, to replace lost floodplain storage. These ponds would be designed to increase the wildlife diversity of the remaining wetland. Valuable stands of tamarack, red maple, hawthorn, and black cherry will be preserved. Pond construction will be limited to areas of stinging nettles and red-osier dogwood.

Wetland 12a is a type 5, 0.8 acre man-made pond (Figure 34). This wetland receives some use by waterfowl, primarily Canada Geese, which nest throughout the General Mills property west of wetland 11. Approximately 0.03 acres of the southwest corner of the pond will be filled. Waterfowl use of the pond should not be affected by this small encroachment.

Wetland 17 is a 54 acre, type 3 cattail marsh. Construction of the Ridgedale Drive interchange will affect less than 0.1 acre of this wetland (Figure 35, page 241). Excavating a wildlife pond in this wetland will increase the habitat diversity and offer greater wildlife habitat for waterfowl.

Wetland 18 is the 105 acre Ridgedale Marsh, a type 4 cattail marsh. This wetland offers the best wildlife habitat within the project corridor. Species which use this wetland include, raccoons, muskrat, ringnecked pheasants, herons, egrets, and numerous species of waterfowl and songbirds. Construction of a frontage road between Ridgedale Drive and CR-73 will impact 3.2 acres of cattail fringe (Figure 35). Approximately 1.0 acre of this impact will be from the construction of a stormwater retention pond between the proposed frontage road and an entrance ramp to I-394. Due to limited space, this pond will be designed solely for stormwater retention, sediment removal and spill control.

TABLE 25

Projected Direct Wetland Impacts of Alternate Routes*

(estimated to the nearest tenth acre)

Wetland Number	Circular 39 Type	Total Acres	Acres of Encroachment Alt. 1	Alt. 2	Alt. 3
6	3	7	4.9	4.9	-
9	3	4	-	-	.6
11	2/6	42	10.9	10.9	10.9
12a	5	0.8	.1	.1	.1
17	3	54	.1	.1	.1
18	4	1 05	3.2	3.2	3.2
Cedar Lake	5	195	-	-	2.5
Brownie Lake	5	9	-	-	.4
		Totals	18.2	18.2	17.8

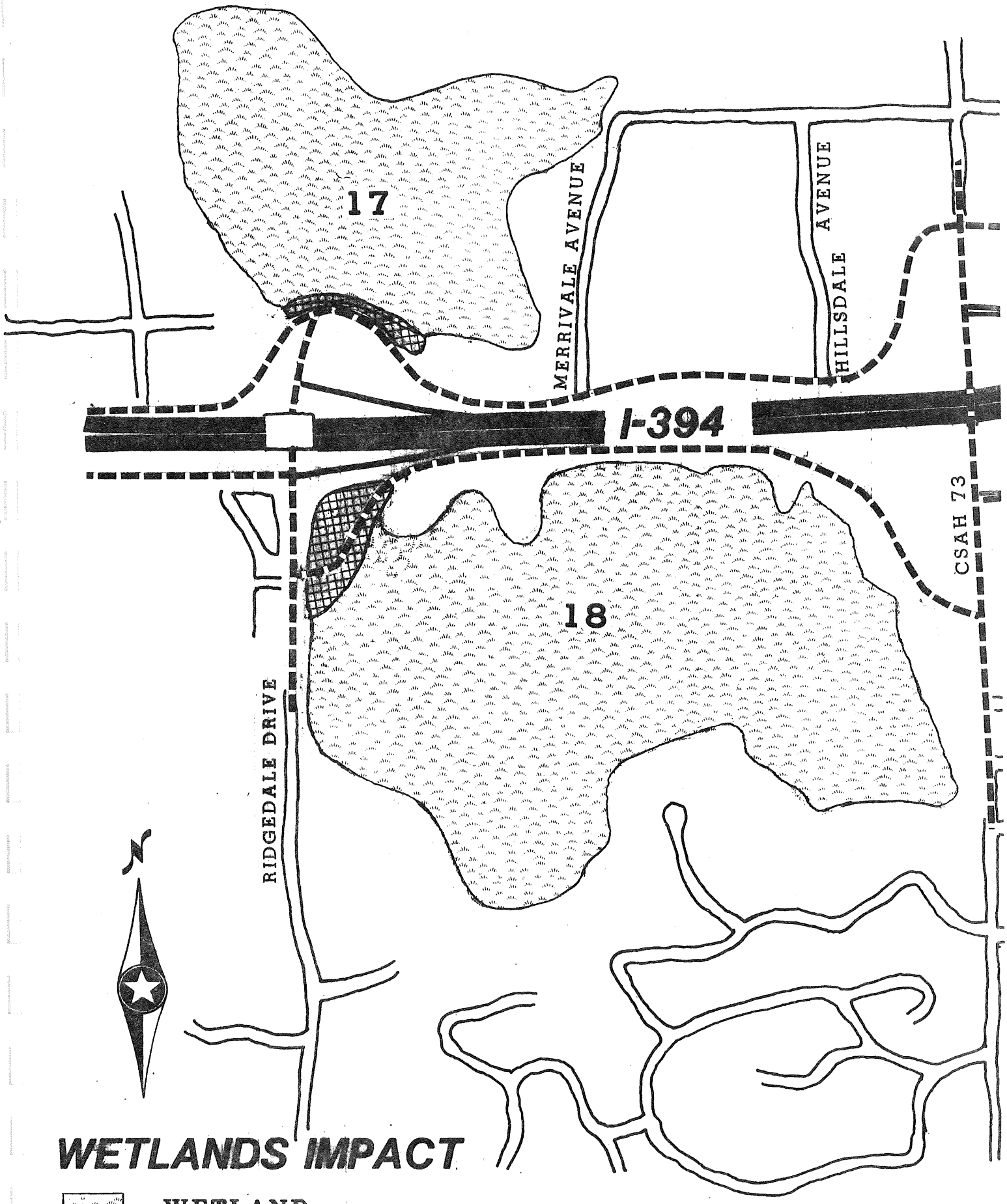
*Refer to Figure 13 for location of alternate routes and the Alternatives section of this report for a discussion of them.

measures to minimize harm

I. Stormwater retention and wetland mitigation ponds will be constructed. Seven ponding areas are planned to store and treat highway runoff and/or mitigate for wetland impacts (Figure 13).

A. Ponding complex A will be excavated within and adjacent to wetland 25, which is a 15 acre type 2/3 emergent marsh. Water presently flows from wetland 22 through this marsh into wetland 26 and eventually into Minnehaha Creek. Two or three dual purpose ponds could be excavated to provide stormwater detention as well as being designed to diversify wildlife habitat. Ultimate size and design of the ponds will not be known until the detail design phase.

B. Ponding complex B would be excavated within wetland 17, which is a 54 acre, type 3 emergent marsh. This wetland is densely vegetated with cattails and has virtually no open water. Excavating several small (less than 0.2 acre) open water basins, with variable shorelines and depths, will increase the value of this wetland as wildlife habitat.



WETLANDS 17&18
Figure 35

C. Pond C will be a small stormwater storage basin to be excavated within the northeast loop of the Ridgedale frontage road. This area is presently a type 3 portion of Ridgedale Marsh which is a 105 acre overall type 4 emergent marsh. Due to space limitations within the loop, this pond will be designed only for storage of runoff.

The U.S. Fish and Wildlife Service recommends that ditching be done in the dense cattail portion of Ridge-Marsh, in order to enhance wildlife habitat. This measure will be explored during detail design and implemented if feasible.

D. Pond D will be excavated within wetland 14, a four acre type 3 emergent marsh. This wetland is densely vegetated with cattails and has no open water. Design of the pond will strive for 50 percent open water and 50 percent emergent vegetation. This will be a dual purpose pond, designed for both stormwater detention and wildlife habitat.

E. One or more ponds will be excavated within wetland 11, a 43 acre type 1/6/7 wetland. The ponds will be designed to replace lost flood storage, retain and treat stormwater, and add diversity to an already good area of wildlife habitat. An effort will be made to preserve areas of unique or valuable vegetation, such as tamarack, hawthorn and red maple.

F. Pond F will be located northwest of the US-12/SR-100 interchange in wetland 6. This wetland is presently a densely vegetated 7 acre type 3 emergent marsh with no open water. Due to the extensive fill that will impact this wetland (4.9 acres) and the small amount of space available for stormwater storage, this pond will be designed only for storage.

G. If drainage is diverted from Brownie Lake to the east, Pond G would be excavated between US TH-12 and the Burlington-Northern railroad tracks near Penn Avenue in what is presently an upland area. Due to the small available space at this location, this pond would be designed only for storage.

II. Highway fill-slopes will be constructed 4:1 or steeper adjacent to impacted wetlands (6, 11, and 17, 18) to minimize wetland encroachment.

III. Temporary erosion and sedimentation control measures will be used throughout construction, including bale ditch blocks, earth or bale diversions, and temporary sedimentation basins. Permanent measures will be initiated as early as practicable and will include replacement of topsoil, seeding, sodding, and placement of riprap.

IV. It is anticipated that considerable quantities of excess excavated materials will be generated by the construction of I-394. Disposal of excess material into wetlands will be avoided unless it is to mitigate for wetland and wildlife habitat losses (i.e., creating nesting islands) or is done in accordance with Guidelines for Disposal of Excess Excavated Material. These guidelines are a procedure developed by Mn/DOT, in consultation with the U.S. Fish and Wildlife Service, to determine if there is no practicable alternative to disposal of excess material in wetlands and other sensitive areas. Since quantities of excess material and locations of disposal areas will not be known until construction of I-394 (in 1986), it is not possible to make a definitive statement that excess materials will not be placed in wetlands; however, it is not anticipated that wetlands will be filled.

vegetation

The I-394 corridor is heavily developed and only three major areas of upland vegetation (mature oak) are located adjacent to existing US-12. Construction limits will be set so that there will be no effect upon these relatively undisturbed woodlots. Only a few small, scattered stands of trees will be removed during the construction of I-394. Of these, the most significant will be the removal of approximately 11 acres of a mixture of lowland hardwoods and disturbed wetland by the construction of the Boone Avenue interchange and extension of Boone Avenue South. For further discussion, refer to the Wetlands Impact Section and the analysis of impacts to wetland number 11.

wildlife

The major wildlife impacts are associated with the loss of wetland habitat, which has been discussed in the wetland section of this document.

Wildlife associated with the undisturbed upland areas should not be affected. Overall impacts to wildlife will be slight, taking into consideration the wetland mitigation to be accomplished by this project.

endangered species

The proposed project is located within ranges of the Arctic and American Peregrine Falcon as outlined in the U.S. Fish and Wildlife Service Red Book. The Mn/DOT Wildlife Biologist has determined that the proposed project will not adversely affect the species or their habitat because, though both species migrate through the state, neither currently nests in the Twin City area.

Interstate 394 is aligned to follow the existing US-12 corridor. Using the present transportation corridor will minimize the negative social and economic impacts of the freeway on the adjacent neighborhoods and communities. These negative impacts will include the displacement of residences and businesses; loss of tax base; reduced revenue sharing and state aid to schools; some disruption of neighborhoods, businesses, and public services; and more serious, but temporary, disruption during construction. These impacts will be balanced by a transportation facility that will be more efficient in terms of saving both time and fuel, will provide better access to the adjacent neighborhoods and businesses, and will provide easier travel between the western suburbs and the Minneapolis CBD. Also, reduced noise levels and improved air quality are positive factors.

A detailed study of the social, economic, and land use characteristics of the area, and the impact of I-394 on these characteristics, has been written and is available for review at the Mn/DOT Golden Valley District Office. This study has been the primary source for the following assessment.

Displacement

The Relocation Office staff of the Mn/DOT Golden Valley District made and published a Relocation Study. That study, available for review at the district office, is the primary source for this discussion of residential displacement, commercial displacement, and the relocation program.

The exact properties to be taken by the project cannot be precisely known until the alignment has been finally established and the final design is under way. The numbers of properties to be taken is given in this document as a probable range, and even this range must be taken as an approximation at this time.

Residential Displacement

Between 63 and 83 residences will be taken by this project, displacing an estimated 169 to 224 persons. Golden Valley will be the most severely affected, but even its possible loss of 101 persons represents less than one-half of one percent of its population.

The following table shows the probable loss of residences and persons to each of the four communities.

TABLE 26

Residential Displacement Effects US-12/I-394 Study Area					
Effect	Community				
	Minne-apolis	Golden Valley	Saint Louis Park	Minnetonka	Total
Number of Displaced Residences (maximum)	16	34	14	19	83
(minimum)	15	25	10	13	63
Estimated Persons per Residence*	2.2	2.9	2.4	2.9	
Estimated Persons Displaced (maximum)	35	101	33	55	224
(minimum)	33	74	24	38	169
Displaced Persons as a Percent of City Population** (maximum)	0.01%	0.44%	0.08%	0.14%	
(minimum)	0.01%	0.32%	0.05%	0.10%	

*Persons per residence equals population divided by number of housing units.
**1980 population.

It does not appear likely that the freeway project will displace an inordinate number of minority group, low income, or elderly persons. Statistically, the residences to be taken might include one minority group household and five homes occupied by elderly persons. Observation of the neighborhoods confirms that no especially sensitive groups will be unduly disrupted. Judging from the homes to be taken, it seems unlikely that many low income families will be affected.

Because the freeway will follow the existing transportation corridor, the displacement will occur at the edge of the neighborhoods, minimizing the effects on the neighborhoods.

According to figures (shown in the table below) from the Greater Minneapolis Area Board of Realtors, sufficient replacement housing exists within the neighborhoods to accommodate the families that will be displaced. Although the vacancy rate is low and the housing market is considered tight, more than 3000 homes were offered for sale in the neighborhoods and communities adjacent to the freeway corridor during the first eight months of 1981. More than half of these were sold. They were available in every community and price range, averaging from $71,777 in Saint Louis Park to $113,097 in the Cedar-Isles-Loring neighborhood of Minneapolis. The average sale price in the Minneapolis area was $80,332 for this time period.

The distribution of these homes by community and price is shown in the following table.

TABLE 27

HOMES FOR SALE BY COMMUNITY AND PRICE

neighborhood or community	Offered for sale	actually sold	lowest selling price	highest selling price	average selling price
Cedar-Isles-Loring(1)	314	166	$26,500	$ 426,500	$113,097
North (2)	1013	570	17,000	91,000	52,915
Saint Louis Park	591	398	11,500	179,000	71,777
Golden Valley	324	166	35,077	2,735,000	110,126
Minnetonka and Hopkins	929	492	13,000	265,000	96,438
Plymouth	956	446	14,000	319,605	107,785
Totals	4127	2238			

(1) Includes the portion of the Bryn Mawr neighborhood south of US-12.

(2) Includes the portion of the Bryn Mawr neighborhood north of US-12.

Approximately 46 commercial operations in 36 buildings will be displaced by the freeway. The three suburbs will be about equally affected; Minneapolis will lose only two businesses.

Most of the businesses to be moved are service firms that do only retail or both retail and commercial business. Eleven are primarily commercial, and two are manufacturers. Most are small. Twenty-nine have ten or fewer full-time employees; only four have more than twenty such employees.

The following table shows the distribution and details of the 46 businesses.

TABLE 28

Commercial Displacement Information for I-394 Corridor*

Item of Information	Community				
	Minneapolis	Golden Valley	Saint Louis Park	Minnetonka	Total
Type of Establishment					
Retail, Personal Service	-	13	5	8	26
Wholesale, Commercial	1	3	6	1	11
Manufacturing	-	-	-	2	2
Other	1	-	2	4	7
Total	2	16	13	15	46
Primary Area Served					
Neighborhood	-	2	-	1	3
Local Community	-	7	5	4	16
Metropolitan Area	1	5	4	4	14
State or larger area	1	1	4	1	7
Unspecified**	-	1	-	5	6
Number of Full-Time Employees					
5 or less	-	6	4	7	17
6-10	-	6	4	2	12
11-15	1	1	3	2	7
16-20	-	-	-	-	-
21 and more	1	1	2	-	4
Unspecified*	-	2	-	4	6

*Source: Data generated by district during relocation needs survey of tenants or property owners.

**Includes vacant properties.

Three of the businesses serve primarily their immediate neighborhoods. Their loss will inconvenience their clients and cause hardship on the businesses themselves. The great majority of the displaced commercial operations draw their clientele from the larger community. While their displacement and relocation may cause short-term disruption to business and client alike, it will cause no discernable effect on the area economy. Due to the relatively strong job market in the Twin City area, long term job loss will be minimal.

Relocation Program and Benefits

The Minnesota Department of Transportation is required by both state and federal law to provide prompt and equitable relocation services and payments to all persons and businesses displaced by State or Federal Aid highway construction.

The Golden Valley District Office has a well trained and experienced relocation staff to provide these services. The district office is relatively accessible to the project, so all relocation contacts will originate from there. The address of the office is 5801 Duluth Street; it is about two miles north of the freeway corridor. If necessary, an on-site field office will be opened to serve as a public information center.

Residents will be informed of their eligibility to receive payments such as moving expenses, appraisal fees, housing supplements, closing costs, interest differentials, and so forth. Business proprieters will be appraised of payments such as moving expenses, loss of property, feasibility studies, discontinued business payment, searching fees, and appraisal fees. These payments and the eligibility requirements to receive them are explained in the booklet entitled "Relocation Assistance" which will be available to all interested parties.

As the time nears for negotiations with landowners, the relocation staff will personally contact and counsel all occupants of the affected residences and businesses concerning their potential relocation benefits.

One of the major impacts a major transportation facility can have is the reduction of the tax base of the communities through which it passes. Purchased right-of-way is permanently removed from the tax rolls.

In the case of I-394, as many as 83 residential properties and 36 commercial buildings will be taken. Tax loss analysis was performed for taxes payable in 1980. Examination of Table 29 on the following page reveals that the aggregate tax loss associated with this project is more than $385,000. More meaningful than the dollar amounts are the figures in the last two columns. These indicate, in percentage, tax loss impacts for each taxing district. The maximum tax loss for any such district is slightly less than one percent.

TABLE 29

Tax Base Impacts Associated with US-12/I-394 Right-of-Way

	Tax on Displaced Property	Total Receipts (000)	Local Property Tax Revenue (000)	Loss as % of Total Receipts	Loss as % of Local Property Tax Revenues
Cities					
Minneapolis	$ 13,594[a]	$245,021[b]	$ 57,906[b]	0.005%	0.023%
Golden Valley	20,976[a]	6,186[b]	2,216[b]	0.339	0.946
Saint Louis Park	24,976[a]	15,929[b]	3,800[b]	0.157	0.657
Minnetonka	8,539[a]	20,458[b]	3,510[b]	0.042	0.243
School Districts					
Special No. 1	$ 15,229[a]	$140,405[c]	$ 59,321[c]	0.011%	0.026%
270*	109,075[a]	24,288[c]	14,053[c]	0.449	0.776
283	34,681[a]	16,746[c]	9,215[c]	0.207	0.376
284	6,206[a]	14,797[c]	7,471[c]	0.042	0.083
Hennepin County	$104,007[a]	$779,208[c]	$110,103[c]	0.013%	0.094%
Other**	$ 48,277[a]				
Total	$385,560				

Sources: [a]Property taxes accruing to the various entities were taken directly from the property tax statements of the affected properties in the Hennepin County Finance Office.

[b]Report of the State Auditor of Minnesota on the Revenues, Expenditures and Debt of Cities in Minnesota for the fiscal year ended December 1979. October, 1980. pp. 12, 16, 20, less borrowing.

[c]Report of the State Auditor of Minnesota on the Revenues, Expenditures and Debt of the Local Governments in Minnesota for fiscal years ended during the period of July 1978 to June 30, 1979.

Notes: *Includes data from former districts 274 and 275.
**Includes such as Metropolitan Council, Watershed Districts, Mosquito Control, etc.

In most cases lost tax revenues constitute a small percent of total receipts. In two cases the loss approaches one half of one percent. In other cases losses are less. The City of Golden Valley and the Hopkins-Golden Valley School District (270) would experience reductions of 0.34 percent and 0.45 percent of total receipts respectively.

The last column expresses these losses as a percent of locally raised property tax revenues, excluding special assessments. Again, the City of Golden Valley and School District 270 are most heavily impacted. Losses in these cases approach one percent of locally raised tax revenue (0.95 and 0.78 percent respectively). Saint Louis Park, and School District 283 would experience losses on the order of one half of one percent of locally raised tax revenues (0.66 and 0.38 percent respectively).

This discussion represents a worst case analysis. That is, it assumes all residential and commercial property owners displaced would leave the community in which they are presently located.

Frequently, the loss of tax base through right-of-way acquisition is offset by increases in the value of the remaining property, development attracted to the area by the transportation improvement, and redevelopment of an area. Communities most likely to benefit from an influx of development are those on the western end of the project, e.g., Plymouth, which would lose no property to the project.

The Minnesota Legislature found it was "desirable to improve the revenue raising and distribution system in the seven county Twin Cities area (Minnesota Statutes 473F.01) and to increase the likelihood of orderly urban development by reducing the impact of fiscal considerations on the location of ... highways ..." (Minnesota Statutes 473F.01(3)), and enacted the Metropolitan Revenue Distribution Act. Briefly, this act provides that a portion of the marginal tax revenue resulting from new development in a municipality be shared with other municipalities in the

Metropolitan region. Some portion of tax revenue resulting from commercial/industrial development generated by I-394 would flow back to the communities mentioned above. Such redistribution will attenuate but not eliminate the negative fiscal impacts to the communities which will lose property to the project.

State Aid to Schools

Some residents were concerned that state aid to local schools could be adversely affected through a reduction in the number of school aged children in the school districts. To analyze this, the number of school age children subject to displacement was estimated. The estimation formula determinates the number of residences to be displaced in each district, applies an average person per residence figure, and then multiplies this by the proportion of the population which is of school age. This procedure results in an estimate of the number of school age children likely to be displaced by the project.

The state guarantees a dollar amount per pupil unit, which varies from year to year. The allocation formula, however, requires that local effort be counted for part of this figure. The actual amount received per pupil in each district, therefore, is variable. Table 30 shows the amount of revenue that would have been lost in 1979 using the amount of aid received in the districts in 1979 as a basis.

Table 30 shows the amount of aid which would have been lost if each displaced student left the district, and if the district lost the full dollar amount it had received on a per pupil basis. This would be a maximum amount and therefore would overestimate losses suffered by each district. It represents the "worst case."

In all cases maximum losses as a result of this project would be less than one-fourth of one percent of state aid received. Since the estimation formula assumed that all displaced residents would leave the school district, any who relocated in the same district would reduce this impact.

TABLE 30

Probable Impacts on State Aid to Schools in I-394 Study Area				
Statistic	School District			
	001 Minneapolis	270 Hopkins Golden Valley	283 Saint Louis Park	284 Wayzata
Estimated Number of School Children Displaced*	8-9	16-22	5-7	8-12
District Envollment 6/30/79	44,250	8,722	6,301	6,866
Estimated Percent of District Enrollment Displaced	0.02%	0.18-0.25%	0.08-0.11%	0.12-0.17%
District Revenue (000)	$140,045	$24,288	$16,746	$14,797
Amount Provided Through				
1. Local Tax (000)	$59,321	$14,053	$9,215	$7,471
2. County Aid (000)	-	61	39	24
3. State Aid (000)	53,798	7,327	5,506	5,460
4. Federal Aid (000)	16,904	771	598	238
State Aid Received Per Pupil	1,216	840	874	795
Estimated Loss of State Aid (maximum)	$10,944	$18,480	$6,118	$9,540
Estimated Loss of State Aid as Percent of State Aid Received	0.02%	0.25%	0.11%	0.17%

*Estimate of school children displaced based on 1975 Hennepin County figure of 22% of population. Other financial and enrollment figures are for year ending June 30, 1979, and are found in the Report of the State Auditor of Minnesota on the Revenues, Expenditures and Debt of the Local Governments in Minnesota, April 1980. p. 76.

Revenue Sharing

A concern has been expressed that residential displacement associated with the project would result in significant adverse impact on receipt of federal revenue-sharing funds. The nature of the federal allocation process is such that addressing this issue with an acceptable degree of precision is impossible. Funding levels are determined by a complex formula, the factors of which include not only population, but local tax effort, personal income levels, and intergovernmental transfers as well. The process employs these figures for every unit of government when determining funding shares. The relative nature of this process makes it impossible to precisely determine changes for one unit of government without simultaneously calculating equivalent statistics for each county and city in Minnesota.

Disruptions

Any freeway has the potential to disrupt neighborhood activities, business activities, and community services by limiting accessibility, increasing traffic levels in residential neighborhoods, or in some other manner altering existing traffic and social patterns. This section will discuss some of the potential long term disruptions associated with this project. Short term construction disruptions are discussed in the Construction Impacts section on page 262.

neighborhood disruptions

The Bryn-Mawr neighborhood of Minneapolis is currently divided by US-12. Replacement of the existing pedestrian crossing over the freeway at Cedar Lake Road will continue the possibility of social interaction in this neighborhood. As currently planned, access to the Bryn Mawr neighborhood from I-394 will be provided at Penn Avenue. The existing access to US-12 at Theodore Wirth Parkway will be closed and the connection between the Parkway and Cedar Lake Road will be severed.

Projected traffic volumes on these streets are shown in Figure 5. Penn Avenue (CR-2) will carry slightly more traffic than it now carries, which could cause some disruption. However, a much greater increase in volume is expected if I-394 is not built. South of I-394, volumes on Cedar Lake Road will decrease from present

levels primarily because the connection with Theodore Wirth Parkway will be eliminated. A new frontage road on the south side of I-394 will connect Penn Avenue and the Parkway, and will border a portion of the Bryn Mawr neighborhood.

The Tyrol Hills neighborhoods in Golden Valley may experience some minor traffic disruption due to changes in local circulation. They will have less direct access to and from I-394 than they now have with US-12. Golden Valley hired a consultant to study this problem. The access to North and South Tyrol Hills will be essentially what the City of Golden Valley has recommended. The existing pedestrian bridge over US-12 at June Avenue will be replaced.

business disruptions

The project will not cause significant loss of access to businesses along the freeway. The project will remove the direct access that many businesses now have on US-12, but access will be provided by interchanges and frontage roads. In most cases access should be improved due to reduced congestion. The major commercial areas will all have very good access.

Another disruption will be to the Brookview Golf Course and recreation area. The loss of direct access to I-394 will affect overall accessibility to the golf course, its recreation facilities, and community center. The project will also require the relocation of one tee. This is discussed in more detail in the Section 4(f) Evaluation attached to this report.

disruption to public services

The project will have an overall beneficial impact on access to community cultural centers, and to the provision of public services. The project will provide separated grade crossings and thus relieve congestion on many local streets, facilitating access to community centers, etc.

temporary disruption due to construction	During construction, Mn/DOT intends to maintain traffic within the existing corridor and no detours are planned. Congestion and delays can be expected during peak periods but construction staging will be planned to minimize this as much as possible. A certain amount of driver confusion and disorientation can also be expected as existing access points are either closed or modified. However, this can also be minimized by proper signing. A public information program to help motorists cope with detours and alternate routes may be implemented.
neighborhood access	The proposed freeway will have a generally beneficial effect regarding access to facilities and services. By reducing congestion and travel time, accessibility to the many social and cultural attractions of Minneapolis and Saint Paul will be increased, particularly for residents nearer the western end of the project. However, for residents near the eastern end of the project, access to the downtown area may be less convenient. Residents in the North and South Tyrol Hills neighborhoods may experience reduced access. Currently these residents have access to US-12 at two or three points between Penn Avenue and SR-100. Under the proposed interchange system, no direct access to the freeway will be provided between Penn Avenue and SR-100. Residents of North and South Tyrol Hills, and to a lesser extent Cedarhurst, may need to follow a less direct route to travel to destinations in the Minneapolis CBD.

Land Use and Planning

This project has been found by the Metropolitan Council to be consistent with the long range land use planning of the metropolitan area. The project may intensify development in the corridor, particularly commercial development near intersections in the western portion of the corridor. This type of development is already planned for in the communities' comprehensive plans and any development attributable to I-394 would be consistent with those plans. The primary impact area is entirely within the Metropolitan Urban Services Area, so provision of public services and utilities to the corridor area is planned and will pose no problem.

The communities along US-12 to the west of this freeway project are, for the most part, beyond the Metropolitan Urban Services Area. To examine potential land use impacts, local planners or planning consultants of the cities in this area were interviewed. The general consensus was that the project would have either no impact or slight beneficial impact. The cities of Wayzata, Mound, Minnetonka Beach, Spring Park, and Long Lake are nearly fully developed and their planners did not anticipate any further growth regardless of I-394. The planners of the remaining communities, with the exception of Orono, felt any resulting growth would be fully consistent with their land use plans. Many considered additional growth desirable. The City of Orono staff expressed concern about the possibility of increased development pressures associated with the project. While a strong zoning ordinance to control growth exists, they felt that the project may bring increased development pressure.

prime and unique farmland

No prime and unique farmland will be taken for the construction of US-12/I-394.

IMPACTS ON HISTORIC FEATURES

No sites on the National Register of Historic Places exist in the freeway corridor or adjacent to it. Although several such sites do exist in the study area, including one in the primary impact area, none of them will be affected by the project.

The Minnesota Historical Society (MHS) has been consulted and a letter from the State Historic Preservation Officer (SHPO) is included in the Appendix of this DEIS. The Society's review of the US-12/I-394 corridor has not revealed the existence of any historic or archaeological sites of significance for present or potential inclusion on the National Register. If any sites or artifacts of possible archaeological value are revealed during construction, operations will be suspended and the Preservation Officer will be notified so that he can determine the significance of the findings and, if appropriate, remove them.

The View Of The Freeway

Freeway US-12/I-394 will follow the route of existing US 12, so its visual impact will not equal that of a new freeway on a new route. Through much of the residential area and parkland, it will be lower than the surrounding land, so less obtrusive than the existing highway. Noise abatement walls along some of these same areas will also visually shield the freeway. The walls will be attractive; the backsides, facing the neighborhoods and parklands, will be landscaped to enhance their appearance. Retaining walls that face away from the freeway will also be designed to be attractive, with landscaping where necessary. The fences along the right-of-way may be vinyl clad to make them less obtrusive. The designers of the walls and landscaping will consult with the communities and park authorities to consider their wishes regarding appearance.

Even where clearly visible from the surrounding area, the freeway will be more attractive than the existing road. It will have a more unified appearance, fewer random elements, more clearly defined primary elements, better landscaping, and a neater relationship with the areas through which it passes. A design guide is being prepared to ensure that it will be aesthetically pleasing, coherent, and compatible with the surrounding areas.

The mitigation of the adverse visual effects of freeway elements, including bridge abutments, retaining walls, noise abatement walls, and fences is discussed in more detail on pages 93 and 94. That discussion considers the elements that face the freeway itself, as well as those that face the neighborhoods along the freeway.

The View From The Freeway

The view from US-12/I-394 will be essentially the same as that from existing US-12, as it will follow the same route. The lowered grade and the noise abatement walls along part of the route will limit the view to the side. These features will exist primarily along residential neighborhoods and parklands, so the most attractive views to the side of the

road will be the ones which will be lost. Much of the route is in rolling terrain, so the more distant landscape will still be visible. The minimum width between noise abatement or retaining walls will be 115 feet, which may create a sense of enclosure to the motorist. The walls will not be continuous for any great length, but intermittant, which will relieve the sense of enclosure.

The better design of the freeway itself will have a positive visual affect on the motorist. Simplicity, clear delineation of the highway elements, and design continuity will all be of help to the driver. Appurtenances such as lights and signs will be visually prominent, so will receive special design attention.

The straight alignment that comprises most of US-12 is not considered to give as interesting a forward view as that provided by a curved alignment. A gently curving alignment provides a landscape background to the roadway in the foreground. A straight alignment provides only a view of the road ahead, as far as the driver can see. On a heavily traveled commuter route such as this, the distant view ahead is probably less important than on, say, a tourist route. On US-12/I-394, most motorists will be so familiar with the route they will be virtually unconscious of the view. The heavy traffic will not permit much attention to the view, in any event. The nearly straight alignment will be beneficial with the series of interchanges, as it best accommodates the merging, lane change, and weaving movements.

A few landmarks will still be prominent to help orient the motorists. They will include the large buildings and complexes at Ridgedale, Shelard, General Mills, Turner's Crossroad, and Prudential. Eastbound motorists will still be treated to a dramatic view of the skyline as they approach Minneapolis.

CONSTRUCTION IMPACTS

The reconstruction of US-12 to freeway US-12 and I-394 will take, it is estimated, about five years. The construction will cause major impacts, but because the freeway will be built in stages, the impacts on any one area should not last more than two construction seasons. The impacts will not be unusual, but common to most urban highway construction projects. Some of the impacts may be more severe because of the need to maintain traffic in the corridor during construction.

The impacts on air quality, noise, water quality, and traffic are discussed below.

Air Quality

The freeway construction will have a negative impact on air quality. The air pollution will include the exhaust from construction equipment and trucks, and dust raised by these vehicles and the wind.

Due to air quality concerns, no traffic will be detoured outside the corridor. Traffic will be maintained within the corridor, on one-way frontage roads where possible, during construction.

Figitive dust (particulates) will be controlled by means of adherence to applicable Mn/DOT construction specifications, special provisions, and MPCA regulations. Control measures will include watering, calcium chloride applications, and street sweeping. Temporary connections and detours will be paved. Right-of-way to be landscaped will be seeded or sodded as soon as possible to reduce dust and wind erosion.

No significant increase of carbon monoxide concentrations are anticipated during the construction of the project. A CO analysis was made of the project corridor for the year 1986, assuming that mainline traffic would be split and on future frontage roads where possible. No violations of the air quality standards were predicted.

Noise

Construction noise will come mainly from the normal operation of trucks and heavy equipment, which could generate unusual or excessive noise. However, most such noise will be either brief or intermittent.

No uniquely sensitive noise receptors are known to be close to the freeway corridor.

The hours of construction activity can be limited in sensitive areas, when and where appropriate, to minimize the noise impact. Minneapolis, Golden Valley, and Saint Louis Park have ordinances that limit the hours that noisy construction activities can take place. These impacts are also discussed in the Noise section on page 196.

Water Quality

The freeway construction will have the potential for a negative impact on water quality. The water pollution could include wastewater from concrete mixing operations, accidental spills of petroleum products or chemicals, and runoff water muddied by erosion.

Wastewater and spills will be carefully controlled in accord with Standard Specification 1717 for Highway Construction, as published by Mn/DOT.

Erosion is a more serious potential source of water pollution. The contractors will be required to submit and obtain approval for an erosion control plan prior to construction. Temporary erosion controls can include bale ditch checks, earth diversions, bale diversions, and temporary sediment basins. Mn/DOT Specification 1803.5 defines erosion control procedures and responsibilities. Finally, insofar as possible, bare slopes will be stabilized and seeded or sodded concurrently with grading operations.

Traffic

A traffic control plan will be developed prior to construction. Mn/DOT's intent is to maintain traffic in the existing corridor.

Increased congestion and temporary driver confusion can be expected as travel patterns are altered and existing access points are either closed or modified. However, the traffic control plan will include provisions for adequate signing and strategies for maintaining a safe flow of traffic. A public information program to help motorists copy with detours and alternate routes may be implemented.

Although the adverse traffic impacts are unavoidable, Mn/DOT will make every effort to minimize them by enforcing all applicable standards and by cooperating with the affected communities to the fullest possible extent.

SECONDARY IMPACTS

Land Use

Development along the highway corridor may accelerate and intensify when US-12 is reconstructed from an expressway to a freeway, as proposed. The difference in the development will be in degree, not in kind. Highway 12 is now a major transportation corridor. Intense commercial development has occured along its path over the past thirty years. Further development is called for and planned for by both the individual communities and by the Metropolitan Council.

Traffic Movement

Because US-12 is now a major traffic corridor, its reconstruction to a freeway will not cause any adverse secondary impacts on traffic movement. To the contrary, the primary effect of the improved road will be to improve the traffic flow of an existing commuter and commercial route. By improving the highway between the western suburbs and the Minneapolis CBD, the project will alleviate congestion and reduce travel times within an existing transportation corridor. Some local traffic patterns will be modified, especially in areas where the direct access to the highway will be eliminated. However, the new travel patterns should prove to be both more efficient and safer.

Mass Transit

US-12/I-394 will include provisions for the preferential treatment of buses, vanpools, and carpools. These provisions will include preferential access ramps, diamond lanes, and reversible lanes.

At this time, no other form of mass transit is being considered for this corridor. A discussion of a Light-Rail-Transit (LRT) system is included in the "Alternatives" section of this report.

Transit systems, such as LRT, will continue to be studied by the Metropolitan Council. Although the recent study on LRT concluded that the I-394 corridor would be better served by a highway, new innovations could make such a system more desirable for the western suburbs in the future.

ENERGY IMPACTS

An energy analysis has been conducted to compare the energy cost of building and operating the US-12/I-394 freeway to the energy cost of not building the freeway and maintaining traffic on existing expressway US-12.

Constructing this 10.2 mile six-lane freeway (including the diamond and reversible lanes) will require a substantial one-time energy expenditure for materials, equipment, and construction operations during the year 1986 through 1990. These energy expenditures will be balanced by the reduced fuel consumption of the vehicles that will use the freeway with its more freely flowing traffic.

Not constructing the freeway will forego the energy expenditure of the construction project. However, based on an estimate of future needs we assume that the highway would also require two 2-inch overlays to maintain the roadway, and approximately two million (1974) dollars of intersection and signalization revisions to improve the capacity of the four lanes. Any energy saving (by not building I-394) would be offset by the increased fuel consumption of the many vehicles that will use the highway with its far more congested traffic.

The following table shows the results of the energy analysis in terms of equivalent daily energy consumption for the twenty year time period from 1990 to 2010. The energy costs of building the freeway and improving existing US-12 are included, of course, although those costs would be expended prior to the twenty years analyzed.

TABLE 31

ENERGY ANALYSIS

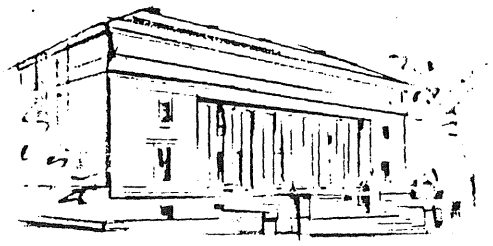
energy consumption by source	Equivalent Daily Consumption: US-12/I-394 freeway built	Equivalent Daily Consumption: freeway not built; US-12 improved
direct consumptions		
vehicle fuel	2.775×10^9 Btu	3.878×10^9 Btu
indirect consumptions		
vehicle maintenance and replacement	2.740×10^9 Btu	2.874×10^9 Btu
construction	0.7298×10^9 Btu	0.015×10^9 Btu
roadway maintenance	0.016×10^9 Btu	0.103×10^9 Btu
Total Energy Daily Average	6.2608×10^9 Btu	6.870×10^9 Btu
Total Energy per Day in terms of Barrels of Crude Oil	1079 barrels	1184 barrels

In the calculations, the US-12/I-394 roadway was assumed to have a useful life of twenty years, and the bridges and other structures a useful life of fifty years. The energy to build the freeway was apportioned, on a daily basis, over these lifespans.

The nine or ten percent energy benefit of building the freeway is not conclusive, considering the state of the art of the calculations. It suggests that building the freeway will ultimately save energy. It does not suggest that building the freeway will be a waste of energy.

The energy study was done using the California Department of Transportation procedure "Energy Mod 3" with a minor revision made in the indirect energy construction portion. The computations are available for review at the Mn/DOT Golden Valley District Office.

APPENDIX



MINNESOTA HISTORICAL SOCIETY

Fort Snelling Branch (Building 25), Fort Snelling, St. Paul, Minnesota 55111 • 612-726-1171

October 29, 1974

Mr. C. P. Kachelmyer
Preliminary Design Engineer
612E State Highway Building
St. Paul, Minnesota 55155

Subject: S.P. 2789-01 (T.H. 394)

Dear Mr. Kachelmyer:

The above referenced project has been reviewed by staff of the Historic Sites and Archaeology sections of the Minnesota Historical Society and has been field surveyed under the auspices of the Highway Archaeology Survey. This research has revealed no historic or archaeological sites of proper significance for present or potential inclusion on the National Register of Historic Places. Therefore, we foresee no adverse effects if this project is implemented. Please notify this office if cultural materials are discovered during construction activities.

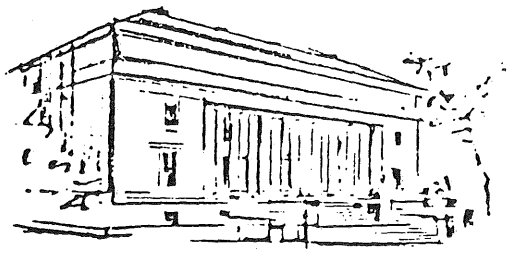
Sincerely,

Russell W. Fridley

Russell W. Fridley
State Historic Preservation Officer

RWF:lt

Founded 1849 • The oldest institution in the state



MINNESOTA HISTORICAL SOCIETY

690 Cedar Street, St. Paul, Minnesota 55101 • 612-221-2747

May 9, 1978

Mr. C.P. Kachelmyer
Preliminary Design Engineer
Department of Transportation
Room 604 - Transportation Building
St. Paul, Minnesota 55155

Dear Mr. Kachelmyer:

Minn. Proj. I 394-6 ( )

Re: SP 2789-01 (I-394)
From I-94 in Minneapolis
to I-494 in Minnetonka
Hennepin Co.

MHS Referral File #F569

Thank you for the opportunity to review and comment on the above project. It has been reviewed pursuant to responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the National Advisory Council on Historic Preservation (36CFR800).

This review reveals the location of no sites of historic, architectural, cultural, or archaeological significance within the area of the proposed project. There are no sites in the area which are on the National Register or eligible for inclusion on the National Register, and, therefore, none which may be affected by your proposal.

Again, thank you for your participation in this important effort to preserve Minnesota's heritage.

Sincerely,

Russell W. Fridley

y
eservation Officer

RWF/f

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MINNESOTA HISTORICAL SOCIETY

690 Cedar Street, St. Paul, Minnesota 55101 • 612-296-2747

4 March 1981

Mr. C. P. Kachelmyer
Preliminary Design Engineer
Department of Transportation
Room 604 - Transportation Bldg.
St. Paul, MN 55155

Dear Mr. Kachelmyer:

Minn Proj. F 019-2( )

RE: S.P. 2789-01 (TH 12)
From I-494 in Minnetonka
To E. Jct. TH 101 in Wayzata
Upgrading/Hennepin County

MHS Referral File Number: M 494

Thank you for the opportunity to review and comment on the above project. It has been reviewed pursuant to responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the National Advisory Council on Historic Preservation (36CFR800).

This review reveals the location of no sites of historic, architectural, cultural, or archaeological significance within the area of the proposed project. There are no sites in the area which are on the National Register or eligible for inclusion on the National Register, and, therefore, none which may be affected by your proposal.

Again, thank you for your participation in this important effort to preserve Minnesota's heritage.

Sincerely,

Russell W. Fridley
State Historic Preservation Officer

RWF/sl

cc: Les P
Fort

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Federal Highway Administration
E.O. 11990 - Wetland Finding
Minnesota Project S.P. 2781

This statement sets forth the basis for a finding that there is no practicable alternative to construction in the wetlands located along US 12 and I-394, from SR 101 in Minnetonka (West Terminus) to I-94 in Minneapolis (East Terminus), and that the highway proposal includes all practicable measures to minimize harm to the wetlands which may result from such use. This finding is made in accordance with the requirements to Executive Order (E.O.) 11990 on the Protection of Wetlands, dated May 24, 1977.

Description of Project

The proposed project entails construction of 10.2 miles of freeway along existing US 12 from SR 101 in Wayzata to I-94 on the western edge of the Minneapolis central business district (CBD). The 8.7 mile segment of US 12 from I-494 in Minnetonka to I-94 will be redesignated as I-394. The street system and parking facilities of the Minneapolis CBD will be linked to I-394 by the proposed 1 mile long Third Avenue Distributor.

From I-494 to SR 100, I-394 will be a six-lane freeway with the inside lanes identified as standard diamond lanes for High Occupancy Vehicles (i.e. buses, van pools, and car pools) during rush hours, and from SR 100 to I-94 near the Minneapolis CBD, it will be a six-lane freeway with the two inside lanes being reversible and physically spearated from the outer lanes. The reversible lanes will operate eastward toward the city in the morning and westward toward the suburbs in the afternoon and evening.

Cloverleaf-type interchanges will connect I-394 to the principal and intermediate arterials of I-494, CSAH 18, and SR 100. Other interchanges will be

spaced to serve local needs. Collector-distributor (C-D) roads will improve the capacity and safety of many of the interchanges. The frontage road system will be improved and bridges and underpasses for both vehicles and pedestrians will improve traffic circulation and link neighborhoods and commercial areas on each side of the freeway. I-394 will be depressed for much of its length to reduce noise and visual impact. Noise abatement walls or mounds will be built where warranted and desired by the local community.

Park-and-ride sites will be built to encourage car and van pooling and the use of public transit buses. Ramps will be built to exclusively serve the reversible lanes. The Traffic Management Center (TMC) will monitor traffic and meter entrance ramps to provide smooth traffic flow.

Alternatives Considered

Three project alternatives located along existing US 12 were considered in addition to the Do-Nothing option (Figure 13).

Alternate 1 - east and westbound lanes would divide just east of Penn Avenue. Eastbound traffic would follow a new southern alignment, and westbound lanes would be aligned mainly within the US 12 corridor to its junction with SR 100. There the westbound lanes would diverge from existing US 12 and follow a new northern alignment. Rejoining each other at Winnetka Avenue, east and westbound lanes would continue along US 12 to the western terminus of the project.

Alternate 2 - (Mn/DOT's selected alternate) would be located along US 12, approximately within existing US 12 Right-of-Way. The Alternate 2 corridor is recommended as the preferred alternate because it would follow an existing transportation corridor which has long been planned for freeway status, requires less relocation of residences and businesses, and directly serves existing and future regional population centers.

Alternate 3 - follows existing US 12 from the Hawthorne Interchange to approximately Penn Avenue in Minneapolis. The route then turns southwesterly, paralleling the Burlington Northern Railroad tracks to approximately SR 100 in St. Louis Park. At this point the route would follow a northwesterly direction along Cedar Lake Road and would rejoin the existing US 12 alignment at approximately Colorado Avenue and would continue on this alignment to the western terminus of the project.

Do Nothing Alternate - would involve no new construction and would maintain existing conditions. This will result in continued congestion on US 12 during rush hours, increased accident frequency, poor access to existing and future developments and jeopardized fire and police protection when the roadway is congested. As traffic increases, noise levels (which are currently in excess of state standards) would also increase.

Description of Wetlands

The project area contains 27 wetlands (Figure 13) totaling 582.1 acres (Table 1). Wetlands were classified according to Wetlands of the United States (U.S. Fish and Wildlife Service, Circular 39), and Classification of Wetland and Deepwater Habitats (FWS/OBS - 79/31). Definitions of the various types defined by these two systems are summarized in Appendix 1. Wetlands are usually dominated by one type, but may contain several constituent types.

Wetlands Affected

Portions of five wetland basins, totaling approximately 18.2 acres, will be filled during construction of Alternate 2. The areas impacted involve 3.1% of the total wetlands within the project corridor. There is little difference between Alternates 1 and 2 in avoiding direct wetland impacts (Table 2).

TABLE 1. Area and classifications of each wetland 1-27 (see Figure13)

Wetland Number	Area (Acres)	Circular 39 U.S. Fish and Wildlife Service (Type)	Classification of Wetlands and Deep-water Habitats of the U.S. (Codes)
1	4	4	PEM5
2	7	4	PEM5
3	6	7	PFO2
4	0.4	5	POW
5	8	4	PEM5
6	7	3	PEM3
7	8	3	PEM3
8	2	5	POW
9	4	3	PEM3
10	74	4	PEM5
11	43	1/6/7	PSS1
12a	0.8	5	POW
12b	0.3	5	POW
13	25	3	PEM3
14	4	3	PEM3
15	1	3	PEM3
16	34	2	PEM1
17	54	3	PEM3
18	105	4	PEM5
19	22	2	PEM1
20	2	5	POW
21	5	3	PEM3
22	91	3	PEM3
23	0.6	5	POW
24	0.5	5	POW
25	15	2/3	PEM1
26	29	3	PEM3
27	31	3	PEM3

Total acres = 582.1

Table 2.

Projected Direct Wetland Impacts of Alternate Routes

(estimated to the nearest tenth acre)

Wetland Number	Circular 39 Type	Total Acres	Acres of Encroachment Alt.1	Alt.2	Alt.3
6	3	7	4.9	4.9	-
9	3	4	-	-	.6
11	2/6	42	10.9	10.9	10.9
12a	5	0.8	.1	.1	.1
17	3	54	.1	.1	.1
18	4	105	3.2	3.2	3.2
Cedar Lake	5	195	-	-	2.5
Brownie Lake	5	9	-	-	.4
		Totals	18.2	18.2	17.8

Alternate 3 avoids wetland 6 but would encroach into wetland 9, Brownie Lake, and Cedar Lake. Approximately .4 acre of Brownie Lake and 2.5 acres of Cedar Lake would have to be filled or bridged under Alternate 3.

Wetlands impacted by Alternate 2 would be as follows:

Wetland 6, a seven-acre type 3 wetland will have up to 4.9 acres filled as a result of constructing the I-394/SR-100 interchange (Figure 33). The remaining wetland, plus some additional upland area, will be used for stormwater storage. This will change the wetland classification from a type 3 emergent marsh to a type 5 open water pond. Considerable fluctuation in water level is expected due to reduced size and increased runoff. Wildlife use by resident and nesting species will decrease, while seasonal use by waterfowl will increase.

Wetland 11 is a highly diverse, 43 acre, type 1, 6, 7 wetland. Construction of the Boone Avenue South extension and interchange will fill 10.9 acres of this wetland (Figure 34). The area to be filled is dominated by elm, cottonwood, maple, dogwood and hawthorn. The unique stand of tamarack will not be disturbed. This wetland offers very good habitat for a variety of wildlife species such as deer, raccoon, skunk, ring-necked pheasant, and a variety of songbirds. Removal of approximately 25 percent of the available habitat will reduce but not eliminate the wildlife value of the remaining wetland. Stormwater storage ponds may be constructed in this wetland, to replace lost floodplain storage. These ponds would be designed to increase the wildlife diversity of the remaining wetland. Valuable stands of tamarack, red maple, hawthorn, and black cherry will be preserved. Pond construction will be limited to areas of stinging nettles and red-osier dogwood.

Wetland 12a is a type 5, 0.8 acre man-made pond (Figure 34). This wetland receives some use by waterfowl, primarily Canada Geese, which nest throughout the General Mills property west of wetland 11. Approximately 0.03 acre of the southwest corner of the pond will be filled. Waterfowl use of the pond should not be affected by this small encroachment.

Wetland 17 is a 54 acre, type 3 cattail marsh. Construction of the Ridgedale Drive interchange will affect less than 0.1 acre of this wetland (Figure 35). Excavating a wildlife pond in this wetland will increase the habitat diversity and offer greater wildlife habitat for waterfowl.

Wetland 18 is the 105 acre Ridgedale Marsh, a type 4 cattail marsh. This wetland offers the best wildlife habitat within the project corridor. Species which use this wetland include, raccoons, muskrat, ringnecked pheasants, herons, egrets, and numerous species of waterfowl and songbirds. Construction of a frontage road between Ridgedale Drive and CR-73 will impact 3.2 acres of cattail fringe (Figure 35). Approximately 1.0 acre of this impact will be from the construction of a stormwater retention pond between the proposed frontage road and an entrance ramp to I-394. Due to limited space, this pond will be designed solely for stormwater retention, sediment removal and spill control.

Measures to Minimize Harm

1) Stormwater retention and wetland mitigation ponds.

   Seven ponding areas are planned to store and treat highway runoff and/or mitigate for wetland impacts (Figure 13).

   A) Ponding complex A would be excavated within and adjacent to wetland 25, which is a 15 acre type 2/3 emergent marsh. Water presently flows from

wetland 22 through this marsh into wetland 26 and eventually into Minnehaha Creek. Two to three dual purpose ponds will be excavated to provide stormwater detention as well as being designed to diversify wildlife habitat. Ultimate size and design of the ponds will not be known until the detail design phase.

B) Ponding complex B would be excavated within wetland 17, which is a 54 acre type 3 emergent marsh. This wetland is densely vegetated with cattails and has virtually no open water. Excavating several small (less than 0.2 acre) open water basins, with variable shorelines and depths, will increase the value of this wetland as wildlife habitat.

C) Pond C would be a small stormwater storage basin to be excavated within the northeast loop of the Ridgedale frontage road. This area is presently a type 3 portion of Ridgedale Marsh which is a 105 acre overall type 4 emergent marsh. Due to space limitations within the loop, this pond will be designed only for storage of runoff. The U.S. Fish and Wildlife Service recommends that level ditching be done in the dense cattail portion of Ridgedale Marsh, in order to enhance wildlife habitat. This measure will be explored during detail design and implemented if feasible.

D) Pond D would be excavated within wetland 14 which is a four acre type 3 emergent marsh. This wetland is densely vegetated with cattails and has no open water. This pond will be designed to approximate a 50:50 ratio of open water and emergent vegetation. This would be a dual purpose pond, designed for both stormwater detention and wildlife habitat.

E) One or more ponds would be excavated within wetland 11 which is a 43

acre type 1/6/7 wetland. The ponds will be designed to replace lost flood storage, retain and treat stormwater, and add further diversity to an area of good quality wildlife habitat. An effort will be made to preserve areas of unique or valuable vegetation, such as tamarack, hawthorne and red maple.

F) Pond F would be located northwest of the US 12/SR 100 interchange in wetland 6. This wetland is presently a densely vegetated 7 acre type 3 emergent marsh with no open water. Due to the extensive fill that will impact this wetland (4.9 acres) and the small amount of space available for stormwater storage, this pond will be designed only for storage.

G) Pond G would be excavated between US 12 and the Burlington-Northern railroad tracks near Penn Avenue in what is presently an upland area. Due to the small available space at this location, this pond will be designed only for storage.

2) Highway fill slopes will be constructed 4:1 or steeper adjacent to impacted wetlands (6, 11, and 17, 18) to minimize wetland encroachment.

3) Temporary erosion and sedimentation control measures will be used throughout construction, including bale ditch blocks, earth or bale diversions, and temporary sedimentation basins. Permanent measures will be initiated as early as practicable and will include replacement of topsoil, seeding, sodding, and placement of rip-rap.

4) It is anticipated that considerable quantities of excess excavated materials will be generated by the construction of I-394. Disposal of excess material

into wetlands will be avoided unless it is to mitigate for wetland and wildlife habitat losses (i.e., creating nesting islands) or is done in accordance with Guidelines for Disposal of Excess Excavated Material. These guidelines are a procedure developed by Mn/DOT, in consultation with the U.S. Fish and Wildlife Service, to determine if there is no practicable alternative to disposal of excess material in wetlands and other sensitive areas. Since quantities of excess material and locations of disposal areas will not be known until construction of I-394 in 1986, it is not possible to make a definitive statement that excess materials will not be placed in wetlands, however, it is not anticipated that wetlands will be filled.

Comments and Coordination

The impact of I-394 upon wetlands has been coordinated with the U.S. Fish and Wildlife Service and the Minnesota Department of Natural Resources (see Appendix 2). DNR protected waters and U.S. Army Corps of Engineers 404 permits will be necessary for the project.

Conclusion

The above factors and considerations establish that there is no practicable alternate to construction in the wetlands located along proposed I-394, and that the highway proposal includes all practical measures to minimize harm to the wetlands which may result from such use.

3/5/82
Date

William R. Lake
Division Administrator
Federal Highway Administration

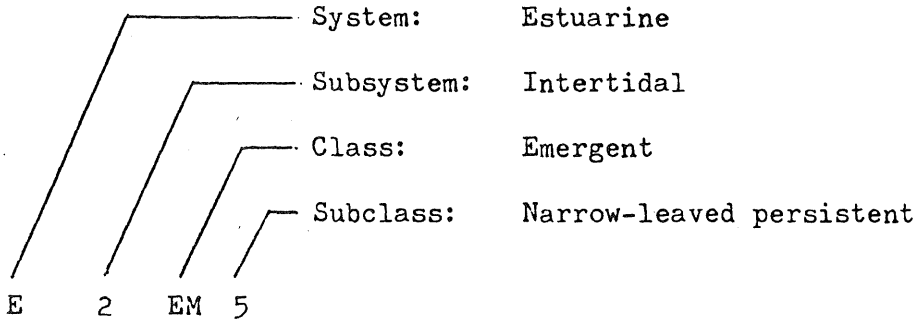
Appendix 1

Classification Codes

Codes are made up of a series of letters and numbers (alpha numerics) with the first letter representing the system and subsequent alpha numerics representing in a sequential manner. Class and subclass where classes and subclasses have been mixed are separated by a diagonal line.

Examples

a. Classification of wetlands to water regime and special modifier:



b. Mixing of Wetland classes and subclasses:

PFO2/EM3A = Palustrine, Forested, Needle-leaved deciduous (PFO2) mixed with Palustrine, Emergent, Narrow-leaved non-persistent (PFM3) with a temporary water regime.

Classifications:

Systems

[P] Palustrine** (-this is the only system involved in this project, and no subsystems). See attached figure.

Classes and Subclasses

[ ] Class

[ ] Subclass

[AB] Aquatic Bed

1 Submergent Algal
2 Submergent Vascular
3 Submergent Moss
4 Floating - Leaved
5 Floating
6 Unknown Submergent
7 Unknown Surface

[BB] Beach/Bar

1 Cobble/Gravel
2 Sand

[EM] Emergent

1 Persistent
2 Nonpersistent
3 Narrow-Leaved Nonpersistent
4 Broad-Leaved Nonpersistent
5 Narrow-Leaved Persistent
6 Broad-Leaved Persistent

[RB] Rock Bottom

1 Bedrock
2 Boulder

[FO] Forested

1 Broad-leaved Deciduous
2 Needle-Leaved Deciduous
3 Broad-Leaved Evergreen
4 Needle-Leaved Evergreen
5 Dead
6 Deciduous
7 Evergreen

[ML] Moss/Lichen

1 Moss
2 Lichen

[SS] Scrub/Shrub

1 Broad-Leaved Deciduous
2 Needle-Leaved Deciduous
3 Broad-Leaved Evergreen
4 Needle-Leaved Evergreen
5 Dead
6 Deciduous
7 Evergreen

[OW] Open Water/Unknown Bottom

Comparison of Wetland Types described in U.S. Fish and Wildlife Service Circular 39 and the new Fish and Wildlife Service, Office of Biological Services (F.W.S./O.B.S.) classification system.

Circular 39	Classification of Wetlands and Deepwater Habitats		Characteristics (description)
	Classes	Water Regimes	
1.- Seasonally Flooded Basins	Emergent Wetland Forested Wetland	Temporarily Flooded Intermittently Flooded	The soil is covered with water, or is waterlogged, during variable seasonal periods, but is usually well drained during much of the growing season. Vegetation varies greatly according to the season and duration of flooding.
2 - Inland Fresh Meadow	Emergent Wetland	Saturated	The soil is usually without standing water during most of the growing season but is waterlogged within at least a few inches of its surface. Vegetation includes grasses, sedges, rushes, and various broad-leaved plants. Wild hay is often cut from such areas.
3 - Inland Shallow Fresh Marshes	Emergent Wetland	Semipermanently Flooded Seasonally Flooded	The soil is usually waterlogged during the growing season, often covered by as much as 6 inches or more of water. Vegetation includes grasses, bulrushes, spikerushes, and various other marsh plants such as cattails, arrowhead, pickeralweed and smartweeds.
4 - Inland Deep Fresh Marshes	Emergent Wetland Aquatic Bed	Permanently Flooded Intermittently Exposed Semipermanently Flooded	The soil is covered with 6 inches to 3 feet or more of water during growing season. Vegetation includes cattails, reeds, bulrushes, spikerushes, and wild rice. In open areas pondweeds, naiads, coontails, watermil foils, duckweed, waterweed, waterlilies, or spatterdock may occur.
5 - Inland Open Fresh Water	Aquatic Bed Unconsolidated Bottom	Permanently Flooded Intermittently Exposed	Shallow ponds, lakes, or reservoirs with less than 10 feet of water and fringed with emergent vegetation, including: pondweeds, naiads, wild-celery, coontail, muskgrasses, and spatterdocks.
6 - Shrub Swamps	Scrub-Shrub Wetland	All nontidal regimes (except Permanently Flooded)	The soil is waterlogged with at least a few inches of its surface during the growing season and is often covered with as much as 1 foot of water. Trees include tamarack, arborvitae, black spruce, balsam, red maple, and black ash.
7 - Wooded Swamps	Forested Wetland	All nontidal regimes (except Permanently Flooded)	The soil is waterlogged with at least a few inches of its surface during the growing season and is often covered with as much as 1 foot of water. Trees included tamarack, arborvitae, black spruce, balsam, red maple, and black ash.
8 - Bogs	Scrub-Shrub Wetland Forested Wetland Moss-Lichen Wetland	Saturated	The soil is usually waterlogged and supports a spongy covering or mosses. Vegetation is woody or herbaceous or both. Typical plants are: heath shrubs, sphagnum moss and sedges along with leatherleaf, labrador tea, cranberries, carex, and cottongrass.

Appendix 2

Coordination

SF-00005-02

STATE OF MINNESOTA

DEPARTMENT Natural Resources

Office Memorandum

TO : Frank Pafko, Acting Supervisor
Environmental Development Unit, Minn. DOT

DATE: Oct. 29, 1981

FROM : Earl Huber, Surveys and Review Unit Supervisor
Ecological Services Section

PHONE: 6-2838

SUBJECT: Work Draft of Wetland Finding for Minnesota Project S.P. 2789 (T.H. 12 and I-394, from T.H. 101 in Minnetonka to I-94 in Minneapolis)

We reviewed the above document and attended the meeting and field reconnaissance of the project area on October 27, 1981. Those in attendance included you, the U.S.F.W.S. (Ken Carr), Minnesota Division of Waters (Judy Boudreau), various DOT District 5 personnel, and Tom Kucera (Ecological Services) and myself. From the available information we feel that the preferred alternative (#2) using the present T.H. 12 alignment is the best choice. The proposed construction appears to include all possible measures to minimize adverse impacts to wetlands and to provide mitigative measures.

In general such mitigative measures as creating open water areas in vegetation choked type III wetlands can be quite beneficial to various wildlife species. These open water areas can be created by the use of water control structures, level ditching, and dredging or blasting shallow pothole openings. In addition the formation of islands for nesting in open water areas can also be very useful. Your preliminary proposal for improving wetland areas 16 and 22 (wetland types III and II, respectively) is reasonable. There may be other such wetlands in the project corridor which could be subject to similar mitigative measures. However the location, numbers, types, and availability of various wetlands present would determine what might be most desirable or practical.

It is noted that wetland #11 in the project path may provide an additional or alternative chance for providing mitigation. The area is owned by General Mills. However the DOT has to find out how receptive the General Mills Company may be to the DOT concept for wetland development, It is our preliminary opinion that wetland 11 is quite desirable just the way it is. However if some open water areas could be provided without greatly impacting present tree, shrub, and grassland areas then possibly it will be advantageous to give variety by impounding water. If creating water areas is a possibility then the use of a water control structure on the outlet may be required.

It seems reasonable to us that whatever mitigative plans that the DOT has they should involve the expertise of Gordon Gust (Area Wildlife Manager - New Hope). He would be helpful in assessing the use and needs of various wetlands in the project corridor. The utilization of type VI and VII wetland areas for impounding waters for wildlife may or may not be that desirable - depending on the circumstances.

EHH:blt
cc: Ken Wald
Gordon Gust

United States Department of the Interior

FISH AND WILDLIFE SERVICE

IN REPLY REFER TO:

St. Paul Field Office, Ecological Services
538 Federal Building and U.S. Court House
316 North Robert Street
St. Paul, Minnesota 55101

November 17, 1981



Mr. Frank Pafko
Office of Environmental Services
Minnesota Department of Transportation
Transportation Building
St. Paul, Minnesota 55155

Dear Mr. Pafko:

This provides preliminary U.S. Fish and Wildlife Service comments regarding the contemplated wetlands mitigation plan for the I-394 project (S.P. 2789).

We generally concur with the mitigation proposals as set forth in the working draft Wetland Finding for S.P. 2789 (I-394). We understand that most of the modifications suggested during our October 27 field review of the project are now proposed for inclusion in your final Wetland Finding and Mitigation Plan. The following is our understanding of possible modifications.

1. A new wetland designation has been given to the palustrine persistent emergent/scrub shrub wetland proposed to contain Pond A. The wetland is now wetland 25, and will contain 2 or 3 dual-purposed ponding areas that will serve to increase wildlife habitat diversity in the wetland complex.

2. If possible, wetland 16 will now contain several small ponds with shallow bottoms and irregular shorelines rather than the one pond originally proposed (Pond B).

3. The use of "level ditching" will be explored for the dense stands of emergent vegetation in wetland 17 (Ridgedale Marsh) to enhance wildlife habitat. Pond C will continue to be proposed for the northwest corner of the wetland.

4. Wetland 14 be proposed for dual-purpose use as a ponding site and wildlife habitat.

5. The wetland area on the General Mills property, adjacent to the Brookview Golf Course, will receive fill on approximately 11 acres due to the extension of Boone Avenue and the construction of an access road to the General Mills building complex. We understand that MnDOT intends to construct water quality "enhancement" ponds in the more disturbed parts of the wetlands and will attempt to avoid the more "natural" areas. Attempts to provide flood storage and storm water treatment above the floodplain of Bassett Creek should aid in the mitigation of impacts to local fish and wildlife resources.

Thank you for the opportunity to review the project and MnDOT's proposed mitigation.

Sincerely,

Richard F. Berry

Richard F. Berry
Field Office Supervisor

cc: Minn. DNR, St. Paul (Ecol. Serv.)

STATE OF MINNESOTA

DEPARTMENT OF NATURAL RESOURCES

Office Memorandum

TO : Frank Pafko, Environmental Development Unit
Minnesota Department of Transportation

DATE: Nov. 6, 1981

FROM : Judy Boudreau, Hydrologist
Metro Region Waters

PHONE: 296-7523

SUBJECT: WORK DRAFT AND FIELD REVIEW---WETLAND FINDINGS, MINNESOTA
PROJECT S.P. 2789: T.H. 12/I-394

In response to your request for comments on the above-referenced Work Draft and subsequent field inspection on October 27, 1981 (also involving Ron Peterson of your office; Tom Kucera and Earl Huber of Ecological Services; Ken Carr of USFWS; John Boynton, Hydraulic Engineer for MN/DOT, District 5, and the two project engineers for I-394), I offer the following:

From a wetland standpoint, alternative 2 seems to be the minimum impact solution in that the proposed alterations to DNR protected wetlands have appropriate mitigative solutions. Below is a list of the numbered wetlands on the route (as well as some which were not indicated, see attached map) and the corresponding DNR preliminary inventory designations:

Wetland No.-DOT	DNR Protected Waters Inventory No. ****	Flood Zone A
1	654P	
2	653P	
3	-	
Brownie Lake	38P	
4	-	
5	-	
6	652P	
7	-	
8	-	
9	-	Yes
10	711P	
11	-	Yes
12 (a & b)	-	
13	Bassett Creek	
14	729P	
15	1092W	
16	732W	Yes
	733P	
	702P	
17	734P	Yes
18	759W	
19	-	
20	737W	
21	740W	
22	741W	
23	753W	
24	743W	

**** (those wetlands not numbered do not qualify as a protected wetland)

Any alteration of those wetlands which are designated as protected should be approved by a DNR permit. In addition, Gordon Gust, Area Wildlife Manager, should be contacted for his comments if he has not already had that opportunity.

From a flood plain standpoint, I have included a column which indicates four wetlands which are within designated A zones. It is my understanding that Joe Thomas (MN/DOT, Environmental Services) and David Leuthe (Land Use Hydrologist, DNR) have reviewed the consistency of this project with State and local standards.

ch

STATE OF
MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

DECEMBER 22, 1981

Mr. Frank Pafko
Office of Environmental Services
Minnesota Dept. of Transportation
Transportation Bldg.
St. Paul, Minn. 55155

Dear Mr. Pafko:

The mitigation proposals suggested in the working draft wetland finding for proposed I-394W, from the western edge of Minneapolis to Wayzata, appear to be adequate to compensate for the total of 18.2 acres of marsh that will be filled during the construction of alternate # 2, said 18.2 acres comprising 3.1% of the total wetland acres within the project corridor.

Because of the diversity of cover types on wetland # 11, adjacent to General Mills, creating open water areas by constructing dug-outs in portions of the marsh with a minimum of woody cover would be desirable, thereby avoiding the loss of woody growth that, currently, is serving as valuable winter cover for upland wildlife.

It is felt that blasting should be avoided in creating dug-outs, being the resulting openings are not as attractive to waterfowl, nor are they as permanent as dug-outs constructed using heavy equipment.

Sincerely yours,

Gordon Gust

Gordon Gust
Area Wildlife Manager
Minnesota Division of Fish & Wildlife

cc. - Roger Johnson
Judy Boudreau
Earl Huber

LIST OF PREPARERS

The following people were primarily responsible for preparing and reviewing the Final Environmental Impact Statement.

All represent the Minnesota Department of Transportation.

Name	Profession	Project Responsibilities
Richard Borson	Engineer	Project Development
John Boynton	Engineer	Hydraulics
Scott Carlstrom	Hydrologist	Water Quality/Drainage
Andrew Datko	Planner	Socio-economics
Greg Felt	Engineer	Air Quality
Graham Ford	Geologist	Geology/Groundwater
Carrie Foster	Student Biologist	Wetlands
John Gable	Technical Writer	Writing/Editing
John Hale	Technician	Air Quality
James Hansen	Technician	Noise
Jon Henslin	Agricultural Engineer	Erosion Control
Roger Kallroos	Illustrator	Graphics
Gerald Larson	Research Analyst	Socio-economics
David Lennartson	Draftsman	Graphics
Norm Mellum	Engineer	Air Quality
Dennis Moline	Draftsman	Graphics
Frank Pafko	Aquatic Biologist	Water Quality/Wetlands
Robert Paine	Engineer	Air Quality
Ronald Peterson	Wildlife Biologist	Wetlands/Wildlife/Vegetation
Allan Pint	Engineer	Geometrics
Jim Reierson	Landscape Architect	Mitigation Design
Craig Robinson	Engineer	Noise/Project Manager
Kenneth Schrader	Engineer	Hydraulics/Drainage
Michael Spielmann	Engineer	Hydraulics/Drainge
Richard Staffon	Wildlife Biologist	Wetlands/Wildlife
Roxanne Sullivan	Geologist	Geology/Groundwater
Joseph Thomas	Hydrologist	Floodplains
Jim Woodruff	Technician	Air Quality
Steven Wyczawski	Landscape Architect	Mitigation Design

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