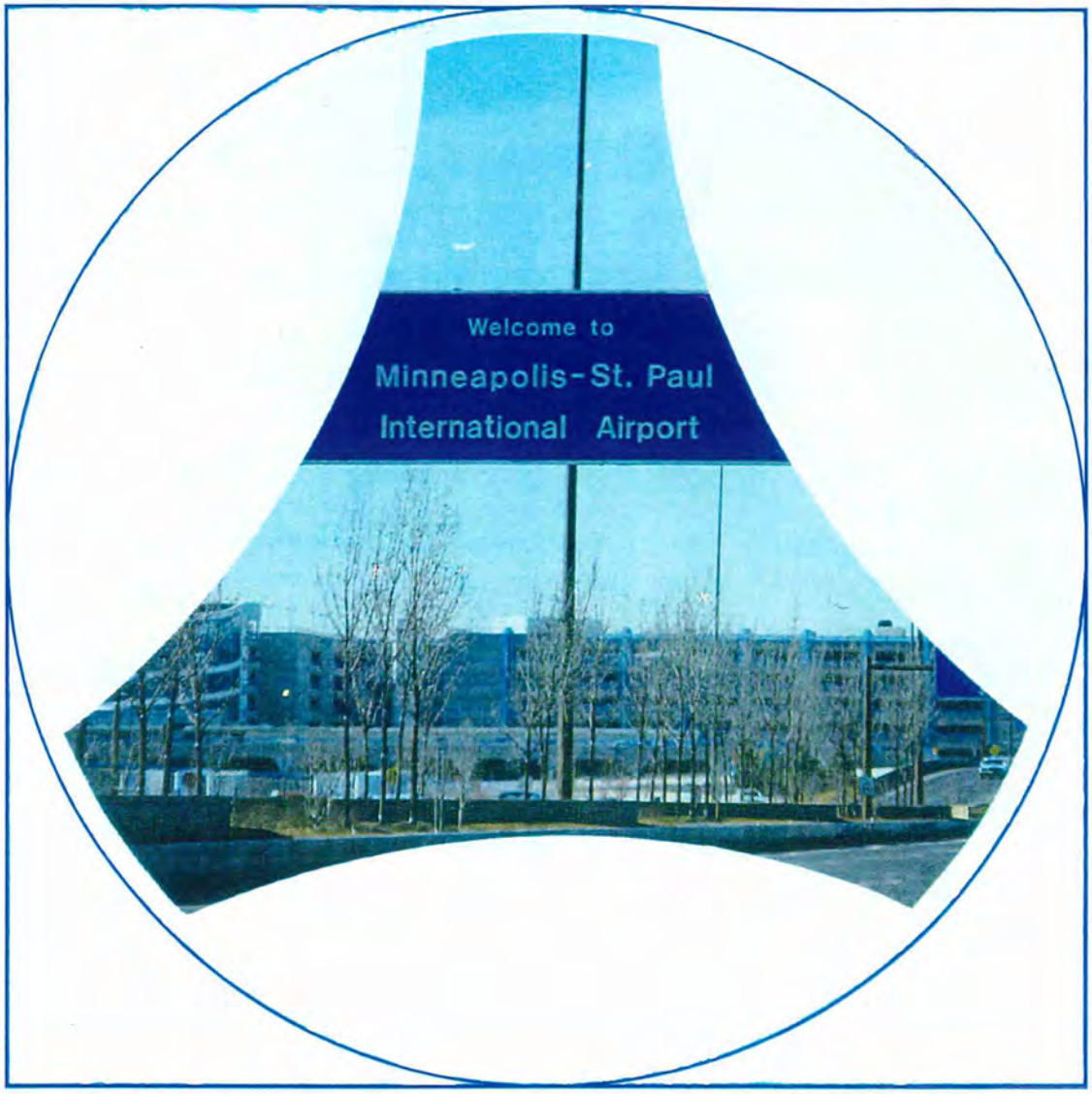
# *Dual Track Airport Planning Process*




# *Final Environmental Impact Statement*

***May 1998***

*Metropolitan Airports Commission*

*Federal Aviation Administration*

U.S. Department
of Transportation
**Federal Aviation
Administration**

AIRPORTS DISTRICT OFFICE
6020 28th Avenue South, #102
Minneapolis, Minnesota 55450-2706
May 8, 1998

TO: Interested Persons and Agencies

FROM: Franklin D. Benson—Manager, Airports District Office;
Federal Aviation Administration
Nigel D. Finney—Deputy Executive Director, Planning and Environment;
Metropolitan Airports Commission

DATE: May 7, 1998

SUBJECT: Final Environmental Impact Statement (FEIS)
Minneapolis-St. Paul International Airport
Hennepin County, Minnesota

Enclosed for your review is the *Final Environmental Impact Statement* (FEIS) for the Minneapolis-St. Paul Dual Track Airport Planning Process.

The Federal Aviation Administration (FAA) and the Metropolitan Airports Commission (MAC) have jointly prepared the FEIS on the potential effects of the addition of a new 8,000-foot runway and other improvements at the Minneapolis-St. Paul International Airport (MSP). The FEIS also summarizes and references the FAA's *Section 4(f) Evaluation* on the project's anticipated impacts on historic and archaeological resources and, in particular, on the Minnesota Valley National Wildlife Refuge.

The FAA's Section 4(f) Evaluation, a separate document, was sent to federal, state and local agencies, and to interested parties on May 1, 1998. The review period for the Section 4(f) Evaluation is May 1, 1998, through June 30, 1998.

The FAA is responsible for assuring the FEIS complies with all applicable federal requirements and the MAC is responsible for assuring the FEIS complies with all applicable state requirements. The Minnesota Environmental Quality Board will make the Determination of Adequacy for the state, while the FAA findings on the federal actions will be made in its Record of Decision.

The review period for the FEIS is May 15, 1998, through June 15, 1998.

Written comments on the FEIS will be accepted until the close of business on June 15, 1998, and may be directed to:

Ms. Jenn Unruh
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, MN 55450

The MAC will be receiving all comments on behalf of the MAC and the FAA.

Additional copies of the referenced environmental documents are available upon request. Contact Jenn Unruh, MAC, at (612) 726-8189.

DUAL TRACK AIRPORT PLANNING PROCESS
TWIN CITIES METROPOLITAN AREA, MINNESOTA

# FINAL ENVIRONMENTAL IMPACT STATEMENT SECTION 4(f) EVALUATION

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COOPERATING AGENCIES
MINNESOTA DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION, U.S. D.O.T.
METROPOLITAN COUNCIL

**May 1998**

This Final EIS addresses the environmental impacts associated with major airport development to provide the capacity, facilities and highway improvements for Minneapolis-Saint Paul International Airport in Hennepin County, Minnesota. This statement is submitted for review pursuant to the following public law requirements: Section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969; 49 U.S.C. section 40114, as amended by P.L. No. 103-305 (August 23, 1994); 49 U.S.C. sections 47101 (a)(6), 47101 (h), and 47106 (b)(2); Section 4(f) of the Department of Transportation Act of 1966 (recodified at 49 U.S.C., Subtitle I, Section 303, dated January 12, 1983), and Minnesota Rules, Chapter 4410. The Metropolitan Airports Commission is the lead agency for the state and the Federal Aviation Administration is the lead agency for the federal government, in the preparation of this joint statement.

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Send comments on adequacy by June 15, 1998 to:

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Metropolitan Airports Commission
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The format of this Final EIS does not follow the usual format of a Federal Aviation Administration (FAA) EIS in the order of listing the impact categories in the Environmental Consequences section; the categories are listed alphabetically and additional categories are included. To assist federal reviewers, the following cross reference with FAA Order 5050.4A is presented.

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# DUAL TRACK AIRPORT PLANNING PROCESS - Final EIS

## *EXECUTIVE SUMMARY*

### The Dual Track Legislative Directive

The 1989 Minnesota Legislature directed the Metropolitan Airports Commission (MAC) and the Metropolitan Council (MC) to examine how best to meet the region's aviation needs 30 years into the future (the year 2020). The agencies were directed to undertake seven years of planning studies comparing expansion of the Minneapolis-St. Paul International Airport (MSP) with construction of a new replacement airport. The development of MSP and the replacement airport were divided into two parts — a 20-year comprehensive plan [the 2010 Long Term Comprehensive Plan (LTCP)] and a concept plan for an additional 10 years (the 2020 Concept Plan). The legislation is included in Appendix A.14.

That seven-year process, known as the Dual Track Airport Planning Process, is complete. In March 1996 MAC and MC submitted a report to the legislature containing their recommendations on future major airport development. In April 1996 the legislature considered these recommendations and the comprehensive planning documents and their environmental effects mandated by the 1989 legislation, and selected the development of MSP as the preferred alternative. The legislature mandated implementation of the MSP 2010 LTCP, a phase of the MSP 2020 Concept Plan (see Appendix A.14).

**Proposed Action and Scope of Final Environmental Impact Statement (FEIS)**

The proposed action is implementation of the MSP 2010 LTCP. It includes development of a new 8,000-foot runway and related airfield and roadway modifications. This plan is recommended by the Federal Aviation Administration (FAA) and MAC for federal environmental approval in this FEIS, and state determination of adequacy of this FEIS. As required by the 1989 Dual Track legislation, the 2020 Concept Plan is also evaluated in the FEIS. The 30-year planning horizon used to develop the 2020 Concept Plan is well beyond the normal 10-to-15-year planning horizon required by FAA in project development. The 2020 Concept Plan is evaluated to the extent possible in order to disclose the potential long-term effects of the development of a new passenger terminal and related airfield and roadway facilities. Implementation of the new terminal and related airfield and roadway facilities will require approval by the Minnesota legislature and further environmental review and approval by MAC, FAA and the Federal Highway Administration (FHWA).

The FEIS contains the evaluation of the impacts on the environment of the MSP 2020 Concept Plan, the MSP 2010 LTCP and a no-action alternative. These alternatives have been studied by MAC, MC and FAA. Other development alternatives that have been considered, including a new replacement airport, are also described. The FEIS also contains comments on the Draft EIS and their responses, and the committed measures that will be implemented to mitigate adverse effects of the proposed action.

A *Section 4(f) Evaluation* document was prepared by FAA and made available for comment on May 1, 1998. A summary of the document is presented in Section V.U of this FEIS.

### The Purpose of the Document

The purpose of this Final Environmental Impact Statement (FEIS) and referenced documents is to disclose the environmental impacts of the proposed action and connected projects, provide measures to mitigate potential adverse effects, and serve as a decision-making tool in evaluating implementation of the proposed action. Also, the FEIS is to provide interested agencies and the public with the information they need to participate in the state and federal review of the proposed action.

The FEIS discloses the effects of the MSP 2010 LTCP and the known effects of the MSP 2020 Concept Plan. The proposed new highway access in the MSP 2020 Concept Plan, noted above, is a feasible concept, but would require additional study and coordination by MAC and FAA with the Metropolitan Council, the Minnesota Department of Transportation and FHWA.

This FEIS is both a state and federal document; it was prepared in accordance with the National Environmental Policy Act (NEPA) and the Minnesota Environmental Review Program, and all portions apply to each unless stated otherwise in the text.

**Purpose and Need for the Project**

The broad purpose of the Minnesota Dual Track Airport Planning Process is to provide for the efficient and economical movement of people and goods between the Twin Cities region and USA and international markets, and help promote the orderly growth and economic development of the region. The process and resulting actions must satisfy the air transportation needs of the region to the year 2010, and have a concept plan that could satisfy the air transportation needs of the region to the year 2020. The main purpose of the federal action-2010 LTCP is to improve airfield and airspace capacity and thereby provide increased levels of service for air transportation users in the Twin Cities region.

During the mid-1980s, an *Airport Adequacy Study* prepared by the Metropolitan Council indicated that, because of physical and environmental constraints, MSP may not be capable of expanding to the degree necessary to meet the region's long-term air transportation needs. MAC subsequently prepared forecasts of activity, developed the long-term comprehensive plan (LTCP) for MSP and utilized the FAA SIMMOD Model and manual techniques from the FAA *Airport Capacity and Delay Manual* to perform detailed analyses of capacity and delay. The proposed addition of new Runway 17-35 was analyzed independently by MAC and a FAA Airport Capacity Design Team, consisting of FAA, the airport operator, and aviation industry groups, and reported in the FAA's *Capacity Enhancement Plan* for MSP completed in December 1993.

Based on these studies and analyses, MAC and FAA have independently concluded that without substantial airfield, terminal, and access improvements, future growth in aviation activity at MSP will result in a significantly decreased level of service and increased user costs.

Peak-hour demand will outstrip capacity of the runway/taxiway system without major improvements. Airfield simulations using SIMMOD show that if no improvements are made by 2020, or by 2010 if recent growth rates continue, peak-hour departure queues for the south parallel runway could reach more than 25 aircraft. That would result in excessive delays and aircraft blocking access to the terminal, producing gridlock. Peak-hour (6:00-7:00 p.m.) delays by the year 2020, or 2010 under recent growth rates, are estimated to average 15 minutes per aircraft during instrument conditions, with the highest delays in excess of one hour. At the levels cited by the Airport Capacity Design Team, ranging from 530,000 to 600,000 annual operations, these savings would range from 21,000 to 44,000 hours per year -- which results in a $30 million to $63 million benefit per year.

This projected increase in delays, decline in service and resulting increase in user costs threatens MSP's ability to provide good-quality air service and economic benefits to the region as a major connecting hub. MSP's role as a connecting hub is integral to the air service the airport provides the region. Further, MSP — the 14th busiest airport in the nation in 1995 for passenger enplanements — is a major link in the nation's airspace structure.

In addition to airport improvements, the 2010 and 2020 regional highway improvements identified in Section III would also be needed to provide adequate access to the airport. The impacts of these potential improvements are also addressed in this FEIS.

**Alternatives Considered to Meet Project Purpose and Need**
When considering how to meet forecast demand for 2010 and 2020, a number of alternatives were analyzed. The following is a summary of the alternatives that have been considered:

- No Action
- MSP Expansion
- New Airport
- High-Speed Intercity Rail (between Twin Cities and Chicago)
- Remote Runway
- Supplemental Airport (use of MSP combined with other existing airports)

Below is a brief description of the alternatives analyzed in this FEIS. The location of the MSP Expansion alternative is shown on **Figure ES-1**, which is attached to the Executive Summary.

**MSP Expansion**– MSP Expansion consists of the MSP 2010 LTCP and the MSP 2020 Concept Plan. A new 8,000-foot north-south runway would be added to the current three-runway airfield as part of the 2010 LTCP. Also included in the 2010 LTCP are dedicated deicing pads at runway ends, enhanced storm water detention basins, improvements to the Trunk Highway 77/66th Street interchange and relocation of the airport frontage road on the west and south sides of the airport. See **Figure ES-3** for a schematic rendering and **Figure 8 in** Appendix J for a more detailed depiction of the 2010 LTCP. In addition to the new 8,000-foot north-south runway and related facilities of the 2010 LTCP, the 2020 Concept Plan includes a new replacement terminal building on the west side of the airport with a connection to gates on the east side via an underground people mover. Other improvements include new highway access from Trunk Highways 62 and 77 to the new west side entrance to the terminal, and a parking/drop-off facility on the east side of the airport. See **Figure ES-2** and **Figure 6** (Appendix J).

**No Action** -- This alternative consists of maintaining the existing airport facilities at MSP and the implementation of those committed projects with funding approved by the MAC in its current 1995-1998 Capital Improvement Program. See **Figure ES-4** and **Figure 2** (Appendix J). It also includes increased use of the runway use system (RUS) that would redistribute aircraft operations and the related noise, by making greater use of Runway 4-22.

Alternatives that were eliminated from further analysis in the FEIS and the reasons for elimination are listed below.

**New Airport** -- A new replacement airport was considered on a site of 14,100 acres east of Vermillion and south of Hastings in Dakota County, as shown on **Figure ES-1**. The airfield would consist of six runways: four parallel runways and two crosswind runways (see **Figure ES-5**). Main highway access would be from the north by a new eight-lane freeway to a centrally-located terminal. The following major 2020 impacts of this alternative were presented in the DEIS:

- Average travel time to the terminal would be 20 minutes longer than to MSP
- Over $511 million in needed off-airport highway improvements, compared to about $200 million for the MSP Alternative
- Over 17,000 acres of farmland would be acquired due to site development, highway construction, power line relocation and induced development
- Over 6,800 acres of wildlife habitat would be lost, compared to 360 acres for the MSP Alternative
- The development cost would be over $2.2 billion more than the MSP Alternative
- The new airport would entail greater financial risk than MSP 2020 Concept Plan for adjusting to changing demand, since most of the construction and land acquisition would have to occur in the early phases and development of MSP could be accomplished incrementally as needed.

**Remote Runway** -- Under this concept, terminal ticketing, baggage and support facilities would remain at MSP while new runways and gates would be constructed at a site in Dakota County, about 15-25 miles away. The two sites would be linked by rail transit. A 1995 MAC study of this concept showed:

- There would be significant operational inefficiencies. Nowhere in the world does an airport have split landside/airside operations over 15 miles apart; that is because the staffing requirements would make air service for this type of configuration prohibitively expensive;
- A two-terminal system would inevitably evolve, with the public demanding ticketing, baggage and parking facilities at both sites, which would ultimately result in a full-service airport at the remote site. It would be very difficult to force passengers to take an intermediate form of transportation, such as a train. Local passengers want to be picked up or have a car available for immediate transport to their final destination, rather than having their trip prolonged by intermediate mode changes. In addition, certain basic amenities must be provided to passengers as they embark from airplanes. These amenities, such as food and rest facilities, require a passenger terminal, as would the required queuing and seating areas for transferring to a train;
- Costs would be slightly higher than the new airport alternative; and
- There would be adverse environmental impacts, including the need for a one-mile bridge over the environmentally-sensitive Minnesota River valley.

The following alternatives do not satisfy the purpose and need for the project:

**High Speed Intercity Rail** -- This alternative would include the construction of high-speed rail connecting Minneapolis and Chicago to divert passengers and operations from air service to rail service so that in 2010 and 2020 an additional runway and terminal facilities at MSP would not be needed. A 1991 Mn/DOT study of the implications of high-speed rail alternatives on air traffic showed:

- High-speed rail service would not divert enough passengers and operations by 2010 and 2020 to preclude the need for additional runway and terminal facilities at MSP.

**Supplemental Airport Concept** -- Under this concept, a component of MSP operations (general aviation, military, regional, cargo, international, and/or flights to major markets) would be diverted to another existing state airport. The intention would be to accommodate the remaining 2020 demand without having to develop new terminal and runway facilities at MSP. A 1993 MAC study evaluated the transfer of various aviation demand components from MSP to Rochester Municipal Airport (*MSP Third Option Scenarios*). A 1995 study by Mn/DOT on the use of supplemental airports also addressed the feasibility of supplemental airports. A summary of findings follows:

- Diverting military operations, cargo activity, international operations or general aviation would not delay the need for new runway and terminal facilities at MSP.
- If regional air carrier traffic were transferred even to the nearest airport -- St. Paul Downtown Airport -- it would force nearly 6,500 regional air carrier passengers a day to travel across town to make their connecting flights at MSP, making MSP a very unattractive connecting hub for regional service. It would be extremely difficult legally to force air carriers to relocate regional service to another airport, and St. Paul Downtown has site constraints that preclude extensive development of this type.
- As with regional carrier service, transferring service to major markets such as Chicago to another state airport would force the passengers making connecting flights to travel long distances to MSP. In addition, originating and destination passengers would have long driving distances. Once again, it would be extremely difficult legally to force airlines to relocate service to major markets to another airport. Neither the MAC nor the FAA have the legal authority to dictate to airlines the level and location of service that they can provide.

**Preferred Alternative/Proposed Action**

The expansion of MSP is the preferred alternative, as determined by MAC, MC and the Minnesota legislature (as discussed above). The preferred alternative consists of the 2010 LTCP and the 2020 Concept Plan . The preferred alternative of the FAA in the FEIS is the implementation of the 2010 LTCP — which is the proposed action. In making this determination, FAA evaluated the environmental consequences of the 2010 LTCP with its economic and technical aspects, as required by the National Environmental Policy Act (NEPA). The proposed action includes the following elements:

- new north-south runway (Runway 17/35) 8000 feet in length with associated taxiways and holding/deicing pad at the north end
- new holding/deicing pads for Runways 12R, 30L and 30R
- enhanced storm water detention basins
- expansion of Red, Gold and Green Concourses
- new Green Concourse people mover
- new skyway connector between Gold and Green Concourses
- realignment and widening of airport frontage road between 66th Street and 34th Avenue South
- reconstruction of TH 77/66th Street interchange
- relocation/construction of maintenance, aircraft hangar and air cargo facilities
- new apron pavement
- implementation of necessary air traffic control procedures
- installation of necessary navigational and lighting aids

Implementation of the proposed action may require modifications by FAA of the affected airspace; it also requires the approval by FAA of the Airport Layout Plan (ALP) and the use of federal airport-development funds and Passenger Facility Charge (PFC) revenues.

Additional projects in the preferred alternative but outside of the 2010 proposed action include a replacement terminal on the west side of the airport, supporting highway improvements, and additional cargo and maintenance hangar development. Development beyond 2010 is subject to further environmental assessment and separate FAA and FHWA approvals.

The preferred alternative is also the environmentally-preferred alternative because it satisfies the project purpose and need with less significant adverse effects to the environment, when considering the committed mitigation, than the No Action Alternative. The preferred alternative will have less impact on air quality, surface water quality and energy consumption and a more beneficial impact on the economy than the No Action Alternative. Also, the No Action Alternative would not satisfy the purpose and need for the project (accommodate the air transportation needs to the year 2010 and have a plan for accommodating 2020 needs). See Section III.D for more detailed discussion.

**Environmental Evaluation**

The Alternative Environmental Review Process, approved in March 1992 by the Minnesota Environmental Quality Board for the Dual Track Airport Planning Process, requires the assessment of environmental impacts of the alternatives to the year 2020. The alternatives were examined for impacts in the identified environmental categories. Those categories are:

Air quality, archaeological resources, biotic communities, bird-aircraft hazards, construction impacts, coastal barriers, coastal zone management program, endangered and threatened species, economic, energy supply and natural resources, farmland, floodplains, historic/architectural resources, induced socioeconomic impacts, land use, light emissions, noise, parks and recreation, environmental justice, social, Section 4(f), solid waste impacts, transportation access, major utilities, visual impacts,

wastewater, water supply, surface water quality, groundwater quality, wetlands, wild and scenic rivers, and wildlife refuges.

Below is a summary highlighting some of the major findings. A matrix summarizing impacts of the alternatives follows on pages xi to xiii. More detail on the impacts of the alternatives is found in Section V of the FEIS.

- **Natural Environment** -- Impacts of the MSP 2010 LTCP and 2020 Concept Plan and the No Action Alternative on the natural environment are not significant (endangered and threatened species, archaeological resources, biotic communities, floodplains, parks, recreation areas other than wildlife refuges, and wild and scenic rivers).
- **Economic** -- The development cost to implement the MSP 2010 LTCP is $803 million and the MSP 2020 Concept Plan is $3.15 billion in 1995 dollars. The 2010 LTCP would involve land acquisition and removal of some off-airport commercial buildings, construction of a new north-south runway, relocation on airport property of airport facilities to accommodate the new runway, and minor road improvements. In addition to the 2010 improvements, the 2020 Concept Plan would involve the construction of a new west terminal and major roadway improvements. The 2010 LTCP would contribute approximately 9,600 jobs and $0.90 billion to the regional economy during construction, and the 2020 Concept Plan would contribute approximately 32,540 jobs and $3.06 billion. The capital cost of the No Action Alternative is $255 million for committed projects in the MAC 1995-1998 Capital Improvement Programs.
- **Land Use** – Existing and planned land uses in the state safety zones south of the proposed new north-south runway in the city of Bloomington are not consistent with current Mn/DOT airport zoning standards and the Metropolitan Council's Compatibility Guidelines for noise. Appropriate zoning regulations would be established for the affected areas, subject to Mn/DOT approval. The city of Bloomington would amend its comprehensive plan and zoning regulations to conform with the new regulations and Compatibility Guidelines. Minnesota law requires city comprehensive plans to be consistent with the Metropolitan Council's Metropolitan Airports System plan, and zoning regulations be consistent with the comprehensive plan and Mn/DOT safety rules.
- **Noise** -- In terms of noise levels of DNL 65 or greater: expanding MSP would expose 7,650 persons to these levels in the worst-case year (2005), compared to 7,350 for no action. In 1994, there were approximately 33,750 persons in the DNL 65 contour for MSP. The lower number of persons impacted by MSP in the future is attributable to the continued introduction of quieter aircraft. Any adverse effects of aircraft noise cannot be avoided through planning and design.
- **Social** -- MSP 2010 LTCP would displace 166 households and 73 businesses with over 2,891 employees. The MSP 2020 Concept Plan would displace 258 households and 82 businesses with over 2,896 employees. The No Action Alternative would not displace any businesses or employees; 76 households would be acquired as part of the Runway 4/22 noise mitigation program. These impacts are unavoidable.
- **Historic** -- The 2010 LTCP would demolish portions of the Original Wold-Chamberlain Terminal Historic District which is on the National Register of Historic Places. MSP 2020 Concept Plan would demolish the entire district. These impacts are unavoidable. The No Action Alternative would have no impacts.
- **Water Quality** -- MSP 2010 would discharge 7,900 lbs. of $CBOD_5$ to the Minnesota River from deicing, compared to 9,200 lbs. for the No Action Alternative in 2010. The LTCP 2020 Concept Plan would discharge 8,200 lbs. compared to 9,200 lbs. for the No Action Alternative in 2020.
- **Wildlife Refuge** -- The Bass Ponds environmental education area in the Minnesota Valley National Wildlife Refuge would be subjected to a DNL 71 dBA noise level by the MSP 2010 LTCP and 2020 Concept Plan in 2005 (the worst-case year), compared to DNL 45 for the No Action Alternative. The increased noise level would impair the ability of the Bass Ponds area to support environmental education and related wildlife recreation activities (birding, hiking, biking, hunting, canoeing, skiing) by the public. About 1,083 publicly-owned acres would be impaired. This adverse effect due to aircraft noise cannot be avoided through planning and design.
- **Wetlands** -- 32.96 acres of wetland would be filled by the MSP 2010 LTCP and 35 acres by the 2020 Concept Plan. This impact is unavoidable.

**Mitigation**

The following mitigation measures will be implemented if the proposed action (MSP 2010 LTCP) is implemented:

**Noise** – MAC approved the following noise mitigation program on October 28, 1996. The program contains measures that may or may not be eligible for funding based on FAA policy or criteria, as stated in Appendix B.

Insulation

- the residential sound insulation program (SIP) for the area encompassed by the 1996 DNL 65 contour be completed on the currently approved schedule (Note: the current program is scheduled for completion in the year 2002)
- the SIP be expanded after completion of the current program to incorporate the area encompassed by the 2005 DNL 60-65 contour
- the 2005 DNL 60 contour be based on the most accurate projection of traffic levels and use of appropriate ANOMS data
- MAC and affected communities seek approval from FAA to develop neighborhood and "natural boundaries" that reflect current conditions at the outer edge of the expanded contour to the maximum extent possible
- insulation of dwellings/buildings in the expanded SIP should be performed in the following order of priority:
    1. single family homes after completion of the 1996 DNL 65 SIP on the approved current schedule
    2. multifamily dwellings, nursing homes, and churches with regular weekday daycare/nursery school types of operations — in accordance with a schedule agreed upon by MAC and each affected city
- the program be funded by a combination of Passenger Facility Charge (PFC) revenues, airline fees, internally generated funds and federal aid; to the extent that MAC cannot fund this expanded program in a reasonable period of time, support from the state of Minnesota will be sought; however, in no case should unreimbursed financial impacts fall on affected residents or their local governments
- MAC commit to funding its community-based noise abatement program on an accelerated basis beyond its current level of $25.5 million annually
- MAC should develop noise impact models which reflect the impact of ground level noise on residential properties; mitigation for low frequency noise should be developed after consultation with independent noise mitigation experts
- completion of the program is contingent upon MAC maintaining a bond rating of at least A
- Subsequent to adoption of the Noise Mitigation Program, MAC has agreed to acquire 27 homes and 131 multifamily units in Bloomington

Community Stabilization

- The Metropolitan Airports Commission should participate with affected communities to identify and quantify any impacts the airport may have on declining property values and/or other negative consequences on neighborhoods near the airport. To the extent that negative consequences can be quantified, a Working Group should prepare recommendations to MAC for consideration by the Minnesota Legislature. Community stabilization measures considered should include, but not be limited to, the measures described in the Metropolitan Council-MAC Community Protection Report. The measures include purchase and property value guarantees and housing replacement to complement the tax credit and revitalization area legislation adopted in 1996.

  A Working Group should be convened including representatives from MAC, Met Council, Northwest Airlines, affected communities and legislative staff. The Working Group should identify a program design, funding options, administrative responsibilities and

eligibility area. The final legislative recommendation should be presented to MAC and other interested parties for endorsement and inclusion in 1997 legislative programs.

In addition to the preceding mitigation, MAC is committed to perform the following study:

Airport Operations

The following be incorporated and evaluated in a Part 150 update:

- Take action, as required by the 1996 Legislature, to prohibit use of Stage 2 aircraft after December 31, 1999.
- Modify the night hours to 10:30 p.m. - 6:00 a.m. and limit activity during these hours to Stage 3 aircraft.
- Develop a departure procedure for Runway 22 to direct aircraft over areas of commercial development and the Minnesota River Valley.
- Seek cooperation from FAA to implement departure procedures as appropriate at each runway end.
- Evaluate departure procedures in the Eagan-Mendota Heights corridor.
- Work within the aviation industry to encourage further reductions in aircraft noise levels.
- Negotiate the Stage 2 prohibition, noise abatement procedures, and expansion of night hours, incorporating appropriate penalties for non-compliance.
- The MAC noise monitoring system monitors will be increased in number to provide more coverage of actual impacts in the airport vicinity, in particular, areas affected by the north-south runway. Areas affected by the parallel runways, may have additional microphone locations to monitor continued and growing volumes of air traffic as the airport expands. This system should be used to corroborate the accuracy of the modeled contours for noise program eligibility.

Furthermore, on October 28, 1996 MAC also adopted the following mitigation, which is associated with the proposed action:

Runway Use

- Completion of the environmental process and construction of the North-South Runway should be expedited and completed as soon as possible. Progress should be measured against this schedule:
  a) commence construction — 1998
  b) complete construction, open runway — 2003
- In the interim, Runway 4/22 should be used for noise mitigation purposes. This requires the following:
  a) Construction of associated taxiways;
  b) Mitigation program at the southwest end of Runway 4-22 in the cities of Bloomington and Richfield as required in the Final Record of Decision (March 28, 1995). The acquisition portion of the mitigation will be initiated as soon as contracts for the associated taxiways are let and should be completed within a period of two years. Funds for the acquisition program will be in addition to those designated for the residential insulation program, consistent with the existing acquisition program. The insulation portion of the mitigation will be integrated with the current MAC program, starting as soon as contracts for construction of the associated taxiways are let, or the RUS is implemented, whichever occurs first. The insulation program will be implemented at the rate of at least 20% of the total homes as defined in the Runway 4-22 mitigation program in each year until all of the single family and multiple family units within the 1996 DNL 65 contour are insulated. To the extent practical, MAC will identify funding and program administration options to minimize delay in completion of the current insulation program.

c) If the North-South Runway is completed before insulation of all eligible homes is completed, the insulation program for the area impacted by aircraft using Runway 4-22 may be terminated.

- Completion of this program is contingent on MAC maintaining a bond rating of at least A.

**Archaeology and Historical/Architectural**

- appropriate documentation and recordation of the Original Wold-Chamberlain Terminal Historic District; items selected for removal be removed in a manner that minimizes damage.
- develop and implement a treatment program for the Spruce Shadows Farm Historic District
- archaeological data be excavated in accordance with the data recovery plan approved by the State Historic Preservation Officer.

**Surface Water Quality**

- MAC will consult with the Minnesota Pollution Control Agency in the NPDES permitting process and will implement the required storm water control measures for the MSP 2010 LTCP specified in the NPDES permit.

**Wetlands**

- Approximately 58.92 acres of replacement wetland will be provided. MAC is committed to providing the mitigation specified in the permits regulated by the U.S. Corps of Engineers (Section 404 of the Clean Water Act permit), the Minnesota Department of Natural Resources (Protected Waters Permit) and the MAC (Wetland Conservation Act permit).

**Minnesota Valley National Wildlife Refuge (MVNWR)**

- Mitigation will consist of compensation to the US Department of the Interior by MAC. The amount and conditions of payment are currently being negotiated. This is an ongoing process and the agreed upon mitigation will be reported in the FAA Record of Decision.

**Unresolved Issues**

The proposed Runway 17-35, when operational, could create low frequency noise and vibration at levels that could cause annoyance by residents in the eastern part of the city of Richfield. There are no standards or criteria for determining potential effects of low frequency noise and vibration on annoyance, and therefore no basis for determining what type of mitigation would be appropriate. MAC is committed to study this issue further, and work with Richfield and FAA to develop and implement a plan to address any adverse impacts that are identified.

Details of the MVNWR mitigation plan are unresolved. These are discussed in the project's *Section 4(f) Evaluation,* a separate document that includes more information about the FAA's determinations concerning the refuge.

**Aviation Forecast Sensitivity Analysis**

A sensitivity analysis was performed to disclose the environmental impacts of the proposed action (MSP 2010 LTCP) that would occur from a forecast of operations and enplanements greater than the forecasts used in the DEIS that was prepared in 1995. The need for this analysis was based on the following:

- the 1997 FAA 2010 forecast for MSP is significantly higher than the (1993) MAC forecast used in the DEIS (658,900 versus 499,900 operations; 22,879,600 versus 15,030,000 enplanements)
- traffic levels at MSP have been growing at rates greater than the DEIS forecast (e.g., 1996 actual operations exceed the DEIS forecast for the year 2005)

The sensitivity analysis used the MAC High Forecast because it is representative of the 1997 FAA Terminal Area Forecast (TAF) and it has a forecast for 2020 whereas the FAA TAF only goes to 2010, as shown below.

| | DEIS Forecast | | MAC High Forecast | | FAA Forecast | |
|---|---|---|---|---|---|---|
| Year | Enplanements | Operations | Enplanements | Operations | Enplanements | Operations |
| 1996 (Actual) | 14,386,000 | 485,400 | | | | |
| 2000 | 12,704,000 | 473,000 | 16,714,000 | 550,200 | 16,096,100 | 533,900 |
| 2005 | 13,895,000 | 484,800 | 18,810,000 | 575,000 | 19,487,900 | 596,500 |
| 2010 | 15,030,000 | 499,900 | 20,828,000 | 603,800 | 22,879,600 | 658,900 |
| 2020 | 16.681,000 | 520,400 | 23,774,000 | 640,200 | Not Available | Not Available |

Comparing the MAC High Forecast with the DEIS Forecast for 2010, no threshold of environmental significance was exceeded. It is therefore concluded that the analyses of environmental impacts in the FEIS are reasonably consistent with the environmental impacts presented in the DEIS.

**Public Involvement**

On April 2, 1992 the FAA and MAC announced their intent to prepare an environmental impact statement and initiated scoping by publishing a Notice of Intent in the April 2, 1992 Federal Register (57 FR 11344). MAC and FAA are jointly preparing this EIS, as MAC must comply with the Minnesota Environmental Review Program, Minnesota Rules, Chapter 4410 - 4410.7900, and FAA must comply with applicable federal law and regulations. The following scoping meetings were held with the general public and with federal, state, and local agencies:

- Three joint public meetings were held on the First Phase Scoping Report, which described the EIS/Dual Track Airport Planning Process and issues/impacts to be addressed. On April 21, 1992, an informal meeting was held at the offices of the Metropolitan Airports Commission; 23 people attended and 14 spoke. On April 21, 1992 a meeting for the general public was held at Ramsey Junior High School in the city of Minneapolis; approximately 25 people attended and 4 spoke. On Aril 22, 1992 a meeting was held at the Rosemount High School in the city of Rosemount; approximately 150 people attended and 12 spoke.
- Three joint public scoping meetings were held on the Second Phase Scoping Report. On June 26, 1995, a scoping hearing was held at the offices of the Metropolitan Airports Commission; approximately 20 people attended and 14 spoke. On June 27, 1995, a scoping hearing was held at Hastings Middle School, in the city of Hastings; approximately 86 people attended and 19 spoke. A scoping meeting for agency representatives was also held on June 27, 1995, at the offices of the Metropolitan Airports Commission; approximately 23 people attended and 6 spoke.

**Implementation Schedule**

Construction of the new north-south runway, planned maintenance, hangar, air cargo and roadway facilities for the proposed action (2010 LTCP) would commence in 1998 after completion of the environmental review process, and could be completed in 2003. Additional expansion of maintenance, hangar and air cargo facilities could occur beyond 2003 if conditions so warrant.

| SUMMARY OF IMPACTS | | | | | |
|---|---|---|---|---|---|
| CRITERION | | ALTERNATIVE | | | |
| | | MSP | | NO ACTION | |
| | | 2020 | 2010 | 2010 | 2020 |
| **Air Quality** | | | | | |
| 1. | Number of receptor sites near critical off-airport roadway intersections over air quality standards. | 0 | 0 | 0 | 0 |
| 2. | Number of receptor sites on airport perimeter over air quality standards. | 0 | 0 | 0 | 0 |
| 3. | Total on-airport CO emissions (tons). | 5,060 | 4,638 | 5,617 | 5,617 |
| 4. | Total off-airport access traffic CO emissions (tons). | 10,200 | 10,500 | 10,500 | 10,500 |
| 5. | Total airport SOx emissions (tons). | 170 | 161 | 168 | 168 |
| **Archaeological Resources** | | | | | |
| 6. | Number of known archaeological sites potentially eligible for the National Register that could be disturbed. | 0 | 0 | 0 | 0 |
| **Biotic Communities** | | | | | |
| 7. | Number of acres of wildlife habitat displaced. | 360 | 318 | 0 | 0 |
| **Bird-Aircraft Hazards** | | | | | |
| 8. | Number of monthly aircraft operations less than 500 feet over areas where birds congregate. | 4,940 | 4,745 | 2,910 | 2,910 |
| **Economic** | | | | | |
| 9. | Total jobs on airport. | 16,601 | 16,041 | 16,041 | 16,071 |
| 10. | Total annual direct and indirect wages generated by airport jobs. | $1.05 billion | $1.02 billion | $1.02 billion | $1.02 billion |
| 11. | Impact of construction | | | | |
| | Jobs | 36,400 | 9,600 | 3,100 | 3,100 |
| | Wages(billions) | $1.71 | $0.45 | $0.14 | $0.14 |
| | Economic Output(billions) | $3.42 | $0.90 | $0.29 | $0.29 |
| 12. | Estimated cost of alternative. | $3,151 million | $803 million | $255 million | $255 million |
| 13. | Percentage of tax capacity lost by affected municipalities/townships. (Total) | 8.14% | 6.09% | 0 | 0 |
| **Endangered and Threatened Species** | | | | | |
| 14. | Number of species on federal list of endangered and threatened species that would be jeopardized. | 0 | 0 | 0 | 0 |
| 15. | Number of threatened or special concern species in Minnesota that would be disturbed. | 1 (forster's tern) | 1 (forster's tern) | 0 | 0 |
| **Energy Supply and Natural Resources** | | | | | |
| 16. | Consumption of aircraft and vehicle fuel (millions of gallons per year). | 160 | 155 | 161 | 161 |
| **Farmland** | | | | | |
| 17. | Acres of farmland that would be lost. | 0 | 0 | 0 | 0 |

| SUMMARY OF IMPACTS | | | | | |
|---|---|---|---|---|---|
| CRITERION | | ALTERNATIVE | | | |
| | | MSP | | NO ACTION | |
| | | 2020 | 2010 | 2010 | 2020 |
| **Floodplains** | | | | | |
| 18. | Is there a potential to significantly increase existing flood flow elevations in adjacent rivers? | No | No | No | No |
| **Historic/Architectural Resources** | | | | | |
| 19. | Number of historic/architectural properties/ districts on or eligible for National Register that would be demolished. | 1 | 1 | 0 | 0 |
| 20. | Number of individual properties and historic districts on or eligible for the National Register or National Historic Landmarks that: | | | | |
| | would be incompatible with aircraft noise | 3 | 3 | 2 | 2 |
| | could be adversely effected by aircraft noise | 1 | 1 | 0 | 0 |
| **Induced Socioeconomic** | | | | | |
| 21. | Office development induced (1000 sq.ft.). | 420 | <420 | <420 | <420 |
| 22. | Industrial development induced (1000 sq.ft.). | 1,050 | <1,050 | <1,050 | <1,050 |
| 23. | Number of employees induced. | 3,900 | <3,900 | <3,900 | <3,900 |
| **Land Use** | | | | | |
| 24. | Number of municipalities required to make land use changes in comprehensive plan. | 1 | 1 | 0 | 0 |
| **Noise** | | | | | |
| 25. | Number of persons residing in the year 2005 DNL 65 + noise contours. | 7,650 | | 7,350 | |
| 26. | Number of persons residing in the year 2005 DNL 60-65 noise contour. | 22,030 | | 27,690 | |
| 27. | Number of persons residing in the year 2005 $L_{10}65$ noise contour. | 121,000 | | 106,000 | |
| 28. | Number of noise-sensitive land uses with noise greater than FAA Guidelines. | 2 | 2 | 2 | 2 |
| **Section 4(f)** | | | | | |
| 29. | Number of Section 4(f) park and recreation lands displaced. | 0 | 0 | 0 | 0 |
| 30. | Number of Section 4(f) park and recreation lands adversely impacted by noise. | 0 | 0 | 0 | 0 |
| 31. | Number of Section 4(f) wildlife refuge acres of environmental education and wildlife recreation activity adversely affected by noise and subject to constructive use. | 1,083 | | 0 | |
| **Social** | | | | | |
| 32. | Number of residents that could be displaced. | 609 | 383 | 156 | 156 |
| 33. | Number of households that could be displaced. | 258 | 166 | 76 | 76 |
| 34. | Estimated number of businesses and employees that could be displaced: | | | | |
| | Businesses | 82 | 73 | 0 | 0 |
| | Employees | 2,896 | 2,891 | 0 | 0 |

| SUMMARY OF IMPACTS | | | | | |
|---|---|---|---|---|---|
| CRITERION | | ALTERNATIVE | | | |
| | | MSP | | NO ACTION | |
| | | 2020 | 2010 | 2010 | 2020 |
| **Environmental Justice** | | | | | |
| 35. | Is there an adverse impact from noise or relocation to low income households? | No | No | No | No |
| 36. | Is there an adverse impact from noise or relocation to minority households? | No | No | No | No |
| **Surface Water Quality** | | | | | |
| 37. | Estimated maximum daily $CBOD_5$ discharge from deicing (lbs.) | 8,200 | 7,900 | 9,200 | 9,200 |
| **Groundwater** | | | | | |
| 38. | Sensitivity of affected significant aquifer (Prairie du Chien/Jordan) to potential contamination. | Low to Moderate | Low to Moderate | Low to Moderate | Low to Moderate |
| 39. | Potential for impacts to downgradient groundwater receptors | Low | Low | Low | Low |
| **Transportation Access** | | | | | |
| 40. | Average travel time to terminal for Metro Area residents (minutes): | | | | |
| | off-peak hours | 22 | 24 | 24 | 24 |
| | PM peak hour | 26 | 28 | 28 | 27 |
| 41. | Percentage of Metro Area population within 30-minute travel time to main terminal: | | | | |
| | off-peak hours | 80.2 | 73.2 | 73.2 | 76.6 |
| | PM peak hour | 67.4 | 58.7 | 58.7 | 62.5 |
| 42. | Percentage of Metro Area population within 45-minute travel time to main terminal: | | | | |
| | off-peak hours | 97.9 | 96.6 | 96.6 | 96.9 |
| | PM peak hour | 94.6 | 90.6 | 90.6 | 92.8 |
| 43. | Percentage of Metro Area population within 60-minute travel time to main terminal: | | | | |
| | off-peak hours | 100 | 99.9 | 99.9 | 99.9 |
| | PM peak hour | 99.8 | 99.1 | 99.1 | 99.6 |
| 44 | Number of lane-miles of off-site highway improvements required (e.g., adding 2 lanes for 3 miles is 6 lane-miles) | 25 | 0 | 0 | 0 |
| **Wetlands** | | | | | |
| 45. | Number of wetland acres displaced | 35.0 | 32.96 | 0 | 0 |
| **Wildlife Refuges** | | | | | |
| 46. | Number of monthly overflights less than 2,000 feet. | 5,620 | 5,400 | 0 | 0 |
| 47 | Number of publicly-owned acres of environmental education and wildlife recreation activity adversely affected by noise within DNL 60+ contour. | 1,083 | | 0 | |

APPROVAL DECLARATION

Submitted by Responsible Federal Official:

Glen Orcutt
Program Manager
Minneapolis Airports
District Office

May 6, 1998
Date

After careful and thorough consideration of the facts contained herein, and following consideration of the views of those Federal agencies having jurisdiction by law or special expertise with respect to the environmental impacts described, the undersigned finds that the proposed Federal actions are consistent with existing national environmental policies and objectives as set forth in Section 101(a) of the National Environmental Policy Act of 1969.

Larry H. Ladendorf
Acting Manager, Airports Division
Great Lakes Region

May 6, 1998
Date

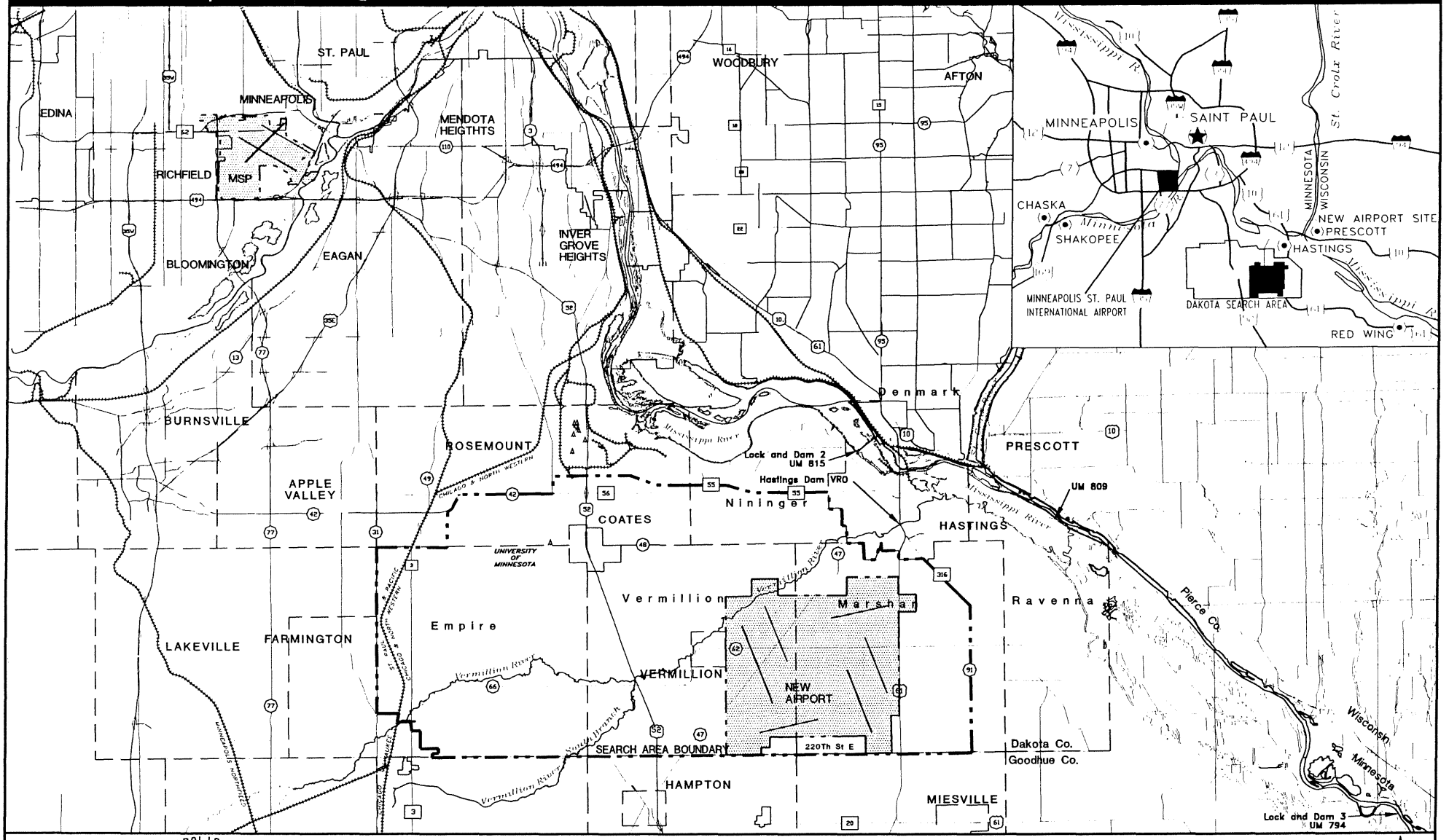


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Figure ES-1

**Location Map**

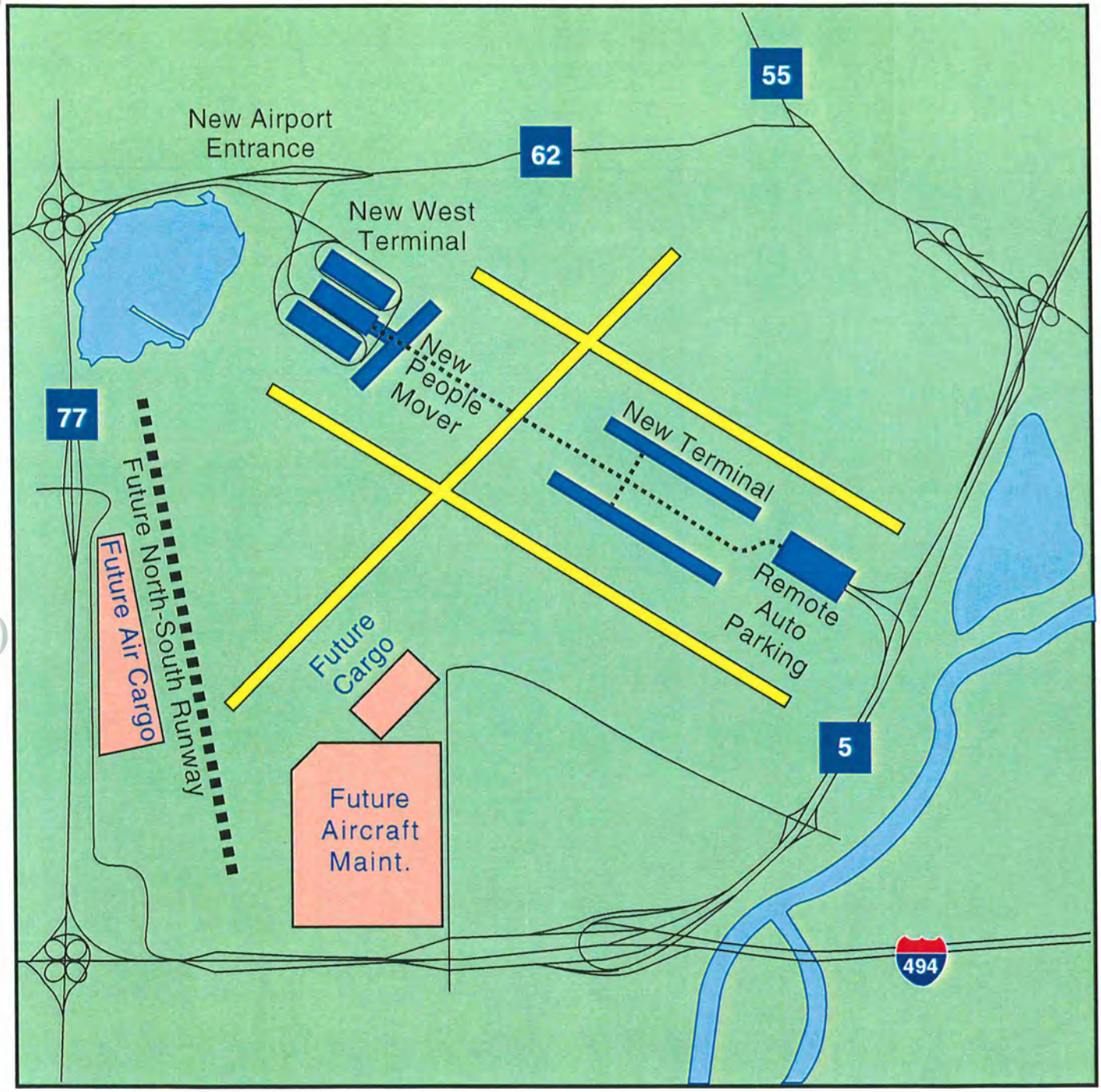


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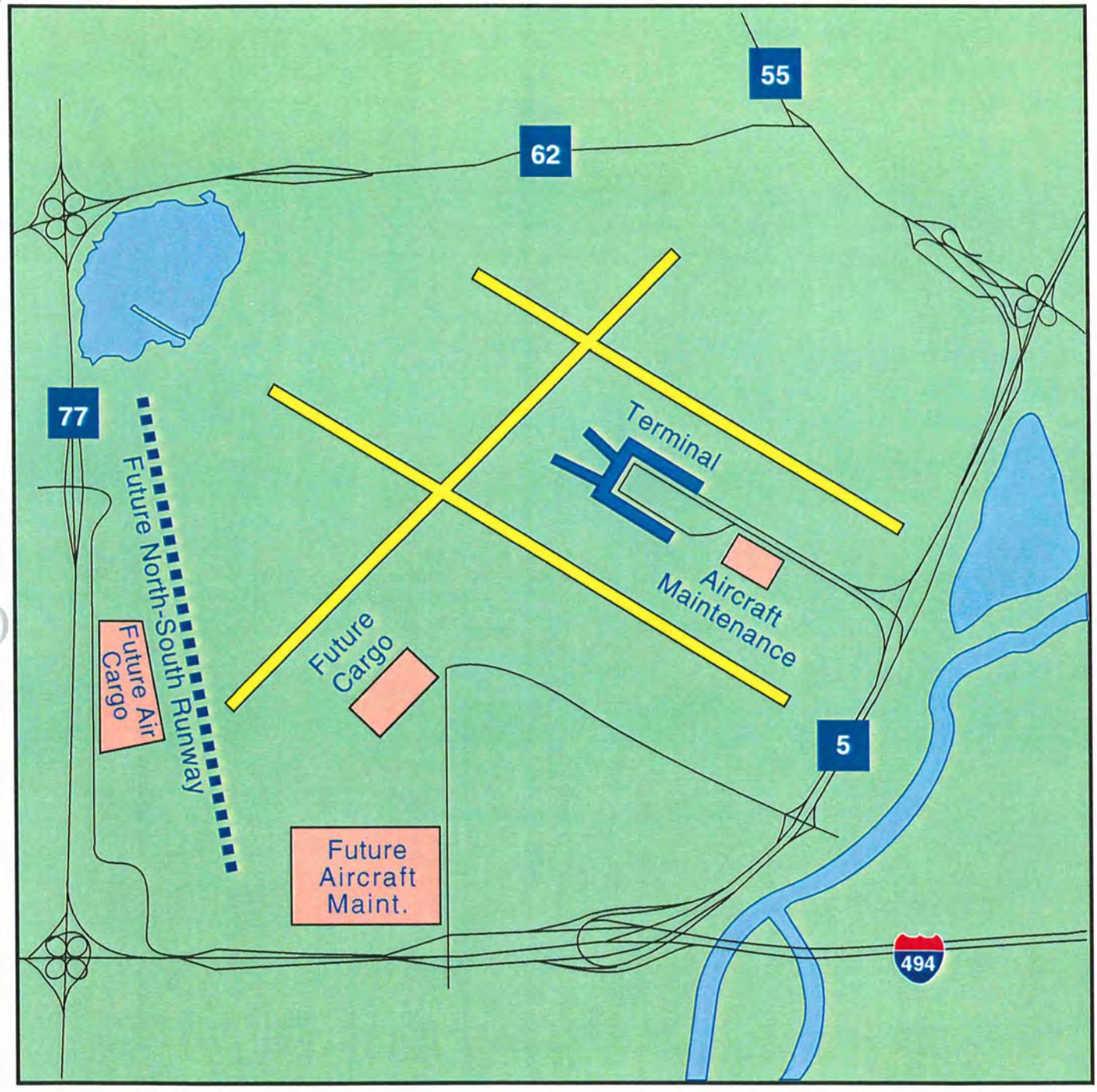
Figure ES-2

MSP 2020 Concept Plan

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MAC Minneapolis Saint Paul Metropolitan Airports Commission

Figure ES-3

MSP 2010 LTCP

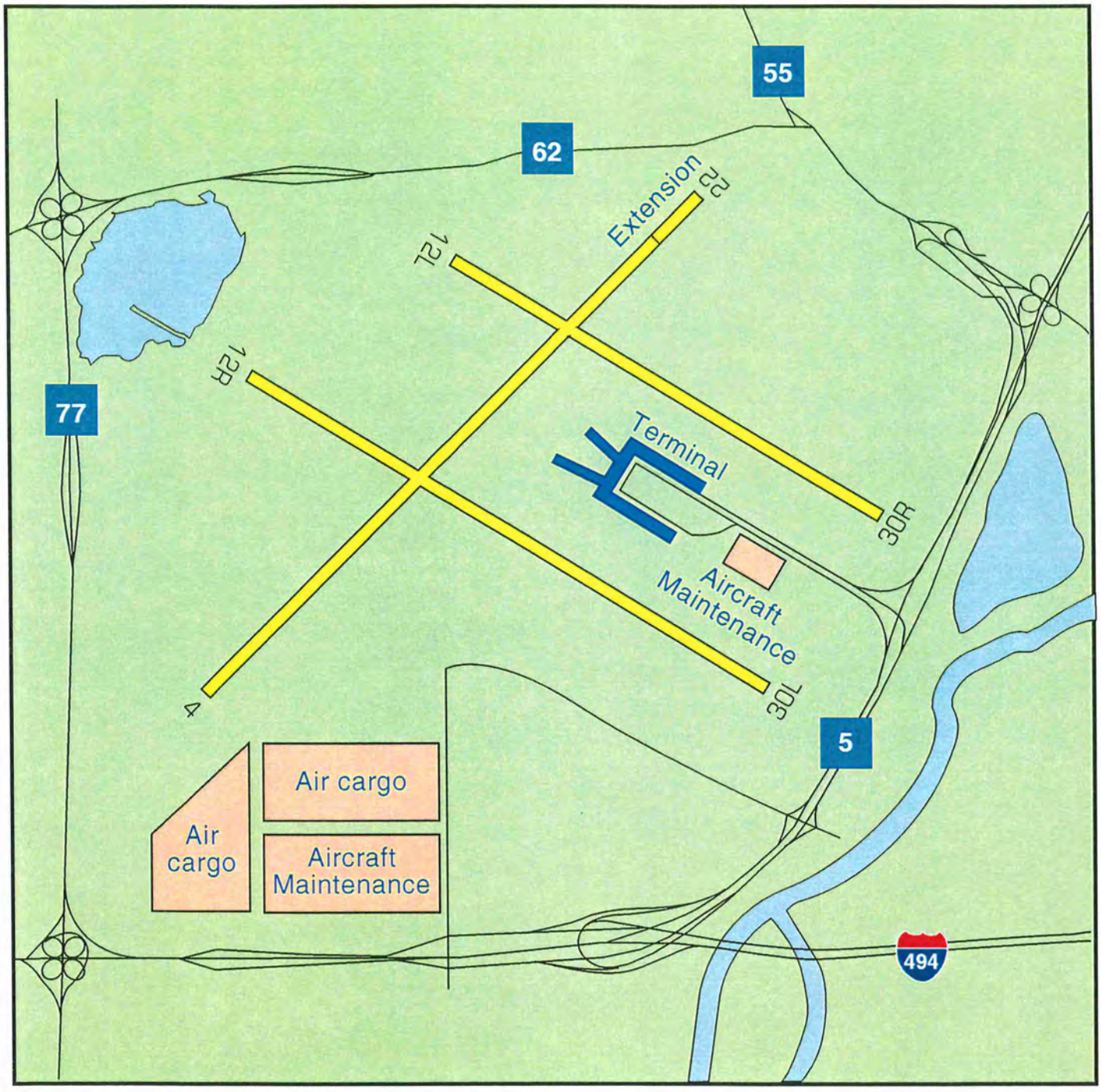


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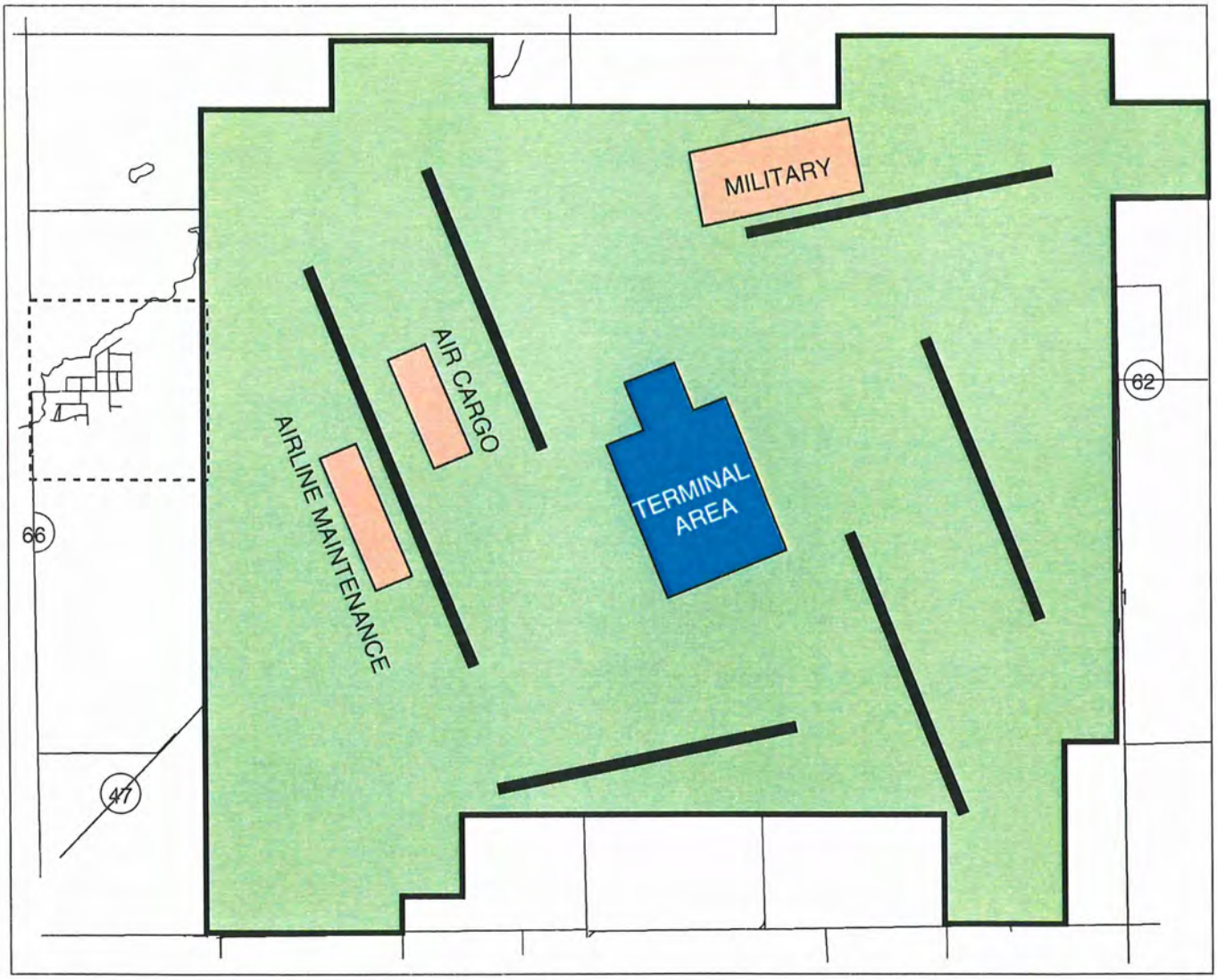
Figure ES-4

No Action Alternative

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MAC
MINNEAPOLIS SAINT PAUL METROPOLITAN AIRPORTS COMMISSION

**Figure ES-5**

**New Airport Alternative**

# I. Introduction

## A. Overview

### A.1 Document Purpose and Organization

The purpose of this Final Environmental Impact Statement (FEIS) is to analyze and discuss the issues, impacts and proposed mitigation measures of developing a new 8,000-foot air carrier runway, as well as a conceptual long-term plan with a new passenger terminal, at the Minneapolis-St. Paul International Airport (MSP). The Metropolitan Airports Commission (MAC) and the Federal Aviation Administration (FAA) of the U.S. Department of Transportation completed this FEIS after the conclusion of the *Dual Track Airport Planning Process*, which is discussed further below and in Section II of this FEIS. This FEIS evaluates a No Action Alternative (as a baseline for comparison of impacts) and two phases of the preferred MSP Expansion Alternative: (1) the 2010 Long-Term Comprehensive Plan (LTCP), involving development of the new runway and related actions linked with the plan's layout to provide greater airfield and airspace capacity; and, to a lesser degree, (2) the 2020 Concept Plan, which proposes development of a new passenger terminal on the northwest side of the airport and related improvements.

The new runway and related items included in the 2010 LTCP constitute the proposed action for federal (FAA) review and approval, and for implementation by the MAC. The 2020 Concept Plan is also evaluated in this document in order to disclose the potential long-term effects of building the new passenger terminal included in the 2020 Concept Plan, as well as related facilities (such as roadway improvements). Development of the new terminal would require that the MAC receive state legislative approval and that additional environmental reviews and approvals be completed based on updated information. It is also the intent of this FEIS process to satisfy the environmental review requirements for the surface transportation improvements included in the 2010 LTCP.

This FEIS has been prepared in accordance with the requirements of the Minnesota Environmental Review Program, through the Alternative Environmental Review Process approved by the Minnesota Environmental Quality Board (MEQB) on March 19, 1992, and in accordance with FAA Order 5050.4A issued October 8, 1985, and Order 1050.1D issued December 21, 1983, with subsequent changes. Compliance with these FAA orders allows the project to meet the procedural and substantive environmental requirements set forth by the Council on Environmental Quality in its regulations implementing the National Environmental Policy Act of 1969, as amended (NEPA).

This document is both a state and federal FEIS, which shares the same text unless stated otherwise in the document. The FAA and MAC jointly prepared this FEIS, in accordance with the provisions of CEQ 1506.2 which directs federal agencies to cooperate with state and local agencies "to the fullest extent possible" to reduce duplication between NEPA and comparable state and local requirements. In such cases the federal agency and the state, or local agency, may be joint lead agencies and jointly share responsibility for preparing an EIS that satisfies both federal and state, or local, requirements. The FAA and MAC are cooperating under a Memorandum of Understanding in the preparation of this report. The FAA and MAC jointly prepared the First Phase Scoping Report in order to propose, and take public comment on, the process to be utilized for the Dual Track EIS.

The detailed Dual Track Airport Planning Process mandated by the Minnesota legislation was performed by MAC and its consultants. FAA provided review, guidance, and advice throughout that process as a member of the Dual Track EIS Technical Advisory Committees and the State Advisory Council. Throughout this planning effort, FAA reviewed the methods and procedures used by MAC and its consultants in site selection and evaluation of alternatives through the AED process. The FAA assisted in the analysis of AED alternatives in various technical committees and through direct consultation with MAC. FAA and MAC jointly prepared the First Phase Scoping Report, Second Phase

Scoping Report, the DEIS and this FEIS. FAA also retained a consultant to assist in the joint preparation of the DEIS and prepare the federal FEIS (the original process called for completion of the state FEIS prior to legislative action on the preferred alternative, and preparation of the federal FEIS following legislative action).

This FEIS uses the same sections as the Draft Environmental Impact Statement (DEIS), published in December 1995, for reporting purposes. However, it is revised to focus on development of the 2010 LTCP and to further evaluate the 2020 Concept Plan--with comparisons to the No Action Alternative -- so as to disclose the impacts of implementing the new runway and to address mitigations. It includes several new appendices and presents additional impact analyses based on higher aviation activity forecasts (see Section II.C.2 and Appendix H). Unlike the DEIS, this document does not compare the expansion of MSP to a "New Airport Alternative." The New Airport Alternative, which was evaluated in the DEIS, is not considered a prudent option for the Twin Cities area, as explained in Section III and supported by other analyses and responses to comments in Appendix I. Therefore, the New Airport Alternative did not warrant any further detailed analyses.

## A.2 Background and Lead Agency Contacts

The issues, impacts and alternatives analyzed and discussed in the 1995 DEIS were delineated in the Second Phase Scoping Report, which was prepared jointly by FAA and MAC in accordance with the Alternative Review Process. Three joint public scoping meetings were held on the Second Phase Scoping Report. On Monday, June 26, 1995, a scoping hearing was held at the offices of the Metropolitan Airports Commission; approximately 20 people attended and 14 spoke. On Tuesday, June 27, 1995, a scoping hearing was held at Hastings Middle School, in the city of Hastings; approximately 86 people attended and 19 spoke. A scoping meeting for agency representatives was also held on Tuesday, June 27, 1995, at the offices of the Metropolitan Airports Commission; approximately 23 people attended and 6 spoke. The 30-day comment period ended July 5, 1995, and 24 written comments were received. Responses to scoping comments were included in the Scoping Decision. The Scoping Decision was adopted by MAC on July 26, 1995, and utilized by MAC and FAA in preparing the DEIS.

The DEIS *was made available* for review and comment on December 15, 1995. Two joint public hearings were held on the DEIS. On Wednesday, January 17, 1996, a public hearing was held at the Hastings High School in the city of Hastings; approximately 40 people attended and 14 spoke. On Thursday, January 18, 1996, a public hearing was held at Washburn High School in the city of Minneapolis; approximately 60 people attended and 22 spoke. The 60-day comment period ended February 13, 1996, and 46 written comments were received.

This FEIS is the most recent environmental document analyzing the potential impacts of the various airport development alternatives. The FEIS responds to the comments received on the DEIS and builds further upon the results of analyses included in the DEIS and a series of Alternative Environmental Documents (AEDs) produced in compliance with guidelines approved by the MEQB on March 19, 1992. The AEDs and the DEIS assessed the differential environmental impacts of options for both MSP and a replacement airport in Dakota County in sufficient detail to compare these options. Specifically, separate AEDs were prepared for the selection of a site in Dakota County for a replacement airport, for options in the development of a 2020 comprehensive plan for the Minneapolis-St. Paul International Airport (MSP) and options for a 2020 comprehensive plan for the new airport site. Each AED was preceded by preparation of a scoping report discussing the options and issues proposed for analysis in the document. Subsequently, a scoping decision was made delineating the options and impacts to be studied in detail in each AED and, ultimately, in the DEIS. As noted above, this FEIS differs from the AEDs and the DEIS in that it does not include any further detailed analysis of a New Airport Alternative (for more information, see also Sections II and III—*Purpose and Need* and *Alternatives*).

By MEQB rules, MAC is the designated Responsible Governmental Unit (RGU) for the Scoping Decision and the state requirements in the FEIS; FAA is responsible for the federal requirements in the FEIS.

The lead agency contact persons are:


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Minneapolis, Minnesota 55450
(612) 713-4354


## B. Cooperating Agencies

The Minnesota Department of Transportation (Mn/DOT) and the Federal Highway Administration (FHWA) are cooperating agencies because the preferred alternative requires improvements to Mn/DOT highways that have received FHWA funding. The highway projects must be part of a Transportation Improvement Program (TIP) that conforms with the Minnesota air quality State Implementation Plan (SIP). The Wisconsin Department of Transportation has also been involved in the Dual Track Airport Planning Process.

With the passage of the 1991 Intermodal Surface Transportation Efficiency Act, the FHWA is required to address the full range of possible strategies to provide surface transportation access to the preferred alternative. This analysis is usually done in the form of a Major Investment Study, which would address the efficiency and the environmental impacts of surface transportation alternatives.

The Metropolitan Council (MC) is a cooperating agency because it has been involved in the Dual Track Process from the beginning, including coordination meetings with Mn/DOT, FHWA, FAA and MAC. MC designated the search area in Dakota County and established the long-range aviation goals for the alternatives. The Council also prepared parts of the DEIS and this FEIS (induced socioeconomic forecasts for the New Airport Alternative, some ground transportation forecasts for the New Airport Alternative, transportation access impacts, and land use).

## C. Related Environmental Documents and Actions

### C.1 Further Studies to Develop the West Terminal

Continued long-term development of MSP to include the new west terminal or other significant elements beyond those in the 2010 LTCP would necessitate the preparation of subsequent environmental documents. Environmental reviews for the 2020 highway improvements shown in **Figure W-8** would be prepared by Mn/DOT and the Federal Highway Administration (see also Appendix F).

### C.2 Other Actions

The MAC is currently proceeding with plans to permanently extend Runway 4-22 an additional 1,000 feet in order to optimize Northwest Airline's nonstop B-747 service to Hong Kong (one daily departure in the foreseeable future). This project also involves the *temporary* extension of Runway 12R-30L in order to accommodate the near-term phasing of the Runway 4-22 reconstruction. These actions are separate from the actions proposed in this FEIS because the runway extensions will have independent utility compared to the FEIS purpose and need, which is related to the airport's long-term capacity in

general. However, because the two runway extensions are reasonably foreseeable, the plan is analyzed in this FEIS.

The MAC's noise analysis with the extensions completed and the Hong Kong service underway includes 10 long-haul international departures per day. Nine of these departures have been assumed to occur without the runway extension project completed and are incorporated into the FEIS noise analyses (assuming the highest future operational levels, as disclosed in Appendix H). The noise analysis shows that the largest change in noise impacts (year 2005) would 0.7 DNL between the DNL 60 and 65 contours, and no increase in the DNL 65+ contours. The FAA criteria state that further noise analysis only needs to be completed if an increase of 1.5 dBA is experienced at levels above DNL 65 over noise-sensitive uses, or if a 3 dBA or larger increase is experienced in the DNL 60 to 65 range over noise-sensitive uses. Because the permanent Runway 4/22 extension with the additional long-haul departures would not result in noise impacts exceeding the FAA thresholds, there are no significant cumulative noise effects expected from this action. The MAC's Draft Environmental Assessment (Draft EA) for the extensions, published in November 1997 also includes analyses of other environmental impact categories and recommends a Finding of No Significant Impact (FONSI). The Draft EA also addressed the cumulative environmental impacts of the runway extension project with the 2010 LTCP. It concluded that there are no cumulative effects that exceed state and federal thresholds of significance resulting from this related action when it is added to the impacts of the proposed new runway evaluated in this FEIS.

The MAC and the FAA will continue to evaluate cumulative effects as airport needs and actions evolve. However, the known near-term connected actions would not significantly alter the airfield and airspace utilization assumptions used in this FEIS for the 2010 LTCP.

## D. Governmental Approvals

The list of currently known governmental permits and approvals required to implement the new runway and other aspects of the 2010 LTCP (the proposed action) is on the following page. If any other permits and approvals are necessary to implement the proposed action, these will be described in the project's Record of Decision.

## E. Federal Aviation Administration (FAA) Actions

There are a number of FAA actions necessary to the design, development, and establishment of airport improvements and air traffic control and flight operating procedures for use in conjunction with the expansion of MSP. All of the actions discussed below are linked to this FEIS and the subsequent federal Record of Decision (ROD), as these documents will provide for federal environmental approval. The specific items requiring FAA technical and environmental approval include the installation of various ground-based air navigation facilities located both on and off the airport site. In addition, recognizing that development of the proposed action will be accomplished over a period of years, within the limits of available appropriations in any particular fiscal year and subject to other demands for funds, the FAA would have the environmental approvals to make Federal grant-in-aid and passenger facility charges (PFC) funds available to MAC for eligible airport development projects. Without attempting to identify every such eligible project, the following kinds of development are among those which may be eligible for Federal grant-in-aid and PFC support:

- land acquisition,
- construction of runways and taxiways,
- construction of aircraft apron areas, and
- on-airport roadways and passenger terminal ground access systems.

The following sections describe the responsibilities and required actions of the various FAA divisions that would be responsible for the implementation of this project.

| Unit of Government | Type of Permit/Approval |
|---|---|
| **General:** | |
| Minnesota Environmental Quality Board | Determination of Final EIS Adequacy |
| **MSP Alternative:** | |
| Federal Aviation Administration | Airspace Approval, Airport Layout Plan Approval, Approval of Federal EIS including findings of fact and record of decision, Air Quality General Conformity Findings and Statements, Airport Improvement Plan (AIP) Grant Approval, Approval to Impose or Use Passenger Facility Charges (PFCs) |
| U.S. Army Corps of Engineers | Section 404 Permit (Corps Individual Permit) |
| Federal Highway Administration | Location and Design Approval and permits, Federal-Aid Roadways; Clean Air Act |
| Governor, State of Minnesota | Certification of receipt of reasonable assurance to comply with state air quality and water quality regulatory standards as required by FAA Order 5050.4A (See Appendix K of this FEIS) |
| Minnesota Department of Transportation | Environmental Assessments, Design Review and Approval, Federal and State-Aid Roadways, Approval of New Runway State Safety Zones' Zoning Regulations |
| Minnesota Department of Natural Resources | Water Appropriation Permit, Protected Waters Permit |
| Minnesota Board of Water and Soil Resources | Compliance with the Wetland Conservation Action of 1991; Compliance with the Metropolitan Watershed Management Act |
| Minnesota Pollution Control Agency | MAC NPDES Stormwater Permit; General NPDES Stormwater Permits (Airport Tenants); NPDES General Construction Permits; 401 Water Quality Certification; Indirect Source Permit; Air Emission Facility Permits; Fugitive Dust Control Regulation Approval; Compliance with State Implementation Plan |
| State Historic Preservation Officer | Advisory Council on Historic Preservation (Section 106/Section 110 Review); Section 4(f) Review |
| Metropolitan Council | Long-Term Comprehensive Airport Plan Review; Annual Review of MAC Capital Improvement Program; Approval to changes in the Metropolitan Highway System; Industrial Discharge Permits; Air Quality Transportation Conformity |
| Richfield-Bloomington Watershed Management Organization | Drainage Design Review and Approval |
| Minnehaha Creek Watershed District | Drainage Design Review and Approval; Grading/Land Alteration Permits |
| Lower Minnesota River Watershed District | Drainage Design Review and Approval; Grading/Land Alteration Permits |
| **No Action Alternative:** | |
| U.S. Army Corps of Engineers | Nationwide Permit |
| Minnesota Board of Water and Soils Resources | Compliance with Wetland Conservation Act of 1991 |
| Minnesota Pollution Control Agency | NPDES Wastewater/Industrial Process Discharges Permit; NPDES Stormwater Permit; NPDES General Construction Permits; 401 Water Quality Certification; Indirect Source Permit; Air Emission Facility Permits; Fugitive Dust Control Regulation Approval; Compliance with State Implementation Plan |
| Metropolitan Council | Airport Comprehensive Plan Review; Approval to changes in the Metropolitan Highway System; Industrial Discharge Permits |

## E.1 Air Traffic

Air Traffic is responsible for the safe and expeditious flow of aircraft to and from the airport. This is accomplished by establishing airspace structure, air traffic control sectors, flight routes and air traffic control procedures.

Development of the proposed action may require redesign of the terminal radar approach control (TRACON) airspace surrounding the MSP airport. It will require establishment of new air traffic control procedures and, therefore, modification of existing tower orders. The project will also require the expansion of the Class B Airspace surrounding MSP. Class B Airspace generally extends from the surface to an altitude of 10,000 feet above mean sea level (MSL) and may extend 30 or more miles from its center. The current MSP Class B Airspace extends from the surface to 8,000 feet and a 20-mile radius from its center. Independent of this project, MSP Air Traffic Control Tower has requested that their Class B airspace be expanded to include the airspace up to 10,000 feet MSL and a 30-mile radius of the airport. This Class B airspace expansion was needed independent of this project to accommodate turns on the runway finals beyond 20 miles from the airport.

FAA conducted a terminal airspace study for MSP in 1996 to identify airspace capacity around MSP and to evaluate impacts on airspace capacity that might result in accommodating a new north-south runway at MSP. The study found that changes could be made in the airspace to accommodate the new runway and identified additional airspace routings for arrivals to, and departures from, the runway.

Because these new airspace routings will result in new overflights of residential areas, the FAA required an analysis of potential noise impacts of operations over 3,000 feet AGL (per FAA Notice 7210.360). That analysis is presented in Appendix G the impacts of operations below 3,000 feet AGL are addressed within the body and in other parts of this FEIS). The new alternative airspace routings are also shown in Appendix G as **Figures G-2, G-3, and G-4**. The noise screening analysis was performed on the airspace alternatives using FAA screening criteria for both the 2005 "Baseline" and "High" forecasts of operations to determine if additional environmental analysis is needed (i.e., to assure that the proposed air traffic changes would not result in a 5-decibel or more increase in the overall Day Night Average Sound Level, DNL, of any residential area). The analysis showed that no additional environmental documentation would be needed, based on the FAA noise screening procedure.

**Table A.3-7** (Runway Use for the MSP Alternative - Average Annual Use) shows the percentage of annual operations that are expected to occur in achieving operational goals for use of the new north-south runway, as well as the other runways at MSP. The new runway, Runway 17-35, would predominantly operate to and from the south and is expected to be used for about one-third of the aircraft departures when the airfield is in a south flow configuration and for every sixth arrival when operating to the north. A very minimal amount of traffic would operate to and from the north, as indicated in Appendix A. These limited north operations on Runway 17-35 would most likely only occur when dictated by weather, so as to support minimal airport capacity, when other runways are closed for maintenance or emergency situations, or when benefiting air cargo operations during periods of light daytime activity. FAA Air Traffic will establish the final procedures, consistent with the conditions set forth in this FEIS, for all runway ends and for airspace at MSP following the Record of Decision.

In addition to assessing the effects of overflights in the immediate environs of MSP, Air Traffic is responsible for examining the integration of aircraft using the new north-south runway into the flight procedures and maneuvering of aircraft as they enter the terminal airspace and begin the initial phases of arrival and departure. As previously noted, the FAA has already conducted an analysis of the airspace structure's ability to support the new runway from as far as 45 miles from MSP and found

that changes could be made to accommodate the new runway and reduce average daily delays. This preliminary plan involves the addition of a new jet arrival fix in the airspace southeast of the airport, for a total of five arrival fixes in the MSP terminal airspace area. The results of this analysis are also referenced in Appendix G as *Terminal Airspace Modifications*. Therefore, in addition to the air traffic procedures described above, Air Traffic will be responsible for establishing and coordinating the addition of the planned fifth arrival fix with other FAA branches and the users before all of the airspace changes are implemented.

## E.2 Airway Facilities

The Airway Facilities Division is responsible for the installation, operation and maintenance of aids to navigation required to support the proposed action.

Development of the proposed action would include the establishment of new and relocated landing aids serving the airport and the new runway. Such facilities include communications equipment and radio aids to navigation such as a relocated very high frequency omni-directional range (VOR) facility. In support of this proposed action, the FAA will design, install and operate a wide range of ground-based air traffic control and navigation facilities. Airway Facilities will support the installation of a precision instrument landing system (ILS) on Runway 35, and an approach lighting system that will consist of a medium-intensity approach lighting system with sequenced flashing lights (MALSR) and runway visual range (RVR) equipment. In conjunction with the establishment of IFR equipment, the location and installation of the outer and middle markers (generally marking course guidance and the decision height for aircraft approaches) will be needed on the approach end of the new runway. Precision approach path indicators (PAPI) systems will also need to be installed on the runway in both directions and runway end identifier lights (REIL's) will be placed on the north end of the new runway.

## E.3 Airports

The Airports Division is responsible for the technical and environmental approval of the airport layout plan (ALP), administration of Airport Improvement Program (AIP) development grants funding the project, approvals to impose or use Passenger Facility Charges (PFC) funds for similar purposes, and environmental approvals under NEPA. The ALP showing the new runway and other improvements described in this FEIS was conditionally approved by the FAA on April 25, 1997. The ALP is conditioned on environmental approval of development in the 2010 LTCP and does not include approval of development in the 2020 Concept Plan. Development of the MSP Alternative will involve approval of the FEIS for the proposed project, approval of the airport layout plan (ALP), and administration of any grants-in-aid funds for approved airport development projects and approvals to use PFC's.

## E.4 Flight Standards

The Flight Standards Division is responsible for ensuring the adequacy of flight procedures and operating methods in addition to setting certification criteria for air carriers, commercial operators, and airmen. Specific Flight Standards actions implementing the proposed action would involve establishment of instrument approach and departure procedures for the new runway, and new or revised instrument approach and departure procedures for existing runways. Flight standards is also assigned the responsibility and authority to approve airline operations under the provisions of FAR Part 121. Authorization of amended operating procedures may be required to permit airline operations on the new runway. Fight standards will also authorize the kinds the kinds of operations that can occur on the new runway and the types of aircraft that can use it.

## E.5 Security

The FAA's Aviation Security Division is responsible for ensuring the integrity of the airport perimeter and secured areas of the terminal and support facilities against intrusions of unauthorized persons and explosives or weapons. Security will provide input to the approval of the airport layout plan for the proposed action. During the master planning and design stages, Security reviewed the terminal, fencing, and access plans prepared by the airport sponsor. Security will ultimately approve the airport security plan, procedures and hardware for compliance with FAR Part 107 and particularly FAA Orders 107.13 and 107.14 relating to security of the air operations areas and the access control system. Use of the infield area for air cargo, and the service roads to these future facilities, will also require Security approvals.

# F. Project History

In 1989, the Minnesota Legislature enacted the Metropolitan Airport Planning Act to determine whether the long-term air transportation needs of the metropolitan area and the state could best be met by enhancing capacity at MSP or by developing a replacement airport within the metropolitan area. Known as the Dual Track Airport Planning Process, the 1989 legislation (as amended) specified the following actions for both the MC and MAC during the 1989-1996 planning period:

- AVIATION PLAN. By February 1, 1990, the Metropolitan Council shall amend its aviation plan to incorporate policies and strategies that will ensure a comprehensive, coordinated, continuing, thorough and timely investigation and evaluation of alternatives for major airport development in the metropolitan area for a prospective 30-year period. The alternatives must include both airport improvements and enhancements of capacity that may be necessary at the existing airport (MSP) and the location and development of a new airport.

- AVIATION GOALS. By March 1, 1990, the Metropolitan Council, shall report to the legislature analyzing and making recommendations on long-range aviation goals for the major airport facility in the metropolitan area for a prospective 30-year period. The report must address goals for safety, environmental impact, and services, including ground access and service levels to other states and countries and to nonmetropolitan areas of the state. In preparing the report, the Council shall consider regional growth patterns, economic development, economic impact, regional and statewide investment, and ground transportation.

- NEW AIRPORT; CONCEPTUAL DESIGN STUDY AND PLAN. By March 1, 1990, the Commission, in consultation with the Council, shall complete a study of facilities requirements, airport functioning, and conceptual design for a major new airport. By January 1, 1991, the Commission shall complete a conceptual design plan for a major new airport. The conceptual design study and plan must describe and satisfy air transportation needs for a prospective 30-year period and be consistent with the development guide of the Council. The conceptual design plan must include an analysis of estimated costs, potential financing methods and sources of public and private funding, and cost allocation issues and options. The Council shall use the design study and plan in selecting a search area.

- SEARCH AREA. By January 1, 1992, the Metropolitan Council, in consultation with the Commission, shall designate a search area for a major new airport.

- MSP PLAN. By January 1, 1992, the Commission shall adopt a long-term comprehensive plan (LTCP) for MSP International Airport at its existing location to satisfy the air transportation needs

for a 30-year planning period. The plan must be updated at least every five years, and amended as necessary to reflect changes in trends and conditions, facilities requirements, development plans and schedules.

- MSP REUSE STUDY. By January 1, 1993, the Council shall report to the legislature on policies for the reuse of the existing major airport site should a new major airport be developed.

- NEW AIRPORT SITE SELECTION & COMPREHENSIVE PLAN. Within four years after the designation of the search area, MAC shall:

    - select a site for a new major airport within the search area,
    - prepare a comprehensive plan for the development of a new major airport at the selected site to satisfy the air transportation needs for a 30-year period, and
    - prepare and submit for administrative review the environmental documents required for site acquisition.

- AIRPORT PLANNING AND DEVELOPMENT REPORT. Within 180 days following completion of the comprehensive plans for MSP and a new major airport, the Metropolitan Council and MAC shall report to the legislature on the long-range planning and development of major airport facilities in the metropolitan area. The report must include recommendations of the agencies on major airport development for the 30-year period and on acquiring a site for a new major airport, including financing. The report must be completed by July, 1996.

The following actions have been taken since the 1989 legislation was enacted:

1. The Metropolitan Council amended its aviation plan in January, 1990 to include both airport improvements and enhancement of capacity at MSP and the location and development of a new major airport — as alternatives for major airport development in the metropolitan area for the next 30 years. The plan also included the aviation goals and policies to guide major airport development for the next 30 years.

2. The MEQB approved on October 18, 1990, an alternative environmental review process for selecting a search area.

3. The Commission completed the New Airport Conceptual Design Study and Plan in December, 1990.

4. The Council, in December 1991, after considering three potential search areas, designated the Dakota Search Area in Dakota County **(Figure 1)** as the location for the planning and development of a new major airport.

5. The Commission adopted a long-term comprehensive plan for MSP in November, 1991.

6. The Commission submitted an alternative environmental review process for the Dual Track Airport Planning Process to the MEQB, which was approved on March 19, 1992. The alternative environmental review process called for the preparation of an Alternative Environmental Document (AED) for each stage of the development of the comprehensive plans for the two "tracks" (MSP and New Airport). The AEDs would assess the environmental impacts of the alternatives under consideration in sufficient detail to select the best alternative.

7. The Council completed the MSP Reuse Study in December 1992.

8. A First Phase Scoping Report describing the Dual Track Airport Planning Process and issues/impacts to be addressed was prepared and made available for public and agency review on March 30, 1992. Three public meetings were held in April 1992 for public and agency comment. Responses to substantive comments were published in March 1993.

9. The Scoping Document and Draft Scoping Decision Document for the selection of a new airport site were prepared by MAC and made available for public and agency review on March 1, 1993. A public scoping meeting was held March 18 and the Scoping Decision Document, including responses to comments, was adopted by the Commission on June 21, 1993.

10. The Draft AED for the selection of a new airport site, including the identification of a preferred site, was reviewed by MAC on September 20, 1993, for public/agency review and comment. Three sites were evaluated in the Draft AED. A public hearing was held on November 18 and the Final AED was made available on February 28, 1994, for public/agency review and comment. The Commission determined the adequacy of the Final AED and selected Site 3 on March 21, 1994.

11. The Scoping Environmental Assessment Worksheet (EAW) and Draft Scoping Decision Document for the update of the long-term comprehensive plan for MSP were prepared by MAC and made available for public and agency review on January 17, 1994. A public scoping meeting was held February 15 and the Scoping Decision Document was adopted by the Commission on March 21, 1994.

12. The Scoping EAW and Draft Scoping Decision Document for the development of a comprehensive plan at the New Airport Site 3 were prepared by MAC and made available for review and comment on April 25, 1994. A public scoping meeting was held May 12 and the Scoping Decision Document was adopted by the Commission on June 20, 1994.

13. The Draft AED for the selection of the MSP Long-Term Comprehensive Plan was reviewed by MAC on September 19, 1994 for public/agency review and comment. Six airport expansion layouts were evaluated in the Draft AED. A public hearing was held on October 26, 1994 and the Final AED was made available on January 30, 1995 for public/agency review and comment. The Commission determined the adequacy of the Final AED and selected Alternative 6 (see Section III.B.1) on February 21, 1995.

14. The Draft AED for the selection of the New Airport Comprehensive Plan was reviewed by MAC on November 21, 1994 for public/agency review and comment. Three new airport layouts were evaluated in the Draft AED. A public hearing was held on January 18, 1995 and the Final AED was made available on March 27, 1995 for public/agency review and comment. The Commission determined the adequacy of the Final AED and selected the New Airport Comprehensive Plan on April 18, 1995.

15. FAA and MAC prepared scoping documents for the Draft EIS (the Second Phase Scoping Report dated May 22, 1995) and held three public hearings on this document in June 1995. The 30-day comment period ended July 5, 1995, and a final Scoping Decision document was issued July 26, 1995.

16. FAA and MAC prepared the DRAFT EIS and held two public hearings in January 1996. The 60-day comment period ended February 13, 1996.

17. MAC and MC prepared a joint *Report to the Legislature* in March 1996 with a recommendation to expand MSP. The report concluded that the aviation needs of the

metropolitan area can best be met by continued development of MSP, even under the highest of MAC's forecast range of operations.

18. In April 1996 the legislature considered the MAC and MC recommendations and the comprehensive planning documents and their environmental effects mandated by the 1989 legislation, and selected the development of MSP as the preferred alternative. The legislature mandated implementation of the MSP 2010 LTCP, a phase of the MSP 2020 Concept Plan. The April 1996 legislation also prohibits development of the new west terminal without further legislative approval.

19. A *Section 4(f) Evaluation* document was prepared by FAA and made available for comment on May 1, 1998. A summary of the document is presented in Section V.U of this FEIS.

## G. Implementation Schedule

Subject to completion of the environmental review process, construction of the new north-south runway, planned maintenance, hangar, air cargo and roadway facilities for the proposed action (2010 LTCP) would commence in 1998 and could be completed in 2003. Additional expansion of maintenance, hangar and air cargo facilities could occur beyond 2003 if conditions so warrant.

# II. Purpose and Need

In 1989, the Minnesota State Legislature recognized the need to examine alternatives to meet the long-term air transportation needs of the Twin Cities metropolitan area, and established the *Dual Track Airport Planning Process*. The Metropolitan Airport Planning Act of 1989 (see Appendix A.14) stated that the planning process and resulting actions must satisfy the air transportation needs of the region to the year 2010, and have a concept plan that could satisfy the air transportation needs of the region to the year 2020.

The FAA has a statutory charter to encourage the development of civil aeronautics and the safety of air commerce (49 USC 40104). Further, Congress has declared as a policy that airport improvement projects that increase capacity should be undertaken to the maximum extent feasible to increase safety, efficiency and decrease delays [49 USC 47101(a)(7)].

## A. Purpose

The broad purpose of the Minnesota Dual Track Airport Planning Process is to provide for the efficient and economical movement of people and goods between the Twin Cities region and USA and international markets, and help promote the orderly growth and economic development of the region. The process and resulting actions must satisfy the air transportation needs of the region to the year 2010, and have a concept plan that could satisfy the air transportation needs of the region to the year 2020.

As directed by the 1989 legislature, long-range aviation goals for the major airport facility in the metropolitan area for the 30-year period were to be prepared by the Metropolitan Council and reported to the legislature. The goals must address safety, environmental impact, and service (including ground access and service levels to other states and countries and to non-metropolitan areas of the state). The following goals were adopted by the Metropolitan Council to direct the development and evaluation of the major airport alternatives.

The following subsections show how the proposed action satisfies the FAA's statutory mission and objectives and the state's long-range aviation goals.

**Goal A.** To plan, develop and operate an aviation system that will help promote the orderly growth and economic development of the region.

**Goal B.** To provide an aviation system that is safe, efficient and economical.

**Goal C.** To provide aviation facilities and services that produce positive effects on the social and economic environments with minimal adverse effects on the physical environment.

**Goal D.** To develop, operate and maintain an aviation system that enhances the quality of life for people in the Twin Cities Area by providing them with good access to state, national and international activities and opportunities.

**Goal E.** To attain a regional aviation planning and programming process that is responsive to the needs and interests of residents, industries, counties, cities, and affected agencies and provides sufficient opportunities for them to participate in formulating and implementing public policies.

These regional goals were applied throughout the Dual Track Process. As the level of detail increased during the course of this process, these goals became more specific. Based on these regional goals, The Long Term Comprehensive Plan (LTCP) for MSP, Volume 1, Goals, Assumptions and Methodologies and

the New Air Carrier Airport Conceptual Design Study and Plan established the following six planning goals to guide each of the two "tracks" of the Dual Track Process.

1. Develop airport facilities to meet future aviation needs, to provide enhanced levels of air service, and to further the economic development of the State of Minnesota.
2. Minimize costs to users.
3. Develop the airport in a manner which is flexible and adaptable to changing conditions.
4. Provide an airport which is safe and reliable.
5. Develop an airport that is consistent with state, regional, and local plans and economic development policies.
6. Develop the airport and the airport vicinity to minimize and reduce adverse aircraft noise and other environmental effects.

The 1989 Metropolitan Airport Planning Act also directed the Metropolitan Council and MAC to undertake a series of studies to identify a preferred MSP and new airport development plan. The manner for addressing the sequenced environmental documentation of alternatives was approved in alternative environmental processes between the Metropolitan Council and the Minnesota Environmental Quality Board (MEQB) in October 1990, and between MAC and MEQB in March 1992. The MAC process requires a series of "tiered" environmental documents, called Alternative Environmental Documents (AEDs), including EIS-level detail but focused only on the specific decision to be made. Separate environmental documents were developed at the following decision points:

- Alternative search areas, with one carried forward to the next phase.
- Alternative sites within the preferred search area, with only one site carried forward to the next phase.
- Alternative development plans on the preferred new airport site, with only one plan carried forward to the EIS.
- Alternative development plans for MSP, with only one plan carried forward to the EIS.

The *main* purpose of the federal action-2010 LTCP is to improve airfield and airspace capacity and thereby provide increased levels of service for air transportation users in the Twin Cities region. The 2010 LTCP also supports the original broad purpose of the MAC's Dual Track process of providing for the efficient and economical movement of people and goods between the Twin Cities region and USA and international markets, and helping promote the orderly growth and economic development of the region.

## B. Need

During the mid-1980s, an Airport Adequacy Study prepared by the Metropolitan Council indicated that, because of physical and environmental constraints, Minneapolis-Saint Paul International Airport (MSP) may not be capable of expanding to the degree necessary to meet the region's long-term air transportation needs. MAC subsequently prepared forecasts of activity, developed the long-term comprehensive plan (LTCP) for MSP and utilized the FAA SIMMOD Model and manual techniques from the FAA *Airport Capacity and Delay Manual* to perform detailed analyses of capacity and delay. The proposed addition of new Runway 17-35 was analyzed independently by MAC and a FAA Airport Capacity Design Team, consisting of FAA, the airport operator, and aviation industry groups, and reported in the FAA's *Capacity Enhancement Plan* for MSP completed in December 1993.

Based on these studies and analyses, MAC and FAA have independently concluded that without substantial airfield, terminal, and access improvements, future growth in aviation activity at MSP will result in a significantly decreased level of service and increased user costs.

Peak-hour demand will outstrip capacity of the runway/taxiway system without major improvements. Airfield simulations using SIMMOD show that if no improvements are made by 2020, or by 2010 if recent growth

rates continue, peak-hour departure queues for the south parallel runway could reach more than 25 aircraft. That would result in excessive delays and aircraft blocking access to the terminal, producing gridlock. Peak-hour (6:00-7:00 p.m.) delays by the year 2020, or 2010 under recent growth rates, are estimated to average 15 minutes per aircraft during instrument conditions, with the highest delays in excess of one hour. At the levels cited by the Airport Capacity Design Team, ranging from 530,000 to 600,000 annual operations, these savings would range from 21,000 to 44,000 hours per year — which results in a $30 million to $63 million benefit per year.

This projected increase in delays, decline in service and resulting increase in user costs threatens MSP's ability to provide good-quality air service and economic benefits to the region as a major connecting hub. MSP's role as a connecting hub is integral to the air service the airport provides the region. Further, MSP — the 14th busiest airport in the nation in 1995 for passenger enplanements — is a major link in the nation's airspace structure.

Aviation activity forecasts for the year 2010 are 603,800 operations according to the MAC High Forecast and 658,000 according to the FAA Terminal Area Forecast (TAF), which are discussed in Subsection II.C.2.2. The operations levels and delay savings called out in the Capacity Enhancement Plan fall within these MAC and FAA 2010 forecast levels and further establish the need for, and delay savings from, the new runway.

The FAA has also completed a *Terminal Airspace Study* (August 1996). This airspace study found that the existing MSP airspace can be reconfigured to accommodate Runway 17/35 and that changes could reduce the average airspace-related delays in the range of 900 to 7,000 hours annually.

The new runway and other airfield and airspace improvements planned to accommodate increased aviation activity would create further demands on the terminal area and ground access facilities, resulting in further airport deficiencies. These deficiencies would be corrected by the other improvements listed in Section III.D (Proposed Action).

Additional information supporting the need for the proposed action is provided below. This information includes discussions of the airport's role, aviation activity levels and forecasts, and the existing airport's limitations.

## C. Supporting Information

### C.1 Airport Role

MSP ranked 12th in the nation and 18th in the world in total passengers for 1996 (Aviation Week & Space Technology, May 19, 1997). MSP serves both as the region's air carrier airport for local origin and destination passengers, and as a connecting hub for Northwest Airlines. It is one of the nation's largest hub airports, based on aircraft operations and percentage of total passengers enplaned. In addition to providing substantial air service and economic benefits, connecting hub operations place a high demand on airfield and terminal facilities. These demands on airport facilities are forecast to intensify in the future.

#### C.1.1 MSP's Role as a Connecting Hub Airport

Since the deregulation of the airline industry in 1979, many airlines have developed "hub and spoke" route structures which bring flights from many cities together at one airport so that passengers can connect with flights to a wide range of destinations. By combining passengers from many cities, hub and spoke systems provide more air service to residents of the region than could be supported by the volume of passengers between any two cities alone. At connecting hub airports, "hubbing" airlines schedule a large number of arrivals in an arrival "bank", transfer passengers between flights, and then schedule a large number of departures in a departure "bank". In order to minimize passenger delay, arrivals and departures are scheduled as close together as possible. Consequently, a successful connecting hub airport must be able

to accommodate a very high level of aircraft operations during the arrival and departure banks, and must provide for rapid passenger and baggage transfer between aircraft. Because of the need to accommodate passengers and baggage transferring from one airplane to another in a minimum amount of time, in addition to meeting the needs of originating passengers, more terminal frontage is needed to park aircraft (because of connecting complexes) than would be required if the airport only serves origination and destination traffic. Inability to accommodate peak period activity during the times that passengers desire to travel will result in loss of service to competing hub airports. Since missed connections have a severe effect on air service in a hub and spoke system, connecting hub airports must also be able to accommodate peak period operations in all weather conditions or risk losing service. By supplying adequate airport accommodations in all weather conditions, MSP's role as a connecting hub provides benefits to both local and connecting passengers.

### C.1.2 MSP's Role In The Local Economy

Metropolitan Council Goals A and D directly relate to MSP's role as a connecting hub. By increasing the number of nonstop destinations, a connecting hub increases the frequency of service to individual cities, thus decreasing travel time and increasing convenience. Since good air service is a major consideration in corporate location decisions, this level of air service helps to make the Minneapolis-Saint Paul region competitive as a business location. Also, investments in payroll and facilities by Northwest Airlines and associated industries further benefit the economy of the Twin Cities. The 1995 study, *The Local and Regional Economic Impacts of Minneapolis-St. Paul International Airport,* indicated that MSP generated 24,500 jobs directly and $880 million in household income which resulted in $715 million in additional consumption in 1994 and employment of an additional 13,000 people.

### C.1.3 MSP's Role in the Air Transportation System

MSP is a vital link in the national and international air transportation systems. As a connecting hub airport, MSP is part of Northwest Airlines' hub and spoke route structure. Over 12 million passengers a year, 51 percent of the airport's total, make connections at MSP enroute to other destinations. In terms of passenger enplanements, MSP was the 12th busiest airport in the nation in 1996, and 18th in the world. It ranked 13th in total aircraft operations in both the US and the world in 1996. The FAA's National Plan of Integrated Airport Systems (NPIAS) lists MSP as a large hub airport, meaning that MSP accounts for at least one percent of the Nation's annual passenger enplanements. In 1995 MSP accounted for 2.25 percent of the nation's scheduled domestic and international passenger enplanements originating from U.S. airports.

## C.2 Aviation Activity

The airport has served the region's aviation needs for more than 50 years. In the 1970's and 1980's, the airport experienced a significant growth in operations which has continued to the present. In the past 10 years, analysis of the physical and environmental capacity of MSP has been ongoing with the intent of covering a period of need to 2010 and beyond.

### C.2.1 Activity Levels

MSP has experienced substantial growth in activity since the 1970s. Between 1972 and 1995, annual airport revenue-passenger traffic grew from 5.5 million to 25.3 million, as shown in **Table 1**. Similarly, annual aircraft operations (an operation is either a landing or a takeoff) have increased from 230,793 in 1972 to 465,454 in 1995, as shown in **Table 2**. This growth is forecast to continue, with commercial passenger activity dominating the airport. In its 1993 "Baseline Forecast" used in the

Table 1 - Historic Revenue Passenger Traffic
1972 to 1996

| Year | Domestic Scheduled Origination/ Destination (a) | Domestic Scheduled Connections | Domestic Scheduled Enplanements/ Deplanements (b) | Regional (c) | Scheduled International (d) | Non-Scheduled (e) | Total |
|---|---|---|---|---|---|---|---|
| 1972 | 3,735,720 | 1,721,676 | 5,457,396 | 30,274 | 256 | -- | 5,487,926 |
| 1973 | 4,061,080 | 2,077,234 | 6,138,314 | 28,804 | - | -- | 6,167,118 |
| 1974 | 4,501,100 | 1,948,950 | 6,450,050 | 32,310 | - | -- | 6,482,360 |
| 1975 | 4,418,220 | 2,038,908 | 6,457,128 | 42,510 | - | -- | 6,499,638 |
| 1976 | 4,740,460 | 2,379,396 | 7,119,856 | 52,968 | - | -- | 7,172,824 |
| 1977 | 5,004,340 | 2,532,114 | 7,536,454 | 56,042 | - | 260,878 | 7,853,374 |
| 1978 | 5,429,880 | 2,283,674 | 7,713,554 | 70,452 | 744 | 291,878 | 8,076,628 |
| 1979 | 6,080,080 | 3,096,462 | 9,176,542 | 98,174 | - | 259,576 | 9,534,292 |
| 1980 | 5,679,240 | 2,891,194 | 8,570,434 | 85,094 | 57,462 | 227,586 | 8,940,576 |
| 1981 | 5,246,220 | 3,537,384 | 8,783,604 | 60,274 | 115,742 | 171,738 | 9,131,358 |
| 1982 | 5,729,460 | 4,413,330 | 10,142,790 | 151,548 | 101,148 | 164,556 | 10,560,042 |
| 1983 | 6,079,860 | 5,324,328 | 11,404,188 | 237,566 | 99,276 | 298,972 | 12,040,002 |
| 1984 | 7,199,220 | 4,773,356 | 11,972,576 | 261,220 | 146,028 | 374,152 | 12,753,976 |
| 1985 | 7,759,660 | 6,469,074 | 14,228,734 | 313,650 | 167,066 | 624,372 | 15,333,822 |
| 1986 | 8,179,700 | 7,511,288 | 15,690,988 | 581,400 | 163,400 | 477,944 | 16,913,732 |
| 1987 | 8,138,640 | 8,203,772 | 16,342,412 | 732,748 | 170,046 | 411,400 | 17,656,606 |
| 1988 | 8,371,160 | 7,675,082 | 16,046,242 | 795,670 | 130,530 | 532,688 | 17,505,130 |
| 1989 | 8,915,820 | 7,784,020 | 16,699,840 | 831,820 | 157,820 | 686,836 | 18,376,316 |
| 1990 | 9,025,480 | 8,193,796 | 17,219,276 | 990,878 | 205,346 | 774,640 | 19,190,140 |
| 1991 | 8,733,260 | 8,633,204 | 17,366,464 | 984,150 | 248,250 | 707,180 | 19,306,044 |
| 1992 | 9,160,120 | 9,941,852 | 19,101,972 | 1,132,372 | 288,510 | 838,120 | 21,360,974 |
| 1993 | 9,789,700 (g) | 9,914,120 | 19,703,820 | 1,298,208 | 341,088 | 701,836 | 22,044,952 |
| 1994 | 9,668,404 (g) | 10,854,252 | 20,522,656 | 1,293,576 | 332,228 | 915,430 | 23,063,890 |
| 1995 | 10,742,196 (g) | 11,834,438 | 22,576,634 | 1,234,954 | 513,358 | 1,003,584 | 25,328,510 |
| 1996 | n/a | n/a | 24,285,566 | 1,441,498 | 553,150 | 963,064 | 27,243,278 |

Notes (a) Origination-destination (O&D) passengers less estimated regional carrier origination-destination passengers.
(b) Enplanements and deplanements equal O&D plus connections.
(c) Regional carrier passengers plus non-jet passengers.
(d) Does not include Canadian traffic.
(e) Includes domestic and international charter activity. Does not include non-scheduled passenger activity by scheduled air carriers.
(f) Revenue passengers only.
(g) Includes regional carrier O&D.

Source: MAC; MSP LTCP Volume 6, Revised Activity Forecasts, Table 2-1.

Table 2 - Historic Aircraft Operations
1972 to 1996

| Year | Domestic Schedule (a) | Regional (b) | Scheduled International (c) | Non-Scheduled (d) | All-Cargo | General Aviation | Military | Total |
|---|---|---|---|---|---|---|---|---|
| 1972 | 115,698 | 6,478 | 20 | -- | - | 92,687 | 15,910 | 230,793 |
| 1973 | 126,712 | 6,532 | 16 | -- | - | 97,191 | 14,180 | 244,631 |
| 1974 | 124,258 | 6,888 | 6 | -- | - | 86,353 | 9,180 | 226,685 |
| 1975 | 123,826 | 8,472 | - | -- | - | 89,321 | 7,985 | 229,604 |
| 1976 | 128,296 | 9,364 | - | -- | - | 96,764 | 6,222 | 240,646 |
| 1977 | 132,370 | 9,364 | - | 1,510 | 504 | 103,239 | 6,260 | 253,247 |
| 1978 | 118,668 | 11,014 | 6 | 2,414 | 814 | 115,106 | 6,698 | 254,720 |
| 1979 | 143,246 | 12,306 | - | 1,802 | 948 | 116,738 | 6,080 | 281,120 |
| 1980 | 146,524 | 12,128 | 350 | 1,976 | 1,214 | 114,260 | 6,604 | 283,056 |
| 1981 | 146,338 | 9,904 | 472 | 2,568 | 1,446 | 97,278 | 5,606 | 263,612 |
| 1982 | 150,450 | 22,838 | 390 | 2,478 | 2,556 | 82,303 | 5,359 | 266,374 |
| 1983 | 170,108 | 33,924 | 388 | 3,752 | 3,192 | 83,548 | 5,100 | 300,012 |
| 1984 | 189,830 | 35,938 | 506 | 2,234 | 5,966 | 93,367 | 7,721 | 335,562 |
| 1985 | 220,190 | 31,460 | 628 | 3,346 | 5,338 | 106,715 | 14,020 | 381,697 |
| 1986 | 231,760 | 50,520 | 680 | 2,426 | 12,360 | 71,406 | 6,869 | 376,021 |
| 1987 | 213,540 | 56,410 | 644 | 3,002 | 15,434 | 70,050 | 8,676 | 367,756 |
| 1988 | 211,562 | 58,896 | 544 | 2,836 | 17,958 | 68,634 | 6,698 | 367,128 |
| 1989 | 218,168 | 59,338 | 718 | 3,310 | 17,194 | 71,669 | 4,347 | 374,744 |
| 1990 | 223,884 | 74,446 | 860 | 4,538 | 18,526 | 58,864 | 2,804 | 383,922 |
| 1991 | 225,390 | 75,856 | 1,078 | 5,046 | 20,280 | 55,702 | 2,534 | 385,886 |
| 1992 | 242,670 | 85,926 | 1,222 | 5,824 | 18,900 | 60,919 | 3,003 | 418,474 |
| 1993 | 258,374 | 108,237 | 1,285 | 4,855 | 15,198 | 49,216 (e) | 2,825 (e) | 439,990 |
| 1994 | 264,519 | 115,164 | 1,478 | 6,103 | 14,110 | 50,898 (e) | 2,451 (e) | 454,723 |
| 1995 | 281,479 | 106,694 | 1,832 | 6,832 | 15,933 | 49,769 (e) | 2,915 (e) | 465,454 |
| 1996 | 295,776 | 105,926 | 2,256 | 8,750 | 20,362 | 49,786 | 2,624 | 485,480 |

Notes:
(a) Adjusted to exclude regional activity.
(b) Regional carrier enplanements plus non-jet enplanements.
(c) Does not include Canadian traffic.
(d) Includes domestic and international charter activity. Does not include non-scheduled operations by scheduled air carriers.
(e) Does not include local operations.

Source: MAC; MSP LTCP Volume 6 Revised Activity Forecasts Table 2-3 and HNTB analysis.

DEIS, MAC estimated that total airport passenger traffic would grow to 33.4 million by the year 2020 (16.7 million enplanements), and annual aircraft operations would grow to 520,400.

**Table 3** shows the MAC's Baseline Forecast of growth in passenger and aircraft activity through the year 2020. For more information about the Baseline Forecast and other MAC and FAA forecasts, see Section C.2.2, below.

As a connecting hub airport, MSP's ability to accommodate growth in peak period activity is critical. **Table 4** summarizes the forecast of peak hour activity. Peak-hour aircraft arrivals occur from 5:00 to 5:59 p.m. and are projected to rise from 63 in 1992 to 75 in 2020. Peak-hour aircraft departures occur from 9:00 to 9:59 a.m. and are projected to rise from 60 in 1992 to 72 in 2020. Peak-hour operations (both arrivals and departures) occur from 6:00 to 6:59 p.m. and are estimated to increase from 119 in 1992 to 143 in 2020.

**Table 3 - Summary of Minneapolis-Saint Paul Baseline Forecast**

| | Total Passengers (millions) | Total Aircraft Operations (thousands) |
|---|---|---|
| 1994 (Actual) | 24.5 | 454.7 |
| 1995 (Actual) | 26.8 | 465.5 |
| 1996 (Actual) | 28.8 | 485.5 |
| 2000 | 25.4 | 473.8 |
| 2005 | 27.8 | 484.8 |
| 2010 | 30.1 | 499.9 |
| 2015 | 31.7 | 508.4 |
| 2020 | 33.4 | 520.4 |

Source: Minneapolis-Saint Paul International Airport Long Term Comprehensive Plan, Volume 6, Revised Activity Forecasts, Technical Appendix (MAC, March 1994).

**Table 4 - Hourly Distribution of Aircraft Arrivals, Departures and Operations**

| Mode | Year | Peak Hour | Commercial | General Aviation | Military | Total |
|---|---|---|---|---|---|---|
| **Arrivals** | 1992 | 1700-1759 | 52.6 | 10.4 | 0.3 | 63.3 |
| | 2020 | 1700-1759 | 65.4 | 9.3 | 0.3 | 75.0 |
| **Departures** | 1992 | 0900-0959 | 53.5 | 6.2 | 0.4 | 60.1 |
| | 2020 | 0900-0959 | 65.8 | 5.6 | 0.4 | 71.8 |
| **Operations** | 1992 | 1800-1859 | 109.3 | 8.9 | 0.8 | 119.0 |
| | 2020 | 1800-1859 | 134.0 | 7.9 | 0.8 | 142.7 |

Note: Operations equal arrivals plus departures within the hour

Source: MSP LTCP Volume 6 **Tables N-24** and **N-29**

## C.2.2 Forecasts of Operations and Enplanements

### MAC Forecasts

Forecasting has been an ongoing effort with regard to the Dual Track Planning Process. MAC originally developed forecasts in 1990 using 1988 as a base year. As required by the Dual Track legislation, the

forecasts were updated in 1993 to reflect recent changes in the industry. In a legislative audit conducted by the state of Minnesota in 1993, the methodology used by MAC in its 1990 forecasts was found to be adequate. However, the Legislative Auditor's report took exception to the hubbing ratio used by MAC as being too high, as 58 percent of all passengers were forecast to connect in the year 2000 and through the remainder of the forecast period. The report recommended that MAC develop updated forecasts and coordinate closely with Northwest Airlines regarding their plans for MSP.

The forecast update process was initiated in October 1992 and resulted in new forecasts the following year. The 1993 revised MAC forecasts (Long-Term Comprehensive Plan, Volume 6, Revised Activity Forecasts, December 1993) included a "Baseline Forecast" and several alternative scenarios which took into consideration variations in economic activity and airline industry factors. The forecasts were developed taking into consideration the finding of the Legislative Auditor's report and input from four expert panels convened over an eight-month period, including input from the FAA. Individual panel sessions focused on: (1) forecasting methodologies, (2) socioeconomic assumptions, (3) aviation industry assumptions, and (4) an overall review of the initial findings. Representatives of the Legislative Auditor's office were observers at these panels. Based on input received during the panel sessions, regional carrier operations were increased almost 10 percent over those used in the 1990 forecast and the hubbing ratio was significantly reduced. A regression analysis, similar to the methodology commonly used for forecasting aviation activity at other U.S. airports, was performed. The independent economic and industry variables used in this analysis were extensive, and reflect local conditions as measured by such agencies as the Bureau of Economic Analysis (BEA) in the U.S. Department of Commerce, and the Metropolitan Council of the Twin Cities. These efforts produced aircraft operations and enplanement forecasts that are lower than the 1990 forecasts.

The MAC 1993 forecasts reflect extensive input from the primary air service provider at Minneapolis-Saint Paul International Airport, Northwest Airlines (NWA). NWA has developed a long-term strategic plan for Minneapolis. Although the details of the business plan are confidential, NWA shared major assumptions with the MAC so that the plans for MSP would include input from NWA. (NWA letter dated February 8, 1995).

At the time of the 1993 forecast, Northwest Airlines projected a fleet growth of less that 1 percent annually for the next five years (Meeting Summary, MAC and NWA, December 17, 1992). They had eliminated plans to add new markets as a result of aircraft order cancellations. NWA expected that, after an increase in the hubbing ratio in 1993 resulting from the new connecting bank, the hubbing ratio would decrease until the ratio of NWA jet to NWA jet connecting enplanements becomes 45 percent of total NWA jet enplanements at MSP (hubbing ratio of 1.82). If interline and Northwest Airlink connections are factored in, the connecting percentage and hubbing ratio would be higher.

NWA anticipated that the reduced connecting percentage would be achieved by limiting the annual increase in MSP available seat miles to less that 1 percent. Local originating passengers would then gradually displace connecting passengers (meeting with NWA, Dec. 17, 1992). NWA believes there will be a fundamental change in the demand for future air travel, based on national economic conditions. These will serve to lower demand vs. historical relationships (Dual Track Airport Planning Process Memorandum, meeting with Northwest Airlines June 23, 1993).

However, in the 1993 to 1996 period, growth has exceeded Northwest's expectations as reflected in the MAC's 1993 Baseline Forecast. Despite this growth, Northwest Airlines' view has been that growth during this period was the result of three "one time" events — the Open Skies policy with Canada, which added 9,000 annual operations, and the combining of two minor Northwest hubs from other cities into existing major hubs. These three events have resulted in a "step" in aircraft activity in the airlines' view, a trend which MAC believes should not be extrapolated. These three factors and other influences on aviation in the Twin Cities, pushed the activity levels beyond the MAC year 2005 forecast activity levels in 1996. The airlines' opinion is that the next incremental growth steps would not begin until the year 2000. This increment could coincide within the implementation of the new north-south runway proposed in the 2010 LTCP for construction completion and opening in 2003. While the 12-month level of activity ending in 1996 for total passengers

exceeds the MAC 2005 Baseline Forecast, it falls within the range of the forecast scenarios developed by the MAC (Long-Term Comprehensive Plan, Volume 6, Revised Activity Forecasts).

The MAC developed separate forecasts for the No Action Alternative. Under the No Action Alternative, the MAC concluded that a lack of adequate airfield and gate capacity would result in constrained demand. Passenger enplanements would decrease to 15.8 million in 2020 (verses 16.7 million under the MSP Alternative) and operations would decrease to 473,500 (verses 520,400 under the MSP Alternative). These levels of activity would be accommodated in under-sized facilities and at a much reduced level of service to the traveling public.

## FAA Forecasts

Each year the FAA issues national forecast of aviation activity as well as forecasts of aviation activity at all commercial service airports. The specific airport forecast is known as the FAA Terminal Area Forecast (TAF). The TAF is based in large part on trend analysis with some modifications based on local conditions. The forecast (i.e., operations and enplanements) is based on historical relationships between the airport's specific aviation activity measures and national economic variables influencing aviation activity. The TAF assumes unconditional demand but takes into account local and national conditions, as well as conditions within the airline industry. They do not consider airport-specific plans of the airlines. The FAA air carrier enplanements forecast used a regression analysis where originating traffic is a function of employment in the Minneapolis CMSA and the real yield at Minneapolis.

The FAA's 1997 TAF predicts that the total number of enplaned passengers will increase from 14.4 million to 22.9 million between 1996 and 2010, for an average annual rate of increase of 3.4 percent. Connecting enplanements were projected in the TAF as a function of U.S. domestic air carrier enplanements. Total aircraft operations are forecast to rise from 485,500 in 1996 to 658,900 by 2010, an annual increase of about 2.2 percent. On a national basis, the FAA is expecting growth of domestic traffic between 1996 and 2007 of 3.8 percent annually.[1]

The FAA under the Deregulation Act of 1978 cannot dictate the level of service that an airline or airport provides. These industry decisions are affected by cost and service issues and are made by the airlines and airport proprietor. The rate of growth in employment from DRI McGraw Hill (Economic Forecasts) was 1.5 percent annually while the real yield was projected to decrease at 2 percent per year. To develop the air carrier operations, the forecast assumed a load factor of 60 rising to 65 percent by 2010, and average seats per aircraft departure of 134 rising a half a seat per year to 142 over the period. These growth rates of operations, as well as passengers, do not consider the specific business plan of Northwest Airlines for MSP.

## Comparison of MAC High and FAA TAF Forecasts

It is the FAA's opinion that forecasts must be as accurate as possible when they drive decisions about the timing and scale of major investments. In instances where the airport sponsor's forecast is too high, the result can be premature or unneeded development, and where the forecast too low, the result can be an understatement of environmental impacts. It is therefore the policy of FAA to review sponsor forecasts to ensure that they are realistic and provide an adequate justification for airport planning and development. Airport sponsor forecasts that vary considerably from the TAF must be resolved.

**Table 5** compares the MAC's 1993 "Baseline Forecast" and the FAA's 1997 TAF. Differences between the MAC and FAA forecasts are to be expected since they were done at different times, using different assumptions. However, based on a complete examination of both forecasts, FAA believes that future demand at MSP will be greater than the MAC Baseline Forecast and that this greater demand should be the basis for examining potential environmental impacts.

[1] "FAA Paints Upbeat Air Travel Picture", Aviation Week & Space Technology, March 11, 1996.

**Table 5 - Comparison of Forecasts**

| YEAR | HISTORIC ENPLANEMENTS | MAC 1993 FORECAST | 1997 FAA-TAF |
|---|---|---|---|
| 1996 (Actual) | 14,400,000 | | |
| 2000 | | 12,704,000 | 16,096,100 |
| 2005 | | 13,895,000 | 19,487,900 |
| 2010 | | 15,030,000 | 22,879,600 |
| 2020 | | 16,681,000 | Not Available |
| **YEAR** | **HISTORIC OPERATIONS** | **MAC 1993 FORECAST** | **1997 FAA-TAF** |
| 1996 (Actual) | 485,500 | | |
| 2000 | | 473,800 | 533,900, |
| 2005 | | 484,800 | 596,500 |
| 2010 | | 499,900 | 658,900 |
| 2020 | | 520,400 | Not Available |

During the Dual Track process, the MAC examined twelve economic and airport utilization scenarios and their impacts on total passenger enplanements and aircraft operations. The scenarios looked at high economic growth, low economic growth, high yield due to oil price/tax shock, low-yield, low-cost entrant, high yield sensitivity, minimum hub, maximum hub, FAA growth in aircraft size, high regional carrier activity, low regional carrier activity, full potential international market, and restructured air travel demand. Combinations of these twelve scenarios resulted in the MAC High Forecast shown in **Table 6**.

**Table 6 - MAC High Forecast**

| Year | Enplanements | Operations |
|---|---|---|
| 2000 | 16,714,000 | 550,200 |
| 2005 | 18,810,000 | 575,000 |
| 2010 | 20,828,000 | 603,800 |
| 2020 | 23,774,000 | 640,200 |
| Source: HNTB Analysis | | |

The MAC High Forecast is based on a combination of optimistic scenarios within the context of rapid economic growth. It assumes that high regional and national economic growth will increase air carrier originations and will also increase national passenger activity, requiring MSP to accommodate more of the Chicago connecting overflow, and enabling NWA to profitably maintain its current connecting percentage. Regional carrier activity will be relatively lower than that in the FEIS Forecast because: 1) like all markets under this case, short-haul markets will have greater levels of passenger activity and would be more likely to require the larger air carrier aircraft to accommodate the demand; 2) NWA would be better able to afford new 100-seat aircraft to serve these markets; and 3) high income persons are more sensitive to time savings and amenities, and are therefore more likely to choose jets over turboprops. It is assumed that part of the reason for the high economic growth would be an increasingly global economy with reduced trade and bilateral restrictions. These factors, combined with congestion at other gateways, would encourage NWA non-stop international service from MSP.

The MAC High Forecast and the FAA 1997 TAF activity levels are generally in line with one another. Furthermore, it is recognized that current airport activity levels are more consistent with the TAF or with the

MAC High Forecast than they are with the Baseline Forecast. Differences between the MAC High Forecast and the FAA TAF for the years 2000, 2005, and 2010 are approximately +4, -3, and -9 percent, respectively, for passenger enplanements, and about +3, -4, and -8 percent, respectively, for aircraft operations in each of these three time frames. FAA believes these to be reasonable forecasts based on its professional judgment and because the differences are within the accuracy of forecasting. The forecast differences are also within the 10% rule of thumb used as a matter of practice by the FAA to determine whether to approve airport master plan forecasts after comparison with the TAF. Therefore, for the purposes of this FEIS, the FAA and MAC are in agreement that the MAC High Forecast is more representative of the level of future aviation activity expected at MSP than the MAC Baseline Forecast.

### Forecasts Used in this Final EIS

The MAC 1993 Baseline Forecast was utilized to evaluate the environmental consequences of the 2010 LTCP and the 2020 Concept Plan for MSP. However, since the MAC High Forecast is more representative of the level of future aviation activity expected at MSP, the environmental analysis in this FEIS should consider the effects of these higher levels of activity (see the following discussion and Appendix H).

### Sensitivity of Environmental Impacts to Forecast Levels

Various environmental impact categories are potentially sensitive to higher levels of aircraft operations and passenger enplanements and should be analyzed and disclosed based on a reasonable forecast range. For this reason, the FAA and MAC performed a sensitivity analysis for all 32 impact categories addressed in the FEIS using the MAC High Forecast to determine if environmental thresholds would be exceeded.

The results of the sensitivity analyses are reported in Appendix H. At the completion of these analyses, the FAA and MAC concluded that no impact would either exceed federal/state guidelines or require additional mitigation beyond what is committed in the FEIS. While the impact categories of air quality, bird-aircraft hazards, economic, energy and natural resources, noise effects, environmental justice, solid waste, transportation access, wastewater, water supply, surface water, groundwater, and wildlife refuges, all had increases in environmental effects at the higher activity level, none of these categories would require additional mitigation as a result of using the 2010 MAC High Forecast (the committed mitigation for impacts on noise and the MVNWR used the 2010 MAC High Forecast). Therefore, the analyses of impacts in Section V of this FEIS are not substantially changed from the analyses found in the DEIS, even though the impacts and mitigations through 2010 should now be based on a higher level of forecast demand than used for the DEIS.

Noise was one of the most important impact categories evaluated in the sensitivity analysis. In completing additional noise analysis using the MAC High Forecast, it was concluded that the worst-case noise impacts due to aircraft operations would continue to occur in 2005 (the same worst-case year as with the Baseline Forecast). Based on comparing the noise analyses for 2005, the MAC and the FAA found that the High Forecast did not result in exceedances of the FAA's threshold-of-significance of 1.5 DNL increase in noise over any noise-sensitive area within the DNL 65 contour, when compared to the Baseline Forecast. For more information on the noise analysis, see Appendix H, including **Figure H-1** showing noise contours under the MAC Baseline and High Forecasts.

Two other environmental impact categories evaluated in detail in Appendix H are air quality and water quality. While the MAC High Forecast would result in additional air pollutant emissions compared to the Baseline Forecast, the total on-airport carbon monoxide emissions would be lower under either forecast with implementation of 2010 LTCP than with the "No Action Alternative," primarily because of reduced aircraft delays. A similar relationship holds for water quality, where extreme-case discharges of water containing deicing fluid into the Minnesota River would be reduced through implementation of the 2010 LTCP (due to aircraft deicing pads to be constructed in connection with the new runway). See Appendix H for more information.

The sensitivity analysis presented in Appendix H, which is based on higher airport demands than the DEIS, is consistent with the FAA's TAF and resulted in no significant increases in environmental impacts. In the case of noise, any increased effect would be insignificant based on FAA-accepted standards of noise impact significance. In the case of other resources, the effects under the MAC's High Forecast with the 2010 LTCP are still less than the effects with the No Action Alternative (i.e., as with air quality and water quality). Therefore, the analyses of impacts in this FEIS (Section V) was not substantially revised from the DEIS, even though the analyses are based on a lower forecast level of airport activity. Furthermore, as previously mentioned, the 2010 time frame is the emphasis of the sensitivity analysis. Additional environmental impact studies would be required to further address impacts and mitigation for the period beyond 2010.

To conclude, based on the analysis found in Appendix H, the FAA has found that there are not any significantly greater impacts expected under the MAC High Forecast activity levels. The MAC and the FAA also agree that the current trends imply the possibility of more robust growth in aviation than was expected in the Baseline Forecast, and a growth rate more consistent with the MAC High Forecast and the FAA's TAF.

## C.3 Airport Limitations

MAC and Federal Aviation Administration (FAA) studies have independently concluded that, without substantial airfield, terminal, and access improvements, forecast growth in activity at MSP will result in significantly decreased levels of service and increased user costs.

### C.3.1 Airfield

MSP has three runways, two parallel runways and one crosswind runway (see **Figure 2**). Peak-hour demand during instrument meteorological conditions currently exceeds the capacity of the existing runway/taxiway system, as shown in **Figure 3.** By the end of the planning period, airfield simulation studies by both MAC and FAA demonstrated that, without major improvements, peak-hour departure queues for the south parallel runway could reach more than 25 aircraft, resulting in excessive delays, blocking access to the terminal area, and producing gridlock. **Figure 4** shows the effect of peak-hour congestion on delays at MSP by the year 2020. This effect would occur by 2010 if traffic at MSP continues to increase at rates consistent with the MAC High Forecast. Based on airfield simulation studies conducted by MAC using the Baseline Forecast, peak-hour (8:00-8:59 p.m.) delays are expected to average 15 minutes per aircraft during instrument conditions, with the highest delays exceeding one hour. Although these effects are more acutely experienced at MSP during adverse weather conditions, they can occur irrespective of weather during periods of heavy traffic and as operation levels increase in the future. Greater delays may occur under the assumptions of the MAC High Forecast. Such delays would seriously disrupt connecting complexes and greatly decrease the airport's attractiveness as a connecting hub. As a practical matter, delays of these magnitudes would result in flight diversions and cancellations. The results of these service disruptions include higher operating costs to the airlines, and a lower level of passenger service.

**Figure 5**, summarizing the results of the FAA's Capacity Enhancement Plan for Minneapolis-St. Paul International Airport, shows that if the No Action Alternative could accommodate the activity levels of the MAC High Forecast, the annual cost of delay would increase from approximately $26 million at 1994 levels of demand to approximately $66 million annually by the end of the planning period, after making the improvements contemplated in the No Action Alternative. The airfield improvements included in the No Action Alternative are committed projects with funding approved in the MAC Capital Improvement Program, including such items as new holding/deicing pads, new apron pavement, and improvements to the existing terminal. However, these improvements do not add substantially to the airfield's capacity. Therefore, under No Action, significant airfield delays would occur throughout the day in varying weather conditions as the airport nears the end of the forecast period.

The opportunity to provide airfield improvements at MSP is extremely limited, as MSP's airfield configuration complicates development of additional airfield capacity. The airport's parallel runways, Runway 12R-30L and 12L-30R, are separated by 3,385 feet (see **Figure 2**). A serious capacity constraint at MSP was relieved by the installation of a precision runway monitor allowing simultaneous independent instrument approaches on these runways. The runway separation at MSP also affects aircraft circulation between the runways and the terminal complex. The parallel runways at MSP are located approximately 1,000 feet from the face of the terminal buildings. The need to provide for runway and taxiway separation standards, and aircraft parking and push-back areas within this limited area, limits aircraft circulation options in and around the terminal area. Since opportunities to by-pass congested segments of taxiway or to hold aircraft are not always available within the confines of the parallel runways, alternatives for reducing congestion would involve substantial changes in the existing airfield and terminal layouts.

### C.3.2 Passenger Terminals

Currently, MSP's Lindbergh and Regional Terminals have 68 air carrier and 37 regional aircraft parking positions. By the year 2020 MSP will require 83 air carrier and 34 regional parking positions to meet forecast demand. The forecast decrease in regional parking positions is due to the consolidation and sharing of these positions. Domestic air carrier facilities at MSP occupied approximately 1.4 million square feet in 1993. These facilities are projected to require nearly 2.2 million square feet in 2020, an increase of 53.5 percent. Regional facility requirements are projected to increase from 30,613 to 50,287 square feet, nearly 70 percent, over the same period. The Humphrey Terminal serving international arrivals and all non-scheduled (charter) operations currently occupies 90,000 square feet. Requirements for non-scheduled airlines (domestic and international) are expected to exceed 459,000 square feet by the end of the planning period.

The Lindbergh Terminal at MSP is located between Runways 12R-30L and 12L-30R (see **Figure 2**). Since these runways are only 3,385 feet apart, the site available for terminal development is limited since all of the terminal passenger facilities, boarding gates, aircraft parking, and landside access roadways and curb frontage must all be contained within this dimension. This results in linear concourses over a portion of the terminal area, because of the need for minimal terminal area depth, and "single loaded" concourses with aircraft parking on one side of the concourse rather than "double loaded" concourse where aircraft parking occurs on both sides of the concourse. Consequently, significant passenger walking distances are required on concourses that must parallel the runways in order to accommodate the necessary aircraft gates. This terminal configuration also results in a high percentage of circulation space, duplication of security checkpoints and airline support functions, and limited expansion capability.

### C.3.3 Surface Access

MSP is surrounded by major transportation corridors (see **Figure 2**). The Lindbergh Terminal area is accessed from state Trunk Highway (TH) 5 to the east of the airport. TH 5 is projected to be operating within its capacity at the airport entrance in the year 2020. Many of the corridors connecting TH 5 to the region including Interstate (I) 494, TH 55, the Crosstown Highway (TH 62) and I-35W are projected to be near or above capacity in the year 2020. Substantial improvement to most of these corridors will be required to maintain adequate service levels in the MSP environs.

### C.3.4 Development Limitations

Physical and environmental constraints surrounding MSP further complicate development options. Expansion of MSP is constrained by the proximity of the Minnesota River, several major highways, a state park, historic district, cemetery, and adjacent residential and commercial development.

## Minnesota River

The Minnesota River runs along the southeastern boundary of the airport. The river and its associated steep terrain represent a substantial constraint to airport expansion to the southeast. In addition, a corridor along the Minnesota River adjacent to MSP has been designated as a National River and Recreation Area, a component of the National Park System. The Minnesota Valley National Wildlife Refuge is also located along the Minnesota River to the south of MSP.

## Transportation Corridors

As noted earlier, MSP is surrounded by major surface transportation corridors. These corridors include Interstate 494 along the southern boundary of the airport, Cedar Avenue (Trunk Highway 77) to the west, the Crosstown Highway (Trunk Highway 62) along the north, and Trunk Highway 5 to the east of the airport. Substantial expansion of the airport boundaries would affect these major transportation facilities and their associated industrial and commercial development. Relocation of these facilities would entail substantial cost and disruption.

## Adjacent Land Use

MSP is surrounded by established land use as shown in **Figure 0-1**. Fort Snelling State Park, the Fort Snelling National Historic Landmark District and the Old Fort Snelling Historic District adjoin the airport to the northeast, and Fort Snelling National Cemetery lies immediately adjacent to the airport to the south. Residential development borders the airport to the north and west. As a result, approximately 30,720 residents of Bloomington, Eagan, Fort Snelling, Mendota Heights, Minneapolis, and Richfield were exposed to greater than DNL 65 noise levels in the year 1992. The Mall of America, the largest shopping center in the USA, is part of an extensive commercial complex located to the south of the airport across Interstate 494.

# III. Alternatives

## A. Alternatives

The FAA and MAC considered many alternatives in the Dual Track Airport Planning Process. The following is a summary of the range of alternatives considered to meet the air transportation needs for the region by the years 2010 and 2020:

- No Action
- MSP Expansion (2010 LTCP and 2020 Concept Plan)
  - runways, taxiways
  - existing terminal expansion by 2010
  - new terminal by 2020
  - ground access improvements – 2010 and 2020
- New Airport
  - search areas
  - general airport configuration
  - sites within selected search area
  - airport layouts within selected site
- Other Alternatives
  - remote runway concept
  - supplemental airport concept (use of MSP and other existing airport)
  - high-speed intercity rail concept (between Twin Cities and Chicago)

## B. Alternatives Under Consideration

The following alternatives are included in the Dual Track FEIS for detailed analysis — MSP Alternative (2020 Concept Plan and 2010 LTCP) and No Action Alternative.

### B.1 MSP Alternative

The MSP Alternative consists of the 2020 Concept Plan and the 2010 LTCP. As shown in **Figure 6**, the MSP 2020 Concept Plan includes construction of a new 8,000-foot north-south runway, a new replacement terminal building, a parking/drop-off facility on the east side of the airport, and additional air cargo and maintenance facilities. Ground transportation access improvements would be provided from TH 77 and TH 62 to the new west-side entrance of the terminal. Widening of TH 62 from I-35W to TH 77, capacity improvements to the TH 62/TH 77 interchange, and widening of TH 77 from TH 62 to I-494 are also required by the MSP Alternative (see **Figure W-8**). In addition to these improvements, the widening of I-35W from 46th Avenue South to TH 62 and reconstruction of the I-35W/TH 62 common section are needed to serve the MSP 2020 Concept Plan, but are also needed to serve the region regardless of the MSP Concept Plan.

The MSP 2010 LTCP is the first phase of the 2020 Concept Plan; it consists of the construction of the new 8,000-foot north-south runway, and replacement of maintenance, cargo and aircraft hangar facilities. Ground transportation improvements would be modifications to the TH 77 and 66$^{th}$ Street interchange and airport frontage road.

#### B.1.1 MSP Alternative Process

Six airport development concepts were considered for MSP. The evaluation and selection process included a number of reports and studies. A seven-volume technical report was prepared which examined capacity, airspace, air service, and other issues. An Alternative Environmental Document

(AED) was prepared which analyzed the differential environmental impacts of each concept at a level of detail required by an EIS.

Community participation was actively solicited (see Section VIII). The seven cities surrounding MSP participated in an Interactive Planning Group to assess the impacts on their communities of MSP expansion. Public meetings were held at several steps in the process to obtain citizen concerns and comments.

### B.1.2 The MSP Alternative and the Project Goals

This section summarizes the performance of the MSP Alternative relative to the regional goals described in Section II.

**Goal A.** **To plan, develop and operate an aviation system that will help promote the orderly growth and economic development of the region.**

Measures of performance with respect to this goal include regional highway access times, the effect of the airport on regional economic development, and the location of induced development.

- **Regional Access.** The MSP Alternative would continue operation of the region's major air carrier airport at its present location. This location is currently served by major transportation corridors. Proposed changes in airport access would increase travel options and improve regional access to the airport. Due to its proximity to regional population centers, average regional travel times for this alternative are moderate. In the year 2020, this alternative would result in average regional passenger driving times of 22 and 26 minutes during off-peak and peak periods, respectively.

- **Regional Economic Development.** Due to improved airfield capacity, the MSP Alternative would permit increased airport activity and associated economic development. The year 2020 forecasts indicate that this alternative would experience 8.9 million originating passengers, 16.7 million enplaned passengers, and 520,400 total aircraft operations. Economic development associated with this activity is expected to generate approximately 16,600 direct jobs, and $2.2 billion in visitor sales in 2020.

- **Location of Induced Development.** The MSP Alternative would continue to induce development in the area surrounding the existing airport. This area is characterized by substantial airport-related and other commercial development.

**Goal B.** **To provide an aviation system that is safe, efficient and economical.**

All of the alternatives under consideration would be operated in accordance with applicable safety standards and criteria. Differences in airfield configuration would be addressed by operational restrictions as necessary to ensure safe operation. Accordingly, measures of performance with respect to this goal include airfield delay and the capital cost of proposed facilities.

- **Airfield Delay.** The MSP Alternative would reduce the cost of user delay by providing additional runway capacity. **Figure 5** shows that for any level of annual demand, the MSP Alternative provides a substantial reduction in delay. This alternative would also result in a significant reduction in peak-hour delays, as

shown in **Figure 7**. In the year 2020, the annual cost of aircraft delay is projected to be $38 million for the MSP Alternative, a reduction of about 43 percent over the No Action Alternative.

- **Capital Costs.** The cost of the MSP 2020 Concept Plan is estimated at $3.15 billion in 1995 dollars, exclusive of mitigation costs. The estimated cost of the 2010 LTCP is $803 million, exclusive of mitigation costs.

Goal C. **To provide aviation facilities and services that produce positive effects on the social and economic environments with minimal adverse effects on the physical environment.**

Measures of performance with respect to this goal focus on the relative environmental effects of the alternatives under consideration. Detailed comparisons of specific impact categories are provided in Section V. The following summary highlights key environmental aspects of the MSP Alternative in terms of aircraft noise, air quality, endangered and threatened species, and water quality.

- **Aircraft Noise.** For the year 2005, the MSP Alternative would result in approximately 7,650 persons being exposed to noise levels of DNL 65 or greater, and 22,030 being exposed to levels of DNL 60 to 65.

- **Air Quality.** The MSP Alternative would not cause significant air quality impacts. MSP is located in a Carbon Monoxide (CO) nonattainment area. CO emissions would not exceed CO emission thresholds.

- **Endangered and Threatened Species.** The MSP Alternative would not adversely impact the bald eagle population of the Minnesota Valley National Wildlife Refuge. The bald eagle is the only federally-listed species having habitat close enough to MSP to be affected by this alternative. The MSP Alternative could have an adverse effect in terms of reducing the quality of wetland habitat for waterbirds including forsters tern, a state-listed species. This reduction in habitat quality would be due to the filling of wetlands for the 2010 LTCP and the shading of wetlands caused by bridge structures required for the 2020 Concept Plan's new west terminal roadways.

- **Water Quality.** Winter discharges to the Minnesota River containing deicing fluids and associated Biological Oxygen Demand (BOD) represent the greatest potential impact to surface water quality. Dedicated deicing pads at runway ends with segregated underdrainage and enhanced detention basins would be provided to improve the quality of the discharge to the river . Groundwater impacts due to releases of fuel or other contaminants are possible, although the probability of such releases are relatively low. The groundwater aquifer underlying MSP is considered to be of low to medium sensitivity.

Goal D. **To develop, operate and maintain an aviation system that enhances the quality of life for people in the Twin Cities Area by providing them with good access to state, national and international activities and opportunities.**

Measures of performance with respect to this goal focus on the air service characteristics of the alternatives under consideration. These measures include the number of originating passengers (representing regional demand) and the quality of air

service (the average daily frequency of departures). Another consideration is the flexibility to accommodate demand beyond the planning period.

- **Number of Originating Passengers.** In the year 2020, the MSP Alternative is forecast to accommodate 8.9 million passenger originations.

- **Air Service Quality.** The MSP Alternative is forecast to support 408 scheduled air carrier and 159 regional carrier average daily departures for the year 2020, with nonstop service to more than 115 cities.

- **Flexibility.** The MSP Alternative will accommodate the forecast demand through the year 2020. After that time, continued growth in demand will result in the need for additional airport development not provided under this alternative, or congestion and delays will increase.

**Goal E. To attain a regional aviation planning and programming process that is responsive to the needs and interests of residents, industries, counties, cities, and affected agencies and provides sufficient opportunities for them to participate in formulating and implementing public policies.**

The process used to select the MSP Alternative offered multiple opportunities for residents, industries, counties, cities, townships, and affected agencies to participate. See Section VIII for a discussion of these opportunities.

## B.2 No Action Alternative

The No Action Alternative consists of the existing airport facilities and access at MSP and those committed projects with funding approved by the Commission in its 1995-1997 Capital Improvement Program (C.I.P.) and those committed projects in the 1998 C.I.P. that are not associated with the implementation of the new north-south runway (see **Figure 2**). A reduced level of airport activity compared to the MSP Alternative, as described in the Purpose and Need section, is assumed for this alternative due to inadequate airport capacity. The achievement of even these constrained levels also assumes that larger aircraft are purchased by the airlines serving MSP to provide more seats per operation on the constrained airfield. The committed major projects included in this alternative are:

- Pavement rehabilitation of Runways 12/30
- Runway 12L holding/deicing pad
- Auto Rental/Parking Expansion
- New automated underground people mover connecting parking ramps to main terminal
- Reconstruction of HHH Terminal
- New Sun Country hangar
- New Taxiway W
- Increased use of Runway 4-22 runway use system

### B.2.1 The No Action Alternative and the Project Goals

This section summarizes the performance of the No Action Alternative relative to the regional goals described in Section II.

**Goal A. To plan, develop and operate an aviation system that will help promote the orderly growth and economic development of the region.**

Measures of performance with respect to this goal include regional highway access times, the effect of the airport on regional economic development, and the location of induced development.

- **Regional Access.** The No Action Alternative would continue operation of the region's major air carrier airport at its present location. This location is currently served by major transportation corridors and substantial airport-related commercial development. In the year 2020, this alternative would result in average regional passenger driving times of 24 and 27 minutes during off-peak and peak periods, respectively.

- **Regional Economic Development.** Due to airfield and terminal capacity constraints, the No Action Alternative would not accommodate all potential demand in the year 2020. Forecasts indicate that this alternative could only handle 8.7 million originating passengers, 15.8 million enplaned passengers, and 473,500 total aircraft operations. These levels of activity would be accommodated at a significantly reduced level of service to airport users than the level of service associated with the build alternatives. There would be inadequate capacity to handle airfield traffic, cargo development, parking and terminal needs of passengers. Passengers would need to be processed in the existing terminal building, which would be significantly undersized to accommodate the 33.4 million total passengers (16.7 million enplaning passengers) expected by 2020. While the analysis of terminal facility requirements indicated a need for 2.6 million square feet, only 1.5 million square feet would be available, resulting in significant crowding, a low level of service and high maintenance costs. Airfield delays would also be significant. This level of service would clearly have an impact on potential economic investment in the region, and would serve as a detriment to future growth. The fact that demand is already constrained in the No Action forecast, due to inadequate capacity, is evidence of the future constraints that the No Action Alternative would create on regional development.

- **Location of Induced Development.** Development would continue in the area surrounding the existing airport. This area is characterized by substantial airport-related and other commercial development.

Goal B. **To provide an aviation system that is safe, efficient and economical.**

All of the alternatives under consideration would be operated in accordance with applicable safety standards and criteria. Differences in airfield configuration would be addressed by operational restrictions as necessary to ensure safe operation. Accordingly, measures of performance with respect to this goal include airfield delay and the capital cost of needed facilities.

- **Airfield Delay. Figure 5** shows that with no facility improvements, and assuming the base case forecasts, the annual cost of delay in 2020 is projected to be $66 million, resulting in near gridlock during some hours. Annual aircraft operations were constrained under the No Action Alternative to remove some of the gridlock, which reduces the cost of delays to about $52 million. (See Section II.C.2.2 for a discussion of No Action forecasts.) Significant aircraft delays would still be experienced during many hours of the day even at the constrained level. The terminal building would be significantly undersized, automobile parking facilities would be inadequate, and the current level of air cargo facilities could not accommodate future demand. The resultant airport layout would be extremely

congested, would provide an extremely low level of service for its users, and would therefore not provide an aviation system that is efficient and economical.

- **Capital Costs.** The estimated cost of the No Action Alternative is $255 million. Costs for projects in the MAC Capital Improvement Programs through 1998, and on-going maintenance costs, are included in this alternative. No projects during or after 1998 that would add capacity to the airfield or main terminal are included.

Goal C. **To provide aviation facilities and services that produce positive effects on the social and economic environments with minimal adverse effects on the physical environment.**

Measures of performance with respect to this goal focus on the relative environmental effects of the alternatives under consideration. Detailed comparisons of specific impact categories are provided in Section V. The following summary highlights key environmental aspects of the No Action Alternative in terms of aircraft noise, air quality, endangered and threatened species, and water quality.

- **Aircraft Noise.** For the year 2005, the No Action Alternative would result in approximately 7,350 persons being exposed to noise levels of DNL 65 or greater, and 27,690 being exposed to levels of DNL 60 to 65.

- **Air Quality.** MSP is located in a Carbon Monoxide (CO) nonattainment area. Although increasing levels of airfield and landside congestion would increase emissions, these emissions would not exceed CO and other air quality emission standards.

- **Endangered and Threatened Species.** The No Action Alternative would have no effect on federal or state listed species.

- **Water Quality.** Winter discharges to the Minnesota River containing deicing fluids and associated Biological Oxygen Demand (BOD) represent the greatest potential impact to surface water quality. Groundwater impacts due to releases of fuel or other contaminants are possible under any alternative, although the probability of such releases are relatively low. The groundwater aquifer underlying MSP is considered to be of low to medium sensitivity.

Goal D. **To develop, operate and maintain an aviation system that enhances the quality of life for people in the Twin Cities Area by providing them with good access to state, national and international activities and opportunities.**

Measures of performance with respect to this goal focus on the air service characteristics of the alternatives under consideration. These measures include the number of originating passengers (representing regional demand) and air service quality (average daily frequency of departures). Another consideration is the flexibility to accommodate demand beyond the planning period.

- **Number of Originating Passengers.** In the year 2020, the No Action Alternative is forecast to accommodate 8.7 million passenger originations although at a substantially-reduced level of service as compared with today and the MSP Alternative. This is a constrained level of demand that, over time, would have a very negative impact on the level of access to regional, state, national and international opportunities. The No Action Alternative would have less airfield

capacity, resulting in greater delays and higher airline operating costs than the other alternative under consideration, even with the constrained number of originating passengers. These constraints on demand are based on the expectation that as congestion reaches unacceptable levels, activity would be diverted to other airports, and the percentage of connecting passengers would decrease as airlines tried to accommodate more local passengers. As hubbing activity diminished, potential economic benefits and air service opportunities to the region would also be reduced.

- **Air Service Quality.** The No Action Alternative is forecast to support 384 scheduled passenger air carrier and 140 regional carrier average daily departures for the year 2020. Since much of this service is made possible by the airport's role as a connecting hub, increased congestion and operating costs are expected to reduce service relative to the other alternative under consideration. MSP currently (September 1995) provides nonstop service to 115 cities. Under the No Action Alternative, air carriers would have to balance increased service frequency to existing nonstop markets with providing nonstop service to new markets. Smaller markets could expect to see a deterioration of service as activity levels continue to increase.

- **Flexibility.** The No Action Alternative would experience increasing congestion and delay during the planning period. This congestion is expected to constrain growth in aircraft operations before the end of the planning period. Consequently, the ability of the airport to accommodate connecting passengers would decrease. Beyond the planning period, growth in origin/destination passengers will also become constrained, which will have negative economic impacts to the region. This lack of flexibility is contrary to Goals A, B and D.

Goal E. **To attain a regional aviation planning and programming process that is responsive to the needs and interests of residents, industries, counties, cities, and affected agencies and provides sufficient opportunities for them to participate in formulating and implementing public policies.**

The process has offered multiple opportunities for residents, industries, counties, and affected agencies to participate. See Section VIII for a discussion of the process.

## C. Alternatives Eliminated

The following subsections summarize the evaluations of alternatives which have been eliminated from further consideration.

### C.1 MSP Alternatives Eliminated

As noted in the discussion of Purpose and Need, airport planning goals were established based on the Metropolitan Council's regional goals. The Long Term Comprehensive Plan (LTCP) for MSP, Volume 1, Goals, Assumptions and Methodologies incorporated planning goals to guide the development of the MSP Alternative. These goals, augmented by objectives, were used to identify the best MSP alternative. Alternatives eliminated during these evaluations are not considered to be reasonable alternatives for meeting the year 2020 regional aviation needs of the Twin Cities.

Initially, more than twenty concepts were reviewed for possible value in adding capacity to the existing MSP airport. Detailed computer simulations of the delay reductions which would result from

each of these concepts were completed. An interactive planning group was formed to provide extensive input for this evaluation. The best six MSP concepts were more fully evaluated in the LTCP. They were the subject of detailed environmental analysis in the *Final AED for the MSP Long-Term Comprehensive Plan (LTCP)* and detailed operational analysis in the *MSP LTCP Volume 5 and 7 Technical Reports*. As a result of these processes, Concept 6 was selected as the MSP 2020 Concept Plan and Concepts 1-5 (**Figures 9-13**) were eliminated from further consideration in the Final Alternative Environmental Document for the MSP Long Term Comprehensive Plan, February 1995.

Concepts 1 and 2 (**Figures 9 and 10**) had a new 7,700-foot north-parallel runway (12/30) with and without a new west terminal. These concepts were eliminated for the following reasons:

- the north-south runway in Concept 6 provides more capacity than a north parallel runway,
- compared to Concept 6, the north parallel runway would -- demolish contributing components of both the Fort Snelling National Landmark Historic District and the Old Fort Snelling National Register Historic District – displace a Section 4(f) 9-hole golf course and directly impact Bossen Field, a Section 4(f) park – displace 601 more residents -- subject 3,030 more residents to aircraft noise levels greater than DNL 60 – and place 2,010 more monthly flights less than 500 feet over areas where birds congregate.
- subsequent to the completion of the Final AED, the 1996 Minnesota legislature enacted legislation that specifically prohibits the construction of the north parallel runway without the approval of each affected city, and MAC must enter into a contract with each affected city stating this prohibition.

For these reasons, the concepts involving a north-parallel runway are not considered feasible and prudent alternatives for adding one new runway to the MSP airfield. When compared to the proposed action (the north-south runway), the north-parallel concepts would result in more extensive Section4(f) resource and residential impacts. Furthermore, due to state legislative requirements, the north-parallel runway is currently not a feasible concept.

Concepts 3 and 4 (**Figures 11 and 12**) had a new 8,000-foot south-parallel runway (12/30) with and without a new west terminal. These concepts were eliminated for the following reasons:

- significant operational problems, safety concerns, and less capacity than Concept 6 -- caused by the close proximity of the Fort Snelling National Cemetery; the cemetery boundary and terrain would require a stagger of about 5,000 feet between the proposed runway end and existing Runway 12R/30L,
- compared to Concept 6, the south parallel runway would subject 10,000 more residents to aircraft noise levels greater than DNL 60.

This combination of minimal benefit and greater environmental impacts caused the FAA and the MAC to conclude that the south-parallel runway concepts are also not feasible and prudent. Compared to the proposed north-south runway, the addition of a south-parallel runway would involve higher costs, greater residential impacts, and more operational/capacity constraints.

Concept 5 (**Figure 13**) had the north-south runway and an additional passenger terminal east of the existing terminal. For the year 2010, Concept 5 would be similar to Concept 6; the major difference is the new west terminal in Concept 6, which is subject to further environmental evaluation. Concept 5 was eliminated because it would be less convenient than Concept 6 for passenger gate access and parking, less efficient baggage transfer, less efficient for regional and international connecting passengers, less flexibility for the use of gates by different types of aircraft, and more conflicts in aircraft circulation.

## C.2 New Airport Alternative

The agencies responsible for implementation of the Dual Track Airport Planning Process, the Metropolitan Airports Commission and the Metropolitan Council (MC), evaluated the two alternatives outlined in the 1989 Metropolitan Airport Planning Act (expansion of Minneapolis-St. Paul International Airport and development of a new airport). The New Airport Alternative developed from this process is shown in **Figure 14.** The airfield would consist of six runways: four parallel runways and two crosswind runways. Main highway access would be from the north by a new eight-lane freeway to a centrally-located terminal. The following major 2020 impacts of this alternative were presented in the DEIS:

- Average travel time to the terminal would be 20 minutes longer than to MSP
- Over $511 million in needed off-airport highway improvements, compared to about $200 million for the MSP Alternative
- Over 17,000 acres of farmland would be acquired due to site development, highway construction, power line relocation and induced development
- Over 6,800 acres of wildlife habitat would be lost, compared to 360 acres for the MSP Alternative
- The development cost would be over $2.2 billion more than the MSP Alternative
- The new airport would entail greater financial risk than MSP 2020 Concept Plan for adjusting to changing demand, since most of the construction and land acquisition would have to occur in the early phases and development of MSP could be accomplished incrementally as needed.

The evaluation by MAC and MC was based on the DEIS and supplementary reports prepared during the Dual Track Planning Process and summarized in a series of findings and conclusions that represented the joint recommendation of the two agencies to the Minnesota legislature. (See Report to the Legislature, March 1996). These findings include the principal rationale for the elimination of the New Airport Alternative and the selection of the MSP Alternative. The findings were based on the following evaluation criteria: airport operational issues, ground access issues, economic impacts, financial issues, environmental impacts, and flexibility issues. In March 1996 MAC and MC submitted the report to the legislature containing their recommendations on future major airport development. In April 1996 the legislature considered these recommendations and the comprehensive planning documents and their environmental effects mandated by the 1989 legislation, and selected the development of MSP as the preferred alternative. The legislature enacted legislation that mandates implementation of the MSP 2010 LTCP, prohibits the preservation of land or land uses for a new major airport, and states that the provision of environmental or technical analysis of the New Airport Alternative in this FEIS is not required.

## C.3 Other Alternatives Eliminated

The Minnesota legislature also considered the following alternatives in its decision to implement the expansion of MSP:

### a. High-Speed Intercity Rail

Mn/DOT performed a study in 1991 on the implications of high-speed rail alternatives on air traffic in the Minneapolis-St. Paul, Madison, Milwaukee and Chicago corridor. Rail technology with operating speeds of 125, 185 and 300 mph were considered. The purpose of this alternative was to retain existing MSP and divert sufficient passengers/operations from air service to rail service, such that new runway and terminal facilities would not be needed by 2020. Results of the study were that the rail services would not divert enough passengers and operations by the year 2020 to preclude a new

runway and terminal at MSP. In short, high-speed inner city rail would not meet the year 2020 capacity needs which underlie Goals A, B, C, and D.

### b. Remote Runway Concept

This alternative would retain the ticketing, baggage, and support facilities at MSP, construct new gates and runways at a remote location in Dakota County (15-25 miles from MSP), and construct a high-speed transit link between the existing terminal and the new gates. The purpose of this alternative is to retain the ground accessibility and existing development related to MSP, and move the airfield activity to a remote location. A study of this alternative was completed in September 1995. Results of the study are:

- The high-speed transit link between MSP and the remote runways would have adverse environmental impacts: it would require a one-mile long high bridge over the environmentally-sensitive Minnesota River valley; the subsequent extension across Dakota County would traverse several wetlands and other environmentally-sensitive areas, and disrupt service on more than 15 local roadways; it would introduce adverse aircraft noise into Dakota County without relocating the economic benefits/tax base.

- While it has been assumed in this alternative that no local passengers would be allowed to drive directly to the remote runway site to take a commercial flight, this is neither politically nor economically realistic. People coming from locations near the remote runways, or other locations further south, will insist on having direct access. In reality, the public would ultimately insist that passenger processing, baggage and public parking facilities be included at the remote runway site, which would duplicate facilities at MSP. The result would be, in effect, a two-airport system serving the region, with redundant facilities. Passengers flying from the Twin Cities would need to decide whether they are going to MSP or to the Dakota County location and check their baggage accordingly.

- The cost of this alternative is slightly greater than the New Airport alternative, primarily due to the transit system on exclusive right-of-way.

- The long-distance separation of ticketing/baggage/parking and the gates/runways results in an inefficient operation. Normal breakdowns of the transit system will result in unacceptable delays for passengers and airlines.

The remote runway alternative is inconsistent with Goal B, which calls for an efficient and economical system, and Goal C, which calls for positive effects on the social and economic environments and minimal adverse effects on the physical environment.

### c. Supplemental Airport Concept

The objective of this alternative is to accommodate future demand at MSP without the need for major airfield and terminal additions. Since all of the demand could not be accommodated without major new facilities, certain components of demand (general aviation, military, regional, cargo, international, or flights to major markets) would be shifted to another existing airport in the state. If this activity could be relocated, it might be possible to accommodate the remaining 2020 demand without having to develop significant new facilities (a new runway or replacement terminal). The supplemental airport alternative could retain the ground accessibility characteristics of MSP for most passengers without requiring extensive additional development. A 1993 MAC study evaluated the transfer of various aviation demand components from MSP to Rochester Municipal Airport

(MSP Third Option Scenarios). A study commissioned by Mn/DOT in 1995 on the use of supplemental airports also addressed the feasibility of supplemental airports. A summary of the findings follows.

- **Military Operations** could be relocated to another airport. The resulting decrease in traffic at MSP (eight daily operations and less than one operation in the peak hour) would not impact the need for new facilities at MSP, but would provide additional space for other aviation facilities, not including new runways.
- **Cargo Activity** at MSP includes all cargo-airline activity and cargo carried in the bellies of passenger aircraft. The former is not tied to passenger traffic, and could potentially be relocated. This activity comprises about 113 daily operations (8.0 percent of total operations). Since less than two operations in the peak hour are attributable to cargo activity, relocating air cargo services would not diminish the need for a new runway. In addition, the closest airport that could be expanded to accommodate air cargo activity, Rochester, is at least 1½ hours away from the Twin Cities. This would require overnight operators to pick up their cargo at least 1½ hours earlier, thus shortening the business day and putting Twin Cities businesses at a competitive disadvantage. Since most of this cargo is destined for the Twin Cities, it would also increase delivery times to local customers particularly in bad weather during the winter months. Lastly, Northwest belly cargo (i.e., cargo carried by passenger aircraft) would remain at MSP, resulting in split cargo operations.
- **International operations** are a growing segment of traffic at MSP. MAC is considering several options for integrating these operations into the domestic passenger facility, including the construction of a new $30 million facility. The few numbers of flights in the peak hour, if removed, would not diminish the need for a new runway or new terminal building. If the international passengers and operations were shifted away from MSP, the travel time between the Twin Cities and the airports that could provide comparable international service without construction of additional facilities would be 3 hours (Duluth), resulting in undue inconvenience for international travel to and from the Twin Cities. Further, the majority of international passengers at MSP (around 70 percent) connect between domestic and international flights. The long highway trip between MSP and the supplemental airport would clearly discourage connecting passengers from using Twin Cities, further decreasing the viability of international service.
- **Regional aircraft flights** are forecast to comprise 22 percent of year 2020 operations. Relocating regional activity to Saint Paul Downtown Airport could result in more modest expansion at MSP, by delaying the need for a new runway to beyond 2020. However, since approximately 80 percent of regional passengers are transferring to air carrier flights, nearly 6,500 passengers a day would have to travel between MSP and Saint Paul Downtown. Competing, more convenient, regional airline service would likely be created through other hubs. It is likely that many passengers would connect into the National Airport System via these other airline hubs, if possible, to eliminate this inconvenience. In response, air carriers may begin serving some of the busier regional markets out of MSP, diminishing the impact of relocating regional service in the first place. Saint Paul Downtown Airport lies on the Mississippi flood-plain, and significant expansion would be extremely difficult and costly due to limited land availability, the presence of the floodplain, and extensive wetlands. Moving regional service to an airport further out would result in long ground travel times between the supplemental facility and MSP, making the concept infeasible. Also, removal of regional flights from the hub would reduce the overall effectiveness and efficiency of the hub.
- **Service to major markets**, such as Chicago, could be transferred to another airport, reducing operations and passenger volumes by relocating service to only a few cities;

however, since MSP is a public use airport, it would be extremely difficult from a legal perspective to force carriers to relocate service to certain markets. Many of the passengers on flights to major markets are local Twin Cities passengers, who would face much longer drive times to the airport in Rochester, Duluth, or elsewhere. Passengers having a connecting flight at a different airport would find transferring extremely difficult. These passengers would likely choose another routing, reducing overall passenger feed for the hub carrier at Minneapolis, ultimately resulting in an overall degradation of service and a negative impact to the economies of the hub.

- **General Aviation** comprises about six operations in the peak hour -- less than five percent of total peak hour operations. Although relocating GA activity would slightly reduce peak hour activity, it would not be to such a level so as to impact the need for a new runway. In addition, moving GA activity would have no effect on reducing the need for expanded terminal facilities.

The supplemental airport alternative is inconsistent with Goal B, which calls for an efficient and economical system, and Goal D, which calls for providing the Twin Cities area with good access to state, national and international activities and opportunities. None of the supplemental airport concepts listed above defer the need for major expansion at MSP. For these reasons, the supplemental airport concept is not considered a viable alternative to development of MSP or a replacement airport.

## D. Preferred Alternative/Proposed Action

After seven years of analysis, the Legislature concluded the Dual Track study process on April 2, 1996, by directing the MAC to implement the MSP 2010 LTCP. The April 1996 legislation prohibits development of the new west-side passenger terminal (a major component of the 2020 Concept Plan) without further legislative action.

The expansion of MSP is therefore the preferred alternative, which consists of the 2010 LTCP and the 2020 Concept Plan. After careful consideration of the analysis of alternatives, and of the ability of the alternatives to satisfy the identified purpose and need for this proposal, and after review and consideration of testimony at public hearings and comments submitted in response to the DEIS and of coordination with federal, state, and local agencies, the FAA selects the runway alternative adopted and approved by the Minnesota legislature in April 1996 as FAA's preferred alternative. The preferred alternative of the FAA in the FEIS is, therefore, the implementation of the 2010 LTCP — which is the proposed action. The proposed action includes the following elements:

- new north-south runway (Runway 17/35) 8000 feet in length with associated taxiways and holding/deicing pad at the north end
- new holding/deicing pads for Runways 12R, 30L and 30R
- enhanced storm water detention basins
- expansion of Red, Gold and Green Concourses
- new Green Concourse people mover
- new skyway connector between Gold and Green Concourses
- realignment and widening of airport frontage road between 66th Street and 34th Avenue South
- reconstruction of TH 77/66th Street interchange
- relocation/construction of maintenance, aircraft hangar and air cargo facilities
- new apron pavement
- implementation of necessary air traffic control procedures
- installation of necessary navigational and lighting aids

Implementation of the proposed action may require modifications by FAA of the affected airspace; it also requires the approval by FAA of the Airport Layout Plan (ALP) and the use of federal airport-development funds and Passenger Facility Charge (PFC) revenues.

Additional projects in the preferred alternative but outside of the 2010 proposed action include a replacement terminal on the west side of the airport, supporting highway improvements, and additional cargo and maintenance hangar development. Development beyond 2010 is subject to further environmental assessment and separate FAA and FHWA approvals.

The preferred alternative is also the environmentally-preferred alternative of those airport development alternatives that would satisfy the purpose and need for the project — with less significant adverse effects on the environment (when considering the committed mitigation) than the No Action Alternative. The preferred alternative will have less impact on air quality, surface water quality and energy consumption and a more beneficial impact on the economy than the No Action Alternative. The No Action Alternative would not satisfy the purpose and need for the project (accommodate the air transportation needs to the year 2010 and have a plan for accommodating 2020 needs). The following are comparisons of the projected major impacts of the MSP 2010 LTCP with the No Action Alternative.

Beneficial Impacts

- no increase in total off-airport carbon monoxide emissions, compared to no action
- 4,638 tons per year of total on-airport carbon monoxide emissions, compared to 5,617 for no action
- 161 tons of total airport SOx emissions, compared to 168 tons for no action
- 155 million gallons per year of aircraft and vehicle fuel consumption, compared to 161 million for no action
- 7,900 pounds per day of $CBOD_5$ discharge from deicing, compared to 9,200 for no action
- $900,000,000 of economic output from construction, compared to $290,000,000 for no action

Adverse Impacts

- 82 businesses with 2,896 employees relocated, compared to none for no action
- 7,650 persons residing within the DNL 65+ noise contours, compared to 7,350 for no action
- 158 households with 370 residents relocated due to noise, compared to 76 households with 156 residents for no action
- 32.69 acres of wetland filled (58.92 acres replaced), compared to none for no action
- 5,620 monthly overflights under 2,000 feet and substantial impairment of environmental education activities in the Minnesota Valley National Wildlife Refuge, compared to no overflights and no impairment for no action

FAA Role in the Alternative Selection Process

Under the dual track planning process, the Minnesota legislature and the MAC, as the sponsor and airport proprietor, have the fundamental role of deciding how to satisfy aviation demand in the Minneapolis area and to determine the approach to the implementation of their selection. The FAA recognizes that the selection of the MSP 2020 Concept Plan by the Minnesota Legislature as the preferred alternative was not simply the result of technical evaluations and environmental impacts, but was strongly influenced by public opinion, political negotiations, economic factors, and airline involvement.

The FAA analyzed alternatives in this EIS from the perspective that it has the authority to withhold project approval, including federal funding and other actions. FAA does not have the authority to control or direct the actions and decisions of the state legislature or the MAC relative to the dual track planning process. FAA considered their purposes and needs and the common sense realities of the

planning process in the development of alternatives in this EIS. FAA independently reviewed the new airport alternative and determined that it was not a feasible or prudent alternative warranting further detailed study in the FEIS as a matter of federal law. FAA considered as a factor, but not as dispositive, the decision of the legislature to reject the new airport alternative.

After careful consideration of the analysis of alternatives, and of the ability of the alternatives to satisfy the identified purpose and need for this proposal, and after review and consideration of testimony at public hearings and comments submitted in response to the DEIS, and of coordination with federal, state, and local agencies, the FAA selects the runway alternative adopted and approved by the Minnesota legislature on April 2, 1996 as FAA's preferred alternative.

# IV. Affected Environment

The purpose of this section is to present the *general* setting of the alternatives under consideration. A description of the affected environment, or area of potential effect, of each specific impact category of each alternative is included in Section V, Environmental Consequences, since the affected environment is different for individual categories.

The affected environment for the MSP and No Action Alternatives is the urban area surrounding the existing Minneapolis-St. Paul International Airport. It is an urban setting that includes the communities of Minneapolis, Bloomington, Richfield, and, across the Mississippi and Minnesota Rivers from the existing airport, the communities of Eagan, Mendota, Mendota Heights and St. Paul. Neighborhoods of Minneapolis and Richfield adjacent to the existing MSP are largely residential with a combination of single-family and multiple-family housing. There are commercial enterprises, either serving the adjacent community or located to take advantage of access to highways or major streets. Bloomington, south of the existing airport, has a high-intensity commercial area that includes the Mall of America, hotels, office buildings and businesses. There also are military properties, such as the Air National Guard and Air Force Reserve, Fort Snelling and the Fort Snelling National Cemetery, as well as parks and recreation areas. Mendota Heights and Mendota are residential communities, while Eagan, within the affected environment of the airport, is largely industrial and commercial (**Figure O-1**).

The land use patterns of these communities have developed over previous decades, with some of this development occurring because of proximity to the existing airport. The trend of redevelopment of properties, particularly along major streets, is expected to continue so that incompatible land uses are replaced with those more compatible with airport activity, as shown in **Figure O-2.**

# V. ENVIRONMENTAL CONSEQUENCES

This section defines for each environmental issue or impact category the following:

- The factors, facets or features that are considered in the FEIS
- The affected environment or area of potential effect (APE) for each alternative, and what is known about the issue or impact category in the APE
- Environmental consequences/effects of each alternative
- Mitigation measures
- A summary comparison of impacts of each alternative

It is important to note that an alternative would have an effect on the environment if, and only if, the future status or condition of the environment would be a change *caused* by the alternative — that is, the future condition would not otherwise occur. Therefore, the projected future condition of the environment due to the MSP Alternative must be compared to the projected future condition due to the No Action Alternative in order to determine if there is an effect or impact attributable to the MSP Alternative.

Analysis of the MSP Alternative is performed for two planning horizons — 2010 and 2020. In 2010 the MSP Alternative is the 2010 LTCP with a new north-south runway (17/35) (**Figure 8**); in 2020 it is the 2020 Concept Plan with a new west terminal in addition to the north-south runway (**Figure 6**). In almost all cases the effects of the No Action Alternative are assumed the same for 2010 and 2020; where this is not the case, the proceeding text will indicate the relevant timeframes. In addition, this section includes the environmental effects of the highway improvements for the MSP 2010 LTCP, and a corridor-level analysis of estimated environmental impacts for potential off-site highway improvements for the MSP 2020 Concept Plan.

Also included in this section are the cumulative impacts of a project initiated in 1997 at the request of Northwest Airlines – the extension of Runway 4-22 from 11,006 to 12,000 feet to the northeast, as shown in **Figure 2A**. Non-stop service to Hong Kong was initiated in October 1997 on the 11,006-foot Runway 4-22, but at reduced payloads. The purpose of this project is to provide non-stop service to Hong Kong at full pay load – which requires a runway length of 12,000 feet. The project will add one additional flight per day by the year 2005. Service is scheduled to begin in the year 2001. A separate Environmental Assessment (EA) was prepared in November 1997 and a public hearing held on December 18, 1997. The cumulative impacts of the Runway 4-22 extension and the MSP 2010 LTCP are included in the EA. The impact categories affected by the project are air quality, noise and surface water quality. The cumulative effects on the MSP and No Action Alternatives are presented in those subsections of this FEIS.

The order of listing of the impact categories in this section does not follow the usual format of a Federal Aviation Administration (FAA) EIS; the categories are listed alphabetically and additional categories are included (see page TC14 in the Table of Contents for cross reference with FAA Order 5050.4A).

## A. Air Quality

### Pollutants Considered

*Criteria pollutants*

Criteria pollutants are those for which ambient air quality standards have been established by the U.S. Environmental Protection Agency and the Minnesota Pollution Control Agency and which have been identified by the FAA as potentially critical pollutants associated with airports[1].

[1] Air Quality Procedures for Civilian Airports and Air Force Bases, U.S. Department of Transportation, Federal Aviation Administration, Report FAA-EE-82-21, December 1982

The two criteria pollutants analyzed in this study are Carbon Monoxide (CO) and Sulfur dioxide ($S0_2$). These two pollutants are critical since MSP is located within a designated non-attainment area for CO and a maintenance area for $SO_2$. The status of these two areas is described below.

CO is a common pollutant generated primarily from the incomplete combustion of fuels such as gasoline, coal, and wood. It is a colorless, odorless and tasteless gas that is slightly lighter than air. Sulfur dioxide ($SO_2$) is a relatively stable, nonflammable, nonexplosive and colorless gas and is generated during the combustion of any sulfur-bearing fuel and by many industrial processes that use sulfur-bearing raw materials.

The other criteria pollutants (Hydrocarbons, Nitrogen dioxide, and Suspended particulate matter (PM-10)) are not considered critical for the MSP study area and are therefore not included in the air quality analysis.

*Other Pollutants*
Odors from jet aircraft engines can be attributed to a wide range of hydrocarbons emitted from the engine exhaust. The concentration of these elements or compounds at which odors can be detected is generally well below levels associated with potentially adverse health effects. A discussion of odors from jet engines is included in Appendix A.1 (p.A.1-1).

**Designated Non-Attainment and Maintenance Areas**

A redesignation of the Metropolitan Area to attainment in CO is currently being sought. Once this is approved, the area remains a maintenance area for 20 years following redesignation. Any exceedances of ambient CO standards could then jeopardize the attainment status of the region. No violations of the Carbon Monoxide standard have been observed for several years until a recent event sponsored by the Minnesota Street Rod Association in St. Paul. However, it is unlikely that concentrations as high as those observed at the Lexington and University permanent CO monitor will occur along roadways providing access to the airport.

The status of the airport site is summarized in **Table A-1**.

**Table A-1 - Air Quality Attainment Status by Pollutant**

| Pollutant | Status |
|---|---|
| PM-10 | Attainment |
| Ozone | Attainment |
| CO | Non-Attainment |
| $SO_2$ | Maintenance |
| Source: David Braslau Assocs. | |

MSP is located within the currently designated CO Non-Attainment area which covers most of the Seven-County Metropolitan Area. MSP lies outside of the currently designated PM-10 and $SO_2$ Non-Attainment areas. The CO Non-Attainment area is shown in **Figure A-1**. The boundaries of these non-attainment areas in relationship to MSP are shown in **Figure A-2**. The entire seven-county Metropolitan Area was designated as non-attainment for $SO_2$ until 31 July 1995. The seven-county region was redesignated on that date to an attainment area in $SO_2$ except for the region around the Ashland Refinery which remains a non-attainment area for $SO_2$. The seven-county Metropolitan Area will retain its Maintenance Area designation for a period of 20 years following the redesignation (July 2015). Therefore, Carbon Monoxide and Sulfur Dioxide are the two critical pollutants in this study.

**Pollutant Sources**

*On-airport sources*
On-airport sources include aircraft and ground support equipment, motor vehicles, and stationary sources such as boilers and fuel storage facilities. Aircraft operations potentially contributing to pollutant concentrations on the ground include taxiing, queuing, takeoff, climbout, approach, landing and taxiing. Other on-airport emissions are associated with aircraft ground support equipment, Auxiliary Power Units (APUs) that

provide power and air conditioning to aircraft when the engines are not running, and motor vehicles on roadways and in parking areas. Motor vehicle emissions from the TH 77/66th Street interchange have also been included as an on-airport source.

*Off-airport sources*
Off-airport sources are defined here as motor vehicle traffic on regional roadways which may carry traffic destined to or from the EIS alternatives. The regional highway network developed by the Twin Cities Metropolitan Council is used for this analysis. Screening guidelines for intersection evaluation have been developed to ensure consistent evaluation of alternatives. These are based upon guidelines adopted by the Metropolitan Council for determining when a microscale Carbon Monoxide analysis should be performed. However, the threshold values used here are lower than those in the Metropolitan Council guidelines since most of the intersections carrying airport traffic are not located in the denser urban portions of the Twin Cities Metropolitan Area. Those at-grade intersections are analyzed which are projected to experience a total approach volume of 2400 vehicles per hour during the PM Peak Hour of which at least 480 vehicles per hour are airport access traffic. It should be noted that because of the updated regional traffic study, some intersections for which earlier predicted concentrations exceeded the 8-hour standard now fall below the screening threshold and are therefore unlikely to exceed air quality standards.

**Methodology and Assumptions**

*On-airport sources*
Annual Pollutant Emissions
Annual pollutant emissions are estimated for the years 2005 and 2020 for on-airport sources using the FAA Emissions and Dispersion Modeling System (EDMS) airport air pollution model. A description of the model is included in Appendix A.1 (p.A.1-3). It should be noted that the air quality analysis is dependent upon forecasts of aircraft operations and motor vehicle traffic on the airport and is therefore sensitive to changes in these forecasts. Estimates of APU Carbon Monoxide and Sulfur emissions are made assuming 15 minutes of APU operation per landing/takeoff cycle and emission factors from the most recent version of the EDMS model. The 15 minutes is based on information provided by Northwest Airlines; the EDMS default value is 28 minutes. A description of the methodology for estimating APU emissions is contained in Appendix A.1(p.A.1-7). The evaluation of on-airport emissions of Carbon Monoxide and Sulfur Oxides performed for this EIS is based upon a methodology reviewed with the U.S. Environmental Protection Agency and summarized in a letter to that agency from the Airports District Office dated September 25, 1995, which is included in Appendix A.1(**p. A.1-8**). The proposed methodology described in that letter is summarized below.

1. Calculate the incremental emissions for CO and $SO_2$ [as listed in 40 CFR 51.853(b)(1)] using the FAA-approved EDMS model for the years 2005 and 2020. This will include total emissions directly caused by the MSP Expansion including increased operations, increased on-airport traffic, increased heating demands, etc.
2. Compare the resulting emissions to the CO and $SO_2$ de minimis thresholds of 100 tons per year. If no threshold is exceeded then conformity mitigation is not required. If the emissions exceed the de minimis threshold, it must be demonstrated that the CO and $SO_2$ emissions are either consistent with the State Implementation Plan (SIP) or are otherwise addressed in accordance with 40 CFR Section 93.158.
3. Compliance must be shown with all Federal and State air quality regulations and standards to complete the conformity analysis (using dispersion modeling).

Pollutant Concentrations
Emissions are determined for the years 2005, 2010 and 2020 in accordance with the meeting/teleconference with the US EPA on August 30, 1995 (see letter in Appendix A.1, (p.A.1-8)) from the Airports District Office dated September 27, 1995 summarizing this meeting). The year 2005 was selected as a 15-year horizon from the MPCA 1990 emission inventory for the Twin Cities Metropolitan Area.

CO concentrations were predicted for Peak Hour on-airport activity. The worst case wind direction and maximum runway activity was assumed in each case to determine the maximum possible concentration. All of the peak hour concentrations are well below the NAAQS 1-hour standard of 35 ppm and the Minnesota 1-

hour standard of 30 ppm. Since the predicted peak-hour concentrations exceed the 8-hour standard by less than 2 ppm and since the estimated 8-hour background is 3 ppm below the 8-hour standard, exceedances of the 8-hour standard are unlikely. Therefore, no detailed analysis of 8-hour concentrations from on-airport sources has been undertaken.

*Off-airport sources*
Annual CO emissions from off-airport traffic associated with the airport are derived from traffic volumes on Metropolitan Council regional highway network model and the EMIS model for the year 2020.

CO is the only pollutant for which a microscale air quality analysis is performed for off-airport sources. Vehicle emissions were developed using the MOBILE 5a emissions model with the same input assumptions used for the Metropolitan Area emission inventory. This included an average temperature of 31°F and a standard vehicle mix for the region. Standard assumptions made for the microscale intersection analysis included a wind speed of 1 meter per second and a neutral stability class. Free flow emissions were based upon an average speed of 25 mph while idle emissions were based upon a speed of 2.5 mph as recommended by the US EPA. A typical cycle time of 90 seconds was assumed with green time proportional to the vehicle demand on each approach. Vehicle volumes were taken from regional network flows provided by the Metropolitan Council. A saturation flow rate of 1600 vehicles per hour is assumed in the CAL3QHC dispersion model that was used to estimate CO concentrations at receptor sites near each of the intersections analyzed.

Vehicle emissions on metered ramps have been estimated using a speed of 2.5 mph which is recommended for estimating idling emissions in the MOBILE 5A model. The ramps are assumed to be occupied during the entire peak hour.

The following selection criteria for at grade-intersections are based upon guidelines developed by the Regional Air Quality Analysis Work Group. The purpose of these criteria is to identify those at-grade intersections with the highest likelihood of generating high Carbon Monoxide concentrations. The criteria used for selection of at-grade intersections are presented in **Table A-2.** Both thresholds must be exceeded in order to generate the likelihood of high Carbon Monoxide concentrations.

**Table A-2 - Screening Criteria for CO Microscale Analysis**

| Screening Criterion | Value | Comments |
|---|---|---|
| Airport approach volume share | 20 % | Airport-related traffic is 20 % of total volume |
| Final volume/capacity (V/C) ratio | 0.50 | V/C ratio with background + airport traffic |
| Source: David Braslau Assoc. | | |

The capacity per lane at an intersection is assumed to be 600 vehicles per hour (green time only). The overall intersection capacity, equal to the number of approach lanes times 600 vph, is 4,800 vph. With a V/C threshold of 0.50, the minimum intersection approach volume is 2,400. With a 20 percent share in airport-related traffic, the threshold value of airport-related traffic that would require a microscale analysis is 480 vph. Therefore, the search for intersections to be analyzed for air quality have been simplified to the criteria identified in **Table A-3**.

**Table A-3 - Simplified Screening Criteria for CO Microscale Analysis**

| | |
|---|---|
| Minimum intersection total approach traffic | 2,400 vph[1] |
| Minimum intersection airport-related traffic | 480 vph[1] |
| Source: David Braslau Assoc. | |

[1] Both thresholds must be exceeded

A table of approach traffic volumes for the three major intersections along 66th Street and the TH 62 and TH 55 intersection and a comparison of these volumes with the above screening criteria are contained in Appendix A.1(**Table A.1.1** and **Table A.1.2**).

The MOBILE 5a emissions model was run for the year 2020 at several speeds to develop estimates of idle and free flow CO vehicle emissions.

Temperature assumptions for the MOBILE 5a model were developed for the Minnesota 1990 Base Year Carbon Monoxide State Implementation Plan Emission Inventory for the Twin Cities Seven County Metropolitan Area , Wright County and the City of Duluth [4] (see in Section 3.1.4.1 and Appendix AA-6 of that report). Based upon that analysis, a temperature of 31 degrees F was established for use in the model. This same temperature has been used in the MOBILE 5a emissions model in this study.

For the year 2020, no Inspection and Maintenance program was assumed since it is not expected to be continued through the 2020 time period. The MOBILE 5a input file, which includes assumptions identical to those used for the 1993 areawide emission inventory update (except for the 2020 projection year and the exclusion of the Inspection and Maintenance program and anti-tampering program) is included in Appendix A.1 (**Table A.1.3**). Results of the MOBILE 5a run are presented in **Table A-4**.

**Table A-4 - Mobile 5a Carbon Monoxide Emissions for 2010 and 2020**
(grams/vehicle mile)

| **Speed** (mph) | **CO 2010** | **CO 2020** |
|---|---|---|
| 2.5 | 98.86 | 110.85 |
| 5.0 | 56.91 | 63.83 |
| 10.0 | 34.97 | 38.34 |
| 20.0 | 22.97 | 26.00 |
| 30.0 | 14.20 | 16.00 |
| 40.0 | 9/87 | 11.07 |
| 50.0 | 7.79 | 8.69 |
| 60.0 | 11.09 | 12.29 |
| Source: David Braslau Assoc. | | |

**Conformity with the Clean Air Act**

Conformity with the Clean Air Act Amendments of 1990 must address impacts from two general sources — on airport and off airport. General Conformity addresses on-airport sources and Transportation Conformity addresses off-airport sources. The General Conformity analysis contained in this document follows the methodology proposed in the letter to the U.S. Environmental Protection Agency from the Airports District Office dated September 25, 1995 which is included in Appendix A.1 (**p.A.1-8**). As stated therein, the proposed action must not cause increases in CO and $SO_2$ to exceed 100 tons per year when compared to the No Action Alternative.

The Transportation Conformity determination will be made by the Metropolitan Council when it certifies consistency of the proposed regional highway projects with the State Implementation Plan (SIP) and the Clean Air Act Amendments of 1990. Steps needed to address Transportation Conformity include incorporation of the proposed regional highway projects into the Metropolitan Council Transportation Policy Plan and the Transportation Improvement Program. The off-airport (intersection) air quality analysis and regional highway network emissions analysis contained in this document are preliminary elements in support of the Transportation Conformity review.

The SIP contains transportation control strategies to bring designated CO non-attainment areas into compliance with state and federal ambient air quality standards and to ensure future maintenance of ambient air quality standards. MSP is not directly part of the SIP. The Indirect Source Rule has been omitted from the SIP so that the Indirect Source Permit for the MSP terminal roadway and parking facilities is also not part of the SIP. Regional roadways which serve MSP are covered by the SIP insofar as they are included in the regional Transportation Plan.

The airport internal roadways are not included as an element of the SIP, but major regional roadways serving the airport are included. None of the proposed roadway improvement projects are currently included in the

Transportation Improvement Plan (TIP) or included in the year 2000, 2005 or 2015 projects addressed in the regional transportation carbon monoxide emission analysis. Once these projects are included, they will be part of the Transportation Conformity determination process. Additional information about transportation project development for the 2010 LTCP and 2020 Concept Plan is in Section V-W and Appendix F.

The 1990 Clean Air Act Amendments required that, as part of the SIP, a base year emissions inventory be prepared. A detailed emissions inventory of the Twin Cities Metropolitan Area for 1990 was prepared by the MPCA[2]; a summary table is included in Appendix A.1 (**Table A.1-4a**). The emission inventory has been updated and approved by the U.S. EPA in October 1997[3]. A summary table of 1993 emissions is included in Appendix A.1 **(Table A.1-4b)**. That inventory included non-road mobile sources such as aircraft, auxiliary power units, airport service equipment, locomotives, and marine and consumer equipment. The emissions inventory was based on landing/takeoff cycles (LTOs) and used the FAA Aircraft Engine Emissions Data Base as well as other sources. Airport sources (aircraft, auxiliary power units and airport service equipment) accounted for 1.25 percent of total regional CO emissions in 1990 and 1.12 percent of total regional CO emissions in 1993.

## A.1 MSP Alternative

### A.1.1 Affected Environment — MSP Alternative

The Area of Potential Effect (APE) for motor vehicle Carbon Monoxide (CO) emissions is the 7-county Metropolitan Area plus Wright County, since this region is currently designated as non-attainment for Carbon Monoxide, as shown in **Figure A-1**. The APE for potentially high CO concentrations includes (1) receptor sites near at-grade intersections carrying airport traffic that exceeds the screening thresholds described above and (2) potentially sensitive receptor sites around the perimeter of the airport. The APE for Sulfur Dioxide emissions is potentially sensitive receptor sites on and around the airport.

*On-airport receptors affected by on-airport emissions*
The roadway system at the present (east) terminal area entrance has been previously analyzed in detail by the Metropolitan Airports Commission because of air quality violations. A detailed response plan has been incorporated into the Indirect Source Permit issued to the Metropolitan Airports Commission. The purpose of this response plan is to ensure that no violations of air quality standards for CO will occur near terminal area roadways under any operating conditions. No other areas of the airport have been identified as having pollutant concentrations above applicable standards.

*Off-airport receptors affected by on-airport emissions*
Twelve receptor sites representing potentially sensitive land uses are located around the boundary of the airport (**Figure A-3**). Receptor sites have been limited to the periphery of the airport since (a) this reflects activity not directly associated with the airport, (b) the exact configurations of roadways and parking area have not been determined and (c) the EDMS model is not as sophisticated as CAL3QHC for predicting concentrations close to roadways. Receptor sites were selected along the airport boundary in areas of commercial , residential and institutional activity.

The location of affected schools in the city of Richfield is shown in **Figure A-3**. The Carbon Monoxide receptor sites in Richfield used for the on-airport air quality analysis are also shown on the map. The sites that are most likely to be impacted by access traffic and airport operations are the Assumption Catholic School located just north of I-494 (potentially impacted by emissions from traffic along I-494), and the Mt. Calvary Lutheran School and the Centennial School, each located approximately 1/8 miles west of Cedar Avenue (potentially impacted by traffic along Cedar Avenue and on-airport emission sources). Emissions from traffic along I-494 will remain about the same or decrease if the new west terminal is constructed. Mt.

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[2] Minnesota 1990 Base Year Carbon Monoxide State Implementation Plan Emission Inventory for the Twin Cities Seven County Metropolitan Area, Wright County, and the City of Duluth, Minnesota Pollution Control Agency, Final Draft, November 1992

[3] Environmental Protection Agency 40 CFR Parts 52: Approval and Promulgation of Implementation Plan: Minnesota; Direct final rule; Federal Register, Vol. 62, No. 205, Thursday, October 23, 1997, p. 55170.

Calvary Lutheran School is located immediately southwest of Receptor Site 7 while Centennial School is located approximately 600 feet north of Receptor Site 9 but approximately at the same distance west of the airport.

*Off-airport receptors affected by off-airport emissions*
Receptor sites adjacent to critical intersections were used to estimate the impact of off-airport sources (motor vehicles accessing the airport). The critical intersections are shown in **Figure A-4**. For each of these intersections, receptor sites were chosen to represent the closest expected continuous human activity to these intersections. While the prevailing wind in the region is from the northwest in the winter and the southeast in the summer, the CAL3QHC model examined all wind directions and the direction with the highest potential concentration was used. The topography at all of the intersections considered is generally flat.

At the TH 55 and TH 62 at-grade intersection there are no sidewalks along these roadways, and no structures or location of human activity are closer than several hundred feet from the intersection. However, for purposes of estimating relative differences in concentrations associated with airport alternatives, a receptor site in each quadrant at a distance of 100 feet (north, south, east and west) of the intersection was assumed.

Receptor sites associated with the additional CO modeling associated with metered ramps and proposed new interchanges reflect the locations of the nearest expected continuous human activity.

**Existing Pollutant Concentrations**

*Carbon monoxide*
Background Carbon Monoxide monitoring was performed in Richfield Memorial Park adjacent to Richfield City Hall. This site, which is shown in **Figure A-3**, was selected by a screening process of sites throughout the City of Richfield. The monitoring was also performed in support of an office project to be constructed at the intersection of Interstate 35 and Interstate 494. The monitoring period extended over a one month period between April 15 and May 15, 1996. The maximum observed 1-hour concentration was 3.6 ppm (parts per million) which occurred in the early morning hour ending at 7 am on April 23. The meteorology at that time was clear, temperature 35 degrees and calm winds. Therefore, this high reading appears to have been an isolated event and not associated with transportation sources in the area. The highest reading associated with an extended "episode" was 2.4 ppm in the hour ending at 12 midnight on April 27. Readings increased beginning at 7 pm and decreased to normal background at 7 am the following morning. Meteorology during this time period were generally calm winds beginning at 6 pm and extending until 6 pm the following day. The buildup in CO background can be attributed to transportation emission sources in the area on Saturday evening and early Sunday morning. The highest 8-hour CO concentration of 2.0 ppm associated with this episode occurred at 4 am. While the 2.4 ppm level may accurately reflect the observed episodal event, the MPCA has requested that background concentrations for projects using these data be based upon the maximum 1-hour reading observed, i.e. 3.6 ppm. Therefore, a 1-hour concentration of 3.6 ppm and 8-hour concentration of 2.0 ppm have been used to establish future background concentrations.

Annual growth rates in regional Vehicle Miles Traveled (VMT) of between 1.76% and 1.56% have been observed in the early 1990s. For purposes of estimating background concentrations, an overall regional growth rate of 1.5% has been assumed to the year 2020.

One additional factor must be considered for estimating the worst case background in the year 2020. Conversion of the data observed in the Spring to a worst-case winter time period has been accomplished using a factor of 1.53 developed by Holzworth for this area of Minnesota.

The individual and total adjustment factors are presented in the table below.

**Table A-5 - Factors for Adjusting 1996 Background to the Year 2020**

| Parameter | Adjustment Factor |
|---|---|
| CO emission reduction (1996 to 2020) | 0.87 |
| VMT growth from 1996 to 2020 (1.5%) | 1.43 |
| Spring to Winter adjustment | 1.53 |
| Overall adjustment to 1996 CO background | 1.90 |
| Source: David Braslau Assoc. | |

The observed background concentrations from the background monitoring site in Memorial Park and those projected to the year 2020 by David Braslau Associates, Inc. are shown in **Table A-6.**

**Table A-6 - Background CO Concentrations within the Study Area**
(ppm)

| 1996 (observed) | | 2020 (adjusted) | |
|---|---|---|---|
| **1-hour** | **8-hour** | **1-hour** | **8-hour** |
| 3.6 | 2.0 | 6.8 | 3.8 |
| Source: David Braslau Assoc. | | | |

*Other pollutants*
Air quality monitoring of hydrocarbons and particulates was performed by the Minnesota Pollution Control Agency at the Wenonah Elementary School in South Minneapolis (5625 23rd Avenue South), one block north of Mother Lake and the airport) between October and December 1993[4]. The monitoring was initiated in response to concerns about ambient air quality near the airport and the dumping of jet fuel from in-flight aircraft. No monitoring of CO was performed. While there is no ambient standard for hydrocarbons, Minnesota relies indirectly upon ozone concentrations which are within acceptable limits. The highest 24-hour concentration of particulates was 29.8 $\mu g/m^3$ which is well below the National Ambient air quality standards (NAAQS) 24-hour limit of 150 $\mu g/m^3$. No permanent monitors are located near the airport.

## A.1.2 Air Quality Impacts — MSP Alternative

### Impacts from On-Airport Sources

*Annual emissions*
Annual emissions from on-airport sources have been estimated from the EDMS model and the APU emission methodology described in Appendix A.1(**p. A.1-7**). Only roadways serving the terminal, terminal parking area and remote parking area were included in the EDMS analysis. Terminal access is from the inbound and outbound roadways. A generalized rental car parking area was also included. Heating plants associated with facilities under the control of the Metropolitan Airports Commission were included along with sufficient additional heating capacity to serve employment located on the airport. It is assumed that some of the Northwest Airlines multi-story office space will be replaced with maintenance facilities which have lower heating requirement. A list of assumptions used for inputs into the EDMS model for analyzing on-airport sources is included in Appendix A.1(**Table A.1.5**). Assumed aircraft operations, runway usage, and time in queue are also included in Appendix A.1(**Table A.1.6** through **Table A.1.9**). Assumed roadway traffic volumes and parameters are included in Appendix A.1 (**Table A.1.10**). Parking assumptions are included in Appendix A.1. (**Table A.1.11**). Assumptions related to heating plants and their locations are also contained in Appendix A.1(**Table A.1.12** through **Table A.1.14**). Motor vehicle CO emissions from the TH 77/66$^{th}$ Street interchange have also been estimated and have been added to the EDMS and APU emissions. A summary

[4] "Minneapolis-St. Paul International Airport: Air Quality Analysis Study Report", MPCA Air Quality Division, August 1994.

of CO emissions for the MSP Alternative is presented in **Table A-7**. A Summary of SOx emissions for the MSP Alternative is presented in **Table A-8**.

**Table A-7 - On-Airport Carbon Monoxide Emissions - MSP Alternative**
(tons per year)

| Source | 2005 | 2010 | 2020 |
|---|---|---|---|
| Roadways | 923 | 819 | 944 |
| Parking facilities | 256 | 203 | 208 |
| Heating plants | 9 | 9 | 9 |
| Ground Service Equipment | 657 | 691 | 728 |
| Aircraft operations | 2573 | 2833 | 3083 |
| Auxiliary Power Units | 49 | 49 | 52 |
| TH 77/66th St Interchange | 20 | 19 | 21 |
| Runway 4-22 Extension to 12,000 feet | 15 | 15 | 15 |
| Total | 4502 | 4638 | 5060 |
| Source: David Braslau Assoc. | | | |

**Table A-8 - On-Airport Sulfur Oxide Emissions - MSP Alternative**
(tons per year)

| Source | 2005 | 2010 | 2020 |
|---|---|---|---|
| Roadways | 0 | 0 | 0 |
| Parking facilities | 0 | 0 | 0 |
| Heating plants | 49 | 51 | 51 |
| Ground Service Equipment | 3 | 3 | 3 |
| Aircraft operations | 92 | 100 | 109 |
| Auxiliary Power Units | 5 | 6 | 6 |
| Runway 4-22 Extension to 12,000 feet | 1 | 1 | 1 |
| Total | 150 | 161 | 170 |
| Source: David Braslau Assoc. | | | |

*Peak hour concentrations*

Peak hour pollutant concentrations at twelve receptor sites representing potentially sensitive land uses located around the boundary of the airport have been estimated using the EDMS model with peak hour aircraft and motor vehicle operations. Because of the increase in aircraft operations and motor vehicle traffic from 2010 to 2020, the year 2020 would represent the worst-case concentrations at these receptor sites. Assumed aircraft operations and runway use for these periods are included in Appendix A.1(**Table A.1.15** and **Table A.1.16**). Assumptions as to motor vehicles and parking during the Peak Hour are also included in Appendix A.1 (**Table A.1.17** through **Table A.1.19**). A temperature of 20° F, a wind speed of 1 meter per second, and a neutral stability class was assumed. Eight wind directions 45° apart were used to ensure that worst case concentrations at these receptor sites would be identified. These peak hour concentrations, which also include an assumed 1-hour background of 6.8 ppm (see **Table A-6**) are presented in **Table A-9**. Only those receptors and wind directions for which predicted airport-related concentrations exceed 0.01 ppm are shown in the table.

**Table A-9 - Peak Hour CO Concentrations from On-Airport Sources - MSP Alternative[1]**
(ppm)

| | Assumed Wind Direction | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Receptor | $45^0$ | $90^0$ | $135^0$ | $180^0$ | $225^0$ | $270^0$ | $315^0$ | $360^0$ |
| 1 | | | | | 7.31 | 6.85 | | |
| 2 | | | | | 6.90 | 7.18 | | |
| 3 | | | 6.83 | 7.10 | 6.86 | 8.04 | | |
| 4 | | | 6.82 | 7.06 | 7.72 | | | |
| 5 | | 7.12 | 9.80 | 9.85 | 9.50 | 6.82 | | |
| 6 | | | 7.72 | 7.12 | | | | |
| 7 | 7.55 | 7.25 | 7.20 | | | | | |
| 8[2] | | | | | | | | |
| 9 | 6.92 | 6.99 | | | | | | |
| 10 | 7.11 | | | | | 7.39 | 6.88 | 7.25 |
| 11 | 6.88 | | | | 7.28 | 7.04 | 7.28 | 6.82 |
| 12 | | | | | | | 6.98 | 6.87 |

[1] Includes an assumed background concentration of 6.8 ppm
[2] Receptor 8 does not exist with the MSP Alternative
Source: David Braslau Assoc.

The maximum predicted peak hour CO concentration at Site 7 (Mt. Calvary Lutheran School) for the MSP Alternative is 7.55 ppm (**Table A-9**) which occurred with winds from the northeast ($45^o$) associated with takeoffs on Runways 12R and 12L. At Site 9 (near Centennial School) the maximum predicted concentration is 6.92 ppm.

All of the peak-hour concentrations are well below the NAAQS 1-hour standard of 35 ppm and the Minnesota 1-hour standard of 30 ppm. Since these represent peak-hour concentrations, estimated 8-hour concentrations will always be lower. Peak-hour concentrations for only three wind directions at Site 3 are over the 9 ppm NAAQS and Minnesota 8-hour standards. Since the peak-hour concentrations exceed the 8-hour standard by less than 2 ppm and since the estimated 8-hour background is 3 ppm below the 8-hour standard, exceedances of the 8-hour standard are unlikely.

**Impacts from Off-airport sources**
Annual CO emissions from all regional trips and airport-related trips in the year 2020 have been estimated from estimated travel on the regional highway network by the Metropolitan Council. The results of that analysis are presented in **Table A-10**.

**Table A-10 - Off-Airport Roadway CO Emissions - MSP Alternative**
(annual emissions in tons)

| Alternative | Regional Trips | Airport Trips | Share |
|---|---|---|---|
| MSP 2010 LTCP | 270,100 | 10,500 | 3.88% |
| MSP 2020 Concept Plan | 313,100 | 10,200 | 3.24% |
| Source: Metropolitan Council and David Braslau Assoc. | | | |

Airport-only and total approach volumes for all intersections on the regional highway network during the PM Peak Hour in 2020 have been provided by the Metropolitan Council and reviewed using the screening criteria described above. All intersections with arterials along 66th Street were evaluated using the screening criteria as was the intersection of TH 62 and TH 55. Only the latter at-grade intersection under the MSP Alternative meets the screening criteria since almost all travel to MSP takes place on limited access roadways with no at-

grade intersections. The location of this intersection relative to MSP is shown in **Figure A-4**. The screening parameter volumes for this intersection are presented in **Table A-11**.

**Table A-11 - Intersection Meeting the Microscale Analysis Screening Criteria**

| Intersection | Alternative | Airport Traffic Pk Hr Approach Vol | Total Traffic Pk Hr Approach Vol |
|---|---|---|---|
| TH 55 at TH 62 | MSP 2020 Plan | 3,931 vehicles | 7,150 vehicles |
| Source: Metropolitan Council and David Braslau Assoc. | | | |

This intersection has no receptor sites within several hundred feet of the intersection. However, for purposes of this analysis, receptor sites were assumed at a distance of 100 feet from the roadway for comparison with the other airport alternatives.

Approach and departure volumes for the PM Peak hour at this intersection were used in conjunction with the CAL3QHC dispersion model to predict CO concentrations at sensitive receptor sites. **Table A-12** presents the maximum CO concentration estimated at this intersection. A 1-hour background concentration of 6.8 ppm (see **Table A-6**) has been assumed. The 8-hour concentration has been estimated by applying a persistence factor of 0.70 to the peak-hour concentration and adding the estimated 8-hour background of 3.8 ppm.

**Table A-12 - Maximum Predicted CO Concentration at TH 55 and TH 62 - MSP 2020 Concept Plan**

| Period | Roadway Concentration (ppm) | Background Concentration (ppm) | Overall Concentration (ppm) | State/ Federal Standard |
|---|---|---|---|---|
| 1-hour | 3.0 | 6.8 | 9.8 | 30.0/35.0 |
| 8-hour | 2.1 | 3.8 | 5.9 | 9.0/9.0 |
| Source: David Braslau Assoc. | | | | |

The maximum 1-hour and 8-hour concentrations for the MSP 2020 Concept Plan fall well below the Minnesota and Federal Ambient Air Quality Standards. The concentrations for the MSP 2010 LTCP would also be lower than the Minnesota and National Ambient Air Quality Standards.

Because of their extent and proximity to residential areas in Richfield and Minneapolis, two proposed interchanges along TH 77 have also been analyzed for potential air quality impacts. For these interchanges, it has been assumed that ramps feeding main line roadways (Crosstown TH 62 or TH 77) are metered and that a queue occupies the entire length of the ramp. The location of these two future interchanges are shown in **Figure A-4**.

The Crosstown TH 62 interchange with TH 77, including roadways connecting the new terminal, has been analyzed as an integral roadway network. This roadway network is shown in **Figure T-1**.

The TH 77 interchange with 66th Street which is just south of the interchange described above has also been analyzed as an integral roadway network. The 2020 Concept Plan roadway network is shown in **Figure T-1,** and the 2010 LTCP in **Figure T-2**.

For all of these interchanges, speed assumptions and associated emissions are shown in **Table A-13.**

**Table A-13 - Assumed Speeds and Emission Values for Interchange Analysis**

| Roadway Type | Assumed Speed (mph) | Emission (grams/mile) |
|---|---|---|
| Main Line | 50.0 | 8.7 |
| On- and off-ramps/connectors | 40.0 | 11.1 |
| Loops and slow speed ramps | 30.0 | 16.0 |
| Metered ramps | 2.5 | 110.9 |
| Source: David Braslau Assoc. | | |

Traffic volumes on each link of these interchanges for the year 2020 were provided by the Twin Cities Metropolitan Council. The number of lanes for each link was estimated using a lane capacity of 1800 vehicles per hour. As noted above, on-ramps to the mainline roadways have been assumed to be metered with queues along the entire length of the ramp. No plans for metering are included in the proposed interchanges but this assumption is made here to provide conservative[5] estimates of potential air quality impacts.

Background concentrations based upon the 1996 CO monitoring in Memorial Park in Richfield (1-hour of 6.8 ppm, 8-hour of 3.8 ppm) have also been added onto the roadway predictions. The selected receptor sites are shown in **Figures T-1** and **T-2**, and the predicted CO concentrations for these interchanges are presented in **Table A-14** and **Table A-15**.

**Table A-14 - TH 62 and TH 77 Interchange**
**Predicted CO Concentrations - MSP 2020 Concept Plan**
**(ppm)**

| Receptor Site | Peak-Hour Roadway | 8-hour Roadway[1] | Peak-Hour Total[2] | 8-hour Total[3] |
|---|---|---|---|---|
| 1 | 0.9 | 0.6 | 7.7 | 4.4 |
| 2 | 1.0 | 0.7 | 7.8 | 4.5 |
| 3 | 1.2 | 0.8 | 8.0 | 4.6 |
| 4 | 1.4 | 1.0 | 8.2 | 4.8 |
| 5 | 1.3 | 0.9 | 8.1 | 4.7 |
| 6 | 0.9 | 0.6 | 7.7 | 4.4 |
| 7 | 1.2 | 0.8 | 8.0 | 4.6 |
| 8 | 2.5 | 1.8 | 9.3 | 5.6 |
| 9 | 2.2 | 1.6 | 9.0 | 5.4 |

[1] Based upon an adjustment factor of 0.70
[2] Includes an assumed background concentration of 6.8 ppm
[3] Includes an 8-hour background of 3.8 ppm
Source: David Braslau Assoc.

The highest projected peak hour concentration near the TH 62 and TH 77 interchange is 9.3 ppm (compared with the 35 ppm federal and 30 ppm state standard). The highest 8-hour concentration is 5.6 ppm (compared with the 8-hour standard of 9 ppm). These concentrations occur at Receptor Site 9 which lies immediately north of the westbound off-ramp from TH 62 to the new terminal. These concentrations are below their respective ambient air quality standards. Concentrations at the other receptor sites north of the interchange are generally 1 ppm lower.

[5] The term "conservative" in Section V means that – where there is a range of possible scenarios, the scenario selected for analysis will result in a greater adverse impact than the other scenarios.

**Table A-15 - TH 77 and 66th Street InterchangePredicted CO Concentrations - MSP 2020 Concept Plan (ppm)**

| Receptor Site | Peak-Hour Roadway | 8-hour Roadway[1] | Peak-Hour Total[2] | 8-hour Total[3] |
|---|---|---|---|---|
| 1 | 0.7 | 0.5 | 7.5 | 4.3 |
| 2 | 1.0 | 0.7 | 7.8 | 4.5 |
| 3 | 1.2 | 0.8 | 8.0 | 4.6 |
| 4 | 1.1 | 0.8 | 7.9 | 4.6 |
| 5 | 1.0 | 0.7 | 7.8 | 4.5 |
| 6 | 0.9 | 0.6 | 7.7 | 4.4 |
| 7 | 0.9 | 0.6 | 7.7 | 4.4 |
| 8 | 1.3 | 0.9 | 8.1 | 4.7 |
| 9 | 1.2 | 0.8 | 8.0 | 4.6 |
| 10 | 1.0 | 0.7 | 7.8 | 4.5 |

[1] Based upon an adjustment factor of 0.70
[2] Includes an assumed background concentration of 6.8 ppm
[3] Includes an 8-hour background of 3.8 ppm
Source: David Braslau Assoc.

The highest projected peak hour concentration near the TH 77 and 66th Street interchange is 8.1 ppm (compared with the 35 ppm federal and 30 ppm state standard). The highest 8-hour concentration is 4.7 ppm (compared with the 8-hour standard of 9 ppm). These concentrations occur at both receptor site #3 and receptor site #8. These concentrations are well below their respective ambient air quality standards. Concentrations at the other receptor sites are generally only a few tenths of a ppm lower

Based upon the MOBILE 5a emissions model and an average travel speed of 20 mph, the HC and NOx concentrations are expected to be about 10 percent of the CO concentration shown in **Table A-12** or less than 1 ppm. There are no specifically established ambient air quality standards for HC or NOx.

**Impacts from Construction Activities**
The analysis of emissions from construction activities is addressed in Section V.E, Construction Impacts.

## A.1.3 Mitigation Measures — MSP Alternative

Since the de minimis limit of 100 tons per year would not be exceeded by the MSP Alternative in 2010 and 2020, mitigation of CO and $SO_x$ emissions is not required (see **Tables A-22** and **A-23**). However, there are a number of mitigation measures available that could lead to a further reduction of CO and $SO_2$ emissions at MSP. MAC is willing to investigate the feasibility of these measures and potential air quality benefits -- which include:

- Expanded use of bus transit and multiple passenger vehicle service to and from the airport
- Efficient terminal design and use of people movers
- Facility design to minimize energy use and emissions
- 400 Hz of electrical power and pre-conditioned air at gates
- Use of alternative fuels for ground support vehicles and on-airport shuttles

There are other mitigation measures that could result in a reduction of emissions due to construction activities, such as a traffic management plan and specific measures to control particulate emissions such as:

- Monitoring of particulate concentrations during construction
- Measures taken to minimize soil erosion during construction
- Measures taken to control airborne particulate matter during construction

MAC intends to implement appropriate construction mitigation measures to minimize construction activity emissions see Section V.E, Construction Impacts).

Construction of roadways and interchanges will require detailed traffic management plans to minimize delays and congestion associated with construction. This will depend upon how the construction of various segments of these interchanges is staged. Traffic management plans will be developed in conjunction with the design phase of these roadways and interchanges.

## A.2 No Action Alternative

### A.2.1 Affected Environment — No Action Alternative

The Area of Potential Effect of the No Action Alternative is identical to that of the MSP alternative.

### A.2.2 Air Quality Impacts — No Action Alternative

**Impact from on-airport sources**

*Annual Emissions*
Annual emissions from on-airport sources have been estimated from the EDMS model and the APU emission methodology described above. Only roadways serving the terminal and terminal parking area were included in the EDMS analysis. A short additional segment representing the roadway in front of the existing terminal with a 5 mph speed has been assumed for the No Action Alternative. A generalized rental car parking area was also included. Heating plants associated with facilities under the control of the Metropolitan Airports Commission were included along with sufficient additional heating capacity to serve employment located on the airport. A list of assumptions used for inputs into the EDMS model for analyzing on-airport sources is included in Appendix A.1(**Table A.1.5**). Assumed aircraft operations and runway usage are included in Appendix A.1(**Table A.1.20** and **Table A.1.21**) along with time in queue (**Table A.1.10**). Motor vehicle CO emissions from the TH 77/66$^{th}$ Street interchange have also been estimated (Appendix A.1 **Table A.1.24**) and have been added to the EDMS and APU emissions.

The 2010 no action emissions would be the same as the 2020 emissions, since no change in aircraft operations and on-airport motor vehicle activity is assumed between 2010 and 2020. A summary of CO emissions for the No Action Alternative is presented in **Table A-16**. A summary of SOx emissions for the No Action Alternative is presented in **Table A-17**.

**Table A-16 - On-Airport Carbon Monoxide Emissions - No Action Alternative**
(tons per year)

| Source | 2005 | 2010 | 2020 |
|---|---|---|---|
| Roadways | 899 | 773 | 773 |
| Parking facilities | 257 | 186 | 186 |
| Heating plants | 9 | 9 | 9 |
| Ground Service Equipment | 622 | 627 | 627 |
| Aircraft operations | 3515 | 3944 | 3944 |
| Auxiliary Power Units | 45 | 43 | 43 |
| TH 77/66$^{th}$ St. Interchange | 17 | 20 | 20 |
| Runway 4-22 Extension to 12,000 ft. | 15 | 15 | 15 |
| Total | 5379 | 5617 | 5617 |
| Source: David Braslau Assoc. | | | |

**Table A-17 - On-Airport Sulfur Oxide Emissions - No Action Alternative**
(tons per year)

| Source | 2005 | 2010 | 2020 |
|---|---|---|---|
| Roadways | 0 | 0 | 0 |
| Parking facilities | 0 | 0 | 0 |
| Heating plants | 51 | 51 | 51 |
| Ground Service Equipment | 2 | 2 | 2 |
| Aircraft operations | 101 | 109 | 109 |
| Auxiliary Power Units | 5 | 5 | 5 |
| Runway 4-22 Extension to 12,000 feet | 1 | 1 | 1 |
| Total | 160 | 168 | 168 |
| Source: David Braslau Assoc. | | | |

*Peak hour concentrations*

Peak hour pollutant concentrations at twelve receptor sites representing potentially sensitive land uses located around the boundary of the airport (**Figure A-4**) have been estimated using the EDMS model with peak hour aircraft and motor vehicle operations. Assumed aircraft operations and runway use for these periods are included in Appendix A.1(**Table A.1.22** and **Table A.1.23**). Assumptions as to motor vehicles and parking during the peak hour are included in Appendix A.1 (**Table A.1.10** through **Table A.1.11**). A temperature of 20° F, a wind speed of 1 meter per second, and a neutral stability class was assumed. Eight wind directions 45° apart were used to ensure that worst case concentrations at these receptor sites would be identified. These peak-hour concentrations, which also include an assumed 1-hour background of 6.8 ppm (see **Table A-6**) are presented in **Table A-18**. Only those receptors and wind directions for which predicted airport-related concentrations exceed 0.01 ppm are shown in the table.

**Table A-18 - Peak-Hour CO Concentrations From On-Airport Sources - No Action Alternative[1]**
(ppm)

| | Assumed Wind Direction | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Receptor | 45° | 90° | 135° | 180° | 225° | 270° | 315° | 360° |
| 1 | | | | | 8.64 | 8.10 | | |
| 2 | | | | 7.36 | 8.39 | 7.22 | | |
| 3 | | | 6.99 | 8.86 | | 6.83 | | |
| 4 | | | 6.92 | 7.07 | 6.85 | | | |
| 5 | 6.83 | 7.08 | 7.59 | 7.50 | | | | |
| 6 | | | 7.04 | | | | | |
| 7 | | 8.90 | 6.99 | | | | | |
| 8 | 8.01 | 7.61 | 7.04 | | | | | |
| 9 | 7.44 | 6.98 | | | | | | |
| 10 | 7.61 | | | | | | 6.87 | 6.95 |
| 11 | 7.13 | | | | 7.26 | 7.25 | 7.51 | |
| 12 | | | | | | 7.49 | 8.03 | 7.25 |

[1] Includes an assumed background concentration of 6.8 ppm
Source: David Braslau Assoc.

The maximum peak-hour concentration at Site #7 (Mt. Calvary Lutheran School) under the No Action is 8.90 ppm with winds from the east (90°) associated primarily with taxiing and queuing aircraft. For Site #9 (near Centennial School) the maximum concentration is 7.44 ppm.

All of the peak hour concentrations are well below the NAAQS 1-hour standard of 35 ppm and the Minnesota 1-hour standard of 30 ppm. Since these represent peak hour concentrations, estimated 8-hour

concentrations will always be lower. With peak hour concentrations below the 9 ppm NAAQS 8-hour and Minnesota 8-hour standards and with an estimated 8-hour background 3 ppm below the 8-hour standard, exceedances of the 8-hour standard are unlikely.

*Impact from off-airport sources*
Annual CO emissions from all regional trips and airport-related trips in the year 2020 have been estimated from estimated travel on the regional highway network by the Metropolitan Council. The results of that analysis are presented in **Table A-19.**

**Table A-19 - 2020 Off-Airport Roadway CO Emissions - No Action Alternative**
(annual emissions in tons)

| Alternative | Regional Trips | Airport Trips | Share |
|---|---|---|---|
| No Action | 312,800 | 10,500 | 3.37% |
| Source: Metropolitan Council and David Braslau Assoc. | | | |

Airport-only and total traffic volumes for the PM Peak Hour in 2020 on the regional network have been provided by the Metropolitan Council. One intersection under the No Action Alternative meets the screening criteria described above. This is listed in **Table A-20.**

**Table A-20 - Intersection Meeting the Microscale Analysis Screening Criteria**

| Intersection | Alternative | Airport Traffic Pk Hr Approach Vol | Total Traffic Pk Hr Approach Vol |
|---|---|---|---|
| TH 55 at TH 62 | No Action | 3,197 vehicles | 6,029 vehicles |
| Source: Metropolitan Council and David Braslau Assoc. | | | |

The intersection was visited to identify lane configurations, signal timing and location of sensitive receptor sites. The intersection had no receptor site within several hundred feet of the intersection. For this intersection, receptor sites were assumed at a distance of 100 feet from the roadway for purposes of comparing alternatives.

Approach and departure volumes for the PM peak hour from the regional highway network were used in conjunction with the CAL3QHC dispersion model to predict CO concentrations at sensitive receptor sites. **Table A-21** presents the maximum CO concentrations estimated at this intersection. The 8-hour concentration has been estimated by applying a persistence factor of 0.70 to the Peak Hour concentration and adding the estimated 8-hour background of 3.8 ppm.

**Table A-21 - Maximum Predicted CO Concentrations at TH 55 and TH 62 - No Action Alternative**

| Period | Roadway Concentration (ppm) | Background Concentration (ppm) | Overall Concentration (ppm) | State/ Federal Standard |
|---|---|---|---|---|
| 1-hour | 2.8 | 6.8 | 9.6 | 30.0/35.0 |
| 8-hour | 2.0 | 3.8 | 5.8 | 9.0/9.0 |
| Source: David Braslau Assoc. | | | | |

The maximum 1-hour and 8-hour concentrations fall below the Minnesota and Federal Ambient Air Quality Standards.

Based upon the MOBILE 5a emissions model and an average travel speed of 20 mph, the HC and NOx concentrations are expected to be about 10 percent of the CO concentrations shown in **Table A-21** or less than 1 ppm. There are no specifically established ambient air quality standards for HC or NOx.

**Impacts from Construction Activities**
The analysis of emissions from construction activities is addressed in Section V.E, Construction Impacts.

## A.2.3 Mitigation Measures — No Action Alternative

While the No Action Alternative involves no major improvements on the airport, pollutant concentrations associated with the airport are governed by state and federal regulation. The Indirect Source Permit for the terminal area and runways also requires compliance with the provisions of the permit including monitoring and traffic control. In addition to the provisions of the Indirect Source Permit, other possible mitigation measures include:

- Expanded use of bus transit and multiple passenger vehicle service to and from the airport
- 400 Hz of electrical power and pre-conditioned air at gates
- Use of alternative fuels for ground support vehicles and on-airport shuttles

.MAC is willing to investigate the feasibility of these measures and potential air quality benefits. The construction mitigation measures discussed in Subsection A.1.3 can also be applied to any maintenance and construction projects carried out under the No Action Alternative.

## A.3 Summary of Air Quality Impacts

**On-Airport Carbon Monoxide Emissions**

Total annual Carbon Monoxide emissions for each of the alternatives in the years 2005, 2010 and 2020 are compared in **Table A-22**. In the year 2005, it can be seen that the MSP Alternative will yield a decrease in annual CO emissions of 881 tons, compared to the No Action Alternative. In the years 2010 and 2020, the MSP Alternative will yield a decrease in annual CO emissions of 979 and 557 tons, respectively, compared to the No Action Alternative. The decreases are due to less aircraft delay on the airport and a more efficient fleet mix.

**Table A-22 - Carbon Monoxide Emissions by Airport Alternative**
(tons per year)

| Source | 2005 | | 2010 LTCP | | 2020 Concept Plan | |
|---|---|---|---|---|---|---|
| | MSP | No Action | MSP | No Action | MSP | No Action |
| Roadways | 923 | 899 | 819 | 773 | 944 | 773 |
| Parking | 256 | 257 | 203 | 186 | 208 | 186 |
| Heating | 9 | 9 | 9 | 9 | 9 | 9 |
| GSE | 657 | 622 | 691 | 627 | 728 | 627 |
| Aircraft | 2,573 | 3,515 | 2833 | 3,944 | 3,083 | 3,944 |
| APU | 49 | 45 | 49 | 43 | 52 | 43 |
| TH 77/66$^{th}$ St. | 20 | 17 | 19 | 20 | 21 | 20 |
| Runway 4-22 Extension to 12,000 feet | 15 | 15 | 15 | 15 | 15 | 15 |
| Total | 4,502 | 5,379 | 4638 | 5,617 | 5,060 | 5,617 |
| Compared to No Action | -877 | 0 | -979 | 0 | -557 | 0 |
| Source: David Braslau Assoc. | | | | | | |

Differences between alternatives in the total number of motor vehicles assumed on airport roadways and leaving airport parking ramps are relatively small. The volumes are based upon hourly traffic volumes

estimated on access roadways and differences in the number of aircraft operations. The parking ramp vehicle assumptions are included in Appendix A.1 (**Table A.1.11**).

Carbon monoxide concentrations associated with aircraft on the airfield, vehicles on roadways and in parking ramps, and stationary emission sources were projected at receptors sites around MSP using the EDMS model. The model takes into account area, line and point sources of pollutant emissions.

Based on the preceding analysis, the proposed action for CO is de minimis; no further analysis or application of the general conformity regulations is required, and the proposed action is presumed to conform with the SIP for CO.

### On-Airport Sulfur Oxide Emissions

Total annual Sulfur Oxide emissions for each of the alternatives in the years 2005 and 2020 are compared in **Table A-23.** In the year 2005, it can be seen that the MSP Alternative will yield a decrease in annual SOx emissions of 10 tons, compared to the No Action Alternative. In the year 2010, the MSP LTCP will yield a decrease of 7 tons in SOx emissions, compared to the No Action Alternative. In 2020, the MSP Concept Plan will yield an increase of 2 tons in SOx emissions, compared to the No Action Alternative.

**Table A-23 - Sulfur Oxide Emissions by Airport Alternative**
(tons per year)

| Source | 2005 | | 2010 LTCP | | 2020 Concept Plan | |
|---|---|---|---|---|---|---|
| | MSP | No Action | MSP | No Action | MSP | No Action |
| Roadways | 0 | 0 | 0 | 0 | 0 | 0 |
| Parking | 0 | 0 | 0 | 0 | 0 | 0 |
| Heating | 49 | 51 | 51 | 51 | 51 | 51 |
| GSE | 3 | 2 | 3 | 2 | 3 | 2 |
| Aircraft | 92 | 101 | 100 | 109 | 109 | 109 |
| APUs | 5 | 5 | 6 | 5 | 6 | 5 |
| Runway 4-22 Extension to 12,000 feet | 1 | 1 | 1 | 1 | 1 | 1 |
| Total | 150 | 160 | 161 | 168 | 170 | 168 |
| Compared to No Action | -10 | 0 | -7 | 0 | +2 | 0 |
| Source: David Braslau Assoc. | | | | | | |

Based on the preceding analysis, the proposed action for SOx is de minimis; no further analysis or application of the general conformity regulations is required, and the proposed action is presumed to conform with the SIP for SOx.

### Off-Airport CO Emissions

Off-airport CO emissions for the airport alternatives in the years 2010 and 2020 are presented in **Table A-24**. It can be seen that emissions associated with the MSP 2020 Concept Plan are the lowest due primarily to the shorter travel distance permitted by the relocation of the terminal to the northwest corner of the airport.

**Table A-24 - Off-Airport Roadway CO Emissions by Airport Alternative**
(annual emissions in tons)

| Alternative | Regional Trips | Airport Trips | Share |
|---|---|---|---|
| 2010 LTCP | 270,100 | 10,500 | 3.88% |
| 2020 Concept Plan | 313,100 | 10,200 | 3.24% |
| 2020 No Action | 312,800 | 10,500 | 3.37% |
| Source: Metropolitan Council and David Braslau Assoc. | | | |

### Off-Airport Peak Hour Concentrations from On-Airport Sources

**Table A-25** compares the predicted maximum (for all wind directions) 1-hour CO concentration for receptor sites surrounding MSP. The maximum concentration of 9.85 ppm occurs at Receptor Site 5 for the MSP 2020 Concept Plan which is near the roadways serving the new west terminal. The maximum concentration for the MSP 2010 LTCP would be less than that for the MSP 2020 Concept Plan. The maximum concentration under the No Action Alternative (8.90 ppm) occurs at Receptor Site 7 which is near Mt. Calvary Lutheran School. All of the concentrations are well below the NAAQS 1-hour standard of 35 ppm and the Minnesota 1-hour standard of 30 ppm. The maximum 1-hour concentration of 9.85 ppm is 0.95 ppm over the 8-hour standard of 9 ppm. However, no exceedance of the 8-hour standard of 9 ppm is likely since (1) the expected 8-hour background concentration is 3 ppm lower than the expected 1-hour background; (2) the assumed high level of peak hour activity will not occur over an 8-hour period; and (3) meteorological conditions will not remain constant over this time period.

**Table A-25 - Maximum Peak Hour CO Concentrations from On-Airport Sources[1]**
(ppm)

| Receptor | MSP 2020 Concept Plan[1] | No Action[1] |
|---|---|---|
| 1 | 7.31 | 8.64 |
| 2 | 7.18 | 8.39 |
| 3 | 8.04 | 8.86 |
| 4 | 7.72 | 7.07 |
| 5 | 9.85 | 7.59 |
| 6 | 7.72 | 7.04 |
| 7 | 7.55 | 8.90 |
| 8 | [2] | 8.01 |
| 9 | 6.99 | 7.44 |
| 10 | 7.39 | 7.61 |
| 11 | 7.28 | 7.51 |
| 12 | 6.98 | 8.03 |

[1] Includes a background concentration of 6.8 ppm
[2] Receptor 8 does not exist with the MSP Alternative
Source: David Braslau Assoc.

### Off-Airport Peak Hour Concentrations for Off-Airport Sources

The levels of service represented in **Table W-21** apply to traffic flows along a roadway and do not represent level of service at intersections. The purpose of the roadway capacity analysis was to identify those roadways which would require improvements under each of the alternatives. A low level of service may not necessarily correspond to air quality problems, although the potential for high levels of carbon monoxide does exist adjacent to slow moving traffic or queues. At-grade intersections based upon the screening procedure were analyzed since concentrations near these intersections are normally the most critical. No concentrations at any receptor site near these intersections were above ambient air quality standards.

CO concentrations at the TH 55 and TH 62 intersection are presented in **Table A-26** for the MSP 2020 Concept Plan and the No Action Alternative. These are well below the 1-hour and 8-hour standards.

**Table A-26 - Maximum Predicted CO Concentrations at Critical Intersections**
(overall concentration in ppm including background)

| Intersection | MSP 2020 Concept Plan | | No Action | |
|---|---|---|---|---|
| | 1-hour | 8-hour | 1-hour | 8-hour |
| TH 55 at TH 62 | 9.8 | 5.9 | 9.6 | 5.8 |
| National Standard | 35.0 | 9.0 | 35.0 | 9.0 |
| Minnesota Standard | 30.0 | 9.0 | 30.0 | 9.0 |
| Source: David Braslau Assoc. | | | | |

Maximum predicted CO concentrations at the TH 62 and TH 77 Interchange are estimated to occur at Receptor Site 8 as indicated in **Table A-27**. Both the peak-hour and 8-hour concentrations are below national and Minnesota Ambient Air Quality Standards.

**Table A-27 - TH 62 and TH 77 Interchange**
**Predicted CO Concentrations - MSP 2020 Concept Plan**

| Receptor Site | Peak Hour (ppm) | 8-hour (ppm) |
|---|---|---|
| 8 | 9.3 | 5.6 |
| Standard | 30.0 | 9.0 |
| Source: David Braslau Assoc. | | |

Maximum predicted CO concentrations at the TH 77 and 66th Street Interchange are estimated to occur both at Receptor Site 3 and Receptor Site 8 as indicated in **Table A-28**. Both the peak-hour and 8-hour concentrations are below Minnesota Ambient Air Quality Standards.

**Table A-28 - TH 77 and 66th Street Interchange**
**Predicted CO Concentrations - MSP 2020 Concept Plan**

| Receptor Site | Peak Hour (ppm) | 8-hour (ppm) |
|---|---|---|
| 3 | 8.1 | 4.7 |
| Standard | 30.0 | 9.0 |
| Source: David Braslau Assoc. | | |

### Regional Significance

Airport sources accounted for 1.25% of regional CO emissions in 1990. No significant change in this percentage is expected in 2005 or 2020.

### Conclusion

The MSP 2020 Concept Plan and 2010 LTCP would not have adverse impacts on air quality. See the governor's certification letter in Appendix K.

## B. Archaeological Resources

Archaeological resources affected by federally funded/licensed undertakings come under the protection of the National Historic Preservation Act of 1966 which, in Section 106, requires federal agencies to consider the effects of such undertakings on properties listed, or eligible for listing, in the National Register of Historic Places. Regulations related to this process are described in 36 CFR Part 800: Protection of Historic Properties.

Archaeological resources are also protected under Section 4(f) of the National Department of Transportation Act of 1966, which requires projects funded by the Federal Highway Administration to avoid significant historic sites unless there is no "feasible and prudent" alternative. As funds are expected to be provided by the Federal Highway Administration for needed road improvements, it will be necessary to meet the provisions of 23 CFR 771.135 which implements Section 4(f).

### B.1 MSP Alternative

#### B.1.1 Affected Environment — MSP Alternative

The Area of Potential Effect (APE) consists of land within the expanded MSP airport boundaries as well as any land that would be affected by the construction/reconstruction of access/exit roads and signal systems needed for the redesigned airport (**Figure M-1**). In addition, the APE includes (a) property affected by improvements needed within the regional transportation system due to the changes made at the airport, and (b) any off-site property acquired for wetlands or other mitigation. It is not possible, as yet, to identify all potential impacts outside the airport boundaries. National Register properties will be identified and evaluated as further impact zones are added to the APE.

Archaeological investigations have been conducted within undisturbed or minimally disturbed portions of the existing airport (with proposed expansions). It has not, as yet, been possible to conduct such investigations beneath or immediately adjacent to built-up portions of the MSP airport property -- an area which, as indicated by historic records, was intensively used, during the 19th/early 20th centuries, as part of the Fort Snelling military reservation, and which, prior to that, was inhabited by a succession of Native American populations. Archaeological investigations that have been completed are discussed in a separate technical report[6]. A comprehensive research design will be prepared that delineates those portions of the APE which still may contain historic evidence beneath existing built-up/paved areas and which, therefore, would need close monitoring and possible intensive survey/data recovery during the implementation of the proposed airport expansion.

Archaeological investigations conducted within undisturbed or minimally disturbed portions of the existing airport have not identified any sites that are eligible for listing in the National Register of Historic Places.

[6] Harrison, C. "The Archaeological Resources of Minneapolis-St. Paul International Airport With Vicinity, Part 1 Summary Report on the 1992-1995 Investigations", Prepared for the Metropolitan Airports Commission, 1996.

### B.1.2 Archaeological Resource Impacts — MSP Alternative (2010 and 2020)

There are no known sites within the APE eligible for the National Register. Plans to add, change or remove structures would physically impact portions of the archaeologically sensitive area described above, which thus far has been inaccessible to reconnaissance survey. As indicated in Section B.1.1, such investigations may well identify archaeological remains at depths that have allowed for the retention of considerable integrity and research significance. Any such remains would need Section 106 review before impacts can be assessed.

### B.1.3 Mitigation Measures — MSP Alternative

Archaeological sites are generally deemed significant primarily because of the information they contain (rather than other characteristics such as their physical setting). A professionally designed and executed data recovery plan is therefore typically considered as sufficient mitigation for adverse effects to archaeological properties. Mitigation at any archaeological site adversely impacted by the MSP Alternative will be implemented by MAC in the following manner. Prior to data recovery (formal excavation), the data recovery plan will be developed by MAC in consultation with the State Historic Preservation Office subject to the approval of the responsible federal agency, FAA. The data recovery plan will consist of a research design delineating the extent and focus of the required excavation, as well as the methodology needed to ensure maximum retention of the research significance of excavated data.

Mitigation will be conducted in this manner at any archaeological site adversely affected by this alternative.

## B.2 No Action Alternative

### B.2.1 Affected Environment — No Action Alternative

The Area of Potential Effect (APE) consists of land located within the existing MSP airport boundary. Archaeological investigations conducted within undisturbed or minimally disturbed portions of this property have not identified any sites that are eligible for inclusion within the National Register of Historic Places. Please refer to B.1.1 for a discussion of the built-up/paved sections of the airport that have not, as yet, been inventoried for archaeological resources.

### B.2.2 Archaeological Resource Impacts — No Action Alternative

There are no known National Register eligible sites within the APE for this alternative. As yet unidentified archaeological properties that may exist under built-up/paved portions of the existing facility airport would only be of concern in case of ground-disturbing modifications to the present layout.

### B.2.3 Mitigation Measures — No Action Alternative

No mitigation needs have been identified for this alternative.

## B.3 Summary of Archaeological Resource Impacts

No National Register eligible archaeological sites have been identified within the boundaries of the MSP Alternative in 2010 or 2020 and the No Action Alternative. As yet unidentified archaeological resources in built-up/paved portions of the existing airport could be impacted by the MSP Alternative in 2010 and 2020.

# C. Biotic Communities

Biotic communities to be considered are fish, vegetation and wildlife. State and federal standards and guidelines for biotic communities are set forth in regulations for the protection of wetlands and threatened and endangered species. These requirements are discussed in Sections V.DD and V.H of this section.

## C.1 MSP Alternative

### C.1.1 Affected Environment — MSP Alternative

The APE for biotic communities at MSP is the existing airport property and areas affected by off-site roadway improvements required for this alternative (2010 LTCP and 2020 Concept Plan). Uplands within MSP are almost entirely comprised of impervious surfaces and mowed bluegrass (*Poa pratensis*) turf. The only exception is a small area of oak forest adjacent to fuel storage facilities at the east end of the airport property; however, this area is unaffected by the MSP Alternative and has not been analyzed in detail. MSP property also encompasses about 28.7 acres of floodplain forest which is part of the Minnesota River floodplain.

While mowed turf provides somewhat limited wildlife habitat value, a number of species do utilize these portions of MSP. Such species include Canada geese *(Branta canadensis)*, meadow voles *(Microtus pennsylvanica)*, pocket gophers *(Geomys bursarius)*, thirteen-lined ground squirrels *(Spermophilus tridecumlineatus)*, red fox *(Vulpes fulva)*, horned larks *(Eremophila alpestris)*, red-tailed hawks *(Buteo jamacensis)*, American kestrels *(Falco sparvarius)*, European starlings *(Sturnus vulgaris)* chipping sparrows *(Spizella passerina)* and vesper sparrows *(Pooecetes gramineus)*. Several less common bird species have been observed at MSP, including the short-eared owl *(Asio flammeus)*, prairie falcon *(Falco mexicanus)* and upland sandpiper *(Bartramia longicauda)*.

Wetland systems comprise the most significant wildlife habitat within the MSP APE. The characteristics of wetlands within MSP are discussed in Section V.DD. As discussed in Section V.DD., wetlands have been classified according to Wetlands and Deepwater Habitats of the United States (FWS/DBS Publication 79/31; Cowardin et al. 1979) and Wetlands of the United States (USFWS Circular 39; Shaw and Fredine 1971). The "Cowardin" system superseded the "Circular 39" system in 1979; however, Circular 39 classifications are still utilized in both the Minnesota Wetland Conservation Act (WCA) and Minnesota's protected water laws (Minn. Stat. Chapter 103G) as well as the rules promulgated under these statutes (Minn. Rules 8420 and 6115). Accordingly, both Cowardin and Circular 39 classifications are provided throughout this EIS. Cowardin types are given first followed by Cowardin abbreviations and Circular 39 types in parentheses.

MSP encompasses approximately 192.56 acres of wetland, 74 percent of which lies within Mother Lake. Mother Lake is a 142.3 acre semi-permanent palustrine unconsolidated bottom/emergent wetland (PUB/EMF; Circular 39 Type 5 open water and Type 4 deep marsh) with a forested fringe around most of its perimeter. Mother Lake is the most significant element of wildlife habitat within MSP and provides excellent habitat for Canada geese, various dabbling ducks (e.g. mallards, blue-winged teal, and wood ducks), great blue herons *(Ardea herodius)*, black-crowned night herons *(Nycticorax nycticorax)*, great egrets *(Casmerodius albus)*, muskrats *(Ondatra zibethicus)* mink *(Mustela vison)*, raccoons *(Procyon lotor)*, and a variety of raptors. A goose control program has been ongoing at Mother Lake since 1984 to minimize the potential for bird strikes (see Section V.D and Appendix A.4).

Mother Lake has been designated by the Minnesota DNR Heritage and Nongame Research Program as a colonial waterbird nesting site due to its long-term use by Forster's terns, a state special concern species. Mother Lake has had as high as 70 tern nests but last received concentrated use in 1986 when 43 breeding pairs were observed. The Mother Lake tern colony was inactive from 1987 through 1993 but became active again in 1994 when one breeding pair returned. The Minnesota DNR found the Mother Lake tern colony to be inactive during the 1995 breeding season (Joan Galli, MDNR, pers. comm.). Storm water-related water level fluctuations in Mother Lake have limited Forster's tern nest success.

MSP encompasses 14 other wetlands, 8 of which are excavated ponds or water hazards within the Rich Acres Golf Course. The habitat value of all of these wetlands has been substantially degraded by human activities. Some basins are used for storm water ponding, some are directly proximate to active runways, some have been disturbed by past grading or excavation activities and some are consistently mowed as part of airport maintenance activities. These wetlands are described in more detail in Section V.DD of this EIS.

MSP does not encompass any fisheries habitat due to; (1) the absence of lakes and streams and (2) the isolated nature of on-site wetlands making them unsuitable as spawning habitat for fish. None of the on-site wetlands are deep enough to support viable fish populations.

### C.1.2 Biotic Communities Impacts — MSP Alternative

The MSP 2020 Concept Plan entails the placement of MSP's terminal complex at the west end of the airport. This configuration requires the construction of a number of bridge structures to allow vehicular access between the terminal complex and Trunk Highways 62 and 77. While these structures would not involve filling in Mother Lake, they would require piers and the placement of bridge deck over approximately 12.1 acres. The use of structure is being proposed as a mitigation measure to avoid the use of fill. Much of this structure would follow the northern fringe of Mother Lake; however, several ramps bisect the lake's northeast end. It is anticipated that the amount of structure in Mother Lake required for the MSP 2020 Concept Plan has the potential to reduce the lake's habitat value for waterbirds, including the Forster's Tern. While bridge piers themselves will not eliminate a substantial acreage of wetland, the shading effect caused by structures may eliminate some of the wetland vegetation required by waterbirds for feeding and nesting. This is particularly likely where structures would be closely spaced and/or would by relatively low in height. The 2020 Concept Plan and 2010 LTCP also require the placement of fill in about 11.4 acres of Mother Lake for a safety area and access road off the end of the north-south runway; this impact would further reduce waterbird habitat values in Mother Lake. Techniques for minimizing impacts during construction have greatly improved in the last decade and the highest level of controls will be utilized.

Conversely, the MSP 2010 LTCP and 2020 Concept Plan would raise and stabilize the average water levels in Mother Lake due to the additional runoff on the airport, which could improve the success of Forster's tern nests that are initiated there. This would also improve habitat through a higher degree of interspersion between vegetation and open water. More stable water levels would reduce the number of nests flooded out.

Impacts to biotic communities from glycol deicing compounds should be reduced. Duck Lake currently receives a considerable amount of waste glycol, thus degrading its water quality. Duck Lake would be filled and replaced off-site. Mother Lake would continue to receive a negligible amount of glycol. As indicated in Section BB.1.2, about 92.5 percent of the glycol will be recycled or treated with about 7.5 percent running off into the storm sewer system. See Section BB.1.3 for a discussion of glycol mitigation measures.

The impact of aircraft noise on wildlife is imperfectly understood and quantitative research is unavailable for many species. Janssen (1980) categorized noise effects on wildlife as primary, secondary and tertiary. Primary effects are direct physical auditory changes such as eardrum rupture, temporary and permanent hearing threshold shifts, and the masking of auditory signals. Secondary effects include stress, behavioral changes, interference with mating, and detrimental changes in the ability to obtain sufficient food, water and cover. Tertiary effects are the direct result of both primary and secondary effects and include population declines and disuse of important habitat.

Wildlife using habitats around MSP may be incurring one or more of the noise impact types listed by Janssen (1980). However, there is no data available on pre-airport wildlife use around MSP to contrast with present conditions. Wildlife habitats around MSP that are currently experiencing the highest noise levels are Mother Lake and Gun Club Lake. Types of wildlife utilizing Mother Lake are summarized above. Waterfowl and waterbird use in Gun Club Lake is discussed in section D.1.1. Noise impacts to wildlife are also discussed further in Section FF.1.2.

The MSP 2010 LTCP and 2020 Concept Plan would alter the distribution of aircraft flights over wildlife habitats surrounding MSP because of the new north-south runway. The primary effect would be to reduce the rate of increase of flights over Mother and Gun Club Lakes and introduce flights over the Long Meadow and Black Dog Lake area within the MVNWR (see **Figure Q-2**). This change may introduce some new wildlife disturbance into this area but would also ameliorate any such disturbance currently occurring in Mother and Gun Club Lakes. The net result would be flights over a larger area but at a reduced frequency over Mother and Gun Club Lakes . Given the tendency of wildlife to habituate to regular, repeated disturbances (see

Section FF.1.2) it appears likely that wildlife in the Long Meadow and Black Dog Lake area would habituate in the same fashion as those species currently using Mother and Gun Club Lakes.

Citation: Janssen, R. 1980. Future scientific activities in effects of noise on animals. In J.V. Tobias, G. Jansen, and W.D. Ward, eds. Proceedings of the Third International Congress on Noise as a Public Health Problem. Am. Speech-Language-Hearing Assoc., Rockville, MD.

The above described impacts cannot be avoided. Either structures or fill are required within Mother Lake to provide freeway access to the western terminal location for the 2020 Concept Plan. The western terminal site is surrounded on all other sides by active runways and taxiways. The north safety area fill for the north-south runway is also unavoidable for the 2020 Concept Plan and 2010 LTCP. Shifting this safety area out of Mother Lake would require the north-south runway to be shifted to the south, placing the south safety area over I-494.

### C.1.3 Mitigation Measures — MSP Alternative

The use of structure in Mother Lake represents a mitigation measure since it is being undertaken to avoid the placement of fill. Impacts to Mother Lake have already been minimized as much as possible in the use and placement of these structures. Mitigation for impacts to threatened/endangered species and to wetlands at MSP are discussed further in Sections V.H. and V.DD.

## C.2 No Action Alternative

### C.2.1 Affected Environment — No Action Alternative

The affected environment for the No Action Alternative is the biotic communities within the MSP airport property. *See C.1.1 above.*

### C.2.2 Biotic Communities Impacts — No Action Alternative

There are no impacts to biotic communities associated with the No Action Alternative.

## C.3 Summary of Biotic Communities Impacts

**Table C-1 - Summary of Impacts to Biotic Communities**

| Habitat/Cover Type | Acres Affected | | |
|---|---|---|---|
| | MSP Alternative | | No Action Alternative |
| | 2020 | 2010 | |
| Maintained Bluegrass Turf | 331.5 | 285.2 | 0 |
| Wetland | 35.0 | 33.0 | 0 |
| Cropland | 0 | | 0 |
| Forest | 0 | | 0 |
| Nursery/Pine Plantation/Shelterbelts | 0 | | 0 |
| Non-Maintained Grassland | 0 | | 0 |
| TOTAL | 366.5 | 318.2 | 0 |

[1] Includes wetlands lying within roadway corridors.
Source: Peterson Environmental Consulting, Inc.

Also, see summaries for Sections V.H and DD.

The impacts to biotic communities due to the loss of wetlands and bluegrass cannot be avoided.

## D. Bird-Aircraft Hazards

Bird-aircraft hazards are not listed as an impact category in FAA guidelines on NEPA compliance. However, the FAA requires an investigation of potential bird-aircraft hazards when expanding airport facilities or siting new facilities and generally recommends against the placement of aircraft-movement facilities in the vicinity of wildlife attractants (per FAA Advisory Circular 150.5200.5). Also, the U.S. Fish and Wildlife Service requested that an analysis of bird-aircraft hazards be included in the EIS.

### D.1 MSP Alternative

#### D.1.1 Affected Environment — MSP Alternative

The APE for bird strike hazards around MSP has been defined as all major bird concentration areas that lie within 10,000 feet of runway ends and active landfills within 5 miles (26,400 feet). No active landfills lie within the APE, the nearest being Kraemer Landfill about 6.1 miles from MSP. Based on the analysis contained in the Final AED for the MSP Long Term Comprehensive Plan, the potential major bird concentration areas within the APE for MSP were identified as Mother Lake, Lake Nokomis, Wood Lake, and the Gun Club/Long Meadow/Black Dog Lake complex in the Minnesota River bottoms. During preparation of the EIS, additional surveys were done in these areas and it was ultimately concluded that only Mother Lake and the complex of Gun Club, Long Meadow and Black Dog Lakes represent bird concentration areas of major significance **(Figure D-1)**. The attractiveness of Mother Lake to Canada geese is augmented by the mowed turf present at Rich Acres Golf Course and Fort Snelling National Cemetery.

Available data on recent bird strikes do not indicate a clear distribution pattern sufficient to ascribe each incident to a specific bird concentration area (**Table D-1**). However, about 28 percent of reported bird strike incidents between July 1990 and October 1993 appear to be related to Mother Lake. Data from 1994 indicated 10 total bird strikes, similar to 1990-1993. The Canada Goose population using Mother Lake has been the subject of an ongoing research project and control effort being conducted by Dr. James A. Cooper of the University of Minnesota. Due to the apparent bird strike hazard presented by an increase in Canada goose numbers at MSP in the early 1980s, MAC requested assistance from the U.S. Fish and Wildlife Service in developing methods to reduce the number of geese using areas on or near MSP.

## Table D-1 - Locations, Numbers and Types of Bird Strikes Reported at MSP, July 1990 to October 1993 [1]

| | LOCATION OF STRIKE | | | | | | |
|---|---|---|---|---|---|---|---|
| **DATE** | **Unk/Misc** | **RW12R** | **RW30L** | **RW12L** | **RW30R** | **RW4** | **RW22** |
| 07-15-90 | 5 starling | | | | | | |
| 09-11-90 | | 1 r.t.hawk | | | | | |
| 03-20-91 | | 3[2] mallard | | | | | |
| 05-11-91 | | 1 unknown | | | | | |
| 05-31-91 | 2 goose | | | | | | |
| 06-16-91 | | | | 1 starling | | | |
| 06-18-91 | | | | 5 starling | | | |
| 08-12-91 | | 1 gull | | | | | |
| 09-15-91 | | 1 mallard | | 1(?)unknown | | | |
| 10-04-91 | 1(?) unknown | | | | | | |
| 03-05-92 | | | 1 mallard | | | | |
| 07-22-92 | | | | | | 4 sparrow | |
| 07-23-92 | | | | 1 crow | | | |
| 09-11-92 | 1 unknown | | | | | | |
| 09-26-92 | 1(?) unknown | | | | 1 unknown | | |
| 10-11-92 | | | | | 1(?) unknown | | |
| 11-14-92 | | | 1 gull | | | | |
| 03-29-93 | | 1 r.t.hawk | | | | | |
| 04-25-93 | | | | | 1 sparrow | | |
| 05-26-93 | 1 r.t.hawk | | | | | | |
| 07-07-93 | | | | | 1 unknown | | |
| 07-19-93 | | | 1 kestrel | | | | |
| 07-23-93 | | 100[3] starling | | | | | |
| 08-14-93 | | 1 m. dove | | | | | |
| 08-25-93 | 1 kestrel | | | | | | |
| 10-10-93 | | | 5 blackbird | | | | |
| 10-12-93 | | | 1 unknown | | | | |
| **TOTAL INCID.** | **7** | **8** | **5** | **4** | **4** | **1** | **0** |

[1] Each cell under Location of Strike indicates; (1) the number of birds struck, if known, (2) the type of birds struck, if known, and (3) a (?) if there remains some question as to whether the incident actually represents a bird strike.
[2] Considered a major incident; the #1 engine on a NWA DC-10 was damaged 3 miles off the end of Runway 12R and shut down. Part of the engine cowling fell into an Eagan parking lot but no injuries occurred.
[3] Considered a major incident; a NWA 747 ingested one or more starlings on departure from Runway 12R. The pilot shut down the #3 engine and returned to the field without incident. All four engines were damaged. Approximately 100 dead starlings were subsequently swept from Runway 12R.
Source: Metropolitan Airports Commission

In response, Dr. Cooper was retained to undertake what initially was to be a 4-year study (see Appendix A.4) from 1984 to 1987 to determine; (1) whether geese using MSP could be identified and removed (i.e., translocated) and (2) whether such reductions would, in turn, reduce the number of geese and goose flights within the airspace used by departing and approaching aircraft. This initial study has evolved into an ongoing research and control effort that remains underway in 1995. Continuing selective control efforts have kept goose numbers at MSP extremely low, rendering the goose-aircraft hazard at Mother Lake almost negligible over the last 7 to 8 years. However, since geese from other brood marshes may eventually move into the vacated habitat existing at MSP, ongoing monitoring and control efforts are being maintained to ensure that goose flights into MSP continue to be minimal.

The MVNWR encompasses a series of waterfowl concentration areas south and east of MSP. These areas are Gun Club, Long Meadow and Black Dog Lakes. Gun Club Lake also extends north of the MVNWR into Fort Snelling State Park. In addition to being concentration areas, the MVNWR lakes also generate flights to and from Mother Lake at the northwest corner of MSP. The MVNWR which encompasses Long Meadow Black Dog and part of Gun Club Lakes lies about 3,400 feet from MSP at its nearest point. At its nearest point, Gun Club Lake lies about 3,400 feet from the east end of the existing south parallel runways at MSP; this part of Gun Club Lake is part of Fort Snelling State Park. Mother Lake lies within MSP boundaries and is about 1,700 feet from the west end of the south parallel runway. Data collected by the MVNWR staff and the EIS study team during the spring of 1995 indicates that Long Meadow Lake has the highest waterfowl concentration numbers for the period March through June with totals exceeding 17,000 birds on a given day, followed by Gun Club Lake (>8,000) and Black Dog Lake (1,052). Peak census totals were reached during the last part of March through mid-April for Long Meadow and Gun Club Lakes with numbers reaching 17,233 and 9,863 respectively. At Black Dog Lake peak numbers were tallied in January. During the winter, waterfowl concentrations occur at Black Dog Lake where warm effluent from the NSP Black Dog Power Plant keeps the lake partially free of ice.

In addition to waterfowl, Long Meadow, Gun Club and Black Dog Lakes attract concentrations of Double-crested cormorants (*Phalacrocorax auritus*), great blue herons, great egret and several migratory gull species. Long Meadow Lake had the highest concentrations of great blue herons, great egrets and double-crested cormorants during the spring migration. Both Long Meadow and Gun Club Lakes hold the largest concentrations of great blue herons, great egrets, and double-crested cormorants during spring and fall migrations. Black Dog Lake had the highest concentrations of gull species during migration.

The MVNWR staff has indicated that the American white pelican (*Pelecanus erythrorhynchos*) population at the refuge has been increasing and that these birds may represent a bird strike hazard due to their habit of soaring at relatively high altitudes in large flocks. One American white pelican was seen at Black Dog Lake during the 1995 spring migration and approximately 300 were seen soaring in three flocks during the 1995 fall migration at Long Meadow Lake.

For purposes of bird-aircraft hazard analysis, the entire Gun Club/Long Meadow/Black Dog Lake wetland complex has been considered a major waterfowl and waterbird concentration area. However, Long Meadow Lake appears to represent the largest bird concentration area, followed by Gun Club Lake. Waterfowl numbers observed by MVNWR staff and the EIS study team (see Appendix A.7) during the spring 1995 migration period are summarized in **Table D-2.** Long term waterfowl populations in the MVNWR are summarized in **Tables D-3** and **D-4.**

**Table D-2 - Summary of Waterfowl Surveys Conducted by MVNWR Staff and EIS Study Team; Spring 1995***

| Location | Jan. | Feb | March | | | April | | | May | June |
|---|---|---|---|---|---|---|---|---|---|---|
| | 4th | 16th | 17th | 30th | 31st | 19th | 6th | 8th | 17th | 23 |
| Long Meadow Lake | - | 33 | 317 | - | 1,650 | 695 | - | - | 174 | |
| Black Dog Lake | 3,010 | 136 | 173 | - | 39 | 120 | - | - | 49 | |
| Gun Club Lake | - | - | - | 88 | - | - | - | 941 | - | |
| Lake Nokomis | - | - | - | 100 | - | - | 53 | - | - | |
| Lake Harriet | - | - | - | 186 | - | - | 84 | - | - | |
| Lake Calhoun | - | - | - | 6 | - | - | 1 | - | - | |

* Table represents total bird populations (i.e., ducks, geese, herons, gulls etc.)counted at the locations listed on the left-hand column. The date counts were conducted on are listed across the top. Columns in gray were counts conducted by EIS study team.

Source: Peterson Environmental Consulting, Inc. and U.S. Fish and Wildlife Service

Table D-3 - Peak Waterfowl Populations within the MVNWR by Season; Source MVNWR Annual Narratives

| | | |
|---|---|---|
| Winter Peak Population[1] | 1988 | 1,800 |
| | 1989 | 4,500 |
| | 1990 | 13,000 |
| | 1991 | 10,000 |
| | 1992 | 7,000 |
| | 1993 | 4,000 |
| | 1994 | 7,000 |
| Spring Peak Population[2] | 1988 | 17,000 |
| | 1989 | 8,000 |
| | 1990 | 32,000 |
| | 1991 | 39,000 |
| | 1992 | 24,000 |
| | 1993 | 38,000 |
| | 1994 | 11,000 |
| Summer Peak Population[3] | 1988 | 40,000 |
| | 1989 | 11,000 |
| | 1990 | 9,000 |
| | 1991 | 11,000 |
| | 1992 | 22,000 |
| | 1993 | 8,000 |
| | 1994 | 10,000 |
| Fall Peak Population[4] | 1988 | 19,000 |
| | 1989 | 32,000 |
| | 1990 | 80,000 |
| | 1991 | 39,000 |
| | 1992 | 91,000 |
| | 1993 | 22,000 |
| | 1994 | 24,000 |

[1]Winter = December of preceding year, January and February. Note that winter population is almost exclusive to Black Dog Lake.
[2] Spring = March, April and May
[3] Summer = June, July and August
[4] Fall = September, October and November
Source: U.S. Fish & Wildlife Service

Table D-4 - Waterfowl and Waterbird Use at MVNWR; Spring and Fall Migration Periods, 1987-1991 for the Long Meadow Lake/Black Dog Area

| Year | Period[1] | Waterfowl & Coots LML/BDG Peak[2]:Mpeak[3] | Canada Geese LML/BDG Peak[2]:Mpeak[3] | Cormorants LML/BDG Peak[2]:Mpeak[3] | White Pelicans LML/BDG Peak[2]:Mpeak[3] |
|---|---|---|---|---|---|
| 1987 | Spring | 28300:9400 | 539:180 | --- | --- |
| | Fall | 31400:10500 | 55:20 | 1700:570 | --- |
| 1988 | Spring | 10000:3300 | 600:200 | 1400:470 | --- |
| | Fall | 18000:6000 | --- | 2400:800 | --- |
| 1989 | Spring | 11500:3800 | 300:100 | 30:10 | --- |
| | Fall | 32000:10700 | 400:130 | 4800:1600 | --- |
| 1990 | Spring | 35400:11800 | 1700:570 | 170:60 | --- |
| | Fall | 65900:22000 | 4800:1600 | 2400:800 | 1400:470 |
| 1991 | Spring | 22500:7500 | 550:180 | 15:5 | 15:5 |
| | Fall | 31900:10600 | 1300:430 | 3000:1000 | 2200:730 |
| 1992 | Spring | 24100:4000 | 3500:580 | 590:90 | --- |
| | Fall | 52300:10400 | 870:170 | 1800:600 | 900:300 |
| 1993 | Spring | 29300:4800 | 2500:400 | 140:40 | --- |
| | Fall | 36300:3300 | 1500:130 | 2900:480 | 21:7 |
| 1994 | Spring | 7700:1200 | 2600:400 | 37:18 | --- |
| | Fall | 49500:9900 | 3900:790 | 2100:400 | 1500:370 |
| 1995 | Spring | 26700:6600 | 3400:860 | 2800:940 | 27:13 |
| Mean | Spring | 21720:5820 | 1700:385 | 575:181 | 5:2 |
| | Fall | 35250:9260 | 1603:408 | 2637:781 | 726:230 |
| | | | CUMULATIVE TOTALS OF ALL MEANS | Peak | Mpeak |
| | | | Spring | 24000 | 6391 |
| | | | Fall | 40216 | 10679 |

[1] Period: SPRING = March, April, May \ FALL = September, October, November
[2] Peak: The SUM of the peak populations for the three months comprising the migration period.
[3] Mpeak: The average monthly peak population.
[Since the numbers presented are estimated and result from expansion of actual data collected, rounding off of numbers was done as following: all numbers in the 1,000's were rounded off to the nearest 100; all numbers in the 100's were rounded off to the nearest 10.]
Source: U.S. Fish and Wildlife Service

### D.1.2 Bird-Aircraft Hazards — MSP Alternative

Bird strikes pose the greatest hazard to aircraft at altitudes less than 500 feet above ground level (AGL). According to FAA data, 90 percent of all known bird-strike incidents occur below 500 feet AGL, and nearly all of the remaining 10 percent occur between 500 and 3,000 feet AGL, with most below 2,000 feet AGL (based on a conversation with Gene LeBoef, FAA Office of Airport Safety and Standards, August 17, 1993).

Integrated Noise Model (INM) data was used to obtain typical departure flight profiles for the various flight tracks associated with each runway. The standard instrument glide path has been used to develop approach profiles. The INM output estimates an aircraft's altitude at various distances from the airport both on arrival and during departure. This output has been used to estimate altitudes over areas that have been identified as potential attractants for concentrations of birds. The INM model is the standard FAA aircraft noise model and has been subjected to substantial field verification. Based on INM data, the number and altitudes of flights over bird concentration areas near MSP are as follows:

Mother Lake:
The MSP 2020 Concept Plan would place about 6,080 monthly flights over Mother Lake -- 3,770 below 500 feet AGL and 2,310 between 500 and 2,000 feet AGL. The MSP 2010 LTCP would have about 5,840 monthly overflights -- 3,620 below 500 feet and 2,220 between 500 and 2,000 feet AGL.

Gun Club Lake:
The MSP 2020 Concept Plan would place about 3,890 monthly flights over Gun Club Lake -- 1,170 below 500 feet AGL and 2,720 between 500 and 2,000 feet AGL. The MSP 2010 LTCP would have about 3,730 monthly overflights -- 1,120 below 500 feet and 2,610 between 500 and 2,000 feet AGL.

Long Meadow and Black Dog Lakes:
The MSP 2020 Concept Plan would place about 6,820 monthly flights over Long Meadow and Black Dog Lakes -- none below 500 feet AGL and 5,620 between 500 and 2,000 feet AGL. The MSP 2010 LTCP would have about 6,550 monthly overflights -- none below 500 feet and 5,400 between 500 and 2,000 feet AGL.

The potential for ongoing bird strikes is an unavoidable impact. Given the distribution of bird concentration areas around MSP, it is not possible to redistribute aircraft operations to avoid overflying these areas.

### D.1.3 Mitigation Measures — MSP Alternative

The proposed new north-south runway placement and orientation was determined to be the most reasonable and effective for expanding the capacity of the existing airfield — which has several severe physical and environmental constraints. The bird-concentration areas shown in **Figure D-1** are among these constraints. However, based on the balancing of these constraints and other considerations discussed in Section III, FAA and MAC determined that it would be neither feasible nor prudent to completely avoid any potential hazards of additional overflights of these areas due to the new runway and increased activity levels.

From an operational standpoint, the only available mitigation measures are to minimize the number of departures occurring over Mother Lake and low altitude overflights of the MVNWR. Given the locations of these bird concentration areas, meaningful reductions in overflights do not appear feasible. Ongoing goose control measures should be pursued within MSP as should any other vegetation management measures that would reduce the attractiveness of the airport environs for geese. Such measures might include reductions in turf mowing through the establishment of low-growing groundcover plants that require little or no mowing and do not provide food for geese.

In a letter dated November 25, 1994 MDNR recommended planting prairie vegetation around Mother Lake if trees were not compatible with the airport. Mid-to-tall grass prairie vegetation around the lake would not be attractive to Canada geese and may be a viable alternative or supplement to a continued goose control program around the lake.

## D.2 No Action Alternative

### D.2.1 Affected Environment — No Action Alternative

The APE for the No Action Alternative is identical to that for the MSP Alternative.

### D.2.2 Bird-Aircraft Hazards Impacts — No Action Alternative

Bird strikes do not appear to represent a major problem at MSP under existing conditions, provided that Canada goose control measures are continued. As described above, overflights of bird concentration areas (**Figure D-1**) under the No Action Alternative in 2010 and 2020 are as follows:

Mother Lake:
Monthly overflights of Mother Lake under the No-Action Alternative would total approximately 3,110. Of those overflights, approximately 970 would be below 500 feet AGL and 2,140 would be between 500 and 2,000 feet AGL.

Gun Club Lake:
Monthly overflights of Gun Club Lake under the No-Action Alternative would total approximately 5,940. Of those overflights, approximately 1,940 would be below 500 feet AGL and 4,000 would be between 500 and 2,000 feet AGL.

Long Meadow and Black Dog Lakes:
Monthly overflights of Long Meadow and Black Dog Lakes under the No-Action Alternative would be approximately 2,000, all above 2,000 feet AGL.

The potential for ongoing bird strikes with the No Action Alternative represents an unavoidable impact. Given the distribution of bird concentration areas around MSP, it is not possible to redistribute aircraft operations to avoid overflying these areas.

### D.2.3 Mitigation Measures — No Action Alternative

Continuation of Canada goose control measures appears to be the only bird strike mitigation measure currently warranted under the No Action Alternative.

## D.3 Summary of Bird-Aircraft Impacts

**Table D-5** shows the number of flights expected over bird concentration areas at critical altitudes. Such overflights occur both on approach and departure with the MSP and No Action Alternatives and cannot be avoided.

**Table D-5 - Summary of Monthly Aircraft Overflights of Bird Concentration Areas**

| Altitude (AGL) | MSP 2020[1] | | | MSP 2010[1] | | | No Action Alternative[1] 2010/2020 | | |
|---|---|---|---|---|---|---|---|---|---|
| | ML | GCL | LML | ML | GCL | LML | ML | GCL | LML |
| <500 Ft. | 3,770 | 1,170 | 0 | 3,620 | 1,120 | 0 | 970 | 1,940 | 0 |
| 500-2000 Ft. | 2,310 | 2,720 | 5,620 | 2,220 | 2,610 | 5,400 | 2,140 | 4,000 | 0 |
| >2000 Ft. | 0 | 0 | 1,200 | 0 | 0 | 1,150 | 0 | 0 | 2,000 |

[1] ML=Mother Lake; GCL=Gun Club Lake; LML=Long Meadow Lake/ Black Dog Lake complex
Source: Peterson Environmental Consulting, Inc.

# E. Construction Impacts

Construction of the MSP 2010 LTCP and 2020 Concept Plan would create some unavoidable temporary impacts to surrounding communities such as noise, fugitive dust, traffic delays, and water quality. Most of these impacts would be mitigated using proper construction techniques, many of which are regulated. The design and construction will be in accordance with applicable state and local ordinances and regulations such as those recommended by the Soil Conservation Service and FAA Advisory Circular 150/5370-10, Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation Control.

On-airport Carbon Monoxide emissions associated with the maximum expected level of construction activity in 2003 have been estimated. Emission factors for SOx emissions from construction equipment or haul trucks are not available. The major sources of on-airport emissions associated with construction activity are

construction equipment and haul truck and employee trips on the airport. A description of the construction emission methodology is contained in Appendix A.13.

Estimates of haul truck emissions have been made using emission factors for Heavy Duty Diesel Trucks from the US EPA Mobile 5A emissions model for 2003. An average on-airport speed of 10 mph has been assumed. As described in Section A.1.2 Air Quality Impacts - MSP Alternative, it was estimated that 80,000 truck loads of material will be moved during the construction season. Based upon these assumptions, 5.4 tons per year of Carbon Monoxide emissions have been estimated for on-airport haul trucks.

Estimates of on-airport Carbon Monoxide emissions associated with employee trips on the airport have been estimated to and from the construction site. It is assumed that all employees drive light duty gasoline trucks and that the average off-airport daily round trip is 30 miles and an average on-airport round trip of 2 miles over a six month construction period or 156 days. An average speed of 30 mph has been assumed for off-airport trips and 20 mph for on-airport trips. For a construction work force of 300, off-airport emissions of 30 tons per year and on-airport emissions of 3 tons per year have been estimated.

On-airport pollutant emissions from construction equipment have been estimated in two ways. The first is based upon emission factors provided by the US EPA National Vehicle and Fuel Emissions Laboratory which are the most recent data available. The second is based upon a methodology developed by the Sacramento (California) Metropolitan Air Quality Management District modified to account for Carbon Monoxide emissions. Assuming all types of construction equipment on the airport, a total of 12 tons per year has been estimated. The Sacramento methodology yields an estimate of just under 4 tons per year. To ensure a conservative estimate of Carbon Monoxide emissions, the 12 ton per year figure has been assumed.

Total Carbon Monoxide emissions from on-airport construction activity was obtained by summing the emissions from haul trucks, employee trips and construction equipment. This yields a total of 20 tons per year. Since these construction emissions are estimated to be below the 100 tons per year de minimis level, construction activity at MSP is projected to be in conformity with the Clean Air Act Amendments.

Construction would take place over a period of years. Increased traffic on roadways leading to the project site will result from both construction workers and delivery of materials to be installed. Since MSP is well served by freeway access from all directions, there should be minimal additional traffic on local roadways.

All concrete batch plants are required to obtain emissions permits and to operate under restrictions imposed as part of the permit process. Construction contracts for mass excavation, crushing rock, and similar activities which might cause fugitive dust will contain requirements to control dust. These measures will include such items as frequent watering of haul routes and paving of frequently used routes. Besides fugitive dust, another point source of air pollution will be from construction equipment fuel combustion emissions.

An adequate labor force is expected to be available to perform the construction throughout the construction period.

Impacts on water quality could result from solvent or fuel spills on the site and dewatering during subsurface construction operations. Mitigation measures will involve special handling and care of all potentially dirty water or hazardous materials. This will involve the construction of special sedimentation ponds or silt barriers, and linings and berms around all proposed fuel depots in order to contain any accidental spills. Designated maintenance areas for construction equipment will be in construction contracts. Special care will be made to require protective linings under equipment when oil changes and other maintenance activities are being performed. No such activities will be allowed in waterways or other sensitive areas.

Soil erosion from disturbance of the project site must also be carefully managed. A wide variety of techniques will be utilized such as: sedimentation ponds; haybale check dams; hydro-mulching; construction of silt fences; watering; compaction; and revegetation. The amount of topsoil and vegetation that is stripped from the site will be phased to minimize the amount of site disturbance at any one time. Disturbed areas will be either revegetated or paved as soon as possible. Topsoil stockpiles will be stabilized with seeding.

Adverse impacts during construction will be minimized to the extent feasible, but cannot be avoided.

Temporary Extension of Runway 12R-30L

The temporary noise impacts of closing Runway 4-22 were analyzed by distributing the Runway 4-22 operations on Runways 12R-30L and 12L-30R, with only the long-haul operations presently using Runway 4-22's full 11,000-foot length utilizing the proposed temporary extension on Runway 12R-30L. All other aircraft would depart from the existing Runway 12R threshold and all landings would continue to be at the existing threshold. A set of DNL contours was generated to depict the anticipated temporary noise impacts as a result of the Runway 4-22 closure for construction and use of the temporary extension. Although there will be temporary noise level increases in Eagan, Mendota, Mendota Heights, Minneapolis, and Richfield during construction, no increases will exceed DNL 1.2 dBA as compared to the DNL noise levels without the extension. Additionally, because this is a temporary condition, these increases are not considered significant. A complete detailed analysis is presented in the *Environmental Assessment for Extension of Runway 4-22 To 12,000 Feet, Minneapolis-Saint Paul International Airport,* Metropolitan Airports Commission, April 1998.

## F. Coastal Barriers

The Coastal Barriers Resources Act of 1982 prohibits federal financing for development within the Coastal Barrier Resources System, which consists of undeveloped coastal barriers along the Atlantic and Gulf coasts. The legislation was amended by the Coastal Barrier Improvement Act in 1990 to include undeveloped coastal barriers along the shores of the Great Lakes including Lake Superior in St. Louis County. The metropolitan area is sufficiently distant from these designated lands along the shore of Lake Superior not to be included. Minneapolis-St. Paul International Airport is not a coastal barrier as defined by the federal government. Consequently, analysis of the alternative with respect to the Coastal Barriers Resources Act is not required.

## G. Coastal Zone Management Program

Coastal Zone Management Programs, prepared by states according to guidelines issued by the National Oceanic and Atmospheric Administration, are designed to address issues affecting coastal areas. While the Great Lakes are considered coastal areas for the purpose of preparing these programs, there is currently no Coastal Zone Management Program approved by the state of Minnesota for Lake Superior. Work is underway to produce an approved Coastal Zone Management Program within the next few years; it is unlikely the metropolitan area would be included in the program. Minneapolis-St. Paul International Airport is not within a coastal area as defined by the federal government. Consequently, analysis of the alternative with respect to an approved Coastal Zone Management Program is not required.

## H. Endangered and Threatened Species

### H.1 MSP Alternative

#### H.1.1 Affected Environment — MSP Alternative

The APE for threatened and endangered species with the MSP Alternative is the MSP property plus any areas of critical habitat for bald eagles (*Haliaeetus leucocephalus*) within the Minnesota Valley National Wildlife Refuge in proximity to MSP. The bald eagle is the only federally listed species (listed as threatened on both state and federal lists of threatened and endangered species) having habitat near enough to MSP to be potentially affected. Forster's terns, a state-listed special concern species, have historically used Mother Lake at the northwest corner of MSP. Mother Lake has been designated by the Minnesota DNR Heritage and Nongame Research Program as a colonial waterbird nesting site due to its long-term use by Forster's terns.

Forster's terns:
Mother Lake has had as high as 70 tern nests in 1981 but last received concentrated use in 1986 when 43 breeding pairs were observed. Reproductive success among terns at Mother Lake has been extremely poor in some years due to storm-related flooding. Due to the developed nature of Mother Lake's tributary drainage area, the lake experiences substantial water level fluctuations in large storms. The 1986 breeding season is a good example; due to flooding and predation, only 4.4 percent of the tern eggs hatched and no young birds were fledged. The Mother Lake tern colony was inactive from 1987 through 1993 but has become active again in 1994. One Forster's tern nest with 3 eggs was found at Mother Lake by DNR staff on June 2, 1994, re-activating the site as a designated colonial nesting bird site. However, no nesting Forster's Terns were observed at Mother Lake during the 1995 breeding season.

Within the context of the MSP Alternative, the above described potential impacts to Forster's Terns are unavoidable. The MSP Alternative cannot be implemented without some reduction in Mother Lake's habitat value for Forster's terns.

Bald Eagles:
Based on coordination with the U.S. Fish and Wildlife Service (USFWS) and Minnesota Department of Natural Resources (MDNR), the only known essential habitat for bald eagles near MSP is one consistently used eagle breeding territory along Long Meadow and Gun Club Lakes within the Minnesota Valley National Wildlife Refuge. Three nest sites lie within this nesting territory and are all located within one mile of each other. The breeding territory was occupied in 1986 and 1987, but successful nesting did not occur in those years. Eagles have actively nested in this territory since 1988 and successfully nested there in 1993, 1994 and 1995 (Mary Stefanski, USFWS, personal comm.).

### H.1.2 Endangered and Threatened Species Impacts — MSP Alternative

Forster's terns:
As stated in Section V.C, the amount of structure and fill in Mother Lake required for the MSP 2020 Concept Plan has the potential to substantially reduce the lake's habitat value for waterbirds, including the Forster's tern. While bridge piers themselves would not eliminate a substantial acreage of wetland, the shading effect caused by structures is likely to eliminate some of the wetland vegetation required by waterbirds for feeding and nesting. This is particularly likely where structures would be closely spaced and/or would by relatively low in height. The MSP Alternative also involves five acres of fill in Mother Lake which will further reduce the potential habitat available to Forster's terns. On the other hand, the MSP Alternative would raise and stabilize the average water levels in Mother Lake due to the additional runoff on the airport. This would improve the quality of the remaining habitat by creating more interspersion and reducing nest drown outs. The significance of potential impacts to Forster's terns is unclear, given the absence of Forster's tern nests in Mother Lake over the past several years.

Within the context of the MSP 2010 LTCP and 2020 Concept Plan, the above described potential impacts to Forster's terns are unavoidable. The MSP 2010 LTCP and 2020 Concept Plan cannot be implemented without some reduction in Mother Lake's habitat value for Forster's terns.

Bald Eagles:
A Bald Eagle Biological Assessment was done in 1990 relating to the potential impacts on nesting bald eagles that might result from an extension of MSP Runway 4-22 that was proposed at that time. This proposed runway extension is also an element of the MSP 2010 LTCP and 2020 Concept Plan and is the only airport improvement under this alternative which involves potential overflights of bald eagle nests within the MVNWR. The 1990 Biological Assessment involved the same nesting territory being analyzed in this EIS and was done to analyze the potential for impacts that might result from approximately 3,330 monthly departures over the nest at altitudes between 1,500 and 2,000 feet. The MSP Alternative involves substantially fewer potential overflights in 2020 (i.e., about 360 per month) on a flight track about 1,639 feet (straight-line distance) from the nearest nest site within the breeding territory. No direct overflights would occur under the MSP 2010 LTCP and 2020 Concept Plan as would have with the project analyzed in 1990.

The Biological Assessment prepared for the Runway 4-22 extension concluded that it could not be stated unequivocally that impacts to eagle reproduction success would not occur but that it was unlikely that such impacts would occur (see Appendix A.5). Accordingly, the USFWS issued a "No Jeopardy" Biological Opinion in relation to the original 4-22 extension project. Since the number of overflights projected for this runway under the MSP 2010 LTCP and 2020 Concept Plan has been substantially reduced and the distance between the nearest flight track and the breeding territory has been increased, the conclusion reached in the Runway 4-22 Biological Assessment appears to remain valid for the MSP2010 LTCP and 2020 Concept Plan . The U.S. Fish and Wildlife Service has formally confirmed that a formal Section 7 consultation under the Endangered Species Act is not required for the MSP 2010 LTCP and 2020 Concept Plan (see U.S. DOI comment letter in Appendix A.11).

### H.1.3 Mitigation Measures — MSP Alternative

As stated in Section V.C, there are no mitigation measures readily available to directly replace Forster's tern habitat lost to the placement of fill and bridge structures in Mother Lake. Impacts to Mother Lake have already been minimized as much as possible in the placement of structures and fill. Also, it appears that the higher and more stable water levels associated with the MSP 2010 LTCP and 2020 Concept Plan may improve the quality of the tern habitat that will remain. No mitigation measures relating to bald eagles appear warranted.

## H.2 No Action Alternative

### H.2.1 Affected Environment — No Action Alternative

The affected environment for the No Action Alternative is limited to biotic communities within the MSP property. See Section H.1.1.

### H.2.2 Endangered and Threatened Species Impacts — No Action Alternative

The No Action Alternative would have no significant effect upon threatened or endangered plant or animal species. This alternative entails no overflights of known bald eagle nests in the MVNWR. The nearest flight track would be about 1.25 miles from the nearest nest site.

### H.2.3 Mitigation Measures — No Action Alternative

No mitigation measures relating to threatened or endangered species are warranted under the No Action Alternative.

## H.3 Summary of Endangered and Threatened Species Impacts

**Table H-1 - Summary of Endangered and Threatened Species Impacts**

| Alternative | Forster's terns | Bald Eagles | Rare Plant Species |
|---|---|---|---|
| **MSP -- 2010 and 2020** | Adverse Impact[1] | No Impact[2] | No Impact |
| **No Action** | No Impact | No Impact[2] | No Impact |

[1] Reduction in habitat value due to fill in and bridges over Mother Lake
[2] There appears to be minimal potential for significant impacts to bald eagles associated with any of the alternatives; however, it should be noted that distance thresholds used in the impact analysis are not definitive and the potential for some adverse impacts cannot be totally ruled out.
Source: Peterson Environmental Consulting, Inc.

The loss of Forster's terns' habitat is unavoidable.

# I. Economic

Economic impacts include the costs of acquiring land and property and the resulting loss of municipal revenues, the cost of developing the airport, and the effect of the airport on local, regional and state jobs, sales, development and municipal tax base.

**Affected Environment — All Alternatives**

The APE is the business sectors of the state of Minnesota and the tax base of Bloomington, Minneapolis and Richfield. The Minneapolis/St. Paul MSA experienced considerable employment growth over the past 20 years. **Table I-1** shows county employment patterns over the 1970-1990 time period. Overall, about 531,000 new jobs were created in the 13 county metropolitan area (MSA) over the 20 year period, which is representative of roughly 2.5 percent average annual growth. The MSA also attracted an increasing share of state employment between 1970 and 1990, increasing from 56 percent to 62 percent of state employment.

**Table I-1 - MSA Total Employment Trends, by County, 1970 - 1990**

| County | 1970 | 1980 | 1990 | County % of MSA in: 1970 | 1990 | Annual Change |
|---|---|---|---|---|---|---|
| Anoka | 58,603 | 97,199 | 133,097 | 7% | 9.7% | 4.19% |
| Carver | 11,193 | 18,217 | 26,061 | 1.3% | 1.9% | 4.32% |
| Chisago | 5,243 | 10,957 | 14,004 | 0.6% | 1% | 5.03% |
| Dakota | 53,607 | 98,292 | 153,905 | 6.4 | 11.2% | 5.41% |
| Hennepin | 421,109 | 501,810 | 572,037 | 50.3% | 41.8% | 1.54% |
| Isanti | 5,787 | 9,647 | 12,005 | 0.7% | 0.9% | 3.72% |
| Ramsey | 198,078 | 230,858 | 252,684 | 23.6% | 18.5% | 1.22% |
| Scott | 12,006 | 20,623 | 30,805 | 1.4% | 2.3% | 4.82% |
| Sherburne | 6,225 | 12,451 | 20,432 | 0.7% | 1.5% | 6.12% |
| Washington | 30,188 | 54,093 | 76,893 | 3.6% | 5.6% | 4.79% |
| Wright | 13,897 | 24,892 | 34,073 | 1.7% | 2.5% | 4.59% |
| St. Croix, WI | 11,973 | 19,564 | 25,727 | 1.4% | 1.9% | 3.90% |
| Pierce, WI | 10,011 | 14,137 | 17,228 | 1.2% | 1.3% | 2.75% |
| **Total MSA** | **837,920** | **1,112,740** | **1,368,951** | **100%** | **100%** | **2.48%** |
| **Minnesota** | **1,494,416** | **1,888,597** | **2,196,056** | | | **1.94%** |
| Source: U.S. Census | | | | | | |

The previous table also highlights the slow drain of jobs to suburban counties. In 1970, employment in Hennepin and Ramsey Counties made up 73.9 percent of MSA employment. By 1990, the share of total MSA employment in Hennepin and Ramsey Counties had fallen to 60 percent. Three suburban counties, Anoka, Dakota, and Washington, attracted significant new employment over the same time period. Job creation was particularly strong in Dakota County, which increased its share of MSA employment from 6.4 percent to 11.2 percent as almost 100,300 new jobs were created. Employment growth in Anoka and Washington Counties created an additional 121,200 jobs over the same time period.

The previous table is useful in that it shows general employment growth trends in the MSA. The following tables are more significant in that they highlight employment trends by industry sector in the 13 county MSA between 1972 and 1992. **Table I-2** is based on data from County Business Patterns and include employment in nine specific industry sectors from 1972 and 1992. **Table I-3**, which summarizes changes in industrial

sector employment between 1972 and 1992, is particularly useful in detailing how employment patterns evolved as the MSA economy changed over a 20-year period.

Changes in industrial sector employment at the MSA level were strongest in Agriculture and Services, which grew by 315.9 percent and 196.1 percent respectively. While Agricultural employment increased from 1,142 in 1972 to 4,750 in 1992, Service employment increased from 142,747 to 422,669 over the same period. Overall, growth in Service employment mirrored national trends. Between 1972 and 1992, Service employment grew from 20 percent to 33 percent of MSA employment. Although Manufacturing employment grew by roughly 30 percent over the 20-year period, the manufacturing share of total MSA employment declined from 29.09 percent to 20 percent.

| Table I-2: Employment by Industry Sector, Minneapolis/St. Paul MSA, 1972 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| County | Agriculture | Mining | Construction | Manufacturing | T.C.U. | Wholesale Trade | Retail Trade | F.I.R.E | Services | Other | Total |
| Anoka | 45 | 15 | 1,567 | 9389 | 1229 | 745 | 6,503 | 510 | 3,209 | 82 | 23,294 |
| Carver | 28 | 13 | 185 | 1,237 | 134 | 168 | 1397 | 526 | 882 | 107 | 4,677 |
| Chisago | 7 | 57 | 139 | 595 | 67 | 96 | 743 | 124 | 255 | 49 | 2,132 |
| Dakota | 53 | 117 | 1,216 | 6,922 | 1,057 | 1,815 | 6,524 | 731 | 3,336 | 62 | 21,833 |
| Hennepin | 528 | 224 | 22,301 | 97,827 | 25,544 | 41,303 | 82,752 | 34,843 | 90,652 | 1,985 | 397,959 |
| Isanti | 2 | 31 | 83 | 373 | 163 | 61 | 698 | 118 | 687 | 9 | 2,225 |
| Ramsey | 312 | 71 | 7,588 | 70,674 | 15,838 | 12,918 | 33,963 | 14,177 | 38,022 | 587 | 194,150 |
| Scott | 26 | 24 | 439 | 2,356 | 456 | 378 | 1604 | 202 | 1286 | 108 | 6879 |
| Sherburne | 34 | 15 | 50 | 299 | 316 | 59 | 603 | 123 | 276 | 14 | 1,789 |
| Washington | 41 | 130 | 558 | 5162 | 782 | 360 | 2932 | 301 | 1467 | 42 | 11,775 |
| Wright | 15 | 2 | 264 | 945 | 287 | 213 | 1575 | 173 | 812 | 37 | 4,323 |
| St. Croix, WI | 9 | 5 | 180 | 1504 | 204 | 207 | 1978 | 171 | 1098 | 30 | 5,386 |
| Pierce, WI | 42 | 4 | 166 | 582 | 266 | 175 | 1472 | 191 | 765 | 4 | 3,667 |
| **Total MSA** | **1,142** | **708** | **34,736** | **197,865** | **46,343** | **58,498** | **142,744** | **52,190** | **142,747** | **3,116** | **680,089** |
| Source: County Business Patterns, 1972 | | | | | | | | | | | |

| Table I-2: Employment by Industry Sector, Minneapolis/St. Paul MSA, 1992 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| County | Agriculture | Mining | Construction | Manufacturing | T.C.U. | Wholesale Trade | Retail Trade | F.I.R.E | Services | Other | Total |
| Anoka | 256 | 9 | 4,623 | 21,793 | 2,539 | 3,676 | 18,808 | 2,033 | 19,328 | 20 | 73,085 |
| Carver | 124 | 9 | 744 | 9,142 | 541 | 454 | 2,369 | 791 | 4,932 | 27 | 19,133 |
| Chisago | 41 | 6 | 401 | 1,635 | 186 | 204 | 1,613 | 257 | 2,598 | 7 | 6,948 |
| Dakota | 709 | 96 | 4,843 | 21,784 | 5,418 | 8,896 | 26,141 | 6,266 | 27,225 | 59 | 101,437 |
| Hennepin | 2,110 | 98 | 24,157 | 113,020 | 53,184 | 61,130 | 124,296 | 66,350 | 245,178 | 546 | 690,069 |
| Isanti | 11 | 1 | 238 | 1,243 | 237 | 169 | 1,354 | 144 | 1,925 | 0 | 5,322 |
| Ramsey | 662 | 9 | 8,913 | 65,451 | 11,071 | 15,024 | 50,236 | 21,654 | 97,010 | 74 | 270,104 |
| Scott | 184 | 29 | 1,771 | 4,715 | 765 | 1,434 | 3,935 | 541 | 4,599 | 12 | 17,985 |
| Sherburne | 20 | 26 | 479 | 1,523 | 1,134 | 273 | 2,006 | 409 | 1,380 | 2 | 7,252 |
| Washington | 276 | 30 | 1,758 | 8,387 | 1,660 | 1,390 | 10,706 | 2,104 | 8,281 | 107 | 34,699 |
| Wright | 135 | 0 | 941 | 2,988 | 1,246 | 914 | 4,570 | 590 | 4,604 | 4 | 15,992 |
| St. Croix, WI | 167 | 1 | 530 | 4,403 | 723 | 536 | 3,635 | 841 | 3,732 | 0 | 14,568 |
| Pierce, WI | 55 | 9 | 299 | 1,266 | 343 | 442 | 2,210 | 359 | 1,877 | 5 | 6,865 |
| **Total MSA** | **4,750** | **323** | **49,697** | **257,350** | **79,047** | **94,542** | **251,879** | **102,339** | **422,669** | **863** | **1,263,459** |
| Source: County Business Patterns, 1992 | | | | | | | | | | | |

| Table I-3: Percent Change in County Employment by Industry Sector, Minneapolis/St. Paul MSA, 1972 - 1992 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **County** | **Agriculture** | **Mining** | **Construction** | **Manufacturing** | **T.C.U.** | **Wholesale Trade** | **Retail Trade** | **F.I.R.E** | **Services** | **Other** | **Total** |
| Anoka | 468.9% | -40.0% | 195.0% | 132.1% | 106.6% | 393.4% | 189.2% | 298.6% | 502.3% | -75.6% | 213.8% |
| Carver | 342.9% | -30.8% | 302.2% | 639.0% | 303.7% | 170.2% | 69.6% | 50.4% | 459.2% | -74.8% | 309.1% |
| Chisago | 485.7% | -89.5% | 188.5% | 174.8% | 177.6% | 112.5% | 117.1% | 107.3% | 918.8% | -85.7% | 225.9% |
| Dakota | 1237.7% | -17.9% | 298.3% | 214.7% | 412.6% | 390.1% | 300.7% | 757.2% | 716.1% | -4.8% | 364.6% |
| Hennepin | 299.6% | -56.3% | 8.3% | 15.5% | 108.2% | 48.0% | 50.2% | 90.4% | 170.5% | -72.5% | 73.4% |
| Isanti | 450.0% | -96.8% | 186.7% | 233.2% | 45.4% | 177.0% | 94.0% | 22.0% | 180.2% | -100.0% | 139.2% |
| Ramsey | 112.2% | -87.3% | 17.5% | -7.4% | -30.1% | 16.3% | 47.9% | 52.7% | 155.1% | -87.4% | 39.1% |
| Scott | 607.7% | 20.8% | 303.4% | 100.1% | 67.8% | 279.4% | 145.3% | 167.8% | 257.6% | -88.9% | 161.4% |
| Sherburne | -41.2% | 73.3% | 858.0% | 409.4% | 258.9% | 362.7% | 232.7% | 232.5% | 400.0% | -85.7% | 305.4% |
| Washington | 573.2% | -76.9% | 215.1% | 62.5% | 112.3% | 286.1% | 265.1% | 599.0% | 464.5% | 154.8% | 194.7% |
| Wright | 800.0% | -100.0% | 256.4% | 216.2% | 334.1% | 329.1% | 190.2% | 241.0% | 467.0% | -89.2% | 269.9% |
| St. Croix, WI | 1755.6% | -80.0% | 194.4% | 192.8% | 254.4% | 158.9% | 83.8% | 391.8% | 239.9% | -100.0% | 170.5% |
| Pierce, WI | 31.0% | 125.0% | 80.1% | 117.5% | 28.9% | 152.6% | 50.1% | 88.0% | 145.4% | 25.0% | 87.2% |
| **Total MSA** | **315.9%** | **-54.4%** | **43.1%** | **30.1%** | **70.6%** | **61.6%** | **76.5%** | **96.1%** | **196.1%** | **-72.3%** | **85.8%** |
| Source: County Business Patterns, 1972 and 1992 | | | | | | | | | | | |

The employment by sector tables also highlighted several trends at the county level. In Agricultural employment, Dakota County grew by more than 1,200 percent, increasing from 53 jobs in 1972 to 709 jobs in 1992. Hennepin County has emerged as the center of Agricultural employment, growing from 528 jobs in 1972 to 2,110 jobs in 1992. Only Sherburne county lost Agricultural jobs over the 20-year period.

Growth in Manufacturing employment occurred in several counties, including Dakota (14,862 new jobs), Hennepin (15,193 new jobs), Anoka (12,401 new jobs), and Carver (7,905 new jobs). Only Ramsey County lost manufacturing employment over the 20-year period, declining from 70,674 jobs to 65,451 jobs.

Service sector employment growth was particularly strong over the 20-year period, as stated above. Although each of the 13 MSA counties recorded significant gains in Service employment, growth was particularly strong in Anoka, Dakota, Hennepin, and Ramsey Counties, generating a total of 253,522 new service jobs. Service industry growth in the aforementioned counties equaled 91.97 percent of total MSA Service employment growth in 1992.

### Population Projections

Population projections for the MSA, developed by the state planning office, as reported in **Table I-4**, show that Dakota County will grow by an estimated 183,000 residents by 2020. Hennepin County is expected to grow by roughly 166,400 residents over the same time period. Other counties projected to grow include Washington (62,534 new residents), Ramsey (64,655 new residents), Anoka (90,289 new residents), and St. Croix (30,634 new residents). Assuming projected growth levels hold true, the MSA is expected to increase by more than 725,000 residents between 1990 and 2020, as the following table shows. The projections also forecast that the metropolitan counties of Hennepin and Ramsey will contain a decreasing share of total population, falling from 59 percent in 1990 to 54 percent in 2020.

**Table I-4 - MSA Population Trends, 1990 - 2020**

| County | 1990 | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 | % Change |
|---|---|---|---|---|---|---|---|---|
| Anoka | 243,641 | 264,570 | 281,870 | 296,830 | 310,660 | 323,440 | 333,930 | 37% |
| Carver | 47,915 | 53,080 | 57,390 | 61,220 | 64,960 | 68,810 | 72,440 | 51% |
| Chisago | 30,521 | 32,460 | 33,990 | 35,500 | 37,120 | 38,730 | 40,090 | 31% |
| Dakota | 275,227 | 313,450 | 347,220 | 377,520 | 406,150 | 434,050 | 459,190 | 67% |
| Hennepin | 1,032,431 | 1,076,410 | 1,110,300 | 1,136,140 | 1,157,890 | 1,178,830 | 1,198,860 | 16% |
| Isanti | 25,921 | 26,840 | 27,470 | 28,140 | 28,930 | 29,690 | 30,260 | 17% |
| Ramsey | 485,765 | 500,650 | 512,240 | 521,850 | 530,880 | 540,430 | 550,420 | 13% |
| Scott | 57,846 | 644,400 | 69,770 | 74,500 | 79,190 | 83,980 | 88,300 | 53% |
| Sherburne | 41,945 | 47,430 | 52,650 | 57,890 | 63,040 | 67,890 | 72,100 | 72% |
| Washington | 145,896 | 160,510 | 172,110 | 182,160 | 191,730 | 200,840 | 208,430 | 43% |
| Wright | 68,710 | 73,140 | 76,820 | 80,460 | 84,350 | 88,210 | 91,570 | 33% |
| St. Croix, WI | 50,251 | NA | 59,474 | NA | 70,632 | NA | 80,885 | 61% |
| Pierce, WI | 32,765 | 34,209 | 35,862 | 37,484 | 39,004 | 40,516 | 42,052 | 28% |
| **Total MSA** | **2,538,834** | **3,227,149** | **2,837,166** | **2,889,694** | **3,064,536** | **3,095,416** | **3,268,527** | **29%** |
| Source: Minnesota Planning, October, 1993 | | | | | | | | |

### Employment Projections

**Table I-5** outlines projections of total employment for the seven county metropolitan area between 1990 and 2020. Overall, the metro area is expected to add a total of roughly 353,700 jobs by 2020, with the majority created in Hennepin (157,500), Dakota (62,100), and Ramsey Counties (54,506). However, the table also indicates that annual rates of employment growth will be strongest in the suburban counties through 2020. Carver, Dakota, and Scott Counties are forecast to experience the highest annual rates of employment growth.

**Table I-5 - Seven County Employment Trends, 1990 - 2020**

| County | Census 1990 | Projections 2000 | 2010 | 2020 | Overall Change | Annual Change |
|---|---|---|---|---|---|---|
| Anoka | 82,956 | 102,260 | 111,740 | 114,770 | 38% | 1.09% |
| Carver | 18,230 | 24,430 | 28,970 | 30,630 | 68% | 1.74% |
| Dakota | 107,257 | 143,876 | 161,936 | 169,366 | 58% | 1.53% |
| Hennepin | 725,836 | 815,365 | 861,025 | 883,405 | 22% | 0.66% |
| Ramsey | 294,884 | 328,690 | 343,340 | 348,940 | 18% | 0.56% |
| Scott | 20,035 | 26,330 | 30,160 | 31,280 | 56% | 1.50% |
| Washington | 43,923 | 57,940 | 65,790 | 68,450 | 56% | 1.49% |
| **Metro Area** | **1,293,121** | **1,498,891** | **1,602,961** | **1,646,841** | **27%** | **0.81%** |
| Source: The Business Source, 1994 Economic Profile of the Twin Cities Area | | | | | | |

### Income Projections

The distribution of recent and projected per capita income in the 13-county MSA is outlined in **Table I-6**. The table shows that income growth is expected to occur in all 13 counties of the MSA between 1994 and 2000.

**Table I-6 - Recent & Projected per Capita Income, 13 County MSA, 1989 - 2000** *(Constant 1994 Dollars)*

| County | 1989 | 1994 | 2000 | % Change 1989-1994 | % Change 1994-2000 |
|---|---|---|---|---|---|
| Anoka | 19,344 | 19,684 | 22,080 | 1.8% | 12.2% |
| Carver | 23,052 | 22,830 | 26,507 | -1% | 16.1% |
| Chisago | 17,674 | 17,349 | 20,329 | -1.8% | 17.2% |
| Dakota | 23,957 | 24,300 | 26,974 | 1.4% | 11% |
| Hennepin | 27,574 | 29,689 | 31,489 | 7.7% | 6.1% |
| Isanti | 16,835 | 17,650 | 20,646 | 4.8% | 17% |
| Ramsey | 22,865 | 25,164 | 26,778 | 10.1% | 6.4% |
| Scott | 20,667 | 21,362 | 24,235 | 3.4% | 13.4% |
| Sherburne | 17,136 | 16,841 | 19,549 | -1.7% | 16.1% |
| Washington | 23,313 | 22,461 | 24,976 | -3.7% | 11.2% |
| Wright | 15,197 | 18,257 | 21,383 | 20.1% | 17.1% |
| St. Croix, WI | 20,904 | 22,095 | 25,897 | 5.7% | 17.2% |
| Pierce, WI | 17,144 | 18,292 | 21,758 | 6.7% | 18.9% |
| **Total MSA** | 24,092 | 25,301 | 27,353 | 5% | 8.1% |
| **Minnesota** | 21,059 | 22,025 | 24,176 | 4.6% | 9.8% |
| Source: Metropolitan Council, 1995. | | | | | |

The highest projected per capita incomes are located in the counties of Hennepin ($31,489), Ramsey ($26,778), Dakota ($26,974), and Carver ($26,507).

## Localized Impact Area

*Population*

**Table I-7** outlines population trends for the localized impact area.

**Table I-7 - Population of the Localized Impact Area**

| City | 1970 | 1980 | 1990 | 1993 | % Change 70 - 80 | % Change 80-90 |
|---|---|---|---|---|---|---|
| Minneapolis | 434,400 | 370,951 | 368,383 | 367,924 | -14.6% | -0.7% |
| St. Paul | 309,866 | 270,230 | 272,235 | 272,243 | -12.8% | 0.7% |
| Richfield | 47,231 | 37,851 | 35,710 | 35,538 | -19.9% | -5.7% |
| Bloomington | 81,970 | 81,831 | 86,335 | 86,918 | -0.2% | 5.5% |
| Eagan | 10,398 | 20,700 | 47,409 | 53,004 | 99.1% | 129.0% |
| Mendota Heights | 6,565 | 7,288 | 9,431 | 10,466 | 11.0% | 29.4% |
| Lilydale | 322 | 417 | 506 | 542 | 29.5% | 21.3% |
| **Localized MSA** | **890,752** | **789,268** | **820,009** | **826,635** | **-11.4%** | **3.9%** |
| Source: The Business Source, 1994 Economic Profile of the Twin Cities Area | | | | | | |

As the **Table I-7** shows, populations of Minneapolis and St. Paul decreased significantly in the 1970's at rates of 14.6 percent and 12.8 percent respectively. However, population loss in the downtown areas has slowed considerably since 1980, due primarily to the success of urban revitalization plans. Population growth in the suburbs has been far more rapid, particularly in Eagan, which grew in size from 10,389 in 1970 to 53,004 in 1993. Although the impact area lost 101,484 residents between 1970 and 1980, population growth re-started after 1980 as the area population grew by 37,360 additional residents.

*Income*

Median household income statistics for the seven community metro area, taken from the 1980 and 1990 census, are shown in **Table I-8**. The results show that the cities with the fastest growing incomes are Eagan, at 6.8 percent and Mendota Heights, at 6.0 percent. Median income in Eagan grew from $24,106 in 1979 to $46,612 in 1989. Across the MSA, median income growth amounted to 5.7 percent, growing from $22,475 in 1979 to $39,026 in 1989.

**Table I-8 - Median Household Income, Localized Impact Area, 1979 - 1989**

| City | 1979 | 1989 | Average Growth Rate |
|---|---|---|---|
| Minneapolis | $ 14,351 | $ 25,324 | 5.8% |
| St. Paul | $ 16,029 | $ 26,498 | 5.2% |
| Richfield | $ 20,424 | $ 32,405 | 4.7% |
| Bloomington | $ 26,083 | $ 41,736 | 4.8% |
| Eagan | $ 24,106 | $ 46,612 | 6.8% |
| Mendota Heights | $ 33,855 | $ 60,514 | 6.0% |
| Lilydale | NA | $ 40,096 | NA |
| **Localized MSA** | **$ 22,475** | **$ 39,026** | **5.7%** |
| Source: The Business Source, 1994 Economic Profile of the Twin Cities Area | | | |

The table also shows that Bloomington achieved the second highest median household income in the six-community area ($41,736) in 1989. It is interesting to note that, while median income growth in Minneapolis

and St. Paul increased by 5.8 percent and 5.2 percent respectively, their 1989 median incomes still fell to the bottom of the seven community median income spectrum.

*Employment*

Employment data for the localized impact area is shown in the following two tables. **Table I-9** provides information on employment by industry sector for the Cities of Minneapolis and St. Paul, while **Table I-10** covers the communities of Bloomington, Eagan, Lilydale, and Mendota Heights. The table below, which outlines employment trends for the Cities of Minneapolis and St. Paul between 1987 and 1993, breaks down employment by industry sector and highlights several interesting trends in the Twin Cites.

In Minneapolis, employment increased by 3,720 between 1987 and 1990 before falling by 4,962 between 1990 and 1993 as the national recession slowed economic output. Employment growth between 1987 and 1990 was robust, however, with seven out of eleven sectors showing an improvement. Between 1990 and 1993 however, nine out of eleven sectors declined. The strongest job creation sectors in Minneapolis between 1987 and 1993 included services, which grew by 11 percent and local government employment, which grew by almost 18 percent. Over the eight-year period, the service sector percentage of total employment increased from 30.2 percent to 33.7 percent.

As stated above, growth in services and local government employment over the 1987-1993 period mitigated the overall effect of the national recession on Minneapolis. Although the service sector in St. Paul expanded by over 10,000 jobs between 1987 and 1993, the city still lost 4,000 overall jobs. The hardest hit sectors included manufacturing and retail trade, which lost a total of 10,439 and 2,667 jobs respectively, over the eight-year period. By 1993, service employment had grown to 32 percent of total employment in St. Paul, increasing from 26 percent in 1987. Although manufacturing employment fell considerably over the eight-year period, the sector still contained roughly 21 percent of total employment in 1993. Considering that the state capitol is in St. Paul, it is interesting to note that the majority of state government employment, roughly 56 percent, is in Minneapolis. Even so, government employment occupies a greater share of total employment in St. Paul (18.7 percent) than in Minneapolis (17.2 percent), as of 1993.

**Table I-9 - Average Annual Employment by Industry Sector, Minneapolis & St. Paul, 1987 - 1993**

| Industrial Category | Minneapolis | | | St. Paul | | |
|---|---|---|---|---|---|---|
| | 1987 | 1990 | 1993 | 1987 | 1989 | 1993 |
| Agriculture & Mining | 389 | 336 | 360 | 329 | 435 | 360 |
| Construction | 6,827 | 5,826 | 5,334 | 6,308 | 5,516 | 4,799 |
| Manufacturing | 40,174 | 39,290 | 35,895 | 49,896 | 44,819 | 39,457 |
| T.C.U | 14,934 | 15,004 | 13,043 | 5,700 | 6,229 | 5,798 |
| Wholesale Trade | 17,339 | 14,917 | 12,559 | 6,868 | 6,702 | 6,584 |
| Retail Trade | 40,365 | 40,652 | 38,031 | 24,340 | 23,457 | 21,673 |
| F.I.R.E. | 33,029 | 33,516 | 32,819 | 15,375 | 13,786 | 13,509 |
| Services | 85,195 | 90,347 | 94,652 | 49,651 | 54,669 | 59,740 |
| Federal Government | 6,054 | 6,407 | 6,349 | 4,846 | 4,926 | 4,833 |
| State Government | 16,588 | 17,129 | 16,766 | 11,939 | 12,910 | 13,028 |
| Local Government | 21,368 | 22,558 | 25,212 | 15,613 | 16,493 | 17,136 |
| **Total Employment** | 282,262 | 285,982 | 281,020 | 190,865 | 189,942 | 186,917 |
| **Retail % of Total** | 14.3% | 14.2% | 13.5% | 12.8% | 12.3% | 11.6% |
| **Services % of Total** | 30.2% | 31.6% | 33.7% | 26.0% | 28.8% | 32.0% |
| **Government % of Total** | 15.6% | 16.1% | 17.2% | 17.0% | 18.1% | 18.7% |
| Source: Minnesota Department of Economic Security, Form ES-202 | | | | | | |

The following table (**I-10**) outlines employment trends for the five smaller communities in the localized impact area. The five communities, ranging in size from Lilydale (the smallest) to Bloomington (the largest), had a total employment of roughly 132,800 in 1994. Employment growth in the five communities was particularly strong, with over 23,500 new jobs created between 1990 and 1994. The strongest performing sectors over the 1990 - 1994 period included retail trade, services, and finance, insurance, and real estate (F.I.R.E.). Manufacturing and construction were the only sectors to decline over the four-year period. Bloomington and Eagan contained roughly 88 percent of 1994 total employment in the five communities.

| Table I-10: Employment by Industry Sector, Localized Impact Area, 1990 - 1994 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Bloomington | | | % Change | Mendota Heights | | | % Change | Eagan | | | % Change |
| Category | 1990 | 1992 | 1994 | 1990-1994 | 1990 | 1992 | 1994 | 1990-1994 | 1990 | 1992 | 1994 | 1990-1994 |
| Manufacturing | 14,893 | 11,947 | 11,368 | -23.7% | 2,224 | 2,555 | 1,216 | -45.3% | 4,964 | 8,064 | 8,928 | 79.9% |
| Construction | 2,072 | 2,238 | 2,010 | -3.0% | 169 | 74 | 110 | -34.9% | 611 | 676 | 788 | 29.0% |
| T.C.U. | 1,890 | 2,025 | 2,398 | 26.9% | 226 | 152 | 86 | -61.9% | 2,282 | 2,460 | 3,047 | 33.5% |
| Wholesale Trade | 8,553 | 7,094 | 8,323 | -2.7% | 747 | 861 | 1,068 | 43.0% | 2,239 | 2,596 | 4,527 | 102.2% |
| Retail Trade | 12,121 | 12,550 | 19,261 | 58.9% | 421 | 361 | 304 | -27.8% | 3,094 | 3,121 | 3,902 | 26.1% |
| F.I.R.E | 5,147 | 8,342 | 10,483 | 103.7% | 184 | 212 | 649 | 252.7% | 3,150 | 3,208 | 3,604 | 14.4% |
| Service | 23,287 | 23,869 | 28,981 | 24.5% | 1,064 | 1,261 | 1,456 | 36.8% | 2,863 | 4,051 | 3,849 | 34.4% |
| Government | 3,305 | 3,295 | 3,504 | 6.0% | 230 | 607 | 642 | 179.1% | 1,502 | 1,914 | 2,049 | 36.4% |
| **Total Employment** | **71,268** | **71,360** | **86,328** | **21.1%** | **5,265** | **6,083** | **5,531** | **5.1%** | **20,705** | **26,090** | **30,694** | **48.2%** |
| **Services % Total** | **32.7%** | **33.4%** | **33.6%** | | **20.2%** | **20.7%** | **26.3%** | | **13.8%** | **15.5%** | **12.5%** | |

| Category | Lilydale/Mendota | | | % Change | Richfield | | | % Change | Six Community Totals | | | % Change |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1990 | 1992 | 1994 | 1990-1994 | 1990 | 1992 | 1994 | 1990-1994 | 1990 | 1992 | 1994 | 1990 - 1994 |
| Manufacturing | 0 | 100 | 0 | 0.0% | 581 | 221 | 169 | -70.9% | 22,662 | 22,887 | 21,681 | -4.3% |
| Construction | 0 | 0 | 0 | 0.0% | 575 | 252 | 240 | -58.3% | 3,427 | 3,240 | 3,148 | -8.1% |
| T.C.U. | 0 | 0 | 0 | 0.0% | 327 | 375 | 279 | -14.7% | 4,725 | 5,012 | 5,810 | 23.0% |
| Wholesale Trade | 0 | 0 | 0 | 0.0% | 687 | 1,242 | 861 | 25.3% | 12,226 | 11,793 | 14,779 | 20.9% |
| Retail Trade | 191 | 166 | 95 | -50.3% | 4,534 | 3,818 | 3,961 | -12.6% | 20,361 | 20,016 | 27,523 | 35.2% |
| F.I.R.E | 0 | 0 | 0 | 0.0% | 944 | 782 | 746 | -21.0% | 9,425 | 12,544 | 15,482 | 64.3% |
| Service | 27 | 0 | 147 | 444.4% | 2,918 | 2,810 | 2,526 | -13.4% | 30,159 | 31,991 | 36,959 | 22.5% |
| Government | 0 | 0 | 0 | 0.0% | 1,171 | 1,082 | 1,149 | -1.9% | 6,208 | 6,898 | 7,344 | 18.3% |
| **Total Employment** | **301** | **557** | **332** | **10.3%** | **11,737** | **10,582** | **9,931** | **-15.4%** | **109,276** | **114,672** | **132,816** | **21.5%** |

Source: Metropolitan Council

Employment growth in Bloomington was particularly strong over the four-year period, increasing from 71,268 in 1990 to 86,328 in 1994. Job creation in the retail trade and F.I.R.E sectors between 1990 and 1994 accounted for 82 percent of the roughly 15,000 new jobs created. The Mall of America, which opened in August of 1992, was primarily responsible for the creation of 7,140 new retail trade jobs over the four year period. Growth in F.I.R.E. employment was primarily attributed to renewed office leasing activity in the I-494 corridor since 1990. Manufacturing was the only sector to exhibit significant decline, falling from 14,893 to 11,368 by 1994.

Job creation was also strong in Eagan, which added almost 10,000 jobs by 1994. The majority of job growth in Eagan was concentrated in wholesale trade and manufacturing, which grew by 2,288 and 3,964 respectively, between 1990 and 1994. The share of total Eagan employment occupied by manufacturing and wholesale trade increased from 34.8 percent in 1990 to 43.8 percent in 1994. Employment creation in the communities of Lilydale and Richfield was minimal over the four year period. Mendota Heights lost employment between 1990 and 1994, falling from 11,737 to 9,931.

*Growth Projections*

Projections for the localized impact area through 2020 were generated by the Metropolitan Council. The forecasts, which cover population, households, and total employment, are contained in the following three tables. Population forecasts for the six communities, contained in **Table I-11**, indicate that population in the six communities will increase from 820,006 in 1990 to 885,750 in 2020, an 8 percent overall increase. On an annual basis, the localized impact area will grow by less than 1 percent per year through 2020. The forecasts project that Minneapolis will experience slight population increases through 2020, increasing from 368,383 in 1990 to 375,000 in 2020. Population growth in St. Paul is expected to be slightly stronger, increasing from 272,235 in 1990 to 285,500 in 2020. Overall, population in Minneapolis and St. Paul is expected to increase by roughly 3.1 percent over the next 25 years.

**Table I-11 - Population Forecast for Localized Impact Area**

| City | Census 1990 | Projected 2000 | Projected 2010 | Projected 2020 | Projected Change | Annual Change |
|---|---|---|---|---|---|---|
| Minneapolis | 368,383 | 370,500 | 373,000 | 375,000 | 2 % | 0.06% |
| St. Paul | 272,235 | 275,000 | 280,000 | 285,500 | 5% | 0.16% |
| Richfield | 35,710 | 36,500 | 38,100 | 38,300 | 7% | 0.23% |
| Bloomington | 86,335 | 91,500 | 97,500 | 102,000 | 18% | 0.56% |
| Eagan | 47,409 | 63,500 | 68,500 | 71,000 | 50% | 1.36% |
| Mendota Heights | 9,381 | 10,800 | 12,150 | 13,300 | 42% | 1.17% |
| Lilydale | 553 | 600 | 650 | 650 | 18% | 0.54% |
| **Localized MSA** | **820,006** | **848,400** | **869,900** | **885,750** | **8%** | **0.26%** |
| Source: Metropolitan Council, Population, Household and Employment Forecasts, Sept. 1, 1994 | | | | | | |

Population growth rates in the suburban communities of Mendota Heights and Eagan are expected to be the strongest in the impact area, with overall increases of 42 percent and 50 percent respectively. Eagan is expected to grow from 47,049 in 1990 to 71,000 in 2020, while Mendota Heights is expected to grow from 9,381 to 13,300 over the same time period. As a result of significant growth in the 1980's, Bloomington emerged as Minnesota's third largest municipality. Population growth in Bloomington is forecast to increase from 86,335 to 102,000 over the 25 year period. Adams and VanDrasek noted that Bloomington had less than 1 percent of its land base available for new residential development in 1990, implying that population growth will slow as remaining housing sites are developed.

**Table I-12** shows household projections for the localized impact area. The forecasts indicate that household growth will be strongest in the community of Eagan, which will expand by roughly 14,500 households by 2020. Mendota Heights is expected to achieve the second highest amount of household growth, increasing by roughly 2,550 households by 2020. Minneapolis and St. Paul are forecasted to experience the lowest

percentage increases in household growth, improving by 2 percent and 5 percent respectively. Although Lilydale is forecasted to achieve 38 percent household growth by 2020, the community will grow by only 113 households over the time period.

**Table I-12 - Projected Households of Localized Impact Area**

| City | Census 1990 | Projected 2000 | Projected 2010 | Projected 2020 | Projected Change | Annual Change |
|---|---|---|---|---|---|---|
| Minneapolis | 160,682 | 161,500 | 162,500 | 163,500 | 2% | 0.06% |
| St. Paul | 110,249 | 112,000 | 114,000 | 116,000 | 5% | 0.17% |
| Richfield | 15,551 | 16,000 | 16,200 | 16,300 | 5% | 0.16% |
| Bloomington | 34,488 | 36,500 | 39,000 | 40,000 | 16% | 0.50% |
| Eagan | 17,427 | 25,000 | 29,000 | 32,000 | 84% | 2.05% |
| Mendota Heights | 3,302 | 4,150 | 5,000 | 5,850 | 77% | 1.92% |
| Lilydale | 297 | 400 | 410 | 410 | 38% | 1.08% |
| **Total:** | **341,996** | **355,550** | **366,110** | **374,060** | **9%** | **0.30%** |

Source: Metropolitan Council, Population, Household and Employment Forecasts, Sept. 1, 1994

Employment forecasts for the six-community impact area, shown in **Table I-13**, indicate that the area's employment base will grow from 569,259 in 1990 to 623,100 in 2020, reflecting a 0.3 percent annual growth. Future employment growth is forecast to be concentrated in three communities, Bloomington, Eagan, and Minneapolis, accounting for 46,600 new jobs, or roughly 86 percent of forecasted total employment by 2020. Forecasted job creation in St. Paul through 2020 is expected to be about 6,500. Richfield is forecasted to experience minimal job creation over the same period, amounting to roughly 750 new jobs through 2020.

**Table I-13 - Employment Forecast for Localized Impact Area**

| City | Census 1990 | Projected 2000 | Projected 2010 | Projected 2020 | Projected Change | Annual Change |
|---|---|---|---|---|---|---|
| Minneapolis | 278,314 | 282,500 | 285,500 | 287,000 | 3% | 0.10% |
| St. Paul | 172,504 | 176,500 | 178,000 | 179,000 | 4% | 0.12% |
| Richfield | 10,844 | 10,900 | 11,600 | 11,600 | 7% | 0.22% |
| Bloomington | 75,742 | 88,800 | 93,500 | 95,000 | 25% | 0.76% |
| Eagan | 26,000 | 36,300 | 40,300 | 41,800 | 61% | 1.60% |
| Mendota Heights | 5,805 | 7,550 | 8,400 | 8,650 | 49% | 1.34% |
| Lilydale | 50 | 50 | 50 | 50 | 0% | 0.00% |
| **Localized MSA** | **569,259** | **602,600** | **617,350** | **623,100** | **9%** | **0.30%** |

Source: Metropolitan Council, Population, Household and Employment Forecasts, Sept. 1, 1994

*AIR SERVICE AND THE MINNESOTA ECONOMY*

The Minnesota Legislature, during its 1996 session, mandated that the Metropolitan Airports Commission contract with the University of Minnesota to prepare an aviation service and facilities analysis to include:

- a description of various types and levels of aviation service and an examination of the relationship between aviation service levels and the level of commercial and industrial activity in the state; and
- an examination of the relationship between available level of aviation service and the relocation of commercial and industrial enterprises to the state.

The interaction between Minnesota industry sectors and the air transportation sector -- including air transportation, air courier services, non-scheduled air transportation, airports, flying fields and airport terminal services -- was analyzed. The research primarily utilized applications of input-output analysis and the Minnesota IMPLAN model. The most recent year for which Minnesota IMPLAN model database has been developed is 1993. Additional sources were economic forecasts from the U. S. Bureau of Economic Analysis and the Bureau of Labor Statistics, data on both domestic and international air cargo shipments, data from domestic and international traveler surveys, as well as published literature on industry location and business air travel trends.

Six major findings from the study are (see Air Service and the Minnesota Economy, Center for Transportation Studies, University of Minnesota, January 1997):

- Top purchasers of air transportation: Four industry sectors in Minnesota -- intra-industry transfers in the air transportation sector, business associations, management and consulting services and the U. S. Postal Service -- are the largest purchasers of air transportation services. All 34 industry sectors in the state spent $383 million for air transportation in 1993, compared to total purchases of $86.5 billion for all goods and services.

- Traveler expenditure impacts: Of the air travel in and out of Minnesota in 1993, 59 percent was business travel and 41 percent was leisure, or non-business, travel. (This compares to a figure of 41 percent business travel throughout the country in 1993.) Also, it is estimated that in 1993 non-resident business travelers to the state spent $1.2 billion on such purchases as lodging, food and car rental, while leisure travelers spent $724 million. It is also estimated that domestic and international travelers supported 45,000 employees statewide in 1993.

- Air cargo: Seven industry sectors accounted for most of the outbound domestic air shipments in 1993, including electronic data processing equipment, miscellaneous printed matter, books, fabricated metal products, refrigeration equipment, construction machinery and miscellaneous electronic components. Three of these sectors -- computer products, printed matter and electrical equipment -- were deemed important both for the value of the product shipped and the purchases from the air transportation sector.

- Purchases by the air transportation sector. An analysis of direct purchases by the air transportation sector from other industries in the state indicate that 39 industry sectors accounted for 98.7 percent of air transportation sector purchases in 1993, for $870 million. The IMPLAN model impact analysis indicates that long-term employment associated with air transportation purchases was 56,900 in 1993.

- Economic forecasts. Purchases of air transportation increase at a higher rate than other transportation modes and at a higher rate than total industry purchases. An analysis of the Bureau of Economic Analysis (BEA) economic forecasts for the state indicates the Air Transportation GSP, which includes sales to consumers, government, investment and net change in inventory, will increase faster than GSP for all transportation sectors through the year 2020; it is estimated that the GSP for all transportation sectors will remain relatively flat during this time. The BEA forecasts for Minnesota also indicate Air Transportation GSP increasing at a higher rate than forecast passenger originations under the optimistic forecasts for the MSP Alternative.

- Industry need for business air travel. Annual surveys by the Air Transport Association indicate business air travel, as a share of total air travel, has steadily decreased since 1977. However, an analysis of historical growth of air passenger originations at Minneapolis-St. Paul International Airport, compared to nationwide shares, indicates that total business travel has continued to increase during most years since 1977. Based upon a 1993 survey, business travel accounted for 59 percent of passengers at MSP, compared to 48 percent of passengers nationwide.

The research for this study identified five major areas where additional investigation and analysis could provide useful information on the importance of air transportation to Minnesota. These include (1) a study of the impact of rapidly rising purchases of air transportation by certain industry sectors; (2) the role of air transportation on the location and growth of high-growth service and high-technology firms; (3) the role of

business associations as a major user of air transportation; (4) the role of air cargo and small package service in high growth industries; and (5) the impact of telecommunications on air travel in Minnesota.

## I.1 MSP Alternative

### I.1.1 Economic Impacts — MSP Alternative

#### Direct and Indirect Employment

Employment data from 40 large U.S. airports were combined with enplanement data from the Federal Aviation Administration to generate ratios of direct employment to origin/destination, connecting, and international enplanements through regression analysis. The methodology was based on previous studies conducted by the al-Chalabi Group, Inc., which established the statistical validity of enplanement to direct employment ratios. The 1990 base year ratios for each enplanement category are outlined in **Table I-14**.

**Table I-14 - Base Year Employment per Enplanement Ratios**

| Type of Enplanement | Employment per Enplanement |
|---|---|
| Origin/Destination | 0.001529 |
| Connecting | 0.001348 |
| International | 0.005459 |
| Source: al-Chalabi Group, Inc. and ERA | |

The model also incorporated an adjustment for airline industry productivity increases over the next 25 years as technological innovations reduce the number of jobs per enplanement. Productivity adjustments, expressed as annual percentage rates, are based on the assumption that airline industry productivity will continue, although at a rate slower then experienced during the 1970's and 1980's, when the industry made dramatic improvements in productivity. **Table I-15** outlines specific annual productivity adjustments used to forecast direct airport employment over the 1989 to 2020 period.

**Table I-15 - Airline Industry Annual Productivity Adjustments, 1989 - 2020**

| Type of Enplanement | 1989-2001 | 2002-2010 | 2011-2020 |
|---|---|---|---|
| Origin/Destination | 1.71% | 1.15% | 0.82% |
| Connecting | 1.71% | 1.15% | 0.82% |
| International | 1.71% | 1.71% | 1.71% |
| Source: al-Chalabi Group, Inc. and ERA | | | |

The productivity adjustments, shown above, are applied to the base year 1990 Jobs per Enplanement ratios in **Table I-14** to generate ratios for 2001, 2010, and 2020, which are shown in **Table I-16**.

**Table I-16 - Adjusted Employment per Enplanement Ratios, 2000 to 2020**

| Type of Enplanement | 2000 | 2010 | 2020 |
|---|---|---|---|
| Origin/Destination | 0.001332 | 0.001186 | 0.001093 |
| Connecting | 0.001174 | 0.001046 | 0.000963 |
| International | 0.004755 | 0.004002 | 0.003368 |
| Source: ERA | | | |

The ratios were applied to MSP enplanement forecasts in order to generate direct employment estimates for each alternative development scenario. **Table I-17** outlines forecasted enplanements by category for the no-action and expansion scenarios.

**Table I-17 - Forecast Enplanement Activity, Alternative MSP Development Scenarios, 2000 - 2020**

| | No-Action Option | | | MSP Option | | |
|---|---|---|---|---|---|---|
| Year | O/D | Connection | Int'national | O/D | Connection | Int'national |
| 2000 | 6,118,000 | 4,848,000 | 238,000 | 6,118,000 | 4,848,000 | 238,000 |
| 2005 | 6,625,000 | 5,248,000 | 335,000 | 6,625,000 | 5,248,000 | 335,000 |
| 2010 | 7,105,000 | 5,624,000 | 432,000 | 7,105,000 | 5,624,000 | 432,000 |
| 2015 | 7,421,000 | 5,833,000 | 552,000 | 7,421,000 | 5,872,000 | 552,000 |
| 2020 | 7,731,000 | 5,508,000 | 672,000 | 7,731,000 | 6,114,000 | 672,000 |
| Source: HNTB | | | | | | |

In **Table I-18**, using the jobs per enplanement ratios, the following estimates of direct employment for the MSP expansion scenario are returned.

**Table I-18 - Direct and Indirect Employment Under MSP Alternative**

| Category | 2000 | 2010 | 2020 |
|---|---|---|---|
| Direct Employment | 14,973 | 16,041 | 16,601 |
| Indirect Employment | 17,600 | 18,900 | 19,600 |
| Source: ERA | | | |

**Table I-18** excludes roughly 10,000 Northwest Airlines employees involved in heavy aircraft maintenance and reservations on MSP property. ERA ascertained that Northwest Airlines maintains roughly 4,000 reservation jobs and 6,000 aircraft overhaul/heavy maintenance jobs on-site. The reservation positions were located on-site after Northwest absorbed Republic in 1986. Discussions with Northwest Airlines indicated that the roughly 10,000 positions are not directly tied to flight operations at MSP and could go elsewhere if the MSP expansion or new airport construction scenarios are followed.

Forecasts of indirect employment under the MSP expansion option were generated with BEA RIMS II multipliers. The multiplier effect provides an indication of employment generated by direct employment at MSP.

### Direct and Indirect Wages

The following table outlines direct and indirect wages generated by direct employment at MSP. Direct earnings are based on an average wage of $35,000, derived from 1993 employment and total wage data for the Twin Cities metro area, as defined by the Minnesota State Employment Office. Indirect wages were generated from direct wages with BEA RIMS II multipliers. **Table I-19** highlights direct and indirect wages for the MSP expansion scenario.

**Table I-19 - Direct and Indirect Wages Under MSP Alternative**

| Category | 2000 | 2010 | 2020 |
|---|---|---|---|
| Direct Wages | $524,067,798 | $561,445,353 | $581,018,224 |
| Indirect Wages | $424,914,171 | $455,219,892 | $471,089,576 |
| Source: ERA | | | |

### Construction Period Impacts

Projected construction period impacts generated by expansion of MSP are based on preliminary development cost estimates. The cost estimate for MSP 2020 Concept Plan and 2010 LTCP is currently $3.044 billion and $803 million, respectively. Using that estimate, the 2020 Concept Plan would create roughly 36,400

construction-person-years, which is equal to roughly 1,820 average construction jobs and roughly $68 million in direct wages per year over a 20-year construction period.

The indirect effects of construction were generated using BEA RIMS II employment and wage multipliers for new construction in Minnesota. Application of the RIMS II multipliers to estimates of direct employment and wages indicates that construction for the 2020 Concept Plan would create an average of roughly 2,600 indirect jobs and $95 million in wages per year in the state economy over the 20-year construction forecast. Construction would also generate fiscal impacts; expenditures for materials as well as taxes on construction worker income would generate revenue for the state, including roughly $60 million in income taxes over the 20-year period and between $78 million and $90 million in sales taxes on airport construction materials.

The 2010 LTCP would create an average of roughly 1,400 indirect jobs and $50 million in wages per year in the state economy over the 10-year construction forecast. Construction would also generate fiscal impacts; expenditures for materials as well as taxes on construction worker income would generate revenue for the state, including roughly $16 million in income taxes over the 10-year period and between $20 million and $24 million in sales taxes on airport construction materials.

### Tax Capacity

The development of the MSP Alternative would result in the acquisition of taxable property and, therefore, a reduction in tax capacity and tax revenues for the affected jurisdictions. The numbers of residences and businesses to be displaced are discussed in Section V.T (Social).

**Table I-20** and **Table I-21** detail the tax capacity of properties that would be acquired in 2020 and 2010 within each affected jurisdiction. Tax capacity figures reflect the estimated market value of a property multiplied by rates for different classes of properties, such as residential homestead, agriculture, commercial and industrial. There are 25 such class rates that have been established by the Minnesota Legislature. The percentage of tax capacity for properties to be acquired in each jurisdiction, compared to the total tax capacity of the jurisdiction, is also shown. Tax revenues that would be lost because of property acquisition are calculated by multiplying the tax capacity by the tax rates, which differ for each county, city within a county, school district and special taxing districts.

**Table I-20 - Tax Capacity Impacts of MSP 2020 Concept Plan[(1)]**

| Jurisdiction | Tax Capacity Lost | Percent of Total Tax Capacity | Annual Tax Revenues Lost |
|---|---|---|---|
| Bloomington | $3,567,478 | 3.44 | $4,396,472 |
| Minneapolis | $4,163,900 | 1.31 | $63,866 |
| Richfield | $4,030,300 | 19.66 | $177,339 |
| Total | $11,761,678 | 8.14 | $4,637,677 |
| (1) Figures calculated using 1994 assessed valuation and 1995 tax rates. | | | |
| Source: Hennepin County Assessor | | | |

Table I-21 - Tax Capacity Impacts of MSP 2010 LTCP[1]

| Jurisdiction | Tax Capacity Lost | Percent of Total Tax Capacity | Annual Tax Revenues Lost |
|---|---|---|---|
| Bloomington | $3,567,478 | 3.44 | $4,396,472 |
| Minneapolis | 0 | 0 | 0 |
| Richfield | $1,788,600 | 8.73 | $84,876 |
| Total | $5,356,078 | 6.09 | $4,481,348 |
| [1] Figures calculated using 1994 assessed valuation and 1995 tax rates. | | | |
| Source: Hennepin County Assessor | | | |

### Rich Acres Golf Course

Rich Acres Golf Course is located on property owned by the Metropolitan Airports Commission, immediately east of TH 77. The recreation complex, which includes two golf courses and a driving range, 10 baseball and softball fields, an archery range and community gardens, would be removed to allow development of the MSP Alternative. (Park and recreation area impacts are discussed in Section R.)

The land is leased to the city of Richfield under terms of a 1978 lease, which includes a provision that the "Commission at any time during the lease term or renewal term shall have the right to retake possession of all or portions of the premises ... for airport purposes based upon a real and present need for use of such land by Commission for aeronautical or other purposes directly relating to the development and use of the airport.

The lease provides for an initial lease rate of $1 (one dollar), plus annual payments to the Commission equal to 33 1/3 percent of net revenues. Two figures factor into the net revenues, including operating expenses and the annual portion of the amortized capital investment to design and construct the golf course.

In addition, the lease provides that, if the Commission retakes possession of the land during the 30-year term, then the Commission "shall pay to the City the amount of unamortized capital investment, if any, (that) then remains outstanding." The unamortized capital investment as of November 30, 1997 was $837,373, according to Richfield city records.

In figures provided by the city of Richfield, gross revenues from golf course operation in 1996 were $1,483,796; and in 1995, $1,353,859. After expenses and amortization of the capital investment are deducted, net revenues in 1996 were $247,217 and in 1995, $52,774.

It is noted that the city of Richfield constructed the 10 baseball and softball fields, at a cost of about $58,000. This expense, in contrast to the unamortized capital investment in the golf course facilities, is not amortized and, under terms of the lease with MAC, would not be repaid to the city if the area were to be used for airport development.

If Richfield decided to replicate the golf courses, it could cost an estimated $4-5 million in development costs, exclusive of land costs. This estimate is based on costs to develop golf courses now underway or contemplated in the region. Land costs cannot be estimated with any degree of certainty, as they vary widely throughout the region.

### Development Costs

The estimated cost of the MSP 2010 LTCP is $803 million and the MSP 2020 Concept Plan is $3.15 billion in 1995 dollars, except for costs of mitigation. The development costs include acquisition of property, construction of airfield and related facilities, the terminal costs, construction of roads and ancillary airport facilities. The estimated costs are based on standardized cost factors used in other capital projects, including airport projects, and are detailed in **Table I-24**.

### I.1.2 Mitigation Measures — MSP Alternative

The tax capacity lost because of the removal of dwelling units likely could not be replaced, as there is little undeveloped land available for infill construction of homes and apartments. This situation affects properties in Minneapolis and Richfield. Tax capacity for businesses removed for airport development in the cities of Bloomington and Richfield, potentially could be replaced if land planned for commercial and industrial uses is available in close proximity to major highways.

Under terms of the lease between MAC and the City of Richfield, the cost of the unamortized capital investment for design and construction of Rich Acres Golf Course would be paid by MAC.

## I.2 No Action Alternative

### I.2.1 Economic Impacts — No Action Alternative

Using the ratios of direct employment to enplanements generated in the previous section, the estimates of direct and indirect employment under the No Action Alternative are shown in **Table I-22**.

**Table I-22 - Direct and Indirect Employment Under No Action Alternative**

| Category | 2000 | 2010 | 2020 |
|---|---|---|---|
| Direct Employment | 14,973 | 16,041 | 16,071 |
| Indirect Employment | 17,637 | 18,895 | 18,866 |
| Source: ERA | | | |

Under the No Action Alternative, direct employment would increase from 2000 to 2010 and only slightly by 2020 as total enplanements fall in response to restricted capacity. The table excludes roughly 10,000 Northwest Airlines employees involved in heavy aircraft maintenance and reservations on MSP property. MAC ascertained that Northwest Airlines maintains roughly 4,000 reservation jobs and 6,000 aircraft overhaul/heavy maintenance jobs on-site. Preliminary discussions with Northwest Airlines indicated that the 10,000 related jobs are likely to remain at MSP under the No Action Alternative.

Forecasts of indirect employment under the no-build option were generated with BEA REMS II multipliers. The multiplier effect provides an indication of indirect employment generated by direct employment at MSP.

#### Direct and Indirect Wages

The following table outlines direct and indirect wages generated by direct employment at MSP. Direct earnings are based on an average wage of $35,000, derived from 1993 employment and total wage data for the Twin Cities metro area, as defined by the Minnesota State Employment Office. Indirect wages were generated from direct wages with BEA RIMS II multipliers. **Table I-23** highlights direct and indirect wages for the No Action Alternative.

**Table I-23 - Direct and Indirect Wages Under No Action Alternative**

| Category | 2000 | 2010 | 2020 |
|---|---|---|---|
| Direct Wages | $524,067,798 | $561,445,353 | $560,586,124 |
| Indirect Wages | $424,914,171 | $455,219,892 | $454,523,229 |
| Source: ERA | | | |

#### Construction Period Impacts

The No Action Alternative would create an average of roughly 440 indirect jobs and $16 million in wages per year in the state economy over the 10-year construction period. Construction would also generate fiscal

impacts; expenditures for materials as well as taxes on construction worker income would generate revenue for the state, including roughly $5 million in income taxes over the 10-year period and about $8 million in sales taxes on airport construction materials.

**Development Costs**

The estimated cost of the committed projects in the MAC 1995-1998 Capital Improvement Programs unrelated to the implementation of the new north-south runway is $255 million. The projects are listed in Section III.

## I.3 Summary of Economic Impacts

A summary of the economic impacts of the alternatives is as follows:

**Table I-24 - Summary of Economic Impacts**

| | | MSP 2020 | MSP 2010 | No Action 2010/2020 |
|---|---|---|---|---|
| Total jobs on airport | | 16,601 | 16,041 | 16,041/16,071 |
| Total annual direct and indirect wages generated by airport jobs | | $1.05 billion | $1.02 billion | $1.02 billion |
| Impact of construction | Jobs | 36,400 | 9,600 | 3,100 |
| | Wages | $1.71 billion | $0.45 billion | $0.14 billion |
| | Economic Output | $3.42 billion | $0.90 billion | $0.29 billion |
| Estimated facilities' cost of alternative (millions of 1995 dollars) | | $3,043 | $803 | $255 |
| Percentage of tax capacity lost by affected municipalities. (Total) | | 8.14% | 6.09% | 0 |

The loss of tax revenue by the affected municipalities is unavoidable.

A preliminary estimate of costs necessary to develop the MSP 2010 LTCP and 2020 Concept Plan is given in **Table I-24**. The total cost of facilities includes a 25% contingency applied to the subtotal of the facilities' costs.

## Table I-24 - Total Airport Development Costs - MSP 2020 Concept Plan
## Preliminary (1995 $)

| ELEMENT | Total Cost 2010 | Total Cost 2020 [1] |
|---|---|---|
| PROPERTY ACQUISITION | | |
| Acquisition, Demolition and Relocation for runway | $46,000,000 | $46,000,000 |
| Acquisition, Demolition and Relocation -Terminal | | 3,000,000 |
| Acquisition, Demolition and Relocation -Highways | | 9,500,000 |
| TOTAL PROPERTY ACQUISITION COSTS | $46,000,000 | $58,500,000 |
| AIRFIELD COSTS | | |
| Committed/ Planned Improvements | included in 1995-1997 CIP | |
| Runways and Taxiways | 262,500,000 | 262,500,000 |
| Tunnels | | 40,000,000 |
| Runway Holding/Deicing Pads | 27,000,000 | 27,000,000 |
| Miscellaneous Construction | 2,800,000 | |
| TOTAL AIRFIELD COSTS | $292,300,000 | $329,500,000 |
| TERMINAL AREA COSTS | | |
| TERMINAL COSTS | | |
| Phased Terminal Improvements | 167,500,000 | 167,500,000 |
| Demolition | | 33,000,000 |
| Terminal Building(s) | | 117,000,000 |
| FIS | included in 1995-1997 CIP | |
| Concourses | | 215,000,000 |
| People Mover Systems | 16,500,000 | 112,000,000 |
| People Mover Tunnel/Stations | | 159,000,000 |
| Central Plant | | 26,000,000 |
| Other Systems (baggage, loading bridges, security) | | 175,000,000 |
| Subtotal | $184,000,000 | $1,004,000,000 |
| PARKING COSTS | | |
| Commercial Vehicle Parking | | 84,000,000 |
| Public Parking | 31,500,000 | 111,000,000 |
| Curbs | | 10,000,000 |
| Subtotal | $31,500,000 | $205,000,000 |
| APRONS/TAXIWAYS | | |
| Terminal Aprons/Taxiways | 84,800,000 | 120,000,000 |
| Subtotal | $84,800,000 | $120,000,000 |
| | | |
| TOTAL TERMINAL AREA COSTS | $283,800,000 | $1,329,500,000 |
| ROADWAY COSTS | | |
| Terminal Circulation Roadways | | $42,000,000 |
| HIGHWAYS | | |
| 28th Avenue Interchange Reconstruction | | 1,000,000 |
| Reconstruction of TH 62 East of TH 77 | | 6,000,000 |
| Reconstruction of TH 62 between TH 77 & I-35 W Ramps | | 9,000,000 |
| TH62/77 and 66th St. Interchange Reconstruction | 5,400,000 | 27,000,000 |
| TH 77 Reconstruction | | 12,000,000 |
| Airport Frontage Rd. between 66th St. & 24th Avenue | 3,000,000 | 3,000,000 |
| East Side Access | | 1,000,000 |
| Subtotal | $8,400,000 | $59,000,000 |
| TOTAL ROADWAY COSTS | $8,400,000 | $101,000,000 |
| OTHER FACILITY COSTS | | |
| Airline Maintenance | | 397,000,000 |
| Air Cargo | | 111,000,000 |
| General Aviation | | 1,000,000 |
| Airport Administration and Maintenance, Heating and Cooling | 11,900,000 | 26,000,000 |
| Fuel Facilities | | 17,000,000 |
| Air Mail Facility | | 25,000,000 |
| Flight Kitchen | | 18,000,000 |
| Rental Car Service Facilities | | 65,000,000 |
| Airport Rescue and Firefighting Stations | | 0 |
| FAA Facilities (tower, approach control, navaids) | | 42,000,000 |
| TOTAL OTHER FACILITY COSTS | $11,900,000 | $702,000,000 |
| SUB TOTAL* | $642,400,000 | $2,520,500,000 |
| Design (7%) | $44,970,000 | $176,440,000 |
| Program Management /Inspection(8%) | $51,390,000 | $201,600,000 |
| Cost Contingencies (10%) | $64,240,000 | $252,050,000 |
| GRAND TOTAL FOR FACILITIES * | $803,000,000 | $3,150,590,000 |
| MITIGATION COSTS | | |
| Noise Mitigation | 168,000,000 | 168,000,000 |
| Other Mitigation | (Under Study) | (Under Study) |
| TOTAL MITIGATION COSTS | $168,000,000 | $168,000,000 |

[1] The 2020 costs include the 2010 costs.

* EXCLUSIONS:

1. Local/State taxes
2. Abatement and/or Toxic Waste Inspection or Reports
3. Airport tenant relocations
4. Tenant improvements (airline, concessions, administration)
5. Noise mitigation does not include potential costs for acquisition and community stabilization

# J. Energy Supply and Natural Resources

### Energy and Natural Resources Considered

Fuel constitutes the primary energy and natural resource potentially impacted by the airport alternatives and no other unusual materials or those in short supply are expected to be needed. Fuel consumption by aircraft during ground operations and between the airport and other airport origins and destinations is considered. Ground operations include taxiing and queuing. Flight operations include takeoff, climb, cruise, approach and landing. Energy consumption by motor vehicles traveling to and from the airport is also considered.

### Methodology and Assumptions

Block hour (gate to gate) fuel consumption by aircraft type was estimated by HNTB to account for ground (taxi), climb, cruise and descent portions of average stage lengths. This can be done by estimating the average flight distance between the airport alternatives and all origins and destinations. Average stage lengths for arrivals and departures by aircraft type were estimated and used to derive block fuel consumption. Fuel consumption was broken into departures and arrivals by jet and propeller aircraft using an aircraft mix consistent with that used in the noise and air quality analysis.

Airside delays as well as specific routes within the airport terminal area can vary from hour to hour. However, it is assumed that these will on average not be significantly different among the alternatives. While the airside fuel consumption total may be slightly underestimated, the comparison among airport alternatives should remain valid. Fuel consumption associated with groundside delays (including taxi and queuing delays) was estimated using queuing times consistent with those assumed for the air quality analysis and the ground fuel burn in gallons per minute by aircraft type.

Motor vehicle fuel consumption on the regional highway network was calculated by the Metropolitan Council using a fuel consumption versus speed curve developed by David Braslau Associates, Inc. for the year 2020. Total daily regional highway fuel consumption was calculated. Since airport-related trips account for approximately 1.5 percent of total regional trips, airport-related fuel consumption was estimated by taking this percentage of total regional fuel consumption. Fuel consumption for the 2010 LTCP was adjusted using vehicle fuel for the No Action Alternative (existing terminal) and the increase in operations expected over the No Action Alternative with the 2010 LTCP.

## J.1 MSP Alternative

### J.1.1 Affected Environment — MSP Alternative

The Area of Potential Effect (APE) for energy consumption is national and international in scope depending upon the specific energy sources used. Indirectly, the region and state are affected by revenues generated by the amount and type of energy consumed. For purposes of the EIS, the APE for energy consumption includes (1) the average stage length of aircraft between each airport alternative and origins and destinations outside of the Twin Cities Metropolitan Area and (2) the regional highway network by which motor vehicles access each airport alternative. The APE for mineral extraction includes sand and gravel resources within and adjacent to the seven country Metropolitan Area.

## J.1.2 Energy Supply and Natural Resources Impact — MSP Alternatives

Block (gate to gate) aircraft fuel consumption for the 2010 LTCP is shown in **Table J-1**.

**Table J-1 - Block Fuel Consumption - 2010 LTCP**

| | Annual Ops | Stage Length | Mill Miles | Mill Gal/Year |
|---|---|---|---|---|
| Jet Arrivals | 168,560 | 138.7 | 23.38 | 51.44 |
| Jet Departures | 168,560 | 123.3 | 20.78 | 45.72 |
| Prop Arrivals | 81,390 | 99.8 | 8.12 | 6.50 |
| Prop Departures | 81,390 | 124.8 | 10.16 | 8.13 |
| Totals | 499,900 | | | 111.79 |
| Source: HNTB and David Braslau Associates | | | | |

Block (gate to gate) aircraft fuel consumption for the 2020 Concept Plan is shown in **Table J-2**.

**Table J-2 - Block Fuel Consumption - 2020 Concept Plan**

| | Annual Ops | Stage Length | Mill Miles | Mill Gal/Year |
|---|---|---|---|---|
| Jet Arrivals | 183,486 | 138.7 | 25.45 | 55.99 |
| Jet Departures | 183,486 | 123.3 | 22.63 | 49.77 |
| Prop Arrivals | 76,614 | 99.8 | 7.65 | 6.12 |
| Prop Departures | 76,614 | 124.8 | 9.56 | 7.65 |
| Totals | 520,200 | | | 119.53 |
| Source: HNTB | | | | |

Ground delay fuel consumption under the 2010 LTCP for aircraft is shown in **Table J-3**. This is based upon a time in queue of 1.11 minutes.

**Table J-3 - Ground Delay Fuel Consumption - 2010 LTCP**
(fuel consumption in million gallons per year)

| | Annual Ops | Mill Gal/Year |
|---|---|---|
| Jet Arrivals | 168,560 | |
| Jet Departures | 168,560 | 1.21 |
| Prop Arrivals | 81,390 | |
| Prop Departures | 81,390 | 0.12 |
| Totals | 499,900 | 1.33 |
| Source: HNTB and David Braslau Associates | | |

Ground delay fuel consumption for aircraft under the 2020 Concept Plan is shown in **Table J-4**. This is based upon a time in queue of 1.11 minutes.

**Table J-4 - Ground Delay Fuel Consumption - 2020 Concept Plan**
(fuel consumption in million gallons per year)

| | Annual Ops | Mill Gal/Year |
|---|---|---|
| Jet Arrivals | 183,486 | |
| Jet Departures | 183,486 | 1.32 |
| Prop Arrivals | 76,614 | |
| Prop Departures | 76,614 | .11 |
| Totals | 520,200 | 1.43 |
| Source: HNTB | | |

Fuel consumption for the 2020 Concept Plan on the regional highway network by motor vehicles accessing the airport has been estimated by the Metropolitan Council to be 39.18 million gallons per year. Since the new west terminal will not be completed by 2010, this fuel consumption figure has been adjusted using the No Action motor vehicle fuel (estimated for the existing terminal) and the increased operations under the 2010 LTCP.

The combined energy consumption of aircraft and motor vehicle traffic for the 2010 LTCP is presented in Table J-5 (no airside delays of aircraft are assumed).

**Table J-5 - Aircraft and Motor Vehicle Fuel Consumption - 2010 LTCP**
(million gallons per year)

| | Aircraft Energy Consumption | | | | |
|---|---|---|---|---|---|
| Alternative | Block | Queue | Total | Vehicles | Total |
| MSP | 111.79 | 1.33 | 113.12 | 41.47 | 154.59 |
| Source: HNTB, David Braslau Associates and Metropolitan Council | | | | | |

The combined energy consumption of aircraft and motor vehicle traffic for the 2020 Concept Plan is presented in Table J-6 (no airside delays of aircraft are assumed).

**Table J-6 - Aircraft and Motor Vehicle Fuel Consumption - 2020 Concept Plan**
(million gallons per year)

| | **Aircraft Energy Consumption** | | | | |
|---|---|---|---|---|---|
| **Alternative** | **Block** | **Queue** | **Total** | **Vehicles** | **Total** |
| MSP | 119.53 | 1.43 | 120.96 | 39.18 | 160.14 |
| Source: HNTB and Metropolitan Council | | | | | |

### J.1.3 Mitigation Measures — MSP Alternative

Fossil energy consumption can be reduced by employing measures that are also intended to reduce pollutant emissions. These include:

- Expanded use of bus transit service to and from the airport
- Efficient terminal design and use of people movers to minimize aircraft emissions
- Facility design to minimize energy use and emissions
- 400 Hz of electric power and pre-conditioned air at gates
- Use of alternative fuels for ground support vehicles and on-airport shuttles

## J.2 No Action Alternative

### J.2.1 Affected Environment — No Action Alternative

The Area of Potential Effect is the same as that for the MSP alternative.

### J.2.2 Energy Supply and Natural Resources Impacts — No Action Alternative

Block (gate to gate) aircraft fuel consumption is shown in **Table J-4.**

**Table J-7 - Block Fuel Consumption - No Action Alternative**

| | Annual Ops | Stage Length | Mill Miles | Mill Gal/Year |
|---|---|---|---|---|
| Jet Arrivals | 183,486 | 138.7 | 25.45 | 55.99 |
| Jet Departures | 183,486 | 123.3 | 22.63 | 49.77 |
| Prop Arrivals | 53,254 | 99.8 | 5.31 | 4.25 |
| Prop Departures | 53,254 | 124.8 | 6.65 | 5.32 |
| Totals | 473,480 | | | 115.33 |
| Source: HNTB | | | | |

Ground delay fuel consumption for aircraft is shown in **Table J-5.** This is based upon a time in queue of 4.88 minutes.

**Table J-8 - Ground Delay Fuel Consumption - No Action Alternative**
(fuel consumption in million gallons per year)

| | Annual Ops | Mill Gal/Year |
|---|---|---|
| Jet Arrivals | 183,486 | |
| Jet Departures | 183,486 | 5.82 |
| Prop Arrivals | 53,254 | |
| Prop Departures | 53,254 | 0.34 |
| Totals | 473,480 | 6.16 |
| Source: HNTB | | |

Fuel consumption in 2020 for this alternative on the regional highway network by motor vehicles accessing the airport has been estimated by the Metropolitan Council to be 39.28 million gallons per year.

The combined energy consumption of aircraft and motor vehicle traffic for the MSP alternative is presented in **Table J-6** (no airside delays of aircraft are assumed).

**Table J-9 - Aircraft and Motor Vehicle Fuel Consumption - No Action Alternative**
(million gallons per year - year 2020)

| | Aircraft Energy Consumption | | | | |
|---|---|---|---|---|---|
| **Alternative** | **Block** | **Queue** | **Total** | **Vehicles** | **Total** |
| No Action | 115.33 | 6.16 | 121.49 | 39.28 | 160.77 |
| Source: HNTB and Metropolitan Council | | | | | |

## J.2.3 Mitigation Measures — No Action Alternatives

Fossil energy consumption can be reduced by employing measures that are also intended to reduce pollutant emissions. These are listed under J.1.3. Mitigation Measures - MSP Alternative.

## J.3 Summary of Energy Supply and Natural Resources Impacts

Energy impacts for the two alternatives are summarized in **Table J-7** (no airside delays of aircraft are assumed). These impacts cannot be avoided.

**Table J-10 - Comparison of Total Energy Consumption by Airport Alternative**
(million gallons per year - year 2020)

| | AIRCRAFT ENERGY CONSUMPTION | | | | |
|---|---|---|---|---|---|
| **Alternative** | **Block** | **Queue** | **Total** | **Vehicles** | **Total** |
| | | | | | |
| 2010 LTCP | 111.79 | 133 | 113.12 | 41.47 | 154.59 |
| 2020 Concept Plan | 119.53 | 1.43 | 120.96 | 39.18 | 160.14 |
| No Action | 115.33 | 6.16 | 121.49 | 39.28 | 160.77 |
| Source: Tables J-5, J-6, J-9 | | | | | |

### Block Energy Consumption

The 2020 Concept Plan consumes more Block Energy than the 2010 LTCP or the No Action Alternative because of its higher number of flights and an average stage length longer than under the No Action Alternative.

### Queuing Energy Consumption

The No-Action Alternative is the least efficient because of its longer queuing times on the ground.

### Motor Vehicle (regional highway network) Energy Consumption

The 2010 LTCP has the highest vehicle fuel consumption since there is an increase in operations and passengers while the terminal remains at the existing location and the average vehicle trip is longer than with a new west terminal.

### Total Energy Consumption

The No Action Alternative has the greatest energy consumption, dominated by increased queuing fuel consumption. Block fuel consumption is the greatest for the MSP Alternative.

## K. Farmland

Neither the MSP nor the No Action Alternatives would have any impact on farmland or the agricultural economy.

## L. Floodplains

Floodplains are defined as that portion of lowland and flat areas adjoining waters, that are subject to a one percent or greater chance of flooding in any given year, i.e., a 100-year flood event. Floodplain impacts are evaluated to determine potential risks to human safety and property damage, as well as adverse impacts on natural and beneficial floodplain values.

### L.1 MSP and No Action Alternatives

#### L.1.1 Affected Environment — MSP and No Action Alternatives

The APE is the Minnesota River floodplain shown in **Figure L-1**.

The Minnesota River begins at Big Stone Lake along the western side of Minnesota and generally flows eastward to its confluence with the Mississippi River just east of the existing MSP airport. The drainage area for the river is approximately 16,900 square miles and is dominated by agricultural land uses. The 100-year regulatory (regional flood) floodplain elevation in the vicinity of the airport is approximately 716 feet above mean sea level.

#### L.1.2 Floodplain Impacts — MSP and No Action Alternatives

There is no structural encroachment and therefore no impact on the floodplain.

## M. Historic/Architectural Resources

A number of federal laws and regulations address the protection of the country's cultural resources. The statute specifically devoted to cultural resource issues is the National Historic Preservation Act of 1966 (16 U.S.C. 470), as amended, which contains two provisions that are pertinent to future airport development. Section 106 of the statute requires federal agencies to consider the effect of federally funded or licensed projects on properties and districts listed, or eligible for listing, in the National Register of Historic Places. Regulations related to the Section 106 process are outlined in 36 CFR Part 800: Protection of Historic Properties. National Historic Landmarks, a designation bestowed on a very limited number of particularly significant cultural resources, are afforded special protection under Section 110 of the National Historic Preservation Act and 36 CFR Part 800.10.

A broader range of cultural resources is protected under Section 4(f) of the Department of Transportation (DOT) Act of 1966, which requires projects funded by the DOT to avoid "any significant historic site" unless there is no "feasible and prudent" alternative. This provision generally applies to resources listed, or eligible for listing, in the National Register of Historic Places. At the discretion of the FAA (and the Federal Highway Administration, if federal highway aid is involved), Section 4(f) protection may be applied to properties that do not meet the criteria for National Register eligibility if the responsible jurisdiction advocates Section 4(f) status. The position of the responsible jurisdictions is not known, so the FAA cannot make a determination at this time on the Section 4(f) status of properties not eligible for the National Register.

The Draft EIS initiated formal consultation with the Advisory Council on Historic Preservation and with the State Historic Preservation Office (SHPO), according to FAA Order 5050.4.A, page 85. The FAA, SHPO, Advisory Council, MAC, and other interested parties have executed a Programmatic Agreement (PA) in accordance with 36 CFR Part 800.13; the Agreement is included in Appendix C. Execution and implementation of this PA evidences that the FAA has taken into account the effect of the MSP Long-term

Comprehensive Plan on historic properties and afforded the Advisory Council an opportunity to comment on the effect.

The known Areas of Potential Effect (APE) for MSP were analyzed in technical reports which have been reviewed by SHPO. SHPO has concurred with the findings. Correspondence regarding historic properties that were included in the Technical Reports is attached to the FEIS in Appendix A.2.

Indirect adverse impacts, such as noise, which prevent the use of historic properties for their intended purpose, are considered as constituting a "constructive use," or taking of the property, if the normal activities of the property are incompatible with FAA guidelines on noise and land use. The guideline for evaluating indirect noise impacts is the FAA Part 150 Land Use Compatibility Criteria, included in **Table A.3-2** in Appendix A.3 (Noise) of the Final EIS. Under certain circumstances, the projected aircraft noise over an historic property could be considered a "constructive use," depending on the sensitivity of the use to noise, as spelled out in the Land Use Compatibility Criteria.

## M.1 MSP Alternative

### M.1.1 Affected Environment — MSP Alternative

The Area of Potential Effect (APE) is the geographic area or areas within which an undertaking may cause changes in the character or use of historic properties, if any such properties exist. The known APE for MSP is illustrated in **Figure M-1**. Specifically, the APE for historic and architectural resources consists of property within the expanded MSP airport boundaries, as well as property affected by construction/reconstruction of access roadways, interchanges and signal systems directly serving the expanded airport. In addition, the APE encompasses any off-site property acquired for wetlands, surface water, or other mitigation. The APE also includes properties affected by 1) improvements to the regional highway and transportation systems, if the improvements are due to the expansion of MSP, and 2) induced socioeconomic impacts and land use impacts which are the result of MSP expansion as defined by the FEIS (i.e., properties that are affected by the MSP Alternative but not by the No Action Alternative) and/or which are the result of changes in the revised comprehensive plans of the cities of Bloomington or Minneapolis that are related to the expansion of MSP. The APE also includes property within the projected year 2005 DNL 65 noise contours for runways included in the Final EIS and supplements. According to the PA, new noise contours may be generated, based on FAA direction and related airport operation/physical changes; in this case, the APE for historic and architectural resources will be modified to conform to the most current projected year 2005 DNL 65 noise contours. Also, the FAA may change the DNL noise contour eligible for noise mitigation under the FAA Regulation "Part 150" Airport Noise and Land Use Compatibility Planning Program; in that case, the 2010 LTCP APE will conform to the year 2005 noise contour for the currently adopted "Part 150" Program.

The known APE for the MSP Alternative includes the following properties and districts listed, or eligible for listing, in the National Register of Historic Places: the Original Wold-Chamberlain Terminal Historic District, the Old Fort Snelling Historic District, Fort Snelling National Cemetery, Nokomis Knoll Residential Historic District, Spruce Shadows Farm Historic District, and the Soo Line Corridor. The APE also encompasses part of the Fort Snelling National Historic Landmark District. The Hale Elementary School would have DNL 64.5 **(Table Q-8)** and is therefore not in the APE, but noise mitigation has already been implemented.

### M.1.2 Historic/Architectural Resources Impacts — MSP Alternative

The most severe threat to National Register and National Landmark properties is demolition. Less drastic physical and functional alterations can also damage National Register properties. Properties eligible under Criterion C, which focuses on physical attributes, are the most sensitive to physical alterations. More latitude is sometimes allowed when assessing the physical integrity of Criterion A properties, which represent broad patterns of history.

The Old Fort Snelling, Nokomis Knoll, and Spruce Shadows Farm historic districts meet both Criterion A and Criterion C standards, as does the Fort Snelling National Historic Landmark District. The National Register

eligibility of the Original Wold-Chamberlain Terminal Historic District, Fort Snelling National Cemetery, and the Soo Line Corridor is based on Criterion A.

The MSP 2020 Concept Plan would destroy the Original Wold-Chamberlain Terminal Historic District, and the MSP 2010 LTCP would destroy portions of the District, neither of which would occur with the No Action Alternative. The demolition cannot be avoided if these plans for MSP are to be realized. The Nokomis Knoll Residential Historic District and Spruce Shadows Farm are within the DNL 65-70 noise contour of both plans and are not compatible with DNL 65 noise levels (see Appendix A.3, **Table A.3-2**). The physical integrity of these structures might be affected if they were noise-insulated or renovated to serve another use. Only the Spruce Shadows Farm would be affected by the MSP Alternative (2010 and 2020) when compared to the No Action Alternative.

The FAA guidelines do not address cemeteries; however, the U.S. Department of Transportation (DOT) land use guidelines state that cemeteries are compatible with noise levels of DNL 70 ("Guidelines for Considering Noise in Land Use Planning", U.S. DOT, June 1980). As shown in **Figure Q-3**, a small portion of the cemetery would have noise levels greater than DNL 70, which would also be the case with the No Action Alternative (see **Figure Q-9**).

The Fort Snelling National Historic Landmark District and the Old Fort Snelling National Register Historic District do not currently contain land uses incompatible with aircraft noise; future compatible uses include commercial and recreation uses.

The Soo Line Corridor would not be affected by the MSP Alternative.

### M.1.3 Mitigation Measures — MSP Alternative

Specific measures to mitigate adverse effects are addressed in the Programmatic Agreement (PA) included in Appendix C and summarized in Section V.U (Section 4(f)). The PA was developed cooperatively and signed by the FAA, MAC, SHPO and the Advisory Council on Historic Preservation; other agencies were concurring parties to the PA.

Demolition of the Original Wold-Chamberlain Terminal Historic District will be mitigated by documenting the district for the Historic American Buildings Survey (HABS), which is maintained at the Library of Congress. The HABS documentation includes an historical narrative and large-format photographs. In addition, the Smithsonian Institution and the Minnesota Historical Society will have the opportunity to select architectural elements or historical objects for curation and display.

Noise mitigation may also be appropriate for the Spruce Shadows Farm Historic District. MAC will develop a mitigation plan for the district in consultation with the owner, the FAA and the SHPO. Since it is premature to prepare detailed architectural and engineering plans for the mitigation at this time, it is not known if mitigation will result in a finding of No Adverse Effect.

## M.2 No Action Alternative

### M.2.1 Affected Environment — No Action Alternative

The APE consists of land within the existing MSP airport boundary, as well as land within the projected DNL 65+ noise contours for the year 2005 for existing airport runways (see **Figure M-2**). The APE contains the following properties and districts listed, or eligible for listing, in the National Register of Historic Places: the Original Wold-Chamberlain Terminal Historic District, the Old Fort Snelling Historic District, Fort Snelling National Cemetery, Acacia Park Cemetery, Nokomis Knoll Residential Historic District, and the Soo Line Corridor. The APE also encompasses part of the Fort Snelling National Historic Landmark District. The Hale Elementary School would have DNL 64.0 (**Table Q-8**) and is therefore not in the APE, but noise mitigation has already been implemented.

Existing (1994) noise levels are shown in **Table Q-6**.

### M.2.2 Historic/Architectural Resources Impacts — No Action Alternative

No National Register properties in the APE would be demolished under the No Action Alternative, and no significant alterations or new construction within the Original Wold-Chamberlain Terminal Historic District will be required.

There would be no adverse effect on the Nokomis Knoll Residential Historic District, which is currently within the DNL 65-70 noise contour and would continue to have noise levels greater than DNL 65 in 2005.

The FAA guidelines do not address cemeteries; however, the U.S. Department of Transportation (DOT) land use guidelines state that cemeteries are compatible with noise levels of DNL 70 ("Guidelines for Considering Noise in Land Use Planning", U.S. DOT, June 1980). As shown in **Figure Q-9**, a small portion of the Fort Snelling National Cemetery would have noise levels greater than DNL 70, but there would be no adverse effect since these noise levels are less than existing levels (see **Figure Q-1** and **Table Q-6**). Projected noise levels at Acacia Park Cemetery are less than DNL 70.

The Fort Snelling National Historic Landmark District and the Old Fort Snelling National Register Historic District do not currently contain land uses incompatible with aircraft noise; future compatible uses include commercial and recreation uses.

The Soo Line Corridor would not be affected by the No Action Alternative.

### M.2.3 Mitigation Measures — No Action Alternative

Noise mitigation is committed by MAC for the Nokomis Knoll Residential Historic District and will include noise reduction measures through the FAA Regulation "Part 150" Airport Noise and Land Use Compatibility Planning Program. Work under the Part 150 program is covered by a separate Programmatic Agreement that was in force prior to the execution of the Programmatic Agreement for the MSP Long-term Comprehensive Plan. The work meets the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings and has been found to have no adverse effect on the Historic District.

## M.3 Summary of Historic/Architectural Resources Impacts

By requiring the demolition of all or portions of the Original Wold-Chamberlain Terminal Historic District, the MSP 2010 LTCP and 2020 Concept Plan irreversibly harm historic and architectural resources. These adverse impacts are unavoidable. The No Action Alternative does not require the destruction of significant resources in the District.

The MSP 2010 LTCP and 2020 Concept Plan would not have an adverse noise impact on the Nokomis Knoll Residential Historic District when compared with the No Action Alternative. However, sound insulation has been committed for the historic district under the Part 150 program; the insulation meets the Secretary of the Interior standards and has been found to have no adverse effect on the Nokomis Knoll Residential Historic District.

The No Action Alternative would not have an adverse noise impact on historic/architectural resources when compared with existing noise levels.

The MSP 2010 LTCP and 2020 Concept Plan would have a noise effect on the Spruce Shadows Farm. Until detailed architectural and engineering studies are completed, it is not possible to ascertain whether mitigation will result in a finding of no adverse effect.

# N. Induced Socioeconomic Impacts

Induced socioeconomic impact is the potential for induced or secondary effects on surrounding communities as a result of airport development. It includes the shift in patterns of population movement and growth, and changes in business and economic activity caused by the development of the airport. An example would be the redevelopment of incompatible residential uses near the airport to compatible commercial uses.

## N.1 MSP and No Action Alternatives

### N.1.1 Affected Environment

The primary areas of impact are the communities directly surrounding the airport site. These include south Minneapolis, Richfield, north Bloomington, north Eagan, Mendota Heights, Mendota, Lilydale, and the western portion of St. Paul (see **Figure 0-1**).

### N.1.2 Induced Socioeconomic Impacts

The Metropolitan Council provides forecasts for communities within the seven county metropolitan region. The forecasts use a "top-down" method which starts with a review of regional growth in the U.S., forecasts growth for our region, and allocates that growth using historical models. The Metropolitan Council growth forecast assumes an airport serving the region, but does not take into account any variation based upon the airport's ability to accommodate the demand for service; the forecast is therefore the same with or without the expansion of MSP. **Table N-1** gives the Metropolitan Council forecasts for the affected area in the year 2020.

**Table N-1 - Metropolitan Council Forecasts - MSP and No Action Alternatives**

| Community | 1990 Pop. | 2020 Pop. | 1990 Households | 2020 Households | 1990 Employment | 2020 Employment |
|---|---|---|---|---|---|---|
| Minneapolis | 368,383 | 375,000 | 160,682 | 163,500 | 278,314 | 287,000 |
| St. Paul | 272,235 | 285,500 | 110,249 | 116,000 | 172,504 | 179,000 |
| Bloomington | 86,335 | 102,000 | 34,448 | 40,000 | 75,742 | 95,000 |
| Eagan | 47,409 | 71,000 | 17,427 | 32,000 | 26,000 | 41,800 |
| Richfield | 35,710 | 38,300 | 15,551 | 16,300 | 10,844 | 11,600 |
| Mendota Heights | 9,381 | 13,300 | 3,302 | 5,850 | 5,805 | 8,650 |
| Lilydale | 553 | 650 | 297 | 410 | 50 | 50 |
| Mendota | 164 | 190 | 69 | 80 | 534 | 850 |
| Source: Metropolitan Council Regional Blueprint, Appendix E. | | | | | | |

The development pattern around the airport would not change, but some changes in land use surrounding the airport site would occur when MSP is expanded. These changes relate to property acquisition and less intense development in state safety zones. **Map O-3** illustrates land use changes under the No Action Alternative. These changes relate directly to continued growth of the area, as forecast by the Metropolitan Council above.

**Map O-2** illustrates the changes in land use that would occur by the year 2020 if MSP were expanded. The city of Minneapolis has suggested that if the terminal building is moved under the 2020 Concept Plan, there would be an *opportunity* for the conversion of the single family area directly abutting the new entrance to be converted to commercial, office or hotel uses relating to the new "front door" of the airport. There would be changes in the city of Bloomington under the 2010 LTCP and 2020 Concept Plan, where the runway protection zone for the new runway removes existing development and the state safety zones call for less intense development. For a further discussion, see Section V.O., Land Use.

Analysis of case studies of development surrounding other airports in the U.S., especially the early years of development surrounding Washington's Dulles airport and the Kansas City airport, provide the basis for a preliminary estimate of induced development activity anticipated to occur with expansion of MSP. Over the period from the year 2005 to 2020, it is anticipated that approximately 420,000 square feet of office development and 1,050,000 square feet of industrial development will be induced. This preliminary estimate of space can be anticipated to employ approximately 3,900 persons. While some of this space can be expected to be absorbed into existing developments, new space will be required. It is anticipated that this new space will be constructed in south Minneapolis, Bloomington, Mendota Heights and Eagan. The No Action Alternative and MSP 2010 LTCP would induce less development than the MSP 2020 concept Plan.

### N.1.3 Mitigation Measures

Mitigation measures for induced socioeconomic impacts will primarily relate to other areas of impact discussed in this FEIS, including Land Use (Section V.O.), Noise (Section V.Q.), Transportation Access (Section V.W.) and Historic/Architectural Resources (Section V.M).

## O. Land Use Impacts

Land use in the communities surrounding MSP may change. This section addresses those potential changes.

### O.1 MSP Alternative

### O.1.1 Affected Environment — MSP Alternative

The APE includes those communities contiguous with the airport. See **Figure O-1**. They include south Minneapolis, Richfield, northern Bloomington, northern Eagan, Mendota Heights, Mendota, and Lilydale.

The airport site lies to the south and approximately equidistant from the downtowns of Minneapolis and St. Paul. The site itself abuts the Minnesota Valley National Wildlife Refuge, historic Fort Snelling and the National Cemetery. The site is basically bounded by major transportation arteries -- Highway 62 on the north, Cedar Avenue (TH 77) on the west, Interstate 494 on the south, and Highway 5 and the Minnesota River on the east.

The portions of Minneapolis (north of the site) and Richfield (west of the site) adjoining MSP are largely residential. Commercial concentrations are scattered throughout the neighborhoods, oriented along arterials, with larger concentrations found at the intersections of major roadways. This pattern has developed over a period of decades, some of which predates the presence of the airport. However, the majority of the non-residential development occurred after the site began to be used for an airport. (See **Figure 0-1**)

To the south lies Bloomington, which is primarily commercial adjacent to the site. Many hotel, business and office buildings are located in the area, including the Mall of America. Residential uses in Bloomington are primarily located west of the commercial uses.

### O.1.2 Land Use Impacts — MSP Alternative

The land use changes which are anticipated with the expansion of MSP are summarized by community below, and set forth graphically on **Figure O-2.**

#### Bloomington

The MSP 2010 LTCP and 2020 Concept Plan require the acquisition of ten businesses that are in the runway protection zone (RPZ) of the new north-south runway (see **Figure T-3**). These businesses include three hotels -- the 4-story Sheraton Inn, the 2-story Excel Inn, and the 14-story Grand Hotel. In addition, two service

stations, a VFW Post, two office buildings, a small warehouse, and an NSP substation would all be acquired and relocated. Twenty-seven homes and 131 multifamily units shown in **Figure T-4** would be acquired as part of the noise mitigation program.

In addition to the FAA restrictions on land use in the RPZ, Mn/DOT has airport zoning standards for state safety zones that would be required south of the new north-south runway in the city of Bloomington. The zones are shown in **Figure T-4**. Existing and planned land uses in these state safety zones are not consistent with current Mn/DOT airport zoning standards. The MSP Joint Zoning Board would establish zoning regulations for the affected areas, subject to Mn/DOT approval. The comprehensive plan of Bloomington would have to be amended to conform with the established zoning regulations, and to address the Metropolitan Council's land use compatibility guidelines that would apply to the addition of the north-south runway. Bloomington completed a master planning exercise in 1996 for the area south of the airport and east of TH 77 called the "Airport South II Study", an update of an earlier plan. This study was supported by the Metropolitan Council and the Metropolitan Airports Commission. One of the scenarios included the proposed north-south runway and the related impacts of the RPZ and state safety zones on land use in Bloomington. This study will provide input into the determination of the zoning regulations and land use amendments to the City's comprehensive plan.

**Minneapolis**

The 2010 LTCP would not affect land use in the city. Discussion of the anticipated impacts of the development of the new west terminal under the MSP 2020 Concept Plan with the Minneapolis city planning staff has identified three possible areas of redevelopment. While the city staff agrees that redevelopment pressure would be created by the construction of a new west terminal, the Minneapolis City Council has not agreed that redevelopment would or should occur, and has not identified any locations for such redevelopment. The comprehensive plan of Minneapolis would not *have* to be amended for either the MSP 2010 LTCP or the 2020 Concept Plan.

However, it is believed that some redevelopment activity would likely occur during the five-year period following the opening of a new west terminal, and that activity is described below.

The redevelopment activity would be driven by the fact that Highway 62 would connect directly to the new terminal at 28th Avenue. This new northern entrance to the airport would generate development pressure on the Minneapolis side of the airport for uses such as hotels, restaurants, offices, and other commercial uses which commonly surround airports.

The anticipated pattern of redevelopment would include one of the following three scenarios. Scenario A is deemed the most likely, and is illustrated in **Figure O-2**, Future Land Use with MSP Expansion. In all three scenarios, an area of approximately eight blocks of existing noise-impacted residential use would be incrementally replaced with commercial use. The possible redevelopment scenarios are:

A. Assuming no access to Highway 62 is available in the 28th Avenue area, the most likely redevelopment area would lie at the interchange of Highway 62 and Cedar Avenue (77). This would include the blocks from Cedar Avenue east to 22nd Avenue, and from Highway 62 north two blocks. The total affected area is approximately 3.9 acres, and currently contains 196 single family residential units, which would be eliminated due to the redevelopment.

B. If access were available from the new ramps serving the west terminal, the most likely area to be redeveloped would lie between 24th Avenue and 28th Avenue, and from Highway 62 north two blocks. This area is also approximately 3.9 acres, and currently contains 219 single family residential units.

C. Another possible candidate for redevelopment lies between Bossen Field and 34th Avenue. This area currently has right-in/right-out access to Highway 62, and currently contains 498 multi-family housing units.

### Richfield

MAC acquisition of New Ford Town and Rich Acres (both located east of TH 77) is complete and is not considered an impact of MSP expansion. See **Figure O-2.**

The proposed action would eliminate the Rich Acres Golf Course, which has been leased by the city from the Metropolitan Airports Commission. The area would be converted to aviation uses.

Reconstruction of the TH 77/TH 62 interchange for the MSP 2020 Concept Plan would displace 36 household units and 22 businesses between Cedar Avenue and TH 77 (see **Figure T-1**). The land would be converted to highway uses. Modification of the TH 77/66$^{th}$ Street interchange for the MSP 2010 LTCP would displace 7 household units and 14 businesses between Cedar Avenue and TH 77 (see **Figure T-2**).

The comprehensive plan of Richfield would not have to be amended for either the MSP 2010 LTCP or the 2020 Concept Plan because Richfield's comprehensive plan calls for redevelopment of the area affected by them. Conceptually, the city would like to redevelop the first block west of Cedar Avenue as office or office/warehouse and office/showroom space. The next one-half block west of this area would be allowed to develop as duplex and multifamily housing, buffering the adjacent single-family homes from the new office uses along Cedar Avenue. The elimination of the existing buffer provided by the golf course could negatively impact the redevelopment potential of this area, while the movement of the terminal to the west side could induce additional pressure for commercial development along Cedar Avenue. These two forces may simply balance out in the future.

### Eagan

The continuing growth of the airport will help build out the city of Eagan. Substantial vacant or underutilized industrial and commercial areas exist in the major roadway corridors of the city, and portions of the residential areas have yet to be developed. See **Figure O-2.** There are no specific land use changes anticipated beyond the continued growth of the community in accordance with its comprehensive plan.

### Mendota Heights, Mendota and Lilydale

No changes in their comprehensive plans would be required. Mendota Heights has limited additional area for commercial and industrial development. This land can be expected to be built-out in the near future. See **Figure O-2.** The cities of Lilydale and Mendota are primarily residential in nature, and limited additional development is anticipated to occur.

## O.1.3 Mitigation Measures - MSP Alternative

Community stabilization measures will be developed for the proposed action, as stated in the Noise Mitigation Program presented in Appendix B.

# O.2 No Action Alternative

## O.2.1 Affected Environment — No Action Alternative

The affected environment is the same as discussed previously under section O.1.1

## O.2.2 Land Use Impacts — No Action Alternative

The No Action Alternative would result in additional planned development in the surrounding communities related to the normal growth in operations at the airport. The estimated future land use is shown in **Figure O-3.** No changes in affected city comprehensive plans would be required.

### O.2.3 Mitigation Measures — No Action Alternative

The Metropolitan Council and the Metropolitan Airports Commission would continue to work with communities surrounding MSP to develop a set of noise mitigation measures.

### O.3 Summary of Land Use Impacts

Land use impacts related to the MSP 2010 LTCP and 2020 Concept Plan would result from highway construction and runway safety area clearance and rezoning in state safety zones. These impacts are unavoidable. Several properties in Bloomington and Richfield would be acquired and the Rich Acres Golf Course would be eliminated. The city of Bloomington would have to amend its comprehensive plan.

Land use impacts of the No Action Alternative would be from a continuation of the airport in an urban setting with a modest growth in aircraft operations. Areas around the site would still contain incompatible land uses.

## P. Light Emissions

Lighting associated with airport development includes that used to guide aircraft as they land and depart, as well as lighting associated with landside facilities -- the terminal, parking ramps and parking lots, roadways, and aircraft and airport maintenance buildings.

The Approach Lighting System (ALS) for the proposed action would be a configuration of signal lights arranged symmetrically around an extension of the north-south runway centerline, starting at or near each end of the runway and extending outward into the Runway Protection Zone (RPZ) for a distance of 2,400-3,000 feet. The ALS would consist of two types of lights — steady burning lights and strobe lights. Steady burning lights, used for nighttime aircraft operations, would be located on centerline bars, spaced at intervals of 200 feet for a distance of 1,400 feet from the end of the runway. There are seven centerline bars, each with five white lights. There would also be two bars of five white lights each, one on each side of the fifth centerline bar. In addition, there would be steady burning lights running along each end of the runway at ground level.

The second type of ALS light includes sequenced flashing lights, or strobe lights. They begin 1,600 feet from the end of the runway and extend outward, up to 3,000 feet from the end of the runway. The sequenced flashing lights also would be spaced at 200-foot intervals. They emit a bluish-white light and flash in sequence toward the end of the runway at a rate of twice per second.

The ALS is a part of the Instrument Landing System (ILS). The ILS increases the reliability and safety of aircraft operations, particularly during inclement and marginal weather conditions. The ILS also provides pilots with information concerning distance of the aircraft from the end of the runway, height above the runway and position in relationship to the center of the runway. The most critical point of an aircraft approach occurs when the aircraft breaks through the overcast and the pilot must change from instruments to visual conditions. Only a few seconds are available to make this transition and complete the landing. The ALS, both the steady burning lights and the sequenced flashing lights, are aids in making this transition.

There are two sizes of steady burning lights. One type emits 3,700 candle power units each; 45 of them on the ALS extend outward from each end of the runway. The other steady burning light emits 24,000 candle power units; there are 18 of them running at ground level along each end of the runway. The 5 sequenced flashing lights, extending outward from the end of the runway beyond the location of the steady burning lights, each emit 20,000 candle power units.

In comparison, a typical auto headlight on a high beam emits 8,000 candle power units and, on low beam, 5,000 candle power units.

## P.1 MSP Alternative

### P.1.1 Affected Environment — MSP Alternative

The APE includes the residential neighborhoods of south Minneapolis in the vicinity of the Trunk Highway 62/Cedar Avenue interchange and of east Richfield near the interchange of Trunk Highway 77 and 66th Street, as well as the commercial area of Bloomington southeast of the 24th Avenue South/I-494 interchange.

All three areas are immediately adjacent to MSP, separated only by the width of the highways that circle the existing airport. Existing nighttime lights in both neighborhoods consist of street lights, as well as lights on major highways such as TH 62 and TH 77. There are also nighttime lights on small commercial buildings and apartment buildings located on Cedar Avenue South in east Richfield, running parallel to the western edge of MSP.

In the southwestern area of MSP, immediately north of I-494, are several large hangars, each with bright nighttime lights. There are also several low level buildings west of the hangars, housing a transit garage and several freight forwarding businesses. The lights on these buildings, particularly those on the hangars, are quite visible from the commercial area of Bloomington, south of I-494 on both sides of 24th Avenues South, immediately adjacent to the airport. The commercial area of Bloomington includes the Mall of America and its parking ramps, several commercial hotels, gas stations and office buildings; each of these buildings are well-illuminated at night, often as brightly as nighttime lights on the large aircraft hangars.

### P.1.2 Light Emission Impacts — MSP Alternative

Approach lights for the south end of the new runway for the proposed action would be located south of I-494 in Bloomington in an area now developed with a variety of commercial buildings, all of which would be removed to meet FAA requirements that no buildings potentially hazardous to air traffic be located in the Runway Protection Zones. While approach lights would be visible to businesses in Bloomington, south of I-494, they would not be appreciably brighter than the lighting on commercial buildings in this area. No approach lights are planned for the north end of the runway.

Runway lights would not be visible in surrounding commercial or residential neighborhoods.

There would be light emissions from aircraft using the proposed north-south runway, both approaching and departing MSP during either nighttime or inclement weather.

Buildings on the airport property would have lighting needed to identify and use them during the nighttime hours. Lighting would be similar to that now found on buildings at the existing airport. The new west terminal proposed for the MSP 2020 Concept Plan, to be located southeast of the interchange of Trunk Highways 62 and 77, would be flanked on its north and south sides by a parking ramp, which is proposed to be higher than the terminal building. The west side of the terminal, shorter in length than the north and south sides of the building, would be situated closer to neighborhoods in south Minneapolis. Consequently, lights would, under certain weather conditions, have a minimal impact on adjacent residential neighborhoods. Lights would be shielded and would be directed toward the interior of airport property. Furthermore, these buildings would be approximately 2,500 feet from the edge of the south Minneapolis neighborhood closest to MSP and approximately 3,750 feet from the edge of the nearest neighborhood in east Richfield. Existing open spaces on airport property would serve as a buffer between the residential neighborhoods and these buildings.

Lights illuminating new roadways have the potential to be visible from adjacent neighborhoods in both south Minneapolis and east Richfield. They will be designed according to state and federal standards.

Increased traffic using new roadways on MSP property and expanded roadways adjacent to the airport (Section T.1.2 and **Table T-1**) will result in greater light emissions. These light emissions have the potential to be visible from adjacent residential neighborhoods in east Richfield and south Minneapolis.

Lastly, induced development in commercial areas surrounding MSP would result in increased light emissions. The greatest concentration of commercial zoning near MSP is along I-494 and, closest to the airport, in the city of Bloomington south of the interstate highway. (Discussion of induced development is in Section N.1.2.)

### P.1.3 Mitigation Measures — MSP Alternative

Building lights are not yet designed to sufficient detail to determine the extent of light spillover into surrounding areas. It is noted, however, that the west end of the new terminal, the one facing residential neighborhoods in south Minneapolis, is the shortest dimension of the building. The longer dimensions of the new terminal, along the north and south sides, would be shielded from surrounding areas by the parking ramp. Lights will be shielded and will be directed towards the interior of the property.

## P.2 No Action Alternative

### P.2.1 Affected Environment — No Action Alternative

The APE includes the residential neighborhoods in south Minneapolis north of TH 62 and in east Richfield west of TH 77. Both areas are immediately adjacent to MSP, separated by the width of the highways that circle the existing airport. Existing nighttime lights in both neighborhoods consist of street lights, as well as lights on major highways such as TH 62 and 77. There are also nighttime lights on small commercial buildings and apartment buildings located on Cedar Avenue South in east Richfield, running parallel to the western edge of MSP.

### P.2.2 Light Emission Impacts — No Action Alternative

Light emission impacts for the No Action Alternative will not be greater than those for existing conditions at MSP.

Approach lights for the two existing east-west runways and the extension of the cross-wind runway, Runway 4-22, would be identical to existing impacts. Open space along the west side of the airport property, adjacent to the Runway 4-22 extension, would provide a buffer zone between the approach lights and adjacent neighborhoods in east Richfield.

Lighting planned for improvements in the terminal area and the new Sun Country hangar would not intrude into surrounding residential areas. These facilities are some distance from surrounding neighborhoods. In addition, lighting designed for these improvements will be shielded and angled in such a manner so that they will not be visible from off-airport property.

### P.2.3 Mitigation Measures — No Action Alternative

No mitigation is required.

## P.3 Summary of Light Emission Impacts

Impacts of the MSP Alternative will be minimal. The sequenced flasher, or strobe, lights associated with an approach lighting system have the greatest potential to affect surrounding areas because of their intensity and distinctive visual character. The proposed action would require installation of approach lighting systems at the south end of the new north-south runway. The approach lights would be located in a largely commercial district characterized by extensive nighttime lighting.

To the north, two strobe lights would be located at the end of the runway, with no lights extending into Mother Lake.

No impacts would occur as a result of the No Action Alternative.

## Q. Noise

This section describes both aircraft and surface transportation noise associated with the Dual Track Alternatives. Subsection Q1. discusses aircraft noise impacts; Subsection Q2. discusses surface transportation noise impacts.

### Q.1 Aircraft Noise

Aircraft noise can affect residents, businesses and certain land uses in the vicinity of an airport. The criteria for determining compatibility with aircraft noise are based on FAA criteria shown in **Table A.3-2** in Appendix A.3. Federal noise impact criteria are based on the Day-Night Sound Level (DNL) metric. State noise impact criteria are based on the $L_{10}$ metric which measures the point at which a specified sound level is exceeded at least 10 percent of a specified time period (e.g., one hour).

#### Methodology and Assumptions

A summary of the methodology and assumptions used for aircraft noise impact evaluation follows. A detailed discussion is presented in Appendix A.3 of this report.

*Population*

In order to directly compare noise impacts of the alternatives, a common year of population estimates was required. Selecting an appropriate forecast year involved a number of considerations. Two important dates were identified: 1997, the year the decision to expand MSP or build a new airport would likely be made, and 2005, the year the new airport could open and the year the north-south runway at MSP could be operational. The noise contours also reflect year 2005 activity and fleet mix. Local jurisdictions have approved year 2000 population and household projections readily available at the appropriate zone level needed for noise impact analysis. Forecasts reflecting changing population distributions due to the new airport had not been developed or approved by the appropriate agencies. For these reasons, and because 2000 was, and is, a good "mid-point" forecast between 1997 and 2005, year 2000 demographic data was used for noise impact analysis.

*Aircraft Activity and Fleet Mix*

The aircraft operations and fleet mix forecasts are based primarily on the *MSP Long-Term Comprehensive Plan (LTCP), Volume 6: Revised Activity Forecasts* (December 1993). The LTCP fleet mix was modified to reflect the August 1994 announcement by Northwest Airlines that it would refurbish its fleet of DC-9-30 aircraft including the installation of "hush kits", rather than acquire new aircraft as previously planned. These hush-kitted aircraft are typically noisier than "true" stage 3 aircraft of the same size. For example, a hush-kitted DC-9-30 produces the equivalent noise of two 737-300 aircraft.

Year 2005 was the year selected for noise impact analysis as a worst-case scenario, because its noise contour was larger than that for 2010 and 2020. Although year 2020 total average daily aircraft operations are forecast to be 7 percent greater than 2005 (1,426 vs. 1,328, respectively), the year 2005 fleet mix is expected to comprise 240 relatively noisy "hush-kitted" aircraft (29 percent of the air carrier fleet). By 2020, the number of hush-kitted aircraft decreases to 8 daily operations (less than 1 percent of the air carrier fleet). **Tables A.3-3** and **A.3-4** in the Appendix A.3 list the average daily arrivals and departures by aircraft type for 2005. The noise impacts of the MSP 2020 Concept Plan and MSP 2010 LTCP are identical since the worst-case year is 2005, and will be referred to as the MSP Alternative.

Under the No Action Alternative, it is assumed that year 2005 operations would be about 2.3 percent lower than the MSP Alternative due to increasing capacity constraints. Most of the decrease would be among

general aviation aircraft. The fleet mix would also change, with fewer hush-kitted aircraft under the No Action Alternative, compared to the MSP Alternative (See Appendix A.3, **Tables A.3-5** and **A.3-6**).

The year 2005 was the earliest that a new airport would likely be open. In addition, the north-south runway in the MSP 2010 LTCP would also likely be operational by this year. Using the same year for all alternatives allowed for a direct comparison of alternatives.

Takeoff and landing profiles (the vertical path aircraft follow when departing from and arriving at an airport) were based on airline operating procedures, aircraft type and aircraft operating weight. Actual profiles obtained from the MAC's ANOMS compared well with the computer-generated profiles used in the analysis.

Runway use is based on weather conditions (both wind and visibility), direction of flight, noise impacts and operational efficiency. Runway use for the two alternatives is shown in **Tables A.3-7** through **A.3-8** in Appendix A.3. For the MSP Alternative, forecast runway use incorporated the new north-south runway, predominantly with departures to the south and arrivals from the south. The optimum operating modes identified by ATC personnel were balanced with environmental considerations. Runway use under the No Action Alternative reflects the extension of Runway 4-22. Separate runway use procedures were developed for nighttime operations. For the MSP Alternative, these consisted of head-to-head operations and use of the north-south runway when necessary.

*Flight Tracks*

Flight tracks for the MSP and No Action alternatives were based upon data provided by the MAC's Airport Noise and Operations Monitoring System (ANOMS), which details existing flight tracks, in conjunction with wind and weather considerations for the future utilization of the facility. With the utilization of ANOMS data to model flight tracks for the INM runs, all existing abatement procedures (including the voluntary nighttime limits on flights) are accounted for within the modeled tracks. The modeled flight tracks were reviewed by FAA ATCT personnel. For a description of flight tracks and overflights, see the "Overflights" discussion for each alternative. See **Figure Q-2** for the flight tracks modeled for the MSP Alternative and **Figure Q-8** for the No Action Alternative.

The flight tracks were prepared by HNTB in consultation with FAA. While FAA has not approved those flight tracks/procedures, FAA concurs that they should be treated as reasonable for the purpose of assessing impacts in the FEIS.

Aircraft headings are expressed in terms of magnetic compass directions assigned to pilots. Since aircraft are flying through moving air masses, a given heading will result in different aircraft paths over the ground (or "tracks") under different wind conditions. The flight headings used to represent assigned headings in this FEIS are average center-of-gravity tracks.

The FAA and MAC have established procedures for directing aircraft to certain headings and/or over specific geographic points. Specific flight headings are assigned to departing and arriving aircraft by ATC. Although arriving and departing aircraft are directed to fly along these prescribed headings, an infinite number of actual ground tracks are possible due to meteorological conditions, various traffic levels, and pilot technique.

*Noise Metrics*

The noise analysis conducted for this study comprises several methods to assess impacts.

Analysis of aircraft overflights was undertaken to show the average monthly flights on each takeoff and landing track out to a point where single-event noise levels would usually result in speech interference for two people standing about 3 feet apart, approximately 70 A-weighted decibels (dBA, <u>not</u> 70 DNL).[7] This point is typically 7 or 8 miles from the end of the runway.

[7] Canter, Larry W., Environmental Impact Assessment, McGraw-Hill, 1977, p. 137.

DNL contours were developed to quantify impacts on population, dwellings and other noise sensitive uses within the DNL 65 and greater contours per federal guidelines. The DNL metric is used to describe the cumulative effect of aircraft noise. Recognizing that noise concerns can occur beyond the DNL 65, DNL 60 contours are also shown and assessed.

Peak hour $L_{10}$ 65 contours were developed to show areas exposed to 65 dBA or more for at least 10 percent of the peak one-hour period. The annual percentage of time is depicted to show how often these conditions would be experienced.

Aircraft noise levels were also estimated for selected noise-sensitive uses outside the DNL 65; and their noise levels estimated in DNL, peak sound exposure levels (SEL), and time above (TA) 85 dBA.

Peak noise levels (Lmax) are also provided to illustrate the effect of ground operations, such as taxiing and queuing aircraft on nearby residential areas.

Descriptions of the DNL, $L_{10}$, SEL, TA 85, A-weighted decibels (dBA), and Lmax noise metrics, as well as discussions of community annoyance, are presented in Appendix A.3.

## Q.1.1 MSP Alternative

### Q.1.1.1 Affected Environment — MSP Alternative

The APE of aircraft noise is the area within the DNL 60+ contours for this alternative, in accordance with the Metropolitan Council's Land-Use Compatibility Guidelines and the requirement in the April 1996 legislation (Appendix A.14) that mitigation be examined to the DNL 60 level. The DNL contours for operation of MSP in 1994 are shown in **Figure Q-1**. These base year contours represent average annual operations for the calendar year 1994. Approximately 42.3 square miles of land around MSP experienced DNL 60 or greater, with 19.7 square miles in the DNL 65 and greater contour. Approximately 65,130 people and 28,220 dwellings are within the DNL 60 to 65 contour, while 22,090 people reside in 9,570 dwellings in the DNL 65 and greater contour.

The DNL 65 contour extends approximately 4 miles southwest of the airport over Eagan and Mendota Heights. The DNL 60 contour extends an additional 2 to 3.5 miles towards Inver Grove Heights. To the northwest, the DNL 65 contour extends approximately 2 to 2.5 miles from airport property over the City of Minneapolis and Richfield. The DNL 60 contour extends an additional 1.5 to 2.0 miles beyond the DNL 65 contour. The DNL 65 contour includes part of Minneapolis to the northeast and Richfield and Bloomington to the southwest. The DNL 60 contour extends into Richfield and Bloomington to the southwest and slightly into Saint Paul to the northeast.

### Q.1.1.2 Noise Impacts — MSP Alternative

*Overflights*

As shown in **Figure Q-2**, flight tracks radiate at MSP from the ends of the runways. Many overflights occur northwest and southeast of the site, with an increase in overflights immediately south of the airport attributable to the new north-south runway.

*Population Impacts - DNL 70, 65 and 60*

**Figure Q-3** shows the year 2005 DNL contours for the MSP Alternative. The DNL 65 contour encompasses approximately 9.7 square miles. The year 2000 population exposed to DNL 65 or greater is approximately 7,650. There would be 3,370 homes within the contour. An additional 22,030 people and 9,460 dwellings would be within the DNL 60 to 65 contour. **Table Q-1** summarizes population and households contained within the contours.

## Table Q-1 - Population and Dwellings Within Year 2005 DNL Contours- MSP Alternative

| | Population | | | | | Dwellings | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Jurisdiction | DNL 75+ | DNL70-DNL75 | DNL 65-DNL 70 | DNL 60-DNL 65 | Total | DNL 75+ | DNL70-DNL75 | DNL 65-DNL 70 | DNL 60-DNL 65 | Total |
| Minneapolis | 10 | 970 | 5,410 | 17,130 | 23,500 | 0 | 390 | 2,380 | 7,220 | 9,990 |
| North Richfield (1) | 0 | 70 | 500 | 1,740 | 2,300 | 0 | 30 | 220 | 700 | 950 |
| South Richfield (2) | 0 | 0 | 0 | 640 | 640 | 0 | 0 | 0 | 320 | 320 |
| Fort Snelling | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 0 | 30 | 30 |
| Bloomington | 0 | 40 | 600 | 1,690 | 2,320 | 0 | 20 | 320 | 900 | 1,240 |
| Inver Grove Heights | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mendota Heights | 0 | 0 | 10 | 170 | 180 | 0 | 0 | 0 | 70 | 70 |
| Eagan | 0 | 0 | 40 | 630 | 670 | 0 | 0 | 10 | 220 | 230 |
| Total | 10 | 1,080 | 6,560 | 22,030 | 29,680 | 0 | 440 | 2,930 | 9,460 | 12,830 |
| New Ford Town | 860 | 50 | 0 | 0 | 910 | 340 | 20 | 0 | 0 | 360 |
| Rich Acres | - | 40 | 90 | 50 | 190 | 0 | 20 | 30 | 20 | 70 |

(1) Excluding New Ford Town which will be acquired by the MAC.
(2) Excluding Rich Acres which will be acquired by the MAC.
Note: Totals may not add due to rounding.

Source: HNTB analysis based on year 2005 fleet mix.

*Noise Sensitive Land Uses in DNL 65+ Contour*

In addition to residential dwellings and people there would be 1 school, 1 place of worship, 3 park/recreation areas and 1 environmental education area (Bass Ponds in the Minnesota Valley National Wildlife Refuge) within the DNL 65+ contour. There would be no hospitals, nursing homes, outdoor amphitheaters, or nature exhibits/zoos within the contour. See **Tables Q-2** and **Q-3.**

## Table Q-2 - Noise Sensitive Uses within Year 2005 DNL Contours - MSP Alternative

| Use Type | DNL 75+ | DNL70-75 | DNL 65-70 | DNL 60-65 | Total |
|---|---|---|---|---|---|
| Schools/Day Care | 0 | 1 | 0 | 4 | 5 |
| Churches/Synagogues | 0 | 0 | 0 | 1 | 1 |
| Hospitals/Nursing Homes | 0 | 0 | 0 | 0 | 0 |
| Parks/Recreation | 0 | 0 | 3 | 1 | 4 |
| Outdoor Amphitheaters/Music Shells | 0 | 0 | 0 | 0 | 0 |
| Nature Exhibits/Zoos | 0 | 0 | 0 | 0 | 0 |
| Wildlife Refuges/Environmental Education | 0 | 1 | 0 | 0 | 1 |
| Total | 0 | 2 | 3 | 6 | 11 |

Source: HNTB analysis based on year 2005 fleet mix.

*$L_{10}$65 Impacts*

**Figure Q-4** shows the $L_{10}$ 65 contours for the MSP Alternative. The wider contours are generated by departing aircraft; the spike-shaped contours are generated by arriving aircraft. It is anticipated that approximately 121,000 people would be living within the $L_{10}$ 65 contours. The large departure and arrival contours generated from operations to and from the southeast on the main parallel runways would occur approximately 25 percent and 47 percent of the time, respectively. The departure and arrival contours generated by operations on the main parallels to/from the northwest would occur about 38 percent and 36

percent of the time, respectively. The contours centered over Runway 4-22 would occur very infrequently -- about one percent for departures off Runway 22 and near 0 percent for other modes. The proposed north-south runway would result in an $L_{10}$ 65 contour which would occur approximately 36 percent of the time for departures to the south and 17 percent of the time for arrivals from the south. Operations to/from the north would occur very infrequently.

*Selected Noise Sensitive Uses Outside DNL 65+ Contours*

Noise associated with aircraft operations can annoy people outside the DNL 65+ contours, as shown in **Figure A.3-2 in** Appendix A. For this reason 42 noise-sensitive land use points (most of which are outside the DNL 65 contour) were identified to estimate the noise impacts that may result under the MSP Alternative (**Figure Q-5**). **Table Q-3** lists DNL, peak sound exposure levels (SEL) and time above (TA) 85 dBA for the MSP Alternative.

## Table Q-3 - Noise Impacts at Select Noise Sensitive Locations Shown in Figure Q-5 - MSP Alternative

| Jurisdiction/Location | DNL | | Peak SEL | | Time Above 85 dBA (minutes per day) | |
|---|---|---|---|---|---|---|
| | 1994 | 2005 | 1994 | 2005 | 1994 | 2005 |
| Bloomington | | | | | | |
| 1 Hohag Playlot | 59.7 | 56.7 | 106.7 | 95.0 | 0.3 | - |
| 2 Smith Park | 64.1 | 54.4 | 108.9 | 97.3 | 0.6 | 0.3 |
| 3 Cook's Playlot | 63.4 | 53.9 | 104.4 | 93.3 | 0.8 | - |
| 4 Wright's Lake Park | 65.5 | 58.0 | 108.8 | 95.9 | 0.8 | - |
| The Synod of Lakes & Prairies 5 Trinity School | 67.4 | 60.0 | 109.2 | 97.8 | 1.4 | 0.1 |
| 6 Children's World Learning Center | 54.7 | 53.8 | 100.0 | 98.0 | 0.1 | 0.3 |
| 7 Long Meadow Lake Bass Ponds | 55.0 | 70.6 | 96.0 | 104.6 | 0.2 | 3.8 |
| Eagan | | | | | | |
| 8 Highview Park | 62.6 | 54.8 | 97.5 | 92.2 | 1.6 | - |
| 9 Pilot Knob Elementary | 58.4 | 52.1 | 95.6 | 90.8 | 0.6 | - |
| 10 Tesseract School-Day Care | 45.2 | 57.8 | 82.8 | 96.2 | - | 0.1 |
| 11 Lexington Park | 67.1 | 62.4 | 106.2 | 96.2 | 1.8 | 0.1 |
| 12 Burr Oaks Park | 63.5 | 59.4 | 97.4 | 93.0 | 0.5 | - |
| 13 School | 64.8 | 61.1 | 101.4 | 95.2 | 0.8 | - |
| 14 Fort Snelling Veterans Hospital | 63.2 | 53.7 | 107.3 | 100.2 | 1.4 | - |
| Mendota/Mendota Heights | | | | | | |
| 15 City Park | 62.1 | 52.0 | 95.4 | 89.7 | 1.9 | - |
| 16 State Park | 74.4 | 66.3 | 109.5 | 103.7 | 13.3 | 1.1 |
| 17 Acacia Park Cemetery | 75.6 | 64.5 | 111.2 | 106.1 | 15.6 | 1.1 |
| 18 Mendota Workcamp 1 (Historic) | 74.2 | 66.0 | 109.5 | 104.2 | 15.0 | 0.8 |
| 19 Roger Lake Park | 67.8 | 58.5 | 107.7 | 100.9 | 3.0 | 0.2 |
| 20 Friendly Hills Park | 65.2 | 56.1 | 105.8 | 96.0 | 1.4 | 0.1 |
| 21 I-35E and Mendota Road | 62.1 | 53.4 | 101.2 | 93.9 | 1.5 | - |
| Minneapolis | | | | | | |
| 22 George Todd Park | 71.3 | 66.8 | 108.3 | 102.1 | 7.3 | 1.6 |
| 23 Field Public School | 63.3 | 58.3 | 107.5 | 99.2 | 1.0 | 0.1 |
| 24 Angelus Convalescent | 62.2 | 57.2 | 106.5 | 97.4 | 0.8 | 0.1 |
| 25 Wenonah Elementary School | 76.5 | 71.6 | 111.9 | 106.2 | 22.0 | 7.0 |
| 26 Morris Park Elementary School | 66.6 | 58.8 | 98.7 | 93.1 | 6.0 | - |
| 27 Hale Public School | 71.1 | 64.5 | 108.9 | 103.0 | 6.5 | 0.7 |
| 28 St. Joseph's Home for Children | 64.6 | 57.8 | 107.1 | 99.3 | 1.7 | 0.1 |
| 29 Concy's Montessori School/Daycare | 62.5 | 60.1 | 102.0 | 93.7 | 0.3 | - |
| 30 Clara Barton Open School | 60.5 | 58.2 | 98.5 | 93.9 | 0.2 | - |
| 31 Washburn High School | 62.1 | 58.1 | 106.6 | 97.1 | 0.5 | - |
| 32 Window Open School | 64.5 | 59.7 | 107.9 | 100.5 | 1.8 | 0.3 |
| 33 Annunciation Catholic Church/School | 62.2 | 57.3 | 106.5 | 97.4 | 0.7 | 0.1 |
| 34 Minnehaha Parkway & Lyndale Ave. | 63.2 | 59.0 | 106.0 | 96.5 | 0.5 | - |
| Richfield | | | | | | |
| 35 Richfield Veterans Memorial Park | 60.7 | 53.8 | 99.7 | 93.2 | 1.1 | - |
| 36 Taft Park | 75.3 | 67.9 | 111.7 | 106.0 | 15.8 | 2.5 |
| 37 Mount Calvary Educational Bldg. | 68.2 | 62.2 | 103.4 | 97.4 | 7.0 | 0.2 |
| 38 City Park | 62.5 | 56.2 | 96.3 | 89.3 | 1.5 | - |
| 39 Roosevelt Park | 60.4 | 49.0 | 107.6 | 88.3 | 0.2 | - |
| 40 Centennial Elementary School | 65.2 | 57.9 | 108.3 | 93.0 | 1.2 | 0.2 |
| 41 Richfield Intermediate School | 60.1 | 53.0 | 99.2 | 86.1 | 0.4 | - |
| Saint Paul | | | | | | |
| 42 St. Therese Parish Center | 59.4 | 50.0 | 98.3 | 90.6 | 0.1 | - |

Note: hyphen (-) denotes TA value less than 0.1 minutes.

Source: HNTB analysis based on year 2005 fleet mix.

The results should be interpreted with caution for these noise sensitive land use points for several reasons. First, a 1992 evaluation of DNL as a noise measurement tool by the Federal Interagency Committee on Noise (FICON) reported that "aircraft noise predictions below DNL 65 can be less accurate...." Second, the farther aircraft are from an airport, the more variable their location relative to modeled flight tracks. Finally, the quieter the perceived sound from an aircraft, the harder it is to discern it from other existing ambient noise levels. Other sources of noise (such as automobiles, voices, wind, etc.) may actually be louder than the aircraft at the listener's location.

Most selected locations would see a significant decrease in DNL noise levels from the existing conditions. Some locations (along the flight path of the proposed new runway, for example) would however experience a noticeable increase in DNL noise levels.

*Noise from Ground Operations—Lmax*

Development of Runway 17-35 would bring aircraft taxiing and run-up operations closer to the residential areas of eastern Richfield. A comparative analysis of the noise generated by aircraft taxiing to the existing and proposed runway ends and the associated holding pads for the runways was completed. It should be noted that aircraft taxiing and run-up operations are not predominate noise generating operations on the ground. The start of take-off roll and application of reverse thrust on landing are generally considered the major sources of ground noise during aircraft operations. These phases of aircraft operations are already included in the calculation of the DNL contours within the INM model.

A separate analysis was undertaken to identify noise levels associated with aircraft taxiing to Runways 11R and 17. Although the majority of aircraft would access/egress Runway 17-35 from the east taxiway and holding pad further away from the communities, queuing on the west taxiway was analyzed as a more conservative condition. The potential change in Lmax values (maximum single-event noise level) experienced in the nearby communities of Richfield and south Minneapolis for taxiing operations on the western taxiways of 11R and 17 ranges from +2 dB at the furthest study point (located near Lake Nokomis) to +12 dBA at the closest point studied (a point located near the Evangelical Free Church of America). The increase of +12 dBA near the Evangelical Free Church results in an Lmax value of 73 dBA, which on a single-event basis, is not considered to be a severe noise level. This analysis was based on the 747-200 aircraft being the loudest aircraft to be utilized on Runways 11R and 17. Typical noise levels for quieter Stage 3 aircraft, like the B-757, would be 62.7 dBA at this same point.

The results of this analysis must be interpreted with caution as the INM does not account for ground attenuation, shielding or other noise sources. An example of other noise sources effecting the communities analyzed would be highway noise. Noise analysis for the existing roadways and proposed roadway improvements for the MSP Alternative indicate that TH 77 itself will generate noise levels exceeding 70 dBA during many periods. Potential mitigation of the aircraft ground noise levels through construction of airport facilities and/or noise attenuation barriers are identified in Section QI.1.3. These barriers can significantly reduce ground noise levels experienced in the neighboring communities. Additionally, mitigation will likely be a part of the proposed highway widening design.

*Unavoidable Adverse Impacts*

The continued operation of MSP, including the use of the new north-south runway will result in unavoidable noise impacts for communities immediately surrounding the airport. Approximately 300 more persons would be within the DNL 65+ contours compared to the No Action Alternative in the year 2005. It should be noted, however, that under the MSP Alternative the number of persons within the DNL 65 noise impact would decrease from 22,090 in 1994 to 7,650 by 2005. The following section describes mitigation proposed to address these impacts.

### Q.1.1.3 Mitigation Measures — MSP Alternative

In April 1996 the Minnesota legislature selected the MSP Alternative and directed MAC to develop a noise mitigation program with the assistance of its sound abatement advisory committee, the Metropolitan Aircraft

Sound Abatement Council (see Appendix A.14). MAC subsequently established a MSP Noise Mitigation Committee which prepared a MSP Noise Mitigation Program and report in October 1996. The following mitigation was adopted by the commission on October 28, 1996 (see MSP NOISE MITIGATION PROGRAM, MAC, November 1996). The program contains measures that may or may not be eligible for funding based on FAA policy or criteria, as stated in Appendix B.

Insulation

- the residential sound insulation program (SIP) within the 1996 DNL 65+ contour be completed on the approved current schedule *(Note: the current program is scheduled for completion in the year 2002)*
- the SIP be expanded to incorporate the area within the 2005 DNL 60-65 contour *(see Appendix B)*
- the 2005 DNL 60 contour be based on the most accurate projection of traffic levels and use of appropriate ANOMS data
- MAC and affected communities develop neighborhood and "natural boundaries" that reflect current conditions at the outer edge of the expanded contour to the maximum extent possible
- insulation of dwellings/buildings in the expanded SIP to be performed in the following order of priority:
    1. single family homes after completion of the 1996 DNL 65 SIP on the approved current schedule
    2. multifamily dwellings, nursing homes, and churches with regular weekday daycare/nursery school types of operations — in accordance with a schedule agreed upon by MAC and each affected city
- the program be funded by a combination of Passenger Facility Charge (PFC) revenues, airline fees, internally generated funds and federal aid; to the extent that MAC cannot fund the expanded program in a reasonable period of time, support from the state of Minnesota will be sought; however, in no case will unreimbursed financial impacts fall on affected residents or their local governments
- MAC will fund the program on an accelerated basis beyond its current annual level of $25.5 million
- MAC will develop models which reflect the impact of ground level noise on residential properties; mitigation for low frequency noise will be developed after consultation with independent noise mitigation experts
- completion of the program is contingent on MAC maintaining a bond rating of at least A.

Community Stabilization

The Metropolitan Airports Commission will participate with affected communities to identify and quantify any impacts the airport may have on declining property values and/or other negative consequences on neighborhoods near the airport. To the extent that negative consequences can be quantified, a Working Group should prepare recommendations to MAC for consideration by the Minnesota Legislature. Community stabilization measures considered should include, but not be limited to, the measures described in the Metropolitan Council-MAC Community Protection Report. The measures include purchase and property value guarantees and housing replacement to complement the tax credit and revitalization area legislation adopted in 1996.

A Working Group will be convened including representatives from MAC, Met Council, Northwest Airlines, affected communities and legislative staff. The Working Group should identify a program design, funding options, administrative responsibilities and eligibility area. The final legislative recommendation should be presented to MAC and other interested parties for endorsement and inclusion in 1997 legislative programs.

In addition to the preceding mitigation, MAC is committed to perform the following study.

Airport Operations

The following will be incorporated and evaluated in a Part 150 update:

- Take action, as required by the 1996 Legislature, to prohibit use of Stage 2 aircraft after December 31, 1999.
- Modify the night hours to 10:30 p.m. - 6:00 a.m. and limit activity during these hours to Stage 3 aircraft.
- Develop a departure procedure for Runway 22 to direct aircraft over areas of commercial development and the Minnesota River Valley.
- Seek cooperation from FAA to implement departure procedures as appropriate at each runway end.
- Evaluate departure procedures in the Eagan-Mendota Heights corridor.
- Work within the aviation industry to encourage further reductions in aircraft noise levels.
- Negotiate the Stage 2 prohibition, noise abatement procedures, and expansion of night hours, incorporating appropriate penalties for non-compliance.
- The MAC noise monitoring system monitors will be increased in number to provide more coverage of actual impacts in the airport vicinity, in particular, areas affected by the north-south runway. Areas affected by the parallel runways, may have additional microphone locations to monitor continued and growing volumes of air traffic as the airport expands. This system should be used to corroborate the accuracy of the modeled contours for noise program eligibility.

Furthermore, on October 28, 1996 MAC also adopted the following mitigation, which is associated with the proposed action.

Runway Use

- Completion of the environmental process and construction of the North-South Runway should be expedited and completed as soon as possible. Progress should be measured against this schedule:
  a) commence construction — 1998
  b) complete construction, open runway — 2003
- In the interim, Runway 4/22 should be used for noise mitigation purposes. This requires the following:
  a) Construction of associated taxiways;
  b) Mitigation program at the southwest end of Runway 4-22 in the cities of Bloomington and Richfield as required in the Final Record of Decision (March 28, 1995). The acquisition portion of the mitigation will be initiated as soon as contracts for the associated taxiways are let and should be completed within a period of two years. Funds for the acquisition program will be in addition to those designated for the residential insulation program, consistent with the existing acquisition program. The insulation portion of the mitigation will be integrated with the current MAC program, starting as soon as contracts for construction of the associated taxiways are let, or the RUS is implemented, whichever occurs first. The insulation program will be implemented at the rate of at least 20% of the total homes as defined in the Runway 4-22 mitigation program in each year until all of the single family and multiple family units within the 1996 DNL 65 contour are insulated. To the extent practical, MAC will identify funding and program administration options to minimize delay in completion of the current insulation program.
  c) If the North-South Runway is completed before insulation of all eligible homes is completed, the insulation program for the area impacted by aircraft using Runway 4-22 may be terminated.
- Completion of this program is contingent on the MAC maintaining a bond rating of at least A.

## Q.1.2 No Action Alternative

### Q.1.2.1 Affected Environment — No Action Alternative

The APE of aircraft noise is the area within the DNL 60+ contours for this alternative. The DNL contours for operation of MSP in 1994 are shown in **Figure Q-1**. These base year contours represent average annual operations for the calendar year 1994. Approximately 42.3 square miles of land around MSP experienced

DNL 60 or greater, with 19.7 square miles in the DNL 65. Approximately 65,130 people and 28,220 dwellings are within the DNL 60 to 65 contour, while 22,090 people reside in 9,570 dwellings in the DNL 60 to 65 contour.

The DNL 65 contour extends approximately 4 miles southwest of the airport over Eagan and Mendota Heights. The DNL 60 contour extends an additional 2 to 3.5 miles towards Inver Grove Heights. To the northwest, the DNL 65 contour extends approximately 2 to 2.5 miles from airport property over the City of Minneapolis and Richfield. The DNL 60 contour extends an additional 1.5 to 2.0 miles beyond the DNL 65 contour. The DNL 65 contour includes part of Minneapolis to the northeast and Richfield and Bloomington to the southwest. The DNL 60 extends into Richfield and Bloomington to the southwest and slightly into Saint Paul to the northeast.

### Q.1.2.2 Noise Impacts - No Action Alternative

*Overflights*

As shown in **Figure Q-8**, the flight tracks radiate at MSP from the ends of the runways. Many overflights occur northwest and southeast of the site with some overflights immediately south of the airport.

*Population Impacts--DNL 70, 65 and 60*

**Figure Q-9** shows the year 2005 DNL contours for the No Action Alternative. The DNL contour encompasses approximately 9.2 square miles. The population exposed to DNL 65 or greater is approximately 7,350. There would be 3,200 homes within the DNL 65 and greater contour. An additional 27,690 people and 11,810 dwellings would be within the DNL 60 to 65 contour. **Table Q-4** summarizes population and households contained within the contours.

**Table Q-4 - Population and Dwellings Within Year 2005 DNL Contours - No Action Alternative**

| | Population | | | | | Dwellings | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Jurisdiction | DNL 75+ | DNL 70-DNL 75 | DNL 65-DNL 70 | DNL 60-DNL 65 | Total | DNL 75+ | DNL 70-DNL 75 | DNL 65-DNL 70 | DNL 60-DNL 65 | Total |
| Minneapolis | 0 | 720 | 5,470 | 18,170 | 24,360 | 0 | 290 | 2,410 | 7,650 | 10,350 |
| North Richfield (1) | 0 | 0 | 240 | 1,870 | 2,110 | 0 | 0 | 90 | 770 | 860 |
| South Richfield (2) | 0 | 0 | 680 | 1,560 | 2,240 | 0 | 0 | 330 | 740 | 1,070 |
| Fort Snelling | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bloomington | 0 | 0 | 30 | 3,970 | 4,000 | 0 | 0 | 10 | 1,820 | 1,830 |
| Inver Grove Heights | 0 | 0 | 0 | 10 | 10 | 0 | 0 | 0 | 10 | 10 |
| Mendota Heights | 0 | 0 | 140 | 1,050 | 1,190 | 0 | 0 | 50 | 460 | 510 |
| Eagan | 0 | 10 | 80 | 1,060 | 1,150 | | 0 | 30 | 370 | 400 |
| Total | 0 | 720 | 6,630 | 27,690 | 35,040 | 0 | 290 | 2,910 | 11,810 | 15,020 |
| New Ford Town & | 0 | 170 | 650 | 120 | 940 | 0 | 70 | 260 | 50 | 380 |
| Rich Acres | 0 | 0 | 0 | 80 | 80 | 0 | 0 | 0 | 30 | 30 |

(1) Excluding New Ford Town.
(2) Excluding Rich Acres.
Note: Totals may not add due to rounding.

*Noise Sensitive Land Uses in DNL 65+ Contour*

In addition to residential dwellings and people there would be 1 school, 1 church/synagogue, and 3 parks/recreation areas within the contour. There would be no hospitals, nursing homes, outdoor amphitheaters, or nature exhibits/zoos within the contour. See **Tables Q-5** and **Q-6**.

**Table Q-5 - Noise Sensitive Uses Within Year 2005 DNL Contours - No Action Alternative**

| Use Type | DNL 75+ | DNL70-75 | DNL 65-70 | DNL 60-65 | Total |
|---|---|---|---|---|---|
| Schools/Day Care | 0 | 1 | 0 | 5 | 6 |
| Churches/Synagogues | 0 | 0 | 1 | 0 | 1 |
| Hospitals/Nursing Homes | 0 | 0 | 0 | 0 | 0 |
| Parks/Recreation | 0 | 0 | 3 | 6 | 9 |
| Outdoor Amphitheaters/Music Shells | 0 | 0 | 0 | 0 | 0 |
| Nature Exhibits/Zoos | 0 | 0 | 0 | 0 | 0 |
| Wildlife Refuges/Environmental Education | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 4 | 11 | 16 |

Source: HNTB analysis based on year 2005 fleet mix.

*$L_{10}$65 Impacts*

**Figure Q-10** shows the $L_{10}$ 65 contours for the No Action Alternative. The wider contours are generated by departing aircraft; the spike-shaped contours are generated by arriving aircraft. It is anticipated that approximately 106,000 people would be living within the $L_{10}$ 65 contours. The large departure and arrival contours generated by operations to and from the southeast on the main parallel runways would occur approximately 50 percent and 53 percent of the time, respectively. The departure and arrival contours generated by operations to and from the northwest on the main parallel runways would occur approximately 34 percent and 46 percent of the time, respectively. The departure contour centered over Runway 4-22 would be generated approximately 15 percent of the year. The arrival contours centered over Runway 4-22 would occur very infrequently -- about one percent for arrivals on Runway 22 and near 0 percent for arrivals on Runway 4.

*Selected Noise Sensitive Uses Outside DNL 65 Contours*

It is recognized that noise impacts associated with aircraft operations can affect people beyond the DNL 65 contour. For this reason 42 noise sensitive land use points outside the contour were identified to estimate the noise impacts that may result under the No Action Alternative (**Figure Q-5**).

**Table Q-6** lists the 42 noise-sensitive locations, their estimated ambient DNL level, and DNL, SEL, and TA 85 dBA for the No Action Alternative.

## Table Q-6 - Noise Impacts at Select Noise Sensitive Locations Shown in Figure Q-5 - No Action Alternative

| Jurisdiction/Location | DNL | | Peak SEL | | Time Above 85 dBA (minutes per day) | |
|---|---|---|---|---|---|---|
| | 1994 | 2005 | 1994 | 2005 | 1994 | 2005 |
| Bloomington | | | | | | |
| 1 Hohag Playlot | 59.7 | 56.3 | 106.7 | 97.9 | 0.3 | 0.1 |
| 2 Smith Park | 64.1 | 61.5 | 108.9 | 103.5 | 0.6 | 0.8 |
| 3 Cook's Playlot | 63.4 | 60.5 | 104.4 | 101.2 | 0.8 | 0.4 |
| 4 Wright's Lake Park | 65.5 | 61.5 | 108.8 | 102.4 | 0.8 | 0.6 |
| 5 The Synod of Lakes & Prairies Trinity School | 67.4 | 65.1 | 109.2 | 106.1 | 1.4 | 1.5 |
| 6 Children's World Learning Center | 54.7 | 55.1 | 100.0 | 98.0 | 0.1 | 0.3 |
| 7 Long Meadow Lake Bass Ponds | 55.0 | 53.5 | 96.0 | 94.8 | 0.2 | - |
| Eagan | | | | | | |
| 8 Highview Park | 62.6 | 56.0 | 97.5 | 91.7 | 1.6 | - |
| 9 Pilot Knob Elementary | 58.4 | 53.3 | 95.6 | 90.3 | 0.6 | - |
| 10 Tesseract School-Day Care | 45.2 | 42.8 | 82.8 | 84.0 | - | - |
| 11 Lexington Park | 67.1 | 63.5 | 106.2 | 96.2 | 1.8 | 0.1 |
| 12 Burr Oaks Park | 63.5 | 60.5 | 97.4 | 93.7 | 0.5 | - |
| 13 Trinity Lone Oak Church/Lutheran School | 64.8 | 61.6 | 101.4 | 95.2 | 0.8 | - |
| Fort Snelling | | | | | | |
| 14 Veterans Hospital | 63.2 | 54.1 | 107.3 | 98.9 | 1.4 | - |
| Mendota/Mendota Heights | | | | | | |
| 15 City Park | 62.1 | 55.1 | 95.4 | 89.7 | 1.9 | - |
| 16 State Park | 74.4 | 67.2 | 109.5 | 103.7 | 13.3 | 1.7 |
| 17 Acacia Park Cemetery | 75.6 | 68.3 | 111.2 | 106.1 | 15.6 | 3.0 |
| 18 Mendota Workcamp 1 (Historic) | 74.2 | 67.6 | 109.5 | 105.2 | 15.0 | 1.5 |
| 19 Roger Lake Park | 67.8 | 62.4 | 107.7 | 100.9 | 3.0 | 0.5 |
| 20 Friendly Hills Park | 65.2 | 59.8 | 105.8 | 96.0 | 1.4 | 0.2 |
| 21 I-35E and Mendota Road | 62.1 | 57.0 | 101.2 | 93.9 | 1.5 | - |
| Minneapolis | | | | | | |
| 22 George Todd Park | 71.3 | 68.2 | 108.3 | 102.1 | 7.3 | 2.8 |
| 23 Field Public School | 63.3 | 57.5 | 107.5 | 99.2 | 1.0 | 0.1 |
| 24 Angelus Convalescent | 62.2 | 56.4 | 106.5 | 97.4 | 0.8 | 0.1 |
| 25 Wenonah Elementary School | 76.5 | 71.1 | 111.9 | 106.2 | 22.0 | 6.2 |
| 26 Morris Park Elementary School | 66.6 | 59.0 | 98.7 | 93.1 | 6.0 | - |
| 27 Hale Public School | 71.1 | 64.0 | 108.9 | 103.0 | 6.5 | 0.5 |
| 28 St. Joseph's Home for Children | 64.6 | 56.8 | 107.1 | 99.3 | 1.7 | 0.1 |
| 29 Concy's Montessori School/Daycare | 62.5 | 60.2 | 102.0 | 93.7 | 0.3 | - |
| 30 Clara Barton Open School | 60.5 | 58.1 | 98.5 | 93.9 | 0.2 | - |
| 31 Washburn High School | 62.1 | 58.5 | 106.6 | 97.1 | 0.5 | - |
| 32 Window Open School | 64.5 | 59.6 | 107.9 | 100.5 | 1.8 | 0.3 |
| 33 Annunciation Catholic Church/School | 62.2 | 57.9 | 106.5 | 97.4 | 0.7 | 0.1 |
| 34 Minnehaha Parkway & Lyndale Ave. | 63.2 | 60.4 | 106.0 | 96.5 | 0.5 | - |
| Richfield | | | | | | |
| 35 Richfield Veterans Memorial Park | 60.7 | 54.1 | 99.7 | 93.2 | 1.1 | - |
| 36 Taft Park | 75.3 | 67.8 | 111.7 | 106.0 | 15.8 | 2.6 |
| 37 Mount Calvary Educational Bldg. | 68.2 | 60.3 | 103.4 | 97.4 | 7.0 | 0.1 |
| 38 City Park | 62.5 | 55.8 | 96.3 | 90.0 | 1.5 | - |
| 39 Roosevelt Park | 60.4 | 55.7 | 107.6 | 103.9 | 0.2 | 0.1 |
| 40 Centennial Elementary School | 65.2 | 61.6 | 108.3 | 104.2 | 1.2 | 0.6 |
| 41 Richfield Intermediate School | 60.1 | 54.2 | 99.2 | 93.6 | 0.4 | - |
| Saint Paul | | | | | | |
| 42 St. Therese Parish Center | 59.4 | 51.7 | 98.3 | 94.1 | 0.1 | - |

Note: hyphen (-) denotes TA value less than 0.1 minutes.

Source: HNTB analysis based on year 2005 fleet mix.

The results should be interpreted with caution for these points for several reasons. First, a 1992 evaluation of DNL as a noise measurement tool by FICON reported that "aircraft noise predictions below DNL 65 can be

less accurate...." Second, the farther aircraft are from an airport, the more variable their location relative to modeled flight tracks. Finally, the quieter the perceived sound from an aircraft, the harder it is to discern it from other existing ambient noise levels. Other sources of noise (such as automobiles, voices, wind, etc.) may actually be louder than the aircraft at the listener's location.

*Effect of No Action Alternative on Noise Exposure at Saint Paul Downtown Airport*

Under the No Action Alternative, a number of general aviation aircraft operations at MSP could move to Saint Paul Downtown Airport (STP) as a result of increased congestion at the former facility. The issue then arises relative to what impact these additional operations would have on noise for communities around STP. The volume of GA jet aircraft operations transferring to STP under the No Action Alternative is anticipated to be less than 10 per day. A preliminary noise analysis at 10 study points in the vicinity of STP found that DNL noise impacts would increase by less than 1.5 dBA for the transfer of over 10 general aviation jet operations. The FAA guidelines for determination of a significant impact. is an increase of DNL 1.5 dBA or greater. Because the increase is less than 1.5 dBA, the potential impact on STP due to the No Action Alternative would not be significant and no further analysis is required.

*Unavoidable Adverse Impacts*

The continued operation of MSP under the No Action Alternative would result in continued unavoidable noise impacts for communities immediately surrounding the airport. It should be noted, however, that under this alternative the number of persons within the DNL 65+ noise impact area would decrease from 22,090 in 1994 to 7,350 by 2005. These impacts would be addressed through continuation of the MSP noise compatibility program section described in Section Q.1.1.3.

## Q.1.3 Cumulative Noise Impacts of Runway 4-22 Extension

The noise impacts of the Runway 4-22 extension for the MSP and No Action Alternatives are summarized in **Table Q-7**; a detailed analysis is presented in the *Environmental Assessment For Extension Of Runway 4-22 To 12,000 Feet, Minneapolis-Saint Paul International Airport,* MAC April 1998. **Table Q-7** shows that significant noise impacts (an increase of DNL 1.5 dBA at levels of DNL 65+) would not occur at any location experiencing an increase in noise due to the proposed extension of Runway 4-22. The largest increase is 0.7 dBA to DNL 54.4 at Receptor 14, the Veterans Hospital, from the MSP Alternative – which is still less than the DNL 56.0 from the No Action Alternative.

Table Q-7 - Cumulative Runway 4-22 Extension 2005 Noise Impacts - MSP and No Action Alternatives

| Jurisdiction/Location | MSP Alternative | | No Action Alternative | |
|---|---|---|---|---|
| (See Figure Q-5) | Without 4-22 | With 4-22 | Without 4-22 | With 4-22 |
| **Bloomington** | | | | |
| 1 Hohag Playlot | 56.7 | 56.7 | 56.3 | 56.3 |
| 2 Smith Park | 54.4 | 54.7 | 61.5 | 61.6 |
| 3 Cook's Playlot | 53.9 | 54.0 | 60.5 | 60.6 |
| 4 Wright's Lake Park | 58.0 | 58.0 | 61.5 | 61.5 |
| 5 The Synod of Lakes & Prairies Trinity School | 60.0 | 60.0 | 65.1 | 65.1 |
| 6 Children's World Learning Center | 53.8 | 54.4 | 55.1 | 55.5 |
| 7 Long Meadow Lake Bass Ponds | 69.0 | 69.0 | 53.5 | 53.5 |
| **Eagan** | | | | |
| 8 Highview Park | 54.8 | 54.8 | 56.0 | 56.0 |
| 9 Pilot Knob Elementary | 52.1 | 52.1 | 53.3 | 53.3 |
| 10 Tesseract School-Day Care | 57.8 | 57.8 | 42.8 | 42.8 |
| 11 Lexington Park | 62.4 | 62.4 | 63.5 | 63.5 |
| 12 Burr Oaks Park | 59.4 | 59.4 | 60.5 | 60.5 |
| 13 Trinity Lone Oak Church/Lutheran School | 61.1 | 61.1 | 61.8 | 61.8 |
| **Fort Snelling** | | | | |
| 14 Veterans Hospital | 53.7 | 54.4 | 54.1 | 54.7 |
| **Mendota/Mendota Heights** | | | | |
| 15 City Park | 52.0 | 52.0 | 55.1 | 55.1 |
| 16 State Park | 66.3 | 66.3 | 67.2 | 67.2 |
| 17 Acacia Park Cemetery | 64.5 | 64.5 | 68.3 | 68.3 |
| 18 Mendota Workcamp 1 (Historic) | 66.0 | 66.0 | 67.6 | 67.6 |
| 19 Roger Lake Park | 58.5 | 58.5 | 62.4 | 62.4 |
| 20 Friendly Hills Park | 56.1 | 56.1 | 59.8 | 59.8 |
| 21 I-35E and Mendota Road | 53.4 | 53.4 | 57.0 | 57.0 |
| **Minneapolis** | | | | |
| 22 George Todd Park | 66.8 | 66.8 | 68.2 | 68.2 |
| 23 Field Public School | 58.3 | 58.3 | 57.5 | 57.5 |
| 24 Angelus Convalescent | 57.2 | 57.2 | 56.4 | 56.4 |
| 25 Wenonah Elementary School | 71.6 | 71.6 | 71.1 | 71.1 |
| 26 Morris Park Elementary School | 58.8 | 58.8 | 59.0 | 59.0 |
| 27 Hale Public School | 64.5 | 64.5 | 64.0 | 64.0 |
| 28 St. Joseph's Home for Children | 57.8 | 57.8 | 56.8 | 56.8 |
| 29 Concy's Montessori School/Daycare | 60.1 | 60.1 | 60.2 | 60.2 |
| 30 Clara Barton Open School | 58.2 | 58.2 | 58.1 | 58.1 |
| 31 Washburn High School | 58.1 | 58.1 | 58.5 | 58.5 |
| 32 Window Open School | 59.7 | 59.7 | 59.6 | 59.6 |
| 33 Annunciation Catholic Church/School | 57.3 | 57.3 | 57.9 | 57.9 |
| 34 Minnehaha Parkway & Lyndale Ave. | 59.0 | 59.0 | 60.4 | 60.4 |
| **Richfield** | | | | |
| 35 Richfield Veterans Memorial Park | 53.8 | 53.8 | 54.1 | 54.1 |
| 36 Taft Park | 67.9 | 67.9 | 67.8 | 67.8 |
| 37 Mount Calvary Educational Bldg. | 62.2 | 62.2 | 60.3 | 60.3 |
| 38 City Park | 56.2 | 56.2 | 55.8 | 55.8 |
| 39 Roosevelt Park | 49.0 | 49.4 | 55.7 | 55.8 |
| 40 Centennial Elementary School | 57.9 | 58.0 | 61.6 | 61.6 |
| 41 Richfield Intermediate School | 53.0 | 53.0 | 54.2 | 54.2 |
| **Saint Paul** | | | | |
| 42 St. Therese Parish Center | 50.0 | 50.0 | 51.7 | 51.7 |

Source: HNTB analysis

## Q.1.4 Summary of Aircraft Noise Impacts

The noise impacts of the MSP 2020 Concept Plan and MSP 2010 LTCP are identical since the worst-case year is 2005, and are referred to as the MSP Alternative. **Table Q-8** compares the noise impacts for the two alternatives. Although the MSP Alternative has slightly more population within the DNL 65 contour, it exposes approximately 5,400 fewer people to noise levels of DNL 60 or greater than the No Action Alternative.

The MSP Alternative impacts two noise-sensitive land uses — the Wenonah Elementary School in Minneapolis and the Bass Ponds environmental education area in the Minnesota Valley National Wildlife Refuge. The No Action Alternative also impacts two noise-sensitive land uses — the Wenonah Elementary School and the Trinity School. Both alternatives would result in unavoidable impacts.

**Table Q-8 - Summary Comparison of Noise Impacts - MSP and No Action Alternatives**

| Criteria | Alternative | | |
|---|---|---|---|
| | MSP[1] | No Action[1] | 1994 |
| Persons in Year 2005 DNL 65 Noise Contour or Greater | 7,650 | 7,350 | 33,750 |
| Persons in Year 2005 DNL 60-65 Noise Contours | 22,030 | 27,690 | 65,150 |
| Persons in Year 2005 DNL 60 Noise Contour or Greater | 29,680 | 35,040 | 98,900 |
| Number of Noise-Sensitive Land Uses with Noise Exceeding FAA Guidelines | 2 | 2 | 4 |

[1] Year 2000 population estimates.

Source: HNTB analysis.

**Table Q-9** compares DNL for the MSP Alternative and No Action Alternative. According to the FAA's AC 5050.4A, Airport Environmental Handbook, a 1.5 dBA increase in DNL (at noise sensitive sites located at or above 65 DNL) is considered significant. The table shows 29 of the 42 noise sensitive locations would experience a decrease in noise exposure under the MSP Alternative compared to the No Action Alternative. An additional 10 noise sensitive locations would experience an increase of less than 1.5 dBA. Only three points would experience a significant (1.5 dBA or greater) increase. These three points are Long Meadow Lake Bass Ponds (an increase of 17.1 dBA), Tesseract School-Day Care (an increase of 15.0 dBA), and Mount Calvary Educational Building (an increase of 1.9 dBA). The increased noise levels at Tesseract and Mount Calvary are still within FAA compatibility guidelines for the specific land uses. The impact on Bass Ponds exceeds FAA guidelines and is discussed in Section V.U (Section 4(f) impacts).

## Table Q-9 - Noise Impacts at Select Noise Sensitive Locations Shown in Figure Q-5 - Comparison Between MSP and No Action Alternatives

| Jurisdiction/Location | DNL FAA Guideline (1) | DNL MSP | DNL No Action | Difference (MSP - No Action) |
|---|---|---|---|---|
| Bloomington | | | | |
| 1 Hohag Playlot | 75.0 | 56.7 | 56.3 | 0.4 |
| 2 Smith Park | 75.0 | 54.4 | 61.5 | (7.1) |
| 3 Cook's Playlot | 75.0 | 53.9 | 60.5 | (6.6) |
| 4 Wright's Lake Park | 75.0 | 58.0 | 61.5 | (3.5) |
| 5 Trinity School - | 65.0 (2) | 60.0 | 65.1 | (5.1) |
| 6 Children's World Learning Center | 65.0 (3) | 53.8 | 55.1 | (1.3) |
| 7 Long Meadow Lake Bass Ponds | 65.0 | 70.6 | 53.5 | 17.1 |
| Eagan | | | | |
| 8 Highview Park | 75.0 | 54.8 | 56.0 | (1.2) |
| 9 Pilot Knob Elementary | 65.0 (3) | 52.1 | 53.3 | (1.2) |
| 10 Tesseract School-Day Care | 65.0 (3) | 57.8 | 42.8 | 15.0 |
| 11 Lexington Park | 75.0 | 62.4 | 63.5 | (1.1) |
| 12 Burr Oaks Park | 75.0 | 59.4 | 60.5 | (1.1) |
| 13 Trinity Lone Oak Church/ School | 65.0 (3) | 61.1 | 61.6 | (0.5) |
| Fort Snelling | | | | |
| 14 Veterans Hospital | 75.0 (2) | 53.7 | 54.1 | (0.4) |
| Mendota/Mendota Heights | | | | |
| 15 City Park | 75.0 | 52.0 | 55.1 | (3.1) |
| 16 State Park | 75.0 | 66.3 | 67.2 | (0.9) |
| 17 Acacia Park Cemetery | -- | 64.5 | 68.3 | (3.8) |
| 18 Mendota Workcamp 1 (Historic) | -- | 66.0 | 67.6 | (1.6) |
| 19 Roger Lake Park | 75.0 | 58.5 | 62.4 | (3.9) |
| 20 Friendly Hills Park | 75.0 | 56.1 | 59.8 | (3.7) |
| 21 I-35E and Mendota Road | -- | 53.4 | 57.0 | (3.6) |
| Minneapolis | | | | |
| 22 George Todd Park | 75.0 | 66.8 | 68.2 | (1.4) |
| 23 Field Public School | 65.0 (3) | 58.3 | 57.5 | 0.8 |
| 24 Angelus Convalescent | 75.0 (2) | 57.2 | 56.4 | 0.8 |
| 25 Wenonah Elementary School | 65.0 (3) | 71.6 | 71.1 | 0.5 |
| 26 Morris Park Elementary School | 65.0 (3) | 58.8 | 59.0 | (0.2) |
| 27 Hale Public School | 65.0 (3) | 64.5 | 64.0 | 0.5 |
| 28 St. Joseph's Home for Children | 65.0 (4) | 57.8 | 56.8 | 1.0 |
| 29 Concy's Montessori School/Daycare | 65.0 (3) | 60.1 | 60.2 | (0.1) |
| 30 Clara Barton Open School | 65.0 (3) | 58.2 | 58.1 | 0.1 |
| 31 Washburn High School | 65.0 (3) | 58.1 | 58.5 | (0.4) |
| 32 Window Open School | 65.0 (3) | 59.7 | 59.6 | 0.1 |
| 33 Annunciation Catholic Church/School | 65.0 (3) | 57.3 | 57.9 | (0.6) |
| 34 Minnehaha Parkway & Lyndale Ave. | -- | 59.0 | 60.4 | (1.4) |
| Richfield | | | | - |
| 35 Richfield Veterans Memorial Park | 75.0 | 53.8 | 54.1 | (0.3) |
| 36 Taft Park | 75.0 | 67.9 | 67.8 | 0.1 |
| 37 Mount Calvary Educational Bldg. (5) | 65.0 (3) | 62.2 | 60.3 | 1.9 |
| 38 City Park | 75.0 | 56.2 | 55.8 | 0.4 |
| 39 Roosevelt Park | 75.0 | 49.0 | 55.7 | (6.7) |
| 40 Centennial Elementary School | 65.0 (3) | 57.9 | 61.6 | (3.7) |
| 41 Richfield Intermediate School | 65.0 (3) | 53.0 | 54.2 | (1.2) |
| Saint Paul | | | | - |
| 42 St. Therese Parish Center (6) | 75.0 (2) | 50.0 | 51.7 | (1.7) |

(1) Maximum Day-Night Level (DNL) recommended by the FAA for this land use.

(2) Noise level reduction sufficient to achieve interior noise levels of DNL 45 or less should be incorporated in design and construction.

(3) When the noise level exceeds DNL 65 and the community determines that the use must be allowed, noise level reduction sufficient to achieve interior noise levels of DNL 45 or less should be incorporated in design and construction.

(4) When the noise level exceeds DNL 65 and the community determines that the use must be allowed, noise level reduction sufficient to achieve interior noise levels of DNL 40 or less should be incorporated in design and construction.

Source: HNTB analysis based on year 2005 fleet mix.

## Q.2 Surface Transportation Noise Impacts

The airport project has the potential to cause noise impacts at noise sensitive receiver sites proximate to the primary access roads serving each of the alternative airport sites. Traffic generated by the airport will add to existing traffic noise levels along roadways. Where roadways are new or reconstructed to accommodate airport traffic, traffic noise levels at nearby sensitive receivers may be affected.

Traffic noise levels vary significantly over time. Traffic noise is dependent on traffic volumes, vehicle speeds and vehicle types. Noise from vehicles comes from a variety of sources. For most cars, the primary noise source is the interaction of tires on the pavement. For trucks, the dominant noise source is usually exhaust and engine noise. Noise is also generated by brakes, loose body components and faulty exhaust systems.

### Q.2.1 2020 Methodology and Assumptions

Traffic noise levels are reported in dBA. Because the decibel is a logarithmic unit, a doubling of sound energy results in a 3 dBA change in noise levels. For example, the sum of two noise sources each emitting 70 dBA yields a combined noise level of 73 dBA. A 3 dBA change is generally considered to be the smallest change in traffic noise levels noticeable to most people. Traffic volumes must double to cause a 3 dBA change in adjacent noise levels. Therefore, a perceptible noise impact can occur along roadways where traffic volumes are forecast to increase by a factor of two or more.

The traffic noise impact analysis was conducted using the $L_{10}$ noise descriptor. The Minnesota State Noise Standards (Minnesota Rules Parts 7030.0010 to 7030.1050) and the FHWA Noise Abatement Criteria (23 CFR Part 772) are both expressed in terms of the $L_{10}$ noise descriptor. In residential areas, the state daytime noise standard is $L_{10}$ 65 dBA and the FHWA Noise Abatement Criteria Level is $L_{10}$ 70 dBA.

The traffic noise impacts of the project have been assessed by estimating the number of homes that would experience a perceptible noise impact in excess of state daytime standards or FHWA Abatement Criteria because of airport-generated traffic. The impact assessment methodology consisted of the following steps:

- Identify the roadway segments serving each build alternative where forecast traffic volumes are more than twice as high as no-build forecast traffic volumes.

- For the identified roadway segments, estimate the distance to the $L_{10}$ 65 dBA and the $L_{10}$ 70 dBA contours for both the MSP and No Action alternatives.

- Using 1"=800' 1990 aerial photography obtained from the Metropolitan Council, tabulate the number of homes within the $L_{10}$ 65 dBA and the $L_{10}$ 70 dBA contours for both alternatives by roadway segment.

- The total number of homes associated with the MSP Alternative represents the homes that would experience a perceptible increase in noise level in excess of state noise standards or federal noise abatement criteria, if the existing airport is expanded. In contrast, the total number of homes associated with the No Action Alternative represents the homes that would experience noise levels in excess of state noise standards or federal noise abatement criteria, if the existing airport is not expanded.

The distance to the $L_{10}$ 65 dBA and the $L_{10}$ 70 dBA contours was estimated using procedures given in *Highway Noise* (FHWA-RD-77-108, U.S. Department of Transportation, December 1978). Noise estimates were based on the following assumptions:

- Peak hour noise levels were assumed to coincide with the afternoon peak hour traffic. The afternoon peak traffic hour was assumed to carry ten percent of the average daily traffic volume forecasts.

- During the peak hour, the vehicle mix was assumed to consist of 94 percent automobiles, three percent medium trucks (2 axles, 6 wheels) and three percent heavy trucks (3 or more axles). This estimate was based on the *Special Area Analysis Manual* (U.S. Department of Transportation, August 1973) and represents the typical peak hour truck mix on freeway facilities.

- Ground cover between roadway and receiver was assumed to be acoustically soft. Shielding due to topography, vegetation, or intervening structures was not considered.

- Noise was estimated from mainline facilities only. Frontage roads, ramps and local street traffic noise was not considered.

### Q.2.2 2020 Surface Noise Impacts, Mitigation and Summary

The results of the traffic noise impact assessment are shown in **Table Q-10.**

**Table Q-10 - 1990 Residences Adversely Impacted by 2020 Traffic Noise from Selected Roadways Leading to Existing Airport Site**

| ROADWAY | NUMBER OF RESIDENCES IMPACTED | | | |
|---|---|---|---|---|
| | No Action Alternative | | MSP Alternative | |
| | $L_{10}$ 70 | $L_{10}$ 65 | $L_{10}$ 70 | $L_{10}$ 65 |
| TH 62/CROSSTOWN<br>I 35 W - 28th Ave. S. | 420 | 1,005 | 471 | 1,230 |
| TH 77/CEDAR AVE<br>I 494 - TH 62 | 42 | 267 | 42 | 267 |
| GRAND TOTAL: | 462 | 1,272 | 513 | 1,497 |

The analysis of surface transportation noise addresses the Federal Noise Abatement Criteria and Minnesota Standards. **Table Q-10** shows that the MSP Alternative would increase the number of residences exposed to surface transportation noise levels exceeding the Federal Noise Abatement Criteria ($L_{10}$ 70) from 462 to 513, an increase of 11 percent. Residences exposed to surface transportation noise levels exceeding the State Noise Standards ($L_{10}$ 65) would increase from 1,272 to 1,497, approximately 18 percent, under the MSP Alternative.

Mitigation could be provided through construction of noise barriers. Installation of noise barriers is dependent upon the cost-effectiveness of the barriers, the desires of the affected city and residents, and roadway and terrain conditions.

### Q.2.3 2010 Surface Noise Impacts, Mitigation and Summary

Two alternatives are being considered for improvements at the 66th Street Interchange with TH 77. Alternative A would convert Old Cedar Avenue into a one-way south frontage road between 66th Street and 67th Street. Alternative B would convert Old Cedar Avenue to a cul-de-sac just south of 66th Street as shown in **Figure T-2.** Alternative B would result in the greatest increase in traffic because all of the local traffic now using Old Cedar Avenue would be redirected to 18th Avenue under this alternative. The traffic on 18th Avenue just south of 66th Street is expected to increase from approximately 600 vehicles per day in 1994 to approximately 7,000 vehicles per day in 2020. Just north of 66th Street, traffic is expected to increase from about 600 vehicles per day in 1994 to approximately 5,000 vehicles per day in 2020.

The increase in traffic on 18th Avenue is expected to increase traffic noise levels for the homes on the west side of 18th Avenue in the area where the traffic volumes are increasing (between 67th Street and 66th

Street). An analysis was conducted to determine how the increase in traffic in front of these homes would impact the traffic-related noise levels for these homes. The FHWA's Traffic Noise Prediction Model was used to perform the analysis. The purpose of the analysis was determine the impact of the proposed 66th Street Interchange improvements on traffic noise levels. The analysis was based on a simplified model of the area. Existing noise levels were estimated using the Traffic Noise Prediction Model. The analysis was based on Alternative B which would result in the greatest increase in traffic noise levels for this area. The results of this analysis are shown in **Table Q-11.**

**Table Q-11 - Predicted Noise Levels on 18th Avenue Near 66th Street (Noise Receivers on West Side of 18th Avenue at Front of Homes))**

| Location | Nighttime | | Daytime | |
|---|---|---|---|---|
| | Existing ($L_{10}$dBA) | Future ($L_{10}$dBA) | Existing ($L_{10}$dBA) | Future ($L_{10}$dBA) |
| **South of 66th** | | | | |
| 18th Avenue | 51 | 58 | 52 | 59 |
| Freeway | 60 | 60 | 62 | 62 |
| **Combined** | **60.5** | **62.1** | **62.4** | **63.8** |
| **North of 66th** | | | | |
| 18th Avenue | 51 | 57 | 52 | 58 |
| Freeway | 58.5 | 60 | 60.5 | 62 |
| **Combined** | **59.2** | **61.8** | **61.1** | **63.5** |

Traffic-related noise from several roadways impact the homes in this area. One of the major sources is the traffic on TH 77, which is only about two blocks from these homes. Other noise sources include the traffic on Old Cedar Avenue, 18th Avenue, and 66th Street. Traffic noise from Old Cedar Avenue is a relatively small contributor to the noise at the homes on west side of 18th Avenue. Traffic noise from 66th Street will have the greatest impact on the homes closest to 66th Street but will decrease for homes that are farther away. In order to simplify the analysis the traffic noise from these two noise sources were not included. Excluding these noise sources from the analysis means the existing noise levels are slightly understated and the impact of traffic increases on 18th Avenue are slightly overstated. In both cases the affect of not including these noise sources in the analysis is less than 1 dBA and does not affect the conclusions that can be reached from the analysis.

The following conclusions were reached based on the analysis:

- TH 77 is the largest contributor to traffic noise levels for homes on the west side of 18th Avenue near 66th Street.

- Existing traffic noise levels at the homes on the west side of 18th Avenue near 66th Street exceed the state nighttime noise standards of 55 dBA but are below the daytime standard of 65 dBA.

- The increase in traffic on 18th Avenue is not expected to result in a noticeable increase in traffic noise levels for the homes on the west side of 18th Avenue near 66th Street. The increase in traffic on 18th Avenue is expected to increase the level of traffic noise from 18th Avenue by about 6 dBA which, if this was the only noise source, would be a noticeable amount. However, when 18th Avenue traffic noise is combined with the traffic noise from TH 77, the overall increase in traffic noise levels is only 1.6 dBA nighttime and 1.4 dBA daytime, which would not be a noticeable increase. Research has shown that it takes an increase in noise levels of about 3 dBA to be noticeable by humans. The increase in traffic noise would be even less if traffic noise from 66th Street and Old Cedar Avenue is factored into the analysis.

The increase in traffic noise levels for homes on the north side of 66th Street is slightly greater because the proposed 66th Street interchange improvements will remove some of the buildings along TH 77 which

currently shield these homes from some of the TH 77 traffic noise. However, the increase in traffic noise levels is still less than 3 dBA.

## R. Parks and Recreation

The use of parks and recreation areas is affected by acquisition, access and noise. Determination of adverse effects caused by noise is based on the FAA Land Use Compatibility Criteria (Appendix A.3). The following criteria relate to parks and recreation areas:

- outdoor amphitheaters, music shells -- incompatible with DNL 65+.
- parks, golf courses, other active recreation -- incompatible with DNL 75+.
- outdoor sports arena and spectator sports -- incompatible with DNL 75+

### R.1 MSP Alternative

#### R.1.1 Affected Environment — MSP Alternative

The APE is the area within the airport boundary, the Runway Protection Zones and the DNL 65+ noise contours. The affected environment for the MSP Alternative (2010 LTCP and 2020 Concept Plan) includes 10 parks and recreation areas within the airport boundary and the DNL 65+ noise contours. The affected parks and recreation areas are shown in **Figure R-1;** the DNL 65+ noise contours are shown in **Figure Q-3.** Roadway improvements for the MSP Alternative, identified in **Figures T-1** and **T-2,** will not affect parks and recreation areas within the APE.

Parks and recreation areas under the jurisdiction of the Minneapolis Park Board:

Bossen Field is a park located in the Wenonah neighborhood, north of Trunk Highway 62 at 28th Avenue South, immediately adjacent to MSP. The 39.1-acre park includes softball fields, one of which is illuminated for night games, play equipment, a running track, a children's wading pool and a basketball court. It is wholly within the APE.

Lake Nokomis is a 407.68-acre lake and park lying on both sides of Cedar Avenue north of Trunk Highway 62, approximately 1/2 mile from MSP. The lake is encircled by a greenbelt area, used by walkers and bicyclists, with recreational facilities located in the northern portion of the greenbelt area. About one-third of the lake is within the APE.

Diamond Lake and Todd Parks are located north of Trunk Highway 62 and east of I-35W, adjacent to each other; they are approximately 3/4 mile from MSP. Todd Park is a 13.24-acre park that includes open play areas and four softball fields. Diamond Lake is a 68.83-acre lake circumvented by a greenbelt used by walkers and bicyclists. Virtually all of Todd Park and the northeast tip of Diamond Lake Park are within the APE.

Parks and recreation areas under the jurisdiction of the city of Richfield:

Taft Park is a 42-acre park southwest of the interchange of Trunk Highways 62 and 77, less than 1/4 mile from MSP. Ten acres of the park are owned by the city of Richfield, and 32 acres are owned by the Metropolitan Airports Commission (MAC) and leased to the city. The park includes the following facilities: four lighted softball fields, a lighted football/soccer field, park buildings, two hockey rinks and a skating area, four basketball nets, as well as playground areas, hiking trails also used by bicyclists and a fishing pier. All of Taft Park is within the APE.

Rich Acres Golf Course and recreation complex lies immediately east of Trunk Highway 77 on land owned by the Metropolitan Airports Commission and leased to the city of Richfield under terms of a 1978 lease. The 180-acre recreation complex includes the following:

- Two golf courses and a driving range. They include an 18-hole golf course and a 9-hole golf course and a golf driving range. During 1994, rounds of golf on both courses were played by more than 86,000 people. The driving range was used by more than 55,000 people that year.
- Ten baseball and softball fields. There are two Babe Ruth League baseball fields, four Little League baseball fields and four softball league fields. The fields were constructed by the city of Richfield in the late 1970s. They are used and maintained by the leagues and are not open to the public. During the season, games are scheduled at the fields five or six days each week.
- More than 1.5 acres of community gardens divided into 168 plots, each measuring 20 feet square. The plots are rented each growing season to residents of the community. During the summer of 1995, all but two of the plots were rented.
- An archery range. It is open to the public on a first-come, first-served basis; the city does not keep records on its use.

Park under the jurisdiction of the city of Bloomington:

River Ridge Playground is a seven-acre park located at the intersection of River Ridge Road and 88th Street, approximately one mile from MSP. It includes two tennis courts, a soccer field, a shelter building and passive play equipment. The playground is wholly within the APE.

Park under the jurisdiction of the state of Minnesota:

Fort Snelling State Park is located on both sides of the Mississippi River north and south of I-494. Portions of park within the APE lie between I-494 on the south and Picnic Island on the north and southwest of the TH5/TH55 interchange, both immediately adjacent to MSP. Recreational facilities located between I-494 and Picnic Island include hiking and bike trails, a canoe landing, swimming and picnic facilities and a visitor/interpretive center planned for construction below the Mendota Bridge. The area southwest of the TH5/TH55 interchange includes a nine-hole golf course operated by the Minneapolis Park Board under a five-year agreement with the Minnesota Department of Natural Resources (DNR) scheduled to expire November 30, 1997. Approximately two-thirds of the golf course, which is immediately adjacent to MSP, is within the DNL 65 noise contours. Fort Snelling State Park, including the recreational facilities being operated by the Minneapolis Park Board, has been under the jurisdiction of the DNR since 1971, when the state acquired the land from the U.S. Department of Interior under a quitclaim deed.

Recreation area under the jurisdiction of the U.S. Department of Interior:

The Mississippi National River and Recreation Area (MNRRA), established by Congress in 1988, stretches along the Mississippi River in a 72-mile corridor from a point near Elk River, MN, on the north to a point between Hastings, MN, and Red Wing, MN, on the south. It also includes an approximate four-mile stretch of the Minnesota River that is adjacent to the Mississippi River, near MSP. While the recreation area encompasses about 54,000 acres of public and private lands, very little of it -- approximately 43 acres -- is owned by the federal government. The portion of MNRRA within the APE is identical with the portion of Fort Snelling State Park within the APE. A management plan for MNRRA emphasizing coordination of activities by other park agencies, particularly the Minnesota Department of Natural Resources, and including the construction of two interpretative facilities near the St. Paul and Minneapolis downtown areas, was approved by the Secretary of the Interior in May 1995.

The Minnesota Valley National Wildlife Refuge (MVNWR), which primarily provides a habitat for a variety of animal life, also has wildlife recreation areas and environmental education facilities. Recreation areas at the refuge which are within the APE are depicted in **Figure FF-1**. Caretaker's Walk is a short, self-guided interpretive trail that circles the Bass Ponds. The Hillside trail is a half-mile paved trail running from the east side of the Visitor Center to an observation deck at Peterson Pond overlooking Long Meadow Lake; a portion of it is within the APE. (The Visitor Center itself is not within the APE.) Two additional trails are not within the affected environment but are in close proximity to flight tracks for the proposed north-south runway. The Old Cedar Avenue trail runs along Long Meadow Lake and connects Caretaker's Walk and the Old Cedar Avenue trailhead. The Highway 77 trail passes over the Minnesota River and connects to a bicycle trail which runs to the Old Cedar Avenue trailhead. The Old Cedar Avenue and Highway 77 trailheads were accessed by

approximately 20,405 and 14,570 vehicles, respectively, in 1993. The refuge itself is discussed in Section V.FF.

### R.1.2 Parks and Recreation Impacts — MSP Alternative

Impacts at specific parks within the affected environment include:

Rich Acres Golf Course and recreation complex would be removed for airport uses. However, the 1978 lease between MAC and the city of Richfield includes a provision that the "Commission at any time during the lease term or renewal term shall have the right to retake possession of all or portions of the premises . . . for airport purposes based upon a real and present need for use of such land by Commission for aeronautical or other purposes directly relating to the development and use of the airport . . . ." Therefore, under federal Department of Transportation guidelines (FAA Order 5050.4A, par. 47e(7)(a)3), if land is owned by a transportation agency and recreation use of the land is only on an interim basis, it is not considered a Section 4(f) publicly-owned park and, therefore, not governed by Section 4(f) guidelines. (Section 4(f) guidelines are discussed in Section V.U.) The removal of the complex would result in the loss of all recreational facilities and the community gardens. They could not be easily replicated elsewhere within the city of Richfield, because undeveloped land of similar size is not available in the city. There is no other golf course within the city. Public golf courses in close proximity to the city of Richfield include Fort Snelling State Park, Hyland Greens and Dwan Golf Courses in Bloomington, Braemar and Normandale Golf Courses in Edina, Highland Golf Course in St. Paul, and Hiawatha and Meadowbrook Golf Courses in Minneapolis. There are 18 baseball and softball fields at other city parks, six of which are under the jurisdiction of Little League and Babe Ruth League. There would be little or no space available at existing city parks for the relocation of the 10 league fields at the Rich Acres complex. (Economic impacts of the removal of recreational facilities at Rich Acres Golf Course are discussed in Section V.I.)

Park and recreational uses within the APE, other than those at Rich Acres Golf Course and recreation complex, consist of spectator sports (softball and soccer fields, hockey rinks, basketball courts), active recreation facilities (running tracks, bike trails, swimming), passive play equipment and picnic facilities. Under the FAA Land Use Compatibility Criteria, these activities are compatible with DNL 65-70 noise levels. All of these parks and recreation areas are within the DNL 65-70 noise contour; consequently, there will be no impacts. Recreation impacts to the MVNWR are discussed in Section V.FF; environmental education impacts are discussed in Section V.U.

### R.1.3 Mitigation Measures — MSP Alternative

The lease between the city of Richfield and the Metropolitan Airports Commission, discussed in detail in Section I.1.2, provides that MAC will reimburse the city for the unamortized capital investment if MAC exercises its option to use the land for airport purposes. This will mitigate the removal of the golf courses and no other mitigation is required.

No mitigation is required at other parks and recreation areas within the APE.

## R.2 No Action Alternative

### R.2.1 Affected Environment — No Action Alternative

The APE includes nine parks and recreation areas within the DNL 65+ noise contours for the No Action Alternative, depicted in **Figure R-1**. Many of the parks and recreation areas within the APE for the No Action Alternative are also within the APE for the MSP Alternative; a full description of those parks is included in Subsection R.1.1.

Parks and recreation areas under the jurisdiction of the Minneapolis Park Board:

All of Bossen Field, the southern third of Lake Nokomis, all of Todd Park and the northern third of Diamond Lake are within the APE. Facilities at these parks are described in Subsection R.1.1.

Parks under the jurisdiction of the city of Richfield:

Taft Park, all of which is in the APE, is described in Subsection R.1.1.

Washington Park, immediately adjacent to MSP, recently was expanded to nine acres and includes the following recreation facilities: a field for softball, soccer and football; two tennis courts, basketball court, volleyball area, playground area, as well as walking trails, open play areas and skating area. The park is wholly within the APE.

Veterans Memorial Park is approximately 100 acres. It located on Portland Avenue, south of Trunk Highway 62, about 1/2 mile from MSP. Facilities include: miniature golf course, ice arena, swimming pool, a nature center, a picnic shelter, as well as walking and biking trails. The northern portion of the park is within the APE.

Park under the jurisdiction of the state of Minnesota:

Fort Snelling State Park is described in Subsection R.1.1.

Recreation area under the jurisdiction of the U.S. Department of Interior:

The Mississippi National River and Recreation Area is described in Subsection R.1.1.

### R.2.2 Parks and Recreation Impacts — No Action Alternative

No park or recreation area would be acquired by the No Action Alternative.

There are no affected parks or recreation areas with activities that are considered incompatible under the FAA Land Use Compatibility Criteria; consequently, there would be no adverse impacts.

### R.2.3 Mitigation Measures — No Action Alternative

No mitigation is required.

## R.3 Summary of Parks and Recreation Impacts

The MSP Alternative (2010 LTCP and 2020 Concept Plan) would not result in noise levels at any park or recreational area exceeding federal land use compatibility guidelines. This alternative would require the removal of the Rich Acres Golf Course and recreation complex. Since this facility operates as an interim use on leased airport property, it is not considered to be a publicly-owned park under the provisions of the Department of Transportation Act Section 4(f). Section 4(f) guidelines are discussed in Section U. The lease specifies that MAC may retake possession of the property as needed for airport related development. According to the provisions of the lease, the city of Richfield would be compensated for the unamortized portion of its investment in the design and construction of the golf course. City investment in other facilities does not require compensation under the terms of the lease.

The No Action Alternative would not adversely impact parks or recreation areas.

Impacts to parks are summarized in **Table R-1**.

**Table R-1 - Summary of Park and Recreation Area Impacts**

| | MSP Alternative | No Action Alternative |
|---|---|---|
| Park and Recreation Areas Displaced | 1 | 0 |
| Park and Recreation Areas adversely impacted by noise | 0 | 0 |

## S. Environmental Justice

Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations (EO), dated February 11, 1994, requires Federal agencies to identify and address disproportionately high and adverse human health or environmental impacts on low-income and minority populations in the community which would result from a proposed action. Regulations for implementing Executive Order 12898, entitled Draft Guidance for Addressing Environmental Justice under the National Environmental Policy Act, were published by the Council on Environmental Quality on May 24, 1996. The guidance of the EO and the proposed regulations has been followed in assessing the impacts on low-income and minority populations.

Key definitions in the demographic analysis were derived from the CEQ guidelines where available and include:

- Low income -- The CEQ guidelines define low-income as a household with a median income below the Census Bureau's statistical poverty thresholds. According to Census Bureau documentation, the average poverty threshold for a family of four persons was $12,674 in 1989 (the year for which poverty data was collected). Average poverty thresholds ranged from $6,310 for one person to $25,480 for nine or more family members. The environmental justice analysis in this EIS uses two income levels as representative of low-income. Low-income populations include those households with incomes in 1989 under $10,000 and those under $15,000, to reflect the approximate poverty level for a family of three and the poverty level plus 50 percent.
- Minority -- A person who is a citizen or permanent resident of the United States and who is either Black, Hispanic, Asian American, American Indian or Alaskan Native.
- Disproportionately high and adverse effect -- An adverse impact is considered to have a disproportionately high and adverse effect on low-income or minority populations when: (a) The adverse impact is predominately borne by a low-income population and/or a minority population, or (b) The impact is more severe or greater in magnitude than that borne by the non-minority and/or non-low-income population.
- Community -- (a) The area where residents and employees would be displaced by airport development, (b) The areas within the DNL 65+ noise contours and (c) Hennepin County.

The purpose of the environmental justice analysis is to determine if the adverse effects of a proposed action are borne disproportionately by low-income or minority populations. The adverse impacts of the proposed action are identified throughout the environmental analysis. Demographic data from the 1990 U.S. Census are analyzed to determine the income and minority character of the community where these impacts fall. This is compared with the character of the larger community as a whole to reflect the regional nature of the FEIS.

Two environmental justice impact areas were addressed. The displacement of residents and employees due to airport development and safety requirements, as well as residents within the DNL 65+ noise contour, were assessed. The APE for displacement impacts is described in Section T (Social Impacts) and, for noise impacts, in Section Q.

Income data was collected from the most detailed level available, the census block group level. For comparative purposes, minority data was also evaluated at the block group level. Other demographic analysis in the EIS (such as the noise impacts data) used available census block level information.

The same methodology cannot be used to evaluate potential employment impacts to low-income and minority employees working in businesses displaced by airport development because relevant quantitative data on employee characteristics are not available. Qualitative examination of the possible employment changes due to the development alternatives and the hardship this may impose on employees is conducted for the two alternatives. This examination relates to (1) potential loss of jobs due to elimination, consolidation, or relocation of businesses and (2) potential difficulty reaching jobs relocated to remote locations for public-transit dependent employees (who may be low-income).

The regional income and minority make-up of the work force is relevant to understanding how these groups might be affected by the potential employment changes. The Metropolitan Council reported in Keeping the Twin Cities Vital: Regional Strategies for Change in the Fully Developed Area, (February 1994) that the diversified economy in the region had more jobs available in the core cities of Minneapolis and St. Paul and their developed suburbs than residents of working age. The unemployment rate for the metropolitan area in the last six quarters for which there is data ranged from a high of 3.6 percent in the first quarter of 1994 and 2.7 percent for the last quarter of 1994. During the second quarter of 1995, the unemployment rate for the metropolitan region was 2.9 percent. Job growth in the region has continued at a steady pace, with approximately 1.2 million jobs in 1985, approximately 1.3 million in 1988 and approximately 1.4 million in 1992. During the decade prior to 1992, the greatest proportion of net job growth was in service occupations (in contrast to manufacturing occupations).

However, it was reported that unemployment rates were markedly higher for minorities, particularly among those living in the core cities. In 1992, the region's unemployment rate was 4.1 percent for whites and 12 percent for all others.

In addition, it was reported that working people accounted for 44 percent of the low income working age population. Four percent of whites who were working earned incomes below the poverty level and 12.6 percent of minorities who were working earned incomes below the poverty level.

## S.1 MSP Alternative

*Environmental Justice Impacts -- Residential Displacement*

MSP 2020 Concept Plan
The APE is those jurisdictions where households will be displaced by the 2020 Concept Plan -- the cities of Bloomington, Minneapolis and Richfield. The discussion of these households is in Section V.T.2.

The distribution of displaced low-income households in the APE is given in **Table S-1.**

**Table S-1 - Residential Displacement – Distribution of Low-Income Households - MSP 2020 Concept Plan)**

| Household annual income | Low-Income Households in Affected Block Groups | % Low Income Households in Affected Block Groups | % Low Income Households in Affected Jurisdictions |
|---|---|---|---|
| Below $10,000 | 99 | 4% | 15% |
| Below $15,000 | 234 | 9% | 24% |
| Notes: There are 210,626 total households in the affected jurisdictions; 31,547 have annual incomes below $10,000 and 51,535 have annual incomes below $15,000. There are 2,520 total households in block groups affected by the displacement. | | | |
| Source: 1990 U.S. Census; HNTB Analysis | | | |

The distribution of displaced minority households in the APE is given in **Table S-2.**

**Table S-2 - Residential Displacement – Distribution of Minority Households - MSP 2020 Concept Plan**

| | Minority Households in Affected Block Groups | % Minority Households in Affected Block Groups | % Minority Households in Affected Jurisdictions |
|---|---|---|---|
| Minority Households | 100 | 4% | 13% |
| Notes: There are 210,626 total households in the affected jurisdictions; 26,549 are minority. There are 2,520 total households in block groups affected by the displacement. | | | |
| Source: 1990 U.S. Census; HNTB Analysis | | | |

The MSP 2020 Concept Plan would not disproportionately displace low-income and minority households. As indicated in **Tables S-1** and **S-2** above, the proportion of low-income and minority people in the affected block groups is lower than in the affected jurisdictions as a whole.

MSP 2010 LTCP

The APE is those jurisdictions where households will be displaced by the MSP LTCP -- the cities of Bloomington and Richfield. The discussion of these households is in Section V.T.2.

The distribution of displaced low-income households in the APE is given in **Table S-3.**

**Table S-3 - Residential Displacement – Distribution of Low-Income Households - MSP 2010 LTCP**

| Household annual income | Low-Income Households in Affected Block Groups | % Low Income Households in Affected Block Groups | % Low Income Households in Affected Jurisdictions |
|---|---|---|---|
| Below $10,000 | 27 | 2% | 4% |
| Below $15,000 | 170 | 14% | 12% |
| Notes: There are 50,582 total households in the affected jurisdictions; 2,115 have annual incomes below $10,000 and 5,965 have annual incomes below $15,000. There are 1,263 total households in block groups affected by the displacement. | | | |
| Source: 1990 U.S. Census; HNTB Analysis | | | |

The distribution of displaced minority households in the APE is given in **Table S-4.**

**Table S-4 - Residential Displacement -- Distribution of Minority Households - MSP 2010 LTCP**

| | Minority Households in Affected Block Groups | % Minority Households in Affected Block Groups | % Minority Households in Affected Jurisdictions |
|---|---|---|---|
| Minority Households | 60 | 5% | 4% |
| Notes: There are 50,582 total households in the affected jurisdictions; 2,063 are minority. There are 1,263 total households in block groups affected by the displacement. | | | |
| Source: 1990 U.S. Census; HNTB Analysis | | | |

- The 2010 LTCP would not have a disproportionately high and adverse effect on displaced low income and minority households.

*Environmental Justice Impacts -- Employee Displacement*

The APE is those jurisdictions where businesses will be displaced -- the cities of Minneapolis, Richfield and Bloomington.

As previously described, impacts to business relocation include: (1) potential loss of jobs due to elimination, consolidation, or relocation of businesses and (2) potential difficulty reaching jobs relocated to remote locations for public-transit dependent employees (who may be low-income).

In reviewing the list of businesses which would be displaced (Section V.T.1.2), it appears that a full range of pay scales are affected. However, many of the jobs in these businesses, such as hotel, gas station, and freight forwarding firms are low wage and may be held by individuals who are part of low-income households. The proportion of low-wage jobs and low-income employees cannot be confirmed by available data. Many of these businesses and related jobs are expected to relocate. In addition, many of these businesses are airport-related and can be expected to relocate near the airport. If predominantly low-wage businesses close entirely or relocate outside the region, low-income employees may be disproportionately impacted. Low-income employees in low-wage jobs may be forced to seek new employment. Given the low unemployment in the region, discussed above, it is anticipated that replacement low-wage employment would be available. In addition, airport development is likely to stimulate growth in the service sector and related low-wage jobs.

There is no reason based on available information to expect minority employees to be disproportionately impacted.

Public transit-dependent employees (low income or minority) are unlikely to be adversely impacted by the MSP Alternative. Again, because many of the businesses to be displaced are airport-related, they are likely to relocate near the airport. As such, they should continue to be served by public transit as they are now.

*Environmental Justice Impacts -- DNL 65+ Noise Levels*

The APE is the jurisdictions affected by the projected DNL 65+ contours of the MSP Alternative (2020 Concept Plan and 2010 LTCP) -- the cities of Minneapolis, Mendota, Bloomington, Richfield and Eagan.

The distribution of affected low-income households in the APE is given in **Table S-5** and is the same for the 2020 Concept Plan and 2010 LTCP since the maximum noise levels would occur in 2005.

**Table S-5 - Distribution of Low-Income Households - MSP Alternative**

| Household Annual Income | Low-Income Households in Block Groups Affected by DNL 65+ | % Low Income Households in Block Groups Affected by DNL 65+ | % Low Income Households in Jurisdictions Affected by DNL 65+ |
|---|---|---|---|
| Below $10,000 | 495 | 14% | 15% |
| Below $15,000 | 986 | 28% | 24% |
| Notes: There are 231,450 total households in the affected jurisdictions; 33,997 have annual incomes below $10,000 and 54,590 have annual incomes below $15,000. There are 3,560 total households in block groups affected by DNL 65 and above. | | | |
| Source: 1990 U.S. Census; HNTB Analysis | | | |

The distribution of affected minority households in the projected DNL 65 and greater contours of the MSP Alternative is detailed in **Table S-6**.

**Table S-6 - Distribution of Minority Households - MSP Alternative**

| | Minority Households in Block Groups Affected by DNL 65+ | % Minority Households in Block Groups Affected by DNL 65+ | % Minority Households in Jurisdictions Affected by DNL 65+ |
|---|---|---|---|
| Minority Households | 514 | 14% | 12% |
| Notes: There are 231,450 total households in the affected jurisdictions; 27,520 are minority. There are 3,560 total households in block groups affected by DNL 65 and above. | | | |
| Source: 1990 U.S. Census; HNTB Analysis | | | |

As indicated in **Tables S-5** and **S-6,** the proportions of minority households and households with income less than $15,000 in the block groups affected by noise levels from the MSP 2020 Concept Plan and MSP 2010 LTCP are higher than in the affected jurisdictions as a whole. However, the effect would not be an adverse impact, because the percents of affected low income and minority households for the MSP 2020 Concept Plan and MSP 2010 LTCP are less than or equal to those for the No Action Alternative (see **Table S-12**). The MSP Alternative and MSP 2010 LTCP would therefore not have a disproportionate effect on low-income or minority households, when compared with the No Action Alternative.

## S.2 No Action Alternative

*Environmental Justice Impacts -- Residential and Employee Displacement*

No businesses would be displaced by the No Action Alternative. The APE for displaced residents is the city of Bloomington.

**Table S-7 - Residential Displacement – Distribution of Low-Income Households - No Action Alternative**

| Household annual income | Low-Income Households in Affected Block Groups | % Low Income Households in Affected Block Groups | % Low Income Households in Affected Jurisdictions |
|---|---|---|---|
| Below $10,000 | 19 | 3% | 4% |
| Below $15,000 | 73 | 12% | 9% |
| Notes: There are 34,315 total households in the affected jurisdiction; 1,382 have annual incomes below $10,000 and 3,036 have annual incomes below $15,000. There are 595 total households in block groups affected by the displacement. | | | |
| Source: 1990 U.S. Census; HNTB Analysis | | | |

**Table S-8 - Residential Displacement -- Distribution of Minority Households - No Action Alternative**

| | Minority Households in Affected Block Groups | % Minority Households in Affected Block Groups | % Minority Households in Affected Jurisdictions |
|---|---|---|---|
| Minority Households | 39 | 7 | 3% |
| Notes: There are 34,315 total households in the affected jurisdictions; 1,059 are minority. There are 595 total households in block groups affected by the displacement. | | | |
| Source: 1990 U.S. Census; HNTB Analysis | | | |

The No Action Alternative would have a disproportionate effect on displaced minority households, as shown in **Table S-8.**

*Environmental Justice Impacts -- DNL 65+ Noise Levels*

The APE is the jurisdictions affected by the projected DNL 65+ contours of the No Action Alternative -- the cities of Minneapolis, Mendota, Bloomington, Richfield and Eagan.

The existing (1994) APE also includes the city of St. Paul. Environmental Justice conditions in the 1994 APE is given in **Tables S-9** and **S-10.** As indicated by the tables, there is a disproportionately high and adverse effect on both low income and minority households with noise levels of DNL 65 or greater due to the existing airport.

**Table S-9 - Distribution of Low Income Households in 1994**

| Household Annual Income | Low Income Households in Block Groups Affected by DNL 65+ | % Low Income Households in Block Groups Affected by DNL 65+ | % Low Income Households in Jurisdictions Affected by DNL 65+ |
|---|---|---|---|
| Below $10,000 | 817 | 14% | 16% |
| Below $15,000 | 1669 | 29% | 25% |
| There are 338,681 total households within the affected jurisdictions; 53,697 have annual incomes below $10,000 and 84,862 have annual incomes below $15,000. There are 5755 households in block groups affected by DNL 65 and above. | | | |
| Source: 1990 Census Data; HNTB Analysis | | | |

**Table S-10 - Distribution of Minority Households in 1994**

| | Minority Households in Block Groups within DNL 65+ | % Minority Households in Block Groups Affected by DNL 65+ | % Minority Households within Jurisdictions Affected by DNL 65+ |
|---|---|---|---|
| Minority Households | 1271 | 22% | 12% |
| | | | |
| There are 338,681 total households in the affected jurisdictions; 41,210 are minority. There are 5,755 total households in block groups affected by DNL 65 and above. | | | |
| Source: 1990 Census Data; HNTB Analysis | | | |

The distribution of low-income households in the APE for the No Action Alternative is given in **Table S-11.**

**Table S-11 - Distribution of Low Income Households - No Action Alternative**

| Household Annual Income | Low-Income Households in Block Groups Affected by DNL 65+ | % Low Income Households in Block Groups Affected by DNL 65+ | % Low Income Households in Jurisdictions Affected by DNL 65+ |
|---|---|---|---|
| Below $10,000 | 501 | 14% | 14% |
| Below $15,000 | 1,024 | 28% | 24% |
| Notes: There are 231,450 total households in the affected jurisdictions; 33,997 have annual incomes below $10,000 and 54,590 have annual incomes below $15,000. There are 3,672 households in block groups affected by DNL 65 and above. | | | |
| Source: 1990 U.S. Census; HNTB Analysis | | | |

The distribution of minority households in the APE for the No Action Alternative is detailed in **Table S-12.**

**Table S-12 - Distribution of Minority Households - No Action Alternative**

| | Minority Households in Block Groups Affected by DNL 65+ | % Minority Households in Block Groups Affected by DNL 65+ | % Minority Households in Jurisdictions Affected by DNL 65+ |
|---|---|---|---|
| Minority Households | 544 | 15% | 12% |
| (1) There are 231,450 total households in the affected jurisdictions; 27,520 are minority. There are 3,672 households in block groups affected by DNL 65 and above. | | | |
| Source: 1990 U.S. Census; HNTB Analysis | | | |

As indicated in **Tables S-11** and **S-12,** noise levels from the No Action Alternative would disproportionately effect minority households and households with income less than $15,000 -- because the proportions of these households in the affected block groups are higher than in the affected jurisdictions as a whole. However, the effect would not be an adverse impact, because the percents of affected low income and minority households for the No Action Alternative are less than those that currently exist.

## S.3 Summary of Environmental Justice Impacts

*Environmental Justice Impacts -- Residential Displacement*

The impacts of the alternatives are presented in **Table S-13.**

**Table S-13 Summary of Residential Displacement Environmental Justice Impacts**

| Household | % Households in Affected Block Groups | | | % Households in Affected Jurisdictions | | |
|---|---|---|---|---|---|---|
| | 2020Plan | 2010LTCP | No Action | 2020Plan | 2010LTCP | No Action |
| Income below $10,000 | 4% | 2% | 3% | 15% | 4% | 4% |
| Income below $15,000 | 9% | 13% | 12% | 24% | 12% | 9% |
| Minority | 4% | 5% | 7% | 14% | 4% | 3% |

The MSP 2020 Concept Plan, 2010 LTCP would not have a significant high and adverse disproportionate impact on low-income and minority households due to residential displacement when compared with the No Action Alternative. The No Action Alternative would have a disproportionate impact on displaced minority households, as shown in **Table S-13,** although the percentages are not considered significant (7% vs, 3%).

*Environmental Justice Impacts -- DNL 65+ Noise Levels*

The impacts of the alternatives are presented in **Table S-14.**

**Table S-14 Summary of Aircraft Noise Environmental Justice Impacts**

| Household | % Households in Affected Block Groups | | | % Households in Affected Jurisdictions | |
|---|---|---|---|---|---|
| | MSP | No Action | 1994 | MSP/No Action | 1994 |
| Income below $10,000 | 14% | 14% | 14% | 15% | 16% |
| Income below $15,000 | 28% | 28% | 29% | 24% | 25% |
| Minority | 14% | 15% | 22% | 12% | 12% |

In 1994 there was a disproportionately high and adverse effect on low income (less than $15,000) and minority households with noise levels of DNL 65 or greater from the existing airport. The No Action Alternative would not have a disproportionate effect on low income and minority households with noise levels of DNL 65 or greater, when compared with the existing (1994) conditions. The MSP 2020 Concept Plan and MSP 2010 LTCP would not have a disproportionate effect on low-income or minority households, when compared with the No Action Alternative.

# T. Social

Social impacts include the disruption of established entities, such as residences and businesses, as well as patterns in a community.

The following impacts are addressed: displacement and relocation of residents and businesses; displaced jobs; and changes to the use of established community institutions, such as schools and parks. This includes an estimate of the numbers of residents and households directly impacted by each airport alternative, as well as an estimate of those displaying such characteristics as: renter or homeowner, age (estimates of the number of children and the elderly) and disability status. The provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act), approved by Congress in 1970 and subsequently amended, would apply to all alternatives.

Social impacts due to changes in surface transportation patterns resulting from airport development will also be addressed, in terms of access to local and regional opportunities and services (i.e., community business and institutional centers) and emergency vehicle response time.

## T.1 MSP Alternative

### T.1.1 Affected Environment — MSP Alternative

The APE for social impacts for the MSP Alternative includes the following areas:

- The Runway Protection Zone and state Safety Zones A and B for the south end of the new north-south runway would extend into the city of Bloomington;

- The residential neighborhood on both sides of 28th Avenue South, immediately south of Trunk Highway 62, in the city of Minneapolis; residential neighborhoods on both sides of TH 62 between a point easterly of Portland Avenue, on the west, to a point easterly of 28th Avenue South, on the east, in the cities of Minneapolis and Richfield; and the business and residential area along Cedar Avenue South, north and south of 66th Street East in the city of Richfield, as shown in **Figure T-1;** and

- Areas on MSP property itself where existing buildings house privately-owned businesses. Most are located in the southwest corner of airport property and are accessed by the 24th Avenue ramp from I-494. There is also one business on 28th Avenue South, south of the Crosstown Highway.

**Community Institutions**
Two community institutions are in the APE of the MSP Alternative -- Rich Acres Golf Course and recreation complex and the Airport Medical Clinic. Both are located on airport property. Rich Acres Golf Course and recreation complex is discussed in Sections R.1. and U.1. The clinic provides medical, dental and physical therapy services to an average of 230 patients each weekday.

Community institutions on airport property and within the DNL 65+ noise contours are shown in **Figure T-5**. They include seven parks and sports fields, five churches, two elementary schools, two fraternal organizations, one doctor's office, and one cemetery.

New Ford Town and Rich Acres, two neighborhoods in the city of Richfield, are located south of Trunk Highway 62 and east of Trunk Highway 77 and are surrounded by airport property. The Metropolitan Airports Commission has acquired these properties as part of an approved noise mitigation project. The noise mitigation project is unrelated to the development of the MSP Alternative. Residents of these neighborhoods have been relocated.

## T.1.2 Social Impacts — MSP Alternative

**Displacement Impacts**
Residents, businesses and jobs would be displaced by development of the MSP 2020 Concept Plan and 2010 LTCP, as follows:

- Under FAA guidelines, all structures in the RPZs for new runways, to the extent possible, should be removed. This would require the removal of businesses southeast of the I-494/Trunk Highway 77 interchange, in the city of Bloomington; these include hotels, service stations, offices and a VFW Post shown in **Figure T-3**.

- The MSP 2020 Concept Plan and 2010 LTCP would displace single family residences and multifamily units in the city of Bloomington shown in **Figure T-4**, as part of the noise mitigation program.

- Development of the west terminal, southeast of the Trunk Highway 62/77 interchange, under the 2020 Concept Plan, would require the removal of residences on both sides of 28th Avenue South, in the city of Minneapolis, and one privately-owned business on 28th Avenue South. This area is shown in **Figure T-1**.

- Construction of highway improvements for the 2020 Concept Plan, to serve the west terminal would require removal of the following:
  (1) residences on both sides of TH 62, between Portland Avenue and 28th Avenue south, in the cities of Minneapolis and Richfield; and
  (2) businesses and residences on Cedar Avenue South and adjacent streets, in the city of Richfield.

- Construction of highway improvements for the 2010 LTCP, to serve the new airline cargo facilities east of TH 77, would require removal of businesses and residences on Cedar Avenue South and adjacent streets in the city of Richfield shown in **Figure T-2**.

- Construction of the north-south runway would remove on-airport businesses located in the southwest corner of airport property, on 24th Avenue South immediately north I-494.

Displacement by the 2020 MSP Concept Plan:

*Residential Displacement*

The numbers of households which would be displaced by development of the 2020 MSP Alternative are detailed in **Table T-1**.

**Table T-1 - Households Displaced by the MSP 2020** Concept Plan

| Households | Number |
|---|---|
| - in the RPZ | 1 |
| - because of runway construction | 0 |
| - because of terminal construction | 32 |
| - because of highway improvements | 67 |
| - because of noise mitigation | 158 |
| Total | 258 |
| Sources: 1990 U.S. Census; HNTB survey. | |

The estimated numbers of residents who would be displaced by development of the 2020 Concept Plan are detailed in **Table T-2**.

**Table T-2 - Residents Displaced by the MSP 2020 Concept Plan**

| Population | Number |
|---|---|
| - in the RPZ | 3 |
| - because of runway construction | 0 |
| - because of terminal construction | 83 |
| - because of highway improvements | 153 |
| - because of noise mitigation | 370 |
| Total | 609 |
| Children 18 and younger | 115 |
| Adults 65 and older | 81 |
| Disabled | 0 |
| Average persons/unit displaced | 2.36 |
| Sources: 1990 U.S. Census; HNTB survey. | |

The households and residents displaced by development of the 2020 Concept Plan include those displaced by the 2010 LTCP.

*Business Displacement*

The numbers of businesses which would be displaced by development of the 2020 Concept Plan are detailed in **Table T-3**.

**Table T-3 - Businesses Displaced by the MSP 2020 Concept Plan**

| Businesses | Number |
|---|---|
| - in the RPZ | 10 |
| - because of runway construction[1] | 49 |
| - because of terminal construction[1] | 1 |
| - because of highway improvements | 22 |
| Total | 82 |
| [1] Businesses on airport property are housed in privately-owned buildings; the land beneath those buildings is owned by the Metropolitan Airports Commission. | |
| Sources: HNTB survey. | |

*Employee Displacement*

The estimated numbers of employees who would be displaced by development of the 2020 Concept Plan are detailed in **Table T-4.**

**Table T-4 - Employees Displaced by the MSP 2020 Concept Plan[1]**

| Work Location | Number |
|---|---|
| - in the RPZ | 1,369 |
| - because of runway construction | 1,441 |
| - because of terminal construction | [2] |
| - because of highway improvements | 86 |
| Total | 2,896 |
| [1] Figures include both full time and part time employees. | |
| [2] Numbers of American Telephone and Telegraph employees based at a facility on 28th Avenue South not released for security reasons. | |
| Source: HNTB Survey | |

Employees at two government agencies, the Metropolitan Airports Commission and the Federal Aviation Administration, would be relocated to new facilities on airport property. This includes 244 FAA employees and 216 MAC employees. Employment at private businesses located in the existing Lindbergh Terminal would be relocated to replacement businesses in the west terminal. In addition, the Naval Air Reserve facility, which also houses a unit of the U.S. Marines, would be relocated from its present site near the air traffic control tower to the northeast part of the airport, where other military installations are presently located. There are 30 active-duty employees at this facility; this figure does not include weekend personnel.

The businesses and employees displaced by the 2020 Concept Plan include those displaced by the MSP 2010 LTCP.

Displacement by the MSP 2010 LTCP:

*Residential Displacement*

The numbers of households which would be displaced by development of the MSP 2010 LTCP are detailed in **Table T-5.**

**Table T-5 - Households Displaced by the MSP 2010 LTCP**

| Households | Number |
|---|---|
| - in the RPZ | 1 |
| - because of runway construction | 0 |
| - because of highway improvements | 7 |
| - because of noise mitigation | 158 |
| Total | 166 |
| Sources: 1990 U.S. Census; HNTB survey. | |

The estimated numbers of residents who would be displaced by development of the MSP 2010 LTCP are detailed in **Table T-6.**

**Table T-6 - Residents Displaced by the MSP 2010 LTCP**

| Population | Number |
|---|---|
| - in the RPZ | 3 |
| - because of runway construction | 0 |
| - because of highway improvements | 10 |
| - because of noise mitigation | 370 |
| Total | 383 |
| Average persons/unit displaced | 2.31 |
| Sources: 1990 U.S. Census; HNTB survey. | |

*Business Displacement*

The numbers of businesses which would be displaced by development of the MSP Alternative are detailed in **Table T-7** and shown in **Figure T-2.**

**Table T-7 - Businesses Displaced by the MSP 2010 LTCP**

| Businesses | Number |
|---|---|
| - in the RPZ | 10 |
| - because of runway construction[(1)] | 49 |
| - because of highway improvements | 14 |
| Total | 73 |
| [(1)] Businesses on airport property are housed in privately-owned buildings; the land beneath those buildings is owned by the Metropolitan Airports Commission. | |
| Sources: HNTB survey. | |

*Employee Displacement*

The estimated numbers of employees who would be displaced by development of the MSP 2010 LTCP are detailed in **Table T-8.**

**Table T-8 - Employees Displaced by the MSP 2010 LTCP[(1)]**

| Work Location | Number |
|---|---|
| - in the RPZ | 1,369 |
| - because of runway construction | 1,441 |
| - because of highway improvements | 81 |
| Total | 2,891 |
| [(1)] Figures include both full time and part time employees. | |
| Source: HNTB Survey | |

## Relocation Impacts

The Uniform Act provides for relocation assistance for residents and businesses, as well as actual moving costs. Relocation payments are in addition to payments for the purchase of real property.

*Residential Relocation*

The assessed valuations of housing units which would have to be relocated as a result of the MSP 2020 Concept Plan and 2010 LTCP are detailed in **Table T-9** and **Table T-10**.

**Table T-9 - Residential Relocation for the MSP 2020 Concept Plan**

| | Number of Households | Assessed Valuation (1994) |
|---|---|---|
| In the RPZ | 1 | 0[1] |
| Because of runway construction | 0 | 0 |
| Because of terminal construction | 32 | $2,100,500 |
| Because of highway improvements | 67 | $3,484,300 |
| Because of noise mitigation | 158 | $5,347,100 |
| Total | 258 | $10,931,900 |

[1] Residence located in a hotel in the RPZ.

**Table T-10 - Residential Relocation for the MSP 2010 LTCP**

| | Number of Households | Assessed Valuation (1994) |
|---|---|---|
| In the RPZ | 1 | 0[1] |
| Because of runway construction | 0 | 0 |
| Because of highway improvements | 7 | $311,000 |
| Because of noise mitigation | 158 | $5,347,100 |
| Total | 166 | $5,658,100 |

[1] Residence located in a hotel in the RPZ.

*Business Relocation*

The numbers of businesses that would have to be relocated as a result of development of the 2020 Concept Plan, including the total assessed valuations, are detailed in **Table T-11** and **Table T-12.**

**Table T-11 - Business Relocation for the MSP 2020 Concept Plan**

| | Number of Businesses | Assessed Valuation (1994 $) |
|---|---|---|
| In the RPZ | 10 | $28,154,100 |
| Because of highway improvements | 22 | $3,310,600 |
| Because of runway and terminal construction[1] | 50 | NA[1] |
| Total | 82 | $31,464,700 |
| [1] Businesses on airport property are housed in privately-owned buildings; assessed valuations for these buildings are not available. However, these businesses are entitled to relocation assistance. | | |
| Source: Hennepin County Assessor | | |

**Table T-12 - Business Relocation for the MSP 2010 LTCP**

| | Number of Businesses | Assessed Valuation (1994 $) |
|---|---|---|
| In the RPZ | 10 | $28,154,100 |
| Because of runway construction | 49 | 0 |
| Because of highway improvements | 14 | $1,792,000 |
| Total | 73 | $29,946,100 |

### Community Institutions

The Rich Acres Golf Course and recreational complex, the Airport Medical Clinic, and a VFW Post would be displaced.

There would be noise and visual impacts for community institutions within the DNL 65+ noise contours shown in **Figure T-5**. Sections V.Q and V.Y discuss noise and visual impacts of the MSP Alternative.

### Surface Transportation Patterns and Emergency Vehicle Response Time

Highway improvements proposed to serve the new west terminal would not disrupt existing traffic patterns for residents.

Improvements at the intersection of 66th Street and TH 77 would continue to provide access between the highway and neighborhoods in east Richfield. Existing frontage streets parallel to TH 62, including 62nd Street West in Minneapolis and 62nd Street East in Richfield, would be moved approximately 20-30 feet when TH 62 is widened. Neither street would be eliminated. Access would not be altered from existing conditions.

Access for emergency vehicles would not be hindered nor would emergency vehicle response time be lengthened by proposed highway improvements.

## T.1.3 Mitigation Measures — MSP Alternative

The proposed mitigation for residents and businesses displaced by development of the MSP Alternative is relocation assistance provided by the Uniform Act. This includes assistance to re-establish a business operation and to secure comparable replacement housing.

Housing for residents would not be readily available in the census tracts in which these people are now living, according to data from the 1990 U.S. Census. More recent data is available in a quarterly survey of rental housing throughout the urbanized areas of the metropolitan region, compiled by an Edina-based rental placement company and dated October 1995. The survey reports that the metropolitan-wide rental vacancy rate in September 1995 was 2.4 percent; 3,230 rental dwelling units, out of 133,000 rental dwelling units

surveyed, were vacant. The average monthly rent on all units surveyed was $639 for a two-bedroom apartment. In areas within the affected environment, the survey reports, there was a 2.3 percent vacancy rate in Richfield; 0.5 percent in south Minneapolis; 1.0 percent in Bloomington. Elsewhere in Hennepin County, the survey reports, vacancy rates range from 13 percent in Brooklyn Park and 7.1 percent in Brooklyn Center, to 3.3 percent in Robbinsdale and 0.8 percent in Maple Grove.

Housing for those living in owner-occupied units displaced by airport development may be available within, or in close proximity, to the same census tracts, according to figures from the 1990 U.S. Census. Replacement owner-occupied housing would be more readily available elsewhere in Hennepin County and in adjacent suburbs in other counties in the metropolitan area. Owner-occupied dwelling units valued similarly to those removed by the development of the MSP 2020 Concept Plan and 2010 LTCP could be found in approximately 36 percent of the census tracts in Hennepin County, according to 1990 census figures.

The Uniform Act also provides for "housing of last resort" in the event comparable replacement housing cannot be secured at the time that the project is scheduled to proceed. A decision to initiate the "housing of last resort" provisions of the Uniform Act would have to be done on a case-by-case basis, taking into consideration the circumstances of the displaced resident and the status of the project. Possible measures could include, but are not limited to, replacement housing payments in excess of those permitted by the Uniform Act, rehabilitation or additions to existing replacement housing and a direct loan with a deferred payment.

Some businesses within the RPZ for the north-south runway are somewhat dependent on their location near MSP. Relocation to other areas near the airport would depend, largely, on the availability of land zoned for commercial and industrial use on which to construct replacement buildings.

Businesses operating from buildings on MSP property may be relocated to newly-constructed buildings on airport property, while others may have to relocate off the airport. Cargo facilities located along 26th Avenue South would be relocated on airport property. The freight forwarders located in industrial buildings along 24th Avenue South would have to relocate off airport property; securing new business sites would be related to the availability of vacant industrial property or buildings near freeways elsewhere in the metropolitan region.

The medical clinic located at the south end of the proposed runway would be relocated off airport property; relocation would depend on the availability of land to replicate the existing facility.

Large areas of land zoned for commercial and industrial use are found elsewhere in the region. Whether specific properties are available to businesses displaced by airport development depends on market conditions at that time. However, airport development would present cities, particularly those in close proximity to the airport or those with freeway access, with the rationale to redevelop incompatible land uses.

For low-income and minority employees displaced from their jobs by airport development, possible mitigation for impacts caused when businesses close or during any gap of time while businesses are relocating could include unemployment payments and a program of direct assistance in locating replacement jobs. MAC and the FAA will work with the appropriate government agencies, such as the state Department of Economic Security, to determine the preferred mitigation.

## T.2 No Action Alternative

### T.2.1 Affected Environment — No Action Alternative

The affected environment includes the areas within the DNL 65+ noise contour.

**Community Institutions**
A medical clinic and a portion of Rich Acres Golf Course and recreation complex are located on airport property. Rich Acres Golf Course is discussed in Sections T.1 and U.1. Community institutions within the DNL 65+ noise contours include six parks and sports fields, six churches, two fraternal organizations, one cemetery and two doctor's offices.

Community institutions on airport property and within the DNL 65+ noise contours are depicted on **Figure T-6**.

The APE includes New Ford Town and Rich Acres, two neighborhoods in the city of Richfield. Both are located south of Trunk Highway 62 and east of Trunk Highway 77 and are surrounded by airport property. MAC has acquired these properties as part of an approved noise mitigation project. The noise mitigation project is unrelated to the development of the No Action Alternative. Residents of these neighborhoods have been relocated. Interim uses of these properties are yet to be determined.

## T.2.2 Social Impacts — No Action Alternative

The No Action Alternative would result in no displacement of businesses, but 76 households with about 156 residents are to be acquired as part of the 4-22 noise mitigation program. The social characteristics of the affected residents are given in **Table T-13**. The homes are located in or adjacent to the DNL 65+ contour (**Figure Q-9**), west of T.H. 77 and south of I-494, in the city of Bloomington.

**Table T-13 - Characteristics of Displaced Households - No Action Alternative**

| | Number |
|---|---|
| Households | 76 |
| Residents | 156 |
| Children 18 and younger | 33 |
| Adults 65 and older | 11 |
| Average persons per unit | 2.025 |
| Assessed valuation (1994 $) | $5,523,000 |
| Source: 1990 Census, HNTB | |

No community institutions would be displaced by the No Action Alternative. There would be continued noise and visual impacts for residents and community institutions within the DNL 65+ noise contours. It is noted that the 1994 DNL 65+ noise contours (**Figure Q-1**) are greater than the projected 2005 DNL 65+ noise contours for the No Action Alternative (**Figure Q-9**). Sections V.Q and V.Y discuss noise and visual impacts of the No Action Alternative. **Table Q-11** in Section Q details the number of residents within the DNL 65+ noise contours for the No Action Alternative.

## T.2.3 Mitigation Measures — No Action Alternative

For residents and community institutions within the DNL 65+ noise contours, there are a variety of noise abatement measures that are potential mitigation for these impacts. They are discussed in Section Q.3.3 and include, for example, changes to aircraft operations at MSP, including restrictions on certain activities during nighttime hours and use of new, quieter aircraft.

## T.3 Summary of Social Impacts

Displacement of businesses and residents are unavoidable; however, it would be mitigated through relocation assistance under the Uniform Act. **Table T-13** compares the social impacts of the alternative.

**Table T-14 - Summary of Social Impacts**

| | MSP Alternative | | No Action Alternative |
|---|---|---|---|
| | 2020 | 2010 | |
| Population Displaced | 609 | 383 | 156 |
| Households Displaced | 258 | 166 | 76 |
| Businesses Displaced | 82 | 73 | 0 |
| Employees Displaced | 2,896 | 2,891 | 0 |

## U. Section 4(f)

This part of the FEIS considers the impacts of the airport expansion on certain resources eligible for review under Section 4(f)[8] of the 1966 Department of Transportation Act. Section 4(f) states that the Secretary of the U.S. Department of Transportation may not approve a project which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance unless there are no feasible and prudent alternatives to the use of such land and unless the project includes all possible planning to minimize harm resulting from the use.

Public use lands include publicly owned parks, recreation areas, wildlife and waterfowl Refuges of national, state and local significance, and publicly and privately owned historic sites of national, state and local significance. Privately owned parks, recreation areas, and wildlife refuges are not subject to Section 4(f). The determination of significance must consider the entire property and not simply the portion of the property being used for the proposed project.

This following is a summary of the Section 4(f) determinations required for the MSP Alternative and for the No Action Alternative. The FAA has published a ***Section 4(f) Evaluation***, a separate document that focuses on the Section 4(f) issues summarized below. The *Section 4(f) Evaluation* is being made available for public review and comment concurrently with this FEIS. In particular, it includes more detailed information about the FAA's determinations concerning the Minnesota Valley National Wildlife Refuge (MVNWR or Refuge), for which the FAA reached site-specific conclusions based on noise analyses and federal criteria used to determine significance.

The *Section 4(f) Evaluation* demonstrates why the proposed expansion of MSP will result in the following uses of Section 4(f) resources: (1) demolition of the Original Wold-Chamberlain Terminal Historic District, located within the Airport's boundary; (2) constructive use[9] of the Spruce Shadows Farm Historic District; and (3) constructive use of some of the environmental education and wildlife recreation activity areas of the MVNWR.

The FAA has carefully analyzed the project's environmental impacts and has consulted with the parties having jurisdiction over the affected Section 4(f) resources to determine that there are no feasible and prudent alternatives to the proposed action and to determine the appropriate mitigations. Various analyses, conclusions, and data which are relevant to Section 4(f) resources, are also discussed in Section III of this FEIS (Alternatives) and in the following environmental impact subsections: Archaeological (Section B); Historic/architectural (Section M); Parks and recreation areas (Section R); and, Wildlife Refuges (Section FF). Similar information is also found within the *Section 4(f) Evaluation* document. In addition, the environmental impact discussions found in Sections C (Biotic Communities), D (Bird Aircraft Hazards); H (Endangered and Threatened Species); and DD (Wetlands) include detailed information about impacts to wildlife and plant species at the Minnesota Valley National Wildlife Refuge.

[8] In January 1983, as part of an overall recodification of the DOT Act, Section 4(f) was amended and codified in 49 U.S.C, Section 303. However, the regulation is more commonly known as "Section 4(f)."

[9] A "constructive use" can occur when proximity effects, such as noise, adversely affect the normal activity or aesthetic value of an eligible Section 4(f) property—even though there may be no direct physical effect involving construction of transportation facilities. The project's *Section 4(f) Evaluation*, published separately, includes more information about constructive use.

Where relevant in considering the uses of the resources protected under Section 4(f), the FAA considers FAR Part 150, "Land Use Compatibility Criteria," included in **Table A.3-2** in Appendix A.3 of this FEIS (Noise Metrics) to determine whether noise impacts are significant under the NEPA or constitute a constructive use under Section 4(f).

The FAA also relies upon case law and comparable standards and guidance in Federal Highway Administration (FHWA) 4(f) regulations. According to FHWA regulations, a constructive use occurs when noise levels "substantially impair" public use. The substantial impairment threshold for constructive use has been established through a number of court cases, including Adler v. Lewis, 675 F.2d 1085 (9th Circuit, 1982) and is described as follows within U.S. DOT regulations published by the Federal Highway Administration (FHWA)—*Federal Register*, April 1, 1991:

> *"Substantial impairment would occur only when the protected activities, features or attributes of the resource are substantially diminished."*[10]

Regarding noise impacts, these regulations state that there is no constructive use when the increase in noise due the proposed action is "barely perceptible (3 dBA or less)," even when the post-project noise levels exceed the agency's noise abatement action levels. Further, the FHWA has held that no substantial impairment would occur where there will be a perceptible increase in projected noise levels due to the proposed action, but the post-project levels do not exceed noise abatement criteria.

## U.1 MSP Alternative

### U.1.1 Affected Environment — MSP Alternative

The APE for Section 4(f) impacts is defined by the APEs for relevant types of Section 4(f) properties as defined in subsections B, M, R, and FF. Potential Section 4(f) properties within the affected environment for the MSP Alternative include:

Archaeological: There are no archaeological sites subject to Section 4(f) review within the APE.

Historic/architectural: The buildings of the Original Wold-Chamberlain Terminal Historic District are located on MSP property. The historic district is listed on the National Register of Historic Places and is subject to Section 4(f) review. The site of the historic district is the location of the new west terminal included in the MSP Alternative's 2020 Concept Plan.

Off airport property, there are six historic districts or properties that are potentially subject to Section 4(f) review. The Old Fort Snelling Historic District and the Fort Snelling National Historic Landmark District are listed in the National Register. The Nokomis Knoll Residential Historic District, Spruce Shadows Farm Historic District, the Fort Snelling National Cemetery and the Soo Line Corridor are eligible for inclusion in the National Register.

The State Historic Preservation Officer (SHPO) has responsibility for reviewing projects that impact historic properties if federal funds or licensing is involved. Correspondence regarding FAA/MAC consultation with SHPO is found in Appendix A.2 and the SHPO's comments on the DEIS are included in Appendix I.

Parks and recreation areas: There are seven park and recreation properties within the APE that are subject to Section 4(f) review: Fort Snelling State Park, under the jurisdiction of the state of Minnesota; Bossen Field, Lake Nokomis, Diamond Lake Park and Todd Park, all under the jurisdiction of the Minneapolis Park Board;

10 23 CFR 771.135(p)(2), 56 Federal Register 13273.

Taft Park, under the jurisdiction of the city of Richfield;[11] and River Ridge Playground, under the jurisdiction of the city of Bloomington.

Rich Acres Golf Course and recreation complex is a recreation area that would be removed for development of the MSP Alternative. However, Rich Acres is not subject to Section 4(f) review because the property is owned by the MAC and has been leased to the City of Richfield until such time as it is needed for airport use. The lease states that the "Commission at any time during the lease term or renewal term shall have the right to retake possession of all or portions of the premises . . . for airport purposes based upon a real and present need for use of such land by Commission for aeronautical or other purposes directly relating to the development and use of the airport. . . ." FAA regulations state that "where property is owned by and currently designated for use by a transportation agency, and a park or recreation use of the land is being made only on an interim basis, a Section 4(f) determination would not ordinarily be required. The sponsor should indicate in any lease or agreement involving such use that this use is temporary" [FAA Order 5050.4A, 47.e.(7)(a)3]. Since the recreation use of Rich Acres falls within the scope of the cited regulation, a Section 4(f) determination for the property is not required.

Wildlife Refuges: Portions of the Minnesota Valley National Wildlife Refuge (MVNWR or Refuge), under the jurisdiction of the U.S. Department of Interior, are subject to Section 4(f) review.

### U.1.2 Section 4(f) Impacts — MSP Alternative

Based upon the on- and off-airport actions comprising the 2010 LTCP and the 2020 Concept Plan — including roadway improvements — the direct and indirect constructive use impacts on properties subject to Section 4(f) review are as follows:

Archaeological: There are no known impacts because there are no known sites. However, it is recognized that as-yet unknown artifacts could be unearthed during construction activities. This issue is addressed within a Programmatic Agreement, discussed in the paragraph below and in the following subsection on Section 4(f) mitigations.

Historic/Architectural: Under the 2020 Concept Plan, the buildings of the Original Wold-Chamberlain Terminal Historic District would be demolished for construction of the west terminal. Construction of planned improvements under the 2010 LTCP would not necessarily require that the entire District be demolished. But planning for the MSP Alternative anticipates some near-term adverse effects on the District, including the removal of hangars or other contributing elements to adequately improve airfield operations and aircraft deicing procedures. During the preparation of this FEIS, the FAA and the MAC developed an interagency Programmatic Agreement (PA) that establishes the appropriate procedures to be used during implementation of the 2010 LTCP and beyond. The PA is presented in Appendix C of this FEIS; it is signed by the MAC, the FAA, the SHPO and the Advisory Council on Historic Preservation (ACHP) —, with the U.S. Army Corps of Engineers, the Federal Highway Administration, the Minneapolis Heritage Preservation Commission, the National Park Service-Mississippi National River and Recreation Area, Metropolitan Council and Minnesota Department of Transportation as concurring parties.

Park and recreation areas: No parks and recreation areas subject to Section 4(f) review will be acquired for development of the MSP Alternative. The potential Section 4(f) park and recreation areas within the APE do not have activities incompatible with aircraft noise and, therefore, there would be no constructive use of parklands.

11 A portion of Taft Park (the land north of a line extended east from 62nd Street) is on MAC-owned property and is leased to Richfield based on the same terms as the Rich Acres Golf Course area, also discussed in this section. There are currently no anticipated impacts to Taft Park as a result of the proposed action.

One small portion of Fort Snelling State Park is located outside of the future DNL 65 noise contour, but inside the DNL 60 noise contour. This area (east of Trunk Highway 77—or Cedar Avenue—and south of the Minnesota River) primarily provides parking, which in turn provides recreational access to adjacent parts of the park located outside of the DNL 60 contour. Aside from the parking, the area includes the Cedar Avenue bicycle ramp, a trailhead, and the Jens A. Caspersen Boat Landing on the Minnesota River. The recreational use characteristics in this part of the park are consistent with the FAR Part 150 land use category that includes parks and "other active recreation areas" (see Appendix A.3, Table A.3-2). Such uses are compatible with noise levels as high as DNL 70-75.

Therefore, the FAA concludes that the recreational use of this area is compatible with the MSP Alternative based on the Part 150 guidelines and the specific nature of public use—which includes boat launching, picnicking, bicycling, and hiking. These activities are clearly compatible with the MSP Alternative because only a small and highly developed portion of the State Park would be exposed to noise levels above DNL 60, and no portion of the park would be exposed to noise levels reaching DNL 65. Consequently, there would be no impacts.

Wildlife Refuges: Implementation of the MSP Alternative does not require land acquisition or other direct taking of facilities within the boundaries of the Minnesota Valley National Wildlife Refuge (MVNWR or Refuge). However, an indirect taking or "constructive use" under Section 4(f) will occur since the proximity effects from the proposed action will substantially impair public use or enjoyment of Section 4(f) resources within the MVNWR.

The FAA and the MAC have participated in detailed consultations with the U.S. Fish and Wildlife Service (USFWS) regarding the noise impacts to the MVNWR lands resulting from the MSP Alternative. Based on those consultations and noise analysis, the FAA — as the federal agency responsible for implementing Section 4(f) regulations — has determined that the MSP Alternative would result in the constructive use of a portion of the Refuge. This FAA determination is based on several project-specific findings, which are discussed further within the *Section 4(f) Evaluation*, published separately from this FEIS. The major findings and conclusions include these:

- Section 4(f) applies only within publicly-owned portions of the Refuge (i.e., lands within the MVNWR's authorized boundary that are currently owned by federal, state, or local governments). Private property located inside the boundary is not subject to the provisions of Section 4(f).

- The constructive use finding is based solely on public use impacts within the Refuge, and not on impacts to wildlife resources (see also the discussion in Section FF, *Wildlife Refuges*).

- The noise impacts resulting from implementation of the MSP Alternative would *substantially impair* public use within the publicly owned Refuge lands that experience a 3 dBA increase in noise and are located inside the 2005 DNL 60 contour; and the noise impact to that land area, and to public-use facilities within that area, comprises a constructive use under Section 4(f).[12]

It is the FAA's opinion that constructive use occurs when noise levels due to a federal action "substantially impair" public use. To evaluate noise impacts within the Refuge, the FAA has defined substantial impairment based on site-specific issues and data to determine whether potential increases in noise are de minimus or if the noise may substantially impair a visitor's use and enjoyment of the Refuge.

For this specific Refuge determination, the FAR Part 150 land use compatibility guidelines (Appendix A.3, **Table A.3-2**) were used to establish the first tier in the Section 4(f) impact assessment. Other aspects of the Refuge determination were reached recognizing that the FAA is currently reexamining its criteria with respect to aircraft overflights of national parks and wildlife refuges, which may derive their value and use from a relatively quiet setting.

[12] This FAA finding of constructive use is based on the project-specific circumstances and analyses contained within the Section 4(f) Evaluation, published separately from this FEIS.

The effects of the MSP Alternative on public use within publicly owned areas of the MVNWR (i.e., the areas that would be substantially impaired) would vary depending on a visitor's location within the Refuge and the specific public use or activity. As explained further in the *Section 4(f) Evaluation*, the Bass Ponds area of the Long Meadow Lake Unit would be adversely affected because of a clear pattern of public use for both guided and self-guided public education and interpretive programs. The Bass Ponds area would experience the greatest noise impact within the Refuge. Other areas of the MVNWR, farther from the Bass Ponds, would be exposed to less noise. **Figure FF-3** (Appendix J) shows the noise contours within the Refuge anticipated as a result of the MSP Alternative.

The increased noise levels near the Bass Ponds would impair the ability of the Bass Ponds area to support environmental educational activities. Specifically, it would become more difficult for an instructor to communicate with students during periods when aircraft are flying over the Bass Ponds. Therefore, the FAA and the MAC agree with the USFWS that the proposed action constitutes a "taking" of the Bass Ponds environmental education area. The same determination also extends to outdoor facilities (i.e., site improvements) necessary to and directly related to the Bass Ponds interpretive area, such as trails, parking, and access roadways within the Refuge.

As noted previously, the FAA also applies site-specific analyses based on the circumstances and using other noise impact criteria. For the MVNWR, the FAA considered:

- the work of the Federal Interagency Committee on Noise (FICON)[13] and research on the impact of noise levels on communication;
- the MVNWR's development history and historical relationships to the urban environment; and
- a technical analysis of noise impacts in the Refuge, including existing ambient noise levels (see Appendix A.12 of this FEIS).

Each of these items, which were considered in addition to the FHWA-established 3 dBA threshold for perceptible noise increase, are discussed further within the *Section 4(f) Evaluation*, published separately.

Based on FAA and FHWA guidance, FICON recommendations, Refuge history, case law, Refuge ambient noise levels, the types of public uses in the Refuge and consultations with the USFWS, the FAA has determined that future noise impacts of the MSP Alternative for publicly owned Refuge parcels within the DNL 60+ area would constitute a Section 4(f) constructive use. The FAA found that noise resulting from operations on the new runway would result in noise increases of 3 dBA or more within that area and would substantially impair public use in the Refuge for outdoor activities involving environmental education, nature walks, bird watching, and similar group and individual interests.[14] This impact would be especially pronounced within the Bass Ponds area, where future noise levels would exceed DNL 70. Other areas, inside of the DNL 65 and DNL 60 contours, are also included within the area of Section 4(f) constructive use due to: (1) noise levels that would increase by levels of 3 dBA or more; (2) the public use of the Bass Ponds as an access point to broader areas of the Refuge; and (3) established patterns of public use within these areas for wildlife observation and environmental education, which derive some value from an existing level of ambient noise that approximates normal urban residential conditions.

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[13] The FICON was composed of representatives from the FAA, U.S. EPA, Department of Defense, Department of Housing and Urban Development, Department of Veteran Affairs, and the Council on Environmental Quality. In August 1992, the FICON issued a guidance report which concluded that, "the federal noise assessment process can and should be improved." The FICON's recommended improvements were incorporated into a "normal process of periodically reassessing present procedures and techniques to ensure that the most practical and realistic approaches are being used" (see Summary of Recommendations, page 1-4; Federal Agency Review of Selected Airport Noise Analysis Issues; by the FICON; August 1992).

14 Non-wildlife oriented recreation such as bicycling, cross-country skiing, and snowmobiling would not be significantly affected by increased noise levels.

Below DNL 60, the FAA concludes that the new runway would not substantially impair public use of the Refuge. In making this determination, the FAA emphasizes that it has considered the unique circumstances of the MSP airport expansion and the public uses in the MVNWR. In other words, this determination is entirely site-specific and does not necessarily establish a precedent for other urbanized refuge areas, recreational parks and playgrounds, or for national parks that were established and derive their value from a wilderness and relatively quiet setting.

### U.1.3 Mitigation Measures — MSP Alternative

The mitigation measures proposed to address the uses of Section 4(f) resources are addressed within two interagency agreements:

- **The *Programmatic Agreement (PA)* for archaeological and historical/architectural resources.** By July 28,1997, the PA had been signed by the FAA, the MAC, the Minnesota State Historic Preservation Officer, the Advisory Council on Historic Preservation, and other parties (see Appendix C).

- **The *Memorandum of Agreement (MOA)* for the Refuge.** A current draft of the preliminary MOA is attached to this FEIS. The FAA and the MAC will continue consultations with the USFWS so that the MOA can be finalized and signed (see Appendix E).

The rest of this mitigation section summarizes the measures proposed within the historic resources PA and the preliminary Refuge MOA. More information about the planned Refuge mitigation can also be found within the *Section 4(f) Evaluation*, published separately from this FEIS.

Archaeological and historic/architectural: For the MSP Alternative, mitigation for the demolition of the Original Wold-Chamberlain Terminal Historic District is addressed in the PA (see the discussion of impacts, above, and the complete PA, presented in Appendix C of this FEIS). The major elements of the mitigation program, as agreed to in the PA, are as follows:

- Document the Original Wold-Chamberlain Terminal Historic District according to the standards of the Historic American Building Survey (HABS) and obtain HABS concurrence on the documentation prior to alteration of the District (the HABS documentation is to be archived in the Library of Congress)

- Ensure that the Smithsonian Institution and the Minnesota Historical Society can select elements or objects from the Original Wold-Chamberlain Terminal Historic District for curation and display

- Conduct a supplemental study of historic and architectural resources within the APE in 2005, due to the planned phasing of construction

- Evaluate the cultural resource potential of any property added to the APE, which consists of land area within the DNL 65 contour, the expanded airport boundaries, properties affected by roadways directly serving the airport, properties acquired for wetland or other mitigation, and areas impacted due to airport-induced socioeconomic and land use effects

- Prepare a comprehensive research design for future archaeological evaluation of those portions of the APE that are not accessible at this time because archaeological evidence may exist beneath built-up and paved areas; notify the ACHP if additional resources are found

- Conduct annual consultations with the parties involved in the PA

- Determine and agree with the parties on appropriate mitigations if future actions result in as-yet unforeseen impacts on historic resources

- Consult with any member of the public if they have questions about this process

The PA stipulations are designed, in part, to address the major phases of development for the MSP Alternative (both the 2010 LTCP and the long-term 2020 Concept Plan).

Park and recreation areas: There are no impacts. No parks and recreation areas subject to Section 4(f) review will be acquired for development of the MSP Alternative. Under the FAA guidelines, activities at these parks are considered compatible with aircraft noise; therefore, there would be no constructive use of these parks.

Wildlife Refuges: The proposed Refuge mitigation plan is a financial settlement in exchange for aviation easements over the affected Section 4(f) lands, sufficient to secure the airport's interest. The value of the "taken" land interests will be determined in accordance with standard appraisal principles and practices, reflecting the appraised fair market value of the airport's interest in the publicly-owned Refuge lands.

Based on the Section 4(f) impacts to the MVNWR (i.e., substantial impairment), the FAA has concluded that the value of mitigation measures should be equal to the fair market value of:

- aviation easements of publicly-owned lands within the MSP Alternative's DNL 65 contour and inside the MVNWR's authorized boundary;

- aviation easements of publicly-owned lands that are expected to experience a 3 dBA noise increase and are between the DNL 60 and DNL 65 contours resulting of the proposed action; and

- the impact due to diminished value of the Visitor Center given its connectivity with the Bass Ponds area.

The FAA has also determined that certain other mitigation components, such as reasonable costs to plan the mitigation, can be accepted for federal funding and will work with the MAC and the USFWS to further define those components.

The FAA, the MAC, and the USFWS have agreed in principle that a financial settlement for the aviation easements over the Refuge land is proper. The mitigation to be implemented will include compensation to restore the functions of approximately 1,083 acres of public-use and publicly owned lands within the Refuge that have substantial impairment.[15]

It is anticipated that compensation to the UWFWS will be sufficient to provide the Refuge with replacement land of equal habitat quality, plus the funding for replacement ponds, the restoration of hiking trails and trail markers, informational kiosks, parking, water-management structures, and other site improvements impacted by the proposed action—especially in regard to the Bass Ponds area due to the high level of noise impact.

With the conveyance of aviation easements, it will not be necessary for the MAC to take fee title to Refuge lands, and the USFWS would still be able to manage the lands for wildlife production, conservation, and the other uses that it deems appropriate.

Other mitigation elements and issues that are proposed by the MAC and to be negotiated further among the FAA, the MAC, and the USFWS include:

15 For more information about the basis for this determination, see the Section 4(f) Evaluation, published separately from this FEIS. This estimated land area is for current ownership only, based on a review of local government records and parcel information on-file at the USFWS Regional Office. It does not include lands owned by Northern States Power Company which are leased to the USFWS, nor does it include parcels owned by the Kelley family, for which monies to acquire are now available through appropriation to the USFWS. For informational purposes, Figure FF-6 in Appendix J shows a DNL 57 contour for the MSP Alternative. The DNL 57 contour was evaluated by the MAC as a potential noise impact boundary for the Refuge. However, based upon further analysis of impacts and criteria, the lands between DNL 60 and DNL 57 were excluded from the Section 4(f) constructive use determination because potential noise increases are expected to be de minimus and therefore would not substantially impair a visitor's use and enjoyment of the Refuge.

- funds to cover the detailed planning/design work associated with a mitigation plan, to be based on an agreed-to scope and cost estimate for the professional services;

- funds or other measures to provide the Refuge with an interpretive exhibit within the MSP airport terminal; and

- procedures for administration of the mitigation program.

The negotiations over the above items are ongoing and can be addressed separately from this FEIS. The currently proposed Refuge mitigation measures are also described further within the *Section 4(f) Evaluation* and in a preliminary Memorandum of Agreement (MOA), presented in Appendix E of this FEIS.

## U.2 No Action Alternative

The APE for the No Action Alternative differs from the MSP Alternative in that there would be no noise contour from the new runway extending toward the south (see **Figures M-2** and **FF-4**). This would eliminate any potential for constructive use of the MVNWR or the Spruce Shadows Farm Historic District. Furthermore, the No Action Alternative would not result in any on-airport impacts affecting the Original Wold Chamberlain Terminal Historic District.

Additional review of the No Action Alternative entailed review of the other eligible Section 4(f) resources for potential impacts as identified in Subsection U.1.1, above. However, this review indicated that none of the eligible resources would need to be acquired; consequently there are no Section 4(f) impacts and no mitigation would be required

## U.3 Summary of Section 4(f) Impacts

The MSP Alternative requires demolition of the Original Wold-Chamberlain Terminal Historic District and the constructive use of the Spruce Shadows Farm Historic District. Mitigation for this impact will consist of documentation under the provisions of HABS and other measures as specified in the Programmatic Agreement (PA), presented in Appendix C.

The MSP Alternative also involves a Section 4(f) constructive use of a portion of the MVNWR. Mitigation for this impact includes the measures described in the Memorandum of Agreement (MOA), presented in Appendix E.

The No Action Alternative would not entail Section 4(f) impacts.

**Table U-1** summarizes Section 4(f) impacts.

**Table U-1 - Number of Section 4(f) Properties that will be Subject to Use by Each Alternative**

| | MSP Alternative | No Action Alternative |
|---|---|---|
| Archaeological resources | 0 | 0 |
| Historic/Architectural resources | 2 | 0 |
| Park & Recreation Areas | 0 | 0 |
| Wildlife Refuges | 1 | 0 |

# V. Solid Waste Impacts

Solid waste to be considered is the municipal solid waste (MSW) generated by the airport alternatives.

Solid waste impacts were determined during scoping as being not significant and therefore not requiring detailed analysis in the EIS (see Scoping Decision, MAC, July 1995). The following is a summary of the analysis performed during scoping.

## V.1 MSP Alternative

### V.1.1 Affected Environment — MSP Alternative

The APE consists of the solid waste management system which serves Hennepin County and the metropolitan area.

MSP is located within Hennepin County. According to Hennepin County records, approximately 750,000 tons of non-recycled mixed municipal solid waste (MSW) requiring processing/disposal were generated within the County in 1994. The primary processing facilities used by Hennepin County are: a) the Hennepin Energy Resource Company (HERC) waste-to-energy facility located in downtown Minneapolis, and b) the Elk River Resource Recovery Facility (ERRRF) located outside of Elk River, MN. Hennepin County also has waste capacity sharing agreements with neighboring counties, most notably with Ramsey and Washington Counties (Newport refuse derived fuel facility). There is an extensive network of waste haulers which currently service Hennepin County. These haulers have ready access to the airport facility from Trunk Highways 5 and 62.

The Hennepin County Solid Waste Management Master Plan (November, 1992) presents estimates for Hennepin County generation of MSW through 2010. These estimates were extrapolated to 2020 using the rates of increase assumed by Hennepin County. The projected 2020 Hennepin County generation of MSW requiring processing/disposal (i.e., non-recycled) is 805,000 tons.

### V.1.2 Solid Waste Impacts — MSP Alternative

The MAC and MSP tenants currently have MSW recycling programs in place which target paper products, aluminum and other metals, plastics, and glass. In 1994, the MAC commissioned a major study (EcoSource, November 1994) to a) characterize the existing MSP waste stream and MAC waste management system, and b) provide recommendations to help the facility address the state goal for the metropolitan area of recycling 45 percent of the waste stream by the end of 1996. A number of these recommendations have been implemented to date, and enhancements to recycling efforts based upon the 1994 study will continue on an on-going basis.

Information provided by the MAC and by MSP tenants which have separate (non-MAC) waste hauling contracts, indicates that the current total annual generation of solid waste requiring processing/disposal at the MSP facility is approximately 8,350 tons. This translates to approximately 1.5 lbs. of solid waste per enplanement in 1994. This unit generation rate was used to estimate the solid waste requiring processing/disposal in 2020 for the MSP Alternative at 12,700 tons. This represents approximately 1.6 percent of the projected non-recycled MSW in Hennepin County. This is a conservative (high) figure, because it does not account for anticipated future gains in recycling at MSP. The expansion and continued use of MSP under both the 2010 LTCP and 2020 Concept Plan would not adversely impact the waste management system within Hennepin County.

## V.2 No Action Alternative

### V.2.1 Affected Environment

The affected environment is the same as that for the MSP Alternative.

### V.2.2 Solid Waste Impacts — No Action Alternative

There would be less solid waste generated under the No Action Alternative than the MSP Alternative (fewer enplanements). The No Action Alternative will not have a significant impact on the waste management system serving Hennepin County.

## V.3 Summary of Solid Waste Impacts

There are no significant impacts.

# W. Surface Transportation Access

This section describes the surface transportation improvements needed to provide access to MSP under the No-Action and MSP Expansion Alternatives, including the role of transit and travel demand management strategies. This section also describes the impact of the MSP and No Action Alternatives on travel times to the airport and traffic volumes on principal roadways near MSP.

Several roadway improvements would be needed under the MSP Alternative. The needed roadway improvements were identified by Mn/DOT, FHWA, WisDOT, MAC, FAA, EQB, and the Metropolitan Council. Representatives of these agencies formed a committee on surface transportation which met between August 1995 and March 1997. The Surface Transportation Committee evaluated many potential surface transportation improvements to determine if they were necessary to implement the MSP Alternative. The Committee's conclusions are presented in a signed, inter-agency agreement known as the Consensus Document. The Consensus Document is included in Appendix F of this FEIS and is summarized in this section. A 1995 Mn/DOT report, "Potential Effects of Twin Cities Major Airport Alternatives on the Minnesota State Highway System," also describes the impact of MSP expansion on the area's surface transportation network. (Strgar, Roscoe, and Fausch, August 1995).

#### Modeling Process

The region's travel demand model was developed by the Metropolitan Council using data from the 1990 Travel Behavior Inventory and the 1990 Census. It consists of 1,165 internal Transportation Analysis Zones (TAZs) and 35 external stations. Socioeconomic data for current years and future year forecasts of population, households and employment are aggregated to TAZs for input into the model. The model network was created by Mn/DOT with assistance from the Council, and the transportation departments of the counties and cities of the region. The modeling process is described in detail in the Draft EIS.

## W.1 MSP Alternative

### W.1.1 Affected Environment — MSP and No Build Alternatives

MSP's location is well served by several freeways including I-494, TH 5, TH 77, TH 55, and TH 62. The affected environment for surface transportation impacts are those roadways adjacent to MSP whose traffic volumes would be affected by selection of the MSP Alternative or No-Build Alternative. **Figure W-1** shows 1992 traffic volumes for the airport area and its environs and also illustrates some of the roadways in the area. The principal roads in the area are:

| Roadway | Classification | Number of Lanes and Type of Facility |
|---|---|---|
| I-494 | Principal Arterial | 6 to 10, Urban Interstate |
| I-35W | Principal Arterial | 4 to 6, Urban Interstate |
| TH 5 | Principal Arterial | 6 to 7, Urban Freeway |
| TH 77 | Principal Arterial | 4 to 6, Urban Freeway |
| TH 62 | Principal Arterial | 4, Urban Freeway |
| TH 55 | Principal Arterial | 4, Urban Arterial to Urban Freeway |

Interstate I-494 runs east-west along the southern boundary of MSP. The number of lanes range from six lanes across the Minnesota River to ten lanes between 24th Avenue and 34th Avenue. West of TH 77 I-494 is eight lanes. TH 77 (Cedar Avenue) serves as MSP's western boundary. TH 77 is generally four lanes wide, with an additional southbound lane being added just north of I-494. South of I-494, TH 77 consists of four through lanes with additional auxiliary lanes to serve as access routes to the Mall of America and to the I-494/TH 77 interchange. Crossing the Minnesota River, the roadway is six lanes wide. TH 62 (the Crosstown Highway) is a four-lane facility that runs east-west along the northern boundary of the airport. TH 55 borders MSP on the northeastern side and consists of four lanes. North of TH 62 it is an undivided urban arterial with stoplights. From TH 62 east it is a divided facility. TH 5 is located on the eastern side of the airport, running from St. Paul across the Mississippi River and through a tunnel under Fort Snelling and connects with I-494. Across the Mississippi River to TH 55 it is four lanes. From TH 55 to Post Road it is six lanes and from Post Road to I-494 it is seven lanes. The primary access to the Lindbergh Terminal (Glumack Drive) is from TH 5 between TH 55 and Post Road.

The regional highway system currently accesses the airport at several points. The primary access point is Glumack Drive from TH 5 which serves the Lindbergh Terminal, several car rental agencies, the U.S. Post Office, and Northwest Airlines maintenance facilities. A secondary access point to the airport is 34th Avenue from I-494 which provides access to more Northwest Airline facilities, air cargo companies, the HHH International Terminal and fixed base operators. This street also provides access to Fort Snelling National Cemetery. Several other access points serve other airport-related businesses, the GSA Building, airport facilities and several military bases.

Truck traffic accesses the airport at several locations, but primarily at 34th Avenue from I-494 and also at 28th Avenue from TH 62. The percent of truck traffic on these roads is 5 to 6 percent, or almost a thousand truck trips a day. Over 75 percent of airport-related truck traffic is located on 34th Avenue.

The airport is served by transit and paratransit service (courtesy vehicles, limousines, limo service, buses and taxis), which use the primary access point, Glumack Drive. The terminal is served by transit routes 4, 7, 15, 42B, 54, and 77. The Northwest Airlines facility located on Glumack Drive is served by transit routes 4, 7, 15, and 42B. Two routes, the 42B and 77, serve the south side of the airport, running along Post Road, 70th Street and 34th Avenue. Route 15 runs through the northwestern area of the airport, traveling along 66th Street, Standish Avenue, 62nd Street, and 28th Avenue. Route 22 has a stop just south of TH 62 at 34th Avenue. Routes 4, 7, 9, 15, and 77 serve the northeastern area, running along Minnehaha Avenue and Bloomington Street. In total, all forms of transit accounted for about 5 percent of all trips to and from MSP in 1990. Public bus service, however, carried less than 1 percent of all person trips.

Travel time from the seven-county metropolitan region and two Wisconsin county seats, off-peak and peak is shown in **Table W-1**.

**Table W-1 - 1990 Travel Time to Airport Main Terminal from County Seats**

| County Seat* | Minutes of Off-Peak Travel | Minutes of PM Peak Hour Travel |
|---|---|---|
| Anoka | 42 | 45 |
| Chaska | 32 | 36 |
| Hastings | 31 | 31 |
| Minneapolis | 18 | 20 |
| St. Paul | 14 | 16 |
| Shakopee | 31 | 35 |
| Stillwater | 38 | 42 |
| Hudson | 34 | 36 |
| Ellsworth | 53 | 53 |
| Average For Residents of Seven-County Region | 24 | 26 |
| Average For Employees in Seven-County Region | 20 | 23 |

* Travel time is from the centroid of the Transportation Analysis Zone containing the county courthouse to airport main terminal.

**Table W-2** shows the regional population and employees within 15, 30, 45 and 60 minutes of the Main Terminal in 1990.

## Table W-2 - Regional Population and Employees within Airport Service Areas in 1990

| | | Percentage | | Outside Metro Area Population | | | Percentage | |
|---|---|---|---|---|---|---|---|---|
| **Travelshed** | **Metro Area Population** | **Increment** | **Total** | **Increment** | **Total** | **Employment** | **Increment** | **Total** |
| **Off-Peak Hours** | | | | | | | | |
| Within 15 Minutes | 492,643 | 21.5% | 21.5% | 0 | 0 | 353,766 | 27.4% | 27.4% |
| 15 -30 Minutes | 1,220,844 | 53.4% | 74.9% | 0 | 0 | 760,588 | 58.8% | 86.2% |
| 30-45 Minutes | 495,229 | 21.6% | 96.5% | 34,800 | 34,800 | 166,635 | 12.9% | 99.1% |
| 45-60 Minutes | 78,158 | 3.4% | 99.9% | 122,800 | 157,600 | 11,780 | 0.9% | 100% |
| Over 60 Minutes | 1,847 | 0.1% | 100% | --- | --- | 352 | * | 100% |
| **PM Peak Hour** | | | | | | | | |
| Within 15 Minutes | 388,511 | 17.0 | 17.0% | 0 | 0 | 259,469 | 20.1% | 20.1% |
| 15-30 Minutes | 1,140,038 | 49.8 | 66.8% | 0 | 0 | 748,188 | 57.8% | 77.9% |
| 30-45 Minutes | 635,988 | 27.8 | 94.6% | 23,800 | 23,800 | 258,086 | 20.0% | 97.9% |
| 45-60 Minutes | 115,567 | 5.0 | 99.6% | 92,100 | 115,900 | 26,136 | 2.0% | 99.9% |
| Over 60 Minutes | 8,617 | 0.4 | 100% | | | 1,242 | 0.1% | 100% |
| Regional Total | 2,288,721 | | | | | 1,293,121 | | |

* Less than 0.1%.

## W.1.2 MSP Alternative Surface Transportation Impacts

The proposed action, the implementation of the MSP 2010 LTCP, would not significantly affect traffic volumes on principal arterials in the vicinity of MSP. The surface transportation improvements required to implement the MSP 2010 LTCP are relatively minor (improvements to the TH 77/66th Street interchange and frontage road on the west side of MSP) and would not affect the primary access to MSP (Glumack Drive).

Construction of a new terminal on the northwest side of MSP would require the improvement of several roadways in the vicinity of MSP, including TH 62, TH 77, and I-35W. On-airport access roads to the west terminal would also have to be constructed. The surface transportation improvements required to implement the 2010 LTCP and the west terminal are described in detail later in this section and also in Appendix F.

Traffic patterns in the vicinity of MSP would also be affected by construction of the west terminal. **Figure W-2** and **Table W- 3** show forecast year 2020 daily traffic, which illustrates the impact of the west terminal on traffic volumes in the vicinity of MSP (compared with the No Action Alternative shown in **Figure W-5**). **Figure 1** in Appendix F also shows existing (1992) and forecasted future traffic volumes. Note the increase in traffic on TH 62 under the MSP Alternative compared to the No Action Alternative and the corresponding decrease in traffic volumes on TH 5.

## Table W-3 - Year 2020 Traffic Volume Changes Under the MSP Alternative

| Roadway | Segment | 1992 AADT | 2020 No Action Forecast AADT | 2020 MSP Alternative Forecast AADT | Difference from No-Action |
|---|---|---|---|---|---|
| I-35W | North of TH 62 | 162,000 | 208,000 | 215,000 | +7,000 |
| I-35W | TH 62 to I-494 | 98,000 | 124,000 | 132,000 | +8,000 |
| I-35W | South of I-494 | 107,000 | 133,000 | 134,000 | +9000 |
| I-494 | West of I-35W | 161,000 | 204,000 | 197,000 | -7,000 |
| I-494 | I-35W to Lyndale | 142,000 | 176,000 | 164,000 | -12,000 |
| I-494 | Lyndale to Portland | 138,000 | 182,000 | 171,000 | -11,000 |
| I-494 | Portland to TH 77 | 134,000 | 190,000 | 177,000 | -13,000 |
| I-494 | TH 77 to 24th | 120,000 | 140,000 | 122,000 | -18,000 |
| I-494 | 24th to 34th | 121,000 | 149,000 | 131,000 | -18,000 |
| I-494 | 34th to TH 5 | 104,000 | 145,000 | 130,000 | -15,000 |
| I-494 | Minnesota River Crossing | 60,000 | 96,000 | 93,000 | -3,000 |
| TH 62 | West of I-35W | 88,000 | 132,000 | 138,000 | +6,000 |
| TH 62 | I-35W Commons | 152,000 | 203,000 | 210,000 | +7,000 |
| TH 62 | Portland to TH 77 | 81,000 | 98,000 | 116,000 | +18,000 |
| TH 62 | 28th to 34th | 43,000 | 61,000 | 74,000 | +13,000 |
| TH 62 | 34th to TH 55 | 36,500 | 54,000 | 68,000 | +14,000 |
| TH 77 | 66th to I-494 | 54,000 | 73,000 | 71,000 | -2,000 |
| TH 77 | I-494 to Old Shakopee Rd | 84,000 | 115,000 | 113,000 | -2,000 |
| TH 77 | Minnesota River Crossing | 76,000 | 115,000 | 114,000 | -1,000 |
| TH 55 | North of TH 62 | 26,000 | 61,000 | 52,000 | -9,000 |
| TH 55 | TH 62 to Bloomington Rd | 45,000 | 81,000 | 82,000 | +1,000 |
| TH 55 | Bloomington Rd to TH 5 | 45,000 | 99,000 | 98,000 | -1,000 |
| TH 55 | Mississippi River Crossing | 31,000 | 52,000 | 53,000 | +1,000 |
| TH 5 | Shepard Rd to TH 55 | 48,000 | 86,000 | 84,000 | -2,000 |
| TH 5 | TH 55 to Glumack Dr | 51,000 | 83,000 | 48,000 | -35,000 |
| TH 5 | Post Rd to I-494 | 52,000 | 87,000 | 67,000 | -20,000 |
| AADT = Annual Average Daily Traffic | | | | | |

Travel time from the seven-county metropolitan region and two Wisconsin county seats is shown in **Table W-4.** Existing travel times may be found in Section W.1.1.

**Table W-4 - Year 2020 Travel Time to Main Terminal from County Seats - MSP Alternative**

| | MSP Alternative | | Difference from No Action | |
|---|---|---|---|---|
| **County Seat*** | **Minutes of Off-Peak Travel** | **Minutes of PM Peak Hour Travel** | **Off-Peak** | **PM Peak** |
| Anoka | 35 | 41 | -4 | -6 |
| Chaska | 28 | 33 | -2 | 0 |
| Hastings | 33 | 39 | +2 | +4 |
| Minneapolis | 13 | 15 | -3 | -6 |
| St. Paul | 16 | 20 | +2 | +4 |
| Shakopee | 26 | 30 | 0 | -1 |
| Stillwater | 40 | 46 | +2 | +4 |
| Hudson, WI | 38 | 42 | +4 | +4 |
| Ellsworth, WI | 57 | 60 | +3 | +4 |
| Average for Residents of Seven-County Region | 22 | 26 | -2 | -1 |
| Average for Employees in Seven-County Region | 19 | 23 | -1 | -1 |

Generally, the MSP Alternative results in a slight decrease in travel time for the residents and employees of the seven-county metropolitan region compared to the No Action Alternative. On average, residents would experience a decrease in their trip time of two minutes off-peak and one minute in the peak hour. On average, employees would experience a decrease in their average trip time of one minute both in the peak hour and off-peak, compared to the No Action Alternative (see **Table W-7**).

**Table W-5** shows the regional population and employees within 15, 30, 45 and 60 minutes of the Main Terminal. **Figures W-3** and **W-4** show the travel time contours for the year 2020.

## Table W-5 - Year 2020 Regional Population, Households and Employees within Travelsheds of MSP Alternative

| | | Percentage | | Outside Metro Area Population | | | Percentage | |
|---|---|---|---|---|---|---|---|---|
| Travelshed | Metro Area Population | Increment | Total | Increment | Total | Employment | Increment | Total |
| **Off-Peak Hours** | | | | | | | | |
| Within 15 Minutes | 691,293 | 23.4% | 23.4% | 0 | 0 | 614,001 | 37.3% | 37.3% |
| 15 -30 Minutes | 1,679,926 | 56.7% | 80.1% | 2,750 | 2,750 | 890,888 | 54.0% | 91.3% |
| 30-45 Minutes | 523,155 | 17.7% | 97.8% | 51,100 | 53,850 | 132,660 | 8.1% | 99.4% |
| 45-60 Minutes | 65,396 | 2.2% | 100% | 127,000 | 190,850 | 9,292 | 0.6% | 100% |
| Over 60 Minutes | 0 | 0% | 0% | | --- | 0 | 0 | 0 |
| **PM Peak Hour** | | | | | | | | |
| Within 15 Minutes | 458,321 | 15.5% | 15.5% | 0 | 0 | 368,444 | 22.4% | 22.4% |
| 15-30 Minutes | 1,535,572 | 51.8% | 67.3% | 0 | 0 | 944,404 | 57.3% | 79.7% |
| 30-45 Minutes | 803,909 | 27.2% | 94.5% | 0 | 0 | 298,704 | 18.1% | 97.8% |
| 45-60 Minutes | 153,948 | 5.2% | 99.7% | 45,000 | 45,000 | 34,269 | 2.1% | 99.9% |
| Over 60 Minutes | 8,020 | 0.3% | 100% | --- | --- | 1,020 | 0.1% | 100% |
| Regional Total | 2,959,770 | | | | | 1,646,841 | | |

As illustrated by **Table W-5**, the west terminal would better serve the region than the existing terminal location. Compared to the 1990 travel shed service pattern illustrated in **Table W-2**, the MSP Alternative serves a greater portion of the region's residents and employees in each fifteen minute increment than it did in 1990, and none of the region's residents are situated more than an hour from the airport terminal in the off-peak period of the day.

### Inter-Region Connectivity

The MSP Alternative will have no impact on travel between the Twin Cities and outstate subregions or other states.

Travel between the Twin Cities region and the outstate subregions and other states would not be influenced significantly by the move of the terminal from the east to the west side of the airport. Traffic levels will be generally similar throughout the region, except in the immediate area of the airport (TH 77, TH 62, TH 5). No roads are proposed to be closed or realigned along new corridors by this alternative.

### Highway Capacity Improvements

Several on-airport and off-airport roadway improvement projects would be required to implement the MSP Alternative. The MAC, FAA, Mn/DOT, FHWA, and Met Council have reached a consensus on which roadway projects are required under the MSP Alternative and the preferred approach to implementing these projects. As mentioned earlier in this section, the agreement between these agencies is presented in the *Consensus Document* in Appendix F. The *Consensus Document* describes the necessary roadway projects and presents the preferred approach for implementing the projects.

Two roadway improvement projects would be required to implement the 2010 LTCP:

- **Improving the frontage road on the south and west side of the airport between 34th Avenue and 66th Street.** Initial improvements include realignment in some locations, spot widening, and turn lanes. The ultimate build-out of the frontage road includes eventual realignment and widening of the frontage road to four lanes over its entire length.
- **Reconstructing the TH 77/66th Street interchange.** A diamond interchange would replace the existing interchange, increasing capacity and providing a connection to the realigned frontage road.

If the Minnesota Legislature authorizes implementation of the west terminal, the development program would require several capacity improvements, both on and off airport property. The Dual Track DEIS identified the five road improvement projects necessary to accommodate the proposed new west terminal: two on-airport projects and three off-airport projects. One of the off-airport roadway improvements, widening the I-35W/TH 62 common section, is required without the proposed airport expansion. The five roadway projects needed to implement the MSP Alternative are:

- **West terminal circulation roadways.** Access roadways from TH 62. TH 77, and TH 62/28th Avenue.
- **Airport east side access improvements.** Modify existing east access roads to serve new functions.
- **TH 62/TH 77 reconstruction.** Widen and reconstruct TH 62 and TH 77 to provide terminal access, including reconstruction of three interchanges at TH 77/TH 62, TH 77/66th Street, and TH 62/28th Avenue. Also includes widening TH 77 to 6 lanes between I-494 and 66th Street.
- **TH 62 between I-35W and TH 77.** Widen from 4 to 6 lanes.
- **I-35W/TH 62 common section.** Reconstruct I-35W/TH 62 interchange, reconstruct the I-35W and TH 62 common section for improved lane continuity, and widen I-35W between TH 62 and 46th Street from six to eight lanes, including 2 HOV lanes. Reconstruct southbound I-35W to eastbound TH 62 ramp to increase capacity. This project is currently scheduled for completion in 2003. The impacts of this project are evaluated in a separate EIS prepared by Mn/DOT.

See the discussion below and Appendix F for more detail on these projects.

### Projects Needed to Implement the 2010 LTCP

As mentioned, the major components of the MSP 2010 LTCP are the new north-south runway and the relocation of most air cargo facilities to the west side of MSP. Access to MSP will not be significantly modified, therefore, the required improvements to the surface transportation system are relatively minor. As mentioned above, two roadway improvement projects are required to implement the MSP 2010 LTCP.

This FEIS accounts for the impacts of both roadway improvement projects. Additional Mn/DOT actions and approvals will be required to implement these projects, particularly the TH 77/66th Street interchange reconstruction. Mn/DOT will take a lead role with adjacent communities, namely Richfield, in the next steps of project development which include preparation of a Design Study Report, a Design Hearing to inform the

public of the project's details and solicit input, and Design Approval. These activities will begin after publication of the FEIS and Record of Decision and after a MAC-Mn/DOT cooperative agreement on implementation of these two projects is finalized (see below).

**Frontage Road**

The existing frontage road on the west and south sides of MSP includes parts of 24th Avenue South, East 75th Street, and Longfellow Avenue South. The improvement of the frontage road is required for three reasons:

- A portion of the existing frontage road right-of-way on 24th Avenue north of I-494 must be realigned to allow construction of the new north-south runway;
- the north end of the frontage road near 66th Street must be realigned to provide an efficient connection to the reconstructed TH 77/66th Street interchange;
- the relocated air cargo and maintenance facilities will increase traffic volumes on the frontage road. To adequately serve increased traffic volumes, spot improvements such as the addition of turn lanes and widening the roadway at certain locations and replacement of some existing pavement will be required.

**Figure W-9** and **Figure 2** in Appendix F illustrate the proposed initial improvements to the frontage road. Increased traffic may eventually require the reconstruction of the frontage road to a four-lane facility over its entire length. If TH 77 is widened to six lanes (see below) the frontage road would have to be realigned to the east. This would be an appropriate time to assess the need for a four-lane frontage road.

The improvements to the frontage road would not require the acquisition of right-of-way or the relocation of businesses or residences. The existing frontage road lies on Mn/DOT and MAC right-of-way. If the frontage road is realigned to the east, it would lie completely on MAC-owned property.

Neither the initial improvements nor the potential four-lane ultimate build-out would significantly affect the natural environment. The cost of this project would be $3.8 million (1995 dollars) for the ultimate four-lane build-out. The cost of the initial improvements will be determined during the project design phase as the actual extent of the initial improvements are determined. The MAC will fund this project.

**TH 77/66th Street Interchange**

The reconstruction of the TH 77/66th Street interchange would provide a needed capacity increase to serve airport-related traffic and provide access to Richfield.

The interchange would be reconstructed to a conventional diamond interchange by reconfiguring the existing southbound entrance ramp and northbound exit ramp and constructing a new southbound exit ramp and northbound entrance ramp (see **Figure W-9** and **Figure 2** in Appendix F). The existing southbound exit from TH 77 to Old Cedar Avenue at East 63rd Street would be closed, as would the two existing northbound entrances to TH 77 from East 63rd Street and the loop ramp south of 66th Street. Traffic on Old Cedar Avenue, which parallels TH 77 on the west side of the interchange, would be diverted one block west to 18th Avenue South in the vicinity of the interchange.

Two possible alternatives will be evaluated for the reconstruction of the interchange. The two alternatives have only minor differences, the most notable of which is the treatment of Old Cedar Avenue south of 66th Street. The two design options are to cul-de-sac Old Cedar Avenue south of 66th Street or make Old Cedar Avenue a one-way south frontage road between 66th Street and 65th Street. The impacts of the interchange reconstruction would be the same under both alternatives.

The proposed reconstruction of the TH 77/66th Street interchange would require the acquisition of 4 residences (containing six residential units) and 15 businesses. Fourteen of the relocated businesses are

located on the east side of Old Cedar Avenue north of 66th Street. One business is located one block south of 66th Street on Old Cedar Avenue. Approximately 3.5 acres of privately-owned property would be acquired for the project (See Section T, Social, and Section S, Environmental Justice for more information). All businesses, residences, and churches on the east side of TH 77 are being relocated from the interchange under MAC's existing noise mitigation program.

Reconstruction of the interchange and diversion of traffic from Old Cedar Avenue to 18th Avenue South is consistent with the City of Richfield's development plan for the area. The plan calls for the development of 18th Avenue as a main north-south route in the vicinity of the interchange and emphasizes a transition toward more commercial development.

Neither interchange reconstruction alternative would affect the natural environment. The cost of the interchange reconstruction is estimated to be $6.7 million (1995 dollars). This cost estimate includes real estate acquisition costs and a total of 25 percent in contingencies (see Appendix F).

The MAC and Mn/DOT plan to enter into either one or two cooperative agreements to address funding, design, and construction of the frontage road and the TH 77/66th Street interchange. Hennepin County and the City of Richfield will also be involved in the cooperative agreement(s). It is expected that initial phases of both roadway projects will be constructed concurrently with construction of Runway 17/35.

**Projects Needed to Implement the 2020 Concept Plan**

**New West Terminal**

Airport users approaching a new terminal in the northwest corner of the site, as proposed in the MSP 2020 Concept Plan, would have several multi-lane, divided facilities available such as I-94, I-494, TH 62 and I-35W. These facilities generally provide high speeds and easy access. Users approaching from the south would access MSP from I-35W, I-494 and TH 77. Airport users approaching from the north would access MSP from I-35W, I-35E, TH 62 and I-494. Users approaching from the east or west would have access from I-94 and I-494. The new terminal site would be generally well served by multi-lane divided facilities from all directions, providing safe, efficient and reliable access. However, some improvements to the existing highway network in the vicinity of the new west terminal would be required (see below). The existing east terminal access road will remain in modified form.

Relocating the terminal to the west side of the airport would shift about 75 percent of the airport-oriented traffic to highways on the north and west sides of MSP. This shift of airport-oriented traffic to the other side of the airport would reduce future traffic volumes along segments of TH 5 adjacent to the existing east terminal to levels that approach the 1992 volumes of 51,000 to 55,000 vehicles per day. Approximately 75,000 vehicles per day in 2020 would access the west terminal via TH 77 and TH 62.

As mentioned above, two of the five possible west terminal roadway projects involve construction of on-airport circulation roadways. The other three projects involve improvements to TH 77, TH 62, and I-35W. All three of these off-airport projects require separate approvals to construct, and will not be approved for implementation through this FEIS. If the west terminal is approved, these projects will be re-evaluated to confirm their need. Additional environmental documentation will also need to be completed before these projects can be implemented. The *Consensus Document* in Appendix F describes in more detail the preferred approach for implementation of these projects if the west terminal is constructed. The five west terminal highway improvements are described below.

West Terminal Circulation Roadways

This project would provide the essential on-airport roadways to serve the west terminal. The circulation roads themselves would not require acquisition of off-airport property. However, continuity issues with TH 77 and TH 62 would result in off-airport impacts and therefore must be coordinated among FAA, the MAC, Mn/DOT, and FHWA.

The west terminal circulation roadways would impact wetland habitat in Mother Lake (at the extreme northwest corner of the airport property). This impact should be further defined during preliminary and final design—including the possible use of ramp alignments and structures which avoid/minimize filling of the wetlands. The construction of the west terminal circulation roadways would require acquisition of an estimated 33 homes and 1 business in the area south of TH 62 and west of 28th Avenue South (see **Figure T-1**). The cost estimate for this project is $52.5 million (1995 dollars) not including real estate acquisition costs.

Reconfigured East Terminal Roadways

This project would involve the reconstruction of the existing Lindbergh Terminal access roads to serve their planned new functions under the 2020 LTCP. The project is located entirely on airport property, and there would be few, if any, off-airport impacts anticipated to complete this project. The cost estimate for this project is $1.3 million (1995 dollars).

TH 62 and TH 77 Reconstruction (West Terminal Interchanges)

As shown in **Figure 2** in Appendix F, this project would involve reconstruction of a complex urban freeway corridor containing one system interchange (TH 77/TH 62) and two service interchanges (TH 77/66th Street and TH 62/28th Avenue). Conceptual designs for this area generally favor exclusive ramps from TH 77 and TH 62, which would improve the traffic operation of the system interchange. TH 77 would have to be widened from 4 to 6 lanes between I-494 and 66th Street to accommodate design features to improve traffic operations, such as 2-lane exit ramps. The TH 77 widening would provide adequate connections to terminal access roads. Such a design would result in a significant off-airport freeway reconstruction effort. Two apartment buildings with a total of 28 units on the east side of TH 77 south of the 66th Street interchange may be relocated by this project (**Figure T-1**).

The cost estimates for the TH 62/TH 77 reconstruction is $50 million (1995 dollars) not including real estate acquisition costs.

TH 62 Widening (I-35W to TH 77)

This project would involve widening TH 62 from 4 to 6 lanes between I-35W and TH 77. The project would accommodate increased traffic volumes and serve connections to the TH 62/TH 77 interchange. This widening would require acquisition of 31 residences along both sides of TH 62. The cost estimate for this project is 11.3 miliion (1995 dollars) not including real estate acquisition costs ( **Figure T-1**).

I-35W Reconstruction (TH 62 Common Section and I-35W to 46th Street)

This project is currently being evaluated as part of a Mn/DOT EIS and is programmed for construction in various phases from 1999 to 2003. It includes extensive reconstruction of the I-35W/TH 62 common section and widening of I-35W to provide an HOV lane in each direction between I-494 and 46th Street (see description in **Table 2** in Appendix F).

The need for this project was established independently from the proposed airport expansion, with about 8-12 percent of the forecasted 2020 traffic being airport related (assuming implementation of the west terminal). Nevertheless, completion of this project is considered essential to providing a reasonable level of service and efficient airport access. If TH 62 is widened between TH 77 and I-35W, further modification of the I-35W/TH 62 common section will be required.

If the planned improvements to add high-occupancy vehicle lanes to I-494 and I-35W have not been made (due to fiscal constraints) additional capacity in the form of an additional lane in each direction would be

needed on the TH 62/ I-35W common section, and an additional lane in each direction on I-35W between TH 62 and 46th Avenue South. This cost is estimated by Mn/DOT to be $75 million (including the segment of I-35W from TH 62 to I-494). Additional ramps between TH 62 east of I-35W and I-35W north of TH 62 would also be necessary. If these ramp improvements are not made, trips to the airport terminal could, in a worst case situation, result in traffic backing up along TH 62 and onto I-35W during airport peak use periods. It could also become very difficult for traffic leaving the terminal to get onto TH 62 and I-35W. This would result in more trips diverting to other access routes such as Hiawatha Avenue and the local streets through south Minneapolis.

The improvements needed to provide access to the west terminal are shown in **Figure W-8** and **Figure 2** in Appendix F.

### Other Projects Considered

The Dual Track Surface Transportation Committee concluded that the above-described roadway projects are essential to fully implement the MSP 2010 LTCP and represent the scale of roadway improvements needed to implement the west terminal. The committee also discussed other projects that may relate to the MSP comprehensive planning process, but are not considered essential because they address needs that are independent from the airport's function. However, if implemented they may help to provide improved access to the airport. These projects are noted below.

- I-494/TH 77 Interchange Improvements
- 77th Street Underpass at TH 77
- TH 62 Widening (28th Avenue to TH 55)
- TH 55 Interchanges with TH 62 and TH 5

These projects are described further in the *Consensus Document* in Appendix F.

### Transit

Transit is expected to continue to meet a small portion of the overall travel needs of the airport. As previously discussed, all forms of transit and paratransit serve about 5 percent of the overall travel demand related to the airport and overall auto occupancy is about 1.5 people per vehicle. Similar values are expected in the future.

Public bus service has been improved in recent years with better linkages not only to Minneapolis and St. Paul, but also to suburban locations in Bloomington and Dakota County. These routes, most of which are also connected to the Mall of America, have experienced important ridership increases but still serve much less than 1 percent of all the travel demand generated to and from MSP International Airport.

Additional transit improvements, such as a light rail transit line or busway, have been considered along the Hiawatha Avenue Corridor, connecting downtown Minneapolis with MSP and the Mall of America. These improvements could result in significant airport-related ridership increases (up to 3 times existing public bus ridership levels) but would not result in a major reduction of vehicle trips to and from MSP. These improvements, however, would improve the connectivity of the airport to key destinations in the region. A major obstacle to their implementation, however, has been the lack of readily available funding for major transit capital investments, which could range from $150 to 340 million.

## W.2 No Action Alternative

Certain road improvements would be necessary to handle the traffic under the No Action Alternative as a result of background growth. These improvements are shown in **Table W-6**:

**Table W-6- Year 2020 Potential Roadway Improvements Needed with No Action Alternative**

| Highway Segment | Improvement Needed |
|---|---|
| Ramps, Southbound I-35W to Eastbound TH 62 and Westbound TH 62 to Northbound I-35W | Additional Capacity |
| I-35W, TH 62 to 46th Avenue South | Additional lane in both directions |

Also, if the planned improvements to add high-occupancy vehicle lanes to I-494 and I-35W are not made (due to fiscal constraints), additional capacity in the form of an additional lane in each direction would be needed on the TH 62/ I-35W common section.

**Figure W-5** shows forecast year 2020 daily traffic near MSP for the No-Action Alternative. The roadways near MSP will continue to experience growth as they have in the past. The common section between TH 62 and I-35W will require additional capacity, as will I-35W from TH 62 to 46th Avenue South. Also, the ramps between southbound I-35W and eastbound TH 62 and from westbound TH 62 to northbound I-35W will exceed capacity.

Travel time from the metropolitan region and two Wisconsin county seats, off-peak and peak is shown in **Table W-7**. Existing travel time can be found in Section W.1.1.

**Table W-7 - Year 2020 Travel Time to Airport Main Terminal from County Seats - No Action Alternative**

| County Seat* | Minutes of Off-Peak Travel | Minutes of PM Peak Hour Travel |
|---|---|---|
| Anoka | 39 | 47 |
| Chaska | 30 | 33 |
| Hastings | 31 | 35 |
| Minneapolis | 16 | 21 |
| St. Paul | 14 | 16 |
| Shakopee | 26 | 31 |
| Stillwater | 38 | 42 |
| Hudson, WI | 34 | 38 |
| Ellsworth, WI | 54 | 56 |
| Average for Residents of Seven-County Region | 24 | 27 |
| Average for Employees in Seven-County Region | 20 | 24 |
| * Travel time is from the centroid of the TAZ containing the county courthouse to airport main terminal. | | |

**Table W-8** shows the regional population and employees within 15, 30, 45 and 60 minutes of the Main Terminal. **Figures W-6** and **W-7** show the year 2020 travel time contours.

## Table W-8 - Year 2020 Regional Population and Employees within Travelsheds of No Action Alternative

| | | Percentage | | Outside Metro Area Population | | | Percentage | |
|---|---|---|---|---|---|---|---|---|
| Travelshed | Metro Area Population | Increment | Total | Increment | Total | Employment | Increment | Total |
| **Off-Peak Hours** | | | | | | | | |
| Within 15 Minutes | 622,255 | 21.0% | 21.0% | 0 | 0 | 426,732 | 25.9% | 25.9% |
| 15 -30 Minutes | 1,646,666 | 55.6% | 76.6% | 0 | 0 | 1,011,246 | 61.4% | 87.3% |
| 30-45 Minutes | 599,883 | 20.3% | 96.9% | 43,000 | 43,000 | 195,813 | 11.9% | 49.2% |
| 45-60 Minutes | 88,046 | 3.0% | 99.9% | 151,900 | 194,900 | 12,590 | 0.8% | 100% |
| Over 60 Minutes | 2,920 | 0.1% | 100% | --- | --- | 460 | * | 100% |
| **PM Peak Hour** | | | | | | | | |
| Within 15 Minutes | 404,707 | 13.7% | 13.7% | 0 | 0 | 246,944 | 15.0% | 15.0% |
| 15-30 Minutes | 1,444,861 | 48.8% | 62.5% | 0 | 0 | 988,477 | 60.0% | 75.0% |
| 30-45 Minutes | 895,751 | 30.2% | 92.7% | 29,400 | 29,400 | 363,168 | 22.1% | 97.1% |
| 45-60 Minutes | 200,381 | 6.8% | 99.5% | 113,900 | 143,300 | 46,492 | 2.8% | 99.9% |
| Over 60 Minutes | 14,070 | 0.5% | 100% | --- | --- | 1,760 | 0.1% | 100% |
| Regional Total | 2,959,770 | | | | | 1,646,841 | | |

* Less than 0.1%.

As illustrated in **Table W-8**, over 76 percent of the region's residents and over 87 percent of the region's employees would be within thirty minutes of the airport terminal during the off-peak period. A very small portion (0.1 percent or less) of the region's residents and employees would be more than an hour from the east-side terminal in the off-peak period. In the peak hour, over 62 percent of the region's residents and 75 percent of the region's employees are within thirty minutes of the terminal. Slightly more people are served by the MSP Alternative as illustrated in **Table W-5**.

### Inter-Region Connectivity

Travel between the Twin Cities region and the outstate subregions and other states is not expected to be altered by the No Action Alternative.

**Table W-9** compares expected traffic volumes under the No Action Alternative with expected traffic volumes under the MSP Alternative, with and without planned highway improvements.

**Table W-9 - Year 2020 Traffic Volumes - MSP and No Action Alternatives**

| Highway Segment | No Action Alternative/No Roadway Improvements (ADT) | MSP Alternative/No Roadway Improvements (ADT) | MSP Alternative/With Roadway Improvements (ADT) |
|---|---|---|---|
| TH 62: TH 77 to I-35W | 94,000 | 115,000 | 116,000 |
| I-35W: I-494 to TH 62 | 124,000 | 113,000 | 132,000 |
| I-35W: North of TH 62 | 209,000 | 211,000 | 215,000 |
| I-494: West of TH 77 | 168,000 | 176,000 | 177,000 |
| I-494: East of TH 77 | 147,000 | 124,000 | 122,000 |
| TH 77: Over MN River | 105,000 | 116,000 | 114,000 |
| TH 5: South of Glumack Dr. | 88,000 | 64,000 | 67,000 |
| TH 5: North of Glumack Dr. | 84,000 | 52,000 | 48,000 |
| TH 62: East of I-35W | 115,000 | 129,000 | 130,000 |

**Table W-10** summarizes the levels-of-service that the roadways affected by the various airport alternatives will experience:

Table W-10 - Comparison of Year 2020 Forecast Levels of Service

| Roadway | Segment | Number of Existing Lanes | No Action Alternative | MSP Alternative |
|---|---|---|---|---|
| **Minnesota** | | | | |
| TH 55 | I-494 to TH 149 | 4 | C | C |
| TH 55 | TH 149 to New TH 52 | 4 | A | A |
| TH 55 | New TH 52 to TH 52 | 4 | B | B |
| TH 55 | TH 52 to County Road 85 | 2 | C | C |
| TH 55 | County Road 85 to TH 61 | 2 - 4 | A | A |
| TH 10 | Prescott to US 61 | 2 | E | E |
| TH 61 | Hastings Bridge | 2 | F | F |
| TH 61 | TH 55 Intersection | 4 | F | F |
| TH 316 | TH 61 to CSAH 47 | 4 | E | E |
| New TH 52 | I-94 to TH 56 | 4 | F | F |
| New TH 52 | TH 56 to I-494 | 4 - 5 | D | D |
| CSAH 47 | TH 3 TO CSAH 85 | N/A | B | B |
| CSAH 47 | Airport Road to TH 61 | N/A | C | C |
| TH 20 | TH 50 to TH 19 | 2 | B | B |
| CSAH 42 | TH 3 to TH 55 | 2 - 4 | B | B |
| I-494 | TH 5 to TH 55 | 6 | C | C |
| TH 61 | I-494 to TH 95 | 4 | C | C |
| CSAH 15/TH 95 | I-94 to TH 61 | 2 | C | C |
| TH 77 | Old Shakopee Rd to TH 13 | 6 | D | E |
| TH 5 | I-494 to Airport Road | 6 | C | A |
| TH 5 | Airport Road to TH 55 | 6 | B | A |
| TH 62 | Portland to TH 77 | 4 | F | F |
| TH 62 | 20th Ave. S. to 34th Ave. S. | 4 | B | D |
| TH 62 | 34th Ave. S. to TH 55 | 4 | A | D |
| **Wisconsin** | | | | |
| US 10 | St. Croix Bridge to Canton St. | 4 | A | A |
| US 10 | STH 29 to Prescott City Limits | 2 - 4 | A | A |
| US 10 | Prescott City Limits to CTH J | 2 | C | C |
| Broad Street | US 10 to Locust St. | 2 | B | B |
| CTH F | I-94 to Pierce County Line | 2 | C | C |
| CTH F | Pierce County Line to STH 29 | 2 | B | B |
| STH 29 | CTH F to Prescott City Limits | 2 | D | D |
| STH 29 | River Falls City Limits to CTH FF | 2 | C | C |
| CTH 65 | I-94 to CTH N | 2 | C | C |

### Adjoining Community Impacts

No impacts on adjoining communities are expected under the No Action Alternative. The impacts of the highway improvement projects that would be implemented under the No Action Alternative have been documented in a separate Mn/DOT EIS. These projects are needed regardless of MSP development.

### Transit

Transit is expected to continue to meet a small portion of the overall travel needs of the airport under the No Action Alternative. As previously discussed, all forms of transit and paratransit contribute about 5 percent of the overall travel demand related to the airport and overall auto occupancy is about 1.5 people per vehicle. Similar values are expected in the future.

## W.3 Mitigation Measures — MSP and No-Build Alternatives

### Travel Demand Management

The MSP and No Action Alternatives would benefit from the implementation of travel demand management (TDM) procedures to some degree. The benefits of TDM are a reduced number of drive-alone trips, which reduce the need for highway capacity improvements.

A package of TDM tools could contain any or all of the following:

Financial Incentives

Transportation Allowance
Bike Subsidy
Carpool Subsidy
Introductory Transit Pass Subsidy
Other Financial Subsidy
Transit Subsidy
Vanpool Subsidy
Walk Subsidy
Rideshare Parking Subsidy
Additional Time Off with Pay
Other Employee Benefits

Flexible Work Schedules
Flexible Work Hours
Telecommuting Program
Compressed Work Week Program

Award Programs

Prize Drawing - Free Meal Certificate
Recognition in News Letter

Assistance Programs

Commuter Information Center
Commuter Fairs
New Hire Orientation
Other Marketing Elements
Special Interest Groups
Regional Commuter Management Agency Matching
Employer-Based Matching Service
Information Booths
Company Owned/Leased Vanpool
Other Parking Management

Other
Child-Care Service
On-Site Services (i.e., cafeteria, health club, post office)
Auto Service

The U.S. Department of Transportation report titled "The Effects of Land Use and Travel Demand Management Strategies on Commuting Behavior" (November 1994) states that TDM packages that include financial incentives can reduce drive-alone trips by as much as 6.4 percent. If financial incentives are not a part of the TDM package, the decrease is only 1.7 percent. In the year 2020, these rates would result in a decrease of a low of approximately 1,500 drive-alone trips to a high of approximately 5,700 drive-alone trips. While any decrease in the number of drive-alone trips is beneficial, reductions of this magnitude would only delay requirements for roadway improvements one to two years.

The MAC and the employers on the airport site (particularly Northwest Airlines as the major on-site employer) will need to pursue an aggressive package of TDM measures. Some strategies that could be particularly effective are as follows:

Carpool Subsidy
Vanpool Subsidy
Rideshare Parking Subsidy
Commuter Information Center
Employer-Based Matching Service
Company Owned-Leased Vanpool
Flexible Work Hours
On-site Services

### Mitigation of Surface Transportation Impacts

Mitigation of highway noise impacts is discussed in Section V.Q, Noise. Mitigation of residential and business relocations is discussed in Section V.T, Social. There are no environmental impacts of the two 2010 LTCP projects which require mitigation. Environmental impacts of the five west terminal highway projects will be

mitigated if and when the west terminal is approved. Mitigation measures for the west terminal highway projects will be described in additional environmental documentation.

Mitigation of impacts to the city of Richfield will be presented in the planned MAC-Mn/DOT cooperative agreement for the two 2010 LTCP roadway projects. Discussions on further actions and mitigation are underway with the city of Richfield.

## W.4 Summary of Surface Transportation Access Impacts

The proposed action, implementation of the 2010 LTCP, will require two surface transportation improvements:

- **Improving the frontage road on the south and west side of the airport between 34th Avenue and 66th Street.** Initial improvements include realignment in some locations, spot widening, and turn lanes. The ultimate build-out of the frontage road includes eventual realignment and widening of the frontage road to four lanes over its entire length.
- **Reconstructing the TH 77/66th Street interchange.** A diamond interchange would replace the existing interchange, increasing capacity and providing a connection to the realigned frontage road.

If construction of the west terminal is authorized by the Minnesota legislature, five additional surface transportation improvements would be required:

- **West terminal circulation roadways.** Access roadways from TH 62. TH 77, and TH 62/28th Avenue.
- **Airport east side access improvements.** Modify existing east access roads to serve new functions.
- **TH 62/TH 77 reconstruction.** Widen and reconstruct TH 62 and TH 77 to provide terminal access, including reconstruction of three interchanges at TH 77/TH 62, TH 77/66th Street, and TH 62/28th Avenue. Also includes widening TH 77 to 6 lanes between I-494 and 66th Street.
- **TH 62 between I-35W and TH 77.** Widen from 4 to 6 lanes.
- **I-35W/TH 62 common section.** Reconstruct I-35W/TH 62 interchange, reconstruct the I-35W and TH 62 common section for improved lane continuity, and widen I-35W between TH 62 and 46th Street from six to eight lanes, including 2 HOV lanes. Reconstruct southbound I-35W to eastbound TH 62 ramp. This project is currently scheduled for completion in 2003. The impacts of this project are evaluated in a separate EIS prepared by Mn/DOT.

The impacts of the two 2010 LTCP projects are documented in this FEIS. The impacts of the five projects needed to implement the west terminal will be assessed in future environmental documentation if construction of the west terminal is approved and the projects are deemed necessary at the time.

### W.4.1 Impact on Travel Times to Airport

**Table W-11** shows the impacts of the MSP and No Action Alternatives on travel times to the airport terminal:

**Table W-11 - Summary of Average Travel Times to Airport Main Terminal**

| Criterion | MSP | | No Action | |
|---|---|---|---|---|
| | 2010 | 2020 | 2010 | 2020 |
| Average travel time to terminal for Metro Area residents (minutes) | | | | |
| off-peak hours | 24 | 22 | 24 | 24 |
| PM peak hour | 28 | 26 | 28 | 27 |
| Percentage of Metro Area population within 30-minute travel time to main terminal | | | | |
| Off-peak hours | 73.2 | 80.1% | 73.2 | 76.6% |
| PM peak hour | 58.7 | 67.3% | 58.7 | 62.5% |
| Percentage of Metro Area population within 45-minute travel time to main terminal | | | | |
| Off-peak hours | 96.6 | 97.8% | 96.6 | 96.9% |
| PM peak hour | 90.6 | 94.5% | 90.6 | 92.7% |
| Percentage of Metro Area population within 60-minute travel time to main terminal | | | | |
| off-peak hours | 99.9 | 100% | 99.9 | 99.9% |
| PM peak hour | 99.1 | 99.7% | 99.1 | 99.5% |

### W.4.2 Summary of Environmental Impacts of Highway Improvements

The potential environmental impacts within the study corridors for the highway improvements needed to implement the MSP Alternative are unavoidable. They are summarized in **Table W-12**; the impacts are discussed in the appropriate subsections of Section V.

**Table W-12 - Summary of Potential Environmental Impacts of Needed Highway Improvements**

| Impact within Corridors | MSP | | No Action |
|---|---|---|---|
| | 2010 | 2020 | |
| Number of archaeological sites | 0 | 0 | 0 |
| Number of historic properties | 0 | 0 | 0 |
| Number of sensitive uses | 0 | 0 | 0 |
| Number of households displaced | 99 | 7 | 0 |
| Number of businesses displaced | 22 | 14 | 0 |
| Number of parks and recreation lands | 0 | 0 | 0 |
| Acres of farmland | 0 | 0 | 0 |
| Acres of wetlands displaced | 2.04 | 0 | 0 |

## X. Major Utilities

Major utilities are defined as the major trunk lines that feed the utilities that provide service on a local basis. Major utility impacts are evaluated to determine the extent to which major utility systems will need to be expanded or relocated for the alternatives.

### X.1 MSP Alternative

### X.1.1 Affected Environment — MSP Alternative

The affected environment is those areas on the periphery of the airport that contain major power lines that would interfere with the operations of the expanded airport. The affected environment also includes those

areas to which the power lines must be relocated in order to not interfere with airport operations. The only affected utility is a NSP 115 KV power line which runs along 79th Street south of the airport in the RPZ, and its substation also located in the RPZ.

### X.1.2 Major Utilities Impacts — MSP Alternative

The 115 KV power line and substation are located within the RPZ and are therefore incompatible with the approach to the proposed north-south runway. Additionally, they may cause interference with electronic navigational aids at the airport. They are also inconsistent with FAA policy which specifically precludes power lines and facilities within the RPZ.

The size of the power line is such that it is feasible to bury it. It is anticipated that one-half to one mile of power line would be buried along its existing alignment. Putting the power line underground should not have an adverse environmental impact; no known permits or environmental reviews are required.

It is planned to relocate the NSP substation within the Metro Office Park east of the RPZ; MAC is in the process of acquiring the Metro Office Park. There are no known environmental reviews required for this relocation, and no known permit other than a building permit from the city of Bloomington is required. Consultations with NSP and the city of Bloomington are in process.

There are no other major utilities which are expected to interfere with the operations of the 2010 LTCP and the 2020 Concept Plan. There are no new major utilities required to serve the 2010 LTCP and the 2020 Concept Plan.

### X.1.3 Mitigation Measures — MSP Alternative

Mitigation measures are not required.

### X.2 No Action Alternative

There are no impacts.

## Y. Visual Impacts

Visual impacts are created when airport improvements, both airside and landside, are a barrier to natural vistas surrounding the airport site. Aircraft operations in the vicinity of the airport also may cause visual impacts.

### Y.1 MSP Alternative

### Y.1.1 Affected Environment — MSP Alternative

The existing airport encompasses about 3,000 acres southwest of the confluence of the Mississippi and Minnesota Rivers. Elevations within the site range from 810 feet above Mean Sea Level (MSL) near the intersection of Trunk Highway 5 and the airport access road, to 851 feet MSL near the military installations south of Trunk Highway 62. The terrain to the southwest, north and northeast is relatively flat. Along the southeast, ground elevation decreases towards the Minnesota River Valley.

The FAA Air Traffic Control Tower (ATCT) is the tallest building at MSP. It is located approximately three-quarters of a mile from the closest residential neighborhood and rises to a height of 166 feet above ground level, or 996 feet above MSL. Other significant structures include the Northwest Airlines hangar, which is approximately 100 feet tall and is located in the southeast quadrant of the airport.

Low-flying departing and arriving aircraft are also visible in the airport vicinity. Altitude, direction of flight and number of overflights depend on meteorological conditions and air traffic levels.

The existing airport property provides broad expanses of open space surrounding buildings and structures. These open spaces provide a buffer between airport facilities and adjacent neighborhoods, separating them from the closest Minneapolis neighborhood by approximately a mile and from the closest Richfield neighborhood by more than a mile.

### Y.1.2 Visual Impacts — MSP Alternative

In general, the visual impacts associated with the MSP 2020 Concept Plan and 2010 LTCP involve the relocation of airport-related facilities within airport property (see **Figures 6** and **8**). The MSP 2020 Concept Plan includes a new west terminal complex, located in the northwest quadrant of the airport. The height of this structure would be approximately 100 feet above ground level. Proposed parking structures on either side of the terminal would rise approximately 75 feet above the ground. The new terminal, parking structures and associated roadways would be visible along the Crosstown Highway and TH 77 corridors.

The 2020 Concept Plan also includes a new FAA tower located in the vicinity of the new west terminal. This proposed tower would rise to a height of approximately 359 feet AGL (1,204 feet MSL), including the ASDE dome and lighting arrestors. This is 190 feet taller than the existing tower.

A series of cargo buildings and aircraft aprons would be constructed on the west side of the airport, over the existing Rich Acres golf course for both the 2010 and 2020 plans. These would be visible along TH 77 and Cedar Avenue.

While the proposed structures associated with the MSP Alternative would be seen from areas surrounding the airport, they would not present an intrusion on the vistas found in the vicinity of MSP because the facilities would be located on the existing site and because of the distance between the structures and adjacent neighborhoods and open spaces.

### Y.1.3 Mitigation Measures — MSP Alternative

There will be no significant adverse impact. No mitigation would be required.

## Y.2 No Action Alternative

### Y.2.1 Affected Environment — No Action Alternative

There will be no changes to existing visual resources at MSP under the No Action Alternative.

### Y.2.2 Visual Impacts — No Action Alternatives

The No Action Alternative will not alter the vistas of the airport site.

### Y.2.3 Mitigation Measures — No Action Alternative

No mitigation is required.

## Y.3 Summary of Visual Impacts

As shown in **Table Y-1**, the MSP Alternative would result in visual changes. These changes are associated with construction of a new ATCT, cargo facilities on the west side of the airport (over the existing golf course) and the west terminal complex -- and are not considered adverse impacts..

**Table Y-1 - Summary of Visual Impacts**

| | MSP 2010/2020 | No Action Alternative |
|---|---|---|
| Visual Impacts | Minimal | None |
| Source: HNTB Analysis | | |

# Z. Wastewater

Wastewater includes domestic and industrial wastes. Under the MSP and No Action Alternatives, wastewater would continue to be discharged to the Metropolitan Council Environmental Services (MCES) interceptor and treatment system.

## Z.1 MSP and No Action Alternatives

### Z.1.1 Affected Environment

The existing on-site MSP sanitary sewer lines are depicted on **Figure Z-1**. The APE is the MCES interceptor conveyance network, which receives MSP wastewater, and the MCES Metro Treatment Plant on Childs Road, near Pig's Eye Lake, in St. Paul, Minnesota.

The Metro Plant currently treats approximately 226 million gallons of wastewater per day (MGD), or approximately 80 percent of all wastewater generated in the Twin Cities metropolitan area. The design capacity of the Metro Plant in its current configuration is 250 MGD.

Treatment at the Metro Plant includes screening, settling, and skimming (primary treatment) followed by secondary biological treatment (nitrifying activated sludge), secondary settling, chlorination and dechlorination. Treated effluent from the facility is discharged to the Mississippi River under an NPDES permit administered by the Minnesota Pollution Control Agency (MPCA).

### Z.1.2 Wastewater Impacts — MSP and No Action Alternatives

The data collection and analysis for this section were performed in 1995. The baseline year for wastewater demand is, thus, 1994. There have been no known physical developments at MSP since 1995 which would change the conclusions of the work performed under this heading in 1995.

Baseline average flow, projected (2020) average flow, and projected (2020) peak flows discharged to the sanitary sewer during the heating and cooling seasons are summarized in **Tables Z-1** and **Z-2** for the MSP 2020 Concept Plan and No Action Alternative, respectively. The distinction between discharge to the Minneapolis system versus the Richfield system is largely a billing distinction. Minneapolis and Richfield sanitary sewer lines in the area of the airport both run to MCES interceptor sewers and ultimately to the MCES Metro Plant for treatment.

As presented in **Tables Z-1** and **Z-2**, the baseline discharges through Minneapolis are based on metered 1994 water supply volumes delivered to the MAC, the Air National Guard (ANG), and the Air Force Reserve (AFR) by the City of Minneapolis, plus water which Northwest Airlines (NWA) obtains from wells and discharges to the sanitary sewer, less wastewater discharged through the city of Richfield and metered deducts (e.g., irrigation), which do not discharge to Minneapolis sanitary sewers. Richfield wastewater flow includes water supplied by the city of Minneapolis to buildings which discharge to Richfield sanitary sewer lines and metered flow from the glycol operations facility. Heating volumes are based on metered makeup water delivered to the boilers at MAC and NWA. During 1994, both MAC and NWA cooled their facilities with once-through systems utilizing well water which was discharged to the storm sewer. In 1995, NWA converted to a closed loop system which discharges to the sanitary sewer. In 1999, the MAC intends to make a similar conversion.

## Table Z-1 - 2020 Projected Municipal Wastewater - MSP Alternative

| | Heating Season | | | Cooling Season | | |
|---|---|---|---|---|---|---|
| **Wastewater Category** | **Baseline Average Daily Flow (1) (MGD)** | **Projected Average Daily Flow (MGD)** | **Projected Peak Daily Flow (2) (MGD)** | **Baseline Average Daily Flow (1) (MGD)** | **Projected Average Daily Flow (MGD)** | **Projected Peak Daily Flow (2) (MGD)** |
| A. Wastewater to Minneapolis (3) | 1.184 | 1.765 | 4.410 | 1.184 | 1.765 | 4.410 |
| B. Wastewater to Richfield (3)(4) | 0.203 | 0.274 | 0.686 | 0.184 | 0.274 | 0.686 |
| C. Heating/Cooling (5) | | | | | | |
| MAC | 0.004 | 0.008 | 0.020 | 0.000 | 0.022 | 0.054 |
| NWA | 0.007 | 0.007 | 0.017 | 0.000 | 0.009 | 0.023 |
| TOTAL ESTIMATED DEMAND | 1.398 | 2.054 | 5.133 | 1.368 | 2.070 | 5.173 |

(1)Baseline demand based on 1994 reported usage.
(2)Assumes peaking factor of 2.5 for domestic, heating, and cooling.
(3)Projected volume determined by multiplying 1994 annual average discharge by the ratio of projected 2020 and 1994 enplanements.
(4)Baseline average daily volume for the heating season includes 4.2 million gallons of glycol-impacted storm water discharged to the sanitary sewer throughout the winter of 1994, assuming a 215 day heating season.
(5)Baseline average daily volume based on measured flows and 150 days of cooling and 215 days of heating. In 1994, cooling was provided with once-through systems utilizing well water discharged to the Minnesota River. Consequently, there is no baseline municipal demand presented above for sanitary disposal of cooling water. However, in 1995 NWA converted to a closed loop system which discharges bleedoff water to sanitary. By 1999, the MAC intends to convert to a similar system. The projected volumes presented above assume the closed loop cooling systems.

**Table Z-2 - 2020 Projected Municipal Wastewater - No Action Alternative**

| | Heating Season | | | Cooling Season | | |
|---|---|---|---|---|---|---|
| **Wastewater Category** | **Baseline Average Daily Flow (1) (MGD)** | **Projected Average Daily Flow (MGD)** | **Projected Peak Daily Flow (2) (MGD)** | **Baseline Average Daily Flow (1) (MGD)** | **Projected Average Daily Flow (MGD)** | **Projected Peak Daily Flow (2) (MGD)** |
| A. Wastewater to Minneapolis (3) | 1.184 | 1.670 | 4.175 | 1.184 | 1.670 | 4.175 |
| B. Wastewater to Richfield (3)(4) | 0.203 | 0.288 | 0.719 | 0.204 | 0.288 | 0.719 |
| C. Heating/Cooling (5) | | | | | | |
| MAC | 0.004 | 0.008 | 0.020 | 0.000 | 0.014 | 0.036 |
| NWA | 0.007 | 0.007 | 0.017 | 0.000 | 0.009 | 0.023 |
| TOTAL ESTIMATED DEMAND | 1.398 | 1.973 | 4.931 | 1.388 | 1.981 | 4.953 |

(1)Baseline demand based on 1994 reported usage.
(2)Assumes peaking factor of 2.5 for domestic, heating, and cooling.
(3)Projected volume determined by multiplying 1994 annual average discharge by the ratio of projected 2020 and 1994 enplanements.
(4)Baseline average and projected daily volumes for the heating season includes 4.2 million gallons of glycol-impacted storm water discharged to the sanitary sewer throughout the winter of 1994, assuming a 215 day heating season, adjusted to 2020 by the ratio of projected 2020 and 1994 enplanements.
(5)Baseline average daily volume based on measured flows and 150 days of cooling and 215 days of heating. In 1994, cooling was provided with once-through systems utilizing well water discharged to the Minnesota River. Consequently, there is no baseline municipal demand presented above for sanitary disposal of cooling water. However, in 1995, NWA converted to a closed loop system which discharges bleedoff water to sanitary. By 1999, the MAC intends to convert to a similar system. The projected volumes presented above assume the closed loop cooling systems.

The 1994 MSP wastewater discharges through the MSP sewer system (depicted on Figure Z-1) to the MCES system totaled to approximately 1.4 million gallons per day (MGD). Approximately 85 percent of this flow is directed to MCES interceptors through Minneapolis sewers and 15 percent through Richfield sewers.

Both the MSP 2020 Concept Plan and No Action Alternative are projected to discharge an average daily volume of approximately 2.0 MGD of wastewater to the MCES system in 2020. These projected flows represent roughly a 40 percent increase in the overall flow originating from the airport, relative to 1994 conditions, but less than a one-half of one percent increase over the flows currently managed at the Metro Plant. In 1997, the MAC began segregating high strength G15W for on-site glycol recycling. It is anticipated that this practice will continue into the future.

Metropolitan Council Environmental Services staff was provided with the information and projections presented in **Tables Z-1** and **Z-2**. After reviewing this material, MCES staff reported that the volumes projected for the MSP and No Action Alternatives would not pose capacity problems for either the MCES conveyance or treatment systems.

The number of enplanements is a primary variable affecting wastewater generation for the airport. Thus, the volumes of wastewater requiring conveyance and treatment under the MSP 2010 LTCP would be less than those volumes presented in **Table Z-1** for 2020, and would not pose capacity problems for either the MCES conveyance or treatment systems.

## Z.1.3 Mitigation Measures — MSP Alternative

No mitigation measures would be required.

## Z.2 Summary of Wastewater Impacts

The MSP 2010 LTCP and 2020 Concept Plan and No Action Alternative would not have significant negative impact on the MCES conveyance and treatment systems.

# AA. Water Supply

Water supply includes water requirements for potable/domestic, industrial, heating/cooling, and fire control purposes. Under the MSP and No Action alternatives, it has been assumed that the existing on-site production wells would be abandoned and water would be supplied entirely by the Minneapolis Water Works.

## AA.1 MSP and No Action Alternatives

### AA.1.1 Affected Environment — MSP and No Action Alternatives

The APE consists of the two existing sources of water supply for MSP — the Prairie du Chien/Jordan Sandstone aquifer and the city of Minneapolis Water Works.

The Prairie du Chien Group and the Jordan Sandstone (PdC/Jordan) generally function as one aquifer because there is no regional confining bed between them. All of the water supply wells which are in current use at MSP draw from the PdC/Jordan aquifer, which is the preferred source of groundwater supply in the metro region due to its favorable water transmission characteristics and relative consistency of high yields, as well as proven well designs and construction techniques. The production capacity associated with PdC/Jordan wells typically ranges from 1,000 gallons per minute (gpm) to in excess of 2,000 gpm. Based on regional information and water levels measured at MSP, the PdC/Jordan Aquifer is believed to discharge to the Minnesota River. Since there are no water supply wells between the airport and the Minnesota River, historical use of water from the PdC/Jordan aquifer for airport activities has had no discernible impact on the water quality or availability for other users of this water supply.

The primary water supply source for the city of Minneapolis water works is the Mississippi River. The city has approximately 100,000 accounts and supplies approximately 65 million gallons per day (yearly average). Peak delivery on the Minneapolis system takes place during the summer months and can reach 180 million gallons per day. Minneapolis water is delivered to the MSP through two 18-inch and one 12-inch diameter metered lines which enter the airport from the north, as illustrated on **Figure AA-1**. These lines are supplied by a 48-inch trunk water main buried beneath E. 56th Street. According to Minneapolis Water Works staff, pressures of 68 pounds per square inch (psi) are common in the trunk lines, with a minimum pressure of 50 psi.

### AA.1.2 Water Supply Impacts — MSP and No Action Alternatives

The data collection and analysis for this section were performed in 1995. The baseline year for water supply requirements is, thus, 1994. There have been no known physical developments at MSP since 1995 which would change the conclusions of the work performed under this heading in 1995.

Baseline (1994) average water demand, projected (2020) average water demand, and projected (2020) peak water demand during the heating and cooling seasons are summarized in **Tables AA-1** and **AA-2** for the MSP and No Action alternatives, respectively. The current average demand for domestic purposes are based on metered usage reported by the MAC and Northwest Airlines (NWA) for 1994. The MAC-Minneapolis Supply figures also include water delivered directly to the Air National Guard (ANG) and Air Force Reserve (AFR) by Minneapolis Water Works. The current average demand reported for the MAC-Minneapolis, MAC-Well Water, and NWA-Well Water supplies for heating/cooling is from 1994 meter readings for boiler feed and well water provided by the MAC Energy Center and NWA Plant Maintenance. No average daily demand is assumed for fire fighting purposes. Peak fire demand is based on an assumed

fire flow of 8,000 gpm for a four-hour duration for the terminal area buildings. The water supply requirements for fire protection at NWA, the ANG, and AFR are provided in storage.

**Table AA-1 - 2020 Projected Water Usage - MSP Alternative**

| | Heating Season | | | Cooling Season | | |
|---|---|---|---|---|---|---|
| **Type of Water Use** | **Baseline Average Demand(1) (1994) (MGD)** | **Projected Average Demand (2020) (MGD)** | **Projected Peak Demand(2) (2020) (MGD)** | **Baseline Average Demand (1994) (MGD)** | **Projected Average Demand (2020) (MGD)** | **Projected Peak Demand(2) (2020) (MGD)** |
| A. Domestic (3) | | | | | | |
| MAC - Minneapolis Supply | 1.010 | 1.490 | 3.730 | 1.010 | 1.490 | 3.730 |
| NWA - Minneapolis Supply | | 0.780 | 1.950 | | 0.780 | 1.950 |
| NWA - Well Water (Bldg C) | 0.530 | | | 0.530 | | |
| B. Fire (4) | 0.000 | 0.000 | 0.640 | 0.000 | 0.000 | 0.640 |
| C. Heating/Cooling(5) | | | | | | |
| MAC - Minneapolis Supply | 0.004 | 0.008 | 0.020 | | 0.087 | 0.217 |
| MAC - Well Water | | | | 2.018 | | |
| NWA - Minneapolis Supply | | 0.007 | 0.017 | | 0.038 | 0.094 |
| NWA - Well Water | 0.007 | | | 1.710 | | |
| TOTAL ESTIMATED DEMAND (MUNICIPAL AND WELL WATER) | 1.551 | 2.285 | 6.357 | 5.268 | 2.395 | 6.631 |
| TOTAL MUNICIPAL DEMAND | 1.014 | 2.285 | 6.357 | 1.010 | 2.395 | 6.631 |

(1)Current demand based on 1994 reported usage.
(2)Assumes peaking factor of 2.5 for domestic, heating, and cooling. See (4) regarding fire demand.
(3)Projected MAC - Minneapolis supply volume based on 16,700,000 enplanements projected for 2020 and 32.625 gallons per enplanement. NWA currently obtains all water for building C from on-site wells. However, it is assumed that NWA will convert to a municipal supply by the year 2020.
(4)Fire protection water at NWA and Military Facilities is provided in storage. No consumption assumed for average daily use at Terminal. Peak fire demand based on assumed fire flow of 8,000 gpm for four-hour duration for terminal area buildings.
(5)Assumes 150 days of cooling and 215 days of heating. In 1994, cooling was provided with once-through systems utilizing well water. However, in 1995, NWA converted to a closed loop cooling system which uses the Minneapolis water system for make-up water. In 1999, the MAC intends to convert to a similar system. The projected volumes presented above assume these conversions.

## Table AA-2 - 2020 Projected Water Usage - No Action Alternative

| | Heating Season | | | Cooling Season | | |
|---|---|---|---|---|---|---|
| **Type of Water Use** | **Baseline Average Demand(1) (1994) (MGD)** | **Projected Average Demand (2020) (MGD)** | **Projected Peak Demand(2) (2020) (MGD)** | **Baseline Average Demand (1994) (MGD)** | **Projected Average Demand (2020) (MGD)** | **Projected Peak Demand(2) (2020) (MGD)** |
| A. Domestic (3) | | | | | | |
| MAC - Minneapolis Supply | 1.010 | 1.410 | 3.530 | 1.010 | 1.410 | 3.530 |
| NWA - Minneapolis Supply | | 0.740 | 1.850 | | 0.740 | 1.850 |
| NWA - Well Water (Bldg C) | 0.530 | | | 0.530 | | |
| B. Fire (4) | 0.000 | 0.000 | 0.640 | 0.000 | 0.000 | 0.640 |
| C. Heating/Cooling(5) | | | | | | |
| MAC - Minneapolis Supply | 0.004 | 0.004 | 0.010 | | 0.058 | 0.145 |
| MAC - Well Water | | | | 2.018 | | |
| NWA - Minneapolis Supply | | 0.007 | 0.017 | | 0.038 | 0.094 |
| NWA - Well Water | 0.007 | | | 1.710 | | |
| TOTAL ESTIMATED DEMAND (MUNICIPAL AND WELL WATER) | 1.551 | 2.161 | 6.047 | 5.268 | 2.246 | 6.259 |
| TOTAL MUNICIPAL DEMAND | 1.014 | 2.161 | 6.047 | 1.010 | 2.246 | 6.259 |

(1)Current demand based on 1994 reported usage.
(2)Assumes peaking factor of 2.5 for domestic, heating, and cooling. See (4) regarding fire demand.
(3)Projected MAC - Minneapolis supply volume based on 15,800,000 enplanements projected for 2020 and 32.625 gallons per enplanement. NWA currently obtains all water for building C from on-site wells. However, it is assumed that NWA will convert to a municipal supply by the year 2020.
(4)Fire protection water at NWA and Military Facilities is provided in storage. No consumption assumed for average daily use at Terminal. Peak fire demand based on assumed fire flow of 8,000 gpm for four hour duration for terminal area buildings.
(5)Assumes 150 days of cooling and 215 days of heating. In 1994, cooling was provided with once-through systems utilizing well water. However, in 1995 NWA converted to a closed loop cooling system which uses the Minneapolis water system for make-up water. In 1999 the MAC intends to convert to a similar system. The projected volumes presented above assume these conversions.

The MAC drew an average 2.018 million gallons per day (MGD) of water from its PdC/Jordan wells during the 1994 cooling season. During the same period, Northwest Airlines (NWA) drew an average 2.24 million gallons from its PdC/Jordan wells. In June of 1995, NWA completed construction on a "closed loop" cooling system which will utilize makeup water from the City of Minneapolis, decreasing NWA's demand on the PdC/Jordan aquifer by approximately 1.710 MGD during the cooling season. It is anticipated that NWA will obtain all of its water supply needs from the Minneapolis Water Works by 2020, eliminating NWA's dependence on the PdC/Jordan aquifer. The MAC will also be converting to a closed loop system by 1998, eliminating the MAC's demand on well water from the PdC/Jordan aquifer. Consequently, no water demand is anticipated for the PdC/Jordan aquifer under the MSP and No Action alternatives.

The highest average daily and peak demand for water from the Minneapolis Water Works is projected to occur during the cooling season, when the daily average Minneapolis water demand reaches 2.395 MGD and 2.246 MGD for the MSP and No Action alternatives, respectively. These demands are more than twice the current average airport demand from the Minneapolis Water Works and represent a 2.1 percent increase in the total average demand for the Minneapolis Water Works service area. According to Minneapolis Water Works staff, the 48-inch water main currently servicing MSP has sufficient capacity to supply the airport's average and peak water demands under both the MSP and No Action alternatives. It is not anticipated that the increase in MSP demand for city of Minneapolis water projected for 2020 would have any discernible impact on Mississippi River flow or levels.

It is possible that a new service line or lines from the 48-inch watermain south to the new terminal under the MSP 2020 Concept Plan would be required. The construction required for this installation would involve temporary disruption of local streets.

### AA.1.3 Mitigation Measures — MSP Alternative

Other than standard construction measures associated with installing a new service line(s) into the new main terminal which potentially would be required under the MSP 2020 Concept Plan, no mitigation measures would be required.

### AA.2 Summary of Water Supply Impacts

All alternatives would have access to adequate supplies of potable and other water. The MSP 2020 Concept Plan would use the city of Minneapolis water supply system.

## BB. Surface Water Quality

#### General Background

For the MSP and No Action Alternatives, the source of potential impact on surface water quality is storm water discharge. The storm water quality parameters to be considered are carbonaceous biochemical oxygen demand ($CBOD_5$), nitrogen/ammonia, pH, total suspended solids (TSS), oil and grease (OG), phosphorus (P), and aquatic toxicity. The primary activities/materials which can have an impact on these parameters are:

- $CBOD_5$ – glycol products used by MSP tenants for aircraft deicing, and ground surface snow/ice control chemicals;
- nitrogen/ammonia -- urea historically used for ground surface snow/ice control operations;
- pH -- urea historically used for ground surface snow/ice control operations;
- TSS -- expanse of hard surfaced areas upon which airport operations take place;
- OG -- aviation fueling activities performed by MSP tenants; and
- aquatic toxicity – aircraft deicing fluids and urea.

While there are no known sources of phosphorous specifically related to airport operations, phosphorous will be addressed because it is a parameter which is commonly evaluated in a wide range of development projects.

#### Regulatory Background

Storm water discharge from MSP is regulated by the Minnesota Pollution Control Agency (MPCA) through a National Pollutant Discharge Elimination System (NPDES) permit. The MAC has held this permit for the airport since 1975. Prior to the issuance of this permit, storm water discharge from the airport was not regulated. While MSP tenants perform all aircraft deicing at MSP and the great majority of the fueling operations which take place at the overall facility, the MAC is currently the sole permittee under its NPDES permit.

The original NPDES permit for MSP had monitoring requirements and discharge limits for oil and grease, TSS, and pH. It was re-issued in the 1980s to include monitoring for $CBOD_5$. A new NPDES permit issued in September 1993 had the following primary requirements:

- more extensive water quality monitoring at MSP outfalls for a broader list of parameters;
- river water quality monitoring upstream and downstream of the airport;
- an aggressive glycol containment program;
- monitoring and reporting of deicing material usage; and
- **a series of** investigations to assess existing conditions and evaluate control and management measures, culminating in the preparation of the MSP Decision Report for Storm Water Control Measures (Metropolitan Airports Commission, December 1994).

*(a) Discharge Water Quality Monitoring:*
As addressed above, the MAC has monitored the water quality of surface water discharge from MSP since 1975. With the promulgation of the September 1993 NPDES permit, the MAC substantially upgraded its surface water quality monitoring and reporting program. Under this program, $CBOD_5$, along with a number of other parameters including TSS, un-ionized ammonia, and oil and grease, are measured with continuous flow monitoring. The results of the monitoring are compiled and reported monthly to the MPCA in documents referred to as Discharge Monitoring Reports (DMRs).

Of particular interest and attention in recent years has been the $CBOD_5$ parameter. The five highest $CBOD_5$ discharge days (all watersheds combined) for the 1993/94 through 1996/97 seasons, respectively, are presented in **Table BB-1**. These data may be compared against the modeled results for the MSP and No Action Alternatives presented in **Table BB-6**.

**Table BB-1 - Five Highest $CBOD_5$ Discharge Days (Airport Composite) for 1993/94 through 1996/67 Winters**

| 1993/94 | | 1994/95 | | 1995/96 | | 1996/97 | |
|---|---|---|---|---|---|---|---|
| Date | Load (lbs/day) | Date | Load (lbs/day) | Date | Load (lbs/day) | Date | Load (lbs/day) |
| 4/29/94 | 100,607 | 3/12/95 | 109,908 | 1/18/96 | 101,057 | 11/16/96 | 113,114 |
| 3/4/94 | 51,282 | 3/7/95 | 73,714 | 3/24/96 | 97,500 | 12/24/96 | 93,895 |
| 2/18/94 | 28,723 | 3/11/95 | 46,744 | 12/15/95 | 35,665 | 1/5/97 | 72,285 |
| 3/5/94 | 25,689 | 2/16/95 | 43,048 | 2/8/96 | 32,635 | 1/4/97 | 71,452 |
| 2/17/94 | 25,356 | 2/18/95 | 42,191 | 2/9/96 | 28,624 | 2/21/97 | 51,154 |

*(b) Minnesota River Water Quality Monitoring:*
On a twice-per-week basis, the MAC takes samples in the Minnesota River at a point approximately one half mile upstream from the MSP Minnesota River South outfall (MPCA # 040--the MSP outfall which is furthest upstream) and also from a point approximately three miles downstream from the "Snelling Lake" outfall (MPCA # 030--the MSP discharge point to the Minnesota River which is furthest downstream). The parameters which are analyzed in this sampling are as follows:

- Dissolved oxygen (DO)—river profile
- Temperature—river profile
- Ammonia nitrogen—one meter in depth
- $CBOD_5$–one meter in depth
- pH—one meter in depth

The results of this analysis are reported in the monthly Discharge Monitoring Reports referenced above.

The MPCA required the MAC to perform in-river water quality analysis primarily to determine the potential impact of MSP discharges on DO levels within the river. The material with the greatest potential to impact DO levels in receiving waters is spent glycol resulting from aircraft deicing activities which MSP tenants perform.

The data which has been generated during the past five winter seasons gives no evidence of impact of MSP discharges upon DO levels within the Minnesota River. The downstream DO levels have never been observed to be significantly lower on a consistent basis than the upstream DO levels. This observation is made with two qualifications:

- The river has not experienced low flow in recent years.
- Typically, for approximately a 10-14 week period if time, the river sampling cannot be performed because of ice cover and/or ice flows in the river.

During periods of ice cover, the river will have reduced re-oxygenation potential due to reduced contact of the water with the atmosphere. However, general biodegradation rates are highly temperature-driven. The cold

water temperatures associated with periods of ice cover would be anticipated to significantly limit the potential for breakdown of glycol, thus reducing the effect of the glycol discharge on river DO levels. In addition, river will naturally hold higher DO levels at colder temperatures due to water's inherent capacity to hold higher concentrations of dissolved gasses at the colder temperatures.

*(c) Spent Aircraft Deicing Fluid Control:*
The development of an extensive glycol containment program at MSP has resulted in substantial overall reductions in $CBOD_5$ discharge to receiving waters. This program was initiated in November 1993 and has been enhanced in every subsequent deicing season. This program is based upon the use of plug structures in existing storm sewer lines at aircraft deicing locations, and the use of tanker trucks to evacuate in-line storage of glycol-impacted storm water (GISW) and transport it to temporary storage ponds on MSP property. From the storage ponds, the low glycol concentration GISW is metered to the Metropolitan Council Environmental Services (MCES) sanitary treatment system, and high glycol concentration GISW is processed for glycol recycling by a contractor to Northwest Airlines.

The glycol containment program began with 12 plug structures in November 1993 and, by the 1996/97 winter, had been expanded to include 21 plug structures. During the 1993/94 season, approximately 36 percent of the glycol reaching the MSP storm sewer system was captured and treated. For the 1996/97 season, this figure was 63 percent.

Starting in the 1997/98 winter season, Northwest Airlines has performed cleanup of spent aircraft deicing fluids (ADF) with three vacuum sweeper units. These units generally operate at locations where plug/pump is not viable. However, they also operate, when possible, at plugged locations to minimize potential losses due to tracking, snow plow operations and other factors. Preliminary data for the 1997/98 winter season indicates that these sweeper operations have effectively enhanced the overall glycol control program at MSP.

*(d) Monitoring and Reporting of Deicing Material Usage:*
All of the aircraft deicing fluid which is used at MSP is applied by tenants of the airport facility. For the most part, air carriers perform their own aircraft deicing. However, the fixed base operator (FBO) for MSP, Signature Flight Support, performs significant aircraft deicing operations for charter flights and for smaller carriers.

Consistently with requirements established in the 1993 NPDES permit for MSP, the MAC has set up a program to track all glycol usage on the airport according to date and location of application. The MSP tenants which perform aircraft deicing operations track their glycol usage using a form provided by the MAC and supplies this information to the MAC on a regular basis. The MAC then enters this information into a facility-wide tracking format and submits this information on a monthly basis to the MPCA in the Discharge Monitoring Reports referenced above.

The total volumes of glycol used from the 1993/94 season through the 1996/97 season are presented in **Table BB-2**. It can be seen the glycol usage varies widely from season to season. It is highly dependent upon weather conditions. This type of experience is typical for most airports which have significant aircraft deicing requirements.

**Table BB-2 -**
**Aircraft and Runway Deicing Chemicals Usage at MSP 1993/94 – 1996/97**

| | Gallons Glycol[1] | Tons Urea[2] |
|---|---|---|
| 1993/94 | 450,900 | 660 |
| 1994/95 | 392,000 | 740 |
| 1995/96 | 559,900 | 620 |
| 1996/97 | 1,405,900 | 1,050 |

[1]Aircraft deicing.
[2]Runway deicing.

The MAC tracks all of the materials which it uses for the purposes of ground surface snow/ice control in the aircraft operating area (AOA) according to date and location of application. The volumes of materials used over the past four seasons are presented in **Table BB-2**. It can be seen that substantial amounts of urea have historically had to be used at MSP for ground surface snow/ice control purposes in the AOA. As will be further discussed under the un-ionized ammonia heading of Section BB.1.2, the MAC has been testing and using alternative runway deicing/anti-icing chemicals in recent years with the intention of ultimately eliminating the use of urea at MSP.

*(e) Investigations/Reports:*
The 1993 NPDES permit for MSP has required the MAC, according to a strict schedule, to perform and document a series of investigations evaluating and proposing various surface water control and management measures. These efforts culminated in the generation of MSP Decision Report for Storm Water Control Measures (Metropolitan Airports Commission, December 1994). The 1994 Decision Report was a major assessment of surface water issues and investigation of potential surface water control measures for MSP. In response to a request from the MPCA, the MAC updated the 1994 Decision Report with MSP Storm Water Control Measures: Decision Report Addendum (Metropolitan Airports Commission, November 1996). The updated document took into account the decision by the Minnesota Legislature in 1996 to eliminate the New Airport alternative (which would have been located in Dakota County) from the overall evaluation and planning process, thus making MSP the on-going airport facility to meet future transportation needs associated with the Minneapolis/St. Paul metropolitan area.

The 1993 NPDES permit required the Decision Report to evaluate control measures against various target limits for surface water discharge. These target limits (monthly average) to be used for analytical purposes are:

- $CBOD_5$: 100 lbs/day;
- TSS: 30 mg/l;
- OG: 15 mg/l; and
- un-ionized ammonia: 1 mg/l.

The target $CBOD_5$ limit of 100 lbs per day was based on a waste load allocation (WLA) study conducted by the MPCA in 1985/87. This study addressed a 25-mile reach of the lower Minnesota River, with a focus on the relative pollutant loads from non-point sources (both prior to and within this stretch), and from two major point sources to this reach, namely, the MCES treatment plants at Seneca and Blue Lake. Because dissolved oxygen is typically of most concern in the late summer months, this WLA utilized data for summer months only, and, thus, did not account for baseline discharge from MSP during winter/spring months. Because elevated levels of $CBOD_5$ discharge from MSP result primarily from the use of aircraft and other deicing products, the highest $CBOD_5$ discharges from MSP occur in the winter and spring months. The 1985/87 WLA focussed upon the MCES treatment plants at Seneca and Blue Lake, and did not assign a wasteload allocation to MSP.

Since the promulgation of the September 1993 NPDES permit, the MPCA has acknowledged that basing a year-round limit of 100 lbs per day $CBOD_5$ for MSP discharge would be inappropriate, because the 1985/87 was based only upon summer data and therefore did not account for the most significant MSP discharges. The Decision Report concluded that a 100 lbs $CBOD_5$ per day limit was essentially unattainable for MSP. With the large volume of drainage from the airport during significant run-off events, any detectable $CBOD_5$ concentration would translate to an exceedance of a 100 lb per day mass limit. It is the MAC's understanding the MPCA intends to use a cold-weather low-flow WLA to be conducted in the coming years to be able to analyze the true impact of MSP discharge on dissolved oxygen levels in the Minnesota River with confidence.

The Decision Report evaluated a broad range of control measures for the $CBOD_5$ parameter, including dedicated deicing pads, vacuum sweepers, synthetic mats and other measures. The Decision Report Addendum concludes that available information indicates that dedicated deicing pads represent the best available source control measure for spent aircraft deicing fluid. Anticipated development costs associated with pad facilities to serve MSP are in the range of $10 million to $15 million per pad.

The TSS target standard of 30 mg/l for analytical purposes is a secondary treatment standard for wastewater treatment plants. With regards to TSS control, it appears questionable as to why such a standard would apply to airport run-off, when, by comparison, surface water run-off from municipalities and roadways is generally unregulated. The 1994 Decision Report provided information supporting the position that meeting a technology-based standard for TSS control would be more appropriate than the 30 mg/l target limit referenced above. The 1997 Decision Report Addendum documented the MAC's intention to increase retention capacity serving the overall airport site such that it would meet National Urban Run-off Program (NURP) or equivalent design standards. This issue is further discussed under the Total Suspended Solids heading within Section BB.1.2.

The 1994 Decision Report concluded that to treat end-of-system discharges to reduce un-ionized ammonia discharges would be prohibitively expensive. The preferred way to control un-ionized ammonia discharge levels would be to eliminate the only significant source of ammonia loading into MSP storm water, which is urea. The 1996 Decision Report Addendum discussed issues to be addressed in the transition from urea to alternative products. This issue is further discussed under the un-ionized ammonia heading of Section BB.1.2.

As can be seen in a review of the monthly DMRs, discharges from MSP in excess of 15 mg/l oil and grease have been quite infrequent in recent years. As was stated in the 1994 Decision Report, it is anticipated that the planned development of additional storm water detention capacity will help limit release of oil and grease effluents to receiving waters. Further discussion on this Issue is provided under the Oil and Grease Heading of Section BB.1.2.

The investigations/reports required under the 1993 NPDES permit are the basis behind the MAC's intended enhancements to the overall surface water control program for MSP.

*(f) Future NPDES Permitting Issues and Implementation of Environmental Control Measures:*
The MAC has applied for and is currently in the process of discussing reissuance of its NPDES permit. The MAC fully intends to comply with the applicable requirements of any new or modified NPDES permit governing its activities at MSP. The following information is presented for clarification for the purposes of this FEIS document, but it is not intended to presume a permit result or in any way pre-judge the regulatory requirements which will be set forth in that reissued permit.

The information and analysis presented in this FEIS covers a longer timeframe than the permit timeframe, since NPDES permits are issued on a five-year basis. The MAC envisions the following NPDES permit-related terms and conditions in the five-year reissuance of the permit for the MSP and No Action Alternatives, respectively:

MSP Alternative:

1. Construction and full utilization of three dedicated deicing pads, each serving a different runway end and associated operations. It is anticipated that two more deicing pads will be built under subsequent NPDES reissuance, to bring the total number of pads to 5 (one for each primary take-off runway end).

2. Continued use of plug/pump program in areas without pads, until all pads are constructed.

3. Glycol-impacted snow containment and management.

4. Supplemental vacuum sweeping operations.

5. Enhance storm water detention ponds to improve collection, settling and flow equalization.

6. Elimination of urea at MSP, pending satisfactory outcomes as regards material supplier and material storage/handling issues.

7. Support airline's efforts to use the least toxic aircraft deicing products. If such an approach is deemed necessary and appropriate, the MPCA may have ability under NPDES permitting authority to require the airlines to use the least toxic product formulations.

8. Continued material use tracking and water quality monitoring to assess the performance of the above measures.

9. Performance of whole effluent toxicity (WET) testing at actual outfall locations according to protocols to be negotiated with the MPCA (see further discussion on this issue provided under the Aquatic Toxicity heading of Section BB.1.2).

No Action:

Same as the above, but with use of one deicing pad (Runway 12L), with a combination of plug/pump and vacuum sweepers at other locations.

The measures as outlined above are the culmination of and are consistent with the analyses and reporting required of the MAC by the MPCA in the 1993 NPDES permit. They are based upon the principle of comprehensive source control. In the case of $CBOD_5$, it is possible that an approach over and above those listed above may be deemed necessary to implement in future years and under future reissued versions of the NPDES permit. The residual (that which escapes containment at the source) GISW management measures which could potentially be implemented over and above the source control mitigation measures identified above are as follows:

1. Point-nonpoint effluent source trade credits (upstream mitigation measures).

2. River oxygen augmentation during critical months (slip stream aeration).

3. Diversion of all storm water during critical months from detention basins to MCES for off-site treatment (this option would also manage residual toxicity levels, if this were a problem after source control measures).

(For reasons which are discussed under the Biochemical Oxygen Demand heading of Section BB.1.2 and also in Appendix A.11, on-site treatment of residual GISW is not a viable option at MSP.)

Further discussion on residual GISW management measures is provided in Appendix A.11. One of these measures could be implemented in a future NPDES permitting process under a combination of the following conditions, or if otherwise determined by the MAC:

1. Future water quality analysis indicates that a residual GISW management measure may be necessary.

2. The measure identified is deemed necessary and appropriate through substantive review and the administrative procedures associated with the NPDES permitting process.

The approach of diverting all MSP storm water run-off to the Metro Disposal System during the winter/spring timeframe would require approval from Metropolitan Council Environmental Services.

## BB.1 MSP and No Action Alternatives

### BB.1.1 Affected Environment — MSP and No Action Alternatives

The APE consists of the existing storm water drainage/control system and the waters receiving the runoff/discharge.

**Storm Water Drainage/Treatment System**

MSP is, with minor exceptions, a self-contained watershed. There is very little off-site drainage which flows onto MAC property. The Airport property is divided into four sub-watersheds, each draining to its own outfall (see **Figure BB-1**). These drainage areas are: Mother Lake, Snelling Lake, Minnesota River North, and Minnesota River South. The four drainage areas discharging from MSP comprise approximately 2,600 acres, of which approximately 1,135 are hard surfaced.

Most of the run-off from the Mother Lake drainage area flows initially into a skimmer pond and then to Duck Lake; discharge from Duck Lake to Mother Lake occurs rarely, if ever. Elements of Duck Lake were designed and constructed in 1975 which allow it to serve as a retention basin for the Mother Lake drainage area. It has been used in this capacity since 1975.

Run-off from the Snelling Lake drainage area flows to the Minnesota River through two detention ponds constructed in series. Snelling Lake can also receive run-off from this drainage area. This would occur during storms larger than a 10-year recurrence event via an emergency spillway at the first detention pond, or if the gate at the second detention pond outlet control structure is manually opened to allow discharge into Snelling Lake. This only occurs when Fort Snelling State Park officials wish to augment lake levels.

The Minnesota River South drainage area flows to the Minnesota River through a detention pond. The Minnesota River North drainage area flows to the Minnesota River through a control structure at an earthen embankment. The embankment is designed to contain storm water in the event of a fuel spill, but a permanent pool is not currently maintained.

The storm water detention ponds were designed and constructed primarily to provide capability to contain fuel spills in the event of fuel spills reaching the storm sewer system. The detention basins also provide limited sediment removal, but essentially no ammonia or BOD removal.

**Receiving Waters**

*Duck/Mother Lake*

Duck Lake is approximately eight acres in size and Mother Lake is approximately 100 acres in size. The Minnesota Department of Natural Resources (DNR) and the Minnesota Pollution Control Agency (MPCA) were contacted to determine if any historical water quality data exists for these bodies of water. These agencies are not aware of any such data.

*Minnesota River*

The Minnesota River is classified by reach in Minnesota Rules (part 7050.0470). The descriptions/uses for the various classes are presented in **Table BB-3**. The classification for the Minnesota River from Mile 22 to the confluence with the Mississippi is 2C, 3B.

**Table BB-3 - Water Quality Classifications (Minnesota Rules, 1993, 1994)**

| Class | Description - Uses |
|---|---|
| 1 | DOMESTIC CONSUMPTION |
| 1B | with approved disinfection such as simple chlorination -> drinking water |
| 1C | higher level of treatment such as coagulation, sedimentation etc. to use as drinking water |
| 2 | FISHERIES AND RECREATION |
| 2A | cool and warm water sport and commercial fisheries, all aquatic recreation, including bathing and protected as a drinking water source |
| 2B | cool and warm water sport and commercial fisheries, all aquatic recreation, including bathing, not protected as a drinking water source |
| 2C | rough fishery (species commonly inhabiting the waters under natural conditions), and boating |
| 3 | INDUSTRIAL CONSUMPTION |
| 3B | general industrial uses except food processing; only moderate treatment required |
| 4 | AGRICULTURE AND WILDLIFE |
| 4A | irrigational uses |
| 4B | use by livestock and wildlife |
| 5 | AESTHETIC ENJOYMENT AND NAVIGATION |
| 5 | navigation and waste disposal, aesthetically suitable for scenic enjoyment, no damaging effects to property |
| 6 | OTHER USES |
| 6 | other possible beneficial uses |

The Minnesota River is one of the most polluted rivers in the state. This prompted the State Legislature to fund the Minnesota River Assessment Project (MRAP), a cooperative effort of more than 30 federal, state and local agencies to assess the water quality of this river and to set water quality improvement goals. The Minnesota River Assessment Project Report (January 1994), jointly researched and written by the Minnesota Pollution Control Agency (MPCA) and the Minnesota Department of Natural Resources (DNR), was generated as part of the MRAP. This document and the Lower Minnesota River Waste Load Allocation Study (Minnesota Pollution Control Agency, 1985) and its amendments are important sources of the following information.

The Minnesota River flows 335 miles through the state, including some of the state's richest agricultural land. Pollutants of greatest concern in the river are nutrients, oxygen demanding materials, sediments and bacteria. Elevated levels of these pollutants are primarily the result of non-point source loading. The most significant non-point sources are as follows:

- agricultural fields;
- feedlots;
- roads;
- septic tank discharges;
- parking areas;
- construction sites;
- mining operations; and
- lawns.

The first of three MSP outfalls on the Minnesota River is located approximately four miles upstream of the confluence of the Minnesota River and the Mississippi River. The Minnesota River carries a substantial pollutant load from the sources identified above prior to arriving at these lower reaches. Of note are the

concentrations and mass loadings of $CBOD_5$, TSS, un-ionized ammonia ($NH_3$) and total phosphorus (P), as well as the resultant turbidity and decreased dissolved oxygen (DO) levels.

**Table BB-4** presents quarterly data for river water quality as measured at the MCES Fort Snelling monitoring station. The figures presented in **Table BB-4** are averages for the years 1976 through 1995. The paramters of dissolved oxygen, TSS, and un-ionized ammonia will be addressed individually below.

Dissolved Oxygen--A minimum dissolved oxygen concentration of 5.0 mg/l on a daily average has been established as the water quality standard for the lower reaches of the Minnesota River. The dissolved oxygen concentration in the stream at any point in time depends on a number of variables and the interaction of oxygen consuming and oxygen replenishing processes. These include:

- Water temperature;
- Ice cover;
- Stream hydraulics;
- Algae respiration;
- Headwater oxygen demanding organic matter (carbonaceous biochemical oxygen demand--CBOD);
- Benthic (sediment) uptake;
- Point source CBOD loads; and
- Ammonification and nitrification.

In the late 1970s and 1980s, the water quality standard for DO (5 mg/l) was not consistently met in the Lower Minnesota River, particularly during summer low flow conditions. This prompted a MPCA study in the mid 1980s that recommended lower CBOD limits for Blue Lake and Seneca, the major Metropolitan Council Environmental Services (formerly Metropolitan Waste Control Commission) treatment plants on the river. However, the study also found that point source controls alone could not solve the problem. A 40 percent reduction in upstream $CBOD_5$, predominantly from non-point sources, would also be required.

**Figure BB-2** depicts monthly DO levels at the MCES water quality monitoring station at Fort Snelling. The data presented are averaged over the years 1976 through 1995. It can be seen that the lowest DO levels are generally in the late summer timeframe due to relatively low flow conditions as combined with warm water temperatures. While DO is more of an issue during the warm months than the cold months, significant ice cover can have the effect of limiting re-aeration of a water body, creating the potential for depressed DO levels.

**Table BB-4 - Minnesota River Water Quality Data--Fort Snelling Station**

| | Winter | Spring | Summer | Fall | Annual |
|---|---|---|---|---|---|
| **Dissolved oxygen (mg/l)** | | | | | |
| Minimum | 5.05 | 3.6 | 2.8 | 4.2 | 2.8 |
| Maximum | 17.6 | 15.8 | 14.5 | 16.7 | 17.6 |
| Average | 10.6 | 10.4 | 6.8 | 9.8 | 9.3 |
| **Total 5-day CBOD (mg/l)** | | | | | |
| Minimum | 0.8 | 1.8 | 1 | 1.5 | 0.8 |
| Maximum | 15 | 17 | 15.4 | 23.4 | 23.4 |
| Average | 4.3 | 5.8 | 5.0 | 6.5 | 5.4 |
| **Total ammonia nitrogen (mg/l)** | | | | | |
| Minimum | 0.05 | 0.02 | 0.02 | 0.02 | 0.02 |
| Maximum | 3.9 | 2.52 | 2.5 | 5.6 | 5.6 |
| Average | 1.23 | 0.46 | 0.42 | 0.68 | 0.65 |
| **Total Kjeldahl nitrogen (mg/l)** | | | | | |
| Minimum | 0.3 | 0.4 | 0.28 | 0.28 | 0.28 |
| Maximum | 4.8 | 10.2 | 8.8 | 4.09 | 10.2 |
| Average | 2.18 | 1.98 | 1.89 | 2.15 | 2.05 |
| **Total phosphorus (mg/l)** | | | | | |
| Minimum | 0.03 | 0.03 | 0.13 | 0.06 | 0.03 |
| Maximum | 0.8 | 0.92 | 4.3 | 2.5 | 4.3 |
| Average | 0.32 | 0.31 | 0.41 | 0.39 | 0.36 |
| **Total suspended solids (mg/l)** | | | | | |
| Minimum | 1 | 5 | 39 | 18 | 1 |
| Maximum | 136 | 795 | 1528 | 1780 | 1780 |
| Average | 14.7 | 110.5 | 164.4 | 108.7 | 98.7 |

NOTE: These are averaged data over the years 1976 through 1995.

Total Suspended Solids (TSS) -- The Minnesota River is noted for the heavy TSS load it carries. While there are no water quality standards for TSS, the river does have a standard for turbidity of 25 NTUs (turbidity is associated with high TSS and phosphorus concentrations). The Minnesota River Assessment Project Report shows this limit to be exceeded for the Minnesota River at Jordan on approximately 40 percent of the grab samples and at Fort Snelling on approximately 30 percent of the samples between 1979 and 1991.

Annual TSS loading to the river range from under 100,000 tons in very dry years to more than 1,300,000 tons. Average annual loads are more than 600,000 tons. The tonnage is characterized in the Minnesota River Assessment Project Report as the equivalent of 86 20-ton truckloads per day.

Seasonal loads also vary with run-off flow rates. Concentrations are lowest in the winter when most of the volume represents groundwater base flow. They increase with spring snowmelt and rainfalls and peak in the summer. According to the Minnesota River Assessment Project Report, TSS concentrations average 123 mg/l on a flow weighted basis, significantly higher than observed MSP discharge levels and proposed target discharge levels.

Ammonia--High levels of un-ionized ammonia have toxic effects on some forms of aquatic life. The water quality standard for ammonia is 0.04 mg/l as un-ionized ammonia nitrogen. The percent of total ammonia nitrogen in the un-ionized form is driven by pH and temperature. The combined effects of low river flow, high water temperature, and high pH produce critical conditions for ammonia toxicity. Warm temperatures and higher pH levels make July and August the months that most frequently exhibit stressed conditions. River monitoring at Fort Snelling over the period 1976-1995 shows there were 61 measurements (of 783) in which the water quality standard was exceeded.

Since the start of nitrification at the Blue Lake and Seneca WWTPs in 1991, no exceedances of the .04 mg/l water quality standard for un-ionized ammonia have been reported at Fort Snelling.

## BB.1.2 Surface Water Quality Impacts — MSP and No Action Alternatives

The discussion and analysis presented in the following sections will focus upon potential for environmental impact and mitigative measures regarding run-off to the Minnesota River. Under both the MSP and No Action Alternatives, drainage from Aircraft Operating Area (AOA) surfaces which are or will be within the current boundaries of the Mother Lake watershed boundaries will be routed to the Minnesota River South control and discharge system. Thus, the remaining areas within the current boundaries of the Mother Lake watershed which will drain to Mother Lake should be analagous to standard urban run-off.

### Total Suspended Solids

*Background*

The primary source of elevated levels of total suspended solids (TSS) to the MSP storm water drainage system is the expanse of hard surfaced areas upon which airport operations take place. A total of 1,160 acres of hard surfaced area are currently served by the MSP storm water drainage system. Including the Runway 4-22 extension to 12,000 feet, there will be approximately 1,200 acres from the No Action Alternative, 1,570 acres from the MSP 2010 LTCP, and 1,630 from the MSP 2020 Concept Plan. MAC keeps operating surfaces as free of sand and grit as possible, through extensive sweeping and other measures, because this type of loose material gets pulled into jet engines and can cause excessive mechanical wear.

As discussed in the Minneapolis-St. Paul International Airport Decision Report for Storm Water Control Measures (Metropolitan Airports Commission, December 1994), the MAC intends to enhance its existing storm water drainage facilities to improve TSS control. For each of the four surface water drainage areas, detention ponds will be improved or constructed such that National Urban Runoff Program (NURP) or comparable design standards (Detpond, a.k.a. Pitt Model as developed by Robert Pitt) for wet detention are met. Based upon discussion with Minnesota Pollution Control Agency (MPCA) staff, it is anticipated that Detpond design criteria will meet NPDES requirements for TSS control at MSP. The MAC intends to construct detention facility improvements to meet Detpond standards regardless of the ultimate development outcome for the airport.

*Analysis*

In its document entitled Protecting Water Quality in Urban Areas - Best Management Practices for Minnesota, the MPCA identifies wet detention ponds as one of the most effective best management practices (BMPs) available for treatment of urban run-off. Pond design requires, at a minimum, a pond with wet storage capable of 90 percent particle removal to five microns throughout a 0.5 inch run-off event. Because it has been calibrated and field verified, the MPCA requires the use of Detpond in the determination of pond size and discharge structure configuration.

The following discussion addresses the main development aspects associated with detention pond enhancement for each watershed under the MSP and No Action Alternatives. Final design requirements will be established through the NPDES permiting process.

- Mother Lake (Outfalls 010 and 010A) For the MSP and No Action Alternatives, all surface drainage from aircraft operating areas (AOA) within the current boundaries of the Mother Lake watershed would be routed south to the Minnesota River South control and discharge system. This would include runway, taxiway, and deicing pad surfaces. Under the MSP Alternative, Duck Lake would be abandoned as required by construction of Runway 17/35. While a final determination will be made through the appropriate permitting processes, it is not believed that a detention pond will be required for airport drainage to Mother Lake under the MSP Alternative (see discussion in Appendix A.8). Under No Action, the remaining non-AOA drainage would continue to discharge to Duck

Lake after control with the skimmer pond which would be ehnanced as dictated by the NPDES permitting process.

- Minnesota River North (Outfall 020)--For both the MSP and No Action Scenerios, the existing dam and skimmer structure in the ravine would be removed and replaced by another earthen dam and concrete spillway near the Trunk Highway 5 embankment. Permanent pool levels would be maintained in the existing ravine in accordance with NURP or equaivalent performance requirements. The unregulated MnDOT drainage associated with this outfall location would be diverted around this detention basin.

- Snelling Lake (Outfall 030)--Consistent with the proposed actions documented in the 1994 Decision Report, enhancements were made in 1997 to the outlet structure of the south detention basin which provide better utilization of the existing storage capacity serving this watershed. It is anticipated that any enhancements required for this control system under either the MSP or No Action Alternatives would be relatively minor.

- Minnestota River South (Outfall 040)--The MAC is currently (April 1998) preparing preliminary engineering plans and documents for the development of a new detention pond to be located on Department of Veterans Affairs (DVA) property. This pond is being sized to treat run-off according to NURP-equivalent performance standards from existing and anticipated (2010 and 2020 planning horizons) pavements in the Minnesota River South watershed. As discussed above, these pavements include AOA surfaces which are currently or will be within the existing boundaries of the Mother Lake watershed.

**Biochemical Oxygen Demand**

*Background*

There are two activities and associated chemicals unique to airport operations which can cause elevated loadings of carbonaceous biochemical oxygen demand ($CBOD_5$): a) aircraft deicing; and b) ground surface snow/ice control. Historically, the most significant source of $CBOD_5$ loading to the MSP storm water system by a wide margin was the use of glycol products during aircraft deicing operations. From the 1993/94 winter season through the 1996/97 winter season, the average usage of glycol product to deice aircraft at MSP has been approximately 700,000 gallons per winter season. During the 1996/97 winter, approximately 1,556,000 gallons of aircraft deicing product (approximately 1,400,000 gallons glycol) were used to deice aircraft. In the future, an increasingly significant source of $CBOD_5$ loading will likely be new ground surface snow/ice control chemicals such as sodium formate and potassium acetate. It is anticipated that these chemicals will be used to replace urea.

*Analysis*

To assess the potential impacts of the MSP operations on DO levels in the Minnesota River, an extreme case "slug" of $CBOD_5$ discharge from the airport was projected. The activity which has the greatest impact on $CBOD_5$ levels in MSP storm water is aircraft deicing. It is believed that significant but less important loading factors for $CBOD_5$ in 2010 and beyond will be ground surface deicing operations utilizing sodium formate and potassium acetate. The $CBOD_5$ load associated with an assumed worst case glycol application day was projected. In this analysis, the following assumptions were utilized:

**Glycol**

- 68,100 gallons propylene glycol applied on a worst case application day for the No Action Alternative, 71,800 gallons for the MSP 2010 LTCP, and 74,800 gallons for the MSP 2020 Concept Plan.
- 9.5 percent "blow-by" (glycol escaping containment and running into the storm sewer system) for No Action Alternative, and 7.5 percent blow-by for the MSP Alternative (2010 and 2020)
- $CBOD_5$ of 1,000,000 mg/l for propylene glycol product

**Sodium Formate**

- 600 tons seasonal application of sodium formate for the No Action Alternative, and 860 tons seasonal application for the MSP Alternative (2010 and 2020)
- $CBOD_5$ of 230,000 mg/kg for sodium formate product
- 1.43 percent of total seasonal $CBOD_5$ applied in the form of sodium formate to be discharged to the storm sewer system on worst case glycol application day

**Potassium Acetate**

- 50,000 gallons seasonal application of potassium acetate for the No Action Alternative, and 71,200 gallons seasonal application for the MSP Alternative (2010 and 2020)
- $CBOD_5$ of 300,000 mg/l for potassium acetate product
- 1.43 percent of total seasonal $CBOD_5$ applied in the form of potassium acetate to be discharged to the storm sewer system on worst case glycol application day

The GISW containment programs assumed for this analysis are as follows:

MSP Alternative (2010 and 2020)

- Aircraft deicing performed on dedicated deicing pads with drainage segregated from other airport drainage
- Supplimental vacuum sweeper operations; and
- Glycol-impacted snow containment and management.

No Action Alternative

- Deicing of Northwest Airlines departures from Runway 12L performed on a dedicated deicing pad at that location.
- Containment with plug structures in storm sewers at all other significant aircraft deicing locations;
- Enhancing plugged containment with vacuum sweepers at prominent deicing locations; and
- Glycol-impacted snow containment and management.

These assumptions were used to estimate the volume of blow-by glycol which would escape containment and run into the detention ponds for each drainage area. Further discussion of these assumptions and how they were used can be found in Appendices A.9 and H.4.

For the analysis of extreme case $CBOD_5$ loading to the Minnesota River, it was assumed that detention ponds sized and configured to meet NURP or equivalent standards (as discussed in the TSS section above) would be developed for the MSP and No Action Alternatives. These ponds would have permanent pool levels and would provide significant attenuation of a $CBOD_5$ "spike" associated with extreme usage of glycol and/or other materials.

Because of cold water temperatures, only minimal biological treatment ($CBOD_5$ reduction) during high $CBOD_5$ loading months could be realized in detention ponds at the airport. Thus, on-site treatment of residual (escaping containment at the source) glycol-impacted storm water in ponds would require that these ponds have sufficient capacity to provide storage for all storm water generated at the airport from the months of approximately November through May. Only in late spring would the water temperatures be warm enough to allow significant biological treatment of glycol and other materials. Historical data on run-off volumes in the winter/spring months at MSP indicates that this approach would necessitate the construction of approximately 1,000 acre-feet of pond storage. Physical limitations at the airport site would not viably allow this type of development. Biological treatment of residual glycol-impacted storm water is addressed in greater detail in Appendix A.11.

To model the attenuating effect of the detention ponds, complete mixing in the ponds was assumed, and the mass balance equation for routing the $CBOD_5$ load was used. It was necessary to make assumptions regarding a) the antecedent $CBOD_5$ load in the ponds at the time of the extreme case $CBOD_5$ spike, and b) the hydraulic flow volumes at the time of this spike. Using data from the 1996/97 winter season in concert

with assumptions regarding 2020 glycol application and blow-by for the MSP and No Action Alternatives, the conditions presented in **Table BB-5** were developed and assumed to coincide with the $CBOD_5$ spike event.

**Table BB-5 - Assumed Antecedent Pond Conditions for $CBOD_5$ Spike Event - MSP and No Action Alternatives**

| Watershed | Pond Load (MG/L $CBOD_5$) | | | Influent Flow (mgd) | | |
|---|---|---|---|---|---|---|
| | MSP-2010 | MSP-2020 | No Action | MSP-2010 | MSP | No Action |
| 020 | 260 | 260 | 450 | 5.09 | 5.09 | 4.62 |
| 030 | 750 | 770 | 120 | 0.63 | 0.63 | 0.71 |
| 040 | 360 | 370 | 390 | 1.48 | 1.48 | 1.22 |

The mass balance model and the associated inputs and outputs are addressed in Appendix A.9 and in Appendix H.4 (MSP Alternative - 2010). The projected facility-wide loading into and discharge from the detention ponds to the Minnesota River for the MSP and No Action Alternatives are presented in **Table BB-6.**

**Table BB-6 - Composite Airport $CBOD_5$ Loading on Extreme Case Day - MSP and No Action Alternatives(pounds)**

| Alternative | Influent to Ponds | Effluent from Ponds |
|---|---|---|
| MSP - 2010 | 53,600 | 7,900 |
| MSP - 2020 | 55,400 | 8,200 |
| No Action | 59,800 | 9,200 |

The extreme-case effluent loads from ponds as projected in Table BB-6 may be compared against the oberved high $CBOD_5$ discharge events associated with recent winters as presented in Table BB-1.

As has been discussed with MPCA staff, there is insufficient data at this time to project the potential impacts of the $CBOD_5$ loading projected in Table BB-6 on DO levels within the Minnesota River under low flow conditions. As discussed under the Regulatory Background heading of Section BB, the river monitoring data which the MAC has gathered over the 1993/94 through 1997/98 (through February) winters gives no indication that MAC discharges during the winter/spring months have discernable impact on DO levels in the Minnesota River. However, low flow conditions have not taken place over this timeframe. Also, approximately half of each winter/spring season is not covered with monitoring, because ice conditions make sampling procedures unsafe.

In order to model, with a sufficient degree of confidence, the potential for MSP discharge to negatively impact river DO levels it will be necessary to have data regarding actual assimilative capacity of this reach of the Minnesota River recorded during low flow conditions during the winter/spring timeframe. The MAC and MPCA staff concur on this point and the fact that such data currently does not exist. The MAC understands that the MPCA intends to authorize a winter/spring WLA low-flow river study in the coming years. This study would provide the data required for conclusive DO impact analysis.

**Un-Ionized Ammonia/pH**

*Background*

The only significant source of ammonia loading and problematic pH conditions in MSP storm water is the use of urea as a ground surface snow/ice control agent. Urea breaks down to ammonia, which is a weak base. Ammonia is soluble in water and is found in two forms, ionized and un-ionized. The un-ionized form can be toxic to aquatic life. In recent years, the MAC has typically used between 750 and 1,000 tons of urea per winter for ground surface snow/ice control purposes.

During the 1993/94 winter, MAC began to work with potassium acetate as a liquid ground surface snow/ice control product. At MSP, potassium acetate would serve as a support product for granular runway de-icer(s).

Potassium acetate has no nitrogen content and thus no potential to cause loading of un-ionized ammonia to receiving waters. During the 1996/97 winter, use of potassium acetate became fully operational at MSP as an anti-icing agent.

The MAC performed field testing with sodium formate during the 1995/96 and 1996/97 winter seasons. Sodium formate is a granular product which is used like urea and which could be a replacement for urea. Like potassium acetate, it would not cause loading of un-ionized ammonia to receiving waters. This product has been extensively and successfully field tested in Canada and has received approval for use at airports by Transport Canada and the U.S. Federal Aviation Administration (FAA). Pending continued successful work with sodium formate, and the ability to address product storage/handling issues, the MAC will ultimately eliminate the use of urea at MSP.

For discussion of aquatic toxicity information regarding potassium acetate and sodium formate runway de/anti-icing materials, refer to the Aquatic Toxicity heading of this section.

During the 1996/97 winter season the MAC Field Maintenance Department began the practice of incorporating high speed brooms into snow removal procedures at MSP. The effect of these brooms is to remove residual snow/ice left behind by conventional snow plows, thus leaving relatively bare pavements. This practice significantly limits the overall chemical application requirements associated with snow/ice control operations for runways and taxiways.

*Analysis*

With the anticipated elimination of urea use at MSP, un-ionized ammonia and pH will not be an issue regarding NPDES compliance for the MSP facility. In the very unlikely event that urea was still in use at MSP in 2010 or beyond, a treatment system utilizing air stripping facilities at each outfall almost certainly would have been implemented to maintain compliance with NPDES permit requirements.

In light of the discussion provided above, and as determined through the scoping and external review process culminating in the Scoping Decision (July, 1995), outcomes for the un-ionized ammonia and pH parameters for the MSP and No Action Alternatives will not be modeled or otherwise quantitatively projected for this FEIS.

**Oil and Grease**

*Background*

The most significant source category for oil and grease loading at MSP is aircraft fueling and the associated support facilities and operations. All aviation fuel storage and handling at MSP is the responsibility of tenants which perform aircraft fueling operations. These tenants have National Pollutant Discharge Elimination System (NPDES) General Permit responsibilities to limit the loading of pollutants to surface water run-off from their facilities. Under NPDES requirements, they must generate Storm Water Pollution Prevention Plans (SWPPPs) for their respective facilities. All the facilities at MSP associated with both aviation and non-aviation fueling operations are identified in the Oil Spill Prevention Control and Countermeasure Plan--Minneapolis St. Paul International Airport (Metropolitan Airports Commission, June 1993, revised November 1993).

Surface water quality monitoring since November 1993 indicates that oil and grease is not a major concern at MSP. (See Decision Report for Storm Water Control Measures [Metropolitan Airports Commission, December 1994], and Discharge Monitoring Reports as submitted monthly by MAC to the MPCA.) The existing water quality information does not account for control performance associated with the detention ponds serving three of the four drainage areas because the samples are taken from the influent to those ponds. It is anticipated that the enhancement of existing detention control facilities to meet Detpond performance criteria (as discussed previously) will decrease the discharge of oil and grease effluent to receiving waters relative to existing discharge levels.

*Analysis*

In light of the discussion provided above, and as determined through the scoping and external review process culminating in the Scoping Decision (July, 1995), outcomes for oil and grease loadings for the MSP and No Action Alternatives will not be modeled or otherwise quantitatively projected for this EIS.

**Phosphorous**

*Background*

There are no activities or materials specifically associated with airport facilities or operations which should cause elevated levels of phosphorous.

Twenty-four hour composite samples are analyzed for phosphorous three times per week at MSP. Between November 1993 and September 1997, the flow-weighted average concentration for total phosphorous was 0.17 mg/l. This is similar to phosphorous loading associated with general urban run-off.

There are no anticipated new activities or materials which would cause higher phosphorous loadings than those historically experienced at MSP. Given the existing surface water quality data for this parameter for the MSP facility, there is no need to model or otherwise quantitatively project phosphorous loadings associated with the MSP and No Action Alternatives for this EIS.

**Aquatic Toxicity**

*Background*

Elevated biochemical oxygen demand levels have historically been seen as the most significant environmental consequence associated with glycol-based aircraft deicing products and general surface water discharges from airport facilities. Recently, howerver, there has been increased regulatory attention focused upon aquatic toxicity issues as regards surface water discharge from airport facilities to receiving waters.

The MAC believes that the only materials with potential to substantially impact the aquatic toxicity of surface water run-off from MSP are a) urea used for runway deicing purposes, and b) spent aircraft deicing fluid.

> Urea--As was discussed under the Un-ionized Ammonia/pH heading of Section BB.1.2, urea breaks down to ammonia, which, in sufficient concentration in its un-ionized form, can be toxic to aquatic life. In recent years, the MAC has preformed testing with alternative products (potassium acetate and sodium formate) and has implemented alternative operating procedures with the intention of restricting and, ultimately, eliminating the use of urea at MSP. The MAC anticipates that no urea will be used at MSP once necessary facility development actions have been taken.
>
> According to supplier information, the potassium acetate product used at MSP has an $LC_{50}$ of greater than 2,100 mg/l for rainbow trout, and an $LC_{50}$ of greater than 3,000 mg/l for daphnia magna. According to product information for the sodium formate material used at MSP, this material has $LC_{50}$ results of greater than 1,000 mg/l for daphnia magna, rainbow trout, and fathead minnows. A representative of Hoechst indicated that the actual results for these species could be well in excess of 1,000 mg/l, but, in Europe, most testing is stopped at the 1,000 mg/l threshold because anything greater than this is considered to be relatively benign environmentally.
>
> Aircraft Deicing Fluid—Recent studies have demonstrated that the most important sources of aquatic toxicity in aircraft deicing products are the non-glycol additives, such as surfactants and corrosion inhibitors. There currently are three suppliers of ADF products in North America. The MAC contacted these suppliers and requested that they provide aquatic toxicity information on their products. The three suppliers provided this information, which is summarized in Table BB-7.

**Table BB-7 - Aquatic Toxicity Information for Aircraft De/Anti-Icing Products**

**SUPPLIER A**

1. Type I Material

   a. Fathead minnows: 96 hour $LC_{50} \rightarrow$ 22,000 mg/l
   b. Daphnia magna: 48 hour $EC_{50} \rightarrow$ 44,000 mg/l
   c. Rainbow trout: 96 hour $LC_{50} \rightarrow$ 18,900 mg/l

2. Type IV Material (extended hold over)

   a. Fathead minnows: 96 hour $LC_{50} \rightarrow$ 410 mg/l
   b. Daphnia magna: 48 hour $EC_{50} \rightarrow$ 630 mg/l
   c. Rainbow trout: 96 hour $LC_{50} \rightarrow$ 380 mg/l

**SUPPLIER B**

1. Type I Material

   a. Fathead minnows: 24 hour $LC_{50} \rightarrow$ 625 ppm
   b. Daphnia magna: 48 hour $LC_{50} \rightarrow$ 475 ppm

2. Type IV Material

   a. Fathead minnows: 96 hour $LC_{50} \rightarrow$ 1,975 ppm
   b. Daphnia magna: 48 hour $LC_{50} \rightarrow$ 975 ppm

**SUPPLIER C[1]**

1. Type I Material

   a. Fathead minnows: 96 hour LC50 → 4,600 mg/l
   b. Daphnia magna: 48 hour EC50 → 9,000 mg/l
   c. Rainbow trout: 96 hour LC50 → 4,000 mg/l

2. Type II Material

   a. Leuciscus Idus (fish): $LC_{50} \rightarrow$ 420 mg/l
   b. Daphnia magna: 48 hour $EC_{50} \rightarrow$ 750 mg/l

NOTE: The information included in this table is presented as provided by the respective suppliers. Results may not be directly comparable from product to product.

Other sources of information and data pertaining to ADF products and aquatic toxicity are as follows:

- "Comparative Toxicity of Formulated Glycol Deicers and Pure Ethylene and Propylene Glycol to Ceriodaphnia Dubia and Pimephales Promelas" (David Pillard, ENSR Consulting and Engineering, published July 1994);

- "Chemical Substances Testing Final Study Report: Ecotoxicological Evaluation of UCAR® Aircraft Deicing fluid XL 54" (Beak Consultants Limited for Transport Canada, 1995);

- "Chemical Substances Testing Final Study Report: Ecotoxicological Evaluation of ARCOPLUS® Dilute Aircraft Deicer" (Beak Consultants Limited for Transport Canada, 1995); and

- "Ecological Aspects of UCAR® Aircraft Deicing Fluid and Ethylene Glycol" (Union Carbide Technical Center, June 1995).

*Analysis*

It would be extremely difficult, if not impossible, to confidently model the aquatic toxicity of MSP discharge based upon assumptions regarding concentrations of urea and ADF that discharge. It cannot be predicted how organisms will respond to given effluent/test materials. The MAC, in and effort to further its understanding MSP run-off and aquatic toxicity, has performed limited "whole effluent toxicity" (WET) analysis on samples taken from this run-off. The samples were not taken from discharge points to receiving waters; they were instead taken either upstream of detention ponds, or upstream of the confluence of MSP run-off with non-MAC run-off which does not contain ADF (MN/DOT roadway surfaces). Through standard analytical procedures, these samples did demonstrate an acute toxicity impact for certain species. The information from this testing may by used in the NPDES permit process to help establish appropriate monitoring and testing procedures.

The MAC intends that appropriate WET analysis will be performed on MSP discharge to receiving waters in future winter seasons. It is anticipated that this will be a requirement of the anticipated reissued NPDES permit for the airport.

The MAC's approach to limit the aquatic toxicity of MSP run-off and discharge is based upon the following elements:

- Limit and ultimately eliminate the use of urea at MSP.
- Comprehensive source containment of spent ADF through the use of dedicated deicing pads and other measures.
- Ability of enhanced detention ponds to attenuate discharges.
- Share information with carriers regarding the aquatic toxicity of ADF products as it pertains to MSP discharge.

It is not known at this time what will be established as an NPDES standard for aquatic toxicity for MSP discharge. If it is determined through though representative and appropriate water quality analysis that the MSP discharge, after implementation of the controls identified above, presents a sufficient toxicity potential, it is anticipated that regulatory focus would be directed to ADF products used by airline carriers. It may be appropriate to regulate ADF procurement by MSP carriers on the basis of aquatic toxicity characteristics.

### BB.1.3 Mitigation Measures — 2010 LTCP and No Action Alternatives

There are two general categories of pollutant materials which currently enter the MSP storm water system. The first category will be termed "general loading" and includes pollutants associated with fueling/maintenance operations, ground surface snow/ice control, and general airport operations on the extensive hard surfaced areas of the facility. The second category is associated with the glycol-based products used during aircraft deicing operations.

The mitigation measures outlined below are consistent with storm water quality control requirements which are anticipated to be included in the renewed NPDES permit.

**General Loading (total suspended solids, oil and grease, aquatic toxicity and ammonia/pH)**

For general loading, the mitigation measures assumed for both the 2010 LTCP and No Action Alternatives are the same. They are listed below. These are measures which the MAC either has already put into service,

or intends to do so to meet anticipated NPDES requirements. The primary environmental parameter(s) to be controlled by each measure is indicated in parenthesis.

Source Control:

- implementation of best management practices (BMPs) as defined in Storm Water Pollution Prevention Plans and Spill Prevention Control Countermeasure Plans prepared by entities involved with airport operations (TSS, OG)
- spill protection/containment design at fuel facilities to meet regulatory requirements (OG)
- regular sweeping of pavement surfaces (TSS)
- use of alternate ground surface deicing chemicals (ammonia/pH)

Storm Water Treatment:

- oleophyllic absorbent booms in detention ponds (OG)
- enhanced storm water detention ponds (TSS, OG)

**Aircraft Deicing Fluid Loading ($CBOD_5$, aquatic toxicity)**

For aircraft deicing fluid loading, the mitigation measures which are assumed for the 2010 LTCP and No Action Alternatives, respectively, are presented below.

2010 LTCP Alternative:

- dedicated deicing pad facilities at all primary runway departure ends – five facilities
- glycol-contaminated snow segregation/management
- supplemental vacuum sweeping operations
- CBOD5 attenuation through enhanced detention basins

No Action Alternative:

- use of a dedicated deicing facility located at Runway 12L for departures from that runway end
- in-line containment with plug structures at aircraft deicing locations other than the Runway 12L deicing pad
- glycol-contaminated snow segregation/management
- vacuum sweeper glycol collection operations at select deicing locations
- CBOD5 attenuation through enhanced detention basins

In addition to the mitigation measures listed above, on-going water quality monitoring will be conducted for all appropriate effluent parameters. The MAC intends to continue water quality monitoring as anticipated to be required under the reissued NPDES permit such that the performance associated with the mitigation measures identified above can be properly assessed.

## BB.2 Summary of Surface Water Quality Impacts

The projected extreme case discharges of $CBOD_5$ from the airport to the Minnesota River for the MSP and No Action Alternatives, respectively, are presented in **Table BB-6.** The projected discharge for the MSP Alternative is approximately 14 percent lower than the No Action Alternative in 2010, and about 11 percent lower in 2020. Thus, based on the assumptions and methods utilized, this analysis indicates that the MSP Alternative would not adversely impact surface water quality when compared with the No Action Alternative. The MSP Alternative includes five dedicated deicing pads by 2010, which represent the best available control technology for capture of spent aircraft deicing fluids.

A certification letter by the governor regarding water quality is in Appendix K.

# CC. Groundwater Quality

Hydrogeologic terms which will be used in Section CC are defined as follows:

Water Table - The elevation of the highest groundwater under atmospheric pressure, usually the first groundwater encountered when drilling a well.

Hydraulic Conductivity - A measurement of the capability to transmit water. Sand usually has a high hydraulic conductivity. Clay usually has a low hydraulic conductivity.

Hydraulic Gradient - The change in the water table elevation or groundwater pressure head over distance. A steep water table has a high hydraulic gradient. Values are presented in units of feet/feet, meters/ meter, and are therefore dimensionless.

Vadose Zone or Unsaturated Zone - The area between the ground surface and the water table. The vadose zone may contain some water, but it is not continuously saturated.

Aquifer Thickness - The distance from the base of the aquifer to the water table or upper confining layer.

Aquifer Depth - The depth from the ground surface to the top of the aquifer or the water table.

## CC.1 Affected Environment — MSP and No Action Alternatives

The APE for the MSP and No Action Alternatives consists of the groundwater aquifers which underlie the MSP facility. The most important feature of this APE is the Prairie du Chien/Jordan aquifer, which is the major groundwater supply aquifer locally and regionally.

## Geology/Hydrogeology

*Background*
In 1992, the MAC initiated a major hydrogeologic characterization of the MSP site. For Phase I/II of this study, well log data from over 1,400 borings and wells was compiled and put into a computer database which allows extensive graphic analysis and presentation. This work is summarized in Phase I and II Comprehensive Hydrogeologic Characterization Minneapolis-St. Paul International Airport (Metropolitan Airports Commission, September 1992). This report includes maps illustrating the location of all boreholes and wells at the site and presents the site specific geologic and hydrologic conditions at the site. All appropriate data is summarized and appended to the Phase I and II report. Phase III of this investigation has involved the installation of monitoring wells in 1994 and the utilization of these wells to obtain water level and water quality data. The information from the Phase III investigation has been summarized in Water Quality Monitoring Report; Comprehensive Hydrogeologic Characterization of the Minneapolis-St. Paul International Airport (Metropolitan Airports Commission, August 1997). The information provided under the following headings has been compiled and summarized from this and preceding reports.

### Summary of Regional Geologic Setting

The geologic setting of the Twin Cities is characterized by a thick sequence of sedimentary bedrock units overlain by unconsolidated glacial deposits and more recent alluvium. The bedrock formations of the Twin Cities area are composed of early Paleozoic marine sedimentary rocks which form the uppermost bedrock in a unique local geologic structure referred to as the Twin Cities Basin (Mossler, 1972). As much as 1,000 feet of sedimentary rocks occur in this basin structure.

The Paleozoic bedrock is blanketed by varying thicknesses of unconsolidated sediments deposited as a result of the last glaciation, the late Wisconsin. Older pre-late Wisconsin glacial sediments have also been identified in the Twin Cities, although these deposits are relatively minor and occur at depth. Underlying the present landscape is a buried bedrock surface exhibiting a well developed dendritic stream pattern that may pre-date the late Wisconsin glacial period (Balaban, 1989). This system of buried valleys is interpreted from water well and soil boring records and is found to have buried river valleys of the same magnitude of relief and even greater than the present-day system. Boring logs at and near the MSP Airport indicate a large buried bedrock valley exists immediately west of MSP, with several smaller valleys to the north and south. The underlying bedrock surface at MSP is discussed in the following section.

### Geologic Setting of MSP Airport

The MSP Airport is underlain by the complete section of Paleozoic bedrock units found in the Twin Cities Basin which are overlain by a variety of glacial sediments. A total of 40 different well and boring logs were used to determine the thickness and contact elevations of the bedrock units at the MSP Airport. The units encountered in borings at the MSP Airport, from youngest to oldest, are: Decorah Shale, Platteville Formation, Glenwood Formation, St. Peter Sandstone, Prairie du Chien Group, Jordan Sandstone, and St. Lawrence Formation. The St. Lawrence formation is considered a lower confining unit for the Prairie du Chien/Jordan aquifer. Owing to the confining nature of the St. Lawrence formation, the paleozoic sediments below the St. Lawrence formation should not interact hydrogeologically with the shallower paleozoic and glacial materials and are not discussed herein.

The Ordovician Decorah Shale (Od) occurs as a small erosional remnant in the northern portion of the study area and reaches a maximum thickness at MSP of 4.5 feet. The formation consists of fissile to blocky, greenish-gray or olive-gray shale and has a lower contact elevation of 806 to 808 feet NGVD. It generally does not yield water (Kanivetsky and Walton, 1979).

The Ordovician Platteville Formation (Opv) has a maximum thickness at the MSP Airport of approximately 30 feet and is composed of thin to medium-bedded, gray and yellowish-brown dolomite and dolomitic limestone. This unit is generally found as the uppermost bedrock unit, acting as a shallow, flat-lying caprock of the bedrock "plateau" described in the following section. The contact with the underlying Glenwood Formation in

the study area varies in elevation from 776 to 792 feet NGVD. The Platteville Formation in the study area is water-bearing.

The Ordovician Glenwood Formation (Og) ranges in thickness from two to ten feet and is composed of soft grayish-green or yellow calcareous shale. The contact with the underlying St. Peter Sandstone in the study area varies in elevation from 771 to 784 feet NGVD. The Glenwood Formation in most of the Twin Cities area acts as a lower confining bed to the overlying Platteville Formation.

The Ordovician St. Peter Sandstone (Osp) ranges in thickness from 151 to 165 feet and is composed of light yellow or white, massive, quartzose, fine to medium-grained, well-sorted and friable sandstone. Thin beds of siltstone and shale near the base of the St. Peter Sandstone serve as an underlying confining layer (Kanivetsky and Walton, 1979). The varying thickness of the St. Peter Sandstone appears due to its deposition on an erosional surface developed on the top of the Prairie du Chien Group. Relief on this erosional unconformity in the Twin Cities area can be up to 100 feet (Kanivetsky and Walton, 1979).

The Ordovician Prairie du Chien Group (Opc) varies in thickness in the study area from 121 to 146 feet and comprises two principal formations, the Shakopee Formation and the Oneota Dolomite. Both units are predominantly light brownish gray or buff, thin to thick-bedded dolomite which is vuggy and fractured and contains some thin layers of grayish green shale.

The Cambrian Jordan Sandstone (Cj) ranges in thickness in the study area from 72 to 107 feet and is composed of white-to-yellow, fine to coarse-grained quartzose sandstone. The sandstone is massive to thin-bedded and varies from friable to well cemented (Kanivetsky and Walton, 1979). The Jordan Sandstone and overlying Prairie du Chien function as one aquifer because there is no confining unit between them.

The Cambrian St. Lawrence Formation (Csl) is approximately 60 feet thick and is composed of dolomitic shale and siltstone, interfingered with fine-grained quartzose sandstone (Kanivetsky and Walton, 1979). The top of the St. Lawrence Formation was encountered in several deep borings in the study area. The St. Lawrence Formation acts as a lower confining unit for the overlying Prairie du Chien-Jordan aquifer.

The bedrock topography at the MSP Airport has been defined by utilizing 315 soil borings and well logs and by refining the bedrock interpretation presented in Bloomgren's (1985) bedrock topographic map of the Twin Cities, using the additional information gathered during this project. The location of the data points which support the bedrock topographic interpretation are shown on **Figure 6** of the Phase I and II Report and **Figure CC-1** Bedrock topography is illustrated on **Figure CC-6** and in the geologic cross sections (**Figures CC-2, CC-3** and **CC-4**). Cross section locations are presented on **Figure CC-5.**

A prominent feature observed on the bedrock topography map (**Figure CC-6**) is the large relatively-flat plateau which underlies the eastern half the MSP Airport. The general elevation of the plateau is approximately 800 feet NGVD and is capped by the erosion-resistant Platteville Limestone (**Figure CC-6**), encountered at depths as shallow as 4.5 feet beneath the main terminal. The plateau is bordered on the south and east by the existing Minnesota River valley and on the west by a large buried bedrock valley. The topographic relief between the bedrock plateau and the surrounding bedrock valleys varies from a minimum of approximately 125 feet along the Minnesota River valley to over 200 feet along the buried bedrock valley. The base of the buried bedrock valley is lower than the level of the Minnesota River, although the actual depth to bedrock beneath the river is expected to be similar to the buried valley to the west. The bedrock relief results from the downward erosion through the less-resistant St. Peter Sandstone and into the upper portion of the Prairie du Chien Group. The plateau is also dissected by a smaller bedrock channel which extends from the flume area to the main terminal of the MSP Airport.

The bedrock channel which extends from the flume area to the main terminal (**Figure CC-6**) is much smaller than the bedrock valley to the west. The maximum relief of the channel is known to be greater than 135 feet, since the deepest boring along Post Road did not encounter bedrock. This channel has also eroded through the Platteville Limestone and into the St. Peter Sandstone. Cross section B-B' (**Figure CC-3**, at well B94B-MW-10B) shows that the bedrock channel has eroded into the St. Peter Sandstone to a point just beyond the

Gold Concourse. The hydrologic significance of the bedrock channels in controlling groundwater movement is discussed in following sections.

While shallow limestone formations exist at the airport site, there are no sinkholes or karst conditions at the site. The first bedrock encountered at various points across the site was used to designate three general bedrock "zones". The zones, depicted on **Figure CC-6** are described below from east to west.

Zone A refers to areas in which Platteville Limestone comprises the first bedrock. Platteville Limestone exists in the east-northeastern portion of the site as illustrated in **Figure CC-6**. The Platteville Limestone is directly underlain by three to 10 feet of Glenwood Shale which is underlain by approximately 150 feet of St. Peter Sandstone.

Zone B refers to areas in which St. Peter Sandstone comprises the first bedrock. Zone B exists south, west and east of Zone A as illustrated in **Figure CC-6**.

The St. Peter Sandstone has been eroded to produce the bedrock valley in the western portion of the site where limestones and dolomite of the Prairie du Chien Group comprise Zone C.

**Unconsolidated Overburden**

A sequence of unconsolidated glacially derived sediments, ranging in thickness from a few feet to over 225 feet, covers the eroded Paleozoic bedrock surface in the study area. The thicker sections of unconsolidated sediments fill bedrock valleys that occur in this area. According to the few well and boring logs in the area of the bedrock valley, the lower unconsolidated deposits are composed primarily of red-brown clayey Superior Lobe glacial till, which is also found mantling the shallow bedrock as a cobbly basal till. The deeper clayey till is overlain with mixed sediments of fairly well sorted sandy, alluvial outwash deposits found as a veneer over most of the MSP area and in thicker accumulations in the west and northwest portions of the study area. Thin deposits of peat have also been observed in some of the borings installed at the MSP Airport.

Most of the soil borings at the MSP Airport are geotechnical borings, installed to define shallow subsurface conditions for construction-related projects. Because of this, only the upper 10 to 15 feet of unconsolidated sediments can be described in any detail. Most of these borings were installed prior to construction and the subsurface conditions described may not be indicative of present conditions owing to excavation and construction filling.

**Figure CC-7** illustrates the general geologic trends of the upper unconsolidated sediments at the MSP Airport. These sediments have been divided into two very general units: sand and clay. The sand unit consists predominantly of fine to coarse-grained sand and gravel with isolated lenses of clay, generally less than one-foot thick. The clay unit consists of interbedded clay and sand. The clay horizons vary in thickness from 1 to 14 feet, but in general, are less than four-feet thick and tend to be laterally discontinuous. The sand horizons are fine to coarse-grained, and in general, are more abundant than the clay lenses.

The composition of unconsolidated sediments at depth is less well defined than the shallower sediments due to the relatively limited number of deep borings. Based on information obtained from water well logs and recently installed borings, these deeper sediments are composed primarily of clay-rich till with lesser amounts of sandy alluvium and outwash deposits.

**Hydrogeologic Conditions**

A total of 99 groundwater monitoring wells in and around the MSP Airport have been utilized for groundwater elevation monitoring. Depth to ground water was measured in two comprehensive rounds, one in December, 1994 and another in late January, 1995. Well locations and project numbers are illustrated with the contoured groundwater potentiometric surfaces for the perched and St. Peter ground water (**Figures CC-8 and CC-9**, respectively) for the December, 1994 measurement round.

Shallow groundwater (15 to 35 feet below grade) has been identified in both the fractured Platteville Limestone plateau, where the water table appears to be perched, and in the valley-fill sediments along the western side of the airport. Shallow groundwater movement occurs as fracture flow in the Platteville Limestone and as inter-granular flow in the unconsolidated sediments. In the northern one-third of the airport, shallow groundwater flow historically has shown a northerly component. In the southern one-third, shallow groundwater flows generally to the southeast towards the Minnesota River. In the central region beneath and east of the main terminal area, the direction of shallow groundwater flow is uncertain. Directional flow is likely quite variable because of the near lack of (shallow) groundwater gradient in this area.

While the overall shallow groundwater trend as illustrated on **Figure CC-8** is in a southeasterly direction, localized variability has been reported in investigations related to specific releases at the airport. This variability was discussed and illustrated on Figure 12 of the Phase I and II Report.

It is believed that groundwater discharges from these areas are a combination of vertical infiltration into underlying formations and lateral migration. While it is possible that shallow groundwater discharges to the Minnesota River occur through seepage along the eastern bluff, evidence of such seepage has not been observed at the MSP site.

The relevant deeper aquifers at the MSP site are a) the St. Peter Sandstone, and b) the Prairie du Chien/Jordan (Opc/Jordan) aquifer. The St. Peter Sandstone is an unconfined water table aquifer at the MSP site, since its upper portion is unsaturated due to the overlying Glenwood shale. In this area, the basal portion of the St. Peter formation is comprised of siltstone and shale, which acts as the lower confining layer for this aquifer. According to the groundwater gradient measured in this formation, movement of groundwater is south and east toward and discharging to the Minnesota River as illustrated on **Figure CC-9**. The St. Peter Sandstone is rarely used as a water supply source in the metro area because of inferior water quality (high dissolved solids).

Although no nested wells are constructed within the St. Peter aquifer, groundwater movement is expected to be primarily horizontal, with little or no vertical flow component. This assertion is supported by the well documented basal-St. Peter confining zone of finer, shaley layers in the lower St. Peter formation (Woodward, 1986). As such, it is this lower confining zone in the basal St. Peter formation that separates the St. Peter water table aquifer and the underlying Prairie du Chien aquifer by inhibiting hydraulic communication between these units. Hence, along with the shallow Glenwood Shale acting as the upper confining layer in areas where it is present, the basal St. Peter confining zone provides a second layer of protection from potential impact to the regional Prairie du Chien aquifer underlying this area.

Underlying the St. Peter Sandstone aquifer is the Opc/Jordan aquifer, which is the uppermost confined aquifer at the MSP site. It is the preferred groundwater source in the metro region due to its favorable water transmission characteristics and relative consistency of high yields, as well as proven well designs and construction techniques.

As discussed previously, it is believed that the St. Peter and Opc/Jordan aquifers discharge to the Minnesota River at the MSP site. Since airport activities have resulted in negligible impacts to these aquifers (see discussion under "Water Quality"), this discharge is not believed to impact the water quality of the Minnesota River.

Under certain circumstances, such as sizable fuel spills or glycol-laden snow stockpile melt, it is possible that surface water infiltration could impact the perched water table. Such impact could readily be detected and addressed, particularly given the near lack of groundwater gradient in the perched water table under MSP. It is considered unlikely that surface water infiltration would impact the deeper aquifers because of the natural hydrogeologic protection of those aquifers as discussed previously.

**Aquifer Sensitivity**

Two primary factors make the overall airport site an attractive hydrogeologic setting in terms of natural protection of the Opc/Jordan aquifer. First, the Opc/Jordan aquifer is separated from shallower formations by

shale units or by clayey units in the area. The confining layers limit the potential for vertical downward migration of contaminants.

Second, due to the fact that the Minnesota River is the ultimate discharge location for ground water from beneath the MSP airfield, potential impact from activities at MSP would be constrained to the area between it and the river. According to available information, there are only two wells used as sources of potable water beneath and between MSP and the Minnesota River. These wells are 425 and 426 feet deep and provide water for Northwest Airlines operations from the Prairie du Chien/Jordan aquifer. Due to the depth and above-described natural barriers, the potential for airport activities to impact these groundwater receptors is limited.

Water level information at the MSP site gives no indication of a significant vertical pressure gradient in the unconsolidated materials in the bedrock valley (Zone C). Because of the effective lower confining layers underlying both the perched water in the Plattville Limestone (Glenwood shale) and the St. Peter aquifer (well-documented basal siltstone/shale layer), it is not anticipated that there is significant vertical pressure gradient within either of these units.

In terms of relative sensitivity to groundwater impact, Zone A, as described above, is preferred because of the presence of two confining layers (Glenwood shale, and the lower portion of the St. Peter Sandstone formation). The next best areas in this regard are in Zone B because of the St. Peter sandstone confining layer. While Zone C is the least preferred from the perspective of sensitivity to groundwater impact, it is believed that the substantial presence of clays in the deep unconsolidated deposits in the bedrock valley would significantly impede the migration of impacts to the Opc/Jordan aquifer.

In 1991, the Department of Natural Resources (DNR) published "Criteria and Guidelines for Assessing Geologic Sensitivity of Groundwater Resources in Minnesota". This document establishes three methods (Level 1, Level 2, and Level 3) for assessing aquifer sensitivity. The Level 1 and Level 2 methods are used to assess the sensitivity of water table aquifers. The Level 3 method is used to assess the sensitivity of deeper aquifers. For all three methods, sensitivity can range from "Very Low" to "Very High", based upon relative time of travel for potential contaminants through overlying materials.

To assess the sensitivity of the Opc/Jordan aquifer at the MSP site using the DMR (1991) approach, Level 3 analysis is appropriate. Using the Level 3 method, the Opc/Jordan is characterized as having Low to Moderate sensitivity to environmental impact at the MSP site.

**Water Quality**

There currently are approximately 120 active water quality monitoring wells at the MSP facility. The great majority of these wells have been installed to assess localized environmental impacts from specific events or conditions (e.g. fuel spills or past material management practices) and are screened in the upper water table, hydrogeologically above the St. Peter Sandstone.

At the MSP site, there currently are six deep St. Peter Sandstone aquifer water quality monitoring wells, and three deep monitoring wells screened in unconsolidated sediments at roughly the same depth as the St. Peter wells.

The monitoring network has been sampled on seven occasions through 1997. The results of this monitoring work has been published in Water Quality Monitoring Report; Comprehensive Hydrogeologic Characterization of the Minneapolis-St. Paul International Airport (Metropolitan Airports Commission, August 1997). Examination of the monitoring results from these wells indicate that the majority of impacts are confined to the shallow water table wells completed in the Platteville limestone or shallow overburden. This is expected since the uppermost waterbearing formation would be the first groundwater affected by surface releases. The deeper monitoring wells help assess whether shallow impacts from releases can and/or do migrate into deeper formations. A total of 16 wells have been monitored as part of the Phase III investigation (7 water table (A-horizon) wells, 6 St. Peter wells, and 3 deeper alluvial wells).

Examination of the monitoring results from these 16 wells indicate that there have been a limited number of detections of analytical parameters, most of which have been transient in nature. ("transient" means that detections have not been observed more than once in on-going monitoring). All of the groundwater quality detections reported for this aquifer have been at levels well below the Health Risk Limits (HRLs) for drinking water as established by the Minnesota Department of Health. These levels have not trended upward. The only non-transient water quality detections under Phase III monitoring have been dichlorodifluoromethane and acetone recorded in select water table wells and DRO at deep St. Peter Sandstone equivalent wells which are screened in unconsolidated deposits located in the west to southwest area of the airport north of the Navy Ramp. The DRO results at these wells have intermittently detected DRO at concentrations ranging from non-detect to 3.3 mg/l. There currently is no HRL for diesel range organics.

## CC.2 Groundwater Quality Impacts — MSP Alternative

### Fueling Operations

The potential for groundwater contamination at MSP is primarily associated with the storage and handling of petroleum fuels. The great majority of the fuels handled at MSP are aviation fuels. Currently, fueling of aircraft at the main terminal is performed by Signature Minneapolis Fuel Consortium, Inc. (Signature MFC) using a hydrant system. Contract fueling and general aviation fueling are conducted by Signature Flight Support Corporation (Signature FS) utilizing tanker trucks filled at the underground storage tank facility at the HHH Terminal or the underground storage tank facility located at the Executive Terminal. Air Force Reserve and Minnesota Air Guard aircraft are also fueled with tanker trucks loaded at an Air Force Reserve fuel facility which is located on the Minnesota Air Guard base.

Aviation fuel is pumped to MSP through two pipelines. The Williams Pipeline Company pipeline delivers product directly to the hydrant system. The Koch pipeline delivers product either to the MAC-constructed fuel farm or directly to the hydrant system. The fuel farm is located on Post Road just west of Trunk Highway 5, and includes four aboveground tanks with a combined capacity of approximately 10 million gallons. Fuel is pumped from the commercial pipelines or the fuel farm through an underground piping system to hydrants in the gate areas of the main terminal. There are also two hydrants in the ramp area of the Northwest Airlines Main Maintenance Base (Building B) which are used on an infrequent basis to fuel military charter aircraft.

Due to the magnitude of the fueling operations at MSP, fuel spills occur with some regularity at MSP. There are over 200,000 aircraft fueling operations at MSP per year in which a total of roughly 450 million gallons of fuel are dispensed. In 1996 there were 110 reported aircraft-related fuel spills at MSP. The MAC has instituted quarterly fuel spills meetings attended by Northwest Airlines, Signature Flight Support, and appropriate MAC departments. At these meetings, the number, magnitude and causes of spills during the previous quarter are discussed, as are ways to reduce the number and magnitude of spills in the future.

Spills take place on paved surfaces and are cleaned up through standard procedures utilizing prompt placement of absorbent material on the spills which is then collected with mechanical sweepers and disposed of. Spills are reported to state and federal authorities consistent with regulatory requirements. When there is evidence of environmental impact resulting from a spill or spills, appropriate remedial measures are employed. Typically, this has involved removal and treatment of petroleum-contaminated soils during pavement rehabilitation or other construction projects. There have also been various groundwater extraction and treatment projects at MSP.

Relative to existing conditions, development associated with the MSP Alternative should not significantly affect the potential for ground water impact associated with airport activities. Most of the major fueling facilities, installations, and associated activities would remain in existing locations. Any new pipelines, tanks or other fuel handling installations may have improved spill/leak prevention and containment measures relative to existing installations.

**Table CC-1** presents the major aviation fueling facilities and operational areas under the MSP Alternative, along with the respective locations of those facilities/activities relative to aquifer sensitivity as discussed in Section CC.1.

**Table CC-1 - Location of Aviation Fueling Facilities/Operations Relative to Aquifer Sensitivity - MSP Alternative**

| | Hydrogeologic Zone[1] |
|---|---|
| **Facilities** | |
| Realigned Concourses[2] | A |
| Hydrant System Fuel Farm | A |
| HHH Terminal Fuel Facility | B[3] |
| Executive Terminal Fuel Facility | A[3] |
| Air Force Reserve Fuel Facility[4] | A |
| Williams Pipeline | A/B |
| Koch Pipeline | A/B |
| **Fueling Locations** | |
| Realigned Concourses[2] | A |
| Expanded HHH Terminal | B and C |
| Cargo Ramps | B and C |
| Air National Guard Base | A |
| Air Force Reserve Base | A |

[1]See Section CC.1.1 discussion.
[2]Currently existing as main terminal concourses.
[3]Future location of facility uncertain; presumed to remain unchanged.
[4]Located on Air National Guard Base.

### Aircraft Deicing Operations

Groundwater quality monitoring at MSP does not indicate environmental impact from aircraft deicing activities on the St. Peter aquifer or in unconsolidated sediments at the same depth as the St. Peter aquifer. Seasonal impact on the perched water table in the form of elevated chemical oxygen demand levels has been observed at a specific deicing location (Taxiways H/J intersection). At this deicing location, poor glycol recovery was realized from the plugged storm sewer during the 1993/94 winter season and a large volume (approximately 50,000 gallons) of glycol product was observed to run off into the adjacent grassy swales. Chemical oxygen demand levels returned to background levels when monitored after the 1994/95 winter season after improvements had been made in the pavement to more effectively route run-off to the storm sewer plug location.

Under the MSP Alternative, the percentage of glycol used at MSP which would infiltrate soils will be substantially less than has been experienced in recent winter seasons. This would be due to the following factors:

- The use of dedicated deicing pads will restrict application of glycol to limited areas designed specifically to capture residual glycol product from aircraft deicing operations; and

- Glycol-contaminated snow containment and management will be practiced in the future.

Existing data and literature indicates that the limited amount of glycol which could infiltrate soils under the MSP alternative would not be expected to cause significant environmental impact. This information, as summarized in Appendix A.7, suggests that:

- Glycols are readily biodegraded in soils; and
- Glycols which could conceivably reach groundwater would have only seasonal and local impact, as the glycols biodegrade in ground water.

**Ground Surface Snow/Ice Control**

In the coming years, it is anticipated that urea as a ground surface snow/ice control agent will be replaced by a combination of sodium formate and potassium acetate products. Urea has a significant nitrogen content and corresponding potential for environmental impact.

Sodium formate and potassium acetate have been extensively tested for Transport Canada to determine potential environmental consequences (Nolan Davis and Associates, Ltd. September 1992, and Nolan Davis and Associates, Ltd., November 1994). These studies found the materials to be relatively benign products, environmentally, and clearly superior to urea. The elemental (or breakdown) components of these products are not problematic to the environment. Both are superior from an environmental perspective to salt, with its chloride content, which is used on all significant roadways throughout the state for the purposes of ground surface snow/ice control purposes.

**Overall Environmental Consequences**

Historical practices and general activities associated with MSP have resulted in localized impacts to near-surface soils and the perched water table at the site. As such impacts/releases are discovered, they have been addressed through remediation efforts such as source removal and treatment.

As was discussed in Section CC.1, existing groundwater quality data indicate that environmental impacts associated with MSP operations on the St. Peter aquifer have been negligible. This observation is supported by current understanding of the geology/hydrogeology of the site, which provides substantial natural protection of deep aquifers from environmental impact. It is not anticipated that there have been or will be MSP-related impacts to the Prairie du Chien/Jordan aquifer, which is deeper and has more natural hydrogeological protection regarding potential environmental impact than the St. Peter Aquifer.

Due to the factors discussed previously, development of the site according to the MSP Alternative is not expected to increase the potential for airport operations and activities to impact the underlying aquifers.

## CC.3 Groundwater Quality Impacts — No Action Alternative

**Fueling Operations**

Refer to background information provided in Section CC.2.

**Table CC-2** presents the major aviation fueling facilities and operational areas under the No Action Alternative, along with the respective locations of those facilities/activities relative to aquifer sensitivity as discussed in Section CC.1.

**Table CC-2 - Location of Aviation Fueling Facilities/Operations Relative to Aquifer Sensitivity - No Action Alternative**

| | Hydrogeologic Zone[1] |
|---|---|
| **Facilities** | |
| Main Terminal Hydrant System | A |
| Hydrant System Fuel Farm | A |
| HHH Terminal Fuel Facility | B |
| Executive Terminal Fuel Facility | A |
| Air Force Reserve Fuel Facility[2] | A |
| Williams Brothers Pipeline | A/B |
| Koch Pipeline | A/B |
| **Fueling Locations** | |
| Main Terminal | A |
| Regional Terminal | A |
| HHH Terminal | C |
| Southwest Cargo Ramp | C |
| Air National Guard Base | A |
| Air Force Reserve Base | A |

[1]See Section CC.1.1 discussion.
[2]Located on Air National Guard Base.

### Aircraft Deicing Operations

Refer to background information provided in Section CC.2

Under the No Action Alternative, the assumed glycol containment program would include the following components:

- development and use of a dedicated aircraft deicing pad at Runway 12L;
- utilization of the existing plug/pump containment and/or vacuum sweeper operations at all other deicing locations; and
- glycol-contaminated snow management.

Existing data and literature indicates that the limited amount of glycol which could infiltrate soils under the No Action Alternative would not be expected to cause significant environmental impact. This information, as summarized in Appendix A.11, suggests that:

- Glycols are readily biodegraded in soils; and
- Glycols which could conceivably reach groundwater would have only seasonal and local impact, as the glycols biodegrade in ground water.

### Overall Environmental Consequences

Refer to discussion provided in Section CC.2. Continued operations at the airport under the No Action Alternative would not be expected to increase the potential for environmental impact to underlying aquifers relative to existing conditions.

## CC.4 Mitigation Measures — MSP and No Action Alternatives

The need and/or the ability to implement groundwater quality mitigation measures at the airport site will not be substantially affected by whether the site were operated under the MSP Alternative or the No Action Alternative.

The entities at MSP responsible for the storage and handling of fuel products must meet state, federal and local requirements to minimize the potential environmental impact associated with fuel-related facilities and operations. This includes design and testing standards for installations and facilities, as well as operational/spill response requirements as documented in Spill Control and Countermeasure Plans (SPCCPs). The MAC has developed an overall SPCCP for the airport which outlines general notification requirements, spill response procedures, security and training requirements, and tank facility-specific information for each of the fuel storage facilities at the airport. This document will be updated to include any significant development and/or new installations or facilities in the future.

Regarding the Signature above ground storage tank "fuel farm" (10 million gallons total storage) Signature has prepared a federal SPCC Plan and a Facility Response plan as required by the Federal Oil Pollution Act (both dated February 1993).

All tenants which perform fueling activities must prepare Storm water Pollution Prevention Plans (SWPPPs) through National Pollutant Elimination System (NPDES) requirements. Storm water Pollution Prevention Plans document structural and operational measures to minimize the potential for release of general pollutants which could reach ground surfaces to impact surface water run-off or, potentially, groundwater resources.

In the event of significant release to ground surfaces of environmentally problematic materials, a number of remedial techniques may be deployed. Such techniques include the following;

Surficial free product recovery--In the event of a spill or other known release of an environmentally problematic material, the first action to be taken is to contain and recover as much product as possible before it can infiltrate soils or run into surface waters. This is typically accomplished with diking and pumped evacuation and/or the use of oleophyllic absorbent materials.

Soils/source removal and treatment--impacted soils are excavated and removed from the site to be treated through biotreatment, thermal processing, or other measures.

Soil vapor extraction--using a vacuum source in conjunction with an extraction well network, air is drawn through soils to volatilize organic contaminants which may be present. This measure is often used in combination with air sparging, which injects air directly into ground water to enhance volatilization and biological breakdown of organic compounds.

Petroleum product/groundwater extraction and treatment--after defining the extent and magnitude of groundwater impact using a series of water quality monitoring wells, an appropriate network of extraction wells is then installed to remove free product and/or impacted ground water to be treated through air stripping, carbon adsorption, or other measures.

## CC.5 Summary of Groundwater Quality Impacts

**Table CC-3** addresses, in a generalized manner, the potential for significant environmental impact on groundwater resources associated with airport operations under the MSP and No Action Alternatives, respectively.

The potential for overall groundwater impact may be somewhat higher under the MSP Alternative than the No Action Alternative because of the increased activity levels. However, there is substantial natural hydrogeological protection of the deeper aquifers at this location, and appropriate engineering and operational safeguards will be utilized under both alternatives.

Significant environmental impacts to deeper aquifers have not been detected to date at the airport site. Such impacts are not anticipated under the MSP or No Action Alternatives. The MSP Alternative should therefore not adversely impact groundwater quality. A certification letter from the governor regarding water quality is in Appendix K.

**Table CC-3 - Summary of Potential for Groundwater Impacts**

| Alternative | Aquifer Sensitivity[1] (Prairie DuChien/Jordan) | Downgradient Wells Present? |
|---|---|---|
| MSP 2010 LTCP | Low-Moderate | No |
| MSP 2020 Concept Plan | Low-Moderate | No |
| No Action | Low-Moderate | No |
| [1] Aquifer Sensitivity defined according to methods established in "Criteria and Guidelines for Assessing Geological Sensitivity of Groundwater Resources in Minnesota" (Minnesota Department of Natural Resources, 1991)<br>Source: HDR/Liesch. | | |

# DD. Wetlands

## DD.1 MSP Alternative

### DD.1.1 Affected Environment — MSP Alternative

The APE for wetlands associated with the MSP Alternative consists of the existing MSP property and any contiguous property that would be affected by the MSP Alternative. A total of 15 wetland basins exist within MSP with a cumulative acreage of approximately 192.56 acres. Among these basins is a floodplain forested wetland which lies on the airport's south and east sides along the Minnesota River that would not be impacted. An additional 3 basins exist along Trunk Highway 62 in locations that could potentially be affected by airport-related highway improvements. These consist of two DNR-protected waters, Legion Lake and Taft Lake, in the southwestern quadrant of the TH 62/77 interchange. The third basin is a remnant of Legion Lake which lies on the north side of TH 62. Wetlands on and around MSP are shown in **Figure DD-1**.

Eight of the basins within MSP are within the Rich Acres Golf Course and currently serve as ponds or water hazards that were either created from upland or constitute excavated remnants of pre-existing wetlands. All wetlands within MSP have been physically field delineated except for the excavated basins within Rich Acres Golf Course and the portion of the Minnesota River floodplain lying within MSP property.

Three wetland basins totaling 1.51 acres and located along Runway 4-22 were filled in 1996 as part of the Runway 4-22 extension project with a Corps of Engineers permit and Wetland Conservation Act (WCA) approval.

Mother Lake is a 142.3-acre semipermanently flooded palustrine emergent/intermittently exposed unconsolidated bottom (PEMF/PUBG; Circular 39 Type 4 deep marsh/Circular 39 Type 5 open water) wetland

complex. The Duck Lake wetlands consist of three basins including an 8.63-acre excavated intermittently exposed palustrine unconsolidated bottom/temporarily flooded deciduous forested wetland (PUBGx/PFOIA; Circular 39 Type 5 open water/Circular 39 Type 1 floodplain forest). The other two wetlands in the area of Duck Lake consist of saturated palustrine emergent (PEMB; Circular 39 Type 2 inland fresh meadow) wetland and total 1.57 acres (0.07 and 1.5 acres). The open water portion of Duck Lake has little wildlife value because it lacks emergent vegetation and is hypereutrophic due to its historic use for storm water treatment. Mother Lake and the 8.63-acre open water cell of Duck Lake are DNR-protected waters. The two smaller basins in the Duck Lake area are not DNR-protected waters.

The Ball Field wetlands consist of two basins which are 7.12 acre and 2.35 acre. These wetlands are saturated to seasonally flooded palustrine emergent (PEMB/PEMC; Circular 39 Type 2 inland fresh meadow/Type 3 shallow marsh) and lie immediately south of the City of Richfield softball fields at the west edge of MSP. These basins have limited wildlife habitat value due to their historic use for storm water treatment and their being regularly mowed. Rich Acres Golf Course encompasses eight small excavated permanent open water wetlands totaling 1.89 acres. Two of these basins appear to be badly degraded remnants of a larger wetland that was largely filled during golf course construction. These small ponds provide negligible wildlife habitat value.

Wetland resources existing within or potentially affected by the MSP Reconstruction are summarized in **Table DD-1**.

**Table DD-1 - Wetland Resources within the APE for the MSP Alternative**

| Basin | Size (Acres) | Cowardin Classif. | Notes |
|---|---|---|---|
| ***MSP Property*** | | | |
| Mother Lake | 142.3 | PEMF/PUBG | State-protected water 23-P and fringe of non state-protected wetland |
| Duck Lake Wetlands | 10.2 | PEMB/PFO1A/ PUBGx | 3 basins including State-protected water 25-P |
| "Ball Field" Wetlands | 9.47 | PEMB/PEMC | Two basins of 7.12 and 2.35 acres |
| Golf Course Wetlands | 1.89 | PUBx | 8 small excavated basins |
| Floodplain Forest | 28.7 | PFO1C | Minnesota River floodplain |
| **Total within MSP** | **192.56** | | |
| ***Wetlands Along Trunk Highway 62*** | | | |
| Taft Lake | 14.2 | PUBG | State-protected water 683-P |
| Legion Lake | 78.30 | PEMC/PEMF | State-protected water 24-P |
| Legion Lake Remnant | 5.70 | PEMC | |
| **Total along TH 62** | **98.20** | | |
| Source: Peterson Environmental Consulting, Inc. | | | |

## DD.1.2 Wetland Impacts — MSP Alternative

The wetland impacts associated with the MSP Alternative are summarized in **Table DD-2.**

**Table DD-2 - Wetland Impacts Associated with the MSP Alternative**

| Basin | Size (Acres) | Wetland Impacts (Acres) | |
|---|---|---|---|
| | | 2010 | 2020 |
| Mother Lake | 142.30 | 11.4[a] | 11.4[a] |
| Duck Lake Wetlands | 10.2 | 10.2 | 10.2 |
| "Ball Field" Wetlands | 9.47 | 9.47 | 9.47 |
| Golf Course Wetlands | 1.89 | 1.89 | 1.89 |
| Floodplain Forest | 28.70 | 0 | 0 |
| Taft Lake | 14.20 | 0 | 0.70 |
| Legion Lake | 78.30 | 0 | 0[b] |
| Legion Lake Remnant | 5.70 | 0 | 1.34 |
| **TOTAL** | **290.76** | **32.96** | **35.0** |

[a] Fill for safety area and access road of north-south runway. Does not include placement of bridge piers or area under bridge spans in Mother Lake.
[b] Improvements to TH 62 can be accomplished without additional encroachment into Legion Lake.
Source: Peterson Environmental Consulting, Inc.

The Minnesota DNR has stated that the bridge spans and piers proposed in Mother Lake may require mitigation. The degree to which mitigation would be required for these structures would be determined by the Minnesota DNR upon review of engineering plans for the TH62/77 interchange. The placement of structures is generally not regulated under the WCA or Section 404 of the Clean Water Act. However, if fill material is needed to construct, support or protect the piers, the Wetland Conservation Act of 1991 (WCA) and Section 404 would regulate these activities.

**Finding of No Practicable Alternative**

There is no feasible or practicable alternative to the destruction or modification of the wetlands affected by the proposed action, the MSP 2010 LTCP, and the proposed action includes all practicable measures to minimize harm to the affected wetlands. This finding is made in accordance with Executive Order 11990 issued May 24, 1977, and DOT Order 5660.1A, Preservation of the Nation's Wetlands.

To the extent practicable, wetland impacts have been avoided and minimized. Of the six concept plans considered for the expansion of MSP, Concept 6 was selected as the best development plan in the AED prepared in February 1995. Concept 6 is the plan which became the MSP 2020 Concept Plan being evaluated by this FEIS. Two of the original six expansion alternatives (Concepts 3 and 4) were dropped prior to the preparation of the final AED because of operational, safety and noise concerns. Of the four remaining alternatives considered in the AED, all would have required unavoidable wetland impacts. The preferred alternative (Concept 6) has the greatest amount of wetland impact (see Summary of Differential Impacts table, MSP LTCP Final AED, February 1995) but was selected as the preferred concept based on a comprehensive analysis of the other 18 environmental impact factors evaluated in the AED (see Summary of Differential Impacts table, MSP LTCP Final AED, February 1995, page iv). Concept 5 is the same as Concept 6 through 2010; it would expand the existing terminal by 2020 instead of developing the new west terminal in Concept 6. Compared to Concept 6, Concepts 1 and 2 would — demolish contributing components of both the Fort Snelling National Landmark Historic District and the Old Fort Snelling National Register Historic District — displace a Section 4(f) 9-hole golf course and directly impact Bossen Field, a Section 4(f) park — displace 601 more residents — subject 3,030 more residents to aircraft noise levels greater than DNL 60 — and place 2,010 more monthly flights less than 500 feet over areas where birds congregate.

Total avoidance of wetland impacts within the context of the MSP 2010 LTCP is not practicable due to the wide distribution of wetlands on the airport property and the limited space in which the necessary airport improvements must be accomplished. Eight of these impact areas are associated with small water hazards on the Rich Acres Golf Course. If the Golf Course wetlands were avoided, there would be no space into

which commercial freight facilities could be located. The Duck Lake and Ball Field wetland impacts will result from the construction of the new north/south runway (17/35), associated taxiways and air cargo facilities. These wetlands are situated adjacent to or among existing airport facilities and cannot be readily avoided. Even if they were avoided, the functions and values of these basins would be substantially compromised due to the proximity of active runways and taxiways. Impacts to Mother Lake will result from construction of the required safety area at the north end of the new north/south runway and an access road around the perimeter of the safety area. Even if the north/south runway was realigned, impacts to Mother Lake due to fill for the safety area and access road would still be unavoidable because of the proximity of the wetland boundary to the end of the runway. A tunneled road under the safety area was considered as an alternative to constructing the access road around the safety area's perimeter. Although this alternative would have reduced the wetland impacts to Mother Lake, it is not considered feasible and practicable for safety and maintenance reasons since it would have to be constructed below the ground water table.

Impacts to Mother Lake cannot be reduced by shifting or shortening the north/south runway. The position of the runway's south end is fixed by the location of I-494, making a southerly shift impossible. Shortening the runway would be inconsistent with the facility requirements set forth in the LTCP for MSP.

### DD.1.3 Mitigation Measures — MSP Alternative

As stated in the preceding subsection DD.1,2, there is no feasible or practicable alternative to the displacement of the wetlands affected by the proposed action. Insufficient space lies within MSP property to supply even a portion of the wetland replacement acreage that would be needed for the proposed action, the MSP 2010 LTCP; off-site replacement would be necessary. Also, consistent with FAA policy, consideration of mitigation on airport property was eliminated because of the potential increase of bird strikes by aircraft.

MAC is committed to providing the mitigation specified in the required permits. Assuming the present wetland regulatory framework remains in place at the time permits are applied for, all non-exempt wetland filled by the project will be subject to regulation under; (1) Section 404 of the Clean Water Act (administered by the Corps of Engineers), (2) the WCA (administered by the MAC and overseen by the Board of Water and Soil Resources) and (3) Minnesota protected water law (administered by the DNR).

The wetland replacement requirements of the applicable regulatory programs vary. Under the Corps regulatory program, replacement wetlands must fully replace the functions and values of the wetlands impacted. In the past, the St. Paul District of the Corps consistently accepted 1 to 1 acreage replacement as being sufficient to accomplish this requirement. All of the wetland proposed to be impacted for the MSP 2010 LTCP will be regulated by the Corps. This includes both the wetland impacted through direct filling and any other secondary adverse impacts to wetlands. No secondary wetland impacts associated with the MSP 2010 LTCP are foreseen and none have been identified by the Corps of Engineers. The placement of fill in the open water portion of Duck Lake below the ordinary high water level (OHWL) of 819.1feet would require a Minnesota DNR protected water permit. This area totals 7.91 acres. The wetland fringe of the open water area as well as the other two wetlands in the Duck Lake area would be regulated by the WCA. These areas total 2.29 acres. A total of 5.3 acres of the 11.4-acre impact for safety area and access road fill on the fringe of Mother Lake would take place above the Minnesota DNR OHWL of 816.2 feet and therefore would fall under the jurisdiction of the WCA rather than the Minnesota DNR. The WCA regulates the filling or draining of non state-protected wetland above the OHWL. Any wetland fill that is subject to WCA regulation must be replaced at a minimum 2 to 1 acreage ratio. A total of 6.1 acres of safety area and access road fill would occur below the DNR OHWL. The Minnesota DNR has stated that a 1.5 to 1 replacement ratio is suitable for mitigation planning purposes; however, this ratio is reviewed on a project-by-project basis.

Based on the foregoing, it is anticipated that 2 to 1 replacement would be required for at least 18.95 acres of wetland subject to WCA regulation (Ball Field, Mother Lake, non-DNR regulated basins of Duck Lake, and Golf Course). The DNR regulated wetland (subject to an assumed 1.5 to 1 replacement ratio) includes the 7.91 acres of impact below the OHWL of Duck Lake and the 6.1 acres of Mother Lake – a total of 14.01 acres. Therefore, 37.9 acres of WCA mitigation and 21.02 acres of assumed DNR mitigation would be required – for a total of 58.92 acres of needed replacement wetland for the MSP 2010 LTCP. Wetland fill for the MSP 2010 LTCP subject to 1 to 1 replacement by the Corps totals 32.96 acres. Since the WCA and DNR

cumulative wetland mitigation acreage exceeds 32.96, the Corps requirements would be fulfilled. A summary of the mitigation requirements for the MSP 2010 LTCP is provided in **Table DD-3.**

**Table DD-3 - Wetland Mitigation Requirements Associated with the MSP 2010 LTCP**

| Basin | Size (Acres) | Wetland Displaced (Acres) | Wetland Mitigation Requirement |
|---|---|---|---|
| Mother Lake | 142.30 | 11.4; 6.1 below OHWL<br>5.3 above OHWL | 1.5:1 (9.15 acres)[1]<br>2:1 (10.6 acres)[2] |
| Duck Lake Wetlands | 10.2 | 10.2; 7.91 below OHWL<br>2.29 above OHWL | 1.5:1 (11.87 acres)[1]<br>2:1 (4.58 acres)[2] |
| "Ball Field" Wetlands | 9.47 | 9.47 | 2:1 (18.94 acres)[2] |
| Golf Course Wetlands | 1.89 | 1.89 | 2:1 (3.78 acres)[2] |
| **TOTAL** | **163.86** | **32.96[3] acres** | **58.92 acres** |
| [1] DNR assumed requirement; [2] WCA requirement; [3] Corps of Engineers requirement (1:1) | | | |
| Source: Peterson Environmental Consulting, Inc. | | | |

The Hennepin Conservation District (HCD) and others were contacted to determine potential land owners who may have land which would be suitable for compensatory mitigation of wetland impacts. Several land owners were then contacted to determine their interest in selling either acreage or conservation easements for use as wetland mitigation. Of this group, five potential mitigation sites are being considered for use on the MSP 2010 LTCP. Three of the sites were field inspected by the Corps of Engineers and the DNR and determined to be potential mitigation sites for the proposed action. See Appendix D for additional information on the sites and copies of correspondence from the Corps and DNR. In addition to off-site wetland replacement, a portion of the WCA-required mitigation may be accomplished through water quality ponding facilities constructed to pre-treat airport runoff prior to discharge to downstream water bodies.

## DD.2 No Action Alternative

### DD.2.1 Affected Environment — No Action Alternative

The affected environment for the No Action Alternative is limited to wetlands within the MSP property. See D.1.1 above.

### DD.2.2 Wetland Impacts — No Action Alternative

No wetlands are affected by the No Action Alternative.

### DD.2.3 Mitigation Measures — No Action Alternative

No mitigation is required.

## DD.3 Summary of Wetland Impacts

**Table DD-4 - Summary of Wetland Impacts**

| Alternative | Estimated Total Wetland Impact (Acres) |
|---|---|
| MSP 2010 LTCP | 32.96 |
| MSP 2020 Concept Plan | 35.0 |
| No Action | 0 |
| Source: Peterson Environmental Consulting, Inc. | |

## EE. Wild and Scenic Rivers

The Wild and Scenic Rivers Act includes river areas eligible for protection under the legislation as those that are free flowing and have "outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural and other similar values." River segments that appear to qualify for inclusion in the National Wild and Scenic River System are listed on the National Inventory, compiled by the U.S. Department of Interior.

The FAA has executed a Memorandum of Agreement with the National Park Service and the U.S. Fish and Wildlife Service establishing an advisory 2,000-foot AGL altitude threshold over National Parks and National Wildlife Refuges with the express intent of reducing impacts on parks and wildlife. For purposes of the Dual Track Airport Planning analysis, it is assumed that overflight above this 2,000-foot threshold will not generate unacceptable disturbance impacts to wild and scenic rivers.

The issue of overflights is related to factors which govern the heights of aircraft, including:

- Height of cloud cover (ceiling)
- Federal Aviation Regulations (FARs) that require aircraft to stay 500 feet from any person or structure in rural areas and 1000 feet above ground level (AGL) in urban areas, except for landings and takeoffs.
- Distance from airport of departure or arrival.
- Altitudes assigned by Air Traffic Control for aircraft on instrument flight rules (IFR) flight plans. These altitudes ensure a minimum of 1000 feet clearance from terrain or obstructions.
- Pilot preference.
- Altitudes where turbulence is present.

In addition, the height of aircraft is governed by Class B airspace. Class B airspace exists around the busiest airports. The purpose of Class B airspace is to separate aircraft using a busy airport from other aircraft in the area operating under visual flight rules (VFR). It also ensures that all aircraft using a busy airport are under Air Traffic Control and are separated from each other.

### EE.1 MSP and No Action Alternatives

#### EE.1.1 Affected Environment — MSP Alternative

The APE does not include any wild and scenic rivers.

#### EE.1.2 Wild and Scenic Rivers Impacts — MSP and No Action Alternatives

There are no impacts.

#### EE.1.3 Mitigation Measures — MSP and No Action Alternatives

No mitigation measures are required.

## FF. Wildlife Refuges

Wildlife and waterfowl habitat areas of wildlife refuges, as well as public use areas, will be considered in this section.

Additional discussion regarding biotic communities, bird-aircraft hazards and endangered or threatened species as they relate to wildlife refuges are discussed in Sections V.C, D and H.

## FF.1 MSP Alternative

### FF.1.1 Affected Environment — MSP Alternative

The Minnesota Valley National Wildlife Refuge (MVNWR) is managed by the USFWS and includes the Minnesota River floodplain from Fort Snelling State Park on the north to Louisville Swamp in Chaska on the south. Land acquisition and development of the wildlife refuge was begun in 1976 with the enactment of the Minnesota Valley Wildlife Refuge Act (Public Law 94-466). The eastern end of the refuge lies immediately south of MSP.

The area of potential effect (APE) consists of the two refuge management areas located closest to MSP, the Long Meadow Lake Unit (2,600 acres) and the Black Dog Lake Unit (1,400 acres). The APE includes those portions of the MVNWR where overflights, specifically approaches, occur at less than 2,000 feet (**Figure FF-1**).

In 1993, the FAA signed an Interagency Agreement with the National Park Service and the USFWS establishing a 2,000 foot altitude threshold over National Parks and National Wildlife Refuges with the express intent of reducing "potential interference with wildlife". For purposes of this analysis, it has been assumed that overflights above this 2,000 foot threshold will not generate unacceptable disturbance impacts to waterfowl or other wildlife within the MVNWR. However, because it is not possible to quantify noise impacts to wildlife in absolute terms, it remains unknown whether overflights below 2,000 feet AGL would have meaningful adverse impacts to waterfowl within the MVNWR. Coordination among MAC, FAA and USFWS in 1997 confirms that MVNWR wildlife managers concur that the effects of aircraft noise on wildlife cannot easily be described herein as the literature is inconclusive. As possible evidence, the MAC and FAA note the current extensive waterfowl use in Gun Club and Mother Lakes. These features lie outside the MVNWR but currently incur the majority of MSP overflights, and waterfowl appear to habituate readily to the noise.

The MVNWR supports a broad range of wildlife species. The Environmental Impact Statement for the establishment of the refuge cited 35 mammal species, 23 reptiles and amphibians, and 97 species of breeding birds using the refuge. The refuge is also utilized by a number of bird species that winter in the refuge or temporarily stop over during migration periods. Early in the Dual Track Airport Planning Process, coordination was undertaken with the MVNWR staff and the Twin Cities Field Office of the USFWS to determine what wildlife impact studies were to be done. USFWS staff identified threatened and endangered species, bird-aircraft hazards and overflights of waterfowl concentration areas as the impact areas they felt should be addressed. Accordingly, the investigation of potential noise impacts to wildlife within the MVNWR has been limited to waterfowl concentration areas. The areas within the MVNWR that were identified for analysis were Long Meadow and Black Dog Lakes (for waterfowl survey figures see **Tables D-2** and **D-4**).

The refuge includes several public use areas lying within the affected environment. **Figure FF-2** depicts the location of these areas in the refuge.

The Bass Ponds are an old series of bass-rearing ponds historically constructed and operated by the Izaak Walton League; the active use of the ponds ended in the mid-1960s. The Bass Ponds are approximately 9,600 feet from the nearest existing runway at MSP; they would be approximately 7,500 feet from the proposed north-south runway. The Bass Ponds are now used by USFWS as an interpretive area to demonstrate wildlife and fisheries management techniques and to provide basic environmental education programs. Based on the number of cars using the parking lot at the Bass Ponds, approximately 86,000 people visited the area during twelve months beginning in November 1993.

The Long Meadow Lake Unit contains about five miles of public trails. Of the various trails, only one is located entirely within the affected environment. This is the "Caretaker's Walk" trail, a half-mile "loop" trail used for both guided and self-guided interpretive activities within the Bass Ponds area. This trail is located inside of the DNL 70 noise contour for the MSP Alternative. Along with the Visitor Center, the Bass Ponds area serves as a focus for the MVNWR's evolving environmental education program. Many educational programs begin at the Visitor Center and then move to the Bass Ponds after a drive of just over one mile (there is currently no

public trail access connecting the Bass Ponds area to the Visitor Center). The Caretaker's Walk Trail allows visitors to observe and compare different habitat features, particularly water and wetland features, within a relatively compact area.

The public-use land adjacent to the Visitor Center, including the Visitor Center itself, is located outside of the DNL 60 noise contour for the MSP Alternative, and includes the Hillside Trail. This is a half-mile trail running from the east side of the Visitor Center to an observation deck at Peterson Pond, overlooking Long Meadow Lake. The extent of the Hillside Trail is limited because most of the refuge acreage adjacent to the Visitor Center is privately owned and is not open to the public.

Two additional trails, while not entirely located within the affected environment, are in close proximity to flight tracks for the proposed north-south runway. The Old Cedar Avenue Trail runs along Long Meadow Lake and connects Caretaker's Walk and the Old Cedar Avenue trailhead. The eastern half of this trail is within the affected environment. The Highway 77 trail passes over the Minnesota River and connects to a bicycle trail which runs to the Old Cedar Avenue trailhead. It is located inside of the DNL 60 noise contour for the MSP Alternative.

The Old Cedar Avenue and Highway 77 trailheads were accessed by approximately 20,405 and 14,570 vehicles, respectively, in 1993.

### FF.1.2 Wildlife Refuge Impacts — MSP Alternative

Wildlife Impacts

Although development of the MSP Alternative would not involve the acquisition of any land in the wildlife refuge, this alternative would result in 5,620 monthly overflights over the Long Meadow Lake and Black Dog Lake Units, including the Bass Ponds area, all of which would be between 500 and 2,000 feet AGL (see **Table D-5**). Thus, all of these overflights are below the 2,000-foot threshold set forth in the Interagency Agreement. A large proportion of these overflights are the result of operations being shifted from the existing parallel runways to the north-south runway. Thus, additional overflights of waterfowl concentration areas within the MVNWR brought about by the MSP Alternative also result in reductions in overflights of other waterfowl concentration areas outside the refuge (i.e., Gun Club and Mother Lakes). A potential increase in disturbance effects to waterfowl in the MVNWR cannot be ruled out under the MSP Alternative. However, given the high degree of habituation observed at Gun Club and Mother Lakes, it appears likely that waterfowl within the MVNWR would also become habituated.

Little quantitative information is available on the impacts to waterfowl from noise created by aircraft overflights. The majority of studies on the effects of noise on birds have dealt with reproductive effects of poultry or behavioral response (i.e., the noise is detected and a startle response may occur) of wild birds; little work has been done on the effects of noise on the physiology of wild birds.

Behavioral measures of absolute auditory sensitivity in a wide variety of bird species show a region of maximum sensitivity between 1 and 5 kHz, with a rapid decrease in sensitivity at higher frequencies (Manci et al. 1988). In a study of the effects of air traffic along the shoreline of Izembek Lagoon, Alaska, the USFWS observed that out of 623 possible disturbance events for flocks of geese, 65 percent of these events were caused by jets and propeller aircraft, 14 percent by helicopters, 14 percent by gunshots, 2 percent by people, 2 percent by boats, 2 percent by eagles, 1 percent by falcons, and less than 1 percent by land vehicles and foxes. No altitude data was given for this study.

Additional studies in the Alaska Arctic (Acoustical Society of America 1980) have shown that snow geese are sensitive to aircraft disturbance, and low-level (150 m above ground level) aircraft overflights elicited a stronger response from molting, flightless sea ducks than higher level overflights. Studies conducted by Black et al. (1984) on the effects of low altitude military training flights on wading bird colonies in Florida indicates that reproductive activity (including nest success, nestling survival, nestling mortality, and nesting chronology) was independent of F-16 overflights, but was related to ecological factors including location and physical characteristics of the colony, and climatology. Based on available literature it appears that disturbance to waterfowl from aircraft occurs most often when the aircraft is either low flying (< 200 feet), approaches

suddenly, such as a helicopter, or creates a sonic boom. Waterfowl appear to readily habituate to frequent aircraft overflights.

Based on these studies, it is concluded that aircraft noise within the affected environment would not significantly diminish the wildlife habitat in the refuge.

**Public Use Impacts**
The discussion of public use impacts is presented in Section V.U (Section 4(f)).

### FF.1.3 Mitigation Measures — MSP Alternative

The only way to reduce potential noise impacts to waterfowl concentration areas is to redistribute aircraft operations so that fewer aircraft utilize the north-south runway. However, this would be in conflict with the purpose and need for the MSP Alternative. Furthermore, it is not feasible to alter arrival and departure flight tracks to avoid the MVNWR, given the new runway's close proximity to the refuge lands.

Mitigation of public use impacts within the MVNWR is discussed in Section V.U (Section 4(f)) and Appendix E.

## FF.2 No Action Alternative

### FF.2.1 Affected Environment — No Action Alternative

The affected environment includes those portions of the MVNWR described in Subsection FF.1.1 where overflights occur at less than 2,000 feet (**Figure FF-2**).

### FF.2.2 Wildlife Refuges Impacts — No Action Alternative

The No Action Alternative entails substantially fewer and higher overflights of waterfowl concentration areas within the MVNWR than the MSP Alternative. The No Action Alternative would involve 2,000 monthly overflights of the Long Meadow/Black Dog Lake complex, all at altitudes over 2,000 feet AGL (see **Table D-5**). Thus, the No Action Alternative complies with the FAA-U.S. Fish and Wildlife Service Interagency Agreement and would not disturb waterfowl concentration areas in the refuge.

The discussion of public use impacts is presented in Section V.U (Section 4(f)).

### FF.2.3 Mitigation Measures — No Action Alternative

Mitigation of public use impacts within the MVNWR is discussed in Section V.U (Section 4(f)).

## FF.3 Summary of Wildlife Refuges Impacts

Potential impacts to wildlife at the Minnesota Valley National Wildlife Refuge would occur with overflights under a 2,000-foot altitude threshold over areas of waterfowl concentrations, specifically Long Meadow and Black Dog Lakes. The MSP Alternative could result in 5,620 monthly overflights under 2,000 feet over both lakes, while the No Action Alternative will result in no overflights under 2,000 feet over both lakes. No significant adverse impacts to wildlife are expected; noise impacts to wildlife, according to available relevant studies, occur more often when there are sudden bursts of noise, and waterfowl species often habituate to continuous aircraft noise.

No land in wildlife refuges would be acquired for airport development.

It is estimated that 1,083 acres of publicly-owned Refuge land will be substantially impaired by the proposed action and subject to mitigation. The No Action Alternative would have no impact.

## GG. Design, Art and Architectural Application

Design, art, and architectural considerations apply to actions involving airport location or other disruption of the natural environment or aesthetic integrity of an area, and to other activities such as terminal and roadway development which may affect sensitive locations such as parks, historic sites, or other public use areas.

### GG.1 MSP Alternative

#### GG.1.1 Affected Environment — MSP Alternative

The Area of Potential Effect (APE) for the MSP Alternative is the existing airport and its immediate surroundings. As shown in **Figure O-1**, the airport is surrounded by major transportation corridors. Residential and recreational areas are generally located to the north and west of the airport, while commercial and institutional areas are generally located to the south. The Mississippi and Minnesota River valleys are located to the east and south of the site. The Fort Snelling military reservation is located immediately northeast of the airport. Section V.Y.1.1 describes the visual characteristics of the airport environs.

#### GG.1.2 Design, Art, and Architectural Application — MSP Alternative

Development of the MSP Alternative would be confined to the existing airport and would essentially consist of redevelopment of existing airport facilities. As noted in Section Y.1.1, the FAA air traffic control tower, at 166 above ground level, is the tallest on-airport structure. The tower is three-quarters of a mile from the nearest residential neighborhood. The MSP 2020 Concept Plan recommends a new tower to be located near the proposed west terminal, more than one mile from the nearest residential area. This proposed tower would rise to a height of 359 feet AGL. Other airport development would be less than 100 feet in height.

A new air cargo complex would be developed along the west side of the airport from the 2010 LTCP and 2020 Concept Plan. This development would replace an existing golf course. Cargo buildings and aircraft would be visible from the TH 77 corridor. The area between TH 77 and the air cargo area provides an area for landscaping and visual buffers.

While these structures will be visible from surrounding areas, they do not represent a substantial change from the existing visual conditions and will not disrupt the natural environment or aesthetic integrity of the surrounding area.

#### GG.1.3 Mitigation Measures — MSP Alternative

Since the MSP 2010 LTCP and 2020 Concept Plan would not significantly impact the surrounding area, no mitigation would be required. The application of sound interior design, landscaping, and architectural treatment for new airport terminal development will offer opportunities to enhance the architectural and cultural environment.

### GG.2 No Action Alternative

#### GG.2.1 Affected Environment — No Action Alternative

As with the MSP Alternative, the APE for the No Action Alternative is the existing airport and its immediate surroundings. Section Y.3.1 describes the visual characteristics of the airport environs.

#### GG.2.2 Design, Art, and Architectural Impacts — No Action Alternative

As noted in Section Y.3.2, the FAA air traffic control tower, at 166 above ground level, is the tallest on-airport structure. The tower is three quarters of a mile from the nearest residential neighborhood. Other airport structures are substantially lower. While these structures will continue to be visible from surrounding areas,

they do not represent a substantial disruption of the natural environment or aesthetic integrity of surrounding areas.

### GG.2.3 Mitigation Measures — No Action Alternative

Since the No Action Alternative would not significantly impact the surrounding area, no mitigation would be required.

## HH. Short-Term Uses and Long-Term Productivity and Irreversible and Irretrievable Commitments of Resources

### HH.1 Short-Term Uses and Long-Term Productivity

Short-term uses of the environment include construction impacts which are not expected to be significant. The long-term productivity of the alternatives includes the economic and social benefits that would result from an expanded airport. Considerable additional jobs and commercial/retail activity would occur from the MSP 2010 LTCP and 2020 Concept Plan, and less from the No Action Alternative. Social benefits include improved access to national and international activities and opportunities from the MSP 2010 LTCP and 2020 Concept Plan .

### HH.2 Irreversible and Irretrievable Commitments of Resources

No new, unusual or limited sources or types of materials are involved in the alternatives. The MSP 2020 Concept Plan calls for the removal of every building in the Original Wold-Chamberlain Terminal Historic District, an area determined eligible for listing in the National Register of Historic Places. While mitigation measures can partially compensate for demolition, the built environment suffers an irreversible loss by not retaining the actual resource.

Considerable amounts of fossil fuels, labor and construction materials for runways and buildings would be used with the development of the MSP 2010 LTCP and 2020 Concept Plan . In addition, large amounts of labor and natural resources would be used in the fabrication and preparation of construction materials. These materials are not retrievable; however, they are not in short supply and will not have an adverse effect on the continued availability of these resources. Any construction project will also require the use of user fees and a one-time expenditure of MAC and federal funds, which would not be retrievable.

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| Dick Stafford | Senior Transportation Engineer, CH2M Hill | B.S. Civil Engineering, P.E. | 10 | Surface Transportation |
| Richard Starr | Sr. Vice President, Economics Research Associates | B.A. Economics, M.S. Urban Studies | 34 | Economic Impact |
| Joe Stuber | Water Resources Engineer, CH2M Hill | B.S. Civil Engineering | 18 | Water Resources |
| James Suehiro | Professional Associate, TRA | B.A. Environmental Design, Master in Architecture, AIA | 18 | Terminal Area Plan |
| Harry Summitt | Principal, B.A. Liesch Associates, Inc. | B.S. Civil Engineering, M.A. Business Administration, P.E. | 20 | Water Quality |
| Ralph Thompson | Federal Aviation Administration | B.S. Civil Engineering | 22 | Headquarters Review and Coordination |
| Glenn Vande Water | Peterson Environmental Consulting, Inc. | B.S. Environmental Studies | 17 | Threatened/Endangered Species, Bird Aircraft |
| Robert Varani | Aviation Planner, HNTB | B.A. Airport Administration | 2 | GIS Analysis |
| Richard Veazey | Airport Planner, CH2M Hill | M. Architecture/ Urban Design, AICP | 20 | Overall Document Review |
| Audrey Wald | Aviation Planner, HNTB | B.S. Airway Science Management | 6 | GIS Analysis, Community/Social Impacts, Wetland Impacts, Floodplains |
| Charles Webb | Environmental Planner, CH2M Hill | M.S. Urban and Regional Planning, AICP | 5 | Land Use, Parks, Light Emissions, Visual and Farmland Resources |

# VII. List of Agencies, Jurisdictions, Private Parties and Depositories Receiving Final EIS

**Federal Agencies**

Dept. of Transportation, Federal Highway Administration, Regional Administrator,
U. S. Corps of Engineers, Regulatory Function Branch
U.S. Corps of Engineers, Permit Evaluation Section
Dept. of Energy, Division of NEPA Affairs
Environmental Protection Agency, Planning and Assessment Branch
Dept. of Agriculture, Office of the Secretary
Dept. of Agriculture, Environmental Coordinator
Soil Conservation Service
Dept. of Interior, Office of Environmental Project Review
U.S. Forest Service, Regional Forester
Bureau of Land Management
National Park Service, Regional Director
National Park Service, Division of Planning & Environment
U.S. Fish & Wildlife Service, Regional Director,
U.S. Fish & Wildlife Service, Endangered Species Branch
U.S. Fish & Wildlife Service, St. Paul Field Office
Advisory Council on Historic Preservation, Executive Director
US Dept. of Interior, Bureau of Mines, Intermountain Field Center
Dept. of Housing & Urban Development
Federal Emergency Management Agency
Bureau of Indian Affairs, Area Director, Minneapolis Area Office,
Director, U. S. Veterans Administration Medical Center

**State, Metro and Local Agencies:**

Metropolitan Airports Commission
Minnesota Dept of Transportation
Minnesota Planning
Metropolitan Council
Metropolitan Council - Transportation Advisory Board
Minnesota Pollution Control Agency
Wisconsin Department of Transportation - Div. of Highways
State Historic Preservation Officer
Wisconsin Department of Natural Resources
Department of Agriculture
Department of Health
Minnesota Department of Natural Resources
Department of Public Service
MN Board of Water and Soil Resources
Office of Environmental Assistance

**County Administrators**

Dakota County
Goodhue County
Hennepin County
Pierce County
Ramsey County
St. Croix County
Washington County

**Cities and Townships**

City of Bloomington
City of Burnsville
City of Eagan
City of Hastings
City of Inver Grove Heights
City of Mendota
City of Mendota Heights
City of Minneapolis
City of Richfield
City of Rosemount
City of St. Paul
Denmark Township

**Depositories**

Environmental Conservation Library
Legislative Reference Library
Augsburg Park Library, Richfield
Highland Park Library, St. Paul
Oxboro Library, Bloomington
Washburn Library, Minneapolis
Wescott Library, Eagan

Minnesota Environmental Quality Board
Dakota County Soil and Water Conservation District
Minnehaha Creek Watershed District
Vermillion River Watershed Management Commission
Pierce County, Wisconsin Farm Bureau; Farmers Union and National Farmers Organization
Minnesota-Wisconsin Boundary Area Commission

**Dual Track Task Force**

Dick Anfang, Minnesota State Building & Trades Council
Gregory Boyle, Business community
Alice Clausing, Senator, State of Wisconsin
Tom Crowley, Business community
Bud Erickson, Rochester
Joseph Finley, Transportation Advisory Board
Jennifer Sayre, Northwest Airlines
Don Groen, Bloomington Chamber of Commerce
Edward Gutzmann, MSP Re-use Task Force
Joseph Harris, Dakota County Commissioner
Tim Hoffman, St. Paul Chamber of Commerce
John Kahler, Rochester
Andrew Lindberg, Greater Minneapolis Chamber of Commerce
Myra Peterson, Washington County Commissioner
Gloria Pinke, Dakota County
Ray Rought, Mn/DOT Aeronautics
Mary Hill Smith, Metropolitan Council
Michael Werner, Mayor, Hastings
Bonnie Wittenburg, Rochester
Lyle Wray, Citizens League

Southern Dakota County Townships and Cities Airport Planning Group
Sierra Club
South Metropolitan Airport Action Council
State Representative Jean Wagenius (MN)
State Senator Carol Flynn (MN)
Marion Hall
Wilbur Maki
John Richter
Jeff Schneider
Al Wellnitz
Joyce Herbison
Corlis Hendrickson
Jerome Maier
John G. Turner
Amy Salo
Thomas Manion/Genevieve Lubbers
Robert J. Kelly
Gibson Batch
R. W. Russell
Phyllis Goldin
Wanda Brown

# VIII. Public and Agency Involvement

The involvement of the public and government agencies in the Dual Track Airport Planning Process began with the enactment of the Metropolitan Airport Planning Act by the Minnesota legislature in 1989. The FAA issued a Notice of Intent to prepare an EIS and to conduct public scoping, which appeared in the April 1, 1992 Federal Register.

Early Coordination

Early coordination with agencies began in April 1992 with the preparation of the First Phase Scoping Report. All agencies were contacted and a scoping meeting was held for the staffs of the agencies and affected jurisdictions. Formal comments from the agencies on issues raised during the scoping meetings, and the responses, were published in the First Phase Scoping Report, Comments and Responses.

Alternative Environmental Document Phase of the EIS/Dual Track Airport Planning Process

Following the publication of the First Phase Scoping Report, Comments and Responses, two technical committees were formed -- the MSP Technical Committee and the New Airport Technical Committee. Staff representatives of affected cities, townships, county, regional, state and federal agencies, airport users and local interest groups listed on pages VIII-4 and 5 of this section were invited to sit on the technical committees.

Members of the technical committees, meeting approximately on a monthly basis from 1993 to 1996, reviewed the technical approach and products of the airport planning process.

In addition, technical committee members and all others receiving copies of each document in the Dual Track Airport Planning Process were invited to submit comments on issues discussed and methodologies used. These letters and the responses are included in the appendices of the following Dual Track Airport Planning Process documents:

- Dual Track Airport Planning Process, New Airport Site Selection Study, Scoping Decision Document (Metropolitan Airports Commission, June 1993).
- Dual Track Airport Planning Process, New Airport Site Selection Study, Final AED (Metropolitan Airports Commission, January 1994).
- Minneapolis-Saint Paul International Airport Long-Term Comprehensive Plan, Scoping Decision Document (Metropolitan Airports Commission, March 1994).
- Dual Track Airport Planning Process, New Airport Comprehensive Plan, Scoping Decision Document (Metropolitan Airports Commission, June 1994).
- Minneapolis-Saint Paul International Airport, Long-Term Comprehensive Plan, Final Alternative Environmental Document (Metropolitan Airports Commission, February 1995).
- Dual Track Airport Planning Process, New Airport Comprehensive Plan, Final Alternative Environmental Document (Metropolitan Airports Commission, April 1995).
- Dual Track Airport Planning Process, Environmental Impact Statement, Scoping Decision (Metropolitan Airports Commission, July 1995).

- Dual Track Airport Planning Process, Draft Environmental Impact Statement (Metropolitan Airports Commission and Federal Aviation Administration, December 1995).

Additionally, the Dual Track Airport Planning Process Task Force, consisting of elected officials or representatives from the affected cities, townships, county, regional, state and federal agencies, airport users and local interest groups listed on page VIII-5 was formed. The Task Force, also meeting approximately on a monthly basis between 1993 and 1996, reviewed the process and products of the airport planning process and provided advice to the MAC.

The State Advisory Council (see page VIII-6), established by the legislature, was informed of the progress of the study.

Public Hearings

There have been opportunities to comment, both formally and informally, throughout the EIS/Dual Track Airport Planning Process. Formal input was solicited at a series of public hearings conducted on each of the scoping reports and environmental documents of the airport planning process and held both in the Twin Cities and Dakota County. Following is a summary of the public hearings; additional detail about the project history is in Section I (Introduction) and the scoping decision documents and Final AED's.

- April 1992 -- Three public meetings on the First Phase Scoping Report were held for public and agency comment. Responses to substantive comments were published in March 1993.

- March 18, 1993 -- A public meeting on the Scoping Document and Draft Scoping Decision Document for the selection of a new airport site was held; the Scoping Decision Document, including responses to comments, was adopted by the Commission on June 21, 1993.

- November 18, 1993 -- A public hearing on the Draft AED for the selection of a new airport site, including the identification of a preferred site, was held. The Commission determined the adequacy of the Final AED and selected Site 3 on March 21, 1994.

- February 15, 1994 -- A public meeting on the Scoping Environmental Assessment Worksheet (EAW) and Draft Scoping Decision Document for the update of the long-term comprehensive plan for MSP was held. The Scoping Decision Document was adopted by the Commission on March 21, 1994.

- May 12, 1994 -- A public scoping meeting on the Scoping EAW and Draft Scoping Decision Document for the development of a comprehensive plan at the New Airport Site 3 was held. The Scoping Decision Document was adopted by the Commission on June 20, 1994

- October 26, 1994 -- A public hearing was held on the Draft AED for the selection of the MSP Long-Term Comprehensive Plan.

- January 30, 1995 -- The Final AED for the selection of the MSP Long-Term Comprehensive Plan was made available for public/agency review and comment. The Commission determined the adequacy of the Final AED and selected Alternative 6 on February 21, 1995.

- January 18, 1995 -- A public hearing on the Draft AED for the selection of the New Airport Comprehensive Plan was held. reviewed by MAC on November 21, 1994 for public/agency review and comment.

- March 27, 1995 -- The Final AED for the selection of the New Airport Comprehensive Plan was made available for public/agency review and comment. The Commission determined the

adequacy of the Final AED and selected the New Airport Comprehensive Plan on April 18, 1995.

- June 1995 -- Three public hearings on the Second Phase Scoping Report for the Draft EIS, were held. A final Scoping Decision document was issued July 26, 1995.

- January 1996 -- Two public hearings were held on the Draft EIS.

Documents prepared as part of the EIS/Dual Track Airport Planning Process were supplemented throughout by a series of public information meetings, newsletters, informational brochures, press conferences and news releases for the general public, as appropriate.

Other Public Involvement
The public also has the opportunity to comment on the adequacy of this FEIS and the Section 4(f) Evaluation document which was distributed May 1, 1998 for review and comment.

**Continuing and Future Agency Coordination**

**Surface Transportation.** The Dual Track Surface Transportation Committee was organized by the FAA and consisted of representatives of the FAA, MAC, Federal Highway Administration (FHWA), Minnesota Department of Transportation (Mn/DOT), Wisconsin Department of Transportation, Minnesota Environmental Quality Board, and the Metropolitan Council. The first meeting of the committee was held on August 17, 1995. The participating agencies met 11 times prior to the publication of the FEIS, with the purpose of determining which surface transportation improvements are needed, and to establish an understanding concerning agency responsibility and the procedures to be followed in the development of airport-related surface transportation improvements. Key topics discussed included highway improvement needs, potential environmental impacts, highway construction costs, status and programming of relevant transportation projects, as well as environmental review and permitting procedures. These consultations concluded with the completion of a signed "Consensus Document," which details the agreement between the agencies regarding surface transportation development necessary to implement the MSP Alternative (see Appendix F).

**Water and Air Quality.** The MAC has consulted with the Minnesota Pollution Control Agency (MPCA) throughout the EIS process to confirm that the MPCA's concerns regarding the air and water quality impacts of the MSP Alternative have been adequately addressed. Through this coordination, MPCA concurred that the MAC's proposed surface water control program and air quality emissions for MSP have been adequately assessed and that the airport's development plan provides reasonable assurance of consistency with the state's permitting requirements. Consultation activities from between May 1996 and May 1997 between the MAC, Mn/DOT, and MPCA ultimately resulted in certification letters to this effect from the Governor (see supporting information in Appendix A).

**Historic Preservation.** Section 106/Section 110/Section 4(f) consultation regarding historic resource impacts has occurred throughout the EIS process involving the MAC, FAA, FHWA, National Park Service-Mississippi National River and Recreation Area, U.S. Army Corps of Engineers (COE), Mn/DOT, Minnesota Department of Natural Resources (MDNR), Metropolitan Council, Minneapolis Heritage Preservation Commission (MHPC), Advisory Council on Historic Preservation (ACHP), and the Minnesota State Historic Preservation Officer (SHPO) to assure that impacts to historic properties resulting from the MSP Alternative and aircraft-generated noise have been properly addressed and mitigated. The purpose of the coordination was to agree upon impacts and mitigation requirements for historic properties affected by the MSP 2020 Comprehensive Plan and year 2005 DNL 65 noise contour. The agreed-upon approach for mitigating the defined historic impacts is documented in a programmatic agreement (PA) between the FAA, MAC, ACHP, SHPO, and concurring parties, which was signed on or before July 28, 1997 (see Appendix C).

**Section 4(f).** Consultation between the United States Department of the Interior — Fish and Wildlife Service (USFWS), MAC, and FAA was initiated by the FAA in May 1996 regarding impacts of the MSP Alternative on the Minnesota Valley National Wildlife Refuge (MVNWR). The parties met several times to discuss noise impacts to the refuge and agree upon measures to mitigate the impacts to the MVNWR. Key topics of the coordination were determination of existing and future noise levels, agreement on the extent of the impacts to the MVNWR, and possible mitigation measures.

**Wetlands.** The MAC and FAA have consulted with the COE and the MDNR throughout the EIS process regarding the loss of wetland located on and off airport property which is necessary to implement MSP Alternative. The purpose of these consultations was to gain MDNR and COE concurrence on the extent of wetland impacts and necessary measures to mitigate the impacts. These consultations resulted in a conceptual wetland mitigation plan agreed to by the MAC, COE, and MDNR (see Appendix D).

In addition to these completed activities, the FAA and MAC will coordinate further with relevant agencies concerning the planned development of the MSP 2010 LTCP. Those agencies may include, but are not limited to, the following:

- U.S. Environmental Protection Agency
- State Historic Preservation Officer
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- Federal Highway Administration
- Minnesota Department of Transportation
- Minnesota Department of Natural Resources
- Minnesota Pollution Control Agency
- Metropolitan Council
- Minnesota Board of Water and Soil Resources
- Richfield-Bloomington Watershed Management Organization
- Minnehaha Creek Watershed District, and
- Minnesota Department of Health.

**EIS/Dual Track Committees**

MSP TECHNICAL COMMITTEE

Metropolitan Airports Commission
Aircraft Owners & Pilots Association
Minnesota Air National Guard
U.S. Fish & Wildlife Service
Metropolitan Council
Minnesota Business Aircraft Association
U.S. Air Force Reserves
State Historic Preservation Office
City of Minneapolis
City of Eagan
City of Mendota Heights
City of Bloomington
City of St. Paul
City of Richfield
City of Burnsville
City of Inver Grove Heights
FAA Air Route Traffic Control Center
FAA – Airports District Office
FAA – Air Traffic Control Tower
Environmental Quality Board
Minneapolis Pollution Control Agency
Minnesota Department of Transportation:
Northwest Airlines, Inc.
Mesaba Airlines
Air Transport Association
Federal Express
Airline Pilots Association
Dakota County
Minnesota Department of Agriculture
Minnesota Department of Natural Resources
U.S. Environmental Protection Agency
U.S. Army Corps of Engineers

## NEW AIRPORT TECHNICAL COMMITTEE

City of Hastings
Dakota County
Washington County
Goodhue County
Southern Dakota County Townships and Cities
City of Rosemount
Aircraft Owners & Pilots Association
US EPA – Environmental Review Branch
FAA Airports District Office
U.S. Fish & Wildlife Service
Metropolitan Council
City of Cottage Grove
Cannon Falls Township
Welch Township
Grey Cloud Island Township
Wisconsin Department of Transportation
Pierce County
Wisconsin Dept. of Natural Resources
City of Prescott
Environmental Quality Board
Minnesota Business Aircraft Association
Northwest Airlines, Inc.
State Historic Preservation Office
FAA Air Route Traffic Control Center
Minnesota Pollution Control Agency
US Army Corps of Engineers
Minnesota-Wisconsin Boundary Area Commission
Mesaba Airlines
Air Transport Association
Federal Express
Mn/DOT – Office of Aeronautics
U.S. Air Force Reserves
Airline Pilots Association
FAA – MSP ATCT
Minnesota Department of Agriculture
Minnesota Air National Guard
Minnesota Department of Natural Resources

## DUAL TRACK TASK FORCE

Patrick O'Neill, MAC, Chair
Dick Anfang, Minnesota State Building & Trades Council
Gregory Boyle, Business community
Alice Clausing, Senator, State of Wisconsin
Tom Crowley, Business community
Bud Erickson, Rochester
Paul Farmer, Minneapolis Planning Director
Joseph Finley, Transportation Advisory Board
Kathy Gaylord/ Jennifer Sayre, Northwest Airlines
Don Groen, Bloomington Chamber of Commerce
Edward Gutzmann, MSP Re-use Task Force
Joseph Harris, Dakota County Commissioner
Tim Hoffman, St. Paul Chamber of Commerce
John Kahler, Rochester
Andrew Lindberg, Greater Minneapolis Chamber of Commerce
Myra Peterson, Washington County Commissioner
Gloria Pinke, Dakota County
Ray Rought, Mn/DOT Aeronautics
Mary Hill Smith, Metropolitan Council
Michael Werner, Mayor, Hastings
Bonnie Wittenburg, Rochester
Lyle Wray, Citizens League

## STATE ADVISORY COUNCIL ON METROPOLITAN AIRPORT PLANNING

Legislators:
Senator Keith Langseth
Senator Carol Flynn
Senator William Belanger
Representative Bernie Lieder
Representative Jean Wagenius
Representative Dennis Ozment

State Agency Heads:
James Denn, Commissioner, Minnesota Department of Transportation
Linda Kohl, Director, Minnesota State Planning
Charles Williams, Commissioner, Minnesota Pollution Control Agency
Bob Benner, Special Asst. for State Government Affairs, Northwest Airlines
Rodger Holman, Manager, Airport and Corporate Affairs, Delta Airlines, Inc.

Non-Voting Members:
Frank Benson, Manager, FAA - Minneapolis Airport District Office
Elaine Kienitz, Congressional Delegation Appointee

Public Members:
Suzanne Sandahl
John T. Richter
Dave Danielson
Eve Webster
Al Loehr
Gloria Pinke

Metropolitan Airports Commission:
Sandy Grieve, Chair
Patrick O'Neill, Commissioner

Metropolitan Council:
Curt Johnson, Chair
Mary Hill Smith, Council Member

# IX. List of Acronyms and Glossary

acre-ft -- measurement of water storage, equivalent to amount of water needed to cover 1 acre with water 1 foot deep

ACHP – Advisory Council on Historic Preservation

ADT -- Average Daily Traffic

AED -- Alternative Environmental Document. The AED is a document that included the analysis of environmental impacts and issues in sufficient detail to select the "best" of the alternatives that were under consideration for both MSP expansion and a new airport in Dakota County. It is similar to an EIS, but differs in that the "no action" alternative and reasonable alternatives are not considered. That is, the AED's addressed only the alternatives and impacts included in the SDD for the Long-Term Comprehensive plans at MSP and the Dakota County site.

AGL -- Above Ground Level

Agriculture preserve -- Farmland designated by covenant for long term agricultural use, for which the property owner receives such benefits as lower assessed valuations and, therefore, lower taxes.

ANOMS -- Airport Noise and Operations Monitoring System, the noise monitoring system in use at MSP

APE -- Area of Potential Effect, or the affected environment of each of the alternatives under consideration for Dual Track Airport Planning process.

Biotic Communities -- Fish, wildlife and ecologically sensitive resources, including rare, threatened and endangered species

BOD -- Biochemical Oxygen Demand

CAL 3QHC -- Carbon Monoxide dispersion model used to estimate CO concentrations

CBOD -- Carbonaceous Biochemical Oxygen Demand

CEQ – Council on Environmental Quality

cfs -- cubic feet per second

CO -- Carbon Monoxide

COD -- Chemical Oxygen Demand

COE -- U.S. Army Corps of Engineers

dB -- decibels, used to measure sound levels

dBA -- "A"-weighted decibel scale used to measure aircraft and other sound levels

DNL -- Day Night Level metric that describes aircraft noise. It is the logarithmic average sound level measured in decibels weighted to closely approximate the sensitivity of the human ear. DNL is

based on the annual average of 24-hour Equivalent Sound Level, (Leq), which is weighted to account for increased noise sensitivity during nighttime hours (10:00 p.m. to 7:00 a.m.). DNL 65 dBA is the Day Night Level of 65 decibels on the A-weighted scale, for example.

EDMS -- Emissions and Dispersion Modeling System, used to calculate pollutant emissions and concentrations due to on-airport sources, including aircraft and motor vehicles.

EIS -- Environmental Impact Statement. This is a document required by federal (if federal funds or properties are involved) and state law for proposed projects that could have potentially significant adverse impacts on the social, economic and natural environments. The EIS must address the environmental impacts of all reasonable alternatives, including the "no action" alternative, and commit to measures that would mitigate those adverse impacts that cannot be avoided.

EPA -- Environmental Protection Agency (of the United States government)

ESA -- Minnesota Endangered Species Act

FAA -- Federal Aviation Administration (of the United States Department of Transportation)

FAR Part 150 – Federal Aviation Regulation, Part 150. The procedures, standards, and methodology governing the development, submission, and review of the airport noise exposure maps and airport noise compatibility programs, including the process for evaluating and approving or disapproving those programs, required by FAA to be eligible for federal funds.

Farmland remnants -- Portions of farms remaining after land is acquired for the airport. There are three types of farmland remnants, defined as follows:

Isolated farmlands. farmland that is not accessible because the road leading to it is within the airport boundary.

Triangulated farmlands. farmland with one or more property lines at an angle. This factor could make farming on the field difficult. While there is no minimum acreage for triangulated farmland, a smaller triangulated field also would be difficult to farm.

Severed farmlands. farmlands under one ownership that are separated from each other by the airport project. For example, a large farm may be bisected by a roadway leading to the new airport or the farmstead could be separated from the fields themselves.

FICON -- Federal Interagency Committee on Noise

Footprint -- Area within the boundary of the proposed airport site

FEMA -- Federal Emergency Management Agency

FWS or USFWS – Fish and Wildlife Service of the United States Department of the Interior

GIS -- Geographic Information System

GISW -- Glycol-Impacted Storm water

HABS -- Historic American Buildings Survey

HAER -- Historic American Engineering Record

HC -- Hydrocarbons

HNTB - HNTB Corporation, lead consultant for MAC

INM -- Integrated Noise Model, which calculates DNL noise levels at specified points based on aircraft flight paths/altitudes, number of operations by time of day, and engine types of the fleet.

IPG -- Interactive Planning Group, a 1991 group formed to study potential long-term comprehensive planning options for MSP, including the cities of Bloomington, Burnsville, Eagan, Mendota Heights, Minneapolis, Richfield and St. Paul.

JDEIS -- Joint Draft Environmental Impact Statement

LESA -- Land Evaluation Site Assessment of affected farmland

LTCP -- Long-Term Comprehensive Plan for MSP and the Dakota County site

MAC -- Metropolitan Airports Commission (of the Twin Cities Metropolitan Area)

MASAC – Metropolitan Aircraft Sound Abatement Council

MC -- Metropolitan Council (of the Twin Cities Metropolitan Area)

MCBS -- Minnesota County Biological Survey

MDNR -- Minnesota Department of Natural Resources

MDS -- Metropolitan Disposal System

MEQB -- Minnesota Environmental Quality Board

$mg/m^3$ -- micrograms per cubic meter

mg/l -- milligrams per liter

mgd -- million gallons per day

$mg/m^3$ -- milligrams per cubic meter

MHPC – Minneapolis Historic Preservation Commissioin

Mn/DOT -- Minnesota Department of Transportation

MOBILE 5.0 -- Carbon monoxide emission model developed by EPA

MPCA -- Metropolitan Pollution Control Agency

MSP -- Minneapolis-Saint Paul International Airport

MSL -- mean sea level

MSW -- Metropolitan Solid Waste

MRAP -- Minnesota River Assessment Project

MVNWR -- Minnesota Valley National Wildlife Refuge

MNRRA -- Mississippi National River and Recreation Area

MWCC -- Metropolitan Waste Control Commission

MWWTP -- Metropolitan Wastewater Treatment Plant

NAA -- New Airport Alternative

NLR -- Noise Level Reduction

$NO_X$ -- Nitrogen Oxide

$NO_2$ -- Nitrogen Dioxide

NPDES -- National Pollution Discharge Elimination System (permit governing discharge of pollutants into storm sewer systems and outfalls)

NRHP -- National Register of Historic Places

NSBERT -- Northern States Bald Eagle Recovery Team

NWI -- National Wetland Inventory, referring to maps prepared by the U.S. Fish and Wildlife Service

OPDC -- Ordovician Prairie du Chien aquifer

$O_2$ -- Oxygen

PA – Programmatic Agreement

PM-10 -- Particulate matter less than 10 microns in diameter

ppm -- parts per million

RPZ -- Runway Protection Zone. This is a trapezoidal area at the end of a runway that must be acquired to afford a safety zone for aircraft landings and take-offs. The FAA requires that RPZ's be a part of airport property.

SD -- Scoping Document. A report that describes the purpose of the project, identifies feasible alternatives, and describes the affected social, economic and natural environment and potential impacts of the alternatives.

SDD -- Scoping Decision Document. The SDD presents the alternatives, issues and impacts that the Responsible Governmental Unit (RGU) has decided to study in the EIS or AED. The SDD is adopted by the RGU after receiving comments on the Draft SDD from the public and affected agencies.

SEL -- Sound Exposure Level (level of sound by individual aircraft at specified location)

Section 4(f) Land -- This is land afforded protection under Section 4(f) of the 1966 US Department of Transportation Act of Congress. All publicly-owned park and recreation land, wildlife and waterfowl refuges and historic lands of national, state or local significance are included in Section 4(f). These lands cannot be adversely impacted unless there is no feasible and prudent alternative to the use of the lands.

Section 6(f) Land -- Section 6(f) of the 1965 Land and Water Conservation Fund (LAWCON) Act of Congress stipulates that any land that was planned, developed or improved with LAWCON funds cannot be converted to other than outdoor recreational use unless replacement land of at least equal value and usefulness is provided. Section 6(f) land is outdoor recreational land and can include publicly-owned parks, tennis courts, county trails, golf courses, etc.

SHPO -- State Historic Preservation Officer (of the Minnesota Historical Society)

SIP -- State Implementation Plan (for federal air quality standards); or, Sound Insulation Program

$SO_x$ -- Sulfur Oxide

$SO_2$ -- Sulfur Dioxide

SPCCP -- Spill Prevention Control and Countermeasure Plans used to track equipment and methods to deal with spills

State Safety Zones -- These are trapezoidal areas beyond the ends of the runways, labeled "A" and "B" that can be regulated to prevent the use of the included land for purposes which can be hazardous to aircraft operations. Minnesota Statute 360.063 provides authority for the establishment of a joint airport zoning board consisting of the directly affected municipalities. The board regulates zoning within the safety zones. The established zoning regulations cannot be retroactive (i.e., affecting existing land use and structures) unless the existing land use or structure/object is a safety hazard to the airport.

SWMF -- Storm water Management Facility

SWPPP -- Storm water Pollution Prevention Plans, designed to meet NPDES permit requirements

TBI -- Travel Behavior Inventory

TH -- Trunk Highway, under jurisdiction of Mn/DOT

TKN -- Total kjeldahl nitrogen

TP -- Total Phosphorous

TSP -- Total Suspended Particulates

TSS -- Total Suspended Solids

US FWS – United States Fish and Wildlife Service (see FWS)

VOC -- Volatile Organic Compound

WCA -- Wetlands Conservation Act of 1991

WMS -- Watershed Management Sector

WWTF -- Wastewater Treatment Facility

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# *APPENDIX A SUPPORTING INFORMATION AND LISTS OF SUPPORTING DOCUMENTS AND TECHNICAL REPORTS*

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**A.5 Effect of Aircraft Overflights on Bald Eagles ..... A.5-1**
**A.6 Summary of Migratory Bird Surveys ..... A.6-1**
**A.7 Biotreatment of Glycol in Soils ..... A.7-1**
**A.8 Hydraulic and Nutrient Loading - Mother Lake Watershed ..... A.8-1**
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**A.12 Noise Analysis - Minnesota Valley National Wildlife Refuge ..... A.12-1**
**A.13 Air Quality Impact Analysis Of Construction Activities ..... A.13-1**
**A.14 Dual Track Airport Planning Legislation ..... A.14-1**
**A.15 U.S. Department of Interior Correspondence ..... A.15-1**


The following supporting documents and technical reports are available at the Federal Aviation Administration, 6020 28th Avenue South in Minneapolis, and at the Metropolitan Airports Commission. Contact Jenn Unruh, MAC, 6040 28th Avenue South, Minneapolis, MN 55450; (612) 726-8189.

## List of Supporting Documents:

Throughout the Dual Track Airport Planning Process, a number of documents have been prepared to assess the long-term air transportation needs of the metropolitan region and to determine whether those needs could be met by enhancing capacity at Minneapolis-St. Paul International Airport or by developing a replacement airport within the region. The documents produced since the beginning of the Dual Track Airport Planning Process are listed below:

### Dual Track Planning Documents

1. *Is the Airport Adequate? Report of the Minneapolis-St. Paul International Airport Adequacy Study Advisory Task Force to the Metropolitan Council* (Metropolitan Council, October 1988).

2. *Twin Cities Air Travel: A Strategy for Growth, A Report to the Minnesota Legislature* (Metropolitan Council December 1988).

3. *The 1990 Dual Track Forecast Process: Long-Term Aviation Activity Forecast for the Twin Cities Region* (Metropolitan Airports Commission and Metropolitan Council, October 1992).

4. *Dual Track Planning Process: Report to the Legislature,*(Metropolitan Airports Commission and Metropolitan Council, March 1996).

**Search Area Documents**

1. *Selecting a Search Area for a New Major Airport, Part 1: Three Candidate Areas* (Metropolitan Council, January 1991).

2. *Selecting a Search Area for a New Major Airport, Part 2: Draft Data Analysis* (Metropolitan Council, June 1991).

3. *Selecting a Search Area for a New Major Airport, Part 3: Recommended Search Area* (Metropolitan Council, September 1991).

4. *Selecting a Search Area for a New Major Airport, Part 4: Search Area Designation* (Metropolitan Council, December 1991).

**MSP Planning Documents**

1. *Minneapolis-St. Paul International Airport Long-Term Comprehensive Plan, Volume I, Goals, Assumptions and Methodologies,* (Metropolitan Airports Commission, April 1990).

2. *Minneapolis-St. Paul International Airport Long-Term Comprehensive Plan, Volume 2, Existing Conditions,* (Metropolitan Airports Commission, June 1990).

3. *Minneapolis-St. Paul International Airport Long-Term Comprehensive Plan, Volume 3, Activity Forecasts.,* (Metropolitan Airports Commission, March 1990).

4. *Minneapolis-St. Paul International Airport Long-Term Comprehensive Plan, Volume 4, Facility Requirements,* (Metropolitan Airports Commission, December 1990).

5. *Report of the MSP Interactive Planning Group, Off-Site Impacts of the Six Airport Development Concepts, Minneapolis-Saint Paul International Airport Long-Term Comprehensive Plan* (MSP Interactive Planning Group, July 1991).

6. *Minneapolis-St. Paul International Airport Long-Term Comprehensive Plan, Volume 5, Airport Development Concepts,* (Metropolitan Airports Commission, December 1991).

7. *Minneapolis-St. Paul International Airport Long-Term Comprehensive Plan, Volume 6, Revised Activity Forecasts,* (Metropolitan Airports Commission, December 1993).

8. *Minneapolis-St. Paul International Airport Long-Term Comprehensive Plan, Volume 6, Revised Activity Forecasts, Technical Appendix,* (Metropolitan Airports Commission, March 1994).

**New Airport Planning Documents**

1. *New Air Carrier Airport Conceptual Design Study, Phase I: Conceptual Design Study* (Metropolitan Airports Commission)

2. *Summary, New Air Carrier Airport Conceptual Design Study and Plan* (Metropolitan Airports Commission, January 1991).

3. *Dual Track Airport Planning Process, New Airport Site Selection Study, Scoping Decision Document* (Metropolitan Airports Commission, June 1993).

4. *Minnesota State Airspace Study Phase A, Relocated Minneapolis/St. Paul International Airport, Final Report,* (Minnesota Department of Transportation, January 1994).

5. *New Airport Comprehensive Plan Final Alternative Environmental Document,* (Metropolitan Airports Commission, April 1995.

6. *New Airport Site Selection Study, Technical Report* (Metropolitan Airports Commission, June 1995).

**MSP Environmental Documents**

1. *Minneapolis-Saint Paul International Airport Long-Term Comprehensive Plan, Scoping Environmental Assessment Worksheet and Draft Scoping Decision Document* (Metropolitan Airports Commission, January 1994)

2. *Minneapolis-Saint Paul International Airport Long-Term Comprehensive Plan, Scoping Decision Document* (Metropolitan Airports Commission, March 1994).

3. *Minneapolis-Saint Paul International Airport, Long-Term Comprehensive Plan, Final Alternative Environmental Document* (Metropolitan Airports Commission, February 1995).

**New Airport Environmental Documents**

1. *Dual Track Airport Planning Process, New Airport Site Selection Study, Scoping Document and Draft Scoping Decision Document* (Metropolitan Airports Commission, March 1993).

2. *Dual Track Airport Planning Process, New Airport Site Selection Study, Scoping Decision Document* (Metropolitan Airports Commission, June 1993).

3. *Dual Track Airport Planning Process, New Airport Site Selection Study, Final AED* (Metropolitan Airports Commission, January 1994).

4. *Dual Track Airport Planning Process, New Airport Comprehensive Plan, Scoping Environmental Assessment Worksheet and Draft Scoping Decision Document* (Metropolitan Airports Commission, April 1994).

5. *Dual Track Airport Planning Process, New Airport Comprehensive Plan, Scoping Decision Document* (Metropolitan Airports Commission, June 1994).

6. *Dual Track Airport Planning Process, New Airport Comprehensive Plan, Final Alternative Environmental Document* (Metropolitan Airports Commission, April 1995).

**Dual Track Environmental Documents**

1. *Dual Track Airport Planning Process, First Phase Scoping Report* (Federal Aviation Administration, Metropolitan Airports Commission, April 1992).

2. *Dual Track Airport Planning Process, Environmental Impact Statement, Second Phase Scoping Report* (Metropolitan Airports Commission, May 1995).

3. *Dual Track Airport Planning Process, Environmental Impact Statement, Scoping Decision* (Metropolitan Airports Commission, July 1995).

4. *MSP Noise Mitigation Program,* Metropolitan Airports Commission, November 1996

**Other Supporting Documents**

*Environmental Assessment for Extension of Runway 4-22 to 12,000 feet*, Minneapolis-St. Paul International Airport, Metropolitan Airports Commission, April 1998

## List of Technical Reports:

Potential Effects of Twin Cities Major Airport Alternatives on the Minnesota State Highway System, SRF, Inc., August 1995

Induced Development Projections, Metropolitan Council, November 1995

Draft Supplemental Report on Above-ground Historic and Architectural Resources for the Dual Track Airport Planning Process: MSP, New Airport and No Action Alternatives, Hess, Roise and Company, November 1995

Minneapolis-St. Paul Airport Reconnaissance Survey, Volume II: The Built Environment, Hess, Roise and Company, 1992

Minneapolis-Saint Paul Airport Reconnaissance/Intensive-level Survey (for Long-Term Comprehensive Plan Alternative Environmental Document): The Built Environment, Hess, Roise and Company, August 1995

Economic Impacts of the Alternative Development Scenarios, Economic Research Associates and Dahlgren, Shardlow & Uban, February 1996

Dual Track Airport Planning Process: Technical Report, Metropolitan Airports Commission, Sept. 1996

MSP Third Option Scenarios, Metropolitan Airports Commission, 1993

Supplemental Airports _____, Minnesota Department of Transportation, 1995

# A.1 AIR QUALITY DISCUSSION AND MODELING ASSUMPTIONS

### Odor of Jet Fuel

Odors can be detected by some people in very small concentrations. Odor detection varies from person to person and may be different by the same person at different times. The periodic detection of odor from jet fuel is a phenomenon not uncommon near major air carrier airports. A detailed study on the potential for detection of odors from jet fuel was prepared in 1991 for Logan Airport (Boston)[1]. The discussion presented here is based upon that paper.

Jet aircraft emissions contain a wide variety of hydrocarbons, each of which have different odor potential. The most volatile hydrocarbons have the most potential to cause detectable odor even at very low concentrations. "Some hydrocarbons, for example, methane, require concentrations of hundreds of parts per million to be detectable by most people. Other hydrocarbons, for examples mercaptans, have an odor recognizable to most people at concentrations in the part per billion range." "The principal odor-causing hydrocarbon species in jet exhaust are the aromatic (fuel-related) and oxygenated (partially burned) hydrocarbons."

Hydrocarbon emission rates are largest during low power settings when jet engines are not being operated efficiently. This occurs on the ground during taxi and idle operations. Engine start-up is also a major contributor to on-airport hydrocarbon emissions.

The maximum concentration of total hydrocarbons predicted by the EDMS model for any receptor site near MSP was .00035 grams per cubic meter. Assuming that a typical molecular weight (80) is the same as aromatic hydrocarbons, this converts to approximately 1 ppm at the airport boundary. A number of the hydrocarbon species emitted from jet engines have a 50% odor detection level lower than this value as noted in the table below. This suggests that, under certain wind conditions, there may be a potential for detecting odors from jet fuel emissions.

| Hydrocarbon | 50% odor detection level parts per million (ppm) |
|---|---|
| 1-Butene | 0.030 |
| Formaldehyde | 0.250 |
| 1,3-Butadiene | 0.400 |
| o-Xylene | 0.200 |
| n-Octane | 0.020 |
| Styrene | 0.030 |
| Phenol | 0.050 |
| 1-Decene | 0.020 |
| Undecene | 0.220 |
| Napthalene | 0.001 |
| Methyl Styrene | 0.020 |

A portion of hydrocarbon emissions is contributed by Auxiliary Power Units although this occurs adjacent to the terminal. The eventual provision of air at the gate or electrification will reduce or eliminate that

[1] "Emissions of Odorous Hydrocarbons from Jet Aircraft Engines", prepared in 1991 by Tech Environmental, Inc. for Frederick R. Harris, Inc. and the Massachusetts Port Authority.

source of hydrocarbons. Minimizing taxi and queuing time can also reduce hydrocarbon emissions and hence reduce the potential for odor impacts. It is unlikely, however, under current engine and fuel technology, that odor from jet engines can be totally eliminated.

## Methodology for Estimating Auxiliary Power Unit (APU) CO and SOx Emissions

Based upon the data base for EDMS 3.0, six major class of aircraft were identified by the type of APU units used on aircraft contained in the EDMS data base. The categories are shown in the table below.

| APU Class | Aircraft within APU Class | Equivalent EDMS Aircraft Class | CO (lbs/hour) | SOx (lbs/hour) |
|---|---|---|---|---|
| 1 | L-100, L1101, L-188/C, B727, B737 | 727, 737 | 3.754 | 0.243 |
| 2 | DC8, DC9, MD80 | DC8, DC9, MD80 | 3.754 | 0.243 |
| 3 | A320, F-100 | A300 | 0.947 | 0.236 |
| 4 | B757, B767 | 757, 767 | 0.734 | 0.330 |
| 5 | DC10, MD11 | DC10 | 1.040 | 0.470 |
| 6 | B747F, B747-100/200/400 | B747 | 15.489 | 0.940 |

LTO (landing/takeoff) cycles for each aircraft class were developed from annual operation of aircraft within each APU class.

Based upon information provided by Northwest Airlines, it was assumed that APUs operate for an average of 15 minutes per LTO. This is considerably lower than the operating times assumed in the Draft Environmental Impact Statement. APU operating times of 30 minutes are below contribute relatively little to overall CO emissions on the airport.

The total APU operating time for each APU aircraft class was multiplied by the total number of LTOs within that class, and summed to yield total CO emissions.

**Table A.1-1 Intersection Screening Results (2020)**

Only those intersections which exceed **both** the "airport" and "total" volume screening limits will pass the screening test.

| Intersections along 66th Street/Richfield | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Lyndale at 66th | | | Nicollet at 66th | | | Portland at 66th | | |
| **MSP ALTERNATIVE** | | | | | | | | | |
| | Predicted | Screening | Pass? | Predicted | Screening | Pass? | Predicted | Screening | Pass? |
| Airport | 100 | 480 | No | 101 | 480 | No | 277 | 480 | No |
| Total | 1319 | 2400 | No | 1964 | 2400 | No | 3314 | 2400 | No |
| **NO ACTION ALTERNATIVE** | | | | | | | | | |
| | Predicted | Screening | Pass? | Predicted | Screening | Pass? | Predicted | Screening | Pass? |
| Airport | 76 | 480 | No | 199 | 480 | No | 224 | 480 | No |
| Total | 1870 | 2400 | No | 1965 | 2400 | No | 2986 | 2400 | No |

Source: David Braslau Assoc.

**Table A.1-2 Intersection Screening Results (2020)**

Only those intersections which exceed **both** the "airport" and "total" volume screening limits will pass the screening test.

| Intersection of TH 62 (Crosstown) with TH 55 | | | |
|---|---|---|---|
| | TH 62 at TH 55 | | |
| **MSP ALTERNATIVE** | | | |
| | Predicted | Screening | Pass? |
| Airport | 3170 | 480 | Yes |
| Total | 6389 | 2400 | Yes |
| **NO ACTION ALTERNATIVE** | | | |
| Airport | 3197 | 480 | Yes |
| Total | 6029 | 2400 | Yes |

Source: David Braslau Assoc.

## Table A.1-3 Mobile 5A Input File for Off-Airport Motor Vehicle Emissions (Year 2020 with No I/M or Anti-Tampering Programs)

```
1 PROMPT  1=NO PROMPT,2=PROMPT VERT,3=NO PROMPT HORIZ,4=PROMPT HORIZ
MOBILE 5A METRO REGISTRATION FOR 1990(most recent available),oxygenated fuels
1 TAMFLG  1=DEFAULT TAMPERING RATES,2=USER'S RATES
1 SPDFLG  1=1 SPD,2=8 SPDS 3=1+trip length per scenario 4=1+1trip l.
1 VMFLAG  VMT MIX:1=DEFAULT,2=1 CARD PER SCENARIO.,3=1 CARD FOR ALL
3 MYMRFG  % AGE,1=DEFAULT,2=MILE ACCUM,3=REGISTRATION,4=BOTH
1 NEWFLG  1=DEf,2=mod,3=def+evap,4=mod+evap,5=def+no CAAA,6=mod+no CAAA
1 IMFLAG  1=NONE,2=I/M PROG,3=2 I/M programs
1 ALHFLG  AIR COND,LOAD,HUM,1=DEFAULT,2=6 INPUTS,3=10 INPUTS
1 ATPFLG  1=NONE,2=ATP,3=press,4=purge,5=ATP+press,6=ATP+rurge,7=press+purge,8=ATP+press+purge
1 RLFLAG  1=UNCONTROLLED REFUEL,2=STAGE II ,3=ONBOARD,4=BOTH,5=NO EM
2 LOCFLG  1=LOCAL AREA PARAMETER FOR EACH SCENARIO,2=1 LAP FOR ALL
1 TEMFLG  1=USE MIN. & MAX. TEMP,2=USE 1 VALUE FOR AMBIENT TEMPERATURE
4 OUTFMT  1=221(NUM),2=140(NUM),3=112(DES),4=80(DES),5=mod yr,6=Spread
4 PRTFLG  1=HC ONLY,2=CO ONLY,3=NOX ONLY,4=ALL THREE POLLUTANTS
1 IDLFLG  1=NO IDLE,2=IDLE IS OUTPUT
1 NMHFLG  1=TOT HC,2=NMHC 3=VOC 4=TOG 5=NMOG
1 HCFLAG  1=TOT HC only,2=Tot with Rfl & Comp,3=Tot without Rfl & Comp
 .052 .075 .083 .085 .092 .088 .084 .058 .052 .052    JULMYR.LDGV..my ages 1-10
 .052 .056 .046 .035 .020 .070 .000 .000 .000 .000          .LDGV..my ages 11-20
 .000 .000 .000 .000 .000                                   .LDGV..my ages 21-25
 .063 .084 .084 .084 .084 .069 .059 .044 .036 .031          .LDGT1.my ages 1-10
 .030 .053 .047 .046 .036 .028 .017 .022 .017 .014          .LDGT1.my ages 11-20
 .009 .008 .008 .005 .025                                   .LDGT1.my ages 21-25
 .054 .072 .072 .072 .072 .052 .050 .034 .054 .031          .LDGT2.my ages 1-10
 .028 .080 .084 .049 .039 .030 .018 .023 .018 .015          .LDGT2.my ages 11-20
 .009 .008 .009 .006 .026                                   .LDGT2.my ages 21-25
 .023 .047 .047 .047 .047 .038 .033 .021 .026 .029           HDGV..my ages 1-10
 .034 .064 .054 .058 .051 .038 .043 .041 .035 .029          .HDGV..my ages 11-20
 .021 .022 .022 .014 .117                                   .HDGV..my ages 21-25
 .052 .075 .083 .085 .092 .088 .084 .058 .052 .052    JULMYR.LDDV..my ages 1-10
 .052 .056 .046 .035 .020 .070 .000 .000 .000 .000          .LDDV..my ages 11-20
 .000 .000 .000 .000 .000                                   .LDDV..my ages 21-25
 .063 .084 .084 .084 .084 .069 .059 .044 .036 .031          .LDDT .my ages 1-10
 .030 .053 .047 .046 .036 .028 .017 .022 .017 .014          .LDDT .my ages 11-20
 .009 .008 .008 .005 .025                                   .LDDT .my ages 21-25
 .034 .067 .067 .067 .067 .073 .061 .040 .041 .051          .HDDV..my ages 1-10
 .053 .066 .055 .057 .045 .019 .023 .028 .024 .016          .HDDV..my ages 11-20
 .011 .009 .007 .005 .016                                   .HDDV..my ages 21-25
 .144 .168 .135 .109 .088 .070 .056 .045 .036 .029          .MC....my ages 1-10
 .023 .097 .000 .000 .000 .000 .000 .000 .000 .000          .MC....my ages 11-20
 .000 .000 .000 .000 .000                                   .MC....my ages 21-25
Mpls StPaul Mn   C 16.0 38.0 13.4  9.0 20 2 1 1    <--LAP record
.000 .900 .000 .027 2                               <---- OXY card 2=waiver
1 20  2,5 31.0 20.6 27.3 20.6 01                     Scenario records
1 20  5.0 31.0 20.6 27.3 20.6 01
1 20 10.0 31.0 20.6 27.3 20.6 01
1 20 20.0 31.0 20.6 27.3 20.6 01
1 20 30.0 31.0 20.6 27.3 20.6 01
1 20 40.0 31.0 20.6 27.3 20.6 01
1 20 50.0 31.0 20.6 27.3 20.6 01
1 20 60.0 31.0 20.6 27.3 20.6 01
```

**Table A.1-4a MPCA 1990 8-County CO Emission Inventory**
**Summary Table**

| | SUBTOTALS (TONS PER YEAR) | | | SHARE OF TOTAL (%) | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| MOBILE SOURCES | | | 521,172 | | | 72.78 |
| On-Road | | 398,711 | | | 55.68 | |
| Non-road | | 122,461 | | | 17.1 | |
| Aircraft APUs | 1,028 | | | 0.14 | | |
| Aircraft | 5,322 | | | 0.74 | | |
| Locomotives | 443 | | | 0.06 | | |
| Comm marine vessels | 122 | | | 0.02 | | |
| Rec marine vessels | 21,714 | | | 3.03 | | |
| Industrial equipment | 13,721 | | | 1.92 | | |
| Construction equipment | 6,824 | | | 0.95 | | |
| Agricultural equipment | 1,772 | | | 0.25 | | |
| Recreational equipment | 916 | | | 0.13 | | |
| Logging equipment | 124 | | | 0.02 | | |
| Lawn & garden equipment | 38,430 | | | 5.37 | | |
| Airport service equipment | 2,633 | | | 0.37 | | |
| Light commercial equipment | 29,412 | | | 4.11 | | |
| AREA SOURCES | | | 93,849 | | | 13.11 |
| Stationary sources | | 57,208 | | | 7.99 | |
| Residential | 50,348 | | | 7.03 | | |
| Commercial/institutional | 857 | | | 0.12 | | |
| Industrial | 6,003 | | | 0.84 | | |
| Waste disposal | | 335 | | | 0.05 | |
| Misc area sources | | 36,213 | | | 5.06 | |
| Stationary internal combustion | | 93 | | | 0.01 | |
| POINT SOURCES | | | 101,032 | | | 14.11 |
| External combustion | | 1,490 | | | 0.21 | |
| Industrial processes | | 98,708 | | | 13.79 | |
| Stationary internal combustion | | 260 | | | 0.04 | |
| Incineration | | 574 | | | 0.08 | |
| TOTAL CO EMISSIONS | | | 716,053 | | | 100.00 |

Source: MPCA and David Braslau Associates, Inc.

**Table A.1-4b MPCA 1993 8-County CO Emission Inventory**
**Summary Table**

| | SUBTOTALS (TONS PER YEAR) | | | SHARE OF TOTAL (%) | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| MOBILE SOURCES | | | 609,650 | | | 73.46 |
| On-Road | | 482,792 | | | 58.17 | |
| Non-road | | 126,858 | | | 15.28 | |
| Aircraft APUs | 1,051 | | | 0.13 | | |
| Aircraft | 5,483 | | | 0.66 | | |
| Locomotives | 459 | | | 0.06 | | |
| Comm marine vessels | 124 | | | 0.01 | | |
| Rec marine vessels | 22,502 | | | 2.71 | | |
| Industrial equipment | 14,219 | | | 1.71 | | |
| Construction equipment | 7,072 | | | 0.85 | | |
| Agricultural equipment | 1,836 | | | 0.22 | | |
| Recreational equipment | 949 | | | 0.11 | | |
| Logging equipment | 129 | | | 0.02 | | |
| Lawn & garden equipment | 39,825 | | | 4.80 | | |
| Airport service equipment | 2,729 | | | 0.33 | | |
| Light commercial equipment | 30,479 | | | 3.67 | | |
| AREA SOURCES | | | 98,769 | | | 11.90 |
| Stationary sources | | 59,894 | | | 7.22 | |
| Residential | 52,101 | | | 6.28 | | |
| Commercial/institutional | 1,103 | | | 0.13 | | |
| Industrial | 6,690 | | | 0.81 | | |
| Waste disposal | | 347 | | | 0.04 | |
| Misc area sources | | 38,410 | | | 4.63 | |
| Stationary internal combustion | | 118 | | | 0.01 | |
| POINT SOURCES | | | 121,539 | | | 14.64 |
| External combustion | | 1,698 | | | 0.20 | |
| Industrial processes | | 119,841 | | | 14.44 | |
| Stationary internal combustion | | 0 | | | 0 | |
| Incineration | | 0 | | | 0 | |
| TOTAL CO EMISSIONS | | | 829,958 | | | 100.00 |

Source: MPCA and David Braslau Associates, Inc.

## Table A.1-5 ASSUMPTIONS USED FOR ON-AIRPORT SOURCE IN THE EDMS MODEL

The following is an outline of assumptions made for the EDMS model input and estimates of APU usage.

**On-airport roadways**

Geometry

Only main terminal or parking ramp roadways were included

Simplified straight-line geometry were assumed for major roadway segments

Vehicles

Daily vehicle volumes associated with the terminal area were based on from the Metro Council MSP link connector for the no action alternative (49,000 ADT) (Figure W-1) and assumed for the no action alternative in 2005.

Vehicle volumes on other roadways were estimated from limited data available from the regional network model.

Vehicles volumes for other years and scenarios were assumed to be proportional to aircraft operations (which exhibited growth behavior similar to originating passengers)

Adjustment factors for traffic volumes

| YEAR | NOA | BASE |
|---|---|---|
| 2005 | 1.000 | 1.027 |
| 2010 | 1.001 | 1.062 |
| 2020 | 1.003 | 1.099 |

Annual average hourly volumes were assumed to be 42% of peak hour volumes

Vehicle speed and cold start percentages based upon similar studies

**On-airport parking**

Geometry

Simplified geometry assumed four corners for each parking area

Cold starts of 80% were assumed for exiting vehicles

In-ramp speed of 5 mph was assumed with distance-to-park also estimated

Vehicles

Parking demand was assumed to be approximately 25% of roadway traffic

Car Rental

Car rental volume based was upon data provided by Hertz which accounts for 30% of airport rental volume (1995 data)

Estimates of in/out volume for peak and average periods were based upon information provided

Year 2005 and 2020 data were based upon ratio of jet aircraft departures

**Aircraft operations**

Annual operations

Annual operations of aircraft provided by HNTB for 2005 and 2020

Aircraft mix converted to EDMS data base using typical emission data

Regional turboprops simulated using SF340

F100 simulated using B737300

GA jets simulated using LEAR 35
17 classes of aircraft used in the EDMS model for annual operations
Average hourly operations = annual divided by 8760 hours/year

Peak hour operations
Peak hour operations provided for 2020 by HNTB
Peak hour operations for 2005 based upon annual-to-peak ratios
Limited to four dominant and representative aircraft types
Operations limited to one direction on each runway

Taxi and queuing times
Data provided by HNTB by runway and alternative
Weighted VFR/IFR taxi time by aircraft type and runway calculated

**Heating plants**

MAC plants
Detailed data on boiler capacity and fuel consumption provided by Liesch Associates who is preparing Title V permit for the MAC
Annual fuel consumption used for annual emission estimates
Relative use of natural gas and fuel oil based upon MAC data
Fuel consumption converted to appropriate EDMS input units
Only major boilers (50 Million BTU capacity) used in the model
Boiler location identified by B.A. Liesch Associates

Other plants
Heating requirements estimated from BTU/square foot requirement
Airport employment from updated economic impact study (1995)
Square footage based upon assumed employee space requirements
Total of 4.9 million SF estimated for on-airport heating demand
Three additional 50 Million BTU boilers required in addition to the existing MAC boilers
Additional boilers assigned to Northwest Airlines Main Base and office buildings
Terminal area heating requirement assumed same for all years
One boiler removed for MSP 2020 Concept Plan along with office space
Boilers located at identified support facility or adjacent to building
Relative use of natural gas and fuel oil based upon MAC data

**Fuel storage** (fuel emissions are limited to HC which is not critical for this study)

Fuel amount
Amount for 1995 obtained from Signature Flight Operations support
Amount adjusted to year 2005 and 2020 based upon jet operations

Fuel type
Jet A fuel assumed

**APU (Auxiliary power unit) usage**

Aircraft mix

Aircraft mix was based upon annual operations of APU aircraft classes assumed in the EDMS model for each year and scenario

APU usage

APU usage of 15 minutes per LTO cycle was assumed

Emissions

APU emissions were taken from the EDMS 3.0 data base

Annual emissions based upon annual APU usage

**Other sources**

Ground service equipment emissions automatically estimated in model

No incinerators will be located at MSP in the projection years

No training fires were assumed since particulates not critical in this study

**Table A.1-6 Assumed Average Annual Hourly Departures (2005)**

| | | YEAR 2005 ESTIMATES BY HNTB | | | | YEAR 2020 | |
|---|---|---|---|---|---|---|---|
| | | 24 HRS | 24 HRS | AVG HR | AVG HR | AVG HR | AVG HR |
| | | MSP ALT | NO ACTION | MSP ALT | NO ACTION | MSP ALT | NO ACTION |
| 1 | 1ENG PIS | 11.1 | 9.7 | 0.5 | 0.4 | 0.4 | 0.4 |
| 2 | 2ENG PIS | 13.4 | 11.7 | 0.6 | 0.5 | 0.5 | 0.5 |
| 3 | 727 | 14.8 | 14.7 | 0.6 | 0.6 | 0.1 | 0.1 |
| 4 | 737 | 29.3 | 29.3 | 1.2 | 1.2 | 1.3 | 1.4 |
| 5 | 747 | 8.9 | 6.6 | 0.4 | 0.3 | 0.7 | 0.4 |
| 6 | 757 | 88.9 | 46.3 | 3.7 | 1.9 | 4.7 | 2.3 |
| 7 | 767 | 5.5 | 2.1 | 0.2 | 0.1 | 0.4 | 0.1 |
| 8 | A300 | 80.9 | 147 | 3.4 | 6.1 | 5.2 | 8.3 |
| 9 | C130H | 4.1 | 4.1 | 0.2 | 0.2 | 0.2 | 0.2 |
| 10 | DC10 | 17.1 | 18.0 | 0.7 | 0.8 | 0.4 | 0.2 |
| 11 | DC8 | 2.8 | 2.8 | 0.1 | 0.1 | 0.1 | 0.1 |
| 12 | DC9 | 105.0 | 74.6 | 4.4 | 3.1 | 0.1 | 0.1 |
| 13 | 737300 | 10.0 | 0 | 0.4 | 0.0 | 4.8 | 2.3 |
| 14 | LEAR35 | 37.1 | 32.4 | 1.5 | 1.4 | 1.5 | 1.4 |
| 15 | MD80 | 42.5 | 62.2 | 1.8 | 2.6 | 0.8 | 2.0 |
| 16 | MU3001 | 17.4 | 15.2 | 0.7 | 0.6 | 0.7 | 0.7 |
| 17 | SF340 | 175.4 | 170.1 | 7.3 | 7.1 | 7.8 | 6.7 |
| | TOTAL | 664.2 | 646.8 | 27.7 | 27.0 | 29.7 | 27.2 |

**Table A.1-7a Assumed Annual Departures (2020)**

| | | MSP | NO ACTION |
|---|---|---|---|
| # | EDMS AC TYPE | TOTAL | TOTAL |
| 1 | 1ENG PIST | 3540 | 3284 |
| 2 | 2ENG PIST | 4345 | 4014 |
| 3 | 727 | 840 | 693 |
| 4 | 737 | 11715 | 11895 |
| 5 | 747 | 6567 | 3941 |
| 6 | 757 | 40881 | 20476 |
| 7 | 767 | 3284 | 1095 |
| 8 | A300 | 45772 | 72626 |
| 9 | C130H | 1496 | 1495 |
| 10 | DC10 | 3722 | 1788 |
| 11 | DC8 | 728 | 546 |
| 12 | DC9 | 582 | 438 |
| 13 | F100 | 41938 | 20365 |
| 14 | LEAR35 | 13105 | 12117 |
| 15 | MD80 | 7154 | 17301 |
| 16 | MU3001 | 6314 | 5839 |
| 17 | SF340 | 68106 | 58794 |
| | TOTAL | 260089 | 236707 |

**TABLE A.1-7b Assumed Year 2020 Hourly Departures (Annual/8760)**

| | | MSP | NO ACT |
|---|---|---|---|
| # | EDMS AC TYPE | TOTAL | TOTAL |
| 1 | 1ENG PIST | 0.40 | 0.37 |
| 2 | 2ENG PIST | 0.50 | 0.46 |
| 3 | 727 | 0.10 | 0.08 |
| 4 | 737 | 1.34 | 1.36 |
| 5 | 747 | 0.75 | 0.45 |
| 6 | 757 | 4.67 | 2.34 |
| 7 | 767 | 0.37 | 0.13 |
| 8 | A300 | 5.23 | 8.29 |
| 9 | C130H | 0.17 | 0.17 |
| 10 | DC10 | 0.42 | 0.20 |
| 11 | DC8 | 0.08 | 0.06 |
| 12 | DC9 | 0.07 | 0.05 |
| 13 | F100 | 4.79 | 2.32 |
| 14 | LEAR35 | 1.50 | 1.38 |
| 15 | MD80 | 0.82 | 1.98 |
| 16 | MU3001 | 0.72 | 0.67 |
| 17 | SF340 | 7.77 | 6.71 |
| | TOTAL | 29.69 | 27.02 |

## Table A.1-8a Assumed Average Annual Hourly Departures (2005)
## MSP Alternative

| | EDMS AC TYPE | TOTAL | 4 | 12L | 12R | 17 | 22 | 30L | 30R | 35 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1ENG PIST | 0.5 | 0.0 | 0.1 | 0.0 | 0.2 | 0.0 | 0.1 | 0.1 | 0.0 |
| 2 | 2ENG PIST | 0.6 | 0.0 | 0.1 | 0.0 | 0.2 | 0.0 | 0.1 | 0.1 | 0.0 |
| 3 | 727 | 0.6 | 0.0 | 0.1 | 0.0 | 0.2 | 0.0 | 0.1 | 0.1 | 0.0 |
| 4 | 737 | 1.2 | 0.0 | 0.2 | 0.1 | 0.5 | 0.0 | 0.2 | 0.3 | 0.0 |
| 5 | 747 | 0.4 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 |
| 6 | 757 | 3.7 | 0.0 | 0.7 | 0.3 | 1.4 | 0.0 | 0.6 | 0.8 | 0.0 |
| 7 | 767 | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| 8 | A300 | 3.4 | 0.0 | 0.7 | 0.2 | 1.2 | 0.0 | 0.5 | 0.7 | 0.0 |
| 9 | C130H | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10 | DC10 | 0.7 | 0.0 | 0.1 | 0.0 | 0.3 | 0.0 | 0.1 | 0.1 | 0.0 |
| 11 | DC8 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 12 | DC9 | 4.4 | 0.0 | 0.9 | 0.3 | 1.6 | 0.0 | 0.7 | 0.9 | 0.0 |
| 13 | F100 | 0.4 | 0.0 | 0.1 | 0.0 | 0.2 | 0.0 | 0.1 | 0.1 | 0.0 |
| 14 | LEAR35 | 1.5 | 0.0 | 0.3 | 0.1 | 0.6 | 0.0 | 0.2 | 0.3 | 0.0 |
| 15 | MD80 | 1.8 | 0.0 | 0.4 | 0.1 | 0.7 | 0.0 | 0.3 | 0.4 | 0.0 |
| 16 | MU3001 | 0.7 | 0.0 | 0.1 | 0.1 | 0.3 | 0.0 | 0.1 | 0.2 | 0.0 |
| 17 | SF340 | 7.3 | 0.0 | 1.5 | 0.5 | 2.7 | 0.0 | 1.1 | 1.5 | 0.0 |
| | TOTAL | 27.7 | 0.0 | 5.5 | 1.9 | 10.2 | 0.0 | 4.2 | 5.8 | 0.0 |

## Table A.1-8b Assumed Average Annual Hourly Departures by Aircraft and Runway (2020)
## MSP Alternative

| | EDMS AC TYPE | TOTAL | 4 | 12L | 12R | 17 | 22 | 30L | 30R | 35 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1ENG PIST | 0.4 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 |
| 2 | 2ENG PIST | 0.5 | 0.0 | 0.1 | 0.0 | 0.2 | 0.0 | 0.1 | 0.1 | 0.0 |
| 3 | 727 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 4 | 737 | 1.3 | 0.0 | 0.3 | 0.1 | 0.5 | 0.0 | 0.2 | 0.3 | 0.0 |
| 5 | 747 | 0.7 | 0.0 | 0.1 | 0.1 | 0.3 | 0.0 | 0.1 | 0.2 | 0.0 |
| 6 | 757 | 4.7 | 0.0 | 0.9 | 0.3 | 1.7 | 0.0 | 0.7 | 1.0 | 0.0 |
| 7 | 767 | 0.4 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 |
| 8 | A300 | 5.2 | 0.0 | 1.0 | 0.4 | 1.9 | 0.0 | 0.8 | 1.1 | 0.0 |
| 9 | C130H | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10 | DC10 | 0.4 | 0.0 | 0.1 | 0.0 | 0.2 | 0.0 | 0.1 | 0.1 | 0.0 |
| 11 | DC8 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 12 | DC9 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 13 | F100/737300 | 4.8 | 0.0 | 0.9 | 0.4 | 1.7 | 0.0 | 0.7 | 1.0 | 0.0 |
| 14 | LEAR35 | 1.5 | 0.0 | 0.3 | 0.1 | 0.5 | 0.0 | 0.2 | 0.3 | 0.0 |
| 15 | MD80 | 0.8 | 0.0 | 0.2 | 0.1 | 0.3 | 0.0 | 0.1 | 0.2 | 0.0 |
| 16 | MU3001 | 0.7 | 0.0 | 0.1 | 0.1 | 0.3 | 0.0 | 0.1 | 0.2 | 0.0 |
| 17 | SF340 | 7.8 | 0.0 | 1.5 | 0.6 | 2.8 | 0.0 | 1.2 | 1.6 | 0.0 |
| | TOTAL | 29.7 | 0.1 | 5.9 | 2.2 | 10.8 | 0.0 | 4.4 | 6.3 | 0.0 |

**Table A.1-9 Assumed Time in Queue Delay by Alternative[1]**

| ALTERNATIVE | AVERAGE DELAY TIME IN QUEUE |
|---|---|
| MSP | 1.11 minutes |
| No Action | 4.88 minutes |

[1] The queue delay for 2005 and 2020 are assumed to be the same

**Table A.1-10 Assumed EDMS Input Data - Roadways and Parking**
(annual average vehicles/hour)

| | No Action | | MSP Base | |
|---|---|---|---|---|
| **1. Roadways (E. Terminal)** | 2005 | 2020 | 2005 | 2020 |
| East Terminal Inbound | 1020 | 1023 | 1048 | |
| East Terminal Outbound | 1785 | 1790 | 1833 | |
| Terminal Roadway | 1000 | 1003 | 1027 | |
| Admin Segment 1 | 157 | 157 | 161 | |
| Admin Segment 2 | 157 | 157 | 161 | |
| Air Cargo | 154 | 154 | 158 | |
| Service Road | 967 | 970 | 993 | |
| **1.Roadways (W. Terminal)** | | | | |
| Main Roadway Inbound | | | | 1124 |
| Main Roadway Outbound | | | | 1967 |
| West Terminal Inbound | | | | 1124 |
| West Terminal Outbound | | | | 1967 |
| Air Cargo | | | | 170 |
| Service Road | | | | 1066 |

| | No Action | | MSP Base | |
|---|---|---|---|---|
| **2. Parking (E. Terminal)** | 2005 | 2020 | 2005 | 2020 |
| East Term Ramp In | 250 | 251 | 257 | |
| East Term Ramp Out | 500 | 502 | 514 | |
| Car Rental Lot In | 180 | 181 | 185 | |
| Car Rental Lot Out | 250 | 251 | 257 | |
| Remote Parking In | 85 | 85 | 87 | |
| Remote Parking Out | 210 | 211 | 216 | |
| **2. Parking (W. Terminal)** | | | | |
| West Term Ramp In | | | | 276 |
| West Term Ramp Out | | | | 551 |
| East Remote Ramp In | | | | 94 |
| East Remote Ramp Out | | | | 231 |
| Rental Car In | | | | 198 |
| Rental Car Out | | | | 276 |

**Table A.1-11 Parking Input Data - EDMS Model**

| Alternative | Facility | Average Distance | Speed | Cold Start Percentage |
|---|---|---|---|---|
| No Action | East Ramp | 1000 | 5 | 80 |
| | Remote | 500 | 5 | 80 |
| MSP | West Ramp | 1000 | 5 | 80 |
| | Remote | 500 | 5 | 80 |

**Table A.1-12 Airport-Related Employment (1994) and Estimated Heating Requirements**

| Sector | Total Jobs | On-Airport Jobs | SF Per Employee | Mill SF Feet |
|---|---|---|---|---|
| Passenger airlines | 17,361 | 13,889 | 200 | 3.4722 |
| General aviation | 88 | | 250 | 0.0220 |
| MAC employees | 366 | 366 | 300 | 0.1098 |
| Catering | 500 | | 150 | 0.0750 |
| Passenger services | 455 | 455 | 200 | 0.0910 |
| Aircraft services | 244 | | 300 | 0.0732 |
| Retail concessions | 697 | 697 | 150 | 0.1045 |
| Fedl govt agencies | 722 | | 200 | 0.1444 |
| Misc | 31 | | 200 | 0.0062 |
| Freight airlines | 1,254 | | 200 | 0.2508 |
| Freight forwarders | 442 | | 200 | 0.0884 |
| Rental cars | 486 | | 100 | 0.0486 |
| Ground transportation | 1,344 | 1,344 | 100 | 0.1344 |
| Construction-related | 599 | 599 | 300 | 0.1797 |
| TOTAL CIVILIAN | 24,589 | 17,350 | | 4.8002 |
| Military (ESTIMATE) | 500 | | 200 | 0.1000 |
| TOTALS | 25,089 | 17,350 | | 4.9002 |

- Assume a heating requirement of 40 BTU/SF and efficiency of 65%.
- The heating plant requirement is then 62 BTU/SF
- The on-airport heating capacity needed is 64 x 4.90 = 304 Million BTU
- The existing MAC capacity (major boilers only) is currently 150 Million BTU
- Therefore, the net additional capacity needed is approximately 150 Million BTU.
- This is equivalent to six 50 MMBTU (Million BTU) boilers
- Annual natural gas consumption per installed 50 MMBTU boiler is assumed to be 2.08 million cubic meters.
- Annual backup fuel oil consumption per installed 50 MMBTU boiler is assumed to be 224 kiloliters per year.

**Table A.1-13 Assumed 50 MMBTU Boiler Location**

| Boiler | No Action & MSP 2010 | MSP 2020 |
|---|---|---|
| 1 | Main Terminal Complex | Airline Gate Complex |
| 2 | Main Terminal Complex | Airline Gate Complex |
| 3 | Main Terminal Complex | Airline Gate Complex |
| 4 | NWA offices (Terminal Road) | NWA offices (Terminal Road) |
| 5 | NWA office/maintenance complex | West Terminal Building |
| 6 | NWA office/maintenance complex | Airline Maintenance Area |

**Table A.1-14 Assumed 50 MMBTU Boiler Coordinates**

| | No Action & MSP 2010 | | MSP 2020 | |
|---|---|---|---|---|
| BOILER | X (m) | Y(m) | X (m) | Y(m) |
| 1 | 3184 | 2350 | 3184 | 2350 |
| 2 | 3184 | 2350 | 3184 | 2350 |
| 3 | 3184 | 2350 | 3184 | 2350 |
| 4 | 3942 | 1668 | 3942 | 1668 |
| 5 | 1590 | 570 | 1364 | 3183 |
| 6 | 1590 | 570 | 1570 | 570 |

**Table A.1-15 Projected Peak Hour Operations**
**MSP Alternative (2020)**

| | EDMS | TOTAL | 4 | 12L | 12R | 17 | 22 | 30L | 30R | 35 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1ENG PIST | 0.3 | | 0.1 | 0 | 0.1 | | 0 | 0.1 | |
| 2 | 2ENG PIST | 0.4 | | 0.1 | 0 | 0.1 | | 0.1 | 0.1 | |
| 3 | 727 | 0.2 | | 0 | 0 | 0.1 | | 0 | 0.1 | |
| 4 | 737 | 3.3 | | 0.7 | 0.2 | 1.2 | | 0.5 | 0.7 | |
| 5 | 747 | 0.4 | | 0.1 | 0 | 0.1 | | 0.1 | 0.1 | |
| 6 | 757 | 12.1 | | 2.4 | 0.8 | 4.5 | | 1.8 | 2.6 | |
| 7 | 767 | 0.5 | | 0.1 | 0 | 0.2 | | 0.1 | 0.1 | |
| 8 | A300 | 11.9 | | 2.5 | 0.7 | 4.4 | | 1.8 | 2.5 | |
| 9 | C130H | 0.1 | | 0 | 0 | 0.1 | | 0 | 0 | |
| 10 | DC10 | 0.4 | | 0.1 | 0 | 0.2 | | 0 | 0.1 | |
| 11 | DC8 | 0 | | 0 | 0 | 0 | | 0 | 0 | |
| 12 | DC9 | 0.1 | | 0 | 0 | 0.1 | | 0 | 0 | |
| 13 | F100 | 12.6 | | 2.5 | 0.8 | 4.7 | | 1.9 | 2.7 | |
| 14 | LEAR35 | 1.1 | | 0.2 | 0.1 | 0.4 | | 0.2 | 0.2 | |
| 15 | MD80 | 2.2 | | 0.4 | 0.2 | 0.8 | | 0.4 | 0.4 | |
| 16 | MU3001 | 0.5 | | 0.1 | 0 | 0.2 | | 0.1 | 0.1 | |
| 17 | SF340 | 12.1 | | 2.4 | 0.8 | 4.6 | | 1.8 | 2.5 | |
| | TOTAL | 58.2 | | 11.7 | 3.6 | 21.8 | 0 | 8.8 | 12.3 | 0 |

**Table A.1-16 Assumed Peak Hour Operations for EDMS Model MSP Alternative (2020)**

| EDMS AC TYPE | TOTAL | 17 | 30L | 30R |
|---|---|---|---|---|
| 737300 | 19.5 | 7.3 | 4.3 | 7.9 |
| 757 | 12.6 | 4.7 | 2.7 | 5.2 |
| A300 | 12.7 | 4.7 | 2.6 | 5.4 |
| SF340 | 13.4 | 5.1 | 2.8 | 5.5 |
| TOTAL | 58.2 | 21.8 | 12.4 | 24 |

**Table A.1-17 Assumed on-Airport Roadway Traffic Volumes Peak Hour - (2020)[2]**

| **No Action** | In | Out | Totals |
|---|---|---|---|
| East Terminal[3] | 2,842 | 4,888 | 7,730 |
| Service Road[4] | 700 | 1,602 | 2,302 |
| Administrative[5] | 105 | 269 | 374 |
| Cargo/Transit | 105 | 262 | 367 |
| Total | 3,752 | 7,021 | 10,773 |
| **MSP Alternative** | In | Out | Totals |
| East Remote Parking[6] | 620 | 1,239 | 1,859 |
| Service Road | 737 | 1,557 | 2,294 |
| Cargo/Transit | 160 | 283 | 443 |
| West Terminal | 2,112 | 3,667 | 5,779 |
| Total | 3,629 | 6,746 | 10,375 |

2 Average annual traffic volumes are assumed to be 42% of the Peak Hour traffic volumes. Year 2005 traffic volumes are assumed to be 100% of year 2020 traffic volumes for the No Action Alternative and 93% of 2020 traffic volumes for the MSP Alternative.

3 This roadway serves the terminal, Northwest Airlines, and other on-airport services.

4 This roadway serves general aviation, Northwest Airlines, the Humphrey Terminal and remote parking (remote parking is eliminated under the MSP Alternative).

5 This roadway is eliminated for the MSP Alternative to make space for the West Terminal

6 This access serves the remote east parking area. However, since the parking area is immediately adjacent to Trunk Highway 5, this roadway is not included in the model.

**Table A.1-18 Roadway Input Data - EDMS Model**
**Peak Hour (2020)**

| Alternative | Facility | Vehicles per hour | Speed | Cold Start Percentage |
|---|---|---|---|---|
| No Action | East Term In | 2842 | 30 | 20 |
| | East Term Out | 4888 | 30 | 50 |
| | Terminal Road | 3000 | 5 | 20 |
| | Administrative | 374 | 30 | 20 |
| | Service Road | 2302 | 30 | 20 |
| | Cargo/Transit | 367 | 30 | 20 |
| MSP | Main Road In | 2112 | 30 | 20 |
| | Main Road Out | 3667 | 30 | 50 |
| | West Term In | 2112 | 30 | 20 |
| | West Term Out | 3667 | 30 | 50 |
| | Service Road | 2294 | 30 | 20 |
| | Cargo/Transit | 443 | 30 | 20 |

**Table A.1-19 Parking Input Data - EDMS Model**
**Peak Hour (2020)**

| Airport Alternative | Vehicles In @ 5 mph | Vehicles Out @ 5 mph | Average Distance | Cold Start Percentage |
|---|---|---|---|---|
| MSP Alternative | | | | |
| West Terminal Ramp | 125 | 300 | 1000 | 80 |
| East Remote Ramp | 250 | 500 | 500 | 100 |
| Rental Car Parking | 199 | 277 | | 80 |
| Total Assumed Parking | 574 | 1077 | | |
| No Action Alternative | | | | |
| East Terminal Ramp | 250 | 500 | 1000 | 80 |
| Remote Parking Lot | 85 | 210 | 500 | 100 |
| Rental Car Parking | 180 | 250 | | 80 |
| Total Assumed Parking | 515 | 960 | | |

## TABLE A.1-20 Assumed Average Annual Hourly Departures
## No Action Alternative - 2005

| | EDMS AC TYPE | TOTAL | 4 | 12L | 12R | 22 | 30L | 30R |
|---|---|---|---|---|---|---|---|---|
| 1 | 1ENG PIST | 0.4 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 2 | 2ENG PIST | 0.5 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 3 | 727 | 0.6 | 0.0 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 |
| 4 | 737 | 1.2 | 0.0 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 |
| 5 | 747 | 0.3 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 |
| 6 | 757 | 1.9 | 0.0 | 0.4 | 0.5 | 0.3 | 0.3 | 0.3 |
| 7 | 767 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 8 | A300 | 6.1 | 0.0 | 1.4 | 1.7 | 0.9 | 1.0 | 1.0 |
| 9 | C130H | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10 | DC10 | 0.8 | 0.0 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 |
| 11 | DC8 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 12 | DC9 | 3.1 | 0.0 | 0.7 | 0.9 | 0.5 | 0.5 | 0.5 |
| 13 | F100 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 14 | LEAR35 | 1.4 | 0.0 | 0.3 | 0.4 | 0.2 | 0.2 | 0.2 |
| 15 | MD80 | 2.6 | 0.0 | 0.6 | 0.7 | 0.4 | 0.4 | 0.4 |
| 16 | MU3001 | 0.6 | 0.0 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 |
| 17 | SF340 | 7.1 | 0.0 | 1.6 | 2.0 | 1.1 | 1.2 | 1.1 |
| | TOTAL | 27.0 | 0.0 | 6.2 | 7.5 | 4.0 | 4.6 | 4.3 |

## Table A.1-21 Assumed Average Annual Hourly Departures
## No Action Alternative - 2020

| | EDMS AC TYPE | TOTAL | 4 | 12L | 12R | 22 | 30L | 30R |
|---|---|---|---|---|---|---|---|---|
| 1 | 1ENG PIST | 0.4 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 2 | 2ENG PIST | 0.5 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 3 | 727 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 4 | 737 | 1.4 | 0.0 | 0.3 | 0.4 | 0.2 | 0.2 | 0.2 |
| 5 | 747 | 0.4 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 6 | 757 | 2.3 | 0.0 | 0.5 | 0.7 | 0.3 | 0.4 | 0.4 |
| 7 | 767 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 8 | A300 | 8.3 | 0.0 | 1.9 | 2.3 | 1.2 | 1.4 | 1.4 |
| 9 | C130H | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10 | DC10 | 0.2 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 |
| 11 | DC8 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 12 | DC9 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 13 | F100/737300 | 2.3 | 0.0 | 0.5 | 0.7 | 0.3 | 0.4 | 0.4 |
| 14 | LEAR35 | 1.4 | 0.0 | 0.3 | 0.4 | 0.2 | 0.2 | 0.2 |
| 15 | MD80 | 2.0 | 0.0 | 0.5 | 0.6 | 0.3 | 0.3 | 0.3 |
| 16 | MU3001 | 0.7 | 0.0 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 |
| 17 | SF340 | 6.7 | 0.0 | 1.6 | 1.9 | 1.0 | 1.2 | 1.1 |
| | TOTAL | 27.0 | 0.1 | 6.3 | 7.6 | 4.0 | 4.7 | 4.4 |

## Table A.1-22 Projected Peak Hour 0perations
## No Action Alternative -2020

| | EDMS | TOTAL | 4 | 12L | 12R | 22 | 30L | 30R |
|---|---|---|---|---|---|---|---|---|
| 1 | 1ENG PIST | 0.2 | | 0.1 | 0.1 | 0 | 0 | 0 |
| 2 | 2ENG PIST | 0.4 | | 0.1 | 0.1 | 0 | 0.1 | 0.1 |
| 3 | 727 | 0.1 | | 0 | 0.1 | 0 | 0 | 0 |
| 4 | 737 | 3.4 | | 0.8 | 1 | 0.5 | 0.6 | 0.5 |
| 5 | 747 | 0.7 | | 0.2 | 0.3 | 0 | 0.1 | 0.1 |
| 6 | 757 | 6 | | 1.4 | 1.7 | 0.9 | 1 | 1 |
| 7 | 767 | 0.2 | | 0.1 | 0.1 | 0 | 0 | 0 |
| 8 | A300 | 20.9 | | 4.9 | 5.8 | 3.1 | 3.6 | 3.5 |
| 9 | C130H | 0.1 | | 0 | 0.1 | 0 | 0 | 0 |
| 10 | DC10 | 0.5 | | 0.1 | 0.2 | 0 | 0.1 | 0.1 |
| 11 | DC8 | 0 | | 0 | 0 | 0 | 0 | 0 |
| 12 | DC9 | 0 | | 0 | 0 | 0 | 0 | 0 |
| 13 | F100 | 5.9 | | 1.4 | 1.6 | 0.9 | 1 | 1 |
| 14 | LEAR35 | 1.1 | | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 |
| 15 | MD80 | 5 | | 1.1 | 1.4 | 0.7 | 0.9 | 0.9 |
| 16 | MU3001 | 0.5 | | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 17 | SF340 | 11.2 | | 2.7 | 3.1 | 1.6 | 1.9 | 1.9 |
| | TOTAL | 56.2 | | 13.2 | 16 | 8 | 9.6 | 9.4 |

## Table A.1-23 Assumed Peak Hour Operations for EDMS Model
## No Action Alternative - 2020

| EDMS AC TYPE | TOTAL | 22 | 30L | 30R |
|---|---|---|---|---|
| 737300 | 15.5 | 2.3 | 7.1 | 6.1 |
| 757 | 6.2 | 0.9 | 2.8 | 2.5 |
| A300 | 22.1 | 3.1 | 10.1 | 8.9 |
| SF340 | 12.4 | 1.7 | 5.6 | 5.1 |
| TOTAL | 56.2 | 8 | 25.6 | 22.6 |

## Table A.1-24 Estimation of Motor Vehicle Emissions at the TH 77 and 66th Street Interchange

| YEAR 2005 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **NEW INTERCHANGE** | | | | | | | | | |
| LINK | Length (ft) | Length (mi) | ADT | Daily VMT | Annual VMT | Avg Speed | CO G/MI | CO (gm) | CO (tons) |
| NB OFF | 700 | 0.133 | 3700 | 490.5 | 179044 | 40 | 10.24 | 1833406.1 | 2.02 |
| NB ON | 1000 | 0.189 | 5600 | 1060.6 | 387121 | 40 | 10.24 | 3964121.2 | 4.37 |
| SB OFF | 1000 | 0.189 | 4800 | 909.1 | 331818 | 40 | 10.24 | 3397818.2 | 3.74 |
| SB ON | 700 | 0.133 | 3700 | 490.5 | 179044 | 40 | 10.24 | 1833406.1 | 2.02 |
| 66TH ST | 600 | 0.114 | 11200 | 1272.7 | 464545 | 30 | 14.6 | 6782363.6 | 7.47 |
| TOTALS | 4000 | 0.758 | 29000 | 4223.5 | 1541572 | | | 17811115 | 19.62 |
| EXISTING INTERCHANGE | | | | | | | | | |
| LINK | Length (ft) | Length (mi) | ADT | Daily VMT | Annual VMT | Avg Speed | CO G/MI | CO (gm) | CO (tons) |
| NB OFF | 1100 | 0.208 | 3636 | 757.5 | 276488 | 25 | 18.15 | 5018248.1 | 5.53 |
| NB ON | 1100 | 0.208 | 1708 | 355.8 | 129879 | 25 | 18.15 | 2357306.9 | 2.60 |
| SB ON | 1300 | 0.246 | 3636 | 895.2 | 326758 | 30 | 14.6 | 4770666.1 | 5.25 |
| 66TH ST | 500 | 0.095 | 7200 | 681.8 | 248864 | 30 | 14.6 | 3633409.1 | 4.00 |
| TOTALS | 4000 | 0.758 | 16180 | 2690.4 | 981988 | | | 15779630 | 17.38 |

| YEAR 2010 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NEW INTERCHANGE | | | | | | | | | |
| LINK | Length (ft) | Length (mi) | ADT | Daily VMT | Annual VMT | Avg Speed | CO G/MI | CO (gm) | CO (tons) |
| NB OFF | 700 | 0.133 | 3700 | 490.5 | 179044 | 40 | 9.87 | 1767159.9 | 1.95 |
| NB ON | 1000 | 0.189 | 5600 | 1060.6 | 387121 | 40 | 9.87 | 3820886.4 | 4.21 |
| SB OFF | 1000 | 0.189 | 4800 | 909.1 | 331818 | 40 | 9.87 | 3275045.5 | 3.61 |
| SB ON | 700 | 0.133 | 3700 | 490.5 | 179044 | 40 | 9.87 | 1767159.9 | 1.95 |
| 66TH ST | 600 | 0.114 | 11200 | 1272.7 | 464545 | 30 | 14.2 | 6596545.5 | 7.26 |
| TOTALS | 4000 | 0.758 | 29000 | 4223.5 | 1541572 | | | 17226797 | 18.97 |
| EXISTING INTERCHANGE | | | | | | | | | |
| LINK | Length (ft) | Length (mi) | ADT | Daily VMT | Annual VMT | Avg Speed | CO G/MI | CO (gm) | CO (tons) |
| NB OFF | 1100 | 0.208 | 3700 | 770.8 | 281354 | 25 | 17.7 | 4979968.8 | 5.48 |
| NB ON | 1100 | 0.208 | 1760 | 366.7 | 133833 | 25 | 17.7 | 2368850 | 2.61 |
| SB ON | 1300 | 0.246 | 3700 | 911.0 | 332509 | 30 | 14.2 | 4721634.5 | 5.20 |
| 66TH ST | 500 | 0.095 | 7200 | 681.8 | 248864 | 30 | 14.2 | 3533863.6 | 3.89 |
| TOTALS | 4000 | 0.758 | 16360 | 2730.3 | 996561 | | | 15604317 | 17.19 |

| YEAR 2020 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **NEW INTERCHANGE** | | | | | | | | | |
| LINK | Length (ft) | Length (mi) | ADT | Daily VMT | Annual VMT | Avg Speed | CO G/MI | CO (gm) | CO (tons) |
| NB OFF | 700 | 0.133 | 3700 | 490.5 | 179044 | 40 | 11.07 | 1982012.2 | 2.18 |
| NB ON | 1000 | 0.189 | 5600 | 1060.6 | 387121 | 40 | 11.07 | 4285431.8 | 4.72 |
| SB OFF | 1000 | 0.189 | 4800 | 909.1 | 331818 | 40 | 11.07 | 3673227.3 | 4.05 |
| SB ON | 700 | 0.133 | 3700 | 490.5 | 179044 | 40 | 11.07 | 1982012.2 | 2.18 |
| 66TH ST | 600 | 0.114 | 11200 | 1272.7 | 464545 | 30 | 16 | 7432727.3 | 8.19 |
| TOTALS | 4000 | 0.758 | 29000 | 4223.5 | 1541572 | | | 19355411 | 21.32 |
| EXISTING INTERCHANGE | | | | | | | | | |
| LINK | Length (ft) | Length (mi) | ADT | Daily VMT | Annual VMT | Avg Speed | CO G/MI | CO (gm) | CO (tons) |
| NB OFF | 1100 | 0.208 | 3831 | 798.1 | 291316 | 25 | 20 | 5826312.5 | 6.42 |
| NB ON | 1100 | 0.208 | 1868 | 389.2 | 142046 | 25 | 20 | 2840916.7 | 3.13 |
| SB ON | 1300 | 0.246 | 3831 | 943.2 | 344282 | 30 | 16 | 5508513.6 | 6.07 |
| 66TH ST | 500 | 0.095 | 7200 | 681.8 | 248864 | 30 | 16 | 3981818.2 | 4.39 |
| TOTALS | 4000 | 0.758 | 16730 | 2812.3 | 1026507 | | | 18157561 | 20.00 |

# A.2 STATE HISTORIC PRESERVATION OFFICE CORRESPONDENCE

MINNESOTA HISTORICAL SOCIETY
FOUNDED IN 1849
Fort Snelling History Center, St. Paul, MN 55111 • (612) 726-1171

April 23, 1992

Mr. Nigel Finney
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, Minnesota 55450

Dear Mr. Finney:

Re: Dual-Track Airport Planning Process, First Scope Scoping Report
Needed capacity/facilities at Minneapolis-St. Paul International Airport
MHS Referral File Number: 92-2138

Thank you for the opportunity to review and comment on the above report. It has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the Advisory Council on Historic Preservation (36CFR800), and to the responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act.

Section III.B. of the report includes a listing of issues and concerns that have been identified for the MSP Long-Term Comprehensive Plan. We are pleased to see that "Impact on Fort Snelling historic district and resources" is included on this list. However, the list fails to mention the need for a comprehensive cultural resources survey and evaluation of other potential historic properties. This survey should include all types of historic properties, including, but not limited to, airport buildings and structures, housing developments, and archaeological sites. Our office should be consulted during the determination of the "area of potential effect" to be surveyed, and during the determination of the chronological limits for the survey. The survey will need to be completed in accordance with the Secretary of the Interior's Standards and Guidelines for Identification and Evaluation, and the principal investigator(s) will need to meet the Secretary of the Interior's Professional Qualifications Standards. Some aspects of this survey were discussed with Mark Ryan of MAC and Evan Futterman of HNTB at a meeting held at Ft. Snelling on 5 June 1991.

We assume that the "environmental effects" identified as a consideration in Section II.C. (page 8) include historic properties.

We look forward to working with you in completing the surveys of both the Dakota County search area and the MSP location, and in utilizing the results of those surveys to avoid or reduce effects of airport development on historic properties. We remind you that the Federal Aviation Agency will need to coordinate this process pursuant to the requirements of 36 CFR 800.

Please contact me if you have any questions on our concerns.

Sincerely,

Dennis A. Gimmestad
Government Programs and Compliance Officer

MINNESOTA HISTORICAL SOCIETY

March 29, 1993

Mr. Nigel D. Finney
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, Minnesota 55450-2799

Dear Mr. Finney:

RE: Scoping Document and Draft Scoping Decision Document
New Airport Site Selection Study, Dakota County
MHS Referral File Number: 93-0614

Thank you for the opportunity to review and comment on the above document. They have been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the Advisory Council on Historic Preservation (36CFR800), and to the responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act.

Our comments are as follows:

1. The chart of "Permits and Approvals Required", included under item 8 in the Scoping Document, should include the Advisory Council on Historic Preservation and the State Historic Preservation Office under the Unit of Government column for the Section 106 review. In addition, "clearance" is not part of the Section 106 process.

2. The section on Historic Resources in the Draft Scoping Decision Document identifies the Area of Potential Effect (APE) as a key item of concern. We concur, and appreciate the initial discussions on this issue that have been initiated with our office. Because of the high public interest in and magnitude of this project, we would suggest that a clear discussion of the APE be circulated for review, perhaps to the Technical Advisory Committee. This discussion should also be included in the Survey Research Design to be submitted to our office.

3. The Research Design for the archaeological survey needs to address how archaeological sensitivity was assessed during the initial stages of survey as well as the need or lack of need for geomorphological analysis.

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4. All historic properties identified in the surveys, both historic/architectural and archaeological, need to be evaluated to determine if they meet National Register criteria. This is necessary because the determination of effect cannot be completed until the eligibility of all properties is known.

5. An indication should be made that survey work will meet the Secretary of the Interior's Standards for Identification and Evaluation and the SHPO survey manuals.

We look forward to working with the Metropolitan Airports Commission and the Federal Aviation Administration in the review of this project. Please contact our Review and Compliance Section at 612-296-5462 if you have any questions regarding our comments.

Sincerely,

Britta L. Bloomberg
Deputy State Historic Preservation Officer

BLB:dmh

cc: Glen Orcutt, Federal Aviation Administration
6020 28th Avenue South, Minneapolis, Minnesota 55450

94-0680

MINNESOTA HISTORICAL SOCIETY

November 23, 1993

Ms. Jenn Unruh
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, Minnesota 55450

Dear Ms. Unruh:

Re: Dakota County New Airport Site, Dual Track Planning Process
SHPO Number: 94-0680 (93-0614)

Thank you for the opportunity to review and comment on the Draft Alternative Environmental Document for the New Airport Site Selection Study. It has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the Advisory Council on Historic Preservation (36CFR800), and to the responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act.

We have the following comments on the report:

1. The Area of Potential Effect for the proposed project is discussed on pages III-29 - III-31. FAA and MAC have formulated the APE in a way that appears defensible. Given the magnitude of this project, we would strongly encourage that FAA consult with the Advisory Council on Historic Preservation to assure that they also agree with the APE as currently defined.

2. The archaeological survey and the built environment survey have identified properties in the project areas. The next step in the process is for these properties to be evaluated in order to determine whether they meet National Register criteria. In terms of evaluation:

A. Evaluation of properties should be completed before the development of alternative comprehensive plans for the airport. This is important because efforts need to be taken during development of the plans to avoid effects on properties that meet National Register criteria. If the properties are unevaluated at this stage, it will not be clear which properties need to be taken into account and which do not. Further, the evaluation process often yields information about the specific nature of the significance of properties, and this information is often useful in deciding which kinds of effects are adverse and which may be acceptable. Without

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information about eligibility, the planning becomes clumsy.

B. The evaluation of the homestead sites identified in the archaeological survey and the farmstead sites identified in the built environment survey will require development of additional contextual information on the history of agricultural activity in Dakota County, as per the Secretary of the Interior's Standards for Evaluation. We would request that our office be consulted regarding the best format for this contextual information. All of the farmstead sites recommended for evaluation in the built environment survey will then need to be evaluated within this framework; we would also suggest that the other farmsteads inventoried in this survey be reviewed in light of the context to determine if any of them also need to be evaluated. The archaeological homestead sites should be evaluated within this context framework as well. We are developing specific questions about some of the properties that should be addressed during evaluation.

C. We would also ask that you consult with us regarding evaluation of properties falling outside the agricultural context. We have some specific evaluation questions about some of these properties as well.

D. The archaeological survey report indicates that some potential areas could not be surveyed because of high water levels or because of lack of landowner permission. Once the airport site has been selected, efforts need to be made to complete archaeological survey and evaluation activities for those potential areas that have not been previously surveyed.

E. The discussion of mitigation indicates special problems with mitigation of effects on Chimney Rock. Recognizing these potential problems, it is particularly important that the evaluation of this property be completed as soon as possible, so that any decisions on the project are made with the knowledge that this property is or is not eligible to the National Register. National Register Bulletin #38

("Guidelines for Evaluating and Documenting Traditional Cultural Properties") and the Multiple Property Documentation Form on Geographical Places of Cultural Significance should be used in the evaluation.

3. The mitigation measures discussed are generally appropriate. Of course, more detailed consideration of mitigation will be necessary once the evaluation of properties and assessment of effect is complete.

4. Site 6 has the greatest potential to adversely effect cultural resources.

If you have any questions regarding our review of this document, please contact Dennis Gimmestad in our Review and Compliance Section at 612-296-5462.

Sincerely,

Britta L. Bloomberg
Deputy State Historic Preservation Officer

BLB:dmb

cc: Glenn Orcutt, FAA
Larry Dallam, HNTB
Charlene Roise, HR
Christina Harrison, ARS

MINNESOTA HISTORICAL SOCIETY

March 2, 1994

Mr. Nigel D. Finney
Metropolitan Airports Commission
2040 28th Avenue South
Minneapolis, Minnesota 55450

Dear Mr. Finney:

Re: Minneapolis-St. Paul International Airport Long-Term Comprehensive Plan
SHPO Number: 94-0681

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

Our comments on the Scoping Worksheet and the Draft Scoping Decision Document are as follows:

1. With most projects, the proper coordination between the NEPA process and the 106 process is that all identification and National Register evaluation of historic properties should be completed at the draft EIS stage. This information is then used to evaluate the effects of the project, and, if adverse effect are identified, appropriate avoidance or mitigation measures are considered and a memorandum of agreement is developed (if needed) and included in the final EIS. Because of the complex and lengthy nature of this project, we would strongly recommend that a detailed schedule for 106 compliance activities be developed, with reference to the overall project review schedule which has already been circulated.

2. We would strongly recommend that the Area of Potential Effect (APE) for historical and architectural resources and for archaeological resources be reviewed and approved by the Advisory Council on Historic Preservation at an early stage in the review process. This is particularly important because the APE for this project involves questions of potential impact from noise and other "secondary" factors, and because the planning process is of a unusually long duration.

3. In conjunction with these documents, we have reviewed the report of the initial history/architecture survey prepared by Hess Roise in December 1992.

A. We concur that the Ft. Snelling District retains integrity and eligibility to the National Register.

B. We concur that the Air Force Reserve Base merits further evaluation in order to determine National Register eligibility. This study should pay particular attention to the heating plant and related heating system.

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C. We concur that the Original Wold-Chamberlain Terminal District merits further evaluation in order to determine National Register eligibility. This study should include a specific consideration of the historical associations of buildings P-1 and T-46 with the other buildings in the district.

D. We feel that the information included in the inventory is sufficient to determine that the St. Kevin's Complex is not eligible for the National Register, and we do not feel that further evaluation is necessary.

E. We concur that the other areas covered by this report do not appear to contain history/architecture resources that qualify for the National Register or that merit further study.

F. We concur with the general approach outlined in the Draft Decision Document for completing additional survey in areas outside those covered by the initial survey, and for completing the above referenced evaluations. We do note that the document indicates that the survey will include recommendation of properties that appear to be eligible or that merit additional study to determine eligibility. Please note that any survey report that recommends further study to complete evaluations will need to be returned by our office with a request to complete the evaluations. We cannot complete an assessment of project effect without completed evaluations.

4. We have not yet had the opportunity to review the report of the initial archaeological survey of the airport area. However, the following factors need to be kept in mind regarding subsequent archaeological investigations:

A. A comprehensive long-range Research Design for archaeological survey for the project still needs to be developed and documented. The Draft Decision Document discusses a number of factors that need to be considered in this research design.

B. The Scoping Worksheet delineates the APE for archaeological resources as those areas which will be subjected to ground disturbance. In order to cover the potential alternative of building a new airport and abandoning the current airport, the APE will need to be expanded to cover the entire area within the current airport boundaries, as well as any areas outside the airport boundaries where ground disturbing activities might occur as a result of airport abandonment (for example, removing airport signals). The entire area needs to be included because, but for the new airport, the old one would not be abandoned, and, since future development of the site may not fall under 106 review

procedures, the locations of historic properties need to be known and protected as part if the transition process. The 106 review schedule (see comment above) and the comprehensive archaeological Research Design both need to be very specific about how and when this issue will be addressed.

C. The comprehensive archaeological Research Design needs to include the development of a map of the area which clearly indicates: areas which have been disturbed to the point that no archaeological investigation is necessary, areas which have been surveyed for archaeological resources (include reference to survey dates and reports), locations of archaeological properties which have been identified but not evaluated, locations of evaluated/listed archaeological properties, and areas with potential to contain archaeological resources that still need to be surveyed (with indications of appropriate methods). The Research Design should also include a method for periodically updating this map as survey work and evaluation proceeds.

D. The 106 review schedule should indicate the specific point in the project development process when the 106 Memorandum of Agreement is to be complete. If, due to current airport operations constraints or other factors, all of the archaeological survey and evaluation cannot be completed before the memorandum, the memorandum will need to include a specific stipulation for surveying the areas as the project is implemented. The comprehensive archaeological Research Design should serve as a basis for this stipulation.

E. We agree that additional Phase I testing, and possible Phase II testing, are necessary for the archaeological site by Duck Lake (Area A).

F. We agree that additional Phase II testing is necessary for the archaeological site east of Taylor Avenue (Area C), which is located within the Fort Snelling Historic District. This testing should include an evaluation of the individual National Register eligibility of the Native American components of the site (outside the period of significance for the district), as well as an evaluation of whether the late 19th/early 20th century components of the site contribute to the Fort Snelling Historic District.

G. We agree that no further testing is necessary for the find spot in Area B.

If you have any questions regarding our comments, please contact our Review and Compliance Section at 612-296-5462. We look forward to continuing to work with you on the consideration of historic properties as project planning proceeds.

Sincerely,

Dennis A. Gimmestad
Government Programs and Compliance Officer

DAG:dmb

cc: Glen Orcutt, FAA
Larry Dallam, HNTB
Charlene Roise, HR
Christina Harrison, ARS

MINNESOTA HISTORICAL SOCIETY

March 7, 1994

Mr. Nigel D. Finney
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, Minnesota 55450

Dear Mr. Finney:

Re: Dakota County New Airport Site, Dual Track Planning Process
Final Alternative Environmental Document (AED)
SHPO Number: 94-0680

Thank you for the opportunity to review and comment on the Final Alternative Environmental Document (AED) for the New Airport Site.

One additional issue has become apparent since we commented on the Draft AED last November. We raised this issue in our recent comments on the Scoping EAW for the expansion of the Minneapolis St. Paul Airport. Should a new airport site be selected for development, the effects of this project on historic properties at the Minneapolis St. Paul Airport will need to be considered. Therefore, it is important that the surveys of the Minneapolis St. Paul Airport, both for archaeological properties and for historical/architectural properties, include the entire airport area. The entire airport area could be affected if a new site is selected and the existing airport is transferred to new owners and/or adapted for new uses.

While the survey of the Minneapolis St. Paul Airport area is being completed as part of the review process for the development of a comprehensive plan for Minneapolis St. Paul, it is important to recognize that the survey data may also be needed to consider effects under the review process for the new airport site as well. To cite an example of a potential problem, the early efforts at survey for archaeological resources at Minneapolis St. Paul focused only on areas which would be disturbed during the expansion of the airport dequate to address the effects on archaeological sites located outside potential construction zones but within an area that could be transferred to a new owner or adapted for new use if the airport was built on a different site.

Please keep these factors in mind as the dual track planning process proceeds. Contact our Review and Compliance Section at 612-296-5462 if you have any questions on our comments.

Sincerely,

Britta L. Bloomberg
Deputy State Historic Preservation Officer

BLB:dmb

cc: Glen Orcutt, FAA
Larry Dallam, HNTB
Charlene Roise, HR
Christine Harrison, ARS

345 KELLOGG BOULEVARD WEST / SAINT PAUL, MINNESOTA 55102-1906 / TELEPHONE: 612-296-6126

MINNESOTA HISTORICAL SOCIETY

November 21, 1994

Mr. Nigel Finney
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, Minnesota 55450

Dear Mr. Finney:

Re: Dual Track Planning Process; Hennepin County
Minneapolis-St. Paul International Airport Comprehensive Plan
SHPO Number: 94-0681

Thank you for the opportunity to review and comment on the Draft Alternative Environmental Document for the Long-Term Comprehensive Plan for the Minneapolis-St. Paul International Airport. Our comments are as follows:

1. The report splits the information on cultural resources into separate sections on archaeological resources and history/architecture resources. Since the same review process applies to both groups, this separation could be confusing for many readers. If separate sections are maintained, each discussion should cross-reference the other.

2. The discussion of archaeological resources appropriately acknowledges the need for additional archaeological survey. This survey strategy will need to be carefully integrated into the overall development schedule.

3. The archaeological site in Area C, as discussed on page III-11, appears to be located within the boundaries of the Fort Snelling Historic District, which is already listed on the National Register of Historic Places.

4. We have previously recommended that the Area of Potential Effect (APE) for the project be submitted to the Advisory Council for an early review. Because the APE for this project is unusually complex, we continue to believe that this review by the Council is important.

5. The narrative discussion on project effects should include specific information on the special protection afforded National Historic Landmarks during the Section 106 process.

6. The discussion of mitigation measures for historical/architectural resources should include avoidance as a priority consideration. In addition to HABS/HAER documentation of resources, the discussion of potential mitigation could also include such items as design review for work on National Register properties or for new construction adjacent to National Register properties. Mitigation could also include special planning considerations for properties affected by new development related to airport development. The final AED needs to include a specific assessment of effect on all National Register eligible properties, as well as appropriate avoidance and/or mitigation measures for each site.

345 KELLOGG BOULEVARD WEST / SAINT PAUL, MINNESOTA 55102-1906 / TELEPHONE: 612-296-6126

MINNESOTA HISTORICAL SOCIETY

February 3, 1995

Mr. Nigel D. Finney
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, Minnesota 55450

Dear Mr. Finney:

Re: Dual Track Airport Planning Process,
New Airport Comprehensive Plan, Dakota County
SHPO Number: 94-2883

Thank you for the opportunity to review and comment on the Draft Alternative Environmental Document for the New Airport Comprehensive Plan. We have the following comments:

1. The information on the National Register eligibility of archaeological sites needs clarification. The individual site evaluations discussed on page III-12 indicate that all four archaeological properties do not meet National Register eligibility. However, figure 8 indicates that the four sites are potentially eligible. The discussion under B.2 (impacts) and B.3 (mitigation) includes all four sites, which implies that the sites are eligible, since the criteria of effect and mitigation are only applied to eligible sites.

2. The information on the eligibility of Chimney Rock needs clarification. The evaluation on page III-12 indicates that the property is eligible due to its associations with early Euro-Americans and with Native Americans, while the discussion on page III-13 indicates that the associations with Native Americans have not been documented, and that property may not be eligible due to changes in the larger visual context. Page III-30 indicates that Chimney Rock is eligible. We have detailed some concerns about the evaluation of this property in our comments on the Survey Report. In short, we believe that the process of evaluation (taking into account the guidelines for evaluating traditional cultural properties) and the specific significant qualities of the property need further documentation. Until this has been completed, we cannot concur with the determination that the proposed undertaking has no effect on the Chimney Rock. However, it does not appear that there is a significant difference in the level of impact on the rock among the three final alternatives in the AED.

3. We have previously recommended that the Area of Potential Effect (APE) for the project be submitted to the Advisory Council for an early review. Because the APE for this project is unusually complex, we continue to believe that this review by the Council is important.

345 KELLOGG BOULEVARD WEST / SAINT PAUL, MINNESOTA 55102-1906 / TELEPHONE: 612-296-6126

7. Both the section on archaeological resources and the section on historical/architectural resources contain information about the eligibility or non-eligibility of specific properties to the National Register. Our office has been in close consultation with the consultants who are completing the survey and evaluation work for the project, and we have participated in discussions related to eligibility of inventoried properties. However, for the record, the survey reports are yet to be completed, and we have not, at this point, concurred with most specific property evaluations. (We have commented on a few properties as part of the review of separate project proposals. For example, we commented on the eligibility of the Original Wold-Chamberlain Terminal Complex as part of an FAA E-Scan monitor project.) Except for some archaeological properties, these evaluations need to be complete and included in the final AED.

8. The discussion of 4(f) in Section L is inadequate in relation to historic properties. This section does contain a cross reference to the separate chapters on archaeological resources and historical/architectural resources, but these two chapters discuss Section 106, not Section 4(f). The specific applicability of 4(f) to historical properties needs to be discussed in Section L.

9. Implementation of this plan will not occur for a considerable length of time. Because evaluation of the historic significance of properties takes into account changing perceptions of significance, provisions need to be developed for updating the cultural resource review as part of the overall project schedule.

10. The report indicates that the level of adverse effects on cultural resources would be much more significant for alternatives 1 and 2 than for alternatives 5 and 6. We agree with this assessment. Mitigating the loss of significant portions of the National Landmark Fort Snelling Historic District would be very difficult, and we would strongly recommend that alternatives 1 and 2 be avoided.

If you have any question regarding our comments, please contact Dennis Gimmestad in our Review and Compliance Section at 612-296-5462. We look forward to working with you to address cultural resource concerns through the Section 106 review process for this project.

Sincerely,

Britta L. Bloomberg
Deputy State Historic Preservation Officer

BLB:dmb

4. Implementation of this plan will not occur for a considerable length of time. Because evaluation of the historic significance of properties takes into account changing perceptions of significance, provisions need to be developed for updating the cultural resource review as part of the overall project schedule.

If you have any questions regarding our comments, please contact Dennis Gimmestad in our Review and Compliance Section at 612-296-5462. We look forward to working with you to address cultural resource concerns through the Section 106 review process for this project.

Sincerely,

Britta L. Bloomberg
Deputy State Historic Preservation Officer

BLB:dmb

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MINNESOTA HISTORICAL SOCIETY

June 29, 1995

Mr. Glen Orcutt
Federal Aviation Administration
6020 28th Avenue South, Suite 102
Minneapolis, Minnesota 55450

Dear Mr. Orcutt

Re: Second Phase Scoping Report for Dual Track Airport Planning Process
Dakota County
SHPO Number: 95-3034

Thank you for the opportunity to review and comment on the above document. It has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the Advisory Council on Historic Preservation (36CFR800), and to the responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act.

We have the following comments:

1. As we have stated in our comments on several earlier airport planning documents, we would strongly recommend submitting the area(s) of potential effect delineation to the Advisory Council for their concurrence at an early stage in the review process. This recommendation pertains to the APE for archaeological resources and the APE for history/architecture resources, for all alternatives.

2. The discussion of the APE suggests that adjustments will need to be made once the locations of highway and transit improvements are known. We would also suggest that the results of studies on Induced Socioeconomic Impacts and Land Use be analyzed and incorporated into the APE as appropriate.

3. Section M.1.1 contains a listing of properties listed on or eligible for the National Register of Historic Places. We note that we have not yet concurred in the eligibility for all of these properties.

4. It is important that all inventoried properties in the project areas are evaluated for National Register eligibility early in the planning process so that any planning decisions can be made with clear information about which cultural resources are significant.

We look forward to working with you throughout the planning process for this project. If you have any questions regarding our review of this project, please contact our Review and Compliance Section at 612-296-5462.

Sincerely,

Dennis A. Gimmestad
Government Programs and Compliance Officer

DAG:dmb

MINNESOTA HISTORICAL SOCIETY

October 3, 1995

RECEIVED
OCT 05 1995

Ms. Charlene Roise
Hess, Roise and Company
405 Cedar Avenue South, Suite 200
Minneapolis, Minnesota 55454

Dear Ms. Roise:

Re: Minneapolis St. Paul Airport Reconnaissance/Intensive Level Survey
for Long-Term Comprehensive Plan Alternative Environmental Document
Dual Track Planning Process
SHPO Number: 94-0681

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

We have reviewed the results of the survey of the project area by Hess Roise, and have the following comments:

1. We concur with the report recommendations that the following properties meet National Register criteria:

Acacia Park Cemetery
Twelfth Avenue Bridge
Hale Elementary School
Nokomis Knoll Residential Historic District

2. We feel that the eligibility of the Spruce Shadows Farm needs additional consideration, under both National Register criteria A and C. It is not clear just what the significant criterion A associations are (development of agriculture in Bloomington [farm not built until this activity was waning?], transformation of Bloomington to suburb [theme more directly illustrated by early commercial development?], other?). Under criterion C, more specific analysis is needed.

3. We also feel that the Scenic Overlook on Sibley Memorial Highway needs additional consideration, under National Register criterion A. The evaluation should take into account the registration requirements of the Multiple Property Form for Depression-era construction, and pay particular attention to the potential significance of the association of the overlook with a African American relief construction crew.

4. The Nokomis Knoll District should have its own inventory form, as a means of providing clear documentation of its eligibility. We recognize that an intensive level survey of the entire district might be beyond the scope of this project. Nonetheless, we will need a map marked with "tentative boundaries", "approximate boundaries", or some such qualified delineation, so that we have a record upon which the eligibility call was made.

If you have any questions regarding our review of this project, please contact our Review and Compliance Section at 612-296-5462.

Sincerely,

Dennis A. Gimmestad
Government Programs and Compliance Officer

DAG:dmb

cc: Larry Dallam, HNTB
Glenn Orcutt, FAA
Nigel Finney, MAC
Homer Hruby, SHPO

# A.3 NOISE CHARACTERISTICS, METRICS, COMPATIBLE LAND USE CRITERIA

This appendix describes aircraft noise characteristics, the various metrics used to quantify noise impacts, compatible land use criteria, and the assumptions used to determine the likely impacts of the Dual Track EIS alternatives.

## AIRCRAFT NOISE CHARACTERISTICS

Every noise event has certain characteristics. At any instant, a sound may be loud or quiet (depending upon the amplitude of the wave), high or low pitched (depending on its frequency), sudden or continuous, or build to a peak and fade away. A sound may have identifiable pure tones in an otherwise broad spectrum of undifferentiated sound. This complexity makes it difficult to describe a noise event with a single number than can fully convey all of the characteristics of that event. A summary of noise characteristics associated with the operation of aircraft follows.

### Aircraft Noise[1]

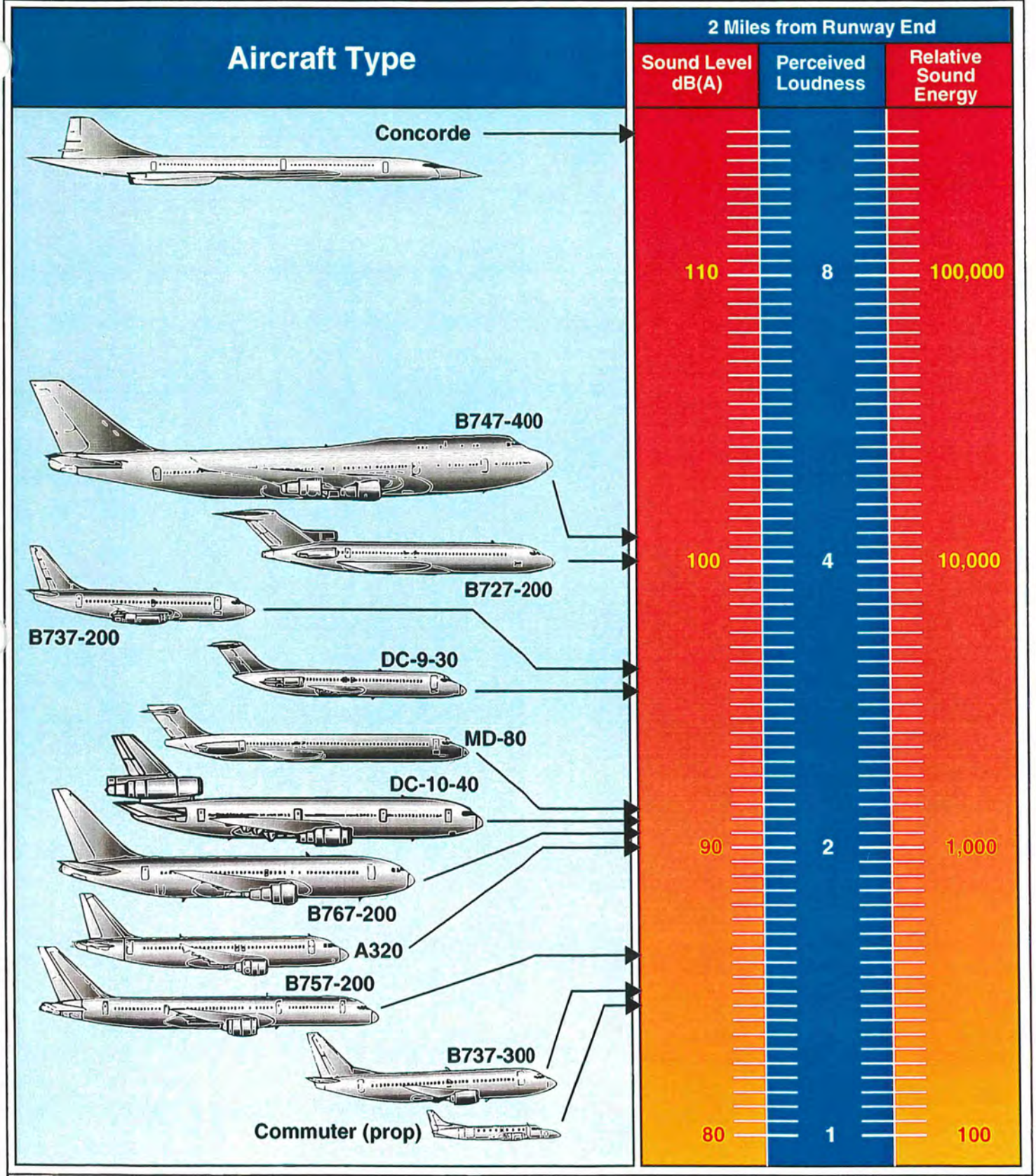
The major source of noise associated with aircraft operations is aircraft power plants (typically jet engines). As an engine's fan blades and turbo-machinery rotate, they produce turbulence that generates high frequency noise (e.g. the familiar compressor whine). Also, as hot jet exhaust is mixed at high velocity with the cooler ambient air, a loud low frequency roar is produced. These sounds are more prominent on older-technology engines (such as those used on the McDonnell Douglas DC-9 and the Boeing 727). Aircraft equipped with these engines are referred to as "Stage 2" aircraft.

Stage 3 aircraft, such as the Boeing 767 and the Airbus A320, use newer-technology engines where the ratio of the air passing by the combustion chamber to the air flowing through the combustion chamber (known as an engine's bypass ratio) is significantly increased. Fan noise is minimized by eliminating inlet guide vanes, modifying geometrical relationships between the fan blades and the outlet guide vanes, slowing blade tip speed and lining the nacelle ducts with acoustically absorbent material. High-bypass engines generate lower frequency fan noise and less jet exhaust noise and are typically much less annoying than low-bypass ratio engines.

A less obvious source of noise is the sound of the airframe traveling through the air. As aircraft engines become quieter, airframe noise may contribute more to the overall noise generated by aircraft. **Figure A.3-1** shows the relative loudness of the more popular aircraft types.

In 1991, the FAA issued a national noise policy that requires air carriers to phase out all Stage 2 aircraft from their fleet by December 31, 1999. The carriers must also meet a series of interim compliance dates. For example, the airlines must have a 75 percent Stage 3 fleet by 1998. Airlines are responding by a combination of acquiring Stage 3 aircraft and "hush-kitting" or re-engining their Stage 2 aircraft to meet stage 3 requirements.

[1] The report, "Aircraft Noise Impact-Planning Guidelines for Local Agencies," United States Department of Housing and Urban Development, 1972, has been drawn upon in the preparation of this section.

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MAC

Figure A.3-1

Common Aircraft Noise Levels on the Decibel Scale

## DESCRIPTION OF NOISE METRICS

The following sections discuss six noise metrics: A-weighted decibel (dBA), Day-Night Average Sound Level (DNL), $L_{10}$, Peak Sound Exposure Level (SEL), Time Above (TA), and Maximum A-Weighted Sound Level (Lmax).

*A-Weighted Decibel (dBA)*

The characteristic most commonly used to describe noise is its loudness, measured in decibels (dB). Since the sound pressure that causes physical pain to most humans is approximately one million times greater than the threshold of hearing, decibels are measured on a logarithmic scale that "compresses" the resulting values to a range of 0 to about 120 dB. A 10 dB increase in the sound pressure level is perceived by humans as approximately twice the volume of sound. Also, most people cannot readily detect changes in sound pressure levels of less than about 3 dB except in a laboratory environment.

Since decibels are measured on a logarithmic scale, normal addition does not apply when determining the impact of multiple noise sources. For example, the total level produced by two 100 dB noise sources is 103 dB, not 200 dB. The level of 10 such sources is 110 dB, and the level of 100 sources is 120 dB. The human ear is more sensitive to higher frequency sounds; therefore, the A-weighted decibel scale (dBA) was developed to take into account this greater sensitivity. The dBA scale is most frequently used in aircraft and other environmental noise analysis. The dBA levels of some common sounds are shown in **Table A.3-1**.

**Table A.3-1 - Common Sounds on the dBA Scale**

| Sound | Sound Level (dBA) | Relative Loudness | Relative Sound Energy |
|---|---|---|---|
| Military jet fighter at 500 feet | 130 | 128 | 10,000,000 |
| Rock music with amplifier (uncomfortably loud) | 120 | 64 | 1,000,000 |
| Loud motorcycle at 20 feet | 110 | 32 | 100,000 |
| Jet plane takeoff (B727) at 1000 feet | 100 | 16 | 10,000 |
| Orchestral crescendo at 25 feet; Motorcycle at 25 feet; Diesel locomotive (20-30 mph) at 50 feet | 90 | 8 | 1,000 |
| Busy street; Diesel truck (moderately loud) 40 mph at 50 feet | 80 | 4 | 100 |
| Interior of department store; Vacuum cleaner at 10 feet | 70 | 2 | 10 |
| Ordinary conversation at 3 feet; Air conditioner at 20 feet | 60 | 1 | 1 |
| Quiet urban daytime; Dishwasher next room | 50 | 1/2 | 0.1 |
| Average office | 40 | 1/4 | .01 |
| City residence (very quiet) | 30 | 1/8 | 0.001 |

Source: HNTB Analysis from Multiple Sources

According to FAA Advisory Circular 150/5020-1, *Noise Control and Compatibility Planning For Airports*, the "A-Weighted Sound Level has been found to correlate well with people's subjective judgment. Its simplicity and superiority over unweighted sound pressure level in predicting people's response to noise have made it the most widely used metric for assessing the impact of aircraft noise and for comparing that noise with other community noise sources." The FAA has determined that A-weighted levels should be used when measuring and describing instantaneous noise levels. The maximum A-weighted level reached during an aircraft noise event is perhaps the most common and simplest way of describing the noise of the event.

In general, the noise level associated with a certain sound decreases by 6 dB for each doubling of the distance from the noise source; however, certain factors affect noise attenuation and transmission including ground cover and the incidence of barriers, vegetation and buildings. These factors become less important when the noise source is airborne. Meteorological conditions also affect noise transmission. Temperature gradients, wind speed and direction, humidity, and atmospheric pressure can combine to cause a 10-15 dB change in the noise heard on the ground for similar overflights of the same aircraft.

*Day-Night Sound Level (DNL)*

While it is important to measure the noise of a single event, the long-range impact of prolonged exposure to noise can best be described with cumulative metrics. The Day-Night Sound Level (DNL) was developed under the auspices of the U.S. Environmental Protection Agency (EPA) to measure the cumulative impact of multiple noise events in an average day. It is the logarithmic average of sound levels in dBA and is based on a 24 hour Equivalent Sound Level (Leq). DNL values incorporate a 10-dBA penalty to noise events occurring between 10:00 PM and 7:00 AM to account for people's increased noise sensitivity at night. DNL 65 is typically the level used in assessing noise impacts and for land use planning, although for this report a lower noise level of DNL 60 is also analyzed.

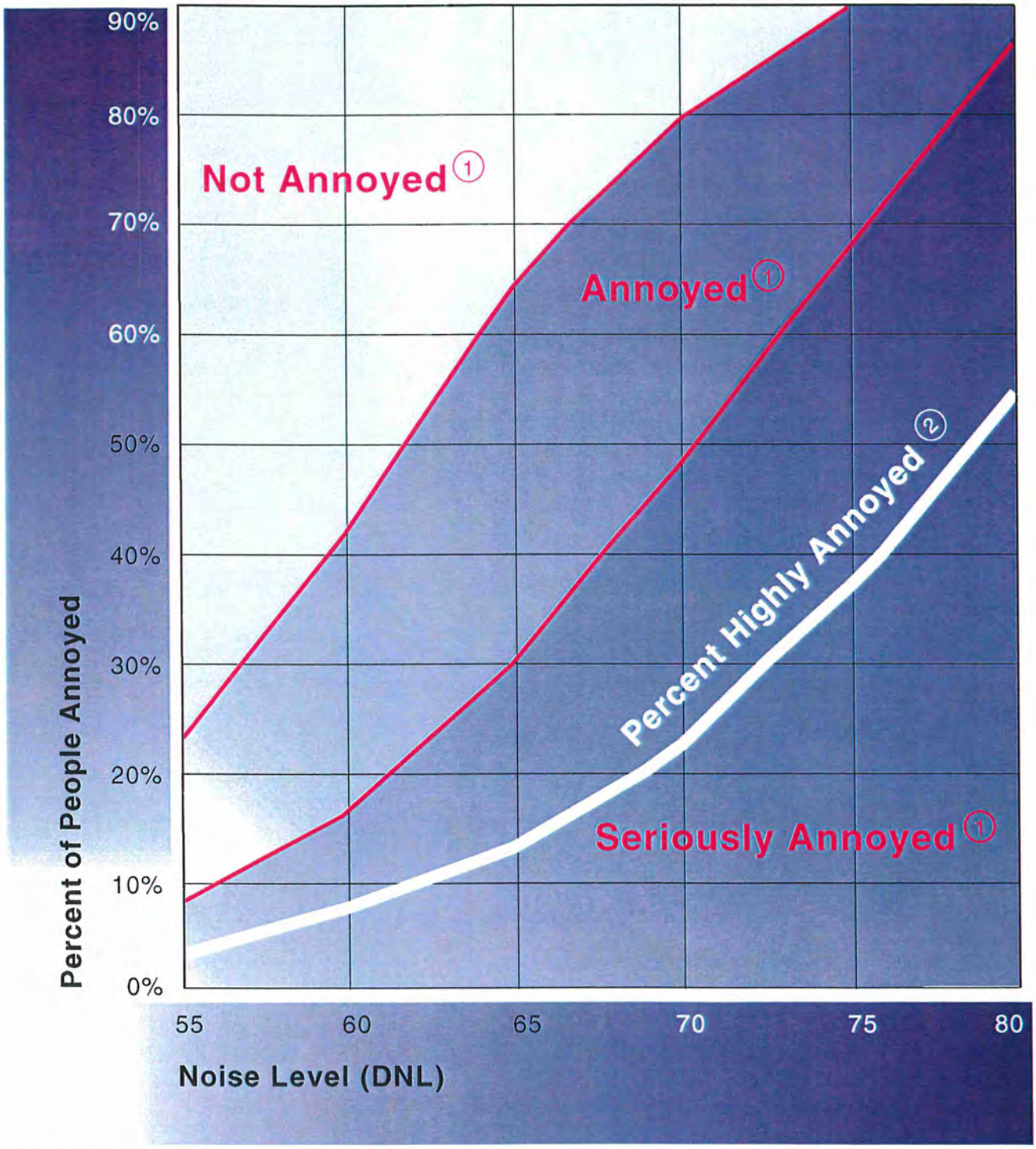
DNL (also known as Ldn) has been equated, through social surveys, with public reactions to different noise levels. The DNL metric is recognized by the U.S. Department of Housing and Urban Development, the U.S. Department of Transportation and the Department of Defense as a proper basis for land use planning around airports.

The Federal Interagency Committee on Noise (FICON) recently evaluated DNL as a noise measurement tool. Their 1992 report noted that there "are no new descriptors or metrics of sufficient scientific standing to substitute for the present DNL cumulative noise exposure metric," and that DNL methodology "is considered the proper one for civil and military aviation scenarios in the general vicinity of airports." The FICON report noted that "aircraft noise predictions below DNL 65 can be less accurate and should be interpreted with caution." **Figure A.3-2** illustrates typical community annoyance to various DNL levels in the form of a graph.

The FAA has developed the Integrated Noise Model (INM) for DNL calculation. The INM model takes into account flight paths, number of operations, and the flyover noise associated with specific aircraft types on a given flight path corrected for the duration of the sound. Contours of equal DNL value are then developed and mapped, reflecting the average noise of takeoffs and landings over a year's time. DNL may also be used for quantifying other noise sources such as auto traffic, and for comparing them to airport-generated noise. INM Version 4.11 was utilized for the Dual Track noise analysis. Version 4.11 features the ability to model surrounding terrain, airport altitude, and allows for direct modeling of displaced runway thresholds.

In the past, the shape and size of the DNL noise contour for an airport was largely determined by departing aircraft. But as airlines change over to an all-Stage 3 fleet, noise contours have been increasingly influenced by the noise generated by arriving aircraft. There are several reasons for this. As described earlier, stage 3 aircraft engines are quieter than older engine designs used on stage 2 aircraft. Also, since Stage 3 engines are more powerful than Stage 2 engines, aircraft are able to climb more quickly. This means that during departure, Stage 3 aircraft will pass a fixed point on the ground at a higher altitude than Stage 2 aircraft, reducing noise on the ground.

However, during landing, Stage 2 and Stage 3 aircraft tend to be at the same low altitude as the follow the final approach course to their assigned runway. Also, while Stage 3 engines are much quieter than Stage 2 engines during takeoff, this difference is less noticeable during landing because aircraft are at lower power settings. At these lower power settings, the noise generated by the airframe traveling through the air is more apparent than during takeoff. This airframe noise is similar for both Stage 2 and Stage 3 aircraft. Finally, while departing aircraft tend to spread out toward their destinations, arriving aircraft are concentrated along the final approach course to their assigned runway.




**Sources:**

① Percentage of Residents Annoyed. Richard,E.J. and J.B. Ollerhead; reproduced in "Aviation Noise Effects", FAA Office of Environment and Energy, March 1985.

② Schultz T. J. "Synthesis of Social Surveys on Noise Annoyance", Journal of Acoustical Society of America, 1978.

As shown in **Figure A.3-2**, noise exposure of DNL 65 or greater is characterized as significant and leads to a number of complaints. The FAA has set guidelines for land use within the DNL 65 contour (i.e., DNL 65 or greater). It is acknowledged that the noise impact does not end at the DNL 65 contour. For areas within the DNL 60 contour (i.e., DNL 60 to DNL 65), noise may be characterized as moderate.

$L_{10}$

This noise metric measures the point at which a specified sound level is exceeded at least 10 percent of a specified time period (e.g., one hour). This Minnesota standard states that the sound level should not exceed $L_{10}65$ in the worst daytime hour (between 7:00 a.m. and 10:00 p.m.); this is the acceptable noise level limit for land uses in Noise Area Classification 1, which includes residential land uses. The $L_{10}65$ analysis produces a contour which depicts points around the airport that experience noise levels of 65 dBA or greater for 10 percent of the hour (6 minutes) with the airport operating in a specific configuration. It is calculated for the worst hourly noise condition which could occur off each runway end. Although the $L_{10}$ metric does not consider how often the condition actually occurs, it does indicate what short-duration "worst case" conditions could be in these areas.

**Peak Sound Exposure Level (SEL)**

This noise metric is designed to compare the sound energy dosage of single noise events of varying duration and intensity, for example an automobile idling for 30 seconds versus a gunshot. To do this, acousticians compress (as in the case of the idling automobile) or expand (as in the case of the gunshot) the duration of the noise event to a common one-second period. The resulting noise level is expressed in decibels, SEL. If both noise events have the same SEL value, that would mean both events produced the same amount of sound energy. Noise events lasting longer than one second, as with the idling automobile, typically have SEL values higher than a standard dB reading of the same event, because all its sound energy would have been compressed into a one-second period. Conversely, a noise event lasting less than one second, as with the gunshot, would typically have an SEL value lower than a standard dB reading of the same event. For these reasons, SEL values cannot be compared to standard dB readings or other metrics (e.g., DNL, $L_{10}$, etc.). Since an aircraft overflight lasts much longer than one second, its SEL value is typically higher than its maximum dB reading (usually on the order of 5 to 10 dB).

**Time Above (TA)**

The Time Above (TA) metric quantifies the amount of time in minutes a certain noise level is exceeded at a particular location during the day. For the purposes of describing noise impacts at selected noise-sensitive locations in the vicinity of MSP, the number of minutes above 85 dBA was quantified for an average day.

**Maximum A-Weighted Sound Level (Lmax)**

Lmax describes the maximum noise level due to individual aircraft events, measured in dBA.

## NOISE-SENSITIVE USES

Aircraft noise, through the various psychological and physiological effects it has on people, can be a source of community annoyance and conflict with various human activities. The FAA has identified acceptable noise levels for certain categories of use, explaining rationale for the criteria. **Table A.3-2** outlines the recommended land use compatibility criteria (from the MSP FAR Part 150, Table 1) used in this study.

## Table A.3-2 - Land Use Compatibility Criteria

| Land Use | DNL 65-70 | DNL 70-75 | DNL 75+ |
|---|---|---|---|
| Residential, other than hotels[1] | N | N | N |
| Hotels | R(25) | R(30) | R(30) |
| Nursing homes[1] | N | N | N |
| Public Use | | | |
| Schools (public and private) | R(30) | N | N |
| Child care centers | R(25) | R(30) | N |
| Places of worship | R(25) | R(30) | N |
| Auditoriums, concert halls | R(30) | R(35) | N |
| Parking | Y | Y | Y |
| Hospitals | R(30) | R(35) | N |
| Commercial Use | | | |
| Offices: business, professional, government | Y | R(25) | R(30) |
| Retail trade | Y | R(25) | R(30) |
| Wholesale trade and retail of building materials, hardware and farm equipment[2] | Y | Y | Y |
| Utilities[2] | Y | Y | Y |
| Manufacturing and Production | | | |
| Manufacturing, general[2] | Y | Y | Y |
| Research and laboratory uses sensitive to vibration | Y | N | N |
| Agriculture and forestry[2] | Y | Y | Y |
| Mining, fishing, resource production and extraction | Y | Y | Y |
| Recreational | | | |
| Outdoor sports arenas and spectator sports | Y | Y | N |
| Outdoor amphitheaters, music shells | N | N | N |
| Nature exhibits and zoos | Y | N | N |
| Parks, golf courses, riding stables and other active recreation areas | Y | Y | N |

Table A.3-2 (Cont'd.)

KEY

Y-Land use and related structures are compatible without restrictions.

N-Land use and related structures are not compatible and should be prohibited.

R(25),(30) or (35)-Land use and related structures are generally compatible; measures to achieve Noise Level Reduction of at least 25, 30, or 35 dBA must be incorporated into design and construction of structures. Normal construction can be expected to provide an NLR of 20 dBA; thus, the reduction requirements are often stated as 5, 10, or 15 dBA over standard construction. These requirements assume mechanical ventilation and closed windows year round. The use of NLR criteria will not eliminate outdoor noise problems.

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[1] Where the city determines that residential uses must be allowed, measures to achieve sufficient outdoor to indoor NLR should be incorporated into building and/or zoning codes and be considered in individual approvals. Federal guidelines recommend NLR of at least 25 dBA in DNL 65-70 and 30 dBA in DNL 70-75. Adjustments to these recommendations may be necessary in considering specific local conditions. In addition to acoustical treatment, potential residents in noise zones should be notified of the noise environment.

[2] Appropriate NLR (as specified in Footnote 1) must be incorporated into the design and construction of portions of these buildings where the public is received, office areas or noise sensitive areas.

[3] NLR specified in Footnote 1 required for residential buildings.

Source: MSP FAR Part 150 Study Update, March 1992

A discussion of land uses and their compatibility with various DNL noise levels follows.

*Residences (other than hotels)*

In areas where noise levels are DNL 75 or greater, all residential development should be considered non-compatible. In the DNL 65-75 zones, new residential development should be considered non-compatible and should be permitted only where the infilling of existing residential neighborhoods is the only reasonable use. For new development or substantial redevelopment in the DNL 65-75 noise zones, insulation should be required to achieve interior noise level reductions (NLR) of 20-30 dBA, resulting in an interior level of DNL 45, as recommended by the EPA. In addition to acoustical treatment of structures, potential new residents should be made aware of the noise environment.

*Transient Lodgings*

Construction of hotels and motels is generally of a standard that results in interior sound attenuation higher than that of single family homes. The nature of their use justifies minimal restrictions, provided that an indoor noise level of no more than DNL 45 is attained. It is recommended that hotels be permitted in all noise zones provided that NLR measures sufficient to achieve acceptable interior noise levels are required.

*Schools*

It is recommended that schools be considered compatible in the DNL 65-70 noise zone provided that they have an interior NLR of at least 30 dBA. They should be considered incompatible in all higher noise zones. The special sensitivity of classroom teaching to periodic aircraft noise events justifies the NLR level more stringent than applied to residences. These criteria would be applied to both public and private schools.

*Hospitals*

Hospitals are usually well-constructed, air conditioned, and kept closed, resulting in high levels of interior noise attenuation. It is recommended that hospitals be considered compatible in the noise zone DNL 65-70 with an NLR of at least 30 dBA, and in DNL 70-75 with an NLR of at least 35 dBA. They should be considered incompatible in noise zones above DNL 75.

*Nursing Homes*

Nursing home are basically residential in character and should be addressed in the same way as multi-family homes. It is recommended that they be considered incompatible in noise zones above DNL 70, and permitted in DNL 65-70 only with an NLR of at least 25 dBA.

*Child Care Centers*

Since classroom instruction is not the primary function of child care centers as it is in a school, it is recommended that criteria for child care centers be less stringent than those for schools. It is recommended that these facilities be considered compatible in zone DNL 65-70 with an NLR of at least 25 dBA and in zone DNL 70-75 with an NLR of at least 30 dBA, and incompatible in zone DNL 75+.

*Churches*

Given the small amount of time per week that a church is used for quiet activities and given that the proportion of time spent by an individual in a church is also small, the justification for adopting more stringent compatibility standards is less than for schools. It is recommended that the criteria proposed in the FAA's table of criteria in FAR Part 150 be applied. For schools, child care centers, or other types of facilities that are part of a church complex, the criteria for these secondary types of facilities would be applied.

In addition, to structures dedicated to church use, numerous small churches are often established in portions of commercial buildings. These "storefront churches" are frequently located in commercial areas which are otherwise compatible with aircraft noise levels. Due to their locational characteristics and sometimes transient nature, it is recommended that storefront churches be treated as other uses in commercial districts.

*Commercial, Industrial and Recreational Uses*

Most uses in these categories are not as noise sensitive as the uses describe previously. It is recommended that the FAA-suggested criteria in **Table A.3-2** be applied.

## DUAL TRACK EIS NOISE IMPACT ASSUMPTIONS

This section documents the major assumptions used to estimate the likely noise impacts associated with the MSP and No Action alternatives.

*Population*

Most areas adjacent to MSP are fully developed, long standing residential neighborhoods. Therefore, 1990 Census data for population and dwellings were assumed for 2005 for all communities with the exceptions of Mendota Heights and Eagan, which are still experiencing growth. For these two

communities, local representatives provided year 2000 forecasts of population and dwellings for noise impact analysis to more fully reflect possible future impacts.

*Aircraft Activity*

Year 2005 aircraft activity was modeled for this study for two reasons. First, the 2005 aircraft fleet mix is anticipated to include Stage 2 aircraft "hush-kitted" to meet Stage 3 requirements. These aircraft are typically noisier than "true" stage aircraft of the same size, and it was desirable to measure their impact. For example, a hush-kitted DC-9-30 produces the equivalent level of noise of two 737-300 aircraft. Second, the new north-south runway proposed for MSP would likely be operational by the year 2005.

The aircraft operations and fleet mix forecast are based primarily on the *MSP Long-Term Comprehensive Plan (LTCP), Volume 6: Revised Activity Forecasts* (December 1993). The LTCP fleet mix was modified to reflect the August 1994 announcement by Northwest Airlines that it would refurbish its fleet of DC-9-30 aircraft including the installation of hush kits, rather than acquire new aircraft as previously planned. **Tables A.3-3** and **A.3-4** list the average daily arrivals and departures by aircraft type for 2005.

**Table A.3-3 - 2005 Projected Fleet Mix and Average Daily Arrivals - MSP Alternative**

| Aircraft Type | Day | Night | Total |
|---|---|---|---|
| Air Carrier Jets | | | |
| DC8 | 1.1 | 1.7 | 2.8 |
| DC9-30 (HUSHKIT) | 97.7 | 7.3 | 105.0 |
| MD80 | 32.8 | 2.7 | 35.5 |
| MD90 | 6.6 | 0.4 | 7.0 |
| DC10 | 10.0 | 1.4 | 11.4 |
| MD11 | 3.9 | 0.7 | 4.6 |
| B727 (HUSHKIT) | 11.6 | 3.2 | 14.8 |
| B737-300/400/500 | 27.2 | 1.8 | 29.0 |
| B737 (HUSHKIT) | 0.2 | 0.1 | 0.3 |
| B747-200/300/400 | 7.5 | 0.9 | 8.4 |
| B757 | 81.0 | 7.9 | 88.9 |
| B767-200/300 | 3.7 | 0.3 | 4.0 |
| B777 | 1.4 | 0.1 | 1.5 |
| A300 | 0.5 | 0.7 | 1.2 |
| A320/321 | 68.3 | 6.4 | 74.7 |
| A330 | 4.7 | 0.3 | 5.0 |
| A340 | 0.4 | 0.1 | 0.5 |
| L1011 | 0.6 | 0.5 | 1.1 |
| BAe 146/RJ/F-70 | 0.9 | 0.1 | 1.0 |
| F100 | 8.0 | 2.0 | 10.0 |
| EM145/CanRJ | 7.1 | 0.9 | 8.0 |
| S U B T O T A L | 375.2 | 39.5 | 414.7 |
| Air Carrier Turboprops | | | |
| CNA/PAG/BEC | 3.0 | 3.4 | 6.4 |
| SWM/J31/BE1/BE9 | 29.2 | 8.6 | 37.8 |
| SF340/DH8/J41 | 61.8 | 8.2 | 70.0 |
| S2000 | 27.2 | 3.7 | 30.9 |
| L188/CVR/F27/ATP/ATR | 15.7 | 5.6 | 21.3 |
| S U B T O T AL | 136.9 | 29.5 | 166.4 |
| General Aviation | | | |
| GA Jet | 32.8 | 4.2 | 37.1 |
| GA Turboprop | 15.4 | 2.0 | 17.4 |
| GA Piston | 21.7 | 2.8 | 24.5 |
| S U B T O T A L | 69.9 | 9.1 | 79.0 |
| Military | | | |
| C130 | 4.0 | 0.1 | 4.1 |
| TOTAL ARRIVALS | 586.0 | 78.2 | 664.2 |

Source: HNTB analysis, based on MSP LTCP Vol. 6, Revised Activity Forecasts, 1993.

**Table A.3-4 - 2005 Projected Fleet Mix and Average Daily Departures - MSP Alternative**

| Aircraft Type | Day | Night | Total |
|---|---|---|---|
| Air Carrier Jets | | | |
| DC8 | 1.0 | 1.8 | 2.8 |
| DC9-30 (HUSHKIT) | 96.8 | 8.2 | 105.0 |
| MD80 | 32.9 | 2.6 | 35.5 |
| MD90 | 6.6 | 0.4 | 7.0 |
| DC10 | 10.1 | 1.3 | 11.4 |
| MD11 | 4.0 | 0.6 | 4.6 |
| B727 (HUSHKIT) | 11.8 | 3.0 | 14.8 |
| B737-300/400/500 | 27.2 | 1.8 | 29.0 |
| B737 (HUSHKIT) | 0.2 | 0.1 | 0.3 |
| B747-200/300/400 | 7.5 | 0.9 | 8.4 |
| B757 | 81.0 | 7.9 | 88.9 |
| B767-200/300 | 3.7 | 0.3 | 4.0 |
| B777 | 1.4 | 0.1 | 1.5 |
| A300 | 0.5 | 0.7 | 1.2 |
| A320/321 | 68.4 | 6.3 | 74.7 |
| A330 | 4.7 | 0.3 | 5.0 |
| A340 | 0.4 | 0.1 | 0.5 |
| L1011 | 0.7 | 0.4 | 1.1 |
| Bae 146/RJ/F-70 | 1.0 | 0.0 | 1.0 |
| F100 | 8.9 | 1.1 | 10.0 |
| EM145/CanRJ | 7.6 | 0.4 | 8.0 |
| S U B T O T A L | 376.4 | 38.3 | 414.7 |
| Air Carrier Turboprops | | | |
| CAN/PAG/BEC | 2.9 | 3.5 | 6.4 |
| SWM/J31/BE1/BE9 | 30.9 | 6.9 | 37.8 |
| SF340/DH8/J41 | 66.6 | 3.4 | 70.0 |
| S2000 | 29.3 | 1.6 | 30.9 |
| L188/CVR/F27/ATP/ATR | 16.7 | 4.6 | 21.3 |
| S U B T O T AL | 146.4 | 20.0 | 166.4 |
| General Aviation | | | |
| GA Jet | 31.4 | 5.7 | 37.1 |
| GA Turboprop | 14.7 | 2.7 | 17.4 |
| GA Piston | 20.7 | 3.8 | 24.5 |
| S U B T O T A L | 66.8 | 12.2 | 79.0 |
| Military | | | |
| C130 | 3.8 | 0.3 | 4.1 |
| TOTAL DEPARTURES | 593.4 | 70.8 | 664.2 |

Source: HNTB analysis, based on MSP LTCP Vol. 6, Revised Activity Forecasts, 1993.

Under the No Action Alternative, it is assumed that year 2005 operations would be about 2.3 percent lower than under the expanded MSP option due to increasing capacity constraints. Most of the decrease would be among general aviation aircraft. It is assumed that carriers would use larger aircraft in order to accommodate passenger demand with the constraints on runways and gates. For this reason, the No Action fleet mix assumes fewer hush-kitted aircraft, because Northwest currently has no plans to hush-kit larger, 150-seat aircraft (see **Tables A.3-5 and A.3-6**).

**Table A.3-5 - 2005 Projected Fleet Mix and Average Daily Arrivals - No Action Alternative**

| Aircraft Type | Day | Night | Total |
|---|---|---|---|
| Air Carrier Jets | | | |
| DC8 | 1.1 | 1.7 | 2.8 |
| DC9-30 (HUSHKIT) | 66.4 | 8.2 | 74.6 |
| MD80 | 32.9 | 2.6 | 35.5 |
| MD90 | 25.2 | 1.5 | 26.7 |
| DC10 | 10.7 | 1.4 | 12.1 |
| MD11 | 3.7 | 0.9 | 4.6 |
| B727 (HUSHKIT) | 11.6 | 3.1 | 14.7 |
| B737-300/400/500 | 27.2 | 1.8 | 29.0 |
| B737 (HUSHKIT) | 0.2 | 0.1 | 0.3 |
| B747-200/300/400 | 5.2 | 0.9 | 6.1 |
| B757 | 38.4 | 7.9 | 46.3 |
| B767-200/300 | 0.5 | 0.1 | 0.6 |
| B777 | 1.4 | 0.1 | 1.5 |
| A300 | 0.5 | 0.7 | 1.2 |
| A320/321 | 133.9 | 6.4 | 140.3 |
| A330 | 5.2 | 0.3 | 5.5 |
| A340 | 0.4 | 0.1 | 0.5 |
| L1011 | 0.7 | 0.4 | 1.1 |
| BAE 146/RJ/F-70 | 0.9 | 0.1 | 1.0 |
| F100 | 0.0 | 0.0 | 0.0 |
| EM145/CanRJ | 2.5 | 0.3 | 2.8 |
| S U B T O T A L | 368.6 | 38.6 | 407.2 |
| Air Carrier Turboprops | | | |
| CAN/PAG/BEC | 3.0 | 3.4 | 6.4 |
| SWM/J31/BE1/BE9 | 29.2 | 8.6 | 37.8 |
| SF340/DH8/J41 | 61.8 | 8.2 | 70.0 |
| S2000 | 27.2 | 3.7 | 30.9 |
| L188/CVR/F27/ATP/ATR | 15.6 | 5.6 | 21.2 |
| S U B T O T AL | 136.8 | 29.5 | 166.3 |
| General Aviation | | | |
| GA Jet | 28.8 | 3.7 | 32.4 |
| GA Turboprop | 13.4 | 1.8 | 15.2 |
| GA Piston | 18.9 | 2.5 | 21.4 |
| S U B T O T A L | 61.0 | 8.0 | 69.0 |
| Military | | | |
| C130 | 4.0 | 0.1 | 4.1 |
| TOTAL ARRIVALS | 570.4 | 76.2 | 646.6 |

Source: HNTB analysis, based on MSP LTCP Vol. 6, Revised Activity Forecasts, 1993.

**Table A.3-6 - 2005 Projected Fleet Mix and Average Daily Departures - No Action Alternative**

| Aircraft Type | Day | Night | Total |
|---|---|---|---|
| Air Carrier Jets | | | |
| DC8 | 1.0 | 1.8 | 2.8 |
| DC9-30 (HUSHKIT) | 65.3 | 9.3 | 74.6 |
| MD80 | 33.0 | 2.5 | 35.5 |
| MD90 | 26.3 | 0.4 | 26.7 |
| DC10 | 10.8 | 1.3 | 12.1 |
| MD11 | 3.8 | 0.8 | 4.6 |
| B727 (HUSHKIT) | 11.8 | 2.9 | 14.7 |
| B737-300/400/500 | 27.2 | 1.8 | 29.0 |
| B737 (HUSHKIT) | 0.2 | 0.1 | 0.3 |
| B747-200/300/400 | 5.2 | 0.9 | 6.1 |
| B757 | 38.4 | 7.9 | 46.3 |
| B767-200/300 | 0.5 | 0.1 | 0.6 |
| B777 | 1.4 | 0.1 | 1.5 |
| A300 | 0.5 | 0.7 | 1.2 |
| A320/321 | 134.0 | 6.3 | 140.3 |
| A330 | 5.2 | 0.3 | 5.5 |
| A340 | 0.4 | 0.1 | 0.5 |
| L1011 | 0.8 | 0.3 | 1.1 |
| BAE 146/RJ/F-70 | 1.0 | 0.0 | 1.0 |
| F100 | 0.0 | 0.0 | 0.0 |
| EM145/CanRJ | 2.7 | 0.1 | 2.8 |
| S U B T O T A L | 369.5 | 37.7 | 407.2 |
| Air Carrier Turboprops | | | |
| CAN/PAG/BEC | 2.9 | 3.5 | 6.4 |
| SWM/J31/BE1/BE9 | 30.9 | 6.9 | 37.8 |
| SF340/DH8/J41 | 66.6 | 3.4 | 70.0 |
| S2000 | 29.3 | 1.6 | 30.9 |
| L188/CVR/F27/ATP/ATR | 16.6 | 4.6 | 21.2 |
| S U B T O T AL | 146.3 | 20.0 | 166.3 |
| General Aviation | | | |
| GA Jet | 27.3 | 5.1 | 32.4 |
| GA Turboprop | 12.9 | 2.3 | 15.2 |
| GA Piston | 18.1 | 3.3 | 21.4 |
| S U B T O T A L | 58.4 | 10.6 | 69.0 |
| Military | | | |
| C130 | 3.8 | 0.3 | 4.1 |
| TOTAL DEPARTURES | 578.0 | 68.6 | 646.6 |

Source: HNTB analysis, based on MSP LTCP Vol. 6, Revised Activity Forecasts, 1993.

Takeoff and landing profiles (the vertical path aircraft follow when departing from and arriving at an airport) were based on airline operating procedures, aircraft type and aircraft operating weight. Air carrier aircraft were assumed to fly standard three-degree descent angle approach profiles. Departure profiles for those aircraft for which Northwest Airlines has developed unique procedures were created to more accurately model the Northwest procedures within the INM runs. The INM data base, which includes typical takeoff and landing profiles, was utilized for all other aircraft.

Stage lengths for each aircraft type were derived from the Official Airline Guide. Stage lengths were adjusted to more accurately reflect Northwest nighttime departure profiles for several specific aircraft types. For the Northwest fleet, specialized departure profiles where developed for the DC9Q7, DC9Q9, DC950 and 727-200 aircrafts through coordination with the airline's operations department.

Runway use for the MSP Alternative is shown in **Table A.3-7** and for the No Action Alternative in **Table A.3-8**. The runway use percentages in **Table A.3-7** are *operational goals* based on weather conditions (both wind and visibility), direction of flight, noise impacts and operational efficiency; however, the actual use of the runways could vary on a daily, weekly or monthly basis, but should closely approximate the percentage goals over an average year. FAA tower personnel will utilize Runway 17-35 in accordance with the conditions set forth in this FEIS. Therefore, tower personnel will utilize Runway 17-35 so that the runway is not used to and from the north, except under the following limited circumstances: 1) safety reasons, 2) weather conditions, or 3) temporary runway closures due to snow removal, due to construction, or due to other activities at the airport. For nighttime hours (10:00 PM to 7:00 AM), aircraft operations were assigned based on existing noise abatement procedures which includes MAC's voluntary nighttime limits on flights. As with the aircraft fleet mix, runway use input to the INM reflects average daily use based on the entire year.

**Table A.3-7 - Runway Use for MSP Alternative - Average Annual Use**

| Runway | Percentage of Departures | Percentage of Arrivals |
|---|---|---|
| 4 | 1.0 percent | less than 0.05 percent |
| 12L | 7.4 percent | 21.3 percent |
| 12R | 16.3 percent | 15.1 percent |
| 17 | 36.6 percent | less than 0.05 percent |
| 22 | less than 0.05 percent | less than 0.05 percent |
| 30L | 15.4 percent | 21.7 percent |
| 30R | 23.3 percent | 25.0 percent |
| 35 | less than 0.05 percent | 16.9 percent |
| Total | 100.00 percent | 100.0 percent |

Source: HNTB Analysis

**Table A.3-8 - Runway Use for No-Action Alternative - Average Annual Use**

| Runway | Percentage of Departures | Percentage of Arrivals |
|---|---|---|
| 4 | 0.3 percent | 0.4 percent |
| 12L | 23.2 percent | 21.7 percent |
| 12R | 28.1 percent | 23.9 percent |
| 22 | 14.8 percent | 0.5 percent |
| 30L | 17.3 percent | 30.6 percent |
| 30R | 16.3 percent | 22.9 percent |
| TOTAL | 100.0 percent | 100.0 percent |

Source: HNTB Analysis

*Flight Tracks*

Flight tracks utilized in the INM runs for the MSP and No Action alternatives were based upon data provided by the Airport Noise and Operations Monitoring System (ANOMS) which details existing flight tracks in conjunction with wind and weather considerations for the future utilization of the facility. **Figures Q-2** and **Q-8** of the EIS show flight tracks for the MSP and the No Action Alternatives. The flight tracks were prepared by HNTB in consultation with FAA; however, FAA has not approved the flight tracks/procedures and they should be treated as reasonable for the purpose of assessing impacts in the EIS.

## A.4 CANADA GOOSE POPULATIONS ON MOTHER LAKE

The Canada Goose population using Mother Lake has been the subject of an ongoing research project and control effort being conducted by Dr. James A. Cooper of the University of Minnesota (Cooper 1991; See Section VII). After once having been essentially eliminated from the Twin Cities area, a nesting Canada goose was first documented at MSP in 1975. By 1981, approximately 100-150 geese were utilizing MSP and/or nearby areas. Prior to the initiation of Dr. Cooper's study, 4 bird strikes attributable to Canada geese were documented (Dr. James Cooper, pers. comm.). Due to the apparent bird strike hazard presented by this increasing goose population, MAC requested assistance from the U.S. Fish and Wildlife Service in developing methods to reduce the number of geese using areas on or near MSP. In response, Dr. Cooper was retained to undertake what initially was to be a 4-year study from 1984 to 1987 to determine; (1) whether geese using MSP could be identified and removed (i.e., translocated) and (2) whether such reductions would, in turn, reduce the number of geese and goose flights within the airspace used by departing and approaching aircraft. This initial study has evolved into an ongoing research and control effort that remains underway in 1994.

The results of this study indicate that the MSP area (specifically Mother Lake, Rich Acres Golf Course and Fort Snelling National Cemetery) has been receiving annual use by geese in distinct social groups that were originally established in the brood marshes where the geese were hatched. Because of their common origin and/or familial relationships, these sub-flocks are both highly cohesive and traditional in their movements. Based on goose trapping and neck-banding done as part of the study, a number of sites were identified as the most common origins and destinations for goose flights to and from the MSP area; these include Apple Lake (also known as Legion Lake), Lake Hiawatha, Lake Nokomis, and Snelling Lake.

Of the above-listed locations, birds neck-banded on Wood Lake in Richfield and Lake Nokomis in Minneapolis generated most of the goose observations in the MSP study area. During the years 1984, 1985, 1986, and 1987, geese neck-banded at these two locations generated 97, 89, 74 and 56 percent of the goose observations recorded in the MSP study area. Wood Lake generated by the far the majority of the geese observed at MSP. By selectively trapping and translocating geese on an annual basis, the total number of goose observations in the MSP study area was reduced from 1,696 in 1984 to 43 in 1987; this represents a 97.5 percent reduction in goose observations during this initial study period. Migrant geese were found to be a significant element of the MSP goose flock during the late summer and fall months; however, these birds did not appear to represent as much of a hazard as resident birds. Resident birds engaged in milling activity and repeated flights to nearby lakes while stopovers by migrants were more transitory and involved fewer sidetrips. The last reported goose strike related to Mother Lake occurred in September 1985. Continuing selective control efforts have kept goose numbers at MSP extremely low, rendering the goose-aircraft hazard at Mother Lake almost negligible over the last 7 to 8 years. However, since geese from other brood marshes may eventually move into the vacated habitat existing at MSP, ongoing monitoring and control efforts must be maintained to ensure that goose flights continue to be minimal.

## A.5 EFFECT OF AIRCRAFT OVERFLIGHTS ON BALD EAGLES

There is little research on the effect of aircraft overflights on bald eagles and what there is, is not definitive.

A Bald Eagle Biological Assessment was done in 1990 relating to the potential impacts on nesting bald eagles that might result from an extension of MSP Runway 4-22, which was proposed at that time. This proposed runway extension is an element of all four alternatives under consideration in this AED. Further, this Biological Assessment involved the same nesting territory being analyzed in this AED and was done to analyze the potential for impacts that might result from approximately 3,330 monthly departures over a nest at altitudes between 1,500 and 2,000 feet. All of the alternatives being analyzed here involve substantially less potential for disturbance than the 4-22 project analyzed in 1990. Alternatives 1 and 2 involve no overflights of this nest while Alternatives 5 and 6 involve far fewer than were analyzed in 1990 (i.e., 630 monthly overflights compared to 3,330).

At the time of the 1990 Biological Assessment, no studies had been undertaken specifically to investigate the impact of commercial jet aircraft operations upon bald eagle nesting. The literature available at that time addressed other types of disturbance, including ordnance and jet fighter disturbance on military facilities as well as low-level overflights by helicopters and small fixed wing aircraft. Due to the lack of directly applicable research in 1990, it could not be stated unequivocally that impacts to eagle reproductive success would not occur. However, it was concluded that it was unlikely that the reproductive success of the nesting eagles would be adversely affected by commercial aircraft due to: (1) the propensity for bald eagles to readily habituate to regular, frequent disturbances of a mechanical nature, and (2) the fact that eagles tolerated louder and more confrontational disturbances than aircraft noise without a notable loss of reproductive success.

Experts from the USFWS Patuxent Wildlife Research Center and the USFWS National Ecology Research Center were contacted in 1990 for their opinions on the potential for adverse impacts resulting from the aircraft operations. Dr. David Ellis of Patuxent indicated that he would not expect commercial jet overflights at altitudes around 2,000 feet to adversely affect nesting eagles. He cited the successful nesting of bald eagles on the Aberdeen Proving Grounds as an example of the level of disturbance bald eagles are likely to tolerate. Dr. Douglas Gladwin of the National Ecology Research Center indicated that it was unknown whether bald eagles would incur any adverse impacts from commercial overflights at such altitudes but that such impacts were possible. The U.S. Fish and Wildlife Service issued a "no jeopardy" Biological Opinion for the Runway 4-22 extension at the Minneapolis-St. Paul International Airport.

Since 1990, some additional research has since been conducted on breeding bald eagle responses to various kinds of disturbance. Grubb and King (1991) studied 4,188 responses of nesting bald eagles to various types of human activities in riparian areas in Arizona. Of the five disturbance categories studied (i.e., pedestrian approaches, watercraft, land vehicles, aircraft overflights and loud noises such as sonic booms and gunshots), aircraft overflights were found to be the least disturbing even though this was the most common type of disturbance. These researchers concluded that; (1) breeding bald eagles in Arizona have become tolerant or habituated to air traffic and (2) that exclusion of aircraft within 625 meters (approximately 1,875 feet) of nests and permitting only short duration flights within 1,100 meters (about 3,300 feet) would minimize disturbance of breeding eagles. The authors stressed, however, that they were not presenting ..."a disturbance threshold for detrimental impacts on reproductive performance."

# A.6 SUMMARY OF MIGRATORY BIRD SURVEYS

## SUMMARY

Peterson Environmental Consulting, Inc. conducted counts of waterfowl, gulls, and other water birds at selected sites around the New Airport site and MSP from February 23 to May 4, 1995. The presence and abundance of bald eagles were noted in addition to waterfowl and gull numbers and flight paths. Bi-weekly counts were conducted at three locations along the Mississippi River between Inver Grove Heights and Gores Pool near Etter and at selected wetlands within Empire, Hampton, Marshan and Vermillion townships in Dakota County. Survey points near MSP included Lake Calhoun, Lake Harriet, Lake Nokomis, Wood Lake and the Minnesota River Valley north of the I-494 crossing. Intensive surveys of the MVNWR were not conducted so as not to duplicate the efforts of refuge staff.

Key waterfowl and gull concentration areas around the New Airport site during the spring migration of 1995 were located along the Mississippi River (both the Spring Lake area and Gores Pool WMA) and at the Pine Bend landfill just west of Highway 52 in Inver Grove Heights. Waterfowl and gull flight patterns largely followed the Mississippi River corridor; however, large numbers of gulls (>1000) were observed moving daily between the Spring Lake and Pine Bend Landfill.

Much smaller numbers of waterfowl and gulls were noted at all of the site around MSP during the spring migration. Note that this does not take into account major concentration areas within the MVNWR surveyed by refuge staff.

Observations of and inquiries about wintering waterfowl were made to locate any potential winter concentration areas. In the past, one area of concern was the Sheily gravel pits located along the Mississippi River on Grey Cloud Island. Based on 1995 winter observations and inquiries of Sheily employees, the Sheily gravel pits hold large numbers of Canada geese and other waterfowl species for a short time during the fall migration; however, these birds quickly disappear once the gravel pits freeze up. Open water areas along the Mississippi River are used by species such as bald eagles, common goldeneyes, mallards, Canada geese and to a lesser extent by ring-billed and herring gulls throughout the winter; however, no major winter concentration areas were noted. The only significant waterfowl winter concentration area near MSP is Black Dog Lake, which is kept open by cooling water discharges from the NSP Black Dog power plant.

### Survey Methods

Surveys were conducted by two biologists from February 23, 1995 to May 4, 1995. A point count method was employed to assess numbers of waterfowl, gulls and other birds at selected locations in Dakota and Hennepin Counties. Counts were conducted twice per week during the heaviest migration period. Birds located in flooded fields were included in the count for the nearest selected wetland or waterbody. Data sheets were prepared and compiled for all survey locations and dates.

## Survey Results

Isolated wetlands scattered throughout the New Airport search area were observed to hold relatively small numbers of waterfowl throughout the spring migration period. The isolated wetlands where observations were made are shown in **Figure DD-2**. Flight patterns between the wetlands and other major water bodies (i.e., Lake Byllesby, Spring Lake, Lake Rebecca, Gores Pool and Mississippi River) were highly variable. Although some movements were noted throughout the day, the largest movements were observed during sunrise and immediately before sunset. The city lakes (i.e., Lake Nokomis, Lake Harriet, Lake Calhoun and Wood Lake) held significantly fewer waterfowl and gulls than the selected wetlands in Dakota County during the spring migration. However, these lakes may temporarily harbor limited concentrations of gulls during the fall migration.

Major flight paths were noted along the Mississippi River corridor in addition to between the Pine Bend Landfill and the Mississippi River. Significant numbers of gulls (>1000) were seen flying between Pine Bend landfill and the river corridor near Spring Lake during every count. Waterfowl were especially abundant along the flooded backwaters of the Mississippi River between Spring Lake and Gores Pool near Etter. Bald eagles were frequently seen along the river from February until early April and one pair was seen nesting near Lake Rebecca Park in Hastings.

Results of the 1995 spring migration survey are summarized in **Table A.6-1**.

**Table A.6-1 - Summary of 1995 Spring Migration Survey**

| Date | Observations Near New Airport Site | | | | | | | Observations Near MSP | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 11 | 12 |
| 3/21/95 | | W - G 16 E 2 | | W 136 G - E - | W 448 G - E - | W 117 G - E - | W 196 G - E - | | | W 4 G - E - | |
| 3/26/95 | | | | W 179 G - E - | W 534 G - E - | | | | | | |
| 3/29/95 | | | | W 411 G - E - | W 77 G - E - | | | | | | |
| 3/30/95 | W - G 1800 E - | W 20 G 100 E - | W 2000 G 2050 E 9 | W 131 G 180 E 2 | | | | W 88 G - E - | W 97 G - E - | W 186 G - E - | W 6 G - E - |
| 4/02/95 | | | | | W 184 G - E - | W 162 G - E - | W 143 G - E - | | | | |
| 4/06/95 | | W 56 G 250 E - | W 164 G 3750 E | W 71 G 4 E 4 | W 459 G 26 E - | W 94 G 1 E - | W 40 G - E - | | W 50 G 3 E - | W 55 G 29 E - | W - G 1 E - |
| 4/08/95 | | W 61 G 200 E - | W 177 G 503 E 5 | W 76 G - E - | W 229 G - E - | W 29 G - E - | | W 531 G 6 E 1 | | | |
| 4/28/95 | W - G 132 E - | W 23 G - E - | W 185 G 18 E - | W 38 G 18 E - | W 50 G - E - | W 183 G - E - | | | | | |
| 5/04/95 | | | W 82 G 40 E - | | W 61 G - E - | W 12 G - E - | | | | | |
| Water-fowl | 15 | 99 | 2608 | 452 | 2021 | 1208 | 379 | 619 | 147 | 245 | 6 |
| Gulls | 1932 | 550 | 6361 | 202 | 28 | 1 | 0 | 6 | 6 | 29 | 1 |
| Eagles | 0 | 2 | 14 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Source: Peterson Environmental Consulting, Inc. | | | | | | | | | | | |

Site 1 - Pine Bend Landfill, Site 2 - Spring Lake, Site 3 - Gores Pool, Site 4 - Lake Rebecca, Site 5 - State Protected Wetland 340, Site 6 - State Protected Wetland 341, Site 7 - Lake Byllesby, Site 8 - Minnesota Valley National Wildlife Refuge North of I-494, Site 9 - Lake Nokomis, Site 11 - Lake Harriet, Site 12 - Lake Calhoun.

### MVNWR Spring Waterfowl Inventories

The U.S. Fish and Wildlife Service (USFWS) conducts monthly waterfowl counts at several locations within the Minnesota River National Wildlife Refuge. Data is collected from locations starting at the I-494 bridge in Bloomington south to the Louisville Swamp area near Chaska, Minnesota. Survey records from the years 1987 through 1995 were obtained and summarized.

## SPRING OF 1995 MIGRATION NOTES: MSP AND NEW AIRPORT SITES

February 23, 1995 - Numbers and species of waterfowl are increasing along the Mississippi River and associated ice-free water bodies. At Black Dog Lake common goldeneyes and mallard are the most often observed species with other species observed including; Canada geese, bald eagles, red-tailed hawks and American black ducks.

March 2, 1995 - All lakes and small ponds are frozen solid. Adult bald eagles seen above the Cedar Avenue bridge. Waterfowl numbers remain about what was seen the previous week. Additional species observed include: gadwall and northern pintails.

March 8, 1995 - Lakes and ponds remain frozen with fresh snow and colder temps turning warmer after the 8th. Observed waterfowl numbers at Grey Cloud island in St. Paul and counted: 28 mallards, 12 Canada geese, 30 common goldeneyes and 2 adult bald eagles. Numbers counted from Hardman Avenue include; 20 Canada geese, 37 common goldeneyes. Numbers at Black Dog Lake remain about the same. I spoke with Mr. Mark Duncan on March 9 about overwintering Canada geese at the Sheily Gravel Pits. Mark is the manager at the pits and said that good numbers of geese do congregate at the pits until freeze up, after freeze up no geese or ducks use this area and are probably associated with adjacent ice-free areas on the Mississippi River.

March 16, 1995 - Very warm temps melt snow quickly and provide abundant feeding areas in farmed fields for waterfowl. Migration of waterfowl and other passerines increased partly due to above average temperatures during the previous week. Species noted include; red-winged blackbird, eastern bluebird, great blue herons, common grackles, killdeer, American robins and all species of waterfowl except red-breasted mergansers.

March 21, 1995 - Reconnaissance count conducted (see data sheet for March 21, 1995). Skies were clear to partly cloudy with winds from the northwest, temps approximately 55°. Noted the smaller ponds and road ditches are free of ice, larger lakes have between 15 to 50 of open water between the shore and remaining ice. *Specific areas noted* as follows; Black Dog Lake/Mississippi River - ice free, Lake Byllesby - western 1/3 ice free, eastern 2/3 remains frozen, State protected water #340 - ice free, State Protected water #341 - southern ponds open and northern reaches frozen except at shores, Lake Rebecca - eastern 1/4 open, western 3/4 frozen over, and Spring Lake - ice free. Northern shrike noted near State protected water #340.

March 26, 1995 - Reconnaissance count (see data sheet for March 26, 1995). Skies cloudy with winds gusting from the east, temps approximately 40°. All water bodies in the Dakota County sample areas are free of ice. City lakes continue to have large amounts of ice with scattered areas of open water. Large flocks of blackbirds, cowbirds, rusty blackbirds, red-winged blackbirds and Brewer's blackbirds are moving through the areas. Bird species noted on the city lakes include 5 red-breasted mergansers, 2 American black ducks, 78 Mallards, 26 Canada geese, 6 herring gulls, and 20 ring-billed gulls. To this point the city lakes are not harboring large concentrations of waterfowl or gulls. I suspect that these lakes are more important staging areas for gulls in the fall and early winter than concentration areas in the spring.

March 30, 1995 - count day (see 3/30/95 data sheets). Skies partly cloudy to mostly cloudy with winds from the northwest and temps between 25-30°. All water bodies are free of ice and the rivers are running high. Floodplains are covered with water and backwater areas are inaccessible along the Mississippi south of Hastings. Flight paths of gulls appear to lie between the river valley and Pine Bend landfill. The gull concentrations I noted were along the Vermillion River in flooded fields near Etter and on sandbars out in the Mississippi River near Hastings. Noted the presence of the nesting pair of bald eagles at Lake Rebecca and a movement up river of great blue herons from the mouth of the Vermillion

River at about 8:45 a.m. Also noted singles and doubles of swans in various locations prior to today all the swans were in groups of at least 20.

April 2, 1995 - reconnaissance count at Vermillion River near Etter noted 2400+ ring-billed gulls in flooded fields at the edge of the river. Other species noted in this congregation area were 29 shovelors, 12 widgeon, 4 gadwalls, 5 great blue herons, 2 bald eagles (immature), and 4 herring gulls. Skies were partly cloudy with temps near 50° and light winds. Also noted 38 tundra swans at protected wetland 341W, 3 mute swans, 43 mallards, 15 widgeon, 12 wood ducks, and 3 green- winged teal.

# A.7 BIOTREATMENT OF GLYCOL IN SOILS

A limited number of studies have been completed specifically concerning the fate of ethylene and propylene glycol once they reach the soil and/or ground water. However, the high carbonaceous biochemical oxygen demand (CBOD) of the glycols suggests that biodegradation would be an important fate mechanism in both media. The end-products of glycol biodegradation are expected to be carbon dioxide, acetate, and ethanol (McGahey and Bouwer, 1992).

The capacity of the soil and its microflora to filter and biologically remove CBOD is reportedly very large, and soils inherently contain large numbers of heterotrophic microorganisms with the ability to utilize and degrade a broad array of organic compounds over a range of environmental conditions (Spyridakis and Welch, 1976).

Batch studies conducted on soil by McGahey and Bouwer (1992) found biotransformation to proceed according to first order kinetics with rate constants ranging from 1.01 to 0.95 $days^{-1}$ at initial glycol concentrations of 100 and 1,000 ppm, respectively. The typical period for adaptation of the soil bacteria to glycol was no more than three days and, for a 1,000 ppm initial concentration, 95 percent removal was achieved within 7 days. Abdelghani et al. (1989) found common soil microorganisms to biodegrade ethylene glycol substantially within three days of exposure at concentrations as high as 1-3 percent although concentrations above 5 percent were inhibitory or toxic to the soil microorganisms studied.

G.M. Klecka et al. (1993) observed glycol biodegradation to occur at soil concentrations ranging from 392 to 5278 mg/kg at rates of 19.7 to 27.0 mg/kg soil per day at 8° C. Biodegradation rates were 66.3 to 93.3 mg/kg soil per day for soils at 25° C. Based on these findings, the authors concluded that "biodegradation is expected to play a major role in removing residual levels of glycols from soils adjacent to airport taxiways and runways." Sills and Blakeslee (1992) reported that analyses completed at Stapleton International Airport in Denver, Colorado failed to yield any evidence of glycol contamination, even in the shallow soils at the edge of the runway where run-off of GISW was known to occur.

The MAC initiated a soil and ground water investigation near the Taxiway H/J remote deicing location in March 1994 to evaluate potential impacts associated with deicing during the 1993/1994 deicing season. Poor glycol recovery had been experienced from the plugged storm sewer at this location and a large volume of deicing fluid (approximately 50,000 gallons) had been observed to run off into the adjacent grassy swales. Ethylene glycol was detected in the soil at Taxiway H/J at depths of 3 to 13 feet in borings drilled in March 1994, but was absent at all depths in October 1994. These findings are attributed to both soil biodegradation and/or leaching into the underlying perched water table.

Ethylene and propylene glycol are essentially miscible in water and exhibit correspondingly low organic carbon/water partition coefficients. Therefore, they would be expected to partition readily into the interstitial water and migrate through the soil at rates governed primarily by the soil permeability. Therefore, the potential exists for glycols to impact ground water, primarily where more permeable surficial soils (e.g. sands) are present.

According to the literature, the bacteria necessary for aerobic and anaerobic biodegradation are generally present in the ground water, however, the rate of biodegradation in ground water is generally slower than in soil. This is because anaerobic processes occur more slowly than aerobic processes and the amount of oxygen available (i.e. dissolved) in ground water is limited. Syracuse Research Corporation (1989) predicted that degradation rates of ethylene glycol in ground water would be approximately one-half of those expected in surface waters. Similarly, Kaplan et al. (1982) found 100 percent degradation of propylene glycol required nine days under anaerobic conditions compared to four days under aerobic conditions.

As described, the MAC initiated an investigation in March 1994 to evaluate potential soil and ground water impacts associated with the remote deicing location at Taxiway H/J. Elevated concentrations of COD were measured in the ground water following the spring thaw. However, the concentrations returned to spring season concentrations by the fall and to background levels after the 1995 deicing season when improvements were made in the pavement and other ground controls to more effectively route runoff to the storm sewer plug location.

During studies conducted in 1985 and 1986, ground water in the perched and permanent water table at Ottawa (Ontario) International Airport were also found to be impacted by ethylene and propylene glycol. As at MSP, the contamination was found to be seasonal and localized, peaking after the spring melt and dissipating to nondetectable levels by the fall (Transport Canada, 1987). Again, there was no evidence of the impacts carrying over into sequential deicing season in Ottawa.

To summarize, because glycols do not bioaccumulate in organisms and are highly biodegradable under normal conditions in soil and water, they are, generally considered to be nonpersistent in the environment. Soil and/or ground water investigations conducted at both MSP and the Ottawa (Ontario) International Airport have supported these findings.

# A.8 HYDRAULIC AND NUTRIENT LOADING - MOTHER LAKE WATERSHED

## 1. Background Discussion

Under current conditions, aircraft operating area (AOA) surfaces in the Mother Lake watershed drain to Duck Lake. Discharge from Duck Lake to Mother Lake has never been observed to take place. Currently, non-AOA impervious surfaces such as roadways and parking lot areas in the Mother Lake watershed drain overland to Mother Lake. Currently, approximately 65 acres of residential areas east of Highway 77 and west of MSP drain to Mother Lake. This area would become part of the airport facility with the LTCP 2010 Alternative.

Under the LTCP 2010 Alternative, Duck Lake would be filled to meet construction requirements associated with the new North/South runway. All run-off from AOA impervious surfaces within the current boundaries of the Mother Lake watershed would permanently drain south to the Minnesota River South control and discharge system. Under the LTCP 2010 Alternative, a substantial portion of what is currently in the Mother Lake watershed will become part of the Minnesota River South watershed. The only airport impervious areas which would drain to Mother Lake would be some limited roadway, parking lot, and building surfaces (approximately 16 acres impervious, total). It is anticipated that none of these impervious areas will be storm sewered. While a final determination will have to be made at a future point through the appropriate permitting processes, it is not believed that a detention pond will be required for run-off in the Mother Lake watershed under the LTCP 2010 Alternative.

## 2. Total Run-off Volumes and Total Phosphorus Loadings

The analysis performed for this section utilized Pondnet, which is a computer simulation model widely used to project hydraulic and nutrient loadings for development projects. The assumptions utilized for and the modeled outcomes from the Pondnet analysis are presented below.

Existing Conditions:

- 193 acres draining to Mother Lake (166 pervious, 27 impervious—includes current airport areas and areas which will become part of the airport under the LTCP 2010 Alternative).
- Phosphorous loading rate of 0.17 mg/l (based upon historical MSP water quality monitoring data).
- Loading of approximately 33 lbs phosphorous from MSP drainage to Mother Lake.

LTCP 2010 Alternative:

- 200 total airport acres draining to Mother Lake (184 pervious, 16 impervious).
- Phosphorus loading rate of 0.17 mg/l (based upon historical MSP water quality monitoring data).
- Loading of approximately 24 lbs phosphorous from MSP drainage to Mother Lake.

It can be seen that the LTCP 2010 Alternative is modeled to result in a decrease of phosphorous loading from 33 – 24 = 9 lbs.

## 3. Floodplain Analysis

Backflow from the Minnehaha Creek/Lake Nokomis flood storage defines worst case conditions in terms of potential for flooding of the areas adjacent to Mother Lake. Backflow from Minnehaha Creek/Lake Nokomis during a 100-year ten-day run-off event would increase the elevation of Mother Lake, Taft

Lake, and the unnamed wetland off of Highway 62 to an elevation of 819.0 (Flood Insurance Study for City of Minneapolis).

Using EXTRAN and HEC1, computer simulation models, it is projected that run-off from the Mother Lake watershed of the airport under the LTCP 2010 Alternative during a 100-year ten-day run-off event would add a surcharge of 0.3 feet to the flood elevation of Mother Lake, bringing the projected final elevation during an extreme case run-off event for Mother Lake to 819.3. This assumes 100 percent impervious (frozen) surface within the future Mother Lake watershed. At 819.3 feet for Mother Lake, flooding would only effect property owned by the MAC.

Under the LTCP 2010 Alternative, the 100-year ten-day run-off event would produce a peak flow rate for drainage in the Mother Lake watershed of 152 cubic feet per second (CFS), based upon HEC1 analysis. This assumes all drainage associated with the AOA areas within the current boundaries of the Mother Lake being sent to the Minnesota River South system on a year-round basis.

# A.9 CBOD LOADING AND ATTENUATION ANALYSIS - MSP AND NO ACTION ALTERNATIVES

**NOTE:** See Appendix H.4 for information specific to MSP 2010 LTCP.

A. $CBOD_5$ LOADING

1. Total Glycol Applied

The total amount of glycol applied in recent winters is presented below:

- 1993/94: 450,900 gallons
- 1994/95: 392,000 gallons
- 1995/96: 559,900 gallons
- 1996/97: 1,400,000 gallons (estimated)

Data exists for usage during the 1992/93 winter. However, this data is not considered to be representative, since this was the first winter after broad new FAA deicing rules went into effect. In adjusting to the new rules, deicing crews were reportedly quite inefficient and liberal in their procedures and volumes.

The average seasonal application for the four seasons identified above has been approximately 700,000 gallons. For an extreme case season, it was considered appropriate to use the 1996/97 usage (1,400,000 gallons) as a base.

The 1996/97 winter glycol usage was divided by the 1996 (annual) aircraft operations for the airport. Thus:

(1,400,000 gallons)/(485,400 operations) = 2.8842 gallons/annual operation

This unit value was scaled up to estimated 2020 usage for MSP using projected aircraft operations for that year for MSP and No Action, respectively. Thus:

MSP Alternative:

(2.8842 gallons/operation)x(520,400 operations) = 1,500,900 gallons

No Action Alternative:

(2.8842 gallons/operation)x(473,500 operations) = 1,365,700 gallons

2. Amount of Glycol Applied on Extreme Case Application Day

From the 1993/94 deicing season through the 1996/97 deicing season, the greatest single day of glycol application for the entire airport has been 69,800 gallons, on March 13, 1997. The highest application days for the previous seasons are as follows:

- 1993/94: 39,080 gallons
- 1994/95: 45,700 gallons
- 1995/96: 49,200 gallons

It is known that the deicing conditions on March 13, 1997 were extremely severe (snow mixed with freezing rain over an extended period of time). It was decided to use the March 13, 1997 application figure as a basis for the extreme case glycol application event for this analysis.

The March 13, 1997 glycol application was divided by the annual number of operations for 1996. Thus:

(69,800 gallons)/(485,400 operations) = 0.1438 gallons per annual operations

This unit value was scaled up to estimated 2020 usage for MSP using projected aircraft operations for that year for MSP and No Action, respectively. Thus:

MSP Alternative - 2020

(0.1438 gallons/operation) x (520,400 operations) = 74,800 gallons

No Action Alternative

(0.1438 gallons/operation) x (473,500 operations) = 68,100 gallons

3. "Blow-By" Percentage

"Blow-by" is defined as that glycol which escapes containment and isflows to the storm sewer system.

Beginning in the 1993/94 winter season, the MAC initiated a glycol-impacted storm water (GISW) containment program utilizing plug structures installed in existing storm sewers at aircraft deicing locations. This program was continued and enhanced in the 1994/95 season. For 1993/94, approximately 50 percent of deicing operations were contained with the plug structures, and in the 1994/95 season approximately 75 percent of deicing operations were contained with plug structures. The blow-by for the GISW containment program at MSP, averaged over the 1993/94 and 1994/95 winter seasons, was approximately 22 percent.

Based upon data and information from glycol containment operations at MSP and upon analysis performed in the Decision Report for Storm Water Control (Metropolitan Airports Commission, December 1994) it is believed that the blow-by percentage would be reduced to 10 percent with a system based upon the plug/pump approach. This reduction assumes that the performance of the plug/pump strategy would be maximized as follows:

- Plugged containment at all significant deicing locations at MSP;
- Optimizing aircraft positioning over the containment zones during aircraft deicing operations;
- Enhancing plugged containment with vacuum sweeper GISW collection at prominent deicing locations;
- A glycol-impacted snow containment/management program; and
- Continuous pumpout during severe deicing events.

For the MSP Alternative, a series of five dedicated aircraft deicing pads will be constructed (one for each primary runway end used for take-offs). Based upon available information, dedicated deicing pads represent the best available source control technology for containing spent aircraft deicing fluid (ADF). Using information from airports around the world which use these pad facilities, it is estimated that approximately 70 percent of the glycol applied on the MSP pad facilities would be captured. For the MSP alternative, it is assumed that supplemental vacuum sweeping operations

will be performed as-needed. It is assumed that this overall approach would decrease the blow-by percentage, relative to that associated with the enhanced plug/pump approach discussed above, to 7.5 percent.

The containment approach assumed for the No Action Alternative is as follows:

- Plug/pump program maximized as discussed above with 100 percent containment coverage of deicing areas, support vacuum sweeping operations, and glycol impacted snow management/containment; and
- A dedicated deicing pad constructed at the 12L runway end.

Based upon deicing practices in recent winters and upon ground movement operational issues for Northwest and non-Northwest carriers, it is assumed that, with this type of overall deicing control configuration, approximately 20 percent of all glycol applied at MSP under the No Action Alternative would be applied on the Runway 12L pad. The estimated blow-by for the extreme-case glycol/CBOD day for No Action is, thus:

$$(0.8)x(0.1)+(0.2)x(0.075) = 0.095.$$

Under the MSP Alternative, it is assumed that all deicing locations would have containment. Most seasonal deicing operations would be performed on the deicing pads, and all deicing during a full *frozen/freezing precipitation* event would take place on these facilities. The estimated blow-by for the extreme-case glycol/CBOD day for MSP is, thus, 0.075 (see above discussion of pad containment performance).

4. CBOD Loading from Ground Surface Deicing Chemicals

There is no known data from MSP or other airports regarding the percentage of CBOD applied as potassium acetate or sodium formate which actually enters the storm sewer system to be discharged to receiving waters. For the purposes of this EIS analysis, information regarding the loading of total nitrogen from *urea at MSP* was used. It is assumed that sodium formate and potassium acetate would load to the storm sewer system at approximately the same rate that urea historically has at MSP.

The focus of this analysis is to project what the extreme case CBOD discharge to receiving waters would be. For analytical purposes, it is assumed that the worst case loading of ground surface deicing chemicals and associated effluents would take place on the worst case glycol application day (aircraft deicing). Averaged over the 1993/94 and 1994/95 winter seasons, the discharge of total *nitrogen on the highest total* nitrogen discharge day was 1.43 percent of the seasonal nitrogen application in the form of urea.

B. $CBOD_5$ ATTENUATION FROM DETPONDS

The modeling assumed complete mixing of pollutants that were routed through each detention pond. With complete mixing, the concentration of the pollutant in the detention pond is assumed to be equal to the effluent concentration. The mass balance equation for an assumed well-mixed, variable-volume pond is:

$$\frac{d(VC)}{dt} = I(t)\,C^I(t) - O(t)\,C(t) - K\,C(t)\,V(t) \qquad (1)$$

where V = reservoir volume, $ft^3$

$C^I$ = influent pollutant concentration, mg/l,

C = effluent and reservoir pollutant concentration, mg/l,

I = inflow rate, $ft^3/sec$,

O = outflow rate, $ft^3/sec$,

t = time, sec, and

K = decay coefficient, $sec^{-1}$.

Equation (1) is very difficult to work with directly;I it may be approximated by writing the mass balance equation for the pollutant over the interval, $\Delta t$:

Change in mass in basin = Mass entering during $\Delta t$ - Mass leaving during $\Delta t$ - Decay during $\Delta t$

$$C_2V_2 - C_1V_1 = \frac{(C'_1 I_1 + C'_2 I_2)}{2}\Delta t - \frac{(C_1O_1 + C_2O_2)}{2}\Delta t - \frac{(K C_1V_1 + C_2V_2)}{2}\Delta t \qquad (2)$$

where subscripts 1 and 2 refer to the beginning and end of the time step, respectively.

The primary inputs and outputs associated with the modeling performed for this analysis are presented in the tables below:

| MSP Alternative - 2020 Concept Plan | | | |
|---|---|---|---|
| | MRN | SL[1] | MRS |
| Pond Volume (gal) | 7,429,000 | 3,251,000 | 6,325,000 |
| Antecedent $CBOD_5$ Concentration (mg/l) | 250 | 750 | 360 |
| Influent Concentration $CBOD_5$ (mg/l) | 510 | 2,040 | 1,740 |
| Influent Flow Rate (*mgd*) | 5.09 | 0.63 | 1.48 |
| Effluent Concentration $CBOD_5$ (mg/l) | 270 | 800 | 480 |
| Effluent Flow Rate (mgd) | 1.64 | 0.22 | 0.69 |

[1]Two ponds in series.
NOTE: MRN = Minnesota River North (Station 020), MRS = Minnesota *River South* (Station 040), SL = Snelling Lake (Station 030).

| No Action Alternative | | | |
|---|---|---|---|
| | MRN | SL[1] | MRS |
| Pond Volume (gal) | 7,066,000 | 3,276,000 | 6,166,000 |
| Antecedent $CBOD_5$ Concentration (mg/l) | 450 | 120 | 390 |
| Influent Concentration $CBOD_5$ (mg/l) | 980 | 400 | 1,940 |
| Influent Flow Rate (mgd) | 4.62 | 0.71 | 1.22 |
| Effluent Concentration $CBOD_5$ (mg/l) | 500 | 135 | 510 |
| Effluent Flow Rate (mgd) | 1.53 | 0.28 | 0.59 |

[1]Two ponds in series.

# A.10 SURFACE WATER QUALITY MITIGATION MEASURES - MSP AND NO ACTION ALTERNATIVES

This appendix addresses control measures for MSP which are either in place, or which the MAC intends to implement in the future to meet anticipated National Pollutant Discharge Elimination System (NPDES) permit requirements.

General Loading (total suspended solids, oil and grease, and nitrogen/ammonia)

Load Minimization--Structural Measures:

The primary source category of structural measures to be utilized to minimize the loading of oil and grease effluents into the storm water system is containment design at fuel storage/handling areas. All such areas are required by state and federal law to have containment and management procedures to control spills or leaks which might occur. An inventory of existing fuel facilities and associated containment systems can be found in the MSP Oil Spill Prevention, Control and Countermeasure Plan (Metropolitan Airports Commission, June, 1993). The development of additional fueling facilities under either the MSP Alternative or the No Action Alternative would include containment and spill protection design to meet the appropriate regulatory requirements. Such development would also be incorporated into MAC and carrier management plans as required by the MPCA which minimize the potential for spills and provide for efficient spill response in the event that spills do occur.

Load Minimization--Operational Measures:

All entities which own fuel storage/handling facilities and/or perform fuel handling activities must generate Storm water Pollution Prevention Plans (SWPPPs) to meet NPDES permit requirements as enforced by the MPCA. These documents identify best management practices (BMPs) to be utilized to minimize the potential for discharges from the regulated facilities to impact surface water quality.

Spill Prevention Control and Countermeasure Plans (SPCCPs) not only document engineered control measures, but response activities as well. The SPCCPs which have been generated by the MAC and its tenants identify procedures to be utilized in the event of spills to minimize the amount of product escaping containment and potentially impacting surface or groundwater resources.

An operational measure which is currently used to minimize the loading of solids into the storm water system is regular sweeping with mechanical sweepers to remove sand and grit from ground surfaces before they can be washed into storm water intakes. The intensity of sweeping operations is increased after snow events during which significant amounts of sand are used for ground surface snow/ice control.

The primary source of ammonia loading to the MSP storm water system is urea, which is currently the primary ground surface deicing agent used by the MAC. It is anticipated that, pending successful field trials with alternative products which do not have nitrogen content (sodium formate, potassium acetate, and potentially sodium acetate), and the ability to address product storage/handling issues, it is anticipated that urea will be eliminated from use at MSP long before 2020.

Storm water Diversion/Treatment--Structural:

The primary type of structural approach to treat storm water once it has entered and passed through the conveyance portion of the storm system is the use of detention basins to remove suspended solids and floating oil and grease. The MAC intends to enhance existing storm water control facilities at MSP to meet Detpond wet detention standards, regardless of the ultimate development outcome for the facility. Oil and grease removal measures (floating absorbent booms) are currently deployed at all existing MSP detention ponds. The enhanced detention ponds should improve the performance of these measures.

Storm water Diversion/Treatment--Operational Measures:

Floating absorbent booms are currently used as an end-of-system measure in each of the four drainage areas to remove oil and grease contaminants from surface water run-off. These booms contain and absorb petrochemical residuals which may float on the surface of the detention ponds, and are inspected and cleaned/replaced regularly. Booms will continue to be used regardless of the ultimate development outcome for MSP. This overall approach could potentially be enhanced by utilizing a mechanical fuel recovery system which is similar in general concept to the existing boom system, but could result in higher capture because of continuous circulation and cleaning of the absorbent element.

Aircraft Deicing Fluid Loading

Load Minimization--Structural Measures:

Since the 1993/94 winter season, the MAC has utilized plug structures at aircraft deicing locations within existing storm sewers to contain glycol product. The glycol-impacted storm water (GISW) which is diverted with this system is currently either processed on-site for glycol recycling, or is conveyed to the Metropolitan Council Environmental Services (MCES) sanitary system for treatment.

Under the MSP Alternative, the plug/pump approach would be replaced with the use of end-of-runway dedicated aircraft deicing areas ("pads") with underdrainage which is segregated from other storm water drainage. Material contained on the pad facilities would be conveyed to on-site processing (high glycol concentration material), or treatment(low glycol concentration material).

The structural containment approach assumed for No Action is: a) development and use of a dedicated deicing pad servicing the 12L runway end, and b) the existing plug/pump system at all other aircraft deicing locations.

Load Minimization--Operational Measures:

Vacuum sweeper glycol collection trucks have been successfully utilized at other airports around the world. These units could be used as a measure to enhance the containment performance associated with the plug/pump approach or, less significantly, the dedicated deicing pad approach.

# A.11 POTENTIAL RESIDUAL GLYCOL-IMPACTED STORM WATER MANAGEMENT MEASURES

Discussion:
Even with a full at-source control program for spent glycol materials, some GISW will escape containment and be discharged at storm water outfalls. The primary issues with such discharge are: a) the CBOD load which it can exert on receiving waters, and b) potential aquatic toxicity factors associated with additives, such as corrosion inhibitors and surfactants, to aircraft deicing products (ADF)

If storm water discharge from MSP were determined to consume too great a percentage of the available dissolved oxygen of a receiving body of water, oxygen augmentation could be implemented. Oxygen augmentation would include effluent aeration, direct aeration, or a combination of the two. Effluent aeration could be accomplished by incorporating hydraulic structures (e.g. steps or cascades) into the discharge structure to promote natural reaeration, or by introducing pure oxygen in an enclosed pipe to supersaturate the effluent. Direct aeration could be accomplished with mechanical aerators or diffused aerators installed within the river or by aeration of a sidestream.

On-site treatment of residual GISW is not considered to be viable at MSP. Because of the existing configuration of the storm sewer drainage system at the airport, treatment of glycol escaping containment at the source would necessitate the treatment of all storm water generated on the facility between the months of approximately November through May. Since limited pond treatment could take place during the winter and spring months due to cold water temperatures, using detention ponds for treatment purposes would require the storage of all of this run-off until water temperatures increased sufficiently to allow significant biological activity.

Storm water run-off data from MSP over the past three deicing seasons, as reported in Discharge Monitoring Reports (DMRs) submitted monthly to the Minnesota Pollution Control Agency, indicates that between 300 and 350 million gallons of run-off would be expected between November and May under the No Action Alternative. With the new hard surfaced areas associated with the MSP Alternative, the surface water generated would be significantly greater than under the No Action Alternative. To store these types of volumes, approximately 1,000 acre-feet of pond storage would have to be developed. Spatial limitations at the airport would not allow this type of development. As a scale of reference, the facility-wide capacity of the detention ponds assumed to meet NURP design standards for the MSP Alternative is approximately 60 acre-feet; this approaches the limits of space useable for storm water detention.

Utilizing an on-site treatment facility or facilities to treat residual GISW would involve two severe design constraints:

- cold water temperatures during glycol usage and discharge months; and
- highly variable hydraulic flow and organic load of the storm water to be treated.

With an on-site treatment facility or facilities, either the storm water would have to be heated prior to being introduced to the facility (ies), or all of the storm water would have to be stored until mid to late spring, when weather conditions would sufficiently raise the temperature of the stored material. Thus, if the system were operated without pre-heating the storm water, the storage requirements would be similar to those associated the in-pond treatment approach addressed above.

The approach of pre-heating all storm water prior to being introduced to an on-site treatment facility or facilities would involve very high capital and operating costs. However, the true limiting factor would still be the need for storage. Because of the highly variable flow and organic loads involved, it is estimated that 30 days of storage would be required for equalization/buffer purposes. In the spring months during snowmelt events, this would translate into a storage requirement of between 100 and 125 million gallons, based upon historical data. This, in turn would mean approximately 350 acre-feet of developed pond storage. There is not enough space at the MSP facility to accommodate this magnitude of pond development.

Diverting all MSP storm water during critical periods of high CBOD levels to the MCES Metro treatment plant has been considered. Under certain conditions, this option might be viable for implementation. It would require major capital expenditures and development actions. The MCES, formerly the Metropolitan Waste Control Commission (MWCC) has indicated in the past that the approach of diverting GISW from MSP detention basins for treatment at the Metro plant would be unacceptable. The primary reasons sited were that this approach would: a) utilize an excessive portion of the reserve capacity for organics at the Metro Plant, and b) would exceed the hydraulic capacity of the MCES/MWCC interceptor system. In addition, MCES has previously indicated an opposition to this approach from the policy perspective that the Metro Plant (or any other MCES treatment plant) is not to treat general (not segregated and/or not pre-treated) storm water run-off. If, in the future, MCES had cause to reassess its position on these general issues, the approach of diverting from MSP detention ponds to off-site treatment could potentially be considered.

It is possible that the MAC and the MPCA, through the NPDES permitting process, would negotiate point-nonpoint effluent trade credits. Under this approach, best management practices would be utilized to reduce nonpoint source pollution upstream of MSP surface water discharges. This approach is sometimes used when comparable benefits to the water quality of the receiving water can be achieved more efficiently at a location or locations other than at the facility itself.

Summary:
Three measures discussed in this appendix are, under certain conditions, potentially viable for implementation at MSP:

- oxygen augmentation;
- diversion of all MSP storm water to the Metro Disposal System during critical months; and
- point/non-point effluent trade credits (upstream control measures).

.One of those approaches could be implemented under a future NPDES permitting process under a combination of the following conditions, or if otherwise determined by the MAC:

1. Future water quality analysis indicates that a resigual glycol-impacted storm water measure may be necessary.
2. The measure identified is deemed necessary and appropriate through substantive review and the administrative procedures associated with the NPDES permitting process.

# A.12 NOISE ANALYSIS - MINNESOTA VALLEY NATIONAL WILDLIFE REFUGE

Appendix A.12 presents the results of an analysis by MAC in conjunction with FAA of existing ambient noise in the Minnesota Valley National Wildlife Refuge (MVNWR) and the increase in noise from the Proposed Action.

In order to determine existing ambient noise levels, continuous monitoring was performed at eight sites (shown in **Figure FF-5**); the sites were agreed to by U.S. Fish and Wildlife Service (USFWS), FAA and MAC. However, Site 8 (as shown) was monitored further east and closer to TH 77 than agreed on because of access restrictions due to flooding, and therefore may not be representative of ambient noise levels in the eastern portion of the Black Dog Lake Unit. The monitoring was performed over a 7-day period from 1:00 p.m., June 3, through 12:00 p.m. June 8, 1997 (Monday through Sunday) -- a total of 155 hours. The following data was collected:

- hourly Leq
- peak Sound Exposure Levels (SEL's)
- Time Above 65 dBA (TA 65)

The average ambient DNL was calculated for each site based on the hourly Leq's by applying a 10 dBA penalty to the *hourly* Leq's *recorded* between 10:00 p.m. and 7:00 a.m. However, the more appropriate noise metric for determining potential effects on wildlife recreation is the average *daytime* Leq -- since these activities occur during daylight hours. It was agreed that 6:00 a.m. to 8:00 p.m. would be used as the average daylight for the year, and the Leq's, SEL's and TA 65's would be determined from these hours. Six full days (144 hours) of monitoring data were therefore available for the analysis.

### Summary of Results

The following is a summary of the noise analysis based on a comparison of the noise levels from the Proposed Action in 2005 with 1997 monitored noise levels:

1. The Proposed Action would not have a perceptible noise increase[1] in the Black Dog Lake Unit, as represented by Monitoring Sites 6, 7 and 8.
2. The Proposed Action would not have a perceptible noise effect in the extreme southwestern portion of the Long Meadow Lake Unit, as represented by Site 1.
3. The Proposed Action would have a perceptible noise increase in the central portion of the Long Meadow Lake Unit, as represented by Sites 2, 3 and 4. However, Site 4 in the future will have noise exposure almost identical with what currently exists at Site 5 (Leq, TA 65, SEL and DNL).
4. The Proposed Action would not have a perceptible noise increase in the extreme northeastern portion of the Long Meadow Lake Unit, as represented by Site 5.

### Environmental Setting

In addition to providing convenient access to the residents of the Twin Cities, the location of the MVNWR significantly affects background noise levels. The MVNWR is located near the urban core of the Twin Cities region and is adjacent to the region's major air carrier airport as well as to significant rail and road transportation corridors. These transportation facilities existed at the establishment of the refuge and have always affected the noise environment. When the refuge was established in 1977, aircraft noise levels were

[1] A perceptible change in sound is generally considered to be 3 dBA.

substantially higher than they are at present. A prediction of noise from actual 1977 activity at Minneapolis-St. Paul International Airport (MSP) was performed in 1978 (Metropolitan Noisemap Project, Technical Report of the Technical Advisory Committee's Aviation Subcommittee, December 1978). **Figure FF-7** shows the 1977 and 1994 DNL 65 noise contours in the vicinity of the MVNWR. In 1977 the central portion of the refuge (Sites 3 and 4) was subject to frequent overflights by aircraft departing on Runway 22. Although DNL 60 contours were not calculated for 1977, Sites 3, 4 and 5 surely had noise levels greater than DNL 60 -- based on their locations with respect to the DNL 65 contour.

**Noise Analysis**

The equivalent sound level for the 14-hour period during which activities occur (Leq $_{14}$) is the primary noise analysis metric. Peak single event noise levels during this 14-hour period are expressed using the SEL metric which accounts for the expected annoyance of a noise event. The amount of time that sound levels exceed 65 decibels (dBA) during this period is also provided. The Leq, SEL and TA metrics are explained in Appendix A.3 of the FEIS.

The attached summary tables (**A.12-1, 2, 3** and **4**) compare the calculated noise effects of the Proposed Action in the year 2005 under the high and base forecast scenarios and the No Action Alternative with the actual noise levels monitored in June of 1997 for the 8 sites in the MVNWR. The following narrative summarizes the findings of each analysis.

**1. Equivalent Noise Level ($Leq_{14}$) Analysis**

This analysis provides the average noise exposure from all events during the 14-hour period. Leq is appropriate for assessing the likely effect of the Proposed Action on visitor annoyance in comparison with existing conditions. The monitored $Leq_{14}$ shows ambient noise levels which include aircraft noise. Ambient average daytime noise levels monitored in the MVNWR range from 48 to 64 dBA, as shown in **Table A.12-1** (tables follow the end of the text of this appendix). This range encompasses noise levels typically encountered in suburban residential to noisy urban residential areas. These comparatively high monitored levels reflect the MVNWR's close proximity to a major air carrier airport and the urban center of the Twin Cities region. In fact, when the refuge was established in 1977, aircraft noise levels were substantially higher in the refuge than they are at present (see **Figure FF-7**).

Comparison of monitored and forecast noise levels provides an indication of the contribution of aircraft to ambient levels and the potential effects of the proposed action. Aircraft noise will continue to affect MVNWR differently at different locations. Analysis of **Table A.12-1** indicates the following:

- **Northeast Portion of the MVNWR (Site 5).** At Site 5, the Proposed Action would be 9 dBA less than the ambient noise level.
- **Central Portion of the MVNWR (Sites 3, 4 and 8).** At Sites 3 and 4, the Proposed Action would be 7 to 8 dBA above existing ambient noise levels. and 2 dBA higher at Site 8. A 3 dBA difference is generally considered to be perceptible; therefore, there would be a perceived increase in noise at Sites 3 and 4, but not at Site 8.
- **Southwest Portion of the MVNWR (Sites 1, 2, 6 and 7).** At Sites 1, 6 & 7, the Proposed Action would have little effect on ambient noise levels. At Site 1, the high aviation forecast scenario for the year 2005 would increase the aircraft Leq by 2 dBA above the current monitored levels -- which is not perceptible. At Sites 6 and 7 the forecast aviation noise levels would be less than the current ambient levels. There would be a perceived increase in noise at Site 2, which would have an increase of 9 dBA.

**2. Time Above (TA) Analysis**

The TA analysis is most appropriate for assessing the amount of time that noise may interfere with specific activities. For most purposes, speech communication is the activity most likely to be disrupted. For guided tours or lectures at the MVNWR, outdoor speech interference is the most important consideration. Research

conducted by the U. S. Environmental Protection Agency (EPA)[2] indicates that normal speech communication can occur at talker-to-listener distances of 5 feet at noise levels of 65 dBA. At this noise level, communication at distances of up to 30 feet are possible with increased effort. Accordingly, the TA analysis compares the amount of time that noise levels would exceed 65 dBA. Analysis of **Table A.12-2** indicates the following :

- **Northeast End of the MVNWR (Site 5).** At Site 5, monitoring data indicates that noise levels exceed 65 dBA (TA 65) for 58.5 minutes per day on average, or about 7% of the 14-hour period. This data indicates that aircraft noise is not the primary source of noise exposure in this area. Since the TA 65 for the Proposed Action is about 46 minutes less than ambient and about 1 minute less than No Action, this area would likely continue to experience noise levels above 65 dBA for roughly 58 minutes during the day.
- **Central Portion of the MVNWR (Sites 3, 4 & 8).** At Sites 3, 4 & 8, monitoring data indicates that noise levels exceed 65 dBA from 0 to 2 minutes per day. The Proposed Action would increase the TA 65 to between 33 and 55 minutes per day; consequently, this area would experience noise levels above 65 dBA for 4% to 7% of the 14-hour period. Site 8 has an existing TA 65 of less than one minute per day; under the Proposed Action, the TA 65 could increase to approximately 42 minutes per day, or 5% of the 14-hour period.
- **Southwest End of the MVNWR (Sites 1, 2, 6 & 7).** At Sites 1 & 2, monitoring data indicates that noise levels exceed 65 dBA for less than 1 minute per day; the Proposed Action would increase the TA 65 by about 12 and 18 minutes per day, respectively. At Site 6 the TA 65 would increase less than 3 minutes per day from the Proposed Action. Site 7 has an existing TA 65 of roughly 15 minutes per day; under the Proposed Action the TA 65 is expected to decrease to about 9 minutes per day.

### 3. Peak Sound Exposure Level (SEL) Analysis

Peak SEL shows the noise "dose" from all events during the daytime period. This metric describes the relative annoyance of individual noise events by considering both the intensity and duration of the event. The monitored SEL values shown in **Table A.12-3** represent an average of the daily peak SELs monitored. Analysis of **Table A.12-3** indicates the following:

- **Northeast Portion of the MVNWR (Site 5).** At Site 5, the monitored peak SEL was substantially higher than what would be expected from aircraft arriving and departing on Runway 12R-30L, indicating that non-aircraft noise sources are dominant in this area. Under the Proposed Action, peak aircraft SEL would be about 18 dBA below monitored peak SELs in this area.
- **Central Portion of the MVNWR (Sites 3, 4 & 8).** At Sites 3 and 4 the Proposed Action peak aircraft SEL would be 11 and 20 dBA higher, respectively, than monitored peak SELs in this area. At Site 8 the Proposed Action would be 6 dBA higher than ambient. A 10 dBA increase would generally be perceived as a doubling of noise.
- **Southwest Portion of the MVNWR (Sites 1, 2, 6 & 7).** At Sites 1 & 2, the Proposed Action peak aircraft SEL would be from 14 to 19 dBA higher than monitored peak SELs. At Sites 1 and 2, the monitored peak SELs were approximately 78 dBA. The monitored levels are less than what would be expected from current aircraft operations since they are less than the peak aircraft SEL calculated for the No Action Alternative. This difference could be due to differences in aircraft activity during the monitoring period, or to site specific factors such as shielding.

  At Site 6, the monitored peak SEL was sufficiently higher (10 dBA) than the Proposed Action peak aircraft SEL to indicate that non-aircraft noise sources might be dominant at this location. At Site 7 the monitored peak SEL is 4 dBA higher than the Proposed Action. As previously noted, a 3 dBA difference is generally considered to be perceptible, while a 10 dBA increase would be perceived as a doubling of noise.

[2] Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, Office of Noise Abatement and Control, March 1974.

**4. Day Night Noise Level (DNL)**

DNL shows the average noise exposure from all events during a 24-hour period with a penalty for events occurring between 10:00 p.m. and 7:00 a.m. This metric is appropriate for assessing the likely effect of the Proposed Action on community annoyance. DNL is the primary means of assessing noise impact on most land uses, especially those involving 24 hours-a-day use. The monitored DNL shows ambient noise levels which may include aircraft noise. Ambient noise monitored in the MVNWR ranges from DNL 52 to 65. This range is typical of suburban residential to noisy urban residential areas. Comparison of monitored and forecast noise levels provides an indication of the contribution of aircraft from the Proposed Action to ambient levels. A 3 dBA change in DNL is generally considered to be perceptible. Analysis of **Table A.12-4** indicates the following:

- **Northeast Portion of the MVNWR (Site 5).** At Site 5, the Proposed Action would have little effect on the ambient noise level -- since the increase is about 2 dBA. At this site, non-aircraft noise would continue to be a major factor affecting the DNL.
- **Central Portion of the MVNWR (Sites 3, 4 & 8).** At Sites 3 and 4, the Proposed Action would increase the DNL by 5 to 7 dBA above ambient noise levels. At Site 8 the DNL would decrease by 2 dBA due to the Proposed Action
- **Southwest Portion of the MVNWR (Sites 1, 2, 6 & 7).** At Site 1, the Proposed Action would have no perceptible effect on the ambient DNL noise level since the increase is about 2 dBA. At Sites 6 and 7, the Proposed Action DNL would be less than ambient DNL noise levels -- by 11 and 6 dBA, respectively. Site 2 would experience an increase of 7 dBA due to the Proposed Action.

**5. Conclusion**

In attempting to determine the overall area that could have a perceptible increase over ambient, it was concluded by MAC that the 2005 DNL 57 contour provides a boundary that gives a conservatively high estimate of the size of the area, as shown in **Figure FF-6.**

**Table A.12-1 - Average Daytime Leq in dBA**

(6:00 a.m. to 8:00 p.m.)

| Site | 1997 Monitored | 2005 High INM | 2005 Base INM | 2005 No Action INM |
|---|---|---|---|---|
| 1 | 53 | 55 | 54 | 47 |
| 2 | 48 | 57 | 57 | 45 |
| 3 | 54 | 61 | 60 | 39 |
| 4 | 56 | 64 | 63 | 40 |
| 5 | 64 | 55 | 54 | 55 |
| 6 | 59 | 50 | 49 | 44 |
| 7 | 53 | 52 | 52 | 47 |
| 8 | 59 | 61 | 61 | 38 |

**Table A.12-2 - Time Above 65 dBA [1]**

(in minutes between 6:00 a.m. and 8:00 p.m.)

| Site | 1997 Monitored | 2005 High INM | 2005 Base INM | 2005 No Action INM |
|---|---|---|---|---|
| 1 | 0.2 | 12.6 | 11.4 | 3.0 |
| 2 | 0.1 | 18.1 | 16.5 | 1.2 |
| 3 | 1.9 | 35.0 | 31.9 | 0.0 |
| 4 | 0.1 | 55.2 | 49.8 | 0.0 |
| 5 | 58.5 | 11.9 | 10.7 | 13.3 |
| 6 | 1.7 | 4.4 | 4.0 | 1.0 |
| 7 | 14.8 | 8.7 | 7.9 | 3.2 |
| 8 | 0.5 | 41.5 | 36.6 | 0.0 |

[1] *TA 65 values are averages of the 14-hr. monitoring periods over 6 days*

**Table A.12-3 - Peak Daytime SEL dBA**

(6:00 a.m. to 8:00 p.m.)

| Site | 1997 Monitored | 2005 High INM | 2005 Base INM | 2005 No Action INM |
|---|---|---|---|---|
| 1 | 80.1 | 94.3 | 94.3 | 92.4 |
| 2 | 79.8 | 98.4 | 98.4 | 91.4 |
| 3 | 90.0 | 101.1 | 101.1 | 79.8 |
| 4 | 82.7 | 102.6 | 102.6 | 76.5 |
| 5 | 106.5 | 88.6 | 88.6 | 86.0 |
| 6 | 97.5 | 87.3 | 87.3 | 83.5 |
| 7 | 92.2 | 88.3 | 88.3 | 90.2 |
| 8 | 93.4 | 99.5 | 99.5 | 75.9 |

**Table A.12-4 - DNL Noise Levels**

| Site | 1997 Monitored | 2005 High INM | 2005 Base INM | 2005 No Action INM |
|---|---|---|---|---|
| 1 | 54 | 56 | 56 | 51 |
| 2 | 52 | 59 | 58 | 49 |
| 3 | 57 | 62 | 62 | 42 |
| 4 | 58 | 65 | 65 | 43 |
| 5 | 65 | 57 | 56 | 57 |
| 6 | 62 | 51 | 51 | 46 |
| 7 | 60 | 54 | 53 | 50 |
| 8 | 65 | 63 | 62 | 40 |

Note: INM version 5.1a was used to obtain the values in **Tables A.12-1** through **A.12-4**.

# A.13 AIR QUALITY IMPACT ANALYSIS OF CONSTRUCTION ACTIVITY

Potential air quality impacts from construction include fugitive dust associated with demolition and construction, fugitive dust along haul routes, exhaust and machinery-related emissions from construction equipment and haul vehicles on the site and along haul routes, and potential vehicular congestion in the vicinity of construction sites and on haul routes.

Large amounts of material transport will be required primarily for construction of airfield facilities and roadways. While the construction cost of terminal and other facilities are significantly greater than basic airport infrastructure facilities, they are more labor-, technology- and equipment-intensive and require less movement of construction vehicles on area roadways.

The primary construction categories evaluated for MSP under the Dual Track analysis (exclusive of property acquisition) are:

Airfield construction (major movement of bulk materials)
- Tunnels
- Runways and taxiways

Terminal construction
- Terminal buildings and related structures
- People mover system and stations
- Central Plant
- Parking costs
- Aprons and taxiways (some movement of bulk materials)

Roadway construction
- TH 62 and TH 77 reconstruction and connections

Other Facility construction
- Airline maintenance
- Air cargo
- General aviation
- Airport administration and maintenance
- Fuel facilities
- Air mail facility
- Flight kitchen
- Rental car service facilities
- Airport rescue and firefighting stations
- FAA facilities

Utility construction
- Discharge pipeline

The information on material movement requirements is based upon information provided by Robert Boyer of Toltz King Duvall Anderson, engineers for the Runway 4-22 extension completed in 1996. Aggregate and embankment fill material are the major bulk items transported onto MSP from other areas. A large amount of fill and recycled materials are still available on airport property from previous construction projects. In 1995 as part of the Runway 4-22 project 200,000 yards of fill were transported onto the airport. At 75 pounds per cubic foot, this is equivalent to 20,000 tons of fill material. At 10 cubic yards of material per truck, this is equivalent to 20,000 truckloads over a several month period. This amount of traffic does not appear to have affected traffic flow around the airport.

Most of the trucks have entered airport property from I-494 at 24th Avenue although some have departed northbound on the slip ramp to TH 77.

Annual expenditures for the 4-22 project were $11 million. The proposed maximum annual expenditure for airfield projects (tunnel, runways and taxiways) is $47 million. Conservatively assuming a four-fold increase in truck requirements, it is estimated that as much as 800,000 cubic yards might be moved in one year. This would be equivalent to 80,000 truck loads during the construction season. Assuming the season lasted only six months, this would mean about 13,000 trucks per month. Assuming 20 working days per month, this would mean 660 trucks per day in and 660 trucks out. If evenly distributed over a 10 hour day, this would mean 66 trucks per hour; although peaks may be higher. Therefore, trucks carrying aggregate and fill material are not likely to have a significant impact on traffic in the airport area

Estimates of both on-airport and off-airport truck emissions have been made using emission factors for Heavy Duty Diesel Trucks from the US EPA Mobile 5A emissions model. The year 2003 has been selected to reflect maximum construction activity on the airport. Estimates of CO, NOx, HC and PM emissions have been made. No emission factor information is available for SOx. Estimated annual emissions from haul trucks are presented in **Table A.13-1.**

**TABLE A.13-1 Estimated Annual CO Emissions from Haul Truck Activity in 2003 (assuming 800,000 truckloads per year)**

| Location | Distance (miles) | Avg Speed (mph) | CO (g/mi) | Number of trucks | CO (grams) | CO (tons) |
|---|---|---|---|---|---|---|
| On-Airport | 3 | 10 | 20.4 | 80,000 | 4992000 | 5.4 |
| Off-Airport | 30 | 40 | 5.7 | 80,000 | 13920000 | 15.0 |
| Source: David Braslau Assoc. | | | | | | |

Other Carbon Monoxide emissions will be associated with employee trips to and from the construction site. It is assumed that all employees drive light duty gasoline trucks and that the average daily off-airport round trip is 30 miles over a six month construction period or 156 days. An average off-airport speed of 30 mph is assumed for which the 2003 emission factor is 19.7 grams per mile. For on-airport emissions an average round trip of 2 miles and an average speed of 20 mph has been assumed for which the 2003 emission factor is 30.1 grams per mile. Estimated Carbon Monoxide emissions in tons per year are presented in **Table A.13-2** for a range of employees.

**Table A.13-2 Estimated Off-Airport CO Emissions from Construction Employee Travel (tons per year)**

| Employees | On-Airport | Off-Airport |
|---|---|---|
| 100 | 1 | 10 |
| 200 | 2 | 20 |
| 300 | 3 | 30 |
| Source: David Braslau Assocs. | | |

On-airport pollutant emissions from construction equipment have been estimated in two ways. The first is based upon emission factors provided by the US EPA National Vehicle and Fuel Emissions Laboratory which are the most recent data available. The second is based upon a methodology developed by the Sacramento (California) Metropolitan Air Quality Management District. Since the latter methodology does not address Carbon Monoxide emissions, which is the most critical pollutant

for this study, US EPA emission factors were used in conjunction with the Sacramento emission factors to estimate Carbon Monoxide emissions. Both of these methods have been used to ensure the most conservative estimates of construction emissions.

Assuming that all types of construction equipment will be used for improvements on MSP, annual emissions estimated from US EPA emission factors are presented in **Table A.13-3.** These emissions are based upon average load factors and estimated annual hours of usage and typical engine horsepower ranging from 200 to 500 hp.

**Table A.13-3 Annual Emissions by All Types of Construction Equipment (tons per year)**

| EQUIPMENT TYPE | CO | NOx | ExHC | PM |
|---|---|---|---|---|
| Crane | 0.32 | 0.79 | 0.10 | 0.11 |
| Excavator | 0.84 | 1.74 | 0.11 | 0.23 |
| Scraper | 1.09 | 1.89 | 0.15 | 0.27 |
| Grader | 0.63 | 1.59 | 0.25 | 0.17 |
| Crawler Dozer | 1.27 | 2.72 | 0.33 | 0.29 |
| Rubber Tired Loader | 0.55 | 1.17 | 0.10 | 0.15 |
| Skid Steer | 1.34 | 1.43 | 0.31 | 0.21 |
| Roller | 0.28 | 0.85 | 0.07 | 0.07 |
| Off Highway Truck | 0.87 | 2.97 | 0.26 | 0.25 |
| Trencher | 0.90 | 0.98 | 0.15 | 0.14 |
| Tractor/Loader/Backhoe | 1.40 | 2.08 | 0.29 | 0.22 |
| Off Highway Tractor | 2.70 | 2.19 | 0.45 | 0.37 |
| Total All Equipment | 12.19 | 20.40 | 2.58 | 2.49 |
| Source: David Braslau Assoc. | | | | |

Construction emissions have also be estimated from a methodology included in a publication by the Sacramento Metropolitan Air Quality Management District entitled Air Quality Thresholds of Significance (1994). Estimates are made for grading emissions (including equipment and fugitive dust), employee trips, asphalt paving, stationary and mobile equipment and architectural coatings. Employee trip emissions have been estimated above. Only HC emissions are estimated from asphalt paving. Other emissions are small relative to those associated with grading. Therefore, grading equipment emissions have been used for the evaluation of on-airport emissions since this is the largest source of emissions likely to be associated runway construction and other airport improvement projects.

The Sacramento methodology is based upon the number of acres per day over which grading takes place. The emissions assume one grader, one wheeled loader and one tracked loader/grader per 10 acres. From **Table A.13-3**, it can be seen that these have some of the highest CO emissions which are of greatest interest in this analysis. Equipment is assumed to be diesel-powered and operating six hours per day. A six-month construction season of 156 working days is assumed. Dust (or fugitive particulate emissions) are calculated separately. For purposes of comparison, annual emissions have been estimated for areas ranging from 5 to 50 acres on any given day. The emission factors developed can be applied to an area of up to 50 acres. The results of this analysis are presented in **Table A.13-4.**

**Table A.13-4 Construction Emissions based upon Sacramento Methodology (tons per year)**

| Acres per day | CO | NOx | ExHC | PM | DUST |
|---|---|---|---|---|---|
| 5 | 0.38 | 0.62 | 0.10 | 0.11 | 23.67 |
| 10 | 0.75 | 1.25 | 0.20 | 0.22 | 47.35 |
| 15 | 1.13 | 1.87 | 0.29 | 0.33 | 71.02 |
| 20 | 1.51 | 2.50 | 0.39 | 0.44 | 94.69 |
| 25 | 1.89 | 3.12 | 0.49 | 0.55 | 118.37 |
| 30 | 2.26 | 3.74 | 0.59 | 0.66 | 142.04 |
| 35 | 2.64 | 4.37 | 0.68 | 0.76 | 165.71 |
| 40 | 3.02 | 4.99 | 0.78 | 0.87 | 189.38 |
| 45 | 3.39 | 5.62 | 0.88 | 0.98 | 213.06 |
| 50 | 3.77 | 6.24 | 0.98 | 1.09 | 236.73 |
| Source: David Braslau Assoc. | | | | | |

From **Table A.13-4**, the highest level of CO emissions permissible under the Sacramento methodology is 3.77 tons per year for a 50 acre/day construction area. From **Table A.13-3**, a total of 12.19 tons per year is estimated, assuming on piece of each type of construction equipment is used throughout the year with average load factor and utilization. If more than three pieces of equipment are used per 10 acres as assumed in the Sacramento methodology, a value somewhere between these two emission levels can be expected. For purposes of the general conformity analysis for on-airport Carbon Monoxide emissions, the maximum emission value from construction equipment of 12 tons per year will be assumed.

Total Carbon Monoxide emissions from on-airport construction activity are summarized in Table A.13-5.

**Table A.13-5 On-Airport Construction Activity Carbon Monoxide Emissions in 2003**

| Source | Tons per Year |
|---|---|
| Construction Equipment | 12 |
| On-Airport Truck Trips | 5 |
| On-Airport Employee Trips | 3 |
| TOTAL | 20 |

Construction emissions are estimated to be below the 100 tons per year de minimis level. Therefore, the construction activity at MSP will be in conformity with the Clean Air Act Amendments.

# A.14 STATE OF MINNESOTA DUAL TRACK PLANNING PROCESS LEGISLATION

vehicle on streets and highways, except parking violations, the judge or agent shall immediately report the violation to the commissioner of public safety. The report must be made on a form provided by the department of public safety and must contain the information required under section 169.95.

Presented to the governor May 23, 1989

Signed by the governor May 25, 1989, 6:05 p.m.

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## CHAPTER 279—S.F.No. 1358

*An act relating to metropolitan airport planning; requiring various actions, plans, and reports by the metropolitan council and the metropolitan airports commission; expanding the membership of the commission; establishing a state advisory council on metropolitan airport planning; amending Minnesota Statutes 1988, sections 473.604, subdivision 1; and 473.621, subdivision 1a; proposing coding for new law in Minnesota Statutes, chapter 473.*

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MINNESOTA:

Section 1. **[473.155] AVIATION PLANNING.**

Subdivision 1. **AVIATION PLANNING ASSESSMENT.** By February 15 of each year, the council shall prepare a long-range assessment of air transportation trends and factors that may affect major airport development in the metropolitan area for a prospective 30-year period. The council shall involve the airports commission in preparing the assessment and shall take into consideration the airport development and operations plans and activities of the commission.

Subd. 2. **AVIATION PLAN.** By February 1, 1990, the council shall amend the aviation chapter of the metropolitan development guide to incorporate policies and strategies that will ensure a comprehensive, coordinated, continuing, thorough, and timely investigation and evaluation of alternatives for major airport development in the metropolitan area for a prospective 30-year period. The alternatives to be examined must include both the airport improvements and enhancements of capacity that may be necessary at the existing airport and the location and development of a new airport.

Subd. 3. **SEARCH AREA.** By January 1, 1992, the council, in consultation with the airports commission, shall designate a search area for a major new airport.

Subd. 4. **LEGISLATIVE REPORTS.** (a) Until the activities required by section 3, subdivision 3, and section 4 are completed, the council shall report to the legislature by February 15 of each year on the results of the aviation planning activities of the council under this section. The report must include a summary of expenditures and sources of funding for the activities.





(b) By February 1, 1990, the council shall report to the legislature recommending methods and legislative actions that would be necessary to protect a new airport search area from conflicting development, to protect and control development on land at and around a site for a major new airport, and to inhibit land speculation and reduce incentives for land speculation in the airport and all surrounding areas.

(c) By March 1, 1990, after consulting with the airports commission, the federal aviation administration, industry representatives, and other persons, the council shall report to the legislature on assumptions and methods that will be used by the council to forecast demand related to the need for major airport facilities in the metropolitan area for a prospective 30-year period.

(d) By March 1, 1990, the council shall report to the legislature analyzing and making recommendations on long-range aviation goals for the major airport facility in the metropolitan area for a prospective 30-year period. The report must address goals for safety, environmental impact, and service, including ground access and service levels to other states and countries and to nonmetropolitan areas of the state. In preparing the report, the council shall consider regional growth patterns, economic development, economic impact, regional and statewide investment, and ground transportation.

(e) By December 1, 1990, the council shall report to the legislature on the general availability of suitable land for a new airport in and in the area surrounding the metropolitan area.

(f) By January 1, 1993, the council shall report to the legislature on policies for the reuse of the existing major airport site should a new major airport be developed.

Sec. 2. Minnesota Statutes 1988, section 473.604, subdivision 1, is amended to read:

Subdivision 1. The commission consists of:

(1) the mayor of each of the cities, or a qualified voter appointed by the mayor, for the term of office as mayor;

(2) a number of members appointed from precincts equal or nearest to but not exceeding half the number of districts which are provided by law for the selection of members of the metropolitan council in section 473.123. Each member shall be a resident of the precinct represented. The members shall be appointed by the governor as follows: a number as near as possible to one-fourth, for a term of one year; a similar number for a term of two years; a similar number for a term of three years; and a similar number for a term of four years, all of which terms shall commence on July 1, 1981. The successors of each member shall be appointed for four-year terms commencing in July of each fourth year after the expiration of the original term. Before making an appointment, the governor shall consult with each member of the legislature

from the precinct for which the member is to be appointed, to solicit the legislator's recommendation on the appointment; ~~and~~

(3) four members appointed from outside of the metropolitan area to reflect fairly the various regions and interests throughout the state that are affected by the operation of the commission's major airport and airport system. Two of these members must be residents of statutory or home rule charter cities, towns, or counties containing an airport designated by the commissioner of transportation as a key airport. The other two must be residents of statutory or home rule charter cities, towns, or counties containing an airport designated by the commissioner of transportation as an intermediate airport. The members must be appointed by the governor as follows: one for a term of one year, one for a term of two years, one for a term of three years, and one for a term of four years. All of the terms start on July 1, 1989. The successors of each member must be appointed to four-year terms commencing on July 1 of each fourth year after the expiration of the original term. Before making an appointment, the governor shall consult each member of the legislature representing the municipality or county from which the member is to be appointed, to solicit the legislator's recommendation on the appointment; and

(4) a chair appointed by the governor for a term of four years. The chair may be removed at the pleasure of the governor.

Sec. 3. **[473.616] COMPREHENSIVE AIRPORT PLANNING.**

Subdivision 1. **WOLD-CHAMBERLAIN PLAN.** (a) By January 1, 1991, the commission shall adopt a long-term comprehensive plan for the international airport at its existing location. The plan must describe:

(1) aviation demand and air transportation needs;

(2) airport capacity limits and potential;

(3) facilities requirements;

(4) a plan for physical development, including financial estimates and a tentative development schedule;

(5) airport operational characteristics;

(6) compatibility with metropolitan and local physical facility systems;

(7) environmental effects;

(8) safety; and

(9) the effect on the neighboring communities.

The plan must satisfy the air transportation needs for a prospective 20-year period. At the same time, the commission shall adopt a concept plan for the airport, including an estimate of facilities requirements, to satisfy the air transportation needs for an additional ten-year period. The plans must be consistent with the development guide of the council. The plans must be updated at least every five years. The plans must be amended as necessary to reflect changes in trends and conditions, facilities requirements, and development plans and schedules. The plans are subject to sections 473.165 and 473.611.





(b) Until January 1, 1996, or until the commission has completed the activities required by subdivision 3 and section 4, whichever occurs first, the commission may construct a new runway or a new, substantially expanded, or relocated terminal facility if the commission determines that construction of the runway or facility is necessary and prudent, considering the economic, financial, environmental, and other costs and benefits of the new runway or facility, the current and long-term future need for major airport facilities, capacity constraints, and the time required to construct airport facilities. The commission shall make its determination by resolution, containing findings of fact and conclusions. Before making its determination, the commission shall hold a public hearing on the question. The hearing may be held separately or in conjunction with any other hearing required on the project, as the commission deems appropriate. The commission may plan, prepare designs and specifications, and conduct an environmental review of a facility before the public hearing.

Subd. 2. **NEW AIRPORT; CONCEPTUAL DESIGN STUDY AND PLAN.** By March 1, 1990, the commission, in consultation with the council, shall complete a study of facilities requirements, airport functioning, and conceptual design for a major new airport. By January 1, 1991, the commission shall complete a conceptual design plan for a major new airport. The conceptual design study and plan must describe and satisfy air transportation needs for a prospective 30-year period and be consistent with the development guide of the council. The conceptual design plan must include an analysis of estimated costs, potential financing methods and sources of public and private funding, and cost allocation issues and options. The council shall use the design study and plan in evaluating areas for locating a new airport under section 1, subdivision 3.

Subd. 3. **NEW AIRPORT; SITE SELECTION; COMPREHENSIVE PLAN.** Within four years following the council's designation of a search area under section 1, the commission shall: (1) select a site for a major new airport in the search area designated by the council; (2) prepare a comprehensive plan and schedule, including financial plans, for the development of a major airport at that site for a prospective 20-year period following a decision to develop a new airport; (3) prepare an estimate of facilities requirements and a concept plan for development of the airport for an additional ten years; and (4) prepare and submit for administrative review the environmental documents that are required for site acquisition.

Subd. 4. **LEGISLATIVE REPORTS.** (a) Until the activities required by subdivision 3 and section 4 are completed, the commission shall report to the legislature by February 15 of each year on the results of the airport planning activities of the commission under this section. The report must include a summary of expenditures and sources of funding for the activities.

(b) By March 1, 1990, after consulting with the council, the federal aviation administration, industry representatives, and other persons, the commission shall report to the legislature on the assumptions and methods that the commission will use in preparing forecasts for airport development and operations purposes and for determining capacity and facility needs.

(c) By March 1, 1990, the commission shall report to the legislature on the integration of major airport facilities in the metropolitan area with state, national, and international air transportation systems and on the commission's planning assumptions and parameters related to such airport development issues as capacity, safety, environmental impact, and air service.

(d) By March 1, 1990, the commission shall report to the legislature on the conceptual design study for a major new airport, prepared under subdivision 2. By January 1, 1991, the commission shall report to the legislature on the conceptual design plan prepared under subdivision 2.

Sec. 4. **[473.618] AIRPORT PLANNING AND DEVELOPMENT REPORT.**

Within 180 days after the completion of the actions required by section 3, subdivision 3, the metropolitan council and the airports commission shall report to the legislature on the long-range planning and development of major airport facilities in the metropolitan area. The report must include the recommendations of the agencies on major airport development in the metropolitan area for a prospective 30-year period and on acquiring a site for a major new airport. The report must include an analysis of the effect of a new airport on present and proposed facilities at the existing airport and on the local, regional, and state economies. The report must contain the recommendations of the agencies on financial planning and financing for a major new airport, including: cost; cost allocation; amortization of major improvements at the existing airport before a transfer of operations; financing methods and sources of public and private funds; lease agreements and user charges at a new airport; and a method of capturing for public uses a portion of the revenue from development around a new airport.

Sec. 5. **[473.619] PLANNING ADMINISTRATION.**

Subdivision 1. **INTERAGENCY AGREEMENT.** The metropolitan council and the airports commission shall enter into an intergovernmental agreement by July 1, 1989. The agreement must establish a process and agency responsibilities for comprehensive and coordinated planning for major airport development, consistent with the requirements of this section and sections 1, 3, and 4. The agreement must establish a joint committee composed of board members of the two agencies to oversee implementation of the agreement.

Subd. 2. **SCOPE OF WORK REPORT.** By September 1, 1989, the metropolitan council and the airports commission shall prepare a scope of work report that describes the general scope and schedule of work and the topics to be addressed in the planning and study tasks required of the agencies under sections 1, 3, and 4.





Subd. 3. **FEDERAL PARTICIPATION.** The metropolitan council and the airports commission shall make use of available federal funding for their activities under sections 1, 3, and 4.

Subd. 4. **CONSULTATION.** The metropolitan council and the airports commission shall prepare the plans and reports under sections 1, 3, and 4 in consultation with each other, the commissioner of transportation, the federal aviation administration, industry representatives, and other interested persons.

Subd. 5. **COMMENCEMENT.** In order to meet the planning deadlines prescribed in sections 1, 3, and 4, the agencies may begin preparing plans and studies immediately, without waiting for the completion of the interagency agreement or the completion and review of the scope of work report.

Sec. 6. Minnesota Statutes 1988, section 473.621, subdivision 1a, is amended to read:

Subd. 1a. **RELATIONSHIP TO LEGISLATURE.** The commission shall be held accountable to the legislature in its activities, plans, policies, and programs. It shall report each session to appropriate committees of the legislature as to its activities, plans, policies, and programs and shall make other reports and recommendations which the legislature or its committees deem appropriate. ~~The commission shall adopt a long-term comprehensive plan for the Minneapolis-St. Paul International Airport. The plan must describe, in the degree of detail that the commission deems appropriate for at least a prospective ten-year period, the following:~~

~~(1) aviation demand;~~

~~(2) airport capacity, including environmental, runway, terminal, and other factors relevant to capacity;~~

~~(3) a plan and financial estimates for physical development;~~

~~(4) airport operational characteristics;~~

~~(5) compatibility with the capacity of metropolitan and local physical facility systems;~~

~~(6) environmental effects; and~~

~~(7) the effect on the neighboring communities.~~

~~The plan must be submitted to the legislature by December 31, 1988, and be updated at least every five years thereafter. The plan is subject to sections 473.165 and 473.611.~~

Sec. 7. **STATE ADVISORY COUNCIL.**

Subdivision 1. **ESTABLISHMENT; PURPOSE.** A state of Minnesota advisory council on metropolitan airport planning is established to provide a forum at the state level for education, discussion, and advice to the legislature on the reports prepared for the legislature by the metropolitan council and metropolitan airports commission. The creation of this advisory council does not affect the existing reporting relationship of the commission and council to the legislature.

Subd. 2. **AUTHORITY; DUTIES.** (a) The advisory council shall review and comment to the legislature on the scope of work report required by section 5, subdivision 2.

(b) The advisory council shall review and comment to the legislature on the reports to the legislature required by section 1, subdivision 4; section 3, subdivision 4; and section 4.

(c) The advisory council may conduct public meetings on the reports to inform the public and solicit opinion.

(d) The advisory council may request interim briefings on work in progress.

(e) The advisory council may gather information, conduct research and analysis, and advise the legislature on matters related to the council's charge.

Subd. 3. **MEMBERSHIP.** The members of the advisory council are:

(1) six legislators, three members of the senate and three members of the house of representatives, appointed by the customary appointing authority of each house;

(2) the commissioners of transportation, state planning, and the pollution control agency, or their designees;

(3) two members of the metropolitan council, appointed by the metropolitan council;

(4) two members of the metropolitan airports commission, appointed by the airports commission;

(5) two representatives of the aviation industry, appointed by the metropolitan council;

(6) six public members who are not eligible for selection under the other clauses of this subdivision, three appointed by the customary appointing authority of each house of the legislature;

(7) a representative of the federal aviation administration, serving as a nonvoting member; and

(8) a person selected by the Minnesota congressional delegation, serving as a nonvoting member.

At least one of the three persons appointed by each house under clause (6) must reside outside of the metropolitan area.

Members serve at the pleasure of the appointing authority.

Subd. 4. **CHAIRS.** The legislative appointing authorities shall each designate a legislative appointee to serve as a co-chair of the advisory council.



Subd. 5. **ADMINISTRATION.** On the request of the advisory council, legislative staff offices and the state and metropolitan agencies represented on the advisory council shall provide administrative and staff assistance. Members appointed under subdivision 3, clause (6), are compensated as provided in section 15.0575, subdivision 3.

Subd. 6. **TERMINATION.** The advisory council ceases to exist when the actions required by section 3, subdivision 3, and section 4 are completed.

Sec. 8. **COMPLIANCE WITH OTHER LAWS.**

Nothing in sections 1 to 9 relieves the commission or the council of any duties or responsibilities otherwise imposed by law.

Sec. 9. **APPLICATION.**

Except as otherwise provided in sections 2 and 7, sections 1 to 8 apply in the counties of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington.

Presented to the governor May 23, 1989

Signed by the governor May 25, 1989, 6:07 p.m.

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## CHAPTER 280—H.F.No. 950

*An act relating to human rights; adopting federal fair housing amendments; clarifying the definition of disability; modifying the definition of familial status; limiting certain exceptions for age discrimination; modifying requirements dealing with reasonable accommodations in employment and requiring reasonable accommodations by public accommodations under certain circumstances; expanding the prohibition of credit discrimination; prohibiting discrimination in certain services because of social or economic conditions in an area; requiring disclosure of medical information that adversely affects an employment decision; limiting age-related questions in employment applications; clarifying who is an aggrieved party for certain violations; clarifying burden on the employer to show a person's impairment is disqualifying; providing for service of subpoenas personally or by mail; striking the requirement that a person's employees must be within Minnesota for purposes of affirmative action; clarifying the time period allowed for filing a private lawsuit; modifying notice requirements in certain human rights appeals; amending Minnesota Statutes 1988, sections 363.01, subdivisions 25, 25a, and 31; 363.02, subdivisions 1, 2, 2a, 2b, and 6; 363.03, subdivisions 1, 3, 7, 8, and by adding subdivisions; 363.05, subdivision 2; 363.073, subdivision 1; 363.117; 363.123; 363.14, subdivision 1; and 363.15; repealing Minnesota Statutes 1988, section 363.01, subdivisions 30 and 32.*

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MINNESOTA:

Section 1. Minnesota Statutes 1988, section 363.01, subdivision 25, is amended to read:

(b) A partnership applying for a license shall have at least one partner individually licensed to act as broker for the partnership. Each partner who intends to act as a broker shall obtain a license;

(c) Applications for a license made by a corporation shall be verified by the president and one other officer. Applications made by a partnership shall be verified by at least two partners;

(d) Any partner or officer who ceases to act as broker for a partnership or corporation shall notify the commissioner upon said termination. The individual licenses of all salespersons acting on behalf of a corporation or partnership, are automatically ineffective upon the revocation or suspension of the license of the partnership or corporation. The commissioner may suspend or revoke the license of an officer or partner without suspending or revoking the license of the corporation or partnership;

(e) The application of all officers of a corporation or partners in a partnership who intend to act as a broker on behalf of a corporation or partnership shall accompany the initial license application of the corporation or partnership. Officers or partners intending to act as brokers subsequent to the licensing of the corporation or partnership shall procure an individual real estate broker's license prior to acting in the capacity of a broker. No ~~license as a real estate salesperson shall be issued to any officer of a corporation or member of a partnership to which a license was issued as a broker~~ corporate officer who maintains a salesperson's license may exercise any authority over any trust account administered by the broker nor may they be vested with any supervisory authority over the broker;

(f) The corporation or partnership applicant shall make available upon request, such records and data required by the commissioner for enforcement of this chapter.

Presented to the governor April 5, 1991

Signed by the governor April 8, 1991, 11:14 a.m.

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## CHAPTER 21—S.F.No. 75

*An act relating to metropolitan government; extending the date for the international airport plan; amending Minnesota Statutes 1990, section 473.616, subdivision 1.*

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MINNESOTA:

Section 1. Minnesota Statutes 1990, section 473.616, subdivision 1, is amended to read:

Subdivision 1. **WOLD-CHAMBERLAIN PLAN.** (a) By January 1, ~~1991~~ 1992, the commission shall adopt a long-term comprehensive plan for the international airport at its existing location. The plan must describe:

(1) aviation demand and air transportation needs;

(2) airport capacity limits and potential;

(3) facilities requirements;

(4) a plan for physical development, including financial estimates and a tentative development schedule;

(5) airport operational characteristics;

(6) compatibility with metropolitan and local physical facility systems;

(7) environmental effects;

(8) safety; and

(9) the effect on the neighboring communities.

The plan must satisfy the air transportation needs for a prospective 20-year period. At the same time, the commission shall adopt a concept plan for the airport, including an estimate of facilities requirements, to satisfy the air transportation needs for an additional ten-year period. The plans must be consistent with the development guide of the council. The plans must be updated at least every five years. The plans must be amended as necessary to reflect changes in trends and conditions, facilities requirements, and development plans and schedules. The plans are subject to sections 473.165 and 473.611.

(b) Until January 1, 1996, or until the commission has completed the activities required by subdivision 3 and section 473.618, whichever occurs first, the commission may construct a new runway or a new, substantially expanded, or relocated terminal facility if the commission determines that construction of the runway or facility is necessary and prudent, considering the economic, financial, environmental, and other costs and benefits of the new runway or facility, the current and long-term future need for major airport facilities, capacity constraints, and the time required to construct airport facilities. The commission shall make its determination by resolution, containing findings of fact and conclusions. Before making its determination, the commission shall hold a public hearing on the question. The hearing may be held separately or in conjunction with any other hearing required on the project, as the commission deems appropriate. The commission may plan, prepare designs and specifications, and conduct an environmental review of a facility before the public hearing.

Sec. 2. **APPLICATION.**

This act applies in the counties of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington.

# DUAL TRACK AIRPORT PLANNING PROCESS
# CHAPTER 464

## ARTICLE 3
## METROPOLITAN AIRPORT PROVISIONS

Section 1. Minnesota Statutes 1994, section 473.155, is amended by adding a subdivision to read:

Subd. 5. [ZONING OF REAL PROPERTY.] The council shall not require a local government unit to continue a current use or to adopt a comprehensive plan designation or any change in zoning, zoning variance, or conditional use in order to ensure or preserve the availability of land for a new major airport.

Sec. 2. Minnesota Statutes 1994, section 473.608, subdivision 2, is amended to read:

Subd. 2. It may acquire by lease, purchase, gift, devise, or condemnation proceedings all necessary right, title, and interest in and to lands and personal property required for airports and all other real or personal property required for the purposes contemplated by sections 473.601 to 473.679, within the metropolitan area, pay therefor out of funds obtained as hereinafter provided, and hold and dispose of the same, subject to the limitations and conditions herein prescribed except that the corporation may not acquire by any means lands or personal property for a major new airport. Title to any such property acquired by condemnation or purchase shall be in fee simple, absolute, unqualified in any way, but any such real or personal property or interest therein otherwise acquired may be so acquired or accepted subject to any condition which may be imposed thereon by the grantor or donor and agreed to by the corporation, not inconsistent with the proper use of the

property by the corporation for the purposes herein provided. Any properties, real or personal, acquired, owned, leased, controlled, used, and occupied by the corporation for any of the purposes of sections 473.601 to 473.679, are declared to be acquired, owned, leased, controlled, used, and occupied for public, governmental, and municipal purposes, and shall be exempt from taxation by the state or any of its political subdivisions. Nothing contained in sections 473.601 to 473.679, shall be construed as exempting properties, real or personal, leased from the metropolitan airports commission to a tenant or lessee who is a private person, association, or corporation from assessments or taxes.

Sec. 3. Minnesota Statutes 1994, section 473.608, subdivision 6, is amended to read:

Subd. 6. It may construct and equip new airports, with all powers of acquisition set out in subdivision 2, pay therefor out of the funds obtained as hereinafter provided, and hold, maintain, operate, regulate, police, and dispose of them or any of them as hereinafter provided. It may not construct, equip, or acquire land for a major new airport to replace the existing Minneapolis-St. Paul International airport, but it may conduct activities necessary to do long-range planning to make recommendations to the legislature on the need for new airport facilities.

Sec. 4. Minnesota Statutes 1994, section 473.608, subdivision 16, is amended to read:

Subd. 16. It may generally carry on the business of acquiring, establishing, developing, extending, maintaining, operating, and managing airports, with all powers incident thereto except it is expressly prohibited from exercising these powers for the purpose of future construction of a major new airport.

Sec. 5. Minnesota Statutes 1994, section 473.608, is amended by adding a subdivision to read:

Subd. 23. [PROHIBITION OF USE OF CERTAIN AIRCRAFT.] After complying with the publication and public comment requirements

of United States Code, title 49, section 47524(b) and other applicable federal requirements, the corporation shall prohibit operation at Minneapolis-St. Paul International airport of aircraft not complying with stage 3 noise levels after December 31, 1999.

Sec. 6. Minnesota Statutes 1994, section 473.608, is amended by adding a subdivision to read:

Subd. 24. [IMPLEMENTATION OF LONG-TERM PLAN.] The corporation shall implement the Minneapolis-St. Paul International airport year 2010 long-term comprehensive plan.

Sec. 7. Minnesota Statutes 1994, section 473.608, is amended by adding a subdivision to read:

Subd. 25. [FINAL ENVIRONMENTAL IMPACT STATEMENT.] The corporation shall not be required to provide environmental or technical analysis of the new airport alternative in the dual track planning process final environmental impact statement.

Sec. 8. Minnesota Statutes 1994, section 473.608, is amended by adding a subdivision to read:

Subd. 26. [USE OF RELIEVER AIRPORTS.] The corporation shall develop and implement a plan to divert the maximum feasible number of general aviation operations from Minneapolis-St. Paul International airport to those airports designated by the federal aviation administration as reliever airports for Minneapolis-St. Paul International airport.

Sec. 9. Minnesota Statutes 1994, section 473.608, is amended by adding a subdivision to read:

Subd. 27. [PROHIBITION CONCERNING REPLACEMENT PASSENGER TERMINAL.] The corporation is prohibited from constructing a replacement passenger terminal on the west side of Minneapolis-St. Paul International airport without legislative approval.

Sec. 10. Minnesota Statutes 1994, section 473.608, is amended by adding a subdivision to read:

Subd. 28. [CONSTRUCTION OF A THIRD PARALLEL RUNWAY.] (a) The corporation must enter into a contract with each affected city that provides the corporation may not construct a third

parallel runway at the Minneapolis-St. Paul international airport without the affected city's approval. The corporation must enter into the contracts by January 1, 1997.

(b) If a contract with a city as required by this subdivision is not executed by January 1, 1997, as a result of the corporation failing to act in good faith, the amount the corporation must spend for noise mitigation in the affected city is increased by 100 percent of the amount spent in the most recent year in which an expenditure was made for noise mitigation in the affected city.

(c) A contract entered into by a city and the corporation under this subdivision creates and the contract must provide third party beneficiary rights on behalf of the affected property owners in the affected cities. These third party beneficiary rights apply only if a state law changes, supersedes, or invalidates the contract or authorizes or enables the corporation to construct a third parallel runway notwithstanding the contract.

(d) An "affected city" is any city that would experience an increase in the area located within the 60 Ldn noise contour as a result of operations using the third parallel runway.

Sec. 11. Minnesota Statutes 1994, section 473.614, is amended by adding a subdivision to read:

Subd. 2a. [ENVIRONMENTAL IMPACT REPORT.] Notwithstanding the provisions of subdivision 2, the commission shall prepare a report documenting the environmental effects of projects included in the MSP 2010 long-term comprehensive plan. Environmental effects of and costs associated with, noise impacts, noise mitigation measures, and land use compatibility measures must be evaluated according to alternative assumptions of 600,000, 650,000, 700,000, and 750,000 aircraft operations at Minneapolis-St. Paul International airport.

Sec. 12. Minnesota Statutes 1994, section 473.621, is amended by adding a subdivision to read:

Subd. 1b. [ANNUAL REPORT TO LEGISLATURE.] The corporation shall report to the legislature by February 15 of each year

concerning operations at Minneapolis-St. Paul International airport. The report must include the number of aircraft operations and passenger enplanements at the airport in the preceding year, current airport capacity in terms of operations and passenger enplanements, average length of delay statistics, and technological developments affecting aviation and their effect on operations and capacity at the airport. The report must include information in all the foregoing categories as it relates to operations at Wayne county metropolitan airport in Detroit. The report must compare the number of passenger enplanements and the number of aircraft operations with the 1993 metropolitan airport commission baseline forecasts of total passengers and total aircraft operations.

Sec. 13. Minnesota Statutes 1994, section 473.661, subdivision 4, is amended to read:

Subd. 4. [NOISE MITIGATION.] (a) According to the schedule in paragraph (b), commission funds must be dedicated (1) to supplement the implementation of corrective land use management measures approved by the Federal Aviation Administration as part of the commission's Federal Aviation Regulations, part 150 noise compatibility program, and (2) for soundproofing and accompanying air conditioning of residences, schools, and other public buildings when there is a demonstrated need because of aircraft noise, regardless of the location of the building to be soundproofed, or any combination of the three.

(b) The noise mitigation program described in paragraph (a) shall be funded by the commission from whatever source of funds according to the following schedule:

In 1993, an amount equal to 20 percent of the passenger facilities charges revenue amount budgeted by the commission for 1993;

In 1994, an amount equal to 20 percent of the passenger facilities charges revenue amount budgeted by the commission for 1994;

In 1995, an amount equal to 35 percent of the passenger facilities charges revenue amount budgeted by the commission for

1995; and

In 1996, an amount equal to 40 percent of the passenger facilities charges revenue amount budgeted by the commission for 1996.

(c) From 1996 to 2002, the commission shall spend no less than $185,000,000 from any source of funds for insulation and accompanying air conditioning of residences, schools, and other publicly owned buildings where there is a demonstrated need because of aircraft noise; and property acquisition, limited to residences, schools, and other publicly owned buildings, within the noise impacted area. In addition, the corporation shall insulate and air condition four schools in Minneapolis and two schools in Richfield that are located in the 1996 60 Ldn contour.

(d) Before the commission constructs a new runway at Minneapolis-St. Paul International airport, the commission shall determine the probable levels of noise that will result in various parts of the metropolitan area from the operation of aircraft on the new runway and shall develop a program to mitigate noise in those parts of the metropolitan area that are located outside the 1996 65 Ldn contour but will be located within the 65 Ldn contour as established after the new runway is in operation. Based upon this determination, the commission shall reserve in its annual budget, until noise mitigation measures are completed, an amount of money necessary to implement this noise mitigation program in the newly impacted areas.

(e) The commission's capital improvement projects, program, and plan must reflect the requirements of this section. As part of the commission's report to the legislature under section 473.621, subdivision 1a, the commission must provide a description and the status of each noise mitigation project implemented under this section.

~~(d)~~ (f) Within ~~60~~ 180 days of submitting the commission's and the metropolitan council's report and recommendations on major airport planning to the legislature as required by section 473.618, the commission, with the assistance of its sound

abatement advisory committee, shall make a recommendation to the ~~legislature~~ state advisory council on metropolitan airport planning regarding proposed mitigation activities and appropriate funding levels for ~~noise~~ mitigation activities at Minneapolis-St. Paul International Airport and in the neighboring communities. The recommendation shall examine mitigation measures to the 60 Ldn level. The state advisory council on metropolitan airport planning shall review the recommendation and comment to the legislature within 60 days after the recommendation is submitted to the council.

Sec. 14. Laws 1989, chapter 279, section 7, subdivision 6, is amended to read:

Subd. 6. [TERMINATION.] The advisory council ceases to exist when the actions required by ~~section 3, subdivision 3, and section 4~~ this article of this chapter of Laws 1996, sections 13 and 15, are completed.

Sec. 15. [ANALYSIS OF AVIATION SERVICES AND COMMERCIAL DEVELOPMENT.]

The metropolitan airports commission shall contract with the University of Minnesota to prepare an aviation service and facilities analysis. The commission shall utilize funds from any available source to pay the University of Minnesota an agreed amount not to exceed $50,000 for the performance of the analysis. The analysis shall include:

(1) a description of various types and levels of aviation service and an examination of the relationship between aviation service levels and the level of commercial and industrial activity in the state; and

(2) an examination of the relationship between available levels of aviation service and the relocation of commercial and industrial enterprises to the state.

The commission shall report the results of the analysis to the state advisory council on metropolitan airport planning no later than February 10, 1997. The council shall review the report and analysis and comment to the legislature within 60 days after the results of the analysis are reported to the

council.

Sec. 16. [REPEALER.]

Minnesota Statutes 1994, sections 473.1551, subdivision 2; 473.636; and 473.637, are repealed.

Sec. 17. [EFFECTIVE DATE.]

This article is effective the day following final enactment and applies to the counties of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington.

ARTICLE 4

AIRPORT NOISE IMPACT RELIEF

Section 1. Laws 1995, chapter 255, article 3, section 2, subdivision 1, is amended to read:

Subdivision 1. [URBAN REVITALIZATION AND STABILIZATION ZONES.] (a) By September 1, 1995, the metropolitan council shall designate one or more urban revitalization and stabilization zones in the metropolitan area, as defined in section 473.121, subdivision 2. The designated zones must contain no more than 1,000 single family homes in total. In designating urban revitalization and stabilization zones, the council shall choose areas that are in transition toward blight and poverty. The council shall use indicators that evidence increasing neighborhood distress such as declining residential property values, declining resident incomes, declining rates of owner-occupancy, and other indicators of blight and poverty in determining which areas are to be urban revitalization and stabilization zones.

(b) An urban revitalization and stabilization zone is created in the geographic area composed entirely of parcels that are in whole or in part located within the 1996 65Ldn contour surrounding the Minneapolis-St. Paul International Airport, or within one mile of the boundaries of the 1996 65Ldn contour. For residents of the zone created under this paragraph, eligibility for the program as provided in subdivision 2 is limited to persons buying and occupying a residence in the zone after June 1, 1996.

Sec. 2. Laws 1995, chapter 255, article 3, section 2,

subdivision 4, is amended to read:

Subd. 4. [EXPIRATION.] Initial applications for the urban homesteading program in the zones designated under subdivision 1, paragraph (a), shall not be accepted after July 1, 1997.

Sec. 3. [AIRPORT NOISE IMPACT AREAS; HOUSING REPLACEMENT DISTRICTS; DEFINITIONS.]

Subdivision 1. [AIRPORT NOISE IMPACT AREA.] "Airport noise impact area" means a geographic area composed entirely of parcels that are in whole or in part located within the 1996 60Ldn contour surrounding the Minneapolis-St. Paul International Airport, or within one mile of the boundaries of the 1996 60Ldn contour.

Subd. 2. [AUTHORITY.] For each city that contains an airport noise impact area, "authority" is the authority as defined in Minnesota Statutes, section 469.174, subdivision 2, that is designated by the governing body of the city to be the authority for purposes of sections 3 to 6.

Subd. 3. [CAPTURED NET TAX CAPACITY.] "Captured net tax capacity" means the amount by which the current net tax capacity in a housing replacement district exceeds the original net tax capacity, including the value of property normally taxable as personal property by reason of its location on or over property owned by a tax-exempt entity.

Subd. 4. [ORIGINAL NET TAX CAPACITY.] "Original net tax capacity" means the net tax capacity of all taxable real property within a housing replacement district as certified by the commissioner of revenue for the previous assessment year less the net tax capacity attributable to existing improvements, provided that the request by the authority for certification of a new housing replacement district has been made to the county auditor by June 30. The original net tax capacity of housing replacement districts for which requests are filed after June 30 has an original net tax capacity based on the current assessment year. In any case, the original net tax capacity must be determined together with subsequent adjustments as set forth in Minnesota Statutes, section 469.177, subdivision 1, paragraph

(c). In determining the original net tax capacity, the net tax capacity of real property exempt from taxation at the time of the request shall be zero, except for real property which is tax exempt by reason of public ownership by the requesting authority and which has been publicly owned for less than one year prior to the date of the request for certification, in which event the net tax capacity of the property shall be the net tax capacity as most recently determined by the commissioner of revenue.

Subd. 5. [PARCEL.] "Parcel" means a tract or plat of land established prior to the certification of the housing replacement district as a single unit for purposes of assessment.

Sec. 4. [ESTABLISHMENT OF HOUSING REPLACEMENT DISTRICTS.]

Subdivision 1. [CREATION OF PROJECTS.] (a) An authority may create a housing replacement project under sections 3 to 6, as provided in this section.

(b) Parcels included in a district must be located in an airport noise impact area, and must be either (1) vacant sites, (2) parcels containing vacant houses, or (3) parcels containing buildings that are structurally substandard, as defined in Minnesota Statutes, section 469.174, subdivision 10.

(c) The city in which the authority is located must pay at least 25 percent of the project costs from its general fund, a property tax levy, or other unrestricted money, not including tax increments.

(d) The housing replacement district plan must have as its sole object the acquisition of parcels for the purpose of preparing the site to be sold for market rate housing or for commercial purposes consistent with the cities' plan for that area. As used in this section, "market rate housing" means housing that has a market value that does not exceed 150 percent of the average market value of single-family housing in that municipality.

(e) An authority may not create a housing replacement project under this section, if the city has approved a special law providing the city with housing replacement district authority and if the authority has requested certification of a

parcel to be included in the district.

Subd. 2. [HOUSING REPLACEMENT DISTRICT PLAN.] To establish a housing replacement district under sections 3 to 6, an authority shall adopt a housing replacement district plan which contains:

(1) a statement of the objectives and a description of the housing replacement projects proposed by the authority for the housing replacement district;

(2) a statement of the housing replacement district plan, demonstrating the coordination of that plan with the city's comprehensive plan;

(3) estimates of the following:

(i) cost of the program, including administrative expenses;

(ii) sources of revenue to finance or otherwise pay public costs;

(iii) the most recent net tax capacity of taxable real property within the housing replacement district; and

(iv) the estimated captured net tax capacity of the housing replacement district at completion;

(4) statements of the authority's alternate estimates of the impact of the housing replacement district on the net tax capacities of all taxing jurisdictions in which the housing replacement district is located in whole or in part. For purposes of one statement, the authority shall assume that the estimated captured net tax capacity would be available to the taxing jurisdictions without creation of the housing replacement district, and for purposes of the second statement, the authority shall assume that none of the estimated captured net tax capacity would be available to the taxing jurisdictions without creation of the housing replacement district; and

(5) identification of all parcels to be included in the district.

Subd. 3. [PROCEDURE.] The provisions of Minnesota Statutes, section 469.175, subdivisions 3, 4, 5, and 6, apply to the establishment and operation of the housing replacement districts created under sections 3 to 6, except as follows:

(1) creation of a district within a municipality is subject to the approval of the metropolitan council in addition to other approvals required by law; and

(2) the determination specified in Minnesota Statutes, section 469.175, subdivision 3, clause (1), is not required.

Sec. 5. [LIMITATIONS.]

Subdivision 1. [DURATION LIMITS.] No tax increment may be paid to the authority on each parcel in a housing replacement district after 15 years from date of receipt by the county of the first tax increment from that parcel.

Subd. 2. [LIMITATION ON USE OF TAX INCREMENTS.] All revenues derived from tax increments must be used in accordance with the housing replacement district plan. The revenues must be used solely to pay the costs of site acquisition, relocation, demolition of existing structures, site preparation, and pollution abatement on parcels identified in the housing replacement district plan, as well as public improvements and administrative costs directly related to those parcels.

Sec. 6. [APPLICATION OF OTHER LAWS.]

Subdivision 1. [COMPUTATION OF TAX INCREMENT.] The provisions of Minnesota Statutes, section 469.177, subdivisions 1a, and 5 to 10, apply to the computation of tax increment for the housing replacement districts created under sections 3 to 6.

Subd. 2. [OTHER PROVISIONS.] References in Minnesota Statutes to tax increment financing districts created and tax increments generated under Minnesota Statutes, sections 469.174 to 469.179, other than references in Minnesota Statutes, section 273.1399, include housing replacement districts and tax increments subject to sections 3 to 6, provided that Minnesota Statutes, sections 469.174 to 469.179, apply only to the extent specified in sections 1 to 4.

Subd. 3. [MINNEAPOLIS SPECIAL LAW.] Laws 1980, chapter 595, section 2, subdivision 2, does not apply to a district created under sections 3 to 6.

Sec. 7. [EFFECTIVE DATE.]

Sections 1 and 2 are effective for taxable years beginning

after December 31, 1997. Sections 3 to 6 are effective July 1, 1997.

CHAPTER No. 464
H.F. No. 3012

This bill was passed in conformity to the rules of each house and the joint rules of the two houses as required by the Constitution of the State of Minnesota.

Irvin N. Anderson
*Speaker of the House of Representatives.*

Allan H. Spear
*President of the Senate.*

Passed the House of Representatives on April 2, 1996.

Edward A. Burdick
*Chief Clerk, House of Representatives.*

Passed the Senate on April 2, 1996.

Patrick E. Flahaven
*Secretary of the Senate.*

This bill is properly enrolled and was presented to the Governor on April 4, 1996.

Harry M. Walsh
*Revisor of Statutes.*

Approved on April 12, 1996, at 2:30 P. M.

Arne H. Carlson
*Governor.*

Filed on April 12, 1996.

Joan Anderson Growe
*Secretary of State.*

A.15 U.S. DEPARTMENT OF INTERIOR CORRESPONDENCE

United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

ER 95/869

MAR 18 1996

Mr. Edward J. Phillips
Director, Great Lakes Region
Federal Aviation Administration
2300 East Devon Street
Des Plaines, Illinois 60018

Dear Mr. Phillips:

This is in response to the request for the Department of the Interior's comments on the Draft Environmental Impact Statement (DEIS)/Section 4(f) Evaluation for the Dual Track Airport Planning Process, Hennepin and Dakota Counties, Minnesota.

This letter incorporates comments from the staff of the Mississippi National River and Recreation Area (MNRRA) of the National Park Service (NPS). A portion of MNRRA is within the area of potential impact for the Minneapolis-St. Paul International Airport (MSP) Alternative. The NPS review of this project is required by 16 U.S.C. Section 460zz-3(b), which states, in part, that before any Department or Agency of the United States Government begins any undertaking within the MNRRA, the NPS (via delegation from the Secretary of the Interior) shall review the undertaking to assess its compatibility with MNRRA's Comprehensive Management Plan.

**SECTION 4(f) EVALUATION COMMENTS**

Archeological and Historic Resources

In its discussion of the MSP Alternative (Page V-196), the DEIS indicates that there are no archeological sites subject to Section 4(f) review within the Area of the Potential Effect (APE). Also, in discussing the summary of Section 4(f) impacts, Table U-1 (page V-201), indicates that no archeological resources will be impacted by the MSP Alternative. However, on pages V-25 & 26, the DEIS appears to indicate that three archeological sites that would be impacted by a proposed stormwater pipe may meet National Register criteria and require evaluation pursuant to Section 4(f). This apparent discrepancy should be resolved in the Final EIS (FEIS) and recommend that, to the maximum extent possible, the proposed outfall pipe be located along a route that avoids the three identified archeological sites.

The MSP Alternative will also impact historic resources, particularly the Original Wold-Chamberlain Terminal Historic District.

Therefore, we recommend continued cooperation and coordination with the State Historic Preservation Officer in order to complete a Memorandum of Agreement (MOA) which should include measures to avoid or minimize harm to any archeological or historic resources which may be affected by the proposed MSP Alternative, in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended. A signed copy of the MOA should be included in the Final Section 4(f) Evaluation.

Minnesota Valley National Wildlife Refuge

The DEIS indicates that implementation of the MSP Alternative would result in 5,620 monthly overflights of the Long Meadow and Black Dog Lakes portion of the Minnesota Valley National Wildlife Refuge. All of the overflights would be between 500 and 2,000 feet AGL (above ground level). As a result, noise levels at the Long Meadow Lake Bass Ponds site would increase to DNL 69 from a 1994 level of DNL 55. As noted in the DEIS (p. V-196), "Under certain circumstances, the projected aircraft noise over a Section 4(f) property could be considered a 'constructive use,' depending on the sensitivity of the use to noise, as spelled out in the Land Use Compatibility Criteria. For example, many outdoor activities are considered compatible but others, where people must communicate with each other, may be incompatible."

In the Final EIS for Proposed Extension of Runway 4-22 at the Minneapolis-St. Paul International Airport, Wold-Chamberlain Field, released in July 1994, (pp. 4-59 to 4-62, and B-10), it is recognized that the Long Meadow Lake Bass Ponds area of the Refuge is an "environmental education" area, as opposed to just being considered a "nature exhibit" area. The FEIS rather clearly indicates that the DNL 65 dB threshold is the primary indicator of constructive use on such Section 4(f) lands, whereas the threshold for a nature exhibit land use would be DNL 70.

In contrast, the subject DEIS in addressing potential noise impacts on the Refuge for the MSP Alternative (pp. V-198, and V-303 to 306) concludes that the activities typically conducted in the Bass Ponds area are similar to those associated with "nature exhibits" and "would be considered compatible with noise levels up to DNL 70. Consequently, there will be no constructive use of the property."

The Department of the Interior adamantly disagrees with the above conclusion. We believe that the DEIS evaluation ignores the Refuge's environmental education activities that occur at the Bass Ponds, which are described below. We contend that the Bass Ponds area is crucial for environmental education, that it is an outdoor classroom, and that the education activity is incompatible with the increased noise levels associated with the MSP Alternative. Thus, there will be a "constructive use," or taking of Refuge property.

Land acquisition and development of the Refuge began in 1976, with enactment of the Minnesota Valley National Wildlife Refuge Act (Public Law 94-466). The Act states, in part, that the Lower Minnesota River Valley "is of great value as a source of environmental education, recreational opportunities, and interpretive programs for hundreds of thousands of urban dwellers." Furthermore, the Act directs the Secretary of the Interior to construct, administer, and maintain a wildlife interpretation and education center "to promote environmental education and to provide an opportunity for the study and enjoyment of wildlife in its natural habitat."

The Refuge administers an active environmental education and interpretive program. Many of the activities occur at the Refuge's wildlife interpretation and education center (Center), which is part of the Refuge Headquarters complex. Because little natural habitat is available near the Center, many environmental education activities are also conducted at the Bass Ponds area. The environmental education activities are part of the formal education of students in public and private schools. As formal instruction, the activities at the Bass Ponds area necessitate frequent communication between the students and instructors.

In addition to formal environmental education, the Bass Ponds area is used for interpretive programs that, while less formal, are educational. The heart of an interpretive program is the oral communication between a naturalist and a group of visitors. The nature of the Bass Ponds area makes it ideal for programs about songbirds, beavers, and wetland management, among other topics.

The following table summarizes the recent educational and interpretive use at the Bass Ponds and Old Cedar sites. The table does not fully represent the educational use at these sites, as it includes only groups that the Refuge staff scheduled. We know that classes use these sites without notifying the Refuge. Also, the table does not include 517 Boy Scouts and Girl Scouts who attended programs between June 1993 and April 1995 at the sites.

Participants in Environmental Education and Interpretive Programs at Bass Ponds and Old Cedar Sites, 1991 - 1994

| Year | Environmental Education | Interpretation |
|---|---|---|
| 1991 | 1,225 | Not Available |
| 1992 | 705 | Not Available |
| 1993 | 1,742 | 423 |
| 1994 | 1,223 | 270 |

Practical experience, as well as compatibility criteria, indicate that the projected aircraft noise will disrupt environmental education and interpretation programs at the Bass Ponds. Currently, aircraft noise interrupts outdoor presentations at the Center, which is outside the existing (1994) DNL 65+ noise contour. Interruptions at the Bass Ponds will be greater. Impacts at the Old Cedar site on the Refuge will also increase.

The Bass Ponds area includes an open-sided shelter that is used by classes to get out of the rain or snow for discussions during their field visit. The shelter, completed in August 1994, at a cost of $20,000, will not shield classes from the increased noise. The value of the shelter and the Bass Ponds area will be significantly diminished as an education site due to the projected increase in noise.

We request that a formal opinion be rendered relative to the MSP Alternative projected aircraft noise constituting a constructive use of the Refuge, and ask that you consult with the U.S. Fish and Wildlife Service (Service) in the development of your opinion. If constructive use is found, we ask that a specific Section 4(f) finding be coordinated with the Service so that we may evaluate whether there are feasible and prudent alternatives to use of the Refuge and whether all possible planning to minimize harm to the Refuge has been provided if some use is unavoidable.

**ENVIRONMENTAL STATEMENT COMMENTS**

New Airport Alternative (NAA)

Most of our concerns are related to the offsite impacts that a new airport would entail. The NAA site has minimal wetland wildlife habitat. However, the Vermillion River, which cuts across the northwest portion of the NAA site, does provide significant riparian habitat within a small corridor.

MSP Alternative

We have significant concerns regarding the impacts that the MSP Alternative will have on wetlands, biotic communities, and floodplains. We recognize that the extent of these possible impacts is uncertain. However, we cannot support the conclusion expressed in the DEIS that "Impacts of the alternatives on the natural environment are relatively minor" (p. iv). In the face of the acknowledged uncertainties, all efforts should be made to identify impacts and develop appropriate mitigation.

In the discussion of Surface Water Quality (Section V.BB.), extensive mitigation measures to protect surface water quality are proposed under the NAA. We strongly support these measures and believe that the same principals need to be integrated into the MSP Alternative. Considering the magnitude of the potential expansion, it would be both appropriate and necessary to provide an on-site wastewater treatment facility at the existing airport. Under both alternatives, we also believe that glycol-contaminated runoff must be treated to reduce chemical oxygen demand loads to the maximum extent possible.

In the discussion of Wetlands (Section V.DD.), there is no comprehensive information on the impacts of the MSP Alternative to wetlands lying within the MSP boundary. Figure DD-1 has inconsistencies and errors when compared to National Wetlands Inventory (NWI) maps of the same areas. For example, the Golf Course wetlands have a diversity of emergent and open water classes as shown on the NWI maps, but are simply encircled as dots on Figure DD-1. If all wetlands within MSP have been "physically field delineated," as indicated on Page V-291, the wetland delineation maps should have been included in the DEIS. This oversight should be corrected in the FEIS.

The DEIS indicates that Duck Lake, a 13.6-acre wetland with a diversity of wetland types and vegetation, has little wildlife value (p. V-291). Other wetlands are also noted as providing "negligible wildlife habitat value." It is unclear what wildlife assessment methodology, if any, was used to make these judgements. We recommend that a "Routine Wetland Assessment," which includes wildlife function and value assessments, be performed on all the wetlands within the MSP boundary. The Routine Wetland Assessment methodology was developed by the Minnesota Interagency Wetlands Group, which is made up of representatives in wetland expertise from Federal and State agencies. The U.S. Fish and Wildlife Service's (FWS) Twin Cities Field Office should be contacted to discuss application of this methodology and would appreciate being given an opportunity to review assessment results prior to their inclusion in the FEIS.

ENDANGERED SPECIES ACT COMMENTS

The FWS concurs with the information presented in Section V.H. (Endangered and Threatened Species) regarding the federally-listed bald eagle (Haliaeetus leucocephalus). Because of the location and type of activities proposed, the project alternatives are not likely to adversely affect any federally-listed or proposed threatened or endangered species or their critical habitat. This precludes the need for further action on this project as required under Section 7 of the Endangered Species Act of 1973, as amended. However, if the project is modified or new information becomes available which indicates that listed species may be affected, consultation with the FWS should be reinitiated.

FISH AND WILDLIFE COORDINATION ACT COMMENTS

The DEIS acknowledges the need for individual and/or nationwide permits under Section 404 of the Clean Water Act for wetlands potentially affected by the project alternatives. Accordingly, our comments in response to the DEIS do not preclude separate evaluation and comments by the FWS when reviewing forthcoming permit applications. At that time, the FWS will review the Corps' public notice to ensure that impacts to streams and wetlands have been identified and that adequate mitigative measures for fish and wildlife habitat losses have been incorporated into the project's final plans and specifications.

SUMMARY COMMENTS

The Department of the Interior has no objection to Section 4(f) approval of this project by the Department of Transportation, providing that the mitigation measures to archeological and historic resources, and the Minnesota Valley National Wildlife Refuge, are adequately documented in the Final Section 4(f) Evaluation.

As this Department has a continuing interest in this project, we are willing to cooperate with the Federal Aviation Administration and the Metropolitan Airports Commission to address project impacts to fish and wildlife resources, and to educational and recreational uses of the Refuge. Questions and further coordination regarding this project should be directed to the Field Supervisor Mr. Nick Rowse, U.S. Fish and Wildlife Service, 4101 East 80th Street, Bloomington, Minnesota 55425-1665 (telephone 612-725-3548, fax 612-725-3609) and to Mr. Michael Mandell or Ms. Nancy Duncan of the Mississippi National River and Recreation Area, 175 East Fifth Street, Suite 418, Box 41, St. Paul, Minnesota 55101-2901 (telephone 612-290-4160).

We appreciate the opportunity to provide these comments.

Sincerely,

Willie R. Taylor
Director, Office of Environmental
Policy and Compliance

cc: Mr. Glen Orcutt
Federal Aviation Administration
6020 28th Avenue South, Suite 102
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## *APPENDIX B NOISE MITIGATION PLAN*

On October 28, 1996, the Metropolitan Airports Commission approved the following noise mitigation program for Minneapolis-St. Paul International Airport (see attached meeting minutes). The program contains measures that may or may not be eligible for funding based on FAA policy or criteria. See "MSP Noise Mitigation Program", MAC, November 1996, for the complete report.

Insulation

- the residential sound insulation program (SIP) within the 1996 DNL 65+ contour will be completed on the approved current schedule (Note: the current program is scheduled for completion in the year 2002)
- the SIP will be expanded to incorporate the area within the 2005 DNL 60-65 contour
- the 2005 DNL 60 contour will be based on the most accurate projection of traffic levels and use of appropriate ANOMS data
- MAC and affected communities will develop neighborhood and "natural boundaries" that reflect current conditions at the outer edge of the expanded contour to the maximum extent possible
- insulation of dwellings/buildings in the expanded SIP to be performed in the following order of priority:
    1. single family homes after completion of the 1996 DNL 65 SIP on the approved current schedule
    2. multifamily dwellings, nursing homes, and churches with regular weekday daycare/nursery school types of operations — in accordance with a schedule agreed upon by MAC and each affected city
- the program will be funded by a combination of Passenger Facility Charge (PFC) revenues, airline fees, internally generated funds and federal aid; to the extent that MAC cannot fund the expanded program in a reasonable period of time, support from the state of Minnesota will be sought; however, in no case will unreimbursed financial impacts fall on affected residents or their local governments
- MAC will fund the program on an accelerated basis beyond its current annual level of $25.5 million
- MAC will develop models which reflect the impact of ground level noise on residential properties; mitigation for low frequency noise will be developed after consultation with independent noise mitigation experts
- completion of the program is contingent on MAC maintaining a bond rating of at least A

Community Stabilization

The Metropolitan Airports Commission will participate with affected communities to identify and quantify any impacts the airport may have on declining property values and/or other negative consequences on neighborhoods near the airport. To the extent that negative consequences can be quantified, a Working Group should prepare recommendations to MAC for consideration by the Minnesota Legislature. Community stabilization measures considered should include, but not be limited to, the measures described in the Metropolitan Council-MAC Community Protection Report. The measures include purchase and property value guarantees and housing replacement to complement the tax credit and revitalization area legislation adopted in 1996.

A Working Group will be convened including representatives from MAC, Met Council, Northwest Airlines, affected communities and legislative staff. The Working Group should identify a program design, funding options, administrative responsibilities and eligibility area. The final legislative recommendation should be presented to MAC and other interested parties for endorsement and inclusion in 1997 legislative programs.

In addition to the preceding mitigation, MAC is committed to perform the following study.

Airport Operations

The following will be incorporated and evaluated in a Part 150 update:

- Take action, as required by the 1996 Legislature, to prohibit use of Stage 2 aircraft after December 31, 1999.
- Modify the night hours to 10:30 p.m. - 6:00 a.m. and limit activity during these hours to Stage 3 aircraft.
- Develop a departure procedure for Runway 22 to direct aircraft over areas of commercial development and the Minnesota River Valley.
- Seek cooperation from FAA to implement departure procedures as appropriate at each runway end.
- Evaluate departure procedures in the Eagan-Mendota Heights corridor.
- Work within the aviation industry to encourage further reductions in aircraft noise levels.
- Negotiate the Stage 2 prohibition, noise abatement procedures, and expansion of night hours, incorporating appropriate penalties for non-compliance.
- The MAC noise monitoring system monitors will be increased in number to provide more coverage of actual impacts in the airport vicinity, in particular, areas affected by the north-south runway. Areas affected by the parallel runways, may have additional microphone locations to monitor continued and growing volumes of air traffic as the airport expands. This system should be used to corroborate the accuracy of the modeled contours for noise program eligibility.

Furthermore, on October 28, 1996 MAC also adopted the following mitigation, which is associated with the proposed action.

Runway Use

- Completion of the environmental process and construction of the North-South Runway should be expedited and completed as soon as possible. Progress should be measured against this schedule:
  a) commence construction — 1998
  b) complete construction, open runway — 2003
- In the interim, Runway 4/22 should be used for noise mitigation purposes. This requires the following:
  a) Construction of associated taxiways;
  b) Mitigation program at the southwest end of Runway 4-22 in the cities of Bloomington and Richfield as required in the Final Record of Decision (March 28, 1995). The acquisition portion of the mitigation will be initiated as soon as contracts for the associated taxiways are let and should be completed within a period of two years. Funds for the acquisition program will be in addition to those designated for the residential insulation program, consistent with the existing acquisition program. The insulation portion of the mitigation will be integrated with the current MAC program, starting as soon as contracts for construction of the associated taxiways are let, or the RUS is implemented, whichever occurs first. The insulation program will be implemented at the rate of at least 20% of the total homes as defined in the Runway 4-22 mitigation program in each year until all of the single family and multiple family units within the 1996 DNL 65 contour are insulated. To the extent practical, MAC will identify funding and program administration options to minimize delay in completion of the current insulation program.
  c) If the North-South Runway is completed before insulation of all eligible homes is completed, the insulation program for the area impacted by aircraft using Runway 4-22 may be terminated.

- Completion of this program is contingent on the MAC maintaining a bond rating of at least A.

**Management and Operations Committee - Board File 12242**
**(See minutes of the October 9, 1996 Committee meeting)**

**B1 Anoka ATCT Equipment Maintenance Agreement**
**B2 August Budget Variance**
**B3 Natural Gas RFP**
**B4 Bids Received for Gasoline and Diesel Fuel**
**B5 Request to Purchase Replacement Telephone System**
**B6 Request to Renegotiate Heating and Cooling Contracts with Honeywell and Landis Gyr**
**B7 Request to Bid Large Equipment**
**B8 Consultant Interviews: Airport Land Appraisal Study**
**B9 1997 Budget Update**
**B10 Legislative Process**
**B11 Commission Request for MSP Gate Information**
**B12 Public Hearing: Ordinance No. 80 - Traffic Provisions**
**B13 Concessions Plan Implementation**
**B14 MAC Oversight of Airport Security**
**B15 Strategic Planning**
**B16 MOVED TO DISCUSSION - Request for Proposals - Cleaning Contract**
**B17 Mitigation Committee Update**
**B18 Rental Car QTA Update**
**B19 Ground Transportation Issues**

**The following items were moved from the Consent to the Discussion portion of the agenda:**

**A9 Preliminary 1997-2003 Capital Improvement Program**
**B16 Request for Proposals - Cleaning Contract**

## DISCUSSION ITEMS

### OLD BUSINESS

**MSP Noise Mitigation Committee Recommendation - Board File 12243**

Commissioner Cramer, Chairman of the MSP Noise Mitigation Committee, presented a summary of the recommendations developed by the Committee. He noted that these recommendations are the result of input received from the participating communities as well as comments received at a public hearing which was held as part of the Mitigation Committee process.

Commissioner Cramer referenced the MSP Noise Mitigation Discussion Outline in explaining the background and assumptions upon which the Committee based its recommendations. In compliance with the 1996 Dual Track Legislation, the Commission formed a committee to develop a noise mitigation plan based on the MSP 2010 Development Plan. He stressed that the Committee attempted to share both the benefits and impacts of airport development and operations among communities, and worked toward equitable distribution among the affected communities to the maximum extent feasible. Implementation of mitigation activities is a shared responsibility of the Commission, the airlines, the State of Minnesota, the FAA and the communities.

The Committee organized its recommendations within four categories:

I. **Insulation**
II. **Community Stabilitzation**
III. **Airport Operations**
IV. **Runway Use**

Following Commissioner Cramer's presentation, Chairman Grieve asked for Commissioner comment/discussion on Items I through III.

**I. Insulation**

**COMMISSIONER REHKAMP MOVED AND COMMISSIONER GASPER SECONDED TO DELETE ITEM NO. 8 FROM SECTION I.**

8. ~~THAT THE COMMISSION EVALUATE THE AIRPORT NOISE ENVIRONMENT 18 MONTHS PRIOR TO THE ESTIMATED COMPLETION OF THE EXPANDED PROGRAM. IF CONDITIONS WARRANT, A MODIFIED SOUND INSULATION PACKAGE SHOULD BE OFFERED TO ELIGIBLE DWELLINGS/BUILDINGS WITHIN THE 54 DNL CONTOUR WHICH ACHIEVES AT LEAST A 3-5 DB INTERIOR NOISE LEVEL REDUCTION.~~

**The motion carried by unanimous vote.**

**II. Community Stabilization**

Commissioner Himle questioned the airport's role in providing community stabilization. He stated that he had previously requested further information quantifying the affects of airport development on communities, particularly real estate values, and that information presented had been contradictory. Commissioner Himle felt that this issue needed to be addressed by the working group. Commissioner Cramer indicated that the limited timetable to develop a recommendation prevented the Mitigation Committee from addressing this question and he suggested that it be the initial charge to the proposed working group.

**COMMISSIONER HIMLE MOVED AND COMMISSIONER JOHNSON SECONDED TO MODIFY SECTION II. COMMUNITY STABILIZATION AS FOLLOWS:**

**~~THE MITIGATION COMMITTEE RECOMMENDS TO THE METROPOLITAN AIRPORTS COMMISSION THAT IT PARTICIPATE WITH AFFECTED COMMUNITIES IN PREPARING A PACKAGE OF COMMUNITY STABILIZATION MEASURES TO BE SUBMITTED TO THE MINNESOTA LEGISLATURE.~~ THE METROPOLITAN AIRPORTS COMMISSION SHOULD PARTICIPATE WITH AFFECTED COMMUNITIES TO IDENTIFY AND QUANTIFY ANY IMPACTS THE AIRPORT MAY HAVE ON DECLINING PROPERTY VALUES AND/OR OTHER NEGATIVE CONSEQUENCES ON NEIGHBORHOODS NEAR THE AIRPORT. TO THE EXTENT THAT NEGATIVE CONSEQUENCES CAN BE QUANTIFIED, A WORKING GROUP SHOULD PREPARE RECOMMENDATIONS TO MAC FOR CONSIDERATION BY THE MINNESOTA LEGISLATURE. COMMUNITY STABILIZATION MEASURES CONSIDERED SHOULD INCLUDE, BUT NOT BE LIMITED TO, THE MEASURES DESCRIBED IN THE METROPOLITAN COUNCIL-MAC COMMUNITY PROTECTION REPORT. THE MEASURES INCLUDE PURCHASE AND PROPERTY VALUE GUARANTEES AND HOUSING REPLACEMENT TO COMPLEMENT THE TAX CREDIT AND REVITALIZATION AREA LEGISLATION ADOPTED IN 1996.**

**The motion carried by unanimous vote.**

Concerns were also expressed with regard to raising public expectations regarding community stabilization efforts. Commissioner Cramer responded that the issues raised during this discussion are valid and will be considered by the working group.

## III. Airport Operations

Commissioner Kahler questioned whether the nighttime hour restrictions would prohibit emergency and unanticipated operations. Mr. Finney responded that this stipulation would include exception for certain factors such as mechanical delays, weather conditions, and air traffic delays. Several Commissioners did not support Item No. 7 under Airport Operations which would incorporate noise abatement procedures as part of the airline lease negotiations. Mr. Finney indicated that several Mitigation Committee members expressed concern about tying noise abatement procedures to the lease agreements as it may be difficult to modify noise restrictions in the future. Other Mitigation Committee members felt that leases were the most effective tool for enforcement. Commission members agreed that Item No. 8 should be modified to indicate that additional microphone locations may be located in areas affected by the parallel runways.

Considerable discussion followed with regard to the airport's future financial standing and its impact on mitigation funding. Commissioner Johnson noted that he supports the recommendations; however, he cautioned the Commission to recognize that if the airport's revenue stream is diminished, there may be insufficient funding to meet all needs as defined by the Commission. He stated that MAC has a responsibility to construct an

airport facility which will meet the needs of the region. Mr. Finney indicated that the Capital Improvement Program is modified on a yearly basis subject to the types of projects and funding available.

**COMMISSIONER REHKAMP MOVED AND COMMISSIONER GASPER SECONDED TO MODIFY SECTION III AS FOLLOWS:**

**7. NEGOTIATE THE STAGE 2 PROHIBITION, NOISE ABATEMENT PROCEDURES, AND EXPANSION OF NIGHT HOURS ~~AS PROVISIONS OF AIRLINE LEASE RENEWALS~~ INCORPORATING APPROPRIATE PENALTIES FOR NON-COMPLIANCE.**

**8. THE MAC NOISE MONITORING SYSTEM MONITORS SHOULD BE INCREASED IN NUMBER TO PROVIDE MORE COVERAGE OF ACTUAL IMPACTS IN THE AIRPORT VICINITY, IN PARTICULAR, AREAS AFFECTED BY THE NORTH-SOUTH RUNWAY. ~~AND~~ AREAS AFFECTED BY THE PARALLEL RUNWAYS ~~SHOULD~~ MAY HAVE ADDITIONAL MICROPHONE LOCATIONS TO MONITOR CONTINUED AND GROWING VOLUMES OF AIR TRAFFIC AS THE AIRPORT EXPANDS. THIS SYSTEM SHOULD BE USED TO CORROBORATE THE ACCURACY OF THE MODELLED CONTOURS FOR NOISE PROGRAM ELIGIBILITY. The motion carried by unanimous vote.**

**IV. Runway Use**

Mayor Houle, Bloomington and Mayor Kirsch, Richfield, addressed the Commission in opposition to implementation of the Runway 4/22 Runway Use System (RUS). Mayor Houle stated that the RUS provides marginal relief to Minneapolis residents and results in a substantial increase in the number of flights and number of residents exposed to noise in Eagan, Richfield and Bloomington. Mayor Houle urged the Commission to reject the RUS for 4/22 and focus on an expedited schedule of the North-South Runway. Mayor Kirsch requested a study which evaluates the impact of ground level noise on residential properties.

Commissioner Cramer stated the Committee committed a substantial amount of time in an effort to develop a recommendation which would equitably balance the noise impact and he urged Commission support of the Runway Use Recommendation.

Commissioner Himle urged the Commission to delete Item No. 2 of Runway Use which supports the operation of Runway 4/22 for noise mitigation purposes during the interim before construction of the North-South Runway. He felt that this is a costly proposal which provides very little incremental benefit and suggested the Commission explore other alternatives to address this issue and avoid litigation.

**COMMISSIONER HIMLE MOVED AND COMMISSIONER MERICKEL SECONDED TO DELETE IV. RUNWAY USE - ITEM NO. 2. The motion failed on the following roll call vote:**

| | |
|---|---|
| **Ayes, three:** | **Commissioners Himle, Johnson and Merickel** |
| **Nays, eleven:** | **Commissioners Cramer, D'Aquila, Dowdle, Fiore, Gasper, Kahler, Long, Miller, Rehkamp, Stenerson and Chairman Grieve** |
| **Absent, one:** | **Commissioner Hitesman** |

**COMMISSIONER REHKAMP MOVED AND COMMISSIONER GASPER SECONDED ADOPTION OF THE MSP NOISE MITIGATION COMMITTEE RECOMMENDATIONS AS FOLLOWS AS AMENDED:**

I. INSULATION

THE MITIGATION COMMITTEE RECOMMENDS TO THE METROPOLITAN AIRPORTS COMMISSION:

1. THAT THE RESIDENTIAL SOUND INSULATION PROGRAM FOR THE AREA ENCOMPASSED BY THE 1996 DNL 65 CONTOUR BE COMPLETED ON THE CURRENTLY APPROVED SCHEDULE;

2. THAT THE PROGRAM BE EXPANDED AFTER COMPLETION OF THE CURRENT PROGRAM TO INCORPORATE THE AREA ENCOMPASSED BY THE 2005 60 DNL;

3. THAT THE 2005 60 DNL CONTOUR BE BASED ON THE MOST ACCURATE PROJECTION OF TRAFFIC LEVELS AND USE OF APPROPRIATE ANOMS DATA;

4. THAT MAC AND AFFECTED COMMUNITIES SEEK APPROVAL FROM FAA TO DEVELOP NEIGHBORHOOD AND "NATURAL BOUNDARIES" THAT REFLECT CURRENT CONDITIONS AT THE OUTER EDGE OF THE EXPANDED CONTOUR TO THE MAXIMUM EXTENT POSSIBLE;

5. THE PRIORITIZATION OF THE EXPANDED PROGRAM SHOULD BE TO INITIATE SINGLE-FAMILY HOMES UPON COMPLETION OF THE CURRENTLY APPROVED SCHEDULE, AND BEGIN WORK ON THE FOLLOWING NEWLY ELIGIBLE DWELLINGS/BUILDINGS, BEGINNING WITH THE HIGHEST NOISE EXPOSURE LEVELS, IN ACCORDANCE WITH A SCHEDULE AGREED UPON WITH EACH AFFECTED CITY – MULTIFAMILY DWELLINGS, NURSING HOMES, CHURCHES WITH REGULAR WEEKDAY DAYCARE/NURSERY SCHOOL TYPES OF OPERATIONS;

6. THAT THE PROGRAM BE FUNDED BY A COMBINATION OF PFC REVENUES, AIRLINE FEES, INTERNALLY GENERATED FUNDS, AND FEDERAL AID, WITH ESTIMATED TOTAL AND ANNUAL COSTS AS SUMMARIZED BELOW; TO THE EXTENT THAT MAC CANNOT FUND THIS EXPANDED PROGRAM IN A REASONABLE PERIOD OF TIME, SUPPORT FROM THE STATE OF MINNESOTA SHOULD BE SOUGHT. IN NO CASE SHOULD UNREIMBURSED FINANCIAL IMPACTS FALL ON AFFECTED RESIDENTS OR THEIR LOCAL GOVERNMENTS.

7. THAT THE METROPOLITAN AIRPORTS COMMISSION COMMIT TO FUNDING ITS COMMUNITY BASED NOISE ABATEMENT PROGRAM ON AN ACCELERATED BASIS BEYOND ITS CURRENT LEVEL OF $25.5 MILLION ANNUALLY;

~~8. THAT THE COMMISSION EVALUATE THE AIRPORT NOISE ENVIRONMENT 18 MONTHS PRIOR TO THE ESTIMATED COMPLETION OF THE EXPANDED PROGRAM. IF CONDITIONS WARRANT, A MODIFIED SOUND INSULATION PACKAGE SHOULD BE OFFERED TO ELIGIBLE DWELLINGS/BUILDINGS WITHIN THE 54 DNL CONTOUR WHICH ACHIEVES AT LEAST A 3-5 DB INTERIOR NOISE LEVEL REDUCTION;~~

~~9.~~ 8. THAT MAC DEVELOP NOISE IMPACT MODELS WHICH REFLECT THE IMPACT OF GROUND LEVEL NOISE ON RESIDENTIAL PROPERTIES. MITIGATION FOR LOW FREQUENCY NOISE SHOULD BE DEVELOPED AFTER CONSULTATION WITH INDEPENDENT NOISE MITIGATION EXPERTS.

9. COMPLETION OF THE SOUND INSULATION PROGRAM IS CONTINGENT UPON THE MAC MAINTAINING A BOND RATING OF AT LEAST A.

II. COMMUNITY STABILIZATION

~~THE MITIGATION COMMITTEE RECOMMENDS TO THE METROPOLITAN AIRPORTS COMMISSION THAT IT PARTICIPATE WITH AFFECTED COMMUNITIES IN PREPARING A PACKAGE OF COMMUNITY STABILIZATION MEASURES TO BE SUBMITTED TO THE MINNESOTA LEGISLATURE.~~ THE METROPOLITAN AIRPORTS COMMISSION SHOULD PARTICIPATE WITH AFFECTED COMMUNITIES TO IDENTIFY AND QUANTIFY ANY IMPACTS THE AIRPORT MAY HAVE ON DECLINING PROPERTY VALUES AND/OR OTHER NEGATIVE CONSEQUENCES ON NEIGHBORHOODS NEAR THE AIRPORT. TO THE EXTENT THAT NEGATIVE CONSEQUENCES CAN BE QUANTIFIED, A WORKING GROUP SHOULD PREPARE RECOMMENDATIONS TO MAC FOR CONSIDERATION BY THE MINNESOTA LEGISLATURE. COMMUNITY STABILIZATION MEASURES CONSIDERED SHOULD INCLUDE, BUT NOT BE LIMITED TO, THE MEASURES DESCRIBED IN THE METROPOLITAN COUNCIL-MAC COMMUNITY PROTECTION REPORT. THE MEASURES INCLUDE PURCHASE AND PROPERTY VALUE GUARANTEES AND HOUSING REPLACEMENT TO COMPLEMENT THE TAX CREDIT AND REVITALIZATION AREA LEGISLATION ADOPTED IN 1996.

A WORKING GROUP SHOULD BE CONVENED INCLUDING REPRESENTATIVES FROM MAC, MET COUNCIL, NORTHWEST AIRLINES, AFFECTED COMMUNITIES AND LEGISLATIVE STAFF. THE WORKING GROUP SHOULD IDENTIFY A PROGRAM DESIGN, FUNDING OPTIONS, ADMINISTRATIVE RESPONSIBILITIES AND ELIGIBILITY AREA. THE FINAL LEGISLATIVE RECOMMENDATION SHOULD BE PRESENTED TO MAC AND OTHER INTERESTED PARTIES FOR ENDORSEMENT AND INCLUSION IN 1997 LEGISLATIVE PROGRAMS.

III. AIRPORT OPERATIONS

THE MITIGATION COMMITTEE RECOMMENDS TO THE METROPOLITAN AIRPORTS COMMISSION THAT THE FOLLOWING BE INCORPORATED AND EVALUATED IN A PART 150 UPDATE:

1. TAKE ACTION, AS REQUIRED BY THE 1996 LEGISLATURE, TO PROHIBIT USE OF STAGE 2 AIRCRAFT AFTER DECEMBER 31, 1999.

2. MODIFY THE NIGHT HOURS TO 10:30 P.M. - 6:00 A.M. AND LIMIT ACTIVITY DURING THESE HOURS TO STAGE 3 AIRCRAFT.

3. DEVELOP A DEPARTURE PROCEDURE FOR RUNWAY 22 TO DIRECT AIRCRAFT OVER AREAS OF COMMERCIAL DEVELOPMENT AND THE MINNESOTA RIVER VALLEY.

4. SEEK COOPERATION FROM FAA TO IMPLEMENT DEPARTURE PROCEDURES AS APPROPRIATE AT EACH RUNWAY END.

5. EVALUATE DEPARTURE PROCEDURES IN THE EAGAN-MENDOTA HEIGHTS CORRIDOR.

6. WORK WITHIN THE AVIATION INDUSTRY TO ENCOURAGE FURTHER REDUCTIONS IN AIRCRAFT NOISE LEVELS.

7. NEGOTIATE THE STAGE 2 PROHIBITION, NOISE ABATEMENT PROCEDURES, AND EXPANSION OF NIGHT HOURS, ~~AS PROVISIONS OF AIRLINE LEASE RENEWALS,~~ INCORPORATING APPROPRIATE PENALTIES FOR NON-COMPLIANCE.

8. THE MAC NOISE MONITORING SYSTEM MONITORS SHOULD BE INCREASED IN NUMBER TO PROVIDE MORE COVERAGE OF ACTUAL IMPACTS IN THE AIRPORT VICINITY, IN PARTICULAR, AREAS AFFECTED BY THE NORTH-SOUTH RUNWAY. ~~AND~~ AREAS AFFECTED BY THE PARALLEL RUNWAYS ~~SHOULD~~ MAY HAVE ADDITIONAL MICROPHONE LOCATIONS TO MONITOR CONTINUED AND GROWING VOLUMES OF AIR TRAFFIC AS THE AIRPORT EXPANDS. THIS

SYSTEM SHOULD BE USED TO CORROBORATE THE ACCURACY OF THE MODELLED CONTOURS FOR NOISE PROGRAM ELIGIBILITY.

## IV. RUNWAY USE

THE MITIGATION COMMITTEE RECOMMENDS TO THE MAC THE FOLLOWING:

1. COMPLETION OF THE ENVIRONMENTAL PROCESS AND CONSTRUCTION OF THE NORTH-SOUTH RUNWAY SHOULD BE EXPEDITED AND COMPLETED AS SOON AS POSSIBLE. PROGRESS SHOULD BE MEASURED AGAINST THIS SCHEDULE:

   A. COMMENCE CONSTRUCTION -- 1998;
   B. COMPLETE CONSTRUCTION, OPEN RUNWAY -- 2003

2. IN THE INTERIM, RUNWAY 4/22 SHOULD BE USED FOR NOISE MITIGATION PURPOSES. THIS REQUIRES THE FOLLOWING:

   A. CONSTRUCTION OF ASSOCIATED TAXIWAYS;
   B. MITIGATION PROGRAM AT THE SOUTHWEST END OF RUNWAY 4-22 IN THE CITIES OF BLOOMINGTON AND RICHFIELD AS REQUIRED IN THE FINAL RECORD OF DECISION (MARCH 28, 1995). THE ACQUISITION PORTION OF THE MITIGATION SHOULD BE INITIATED AS SOON AS CONTRACTS FOR THE ASSOCIATED TAXIWAYS ARE LET AND SHOULD BE COMPLETED WITHIN A PERIOD OF TWO YEARS. FUNDS FOR THE ACQUISITION PROGRAM SHOULD BE IN ADDITION TO THOSE DESIGNATED FOR THE RESIDENTIAL INSULATION PROGRAM, CONSISTENT WITH THE EXISTING ACQUISITION PROGRAM. THE INSULATION PORTION OF THE MITIGATION SHOULD BE INTEGRATED WITH THE CURRENT MAC PROGRAM, STARTING AS SOON AS CONTRACTS FOR CONSTRUCTION OF THE ASSOCIATED TAXIWAYS ARE LET, OR THE RUS IS IMPLEMENTED, WHICHEVER OCCURS FIRST. THE INSULATION PROGRAM SHOULD BE IMPLEMENTED AT THE RATE OF AT LEAST 20% OF THE TOTAL HOMES AS DEFINED IN THE RUNWAY 4-22 MITIGATION PROGRAM IN EACH YEAR UNTIL ALL OF THE SINGLE FAMILY AND MULTIPLE FAMILY UNITS WITHIN THE 1996 DNL 65 CONTOUR ARE INSULATED. TO THE EXTENT PRACTICAL, MAC SHOULD IDENTIFY FUNDING AND PROGRAM ADMINISTRATION OPTIONS TO MINIMIZE DELAY IN COMPLETION OF THE CURRENT INSULATION PROGRAM.
   C. IF THE NORTH-SOUTH RUNWAY IS COMPLETED BEFORE INSULATION OF ALL ELIGIBLE HOMES IS COMPLETED, THE INSULATION PROGRAM FOR THE AREA IMPACTED BY AIRCRAFT USING RUNWAY 4-22 MAY BE TERMINATED.

3. **COMPLETION OF THIS PROGRAM IS CONTINGENT ON THE MAC MAINTAINING A BOND RATING OF AT LEAST A.**

**The motion carried on the following roll call vote:**

| | |
|---|---|
| **Ayes, fourteen:** | **Commissioners Cramer, D'Aquila, Dowdle, Fiore, Gasper, Himle, Johnson, Kahler, Long, Merickel, Miller, Rehkamp, Stenerson, and Chairman Grieve** |
| **Nays, none** | |
| **Absent, one:** | **Commissioner Hitesman** |

**COMMISSIONER HIMLE MOVED AND COMMISSIONER LONG SECONDED TO COMMEND COMMISSIONER CRAMER, THE MSP NOISE MITIGATION COMMITTEE AND STAFF FOR ITS WORK IN DEVELOPING THE MITIGATION RECOMMENDATIONS; FURTHER, THAT THE COMMITTEE WAS SUCCESSFUL IN ITS COMMITMENT TO COMPLY WITH THE LEGISLATIVE MANDATE AS WELL AS TO BALANCE THE COMMUNITIES' NEEDS. The motion carried by unanimous vote.**

**Status Report - Runway 17/35 Land Acquisition and Lease Termination Board File 12243**

Thomas Anderson, General Counsel, reported that as part of the MSP Mitigation Committee Noise Mitigation Plan, the following recommendation was included:

> completion of the environmental process and construction of the North-South Runway should be expedited and completed as soon as possible.

He explained that two of the key components in the runway project will be the acquisition of several parcels located within the Federal Runway Protection Zone, State Safety Zones, and adjacent areas and the termination of several on-airport leases.

Based upon the construction schedule as shown in the 2010 Long Term Comprehensive Plan, several significant airport facilities will be required to be located to the Rich Acres Golf Course premises. Access to portions of this site will be required in 1998 to construct utilities and other infrastructure for the runway project. Under the lease between MAC and the City of Richfield regarding the Rich Acres Golf Course, it is necessary to provide the City eighteen months advance notice prior to actual lease termination (i.e., if notice is given immediately, the lease would not terminate until the spring of 1998).

Staff recommended that the Commission commence the formal public hearing process necessary to acquire property in the approaches to the proposed Runway. One of the

# *APPENDIX C HISTORIC PRESERVATION AGREEMENT*

**PROGRAMMATIC AGREEMENT**
**AMONG**
**THE FEDERAL AVIATION ADMINISTRATION,**
**THE ADVISORY COUNCIL ON HISTORIC PRESERVATION,**
**THE MINNESOTA STATE HISTORIC PRESERVATION OFFICER,**
**AND THE METROPOLITAN AIRPORTS COMMISSION**
**REGARDING IMPLEMENTATION OF**
**THE LONG-TERM COMPREHENSIVE PLAN**
**FOR THE MINNEAPOLIS-SAINT PAUL INTERNATIONAL AIRPORT**

WHEREAS, the Federal Aviation Administration (FAA) proposes to oversee implementation of the Minneapolis-Saint Paul International Airport (MSP) Long-term Comprehensive Plan (LTCP) by the Metropolitan Airports Commission (MAC); and

WHEREAS, the FAA and MAC have prepared a Final Environmental Impact Statement (FEIS) as part of the Dual-track Airport Planning Process, a major element of the development of the LTCP; and

WHEREAS, the FAA has determined that the LTCP will have an effect upon properties included in or eligible for inclusion in the National Register of Historic Places (36 CFR § 60.4) (hereafter, National Register) and has consulted with the Advisory Council on Historic Preservation (Council), the Minnesota State Historic Preservation Officer (SHPO), and MAC pursuant to Section 800.13 of the regulations (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f), and Section 110(f) of the same Act (16 U.S.C. 470h-2(f)); and

WHEREAS, the FAA will continue to follow the stipulations of an existing Programmatic Agreement exclusively covering MSP activities related to noise mitigation under the FAA Regulation "Part 150" Airport Noise and Land Use Compatibility Planning Program (Part 150 Program); and

WHEREAS, the National Park Service-Mississippi National River and Recreation Area, Federal Highway Administration, Minnesota Department of Transportation, Minnesota Department of Natural Resources, Metropolitan Council, and Minneapolis Heritage Preservation Commission participated in this consultation and have been invited to concur in this Programmatic Agreement; and

WHEREAS, a Section 404 permit shall be required from the Army Corps of Engineers (Corps), the Corps has participated in consultation leading to this Programmatic Agreement and has been invited to concur; and

WHEREAS, the Area of Potential Effects (APE) consists of: property within the expanded MSP airport boundaries; property affected by construction/reconstruction of access roadways, interchanges and signal systems directly serving the expanded airport; any off-site

property acquired for wetlands, surface water, or other mitigation; properties affected by 1) improvements to the regional highway and transportation systems, if the improvements are due to the expansion of MSP, and 2) induced socioeconomic impacts and land use impacts which are the result of MSP expansion as defined by the FEIS (i.e. properties that are affected by the MSP Alternative but not by the No Action Alternative) and/or which are the result of changes in the revised comprehensive plans of the cities of Bloomington or Minneapolis that are related to the expansion of MSP; and

WHEREAS, the APE also includes property within the projected year 2005 DNL 65 noise contours for runways included in MSP's FEIS and supplements, if these properties are potentially eligible for the National Register under Criteria A, B and/or C; and

WHEREAS, new noise contours may be generated, based on FAA direction and related airport operation/physical changes; the APE for properties potentially eligible for the National Register under Criteria A, B and/or C will be modified to conform to the most current projected year 2005 DNL 65 noise contours. Also, the FAA may change the DNL noise contour eligible for noise mitigation under the Part 150 Program; in that case, the LTCP APE for properties potentially eligible for the National Register under Criteria A, B and/or C shall conform to the year 2005 noise contour for the currently adopted Part 150 Program;

NOW, THEREFORE, the FAA, the Council, the SHPO and the MAC agree that the MSP LTCP shall be administered in accordance with the following stipulations to satisfy the FAA's Section 106 responsibility for all individual undertakings of the program.

## STIPULATIONS

The FAA will ensure that the following measures are carried out:

1. IDENTIFICATION OF ADDITIONAL HISTORIC PROPERTIES

a) In order to identify potential archaeological resources not previously investigated within portions of the APE as defined above, MAC will prepare a comprehensive research design in accordance with the Secretary of the Interior's Standards and Guidelines for Identification and Evaluation (48 FR 44720-26) (hereafter, Standards and Guidelines) for those portions of the APE that are not accessible at this time (e.g. active runways), but where archaeological evidence may exist beneath built-up and paved areas. The research design will also describe how National Register eligibility shall be assessed and how potential impacts to those eligible resources may be addressed.

b) As additional APEs are defined, MAC shall undertake a survey within the expanded area to identify properties that might meet the criteria for listing in the National Register. The survey shall be conducted in consultation with the SHPO and in accordance with the Standards and Guidelines. Additional survey work will be conducted as necessary if additional properties are identified within the APE. In consultation with the SHPO, MAC

shall apply the National Register criteria to each potentially eligible property identified within the extended APE. If the FAA and SHPO do not agree about the National Register eligibility of properties found, or if the Council or the Secretary of the Interior so request, the FAA shall obtain a determination from the Secretary of the Interior pursuant to the applicable National Park Service regulations.

2. ASSESSMENT OF EFFECTS

In consultation with the SHPO, the FAA shall apply the Criteria of Effect and Adverse Effect (36 CFR §800.9) to those additional historic properties identified under Stipulation 1, giving consideration to the views, if any, of interested persons. If the effect is not adverse, the FAA and MAC will obtain the SHPO's concurrence for the project file which shall be available for public inspection. If the SHPO does not concur, the action will be treated as an adverse effect. If an adverse effect on historic properties is found, the FAA and MAC shall consult with the SHPO to seek ways to avoid or reduce the effects on historic properties.

3. MITIGATION OF EFFECTS

a) If MAC cannot avoid adversely affecting other properties eligible for the National Register under Criteria A, B and/or C, and if the SHPO concurs that there is no reasonable alternative to that adverse effect, the FAA and MAC will consult with the SHPO regarding appropriate treatment. The FAA and MAC will ensure that the treatment is carried out in a timely manner. If the SHPO does not concur with the FAA's finding, the FAA shall proceed with the dispute resolution process outlined in Stipulation 14.

b) Treatment of properties eligible for the National Register under Criterion D will be initiated with preparation of a data recovery plan, which will consist of a research design delineating the extent and focus of the required excavation, as well as the methodology needed to ensure maximum retention and curation of the research significance of excavated data. Upon review and approval by the SHPO, the data recovery will be implemented as outlined in the plan.

4. THE ORIGINAL WOLD-CHAMBERLAIN TERMINAL HISTORIC DISTRICT

a) Prior to any disturbance, the Original Wold-Chamberlain Terminal Historic District shall be documented to the standards of the Historic American Buildings Survey (HABS). MAC will contact the National Park Service (NPS) to determine what level of recordation is required. Unless otherwise agreed to by the NPS, the FAA shall ensure that all documentation is completed and accepted by HABS prior to any alteration, and that an original archival copy (including text, photographs, and negatives) is provided to the SHPO, and that additional photocopied copies are made available to appropriate local archives designated by the SHPO.

b) MAC shall contact the Smithsonian Institution (Air and Space Museum, Aeronautics Division) and the Minnesota Historical Society (Museum Collections Division) to offer the

opportunity to select architectural elements or historical objects from any of the contributing buildings in the historic district for curation and display, providing that the selection of these elements will cause no undue delay in the implementation of the LTCP. The FAA and MAC shall ensure that the items selected are removed in a manner that minimizes damage. Removal of the items will be at the expense of the recipients.

5. SPRUCE SHADOWS FARM HISTORIC DISTRICT

MAC will develop a treatment plan for the Spruce Shadows Farm Historic District by December 31, 1997. The plan will include a schedule for completing the treatment. MAC will develop and implement the plan in consultation with the property owner, the SHPO and the FAA. The plan will be submitted to the SHPO for their concurrence, prior to implementation.

**Administrative Stipulations**

6. At any time during implementation of the measures stipulated in this agreement, should an objection to any such measure or its manner of implementation be raised by a member of the public, the FAA shall take the objection into account and consult as needed with the objecting party, the SHPO, the MAC, or the Council to resolve the objection.

7. The FAA shall be responsible on an annual basis for consulting with the parties to this agreement to review implementation of the terms of this agreement and determine whether amendments are needed.

8. Since the LTCP directs MSP development over an extended period of time, a supplemental study of historic and architectural resources in the APE will be prepared by MAC in the year 2005 to reassess the National Register eligibility of properties that have become fifty years old since the previous survey was completed, and to consider recent scholarship on property types existing within the APE. The FAA shall ensure that MAC will conduct the survey in consultation with the SHPO and will take into account the Standards and Guidelines. If the SHPO objects with the findings of the survey report, the FAA shall proceed with the dispute resolution process outlined in Stipulation 14.

9. The FAA shall ensure that MAC provides reports on all activities carried out pursuant to this agreement to the SHPO and, upon request, to other interested parties.

10. The Council and the SHPO may monitor activities carried out pursuant to this agreement, and the Council will review such activities if so requested. The FAA and MAC will cooperate with the Council and the SHPO in carrying out their monitoring and review responsibilities.

11. Any party to this agreement may request that it be amended, whereupon the parties will consult in accordance with 36 CFR § 800.13 to consider such amendment.

12. Any party to this agreement may terminate it by providing thirty (30) days notice to the other parties, provided that the parties will consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. In the event of termination, the FAA and MAC will comply with 36 CFR §§ 800.4 through 800.6 with regard to individual undertakings covered by this agreement.

13. In the event the FAA and MAC do not carry out the terms of this agreement, the FAA will ensure compliance with 36 CFR §§ 800.4 through 800.6 with regard to individual undertakings covered by this agreement.

14. If the SHPO objects within thirty (30) days to any reports, findings or other information provided for review pursuant to this agreement, the FAA shall consult with the SHPO to resolve the objection. If the FAA determines that objection cannot be resolved, the FAA shall forward all documentation relevant to the dispute to the Council. Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

    a) provide the FAA with recommendations, which the FAA will take into account in reaching a final decision regarding the dispute; or

    b) notify the FAA that it will comment pursuant to 36 CFR § 800.6(b) with reference to the subject of the dispute.

    Any recommendations or comment provided by the Council will be understood to pertain only to the subject of the dispute; the FAA's responsibility to carry out all actions under this agreement that are not the subjects of the dispute will remain unchanged.

15. The FAA and MAC shall ensure that all survey, National Register assessment, and documentation work carried out pursuant to this agreement is carried out by or under the direct supervision of a person or persons meeting at a minimum the qualifications for archaeologists, historical archaeologists, historians, and architectural historians, as appropriate, as defined by the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-9).

16. If a federal agency concurring with this agreement initiates an undertaking that is included in the LTCP, assessed in the FEIS and supplements, and located within the APE as defined above, it is hereby acknowledged that the concurring agency's responsibilities under Section 106/Section 110 have been fulfilled by the agency's adherence to this Programmatic Agreement, as long as it is in force.

Execution and implementation of this Programmatic Agreement evidences that the FAA has taken into account the effect of the MSP Long-term Comprehensive Plan on historic properties and afforded the Council an opportunity to comment on the effect.

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: John M. Fowler Date: 7/28/97

Title: Exec. Director

FEDERAL AVIATION ADMINISTRATION

By: Franklin D Benson Date: 7-11-97

Title: Mgr., MSP-ADO

MINNESOTA STATE HISTORIC PRESERVATION OFFICER

By: Nina M. Archabal Date: 7/1/97

Title: _____

METROPOLITAN AIRPORTS COMMISSION

By: Nigel O. Finney Date: 7.2-97

Title: Deputy Executive Director

Concur:

NATIONAL PARK SERVICE-MISSISSIPPI NATIONAL RIVER AND RECREATION AREA

By: John M Kyral Date: 5-30-97

Title: Superintendent

FEDERAL HIGHWAY ADMINISTRATION

By: K. Kranzke Date: 5/27/97

Title: Project Development Engr.

ARMY CORPS OF ENGINEERS

By: _____ Date: 6 Jun 97

Title: COL, Commanding

My concurrence in this agreement is limited to its application to the Section 106 and Section 1 requirements. Specifically, my concurrence is not relevant with respect to the Section 404 permitting process and should not be interpreted as an endorsement of the LTCP.

MINNESOTA DEPARTMENT OF TRANSPORTATION

By: _____ Date: 7/1/97

Title: Deputy Commr/Chief Engineer

METROPOLITAN COUNCIL

By: _____ Date: 5-27-97

Title: Regional Admin

MINNEAPOLIS HERITAGE PRESERVATION COMMISSION

By: _____ Date: 5/27/97

Title: chair

## APPENDIX A: HISTORIC PROPERTY SURVEYS RELATED TO MSP


Harrison, Christina. "The Archaeological Resources of Minneapolis-St. Paul Airport with Vicinity." Prepared by Archaeological Research Services for the Metropolitan Airports Commission and HNTB, 1996.

Roise, Charlene. "Determination of National Register Eligibility: Original Wold-Chamberlain Terminal Complex, Minneapolis." Prepared by Hess, Roise and Company for the Metropolitan Airports Commission and HNTB, April 1994.

_____. "Minneapolis-St. Paul Airport Reconnaissance Survey: New Ford Town/Rich Acres." Prepared by Hess, Roise and Company for the Metropolitan Airports Commission and HNTB, November 1992.

_____. "Minneapolis-St. Paul Airport Reconnaissance Survey: The Built Environment." Prepared by Hess, Roise and Company for the Metropolitan Airports Commission and HNTB, December 1992.

_____. "Minneapolis-Saint Paul Airport Reconnaissance/Intensive-level Survey (for Long-term Comprehensive Plan Alternative Environmental Document): The Built Environment." Prepared by Hess, Roise and Company for the Metropolitan Airports Commission and HNTB, August 1995.

_____. "Section 106 Compliance Assessment: Sound Insulation Program 1995 Phase, Minneapolis-Saint Paul International Airport." Report prepared by Hess, Roise and Company for the Center for Energy and Environment, October 1995.

## APPENDIX B: ABBREVIATIONS

| | |
|---|---|
| APE | Area of Potential Effect |
| Corps | Army Corps of Engineers |
| Council | Advisory Council on Historic Preservation |
| FAA | Federal Aviation Administration |
| FEIS | Final Environmental Impact Statement |
| HABS | Historic American Buildings Survey |
| LTCP | Long-term Comprehensive Plan |
| MAC | Metropolitan Airports Commission |
| MSP | Minneapolis-Saint Paul International Airport |
| NPS | National Park Service |
| National Register | National Register of Historic Places |
| Part 150 Program | FAA Regulation "Part 150" Airport Noise and Land Use Compatibility Planning Program |
| SHPO | Minnesota State Historic Preservation Officer |
| Standards and Guidelines | Secretary of the Interior's Standards and Guidelines for Identification and Evaluation |

**APPENDIX C:**
**PARTIES AND ADDRESSES**
**FOR NOTIFICATIONS RELATED TO THIS AGREEMENT**

Advisory Council on Historic Preservation (Attn: Mary Ann Naber)
Old Post Office Building, 1100 Pennsylvania Avenue N.W., Suite 809
Washington, D.C. 20004
(202) 606-8534

Federal Aviation Administration District Office (Attn: Glen Orcutt)
6020 28th Avenue South
Minneapolis, MN 55450
(612) 713-4354

Metropolitan Airports Commission (Attn: Mark Ryan)
6040 28th Avenue South
Minneapolis, MN 55450
(612) 726-8100

State Historic Preservation Office (Attn: Dennis Gimmestad)
345 Kellogg Boulevard West
Saint Paul, MN 55102
(612) 296-5434

National Park Service (Attn: Mike Madel)
Mississippi National River and Recreation Area
175 Fifth Street East, Suite 418, Box 41
St. Paul, MN 55101
(612) 290-4160

Federal Highway Administration (Attn: Cheryl Martin)
Metro Square Building, Suite 490
7th Place and Robert Street
St. Paul, MN 55101
(612) 291-6100

Army Corps of Engineers (Attn: John Anfinson)
190 East Fifth Street
St. Paul, MN 55101
(612) 290-5260

Minnesota Department of Transportation (Attn: G. Joseph Hudak)
395 John Ireland Boulevard
St. Paul, MN 55155
(612) 296-6116

Metropolitan Council (Attn: Pat Pahl)
230 East Fifth Street
St. Paul, MN 55101
(612) 291-6359

Minneapolis Heritage Preservation Commission (Attn: Amy Lucas)
Minneapolis City Hall, 350 South Fifth Street, Room 210
Minneapolis, MN 55415
(612) 673-2422

# *APPENDIX D WETLAND MITIGATION PLAN*

The wetlands impacted by the proposed action and the required mitigation is given in the following table.

**Table D.1-1 - Wetland Mitigation Requirements - MSP 2010 LTCP**

| Basin | Size (Acres) | Wetland Displaced (Acres) | Wetland Mitigation Requirement |
|---|---|---|---|
| Mother Lake | 142.30 | 11.4; 6.1 below OHWL<br>5.3 above OHWL | 1.5:1 (9.15 acres)[1]<br>2:1 (10.6 acres)[2] |
| Duck Lake Wetlands | 10.2 | 10.2; 7.91 below OHWL<br>2.29 above OHWL | 1.5:1 (11.87 acres)[1]<br>2:1 (4.58 acres)[2] |
| "Ball Field" Wetlands | 9.47 | 9.47 | 2:1 (18.94 acres)[2] |
| Golf Course Wetlands | 1.89 | 1.89 | 2:1 (3.78 acres)[2] |
| **TOTAL** | **163.86** | **32.96[3] acres** | **58.92 acres** |
| [1] DNR assumed requirement; [2] WCA requirement; [3] Corps of Engineers requirement (1:1) | | | |
| Source: Peterson Environmental Consulting, Inc. | | | |

Permits from the following wetland regulatory programs and agencies will be required for impacts to wetlands associated with the MSP 2010 LTCP. These agencies will also require acceptable compensatory wetland mitigation before permits can be issued for the MSP 2010 LTCP.

Section 404 Clean Water Act

This federal wetland regulatory program requires permits and mitigation for fill and other substantial adverse modification of waters of the United States, including wetlands. The program is administered by the St. Paul District U.S. Army Corps of Engineers.

Minnesota Department of Natural Resources Protected Waters Program

This state law applies to wetlands of Types 3, 4 and 5 that have been inventoried by the DNR which are at least 2.5 acres in size in incorporated areas and at least 10 acres in unincorporated areas of the state. Permits and mitigation are required for projects which would change the course, current or cross-section of protected waters. The program is administered by the DNR - Metro Waters.

Minnesota Wetland Conservation Act (WCA)

This state law applied to all non-DNR protected wetlands and requires permits and mitigation for filing and draining of those wetlands. The Metropolitan Airports Commission acts as the Local Government Unit administering the WCA with the oversight of the Minnesota Board of Water and Soil Resources.

On August 8, 1996, a field meeting was conducted with regulatory agencies to review the primary wetland impact areas associated with the MSP 2010 LTCP. Agencies present at this meeting included the U.S. Army Corps of Engineers and the Minnesota DNR. Specifically, the projected impacts at the Duck Lake and Ball Field wetlands were reviewed. Although grading plans had not yet been developed, the agencies were shown the general area where the 11.4-acre impact area for clear zone and an access road is expected to occur at the fringe of Mother

Lake. Three of the mitigation sites described below (Waconia, Minnetrista and New Prague) have been reviewed in the field with the Corps and DNR. The Corps has agreed that these sites are promising and usable for the wetland impacts of the MSP 2010 LTCP (see attached correspondence). Although the DNR generally agrees with the sites as potential mitigation, they are awaiting further plan development before approving any of the sites (see attached correspondence).

The sites that are being considered for wetland mitigation for the MSP 2010 LTCP are located in Belle Plaine, Eden Prairie, Minnetrista, Waconia New Prague. A combination of one or more of these sites would provide the needed wetland replacement acreage for the MSP 2010 reconstruction. Any additional mitigation acreage created would be placed into the state mitigation bank for use on future impacts associated with the long range plan at MSP.

The potential mitigation sites are described below and have not been placed in any particular order in terms of desirability or feasibility.

Belle Plaine Mitigation Sites

The rural Belle Plaine sites consist of two prior converted wetlands which are now being farmed. These wetlands are underlain by drain tile which may or may not be effectively draining the basins. The first basin is approximately 35 acres in size and is not currently being cropped, although it has been in the past. Before draining it was a saturated palustrine emergent (PEMB; Circular 39 Type 2 inland fresh meadow) and seasonally flooded palustrine emergent (PEMC; Circular 39 Type 3 inland shallow marsh) wetland. By eliminating the current tile drainage system and restoring wetland hydrology, the system would be expected to return to its former wetland condition.

The second wetland mitigation site is very near the first site and consists of approximately 100 acres which would appear to be effectively drained since the area is cropped virtually every year. Restoration would consist of plugging or breaking the existing tile system and restoring the basin which has a large watershed. The landowner who was contacted with regard to this site is one of 5 landowners who abut the basin. At such time as wetland permits are being sought for the MSP 2010 reconstruction, the other landowners would be contacted with regard to selling the drained wetland. The indications from the landowner contacted are that the other owners would be willing to consider selling the parcel.

Eden Prairie Mitigation Sites

These sites consist of tiled and drained wetland within the Minnesota River bottoms, which are currently used as agricultural cropland. Several parcels are available for use as wetland mitigation through restoration and/or creation. These areas total approximately 40-100 acres. The restoration/creation technique on these parcels would be to eliminate the tile systems and perhaps do some excavation within the created wetland areas.

There are also some existing wetlands within the Minnesota River bottoms property which are currently partially or effectively drained by ditches and tile lines. These basins total approximately 80 acres and could be restored through similar techniques as described above. These areas currently consist of temporarily flooded palustrine emergent (PEMA; Circular 39 Type 1 seasonally flooded basins), saturated palustrine emergent (PEMB; Circular 39 Type 2 inland fresh meadow) and seasonally flooded palustrine emergent (PEMC; Circular 39 Type 3 inland shallow marsh) wetlands.

Waconia Site

This site consists of approximately 21 acres of historically drained peatland that is currently being used as a sod farm. The basin is underlain by a drain tile system and a series of upslope erosion control terraces which effectively remove the natural hydrology of the area. This basin was restored in the summer of 1997 by disabling the drain-tile system and breaking the shoulder of the terraces in certain locations. An earthen overflow berm/road was constructed at the basin's outlet to retain water and to serve as an overflow should water levels ever become high enough. With the drainage facilities disabled, the restored wetland now has a seasonally to semi-permanently flooded water regime (PEMC; Circular 39 Type 3 shallow marsh and PEMF; Circular 39 Type 4 deep marsh) and totals approximately 21 acres. Of this acreage, 2.86 acres are being used as mitigation for another project and 10 acres have been transferred to another bank account holder; the remaining acreage would be usable for the MSP 2010 reconstruction. Restoration of this site has been approved for mitigation banking by the Corps of Engineers and the Local Governmental Unit (LGU) under the WCA. The LGU has processed an application for the mitigation credits which were deposited into the state wetland bank on December 31, 1997.

Minnetrista (Nesvold) Site

This site consists of a totally drained former wetland that was historically drained through the placement of tile. Approximately 5 acres of wetland could be restored in two areas adjoined by a sloping drainageway. A similar basin was restored a few hundred feet upstream in the watershed of this proposed mitigation site. Based on the results at that restored basin, the expected wetland types at the mitigation site would be seasonally to semi-permanently flooded palustrine emergent (PEMC/PEMF; Circular 39 Type 3 shallow marsh/Circular 39 Type 4 deep marsh) wetland. The wetland would be established through the disabling of the existing drain tile to restore the basin's historic hydrology. Approximately 5 additional acres of mitigation credit may be possible at this site for WCA-regulated impacts. This acreage would be in the form of an upland buffer for which the WCA allows public value credit. Conceptual plans and cost estimates have been completed for this site.

New Prague Site

This site had been considered as a candidate site for the St. Paul Airport reconstruction project and local regulatory agencies have indicated that it would be a suitable mitigation site. The site is owned by two parties and has been artificially drained. The basin is approximately 40 acres in size and is characterized as drained farmland. The restoration methodology would include disabling the drainage system and possibly constructing a water control structure at the basin's outlet.

**Schedule for Wetland Permits - 2010 LTCP**

The MAC has authorized staff to pursue the acquisition of wetland mitigation credits necessary to obtain the permits required to implement the proposed action (see attached commission action). The remaining activities and schedule for obtaining the required wetland permits is given on the following page for the mitigation sites under consideration. The following sites are not under consideration at this time.

Belle Plaine Mitigation Sites

These sites have been reviewed in the field and the one holding the most promise (100-acre drain tiled basin) has 5 landowners abutting it. This could complicate the acquisition process; therefore, this site will not be pursued unless other more easily acquired sites become unavailable.

Eden Prairie Mitigation Sites

Since these sites were flooded at the time when mitigation sites were being selected, concept mitigation plans are not being developed at this time. If needed, these sites would be revisited in the future.

**Schedule of Activities to Obtain Wetland Mitigation Permits**

| | | | | |
|---|---|---|---|---|
| **January 1998** | MAC to initiate letter of intent agreement for Minnetrista site. | Meet with regulatory agencies to present conceptual plan for Minnetrista site and get approval for its use. | MAC to present Letter of Intent to owner of Waconia site. | Prepare wetland permit applications for the Corps of Engineers, DNR and WCA. |
| **February 1998** | If owners of New Prague site interested, have MAC present them with Letter of Intent. | Consider alternative sites if one or more potential sites fall through. | Meet with regulatory agencies to present conceptual plans for New Prague; get feedback and approval for use of this site as well as Waconia site. | Assuming agency concurrence, acquire/produce 2' contour maps of all sites still under consideration (except Waconia site since restoration already completed). |
| **March 1998** | Make final site selection(s). | Produce concept grading plans for all sites still under consideration (except Waconia). | Engineer review and final drawing of grading plans. | Finalize agreements with landowners; purchase acres/easements. |
| **April 1998** | Finalize mitigation plans for all sites. | Submit permit applications with mitigation plans to regulatory agencies. | | |
| **May 1998** | Regulatory agency review of permit applications. | Respond to agency comments on permit applications. | | |
| **June 1998** | Public Notices sent out by agencies. | | | |
| **July 1998** | Respond to comments received during public notice. | Agencies begin processing permits. | | |
| **August/ September 1998** | Permits issued by regulatory agencies. | | | |

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
ARMY CORPS OF ENGINEERS CENTRE
190 FIFTH STREET EAST
ST. PAUL, MN 55101-1638

June 18, 1997

REPLY TO
ATTENTION OF
Construction-Operations
Regulatory (96-01256-SF-JJY)

JUN 1 9 1997

Mr. Michael Graham
Peterson Environmental Consulting
1355 Mendota Heights Road
Suite 100
Mendota Heights, Minnesota 55120-1112

Dear Mr. Graham:

This letter confirms that the three sites we viewed on May 27, 1997, all appear to be promising compensatory mitigation sites that could be used for the Twin Cities International Airport expansion or for other projects that might affect wetlands. The three sites include the Nesvold-Minnetrista site, the Carpenter-Waconia site, and the Hakim/Krueser-New Prague site. Each site involves a drained wetland that could be restored by ditch plugs, tile breaks, berm construction, or some combination of these measures.

The Carpenter-Waconia site has already been approved as a mitigation area, and the restoration work there was underway at the time of our visit. The other two sites are potential restoration areas that are privately owned. I hope that you are able to reach agreement with the landowners and restore these sites.

Please keep our office advised of any new developments, especially any agreements or proposed mitigation plans.

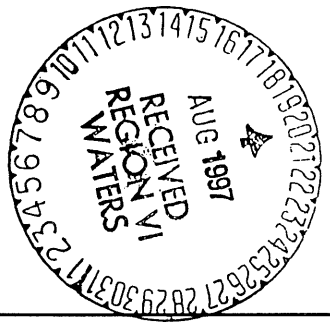
If you have any questions, please contact me in our St. Paul office at (612) 290-5362. In any correspondence or inquiries, please refer to the file number shown above.

Sincerely,

Joseph J. Yanta
Project Manager
Western Permit Evaluation Section

Printed on Recycled Paper

PETERSON
ENVIRONMENTAL
CONSULTING, INC.




# *MEMORANDUM*

AUG 25 1997

**TO:** Larry Dallam, HNTB Corporation
Bob Vorpahl, Metropolitan Airports Commission
Ceil Strauss, Mn-DNR Metro Waters
Peter Leete, Mn-DNR Metro Waters
Michele Stradtmann, Mn-DNR Wildlife
Aimie Yam, Mn-DNR Metro Waters

**FROM:** Mike Graham M.G.

**DATE:** August 20, 1997

**SUBJECT:** Meeting with the Minnesota Department of Natural Resources Regarding Wetland Mitigation Plans for the Minneapolis/St. Paul Airport 2010 LTCP

On July 17, 1997 a meeting was held at Minnesota DNR Regional Headquarters between the Mn-DNR, the Metropolitan Airports Commission (MAC), HNTB Corporation and Peterson Environmental Consulting, Inc. (PEC). Those present included Ceil Strauss, Peter Leete, Michele Stradtmann and Aimie Yam from the Mn-DNR, Bob Vorpahl from the MAC, Larry Dallam from HNTB and Mike Graham from PEC. Joan Galli from the Mn-DNR joined the meeting at its conclusion and was briefed afterward by Mn-DNR staff. The issues discussed included the following:

1. The portion of Duck Lake that would be regulated by the Mn-DNR

2. Preliminary information on the mitigation sites currently being considered.

3. The mitigation ratio that would be sought by the Mn-DNR for impacts to Duck Lake.

**Portion of Duck Lake Regulated by Mn-DNR**

The Mn-DNR has established an Ordinary High Water Level (OHWL) for Duck Lake at 819.1' (NGVD, 1929). PEC delineated three separate and distinct basins in the Duck Lake area in May 1997 including the main water body (8.63 acres), a small finger separated from the main body by a road (0.07 acres) and another wetland separated from the small finger by an upland berm (1.50 acres). A 1-foot contour topographic map of the Duck Lake area with the wetland delineation boundaries overlayed was presented. This map shows that portions of all three basins are below 819', however, the topography on

the map is photo based and not ground truthed. Ceil Strauss stated that for purposes of this project she would not consider the two smaller basins to be a part of the Protected Water if the road separating the 8.63 acre open water from the other two wetlands was constructed prior to the Mn-DNR receiving authority to conduct the Protected Waters Inventory. Bob Vorpahl and Mike Graham will coordinate to review aerial photographs in order to determine when the road was built. Peter Leete will determine the year that the PWI program was initiated. If it is shown that the road was built prior to the PWI program, the two smaller basins of 1.50 and 0.07 acres would not be regulated by the Mn-DNR but would fall under the jurisdiction of the Wetland Conservation Act and Section 404 of the Clean Water Act (administered by the U.S. Army Corps of Engineers).

**Mitigation Sites**

Three potential mitigation sites located in Waconia, Minnetrista and New Prague were discussed. The information presented generally included the geographic location, estimated size, estimated wetland type and general construction techniques that would be used to restore each basin. It was the sentiment of the Mn-DNR staff that the Nesvold site in Minnetrista was the most desirable restoration candidate of the three sites presented, followed by the Hakim/Kreuser site near New Prague and the Carpenter site in Waconia. Mike Graham stated that all three mitigation sites would constitute restoration of drained wetlands and that the restoration work at the Carpenter site had been completed in May 1997.

The Mn-DNR staff stated that the wetland type (Circular 39 Type 4 deep marsh to Type 5 open water) to be created at the Nesvold site would probably be usable to offset the loss of habitat at Duck Lake, although it may not provide enough acreage. Any excess acreage that is necessary would be gained from other mitigation sites. The Mn-DNR staff also made the point that they would prefer to use one discrete mitigation basin as the primary wetland used to offset the loss of Duck Lake. Although the Nesvold site may not provide the full acreage required by the Mn-DNR (see discussion under Mitigation Ratio below), staff indicated that it would provide a significant amount of this acreage and would probably be of a wetland type acceptable to the Mn-DNR. The "upstream" restored wetland at the Nesvold site was discussed as a reference wetland to get some idea of the expected wetland type at the mitigation area in question.

**Mitigation Ratio**

Ceil Strauss stated that a mitigation ratio of 1.5:1 was a general rule of thumb that had been commonly applied on past projects. The Mn-DNR staff agreed that PEC could use this ratio for mitigation planning purposes. Staff also expressed that the mitigation ratio ultimately decided upon by Mn-DNR would take into consideration the upland habitat benefits of any given site. A discussion followed regarding the possibility of implementing an upland planting plan at the Nesvold site. PEC will proceed with mitigation plans which may include an upland planting component.

**General Information**

The functions and values of Duck Lake were briefly discussed. Bob Vorpahl noted that he had seen the water drawn completely down at the lake during his 10-year tenure. The water quality of the lake was also generally discussed. It was agreed that Michele would conduct a field assessment of Duck Lake to evaluate the functions and values that the Mn-DNR would like to see replaced at the mitigation sites. This field assessment will not be done using a formalized method but will be more of a general analysis. Michele will coordinate with Bob to arrange this site visit.

Mn-DNR staff were generally optimistic about the wetland mitigation sites, however, further plan development will be necessary for the Mn-DNR to more formally approve any of the sites for use. At this time, none of the potential mitigation sites will be dropped from consideration. Mitigation plans have already been completed for the Carpenter site in Waconia and that site is pending enrollment into the state wetland mitigation bank. Mn-DNR staff stated that any mitigation wetland used to offset the loss of Duck Lake would need to be of a type acceptable to the Mn-DNR, particularly the wildlife staff. It was expressed that Type 3 or Type 4 wetland would likely be acceptable to offset the loss of Duck Lake which is a Type 5, especially since fisheries issues were virtually non-existent at Duck Lake.

The next step for the project will be to begin negotiation with the owners of the Hakim/Kreuser site and the Nesvold site. When possible, more detailed site information will be collected and preliminary mitigation plans will be done. I anticipate distributing these draft plans for review by the Mn-DNR as well as other wetland regulatory agencies.

**Signature of Attendees**

The undersigned have read and agree to the information contained in this memorandum. By signing, Mn-DNR staff are not committing to or approving for use any of the mitigation sites discussed.

Larry Dallam, HNTB Corporation — Date 8/20/97

Bob Vorpahl, Metropolitan Airports Commission — Date 8/20/97

Ceil Strauss, Mn-DNR Metro Waters — Date 8/21/97

Peter Leete, Mn-DNR Metro Waters — Date 8/21/97

Michelle Doerr
~~Stradtmann~~, Mn-DNR Wildlife — Date 8/21/97

Aimie Yam, Mn-DNR Metro Waters — Date 8/21/97

Mike Graham, Peterson Environmental — Date 8/20/97

**COMMISSIONER LONG MOVED AND COMMISSIONER MILLER SECONDED ACCEPTANCE OF THE LOWEST RESPONSIBLE BID FOR THE PART 150 SOUND INSULATION PROGRAM - AUGUST, 1997 BID CYCLE, SUMMARIZED AS FOLLOWS:**

| | | |
|---|---|---|
| AMERICAN SPECIAL CONTRACTING (DBE) | 10 | $183,671 |
| BLOM CUSTOM HOMES | 9 | 189,865 |
| J. BROLSMA CONSTRUCTION | 1 | 17,677 |
| KATHY'S CONSTRUCTION (DBE) | 12 | 243,746 |
| KEVIN THOMPSON HOMES | 3 | 43,919 |
| RED ROCK CONSTRUCTION | 7 | 248,972 |
| SOCON CONSTRUCTION, INC. | 26 | 549,920 |
| THOR CONSTRUCTION (DBE) | 3 | 69,055 |

**AUTHORIZATION FOR THE EXECUTIVE DIRECTOR OR HIS DESIGNEE TO EXECUTE THE NECESSARY DOCUMENTS; FURTHER, ESTABLISH A PROJECT BUDGET OF $1,580,000. The motion carried on the following roll call vote:**

**Ayes, ten:** Commissioners Cramer, D'Aquila, Dowdle, Fiore, Hitesman, Kahler, Long, Miller, Stenerson, and Chairman Grieve
**Nays, none**
**Absent, five:** Commissioners Gasper, Himle, Johnson, Reedy and Rehkamp

**A6 Authorization to Negotiate for Wetland Credits - North/South Runway**

At the Committee meeting, Staff had reported that as part of the North/South Runway development, approximately 27 acres of wetland impacts will require mitigation. The development will require a DNR Protected Waters Permit, a Wetland Conservation Act Permit and a Corp of Engineers 404 Permit. Applications for these permits cannot commence until a grading plan has been completed, which is scheduled for mid-December, 1997. The initial projects for the North/South Runway will commence in the New Ford Town subdivision which will have impacts on both Mother's Lake and Duck Lake. Permits must be secured no later than April 1, 1998 in order for this work to progress without delay.

**COMMISSIONER CRAMER MOVED AND COMMISSIONER HITESMAN SECONDED APPROVAL OF THE FOLLOWING MOTION AS AMENDED:**

**THAT STAFF BE AUTHORIZED TO NEGOTIATE, WHERE APPROPRIATE, WITH PROPERTY OWNERS FOR WETLAND MITIGATION CREDITS AND ENTER INTO AGREEMENTS TO PURCHASE THESE CREDITS; FURTHER, THAT STAFF BE DIRECTED TO RETURN THE AGREEMENTS TO THE COMMITTEE/COMMISSION FOR APPROVAL. The motion carried by unanimous vote.**

# Appendix E

# MVNWR—Preliminary Memorandum of Agreement (MOA)

This appendix presents a preliminary draft of the MOA between the USFWS, the FAA, and the MAC in regard to impacts and mitigations within the Minnesota Valley National Wildlife Refuge (MVNWR).

This draft MOA, dated May 1, 1998, is provided only for review and comment because the signatory agencies have not agreed to the impacts to the Refuge and the plan for compensation. However, it is the FAA's intent to receive input on the MOA during the 60-day *Section 4(f) Evaluation* review/comment period.

# MEMORANDUM OF AGREEMENT BETWEEN THE FEDERAL AVIATION ADMINISTRATION, METROPOLITAN AIRPORTS COMMISSION, AND THE U.S. FISH AND WILDLIFE SERVICE

## A. Purpose

The purpose of this document is to formalize a Memorandum of Agreement (MOA) between the Federal Aviation Administration (FAA), the Metropolitan Airports Commission (MAC), and the U.S. Fish and Wildlife Service (USFWS) regarding a shared understanding of effects and the mitigation of impacts to the Minnesota Valley National Wildlife Refuge caused by the proposed expansion of the Minneapolis-St. Paul International Airport (MSP).

This agreement between the FAA, the MAC, and the USFWS is necessary because of unavoidable adverse effects on a portion of the MVNWR and the FAA's finding of "constructive use" for that area pursuant to Section 4(f) of the 1966 U.S. Department of Transportation Act [49 U.S.C. 303(c)]. Section 4(f) states that the Secretary of the U.S. Department of Transportation may not approve any transportation project that requires the use of any publicly-owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance unless there are no feasible and prudent alternatives to the use of such lands. Section 4(f) also states that when there must be a use of such lands, the project should include all possible planning to minimize harm resulting from the use. The findings and determinations contained in this MOA are unique and specific to this particular Refuge condition, and are not meant to establish precedent or to be applied to other seemingly similar situations.

No land is to be acquired from the Minnesota Valley National Wildlife Refuge (MVNWR or Refuge). The FAA and USFWS agree that increased aircraft noise levels associated with the addition of new Runway 17/35 at MSP would result in adverse impacts to a portion of the MVNWR, including an important educational/interpretive area known as the Bass Ponds. The increased noise levels in the Bass Ponds area resulting from use of the new runway at MSP and resulting overflights will impair the ability of the area to serve its existing function of providing for environmental education activities. Consequently, this adverse impact constitutes a "constructive use", or taking of Section 4(f) eligible property, since the noise impacts conflict with publics use and enjoyment of this area.

For purposes of this specific agreement, the FAA has also extended its finding of Section 4(f) constructive use to areas outside the immediate Bass Ponds environmental education area—specifically to include all publicly-owned lands located within the 2005 average day-night noise level (DNL) 65 noise contour , and DNL 60 noise contour where noise increases by 3 dBA or more as a result of the proposed runway project. These noise results are based on a "High Forecast" of aviation activity used by the MAC in preparing these contours. In

addition, the constructive use determination recognizes the possibility of diminished value of the Visitor Center because of its connectivity with the Bass Ponds area.

For the purposes of this MOA, the FAA, the MAC, and the USFWS have agreed that a reasonable determination of the Refuge land areas potentially affected by noise and the resulting mitigation aspects of the project have been calculated based on: (1) the MAC High Forecast of future aviation activity for the year 2005; and (2) the resulting DNL 65 noise contour, and for areas experiencing a 3 dBA increase in noise within the DNL 60 noise contour.

## B. Background and Findings

WHEREAS, the MAC and the Minnesota Legislature have selected the further development of MSP as the preferred alternative to serve the future air transportation needs of the metropolitan area and the State of Minnesota into the future, as concurred in by the FAA; and

WHEREAS, the airport improvements proposed by the MAC include: (1) a new 8,000-foot north-south runway—Runway 17/35—to be located on the west side of the existing airfield, (2) improved taxiways, (3) fourteen additional terminal gates, (4) redeveloped air cargo facilities, (5) a new remote parking facility, (6) a potential new aircraft maintenance facility on the south side of the airport, and (7) improvements to the existing roadway system on the west side of the airport; and

WHEREAS, the FAA and the MAC have entered into a Memorandum of Understanding to jointly prepare an environmental impact statement to assess these airport improvements, with FAA serving as lead agency for the final federal EIS and MAC as lead agency for the state EIS, and leading to the issuance of a Record of Decision for the proposed airport improvements; and

WHEREAS, the Minnesota Valley National Wildlife Refuge was established in 1976 in the Minnesota River Valley, a portion of which is located to the south of MSP; and

WHEREAS, 16 U.S.C. 668k and Public Law 94-466 Section 4A(3) direct the Secretary of the Interior to construct, administer, and maintain, a wildlife interpretation and education center at an appropriate site within the Refuge to promote environmental education and to provide an opportunity for the study and enjoyment of wildlife in its natural habitat; and

WHEREAS, the Bass Ponds area, located within the Refuge approximately 1.4 miles south of MSP, offers a unique location and facilities that serve environmental education needs within natural and managed characteristics—including several different types of wetlands and wooded areas—and is a part of the Refuge that is popular for use by groups for nature appreciation and education; and

WHEREAS, the Bass Ponds area is located underneath the approach to the proposed new Runway 17/35, which will result in aircraft arrivals and departures flying over the Bass Ponds between 500 feet and 2,000 feet above ground level; and

WHEREAS, with Runway 17/35 operational, a portion of the Bass Ponds environmental education area will experience a 2005 DNL noise level in excess of 70 decibels, which exceeds the threshold level set forth by the FAA's land use compatibility criteria for nature

exhibits (FAA Advisory Circular 150/5020-1: Noise Control and Compatibility Planning for Airports) and would often interfere with normal conversation, thereby impairing the ability of the Bass Ponds to support environmental education activities; and

WHEREAS, the FAA is reexamining its land use compatibility criteria with respect to aircraft overflights of national parks and wildlife refuges, and is applying site-specific analyses based on the circumstances and using other noise impact criteria. For the MVNWR, the FAA considered: (1) the work of the Federal Interagency Committee on Noise (FICON) and research on the impact of noise levels on communication; (2) the MVNWR's development history and historical relationships to the urban environment; and (3) a technical analysis of noise impacts in the Refuge, including existing ambient noise levels.

WHEREAS, the FAA has concluded that the referenced noise impacts will result in a constructive use of: (1) the Bass Ponds area, (2) other publicly-owned Refuge Lands within the future DNL 60 noise contour,[1] as well as to the facilities/improvements within those lands; and (3) the full potential of the Visitor Center (Refuge headquarters building), based on its diminished functional connections to the Bass Ponds area; and

WHEREAS, all of these constructive use impacts are based on proximity effects in accordance with Section 4(f) of the 1966 U.S. Department of Transportation Act [49 U.S.C. 303(c)], and not on a direct taking of land ownership interest by the MAC or the FAA for airport purposes, but rather is to be compensated for based on the diminished fair market value of the Refuge properties affected by noise; and

WHEREAS, a consultation and disclosure process was implemented beginning in March 1996, to conform with the requirements of Section 4(f) and the National Environmental Policy Act (40 CFR Part 1500-1508) and has included meetings, formal correspondence and consultation since that time, and involved interested parties, including Minnesota Valley National Wildlife Refuge staff (representing the USFWS), Minnesota River and Recreation Area staff (representing the National Park Service), the Minnesota River Valley Audubon Club, the Friends of the Minnesota River Valley, and the Minnesota Association of Environmental Education; and

NOW, THEREFORE, the FAA, the MAC, and the USFWS agree that the addition of Runway 17/35 shall be implemented in accordance with the following stipulations regarding the MVNWR.

## C. Stipulations

The parties to this MOA have agreed, and stipulate, that: (1) the basis for this mitigation shall fundamentally be a financial settlement for compensation of the value of land and facilities impacted by aircraft noise as a result of the new runway; (2) the USFWS will retain fee title to the existing land and facilities impacted by aircraft noise, as further elaborated upon here; (3) the mitigation agreements and details of the financial settlement—documents either referenced within or attached to this MOA—formally establish a "taking" area of land and affected facilities, and an avigation easement for conveyance of unrestricted right of overflight will be used to secure the airport's interest; and (4) the value

[1] Areas within the DNL 60 noise contour and within the MVNWR were determined to be impacted by a noise level increase of 3 dBA as a result of the proposed action.

of the taking will be determined in accordance with standard appraisal principles and practices for various parcels shown in Exhibit A, reflecting the fair market value of the airport's less-than- ownership interest in the publicly owned Refuge lands.

The FAA, the MAC, and the USFWS will ensure that the following measures are carried out with respect to mitigation of land areas affected by aircraft noise.

1. As provided for in Sections C.2 through C.7 (below), the MAC shall fund mitigation measures to be implemented by the USFWS. The mitigation measures will be sufficient to enhance or expand outdoor environmental education opportunities within the existing or modified boundaries of the Minnesota Valley National Wildlife Refuge, thereby mitigating the aforementioned constructive use of the Bass Ponds area. Use of federal funds by the MAC for the purposes of planning and implementing this mitigation shall be subject to federal concurrence and based on the value of:

   a) avigation easements of publicly-owned lands within the MSP Alternative's DNL 65 contour and inside the MVNWR's authorized boundary; and

   b) avigation easements of publicly-owned lands that are expected to experience a 3 dBA noise increase and are between the DNL 60 and DNL 65 contours resulting of the proposed action; and

   c) the impact due to diminished value of the Visitor Center given its connectivity with the Bass Ponds area.

2. Within ninety (90) days from the date of signing the Federal Record of Decision (ROD) for the new runway, the MAC shall commence discussions with the USFWS, leading to a timely agreement to provide funds to be used by the USFWS to commence a specific mitigation plan as described in Section C.4, below. When the agreement is finalized, the MAC shall issue a written *Notice to Proceed* with the mitigation planning effort, and for the land appraisal process to determine the value of lands in the Refuge affected by noise in the DNL 60 and 65 contours.

3. If the final engineering design or construction of Runway 17/35 is delayed due to litigation or injunction, or for any other significant reason beyond the MAC's direct control, the MAC may withhold the *Notice to Proceed* or may issue a notice to the USFWS stating that payments up to the amount referenced in Section C.2 will be withheld due to the delay. In such a case, the MAC shall consult with the USFWS to finalize or amend the agreement and issue a *Notice to Proceed* no later than sixty (60) days after the litigation, injunction, or other significant impediment is removed from the process.

4. Within sixty (60) days from the date of the MAC signing a *Notice to Proceed,* the MAC shall ensure that the applicable appraisal processes regarding Refuge lands and facilities are completed.

5. Within six (6) months from the date of the MAC signing a *Notice to Proceed,* as referenced in Sections C.2 and C.3, and after consultation with the FAA, the MAC, and other interested parties, the USFWS shall provide the FAA and the MAC with a specific mitigation plan. The plan's purpose shall be to mitigate for the adverse impacts of the

new runway on the Bass Ponds area. The plan shall include, but shall not be limited to: (a) one or more specific mitigation measures to address the adverse impacts on the Bass Ponds environmental education area; (b) written concurrence and commitments to perform, if required, from other property owners involved in implementing the mitigation; (c) an estimate of the costs and the planned responsibilities to fund and implement the mitigation, including consideration of long-term operation and maintenance; and (d) an implementation plan and schedule, including a plan for the MAC's payment of the remaining total mitigation funding package.

6. The FAA and MAC shall have thirty (30) days to review the plan and to provide the USFWS with written comments. The USFWS shall, no later than ninety (90) days after receipt of any agency comments, submit a final mitigation plan for funding and implementation. The final mitigation plan shall include: any comments received from the FAA, the MAC, and any other consulted agencies; consideration of the value of the constructive use taking determined in the appraisal process compared with the USFWS mitigation funding plan; and a description of how the agency comments are accommodated by the final plan.

7. The FAA, the MAC, and the USFWS agree that the payment plan required by Section C.5.d, above, shall be based on the most current information available about the Runway 17/35 construction schedule and the land appraisal results and that it shall not call for any release of funds for plan implementation prior to the letting of the runway construction contracts.

8. If construction of Runway 17/35 is stopped or delayed after approval of the final mitigation plan due to litigation or injunction, or for any other significant reason beyond the MAC's direct control, the MAC may issue a notice to the USFWS stating that payments up to the amount referenced in Section C.5.d will be withheld due to the delay. In such a case, the MAC shall consult with the USFWS to finalize or amend the agreement and shall resume funding for the mitigation no later than thirty (30) days after construction of Runway 17/35 is resumed.

It is anticipated that the level of mitigation will provide compensation sufficient to provide the Refuge with replacement land of equal habitat quality, and provide for replacement ponds, the restoration of hiking rails and trail markers, informational kiosks, parking, and other site improvements, which are impacted as a result of high levels of aircraft noise. Nothing shall prohibit the MAC from undertaking additional mitigation separate from this MOA which it deems appropriate so long as federal funding sources are not used to accomplish these measures.

## D. Modification or Termination

This Memorandum of Agreement will continue in full force until December 31, 2003. At any time in the six-month period prior to that date, the FAA, the MAC, or the USFWS, may request consultations to review the terms or to consider an extension or modification of this Memorandum of Agreement. No extension or modification will be effective unless all parties to the Memorandum of Agreement agree to it in writing.

Any party to this Memorandum of Agreement may request that it be amended, whereupon the parties shall consult to consider the details of such an amendment in accordance with 49 U.S.C. 303(c) and 40 CFR Part 1500-1508.

In the event of termination, this Agreement may be terminated by any party upon thirty (30) days written notice to the other parties sent by certified mail, or by facsimile transmission and addressed to the respective parties as follows:

Federal Aviation Administration - Airports District Office
Mr. Glen Orcutt
Program Manager
6020 28th Avenue South, Room 102
Minneapolis, MN 55450-2799

Metropolitan Airports Commission
Mr. Nigel Finney
Deputy Executive Director—Planning and Environment
6040 28th Avenue South
Minneapolis, MN 55450-2799

United States Fish and Wildlife Service
Mr. Rick Schultz
Refuge Manager
3815 East 80th Street
Bloomington, MN 55425-1600

Provided, however, that all parties agree that if one party should provide such written notice of termination, all parties will consult during the thirty (30) days prior to termination in order to attempt to reach agreement on amendments or other actions which would avoid termination.

In the event of termination, the FAA and the MAC will also continue to comply, as applicable given project circumstances, with the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 U.S.C. 303) and with regard to the undertakings covered by this Memorandum of Agreement.

## E. Execution

Execution of this Agreement and implementation of its terms is evidence: (1) that the FAA and MAC have afforded the USFWS opportunity to comment on the proposed expansion of MSP; and (2) that the FAA and MAC have taken into account the effects of the proposed expansion on the Bass Ponds Environmental Education Area and other affected portions of the MVNWR.

IN WITNESS WHEREOF, the parties hereto have caused this Memorandum of Agreement to be executed as of the date therein written.

FEDERAL AVIATION ADMINISTRATION

BY: _____ DATE: _____

Mr. Franklin D. Benson
Manager—Airports District Office

METROPOLITAN AIRPORTS COMMISSION

BY: _____ DATE: _____

Mr. Jeffrey W. Hamiel
Executive Director

UNITED STATES FISH AND WILDLIFE SERVICE

BY: _____ DATE: _____

Mr. William F. Hartwig
Regional Director

# Consensus Approach to Surface Transportation Project Development

# Minneapolis-St. Paul International Airport

Prepared by:
**FEDERAL AVIATION ADMINISTRATION**
Airports District Office
Minneapolis, Minnesota

**METROPOLITAN AIRPORTS COMMISSION**
Minneapolis, Minnesota
MAY 13, 1997

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# Introduction

The planned expansion of the Minneapolis-St. Paul International Airport (MSP) would require improvements to roadways currently serving the airport. This document presents the findings and recommendations of the Surface Transportation Committee, which has spent more than one year evaluating airport-related surface transportation issues.

The Federal Aviation Administration (FAA) assembled the committee in August 1995 to consider surface transportation issues arising from the Twin Cities' *Dual Track Airport Planning Process*. The committee included representatives of the following public agencies:

- FAA
- Federal Highway Administration (FHWA)
- Minnesota Department of Transportation (Mn/DOT)
- Wisconsin Department of Transportation (WisDOT)
- Minnesota Environmental Quality Board (EQB)
- Metropolitan Airports Commission (MAC)
- Metropolitan Council (Met Council)

These agencies, with the exception of the EQB and WisDOT, have signed this document indicating their concurrence with the surface transportation project development strategy and other information described in this document (the endorsements appear on the last page).

The following sections provide a record of the issues considered by the committee and the consensus reached among the participating agencies.

# Background

## Dual Track Airport Planning Process

The Minnesota Legislature established the Dual Track Airport Planning Process in 1989 to examine alternatives to meet the long-term air transportation needs of the Minneapolis-St. Paul area and the State of Minnesota. After initial evaluation of several alternatives, three alternatives were evaluated in detail in the Draft Environmental Impact Statement (DEIS):

- **The MSP Expansion Alternative**—A $2.8 billion expansion of the existing MSP site, including a new north-south runway, relocation of most air cargo facilities, and a shift to a new passenger terminal on the west side of the airport.
- **The New Airport Alternative**—Development of a $4.7 billion replacement airport at a site in Dakota County southeast of the Twin Cities urbanized area.
- **The No-Action Alternative**—Continued operation of MSP, with no improvements planned to provide significant additional airport capacity.

Following the DEIS comment period, the MAC and Met Council fulfilled their obligations under the original legislation and recommended selection of the MSP Expansion Alternative in the *Report to the Legislature* (March 1996). On April 2, 1996, the Legislature directed the MAC to implement the MSP 2010 Long Term Comprehensive Plan (LTCP).

The April 1996 legislation prohibits development of the new west-side passenger terminal (a major component of the 2020 LTCP) without further legislative action. The specific on-airport actions included in the MSP 2010 and 2020 LTCPs are as follows:

2010 LTCP

- Construct a new 8,000-foot north-south runway on the west side of the existing airport
- Add up to 15 gates to the existing Lindbergh Terminal
- Relocate and redevelop air cargo facilities and expand aircraft maintenance facilities

2020 LTCP

- Construct a new passenger terminal on the west side of the airport (requires further legislative approval) and reconfigure the parking and gate areas at the existing east terminal area. Primary access to the new terminal would be from the Trunk Highway (TH) 62/TH 77 interchange. The existing east access to the airport would remain, although on-airport roadways would be modified to provide access to support facilities.
- Expand air cargo, maintenance, and other airport support facilities

The Final Environmental Impact Statement (FEIS) is scheduled for completion in 1997. It will evaluate issues related to implementing the MSP Expansion Alternative in further detail, including surface transportation. Based on specific language in the April 1996 legislation, the FEIS will not evaluate the New Airport Alternative.

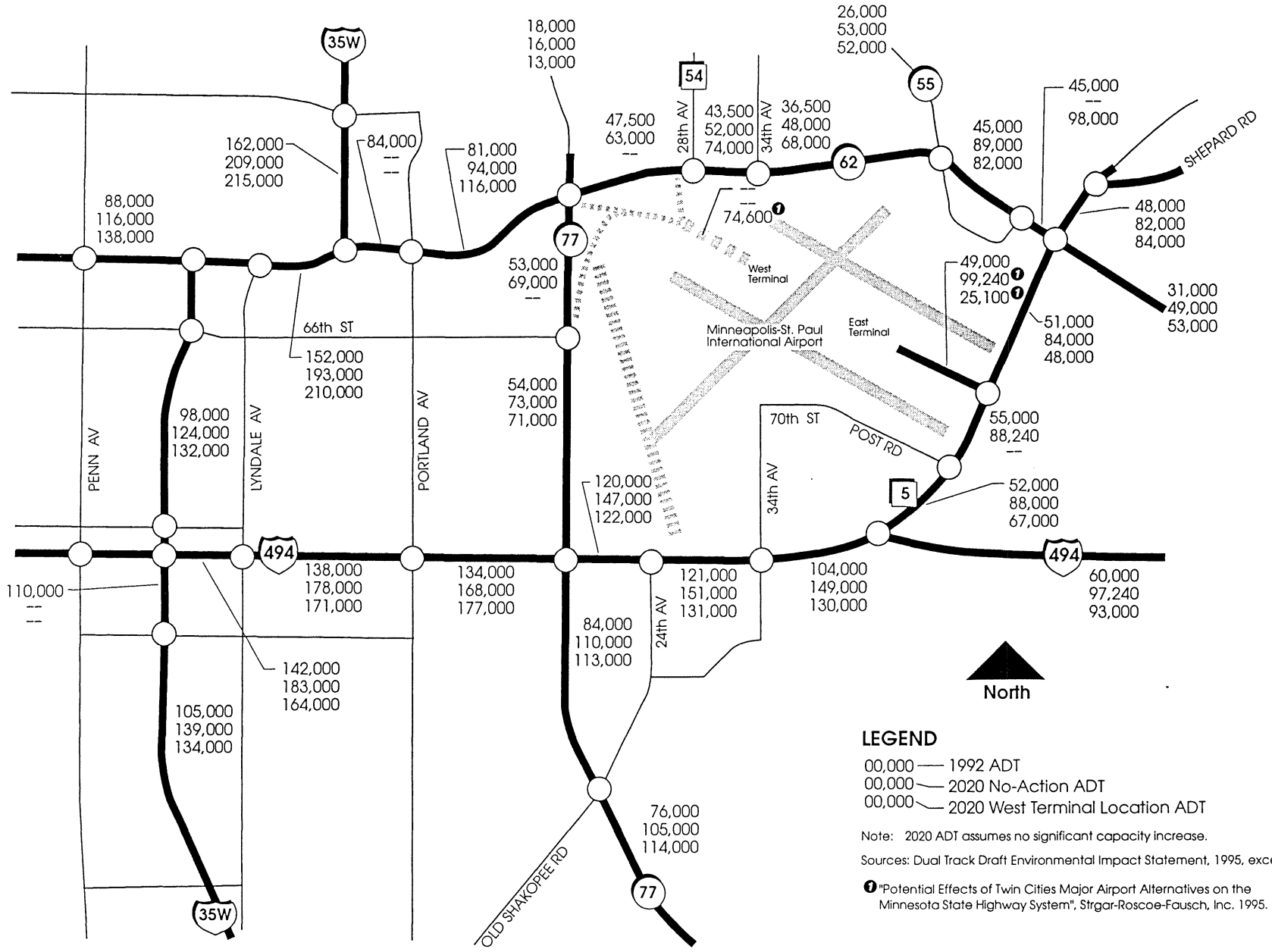
## Travel Forecasts for Roadways Surrounding MSP

The information considered during preparation of the DEIS included the traffic volume forecasts presented in Figure 1. The DEIS looked at how this forecasted traffic could be accommodated by the existing roadways surrounding MSP, with emphasis on how a reasonable level of service could be maintained. The DEIS also identified recommended projects based on the need for additional interchange capacity, improved traffic operations, or improvements to freeway geometrics.

## Surface Transportation Project Development (Consensus Approach)

Members of the Surface Transportation Committee have reached consensus on a strategy to implement the surface transportation improvements needed to support the 2010 and 2020 LTCPs. This strategy includes:

- **Project Definition**—A description of the proposed roadway projects, including logical termini and estimated cost.
- **Project Purpose and Need**—The projects' relationship to the MSP 2010 or 2020 LTCPs. The statement of purpose and need includes whether the project is strongly related to airport-oriented trips or whether it would be needed even under the airport's No Action Alternative.




## LEGEND

00,000 — 1992 ADT
00,000 — 2020 No-Action ADT
00,000 — 2020 West Terminal Location ADT

Note: 2020 ADT assumes no significant capacity increase.

Sources: Dual Track Draft Environmental Impact Statement, 1995, except where indicated.

❶ "Potential Effects of Twin Cities Major Airport Alternatives on the Minnesota State Highway System", Strgar-Roscoe-Fausch, Inc. 1995.

**Figure 1**
**Minneapolis-St. Paul International Airport**
**Historic and Future Traffic Volumes**

- **Project Implementation Issues**—Factors such as potential property acquisition, relocations or other environmental constraints. The implementation aspect also examines administrative issues for implementing selected projects or conducting further studies, such as a Major Investment Study (MIS) or further environmental documents.

- **Project Programming Issues**—Certain highway projects need to be included in a conforming regional *Transportation Policy Plan* (TPP) and/or a *Transportation Improvement Plan* (TIP) prior to funding and construction.

This document records the committee's agreement on the project development approach.

# Surface Transportation Projects Considered

The principal function of the Surface Transportation Committee has been to evaluate a wide variety of potential roadway improvement projects associated with the Dual Track Process. Since the April 1996 legislative action, the committee's focus has been on the MSP Expansion Alternative.

This section describes the roadway projects considered essential to complete the MSP 2010 and 2020 LTCPs (Figure 2). This section also describes other projects evaluated by the committee, but not identified as essential to implement the LTCPs.

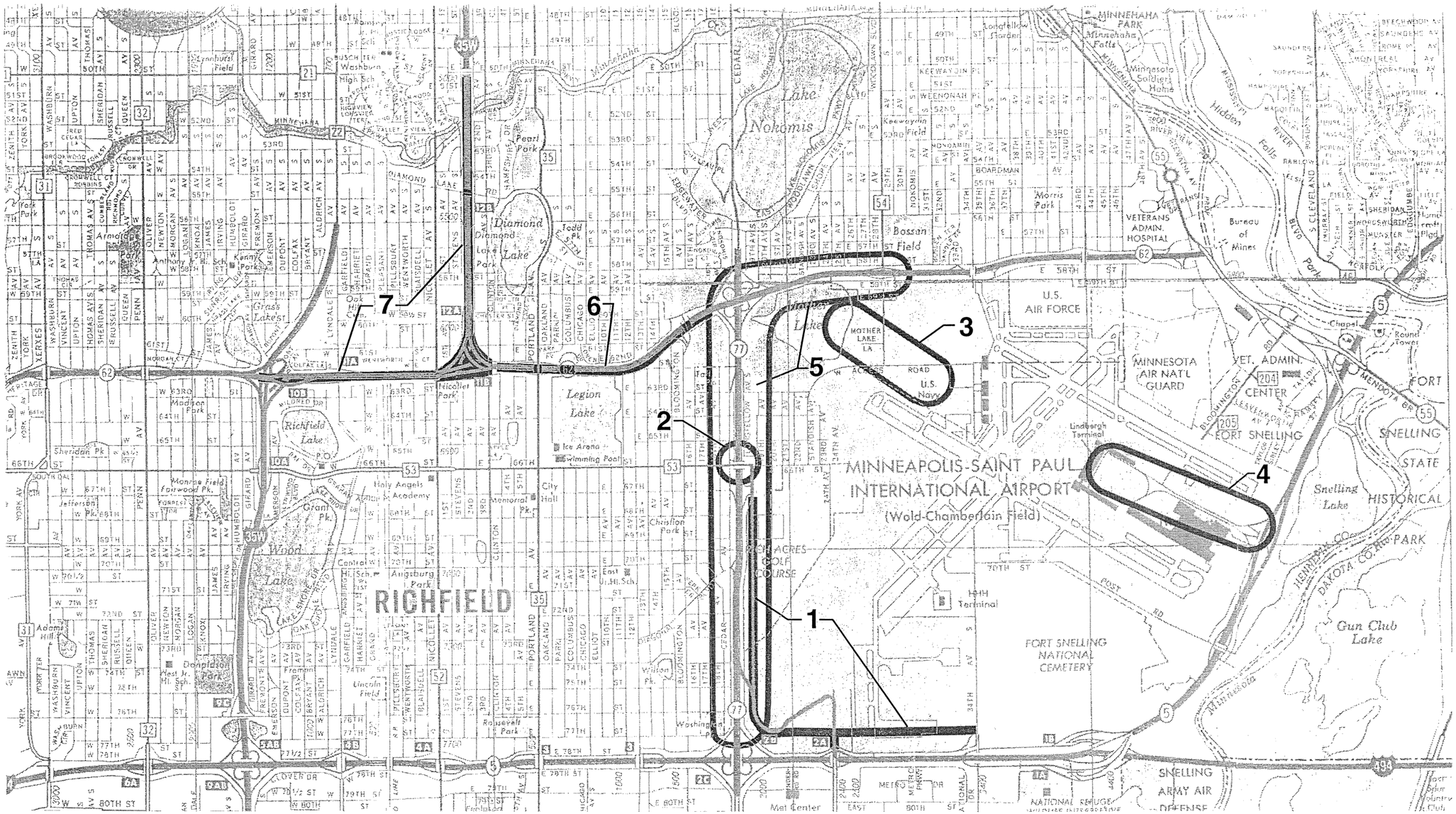
## Projects to Complete the 2010 LTCP

Table 1 lists the essential roadway improvement projects to implement the 2010 LTCP. The two projects described in Table 1 will accommodate the new north-south runway and serve the relocated air cargo area, which would be sited along the western edge of the airport.

**Table 1. Surface Transportation Projects to Complete the 2010 LTCP (East Terminal)**

| Project (see Figure 2) | Description | 1995 Cost Est. (source) | Project Purpose & Need |
|---|---|---|---|
| 1. Airport frontage road between 66th St. and 24th Ave. and extending east to 34th Ave. | Initially reconstruct and realign segments to allow construction of N-S runway, using existing pavement wherever possible. Ultimate build-out is four lanes on new alignment. | $3.8 million for ultimate build-out (MAC)[1] | Accommodates relocated air cargo facilities and aircraft maintenance facility employee access and parking. The realignment is necessary to allow for the north-south runway construction. The forecasted percentage of airport-related traffic using this roadway in 2020 is estimated to be 90 percent. |
| 2. TH 77/66th Street interchange. | Interchange reconstruction to provide connection to relocated frontage road and for additional capacity. | $6.7 million (MAC) | An improved TH 77/66th Street interchange would be needed to serve the air cargo area and connect directly to the 4-lane frontage road (Project No. 1). The forecasted percentage of airport-related traffic using the interchange in 2020 is over 50 percent. |

[1] Includes a 7 percent design contingency, an 8 percent program management/inspection contingency, and a 10 percent cost contingency.




North

0 1/2 1

Approximate Scale in Miles

| Projects to Complete the Year 2010 Comprehensive Plan (East Terminal) | |
|---|---|
| **No.** | **Description (lead agency)** |
| 1 | Reconstruct and realign segments of airport frontage road. Ultimately widen and realign the entire frontage road (MAC) |
| 2 | Reconstruct TH 77/66th Street Interchange in relation to new air cargo area (MAC/Mn/DOT) |

| Projects to Complete the Year 2020 Comprehensive Plan (West Terminal) | |
|---|---|
| **No.** | **Description (lead agency)** |
| 3 | Develop on-airport circulation roadways for west terminal (MAC) |
| 4 | Modify east airport access roads to serve new functions (MAC) |
| 5 | Widen and reconstruct TH 62 and TH 77 to provide terminal access, including reconstruction of three interchanges at 77/62, 77/66th Street, and 62/28th Ave. Also widen TH 77 from 4 to 6 lanes between I-494 and 66th Street (Mn/DOT) |
| 6 | Widen TH 62 from 4 to 6 lanes between I-35W and TH 77 (Mn/DOT) |
| 7 | Reconstruct I-35W/TH 62 interchange, widen 35W-62 common section, and widen I-35W north to 46th Street (Mn/DOT) |

**Figure 2**
**Minneapolis-St. Paul International Airport**
**Potential Surface Transportation Improvements Related to the MSP Comprehensive Plans**

# APPENDIX G MSP Airspace Noise Screening Analysis

This technical appendix documents the screening analysis conducted to identify potential noise impacts associated with anticipated changes in air traffic control procedures at Minneapolis-Saint Paul International Airport (MSP). The changes are a result of the proposed construction and operation of a new north-south runway and proposed airspace capacity enhancement options. These changes will result in new arrival and departure tracks over residential areas currently not exposed to a significant number of overflights. The screening analysis supplements the noise analysis included in the body of the EIS, and covers only operations above 3,000 feet AGL, per FAA requirements. Impacts associated with operations below this altitude are discussed in the Noise Impacts section of the FEIS.

FAA *Noise Screening Procedure for Certain Air Traffic Actions Above 3,000 AGL* (N 7210.360) was used to identify potential noise impacts related to large jet aircraft operations between 3,000 feet and 18,000 feet AGL. The screening analysis consists of a four-step process to determine if proposed air traffic changes will result in a 5-decibel (dB) or more increase in the overall day/night average sound level (DNL) over any residential area. If the criteria are exceeded in any step, the subsequent step is required. If the screening criteria are exceeded in the fourth and final step, additional NEPA documentation may be required. A copy of the screening criteria **Tables 1-4** is attached. The screening analysis was performed using both the 2005 base case and MAC High forecasts described in Section II.B.2.2 of the FEIS.

FAA recently completed the *Airport Capacity Enhancement Terminal Airspace Study for MSP* (August 1996). This plan identified and evaluated alternatives for restructuring the airspace around MSP to accommodate future levels of traffic with a new north-south runway added to the system. The study identified three alternatives, two of which involve modifications to the existing structure and one which is essentially a No Build, to meet future needs. No single alternative was recommended in the study. The greatest potential impact would occur during southeast flow conditions, when the new runway was used for departures (see discussion in Step 1). **Figures G-1** though **G-4** show both existing and alternative routes for southeast flow conditions.

Meetings were held with MSP ATC staff to identify and review specific assumptions regarding flight track locations and usage under the three alternatives. A review of all three alternatives found that they share similar flight track geometry close in to the airport, and that only minor differences are evident at the points where aircraft altitudes pass 3,000 feet AGL. It was determined that in proximity to the airport, most of the flight tracks for the three alternatives essentially fall within the "envelope" of tracks utilized in the original DEIS noise analysis; therefore, it was considered appropriate to use the DEIS tracks to analyze areas in proximity to the airport. If no impact was identified close-in to the airport, no analysis of the alternative tracks would be required farther out, since there would be fewer aircraft on these tracks as aircraft disperse, and the FAA criteria is less demanding farther out. If an impact was identified close-in to the airport, additional analysis of the alternative tracks would be performed in areas farther from the airport. The following analysis documents the four-step screening process.

**Step 1. Does the proposed action introduce noise exposure from large jet airplanes (greater than 75,000 lbs.) which may require further review of the noise impacts as defined in Table 1?**

For screening purposes, Screening Procedure **Table 1** defines the introduction of noise exposure from large jet airplanes as at least two departing aircraft between 3,000 feet and 4,000 feet above ground level (AGL) or 65 large jet arrivals between 3,000 feet and 4,000 AGL on a typical day. More

departures and arrivals would be required to exceed the screening criteria at higher altitudes. The year 2005 base case and high forecasts were used to determine the number of departures and arrivals associated with the operation of the new runway at MSP. As shown in **Figure G-5**, on an average day there are approximately 407 arrivals and 407 departures of jet aircraft over 75,000 pounds in 2005 under the base case forecast. Under the high forecast, there are 460 arrivals and 460 departures a day (**Figure G-6**).

On an average annual basis, which was the basis for the DNL analysis in the DEIS, about 17.0 percent of arrivals are forecast to use Runway 35 and 36.5 percent of departures are forecast to use Runway 17. This means that under the base case forecast there would be approximately 69.1 daily arrivals and 148.4 daily departures to and from the south on the new runway. Under the high forecast, there would be 78.2 arrivals and 167.8 departures on the new runway.

According to the screening methodology, Stage 3 aircraft operations are equivalent to 5 percent of Stage 2 operations. Since by the year 2005 all aircraft will be Stage 3, the total number of equivalent daily landings would be 3.5 and 3.9 under the base case and high forecasts, respectively. There would be 7.4 equivalent departures under the base case forecast and 8.4 equivalent departures under the high forecast.

As shown in **Table 1**, the minimum number of arrivals that would trigger the screening analysis is 65. Since there are less than four daily equivalent landings on Runway 35, no additional analysis of arriving traffic is required. The primary difference among the three airspace alternatives is that Alternatives 2 and 3 each have an additional arrival flight track into MSP airspace, versus the base case (Alternative 1). The number of arrivals on the new track has not been determined; however, even if all the arrivals (20.3 stage 3 equivalent arrivals) were placed on the new track, the trigger number for arrivals is not exceeded. This is because all of the arriving jets on those tracks would be above 7,000 feet. Therefore, no further analysis of the arrival impacts of the three airspace alternatives is required.

The minimum number of departures that would trigger the screening analysis is two. Since there are approximately 7.4 daily equivalent departures from Runway 17 in the base case and 8.4 departures in the high scenario case, additional screening analysis was required.

Aircraft altitudes along each track were estimated using INM departure profiles. Climb rates for six representative aircraft types and three different stage lengths were incorporated. Under the base case, approximately 2.8 aircraft (38 percent) would reach 3,000 AGL about 30,500 feet (5.8 statute miles) from the start of takeoff roll. Nearly two-thirds (4.9 aircraft) cross 3,000 feet at 32,000 feet (6.1 statute miles) from start of takeoff roll. Almost all the aircraft (7.4 departures) would be at 3,000 feet or higher by 39,000 feet (7.4 miles) from start of takeoff roll.

**Figures G-5** and **G-6** show the number of average daily departures using each of the Runway 17 departure tracks for the base year and high forecast, respectively. None of the tracks has two daily equivalent flights. However, since some of the tracks can be considered to be closely spaced, it was considered prudent to combine operations on some tracks to make this a conservative analysis. For this reason, Tracks 2-5 were combined to create a "worst case" alternative for screening purposes. This alternative would result in 4.5 daily departures in the base case and 5.1 daily departures in the high scenario on closely-spaced tracks over some portions of Burnsville, exceeding the threshold of two. For this reason, the screening analysis continued to Step 2.

**Step 2. Does this action introduce large jet airplanes over residential areas which are not routinely exposed to jet aircraft noise?**

For aircraft operations between 3,000 and 6,000 feet AGL, Screening Procedure **Table 2** states that new tracks within one mile of existing tracks do not constitute new overflights of residential areas. Several proposed tracks are beyond this one-mile no change lateral minima, thereby constituting new overflights, while other proposed tracks cross or are crossed by existing tracks. For new tracks not proximate to existing tracks, the analysis proceeded to Step 4; however, for tracks within one mile of existing tracks, the analysis proceeded to Step 3.

**Step 3. In the case of a proposed action which only changes the aircraft altitudes and/or number of daily operations of large jet airplanes on an existing route, will these changes result in a 5-decibel increase in aircraft noise exposure?**

Screening Procedure **Table 3** under Step 3 considers changes in the number of daily operations and changes in altitude to determine if a 5-dB increase could result from the implementation of the new tracks. Aircraft altitudes and the number of daily departures were estimated within the one-mile no-change lateral minima. Track 1 crosses departure tracks from Runways 11L-29R and 11R-29L; the remaining tracks are crossed by departures off of Runway 29L. In the former case, aircraft on the existing and proposed tracks would be at similar altitudes. Also, there would be essentially little change in the number of overflights where the tracks cross. This is because although there would be departures from the new runway, there would be fewer departures off the parallel runways.

The result of Step 3 is that the new tracks could possibly create a 5-dB change in noise levels. To confirm this requires continuing the screening analysis to Step 4.

**Step 4. Taking into account the type of residential community, will the noise from large jet airplanes result in a 5-decibel increase in the overall noise exposure?**

Screening Procedure **Table 4** is a matrix relating the number of overflights at various altitudes to existing noise levels for various residential areas. Using U.S. Census data and field surveys, communities underlying the proposed flight tracks were classified as quiet suburban, normal suburban, urban and noisy urban. When aircraft are at 3,000 feet or higher on Tracks 2-5, the worst case scenario, they are overflying areas classified as normal suburban. According to FAA criteria, a minimum of seven equivalent flights on a track would be required to trigger further analysis, based on this land use classification. Since under the base case forecast and the high forecast there are 4.5 and 5.1 flights on the four combined "worst case" track, respectively, the trigger is not exceeded.

To insure that the three alternatives included in the FAA Airspace Capacity Enhancement Plan did not result in any greater impact than the original flight tracks included in the FEIS, additional screening analysis was undertaken.

**Figures G-2** through **G-4** show the average number of daily departures from the new runway for the three alternative airspace structures (base case forecast values are shown above the track; high forecast values are shown below the track). Volumes along existing tracks are not shown because the earlier work indicated that there is essentially no increase in flights along those tracks. Also, volumes along tracks are not shown for northwest flow because under these conditions, the new runway would be used as an arrival runway, and Step 1 in the screening analysis showed no impact from arrivals to Runway 35.

As shown in **Figures G-2** through **G-4,** none of the alternative departure tracks have volumes of traffic higher than those used for the screening analysis based on the DEIS tracks. Since departure tracks disperse as they move away from the airport, and greater numbers of flights are required at greater distances from the airport to create a significant impact according to the FAA criteria, no impact is anticipated along the alternative flight tracks identified by the FAA's Airspace Capacity Enhancement Plan. As such, no additional NEPA documentation is required for airspace changes associated with the new runway.

## Table 1

The screening procedure applies to new or modified arrival/departure procedures and new or modified airways which meet the following conditions:

- involves airports with more than 1,500 large jet airplane (greater than 75,000 lbs.) operations per year, either current or projected whichever is most appropriate; and
- represents a permanent change or planned test; and
- concerns changes to departure routes or tracks, used by large jet airplanes, between 3,000 and 18,000 feet AGL; and/or changes to arrival routes or tracks, used by large jet airplanes, between 3,000 and 7,000 feet AGL

**STEP 1. Does the proposed action introduce noise exposure from large jet airplanes (> 75,000 lbs.) which may require further review of the noise impacts?**

☐ If the estimated number of daily operations on the affected route or track are greater than the minimum, the answer is YES and proceed to STEP 2 to answer whether the proposed action introduces jet aircraft noise for the first time.

☐ If the estimated number of daily operations on the affected route or track are less than the minimum, the answer is NO and further noise review is NOT necessary. Refer to FAA Order 1050.1D for guidance on the extraordinary factors to consider.

| Aircraft Altitude (ft., AGL) | Minimum Number of Daily Operations [1] by Large Jet Airplanes (>75,000 lbs) on the Affected Route | |
|---|---|---|
| | Departures | Arrivals |
| 3000 | 2 | 65 |
| 4000 | 4 | 116 |
| 5000 | 6 | 198 |
| 6000 | 10 | 305 |
| 7000 | 14 | 455 |
| 8000 | 20 | |
| 9000 | 28 | |
| 10000 | 34 | |
| 11000 | 45 | |
| 12000 | 65 | |
| 13000 | 72 | |
| 14000 | 89 | |
| 15000 | 109 | |
| 16000 | 130 | |
| 17000 | 159 | |
| 18000 | 191 | |

[1] If you know the potential fleet mix which will use the proposed route, count only the Stage 2 aircraft operations for use in the above table. Stage 2 aircraft include the following:

| | |
|---|---|
| B707 with Quiet Nacelles | DC8 with Quiet Nacelles |
| All B727's | DC9-10 thru 50 |
| B737-100, 200 | F28 |
| BAC 1-11 | |

If there are no Stage 2 operations, count 5% of the Stage 3 operations. Stage 3 aircraft include B747, DC10, DC8-70, Airbus, B767, B757, MD80 and B737-300.

**Table 2**

**STEP 2. Does this action introduce large jet airplaness over residential areas which are not routinely exposed to jet aircraft noise?**

☐ If the location of any existing route or track is at least 3 n.mi. from the new route or track, the answer is YES and proceed to STEP 4 to determine the need for further action.
**Otherwise....**

☐ If the new or moved route or track lies within the No Change lateral minimum of the existing route or track closest to the community, the answer is NO and proceed to STEP 3 to determine whether the action will cause a 5 decibel increase in existing aircraft noise exposure.

☐ If the new or moved route or track lies outside the No Change lateral minimum of the existing route or track closest to the community, the answer is YES and proceed to STEP 4 to determine whether the action will cause a 5 decibel increase in the overall noise exposure.

| Aircraft Altitude (ft., AGL) | No Change Lateral Minima (n. mi.) |
|---|---|
| 3000 - 6000 | 1 |
| 6000 - 12000 | 2 |
| above 12000 | 3 |

## Table 3

**STEP 3. In the case of a proposed action which only changes the aircraft altitudes and/or number of daily operations of large jet airplanes on an existing route, will these changes result in a 5 decibel increase in aircraft noise exposure?**

☐ If the change in aircraft noise exposure is equal to or greater than 5 decibels, the answer is **YES** and proceed to **STEP 4** to determine whether the change in aircraft noise exposure is also a 5 decibel increase in the overall noise exposure.

☐ If the change in noise exposure is less than 5 decibels, the answer is **NO** and further noise review is **NOT** necessary. Refer to FAA Order 1050.1D for guidance on the extraordinary factors to consider.

**Change in Aircraft Noise Exposure (decibels, DNL)**

| Change in Altitude for Large Jet Airplanes (%) | Change in Number of Daily Operations of Large Jet Airplanes (%) | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | -90 | -70 | -50 | -30 | -10 | 0 | 10 | 30 | 50 | 70 | 90 | 100 | 110 | 130 | 150 | 170 | 190 | 210 | 230 | 250 | 260 |
| 10 | -11 | -6 | -4 | -3 | -1 | -1 | -1 | 0 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 5 |
| 5 | -11 | -6 | -4 | -2 | -1 | -1 | 0 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 4 | 4 | 5 | 5 | 5 |
| 0 | -10 | -5 | -3 | -2 | 0 | 0 | 0 | 1 | 2 | 2 | 3 | 3 | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 6 |
| -5 | -9 | -5 | -3 | -1 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 6 | 6 | 6 | 6 |
| -10 | -9 | -4 | -2 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 6 | 6 | 6 | 7 | 7 |
| -15 | -8 | -3 | -1 | 0 | 1 | 2 | 2 | 3 | 4 | 4 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 |
| -20 | -8 | -3 | -1 | 1 | 2 | 2 | 3 | 4 | 4 | 5 | 5 | 5 | 6 | 6 | 6 | 7 | 7 | 7 | 8 | 8 | 8 |
| -25 | -7 | -2 | 0 | 2 | 3 | 3 | 4 | 4 | 5 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 8 | 8 | 8 | 8 | 8 |
| -30 | -6 | -1 | 1 | 2 | 3 | 4 | 4 | 5 | 6 | 6 | 7 | 7 | 7 | 8 | 8 | 8 | 8 | 9 | 9 | 9 | 9 |
| -35 | -5 | -1 | 2 | 3 | 4 | 5 | 5 | 6 | 6 | 7 | 7 | 8 | 8 | 8 | 9 | 9 | 9 | 10 | 10 | 10 | 10 |
| -40 | -4 | 0 | 3 | 4 | 5 | 6 | 6 | 7 | 7 | 8 | 8 | 9 | 9 | 9 | 10 | 10 | 10 | 10 | 11 | 11 | 11 |
| -45 | -4 | 1 | 3 | 5 | 6 | 6 | 7 | 8 | 8 | 9 | 9 | 9 | 10 | 10 | 10 | 11 | 11 | 11 | 12 | 12 | 12 |
| -50 | -3 | 2 | 4 | 6 | 7 | 8 | 8 | 9 | 9 | 10 | 10 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 13 | 13 | 13 |
| -55 | -1 | 3 | 6 | 7 | 8 | 9 | 9 | 10 | 10 | 11 | 11 | 12 | 12 | 12 | 13 | 13 | 13 | 14 | 14 | 14 | 14 |
| -60 | 0 | 5 | 7 | 8 | 9 | 10 | 10 | 11 | 12 | 12 | 13 | 13 | 13 | 14 | 14 | 14 | 15 | 15 | 15 | 15 | 15 |
| -65 | 1 | 6 | 8 | 10 | 11 | 11 | 12 | 12 | 13 | 14 | 14 | 14 | 15 | 15 | 15 | 16 | 16 | 16 | 16 | 17 | 17 |
| -70 | 3 | 8 | 10 | 11 | 13 | 13 | 13 | 14 | 15 | 15 | 16 | 16 | 16 | 17 | 17 | 17 | 18 | 18 | 18 | 18 | 19 |
| -75 | 5 | 10 | 12 | 13 | 15 | 15 | 15 | 16 | 17 | 17 | 18 | 18 | 18 | 19 | 19 | 19 | 20 | 20 | 20 | 20 | 21 |
| -80 | 7 | 12 | 14 | 16 | 17 | 17 | 18 | 19 | 19 | 20 | 20 | 20 | 21 | 21 | 21 | 22 | 22 | 22 | 23 | 23 | 23 |

NO

YES

## Table 4

**STEP 4. Taking into account the type of residential community, will the noise from large jet airplanes result in a 5 decibel increase in the overall noise exposure?**

- ☐ If the estimated number of daily operations on the affected route or track are greater than the minimum; the answer is YES , consult with appropriate policy offices and the Regional Assistant Chief Counsel, and refer to Order 1050.1D for guidance on additional procedures to use in considering the environmental consequences.
- ☐ If the estimated number of daily operations on the affected route or track are less than the minimum, the answer is NO and further noise review is NOT necessary. Refer to FAA Order 1050.1D for guidance on the extraordinary factors to consider.

Minimum Number of Daily Operations by Large Jet Airplanes (>75,000 lbs) on the Affected Route[1]

| Aircraft Altitude (ft., AGL) | Departures — Residential Community (See table below)[2] | | | | Arrivals — Residential Community (See table below)[2] | | | |
|---|---|---|---|---|---|---|---|---|
| | Quiet Suburb | Normal Suburb | Urban | Noisy Urban | Quiet Suburb | Normal Suburb | Urban | Noisy Urban |
| 3000 | 2 | 7 | 22 | 68 | 65 | 205 | | |
| 4000 | 4 | 12 | 38 | 119 | 116 | 368 | | |
| 5000 | 6 | 20 | 63 | 198 | 198 | | | |
| 6000 | 10 | 30 | 95 | 300 | 305 | | >500 | |
| 7000 | 14 | 44 | 139 | 438 | 455 | | | |
| 8000 | 20 | 62 | 195 | | | | | |
| 9000 | 26 | 83 | 262 | | | | | |
| 10000 | 34 | 109 | 343 | | | | | |
| 11000 | 45 | 142 | 450 | | | | | |
| 12000 | 65 | 205 | | | | | | |
| 13000 | 72 | 229 | | >500 | | | | |
| 14000 | 89 | 282 | | | | | | |
| 15000 | 109 | 343 | | | | | | |
| 16000 | 130 | 412 | | | | | | |
| 17000 | 159 | | | | | | | |
| 18000 | 191 | | | | | | | |

| Residential Community | Description |
|---|---|
| Quiet Suburb | Single family detached dwellings on large lots |
| Normal Suburb | Single family detached dwellings on 1/4 to 1/3 acre lots |
| Urban | Multi-family dwellings (apartment buildings, row housing, etc.) |
| Noisy Urban | Multi-family dwellings (high rise apartments) near busy roads or industrial areas |

(1) If you know the potential fleet mix which will use the proposed route, count only the Stage 2 aircraft operations for use in the above table. Stage 2 aircraft include the following:

| | | | |
|---|---|---|---|
| B707 with Quiet Nacelles | B737-100, 200 | DC8 with Quiet Nacelles | F28 |
| All B727's | BAC 1-11 | DC9-10 thru 50 | |

If there are no Stage 2 operations, count 5% of the Stage 3 operations. Stage 3 aircraft include B747, DC10, DC8-70, Airbus, B767, B757, MD80 and B737-300.

(2) If the composition of an area is not known, classify the area as a Quiet Suburb. If the Quiet Suburb is assumed without local information and Table 4 dictates that you must proceed to further review, repeat this step assuming the Normal Suburb, Urban and then Noisy Urban classifications. If assuming one of these other classifications does not trigger the need for further review; then you will know that more specific information about the composition of the affected community is critical to the decision on whether to proceed.

# MSP INTERNATIONAL AIRPORT

## Airport Capacity Enhancement
## Terminal Airspace Study
## Southeast Flow Existing

**Legend**

DEPARTURES

ARRIVALS

0 14 28

Scale in Miles

45 NM

OLLEE

GOPHER

MUSKI

TWINZ

WOLVS

NICKL

FUTON

SEANE

SKETR

FARMINGTON

RWF

BANNI

MEINZ

J25 177

J21 111

J36 175

J68 70

J34

J25 122

J36 110

J90

BRD

FAR/GFK

GRB

ABR

FSD

OMA

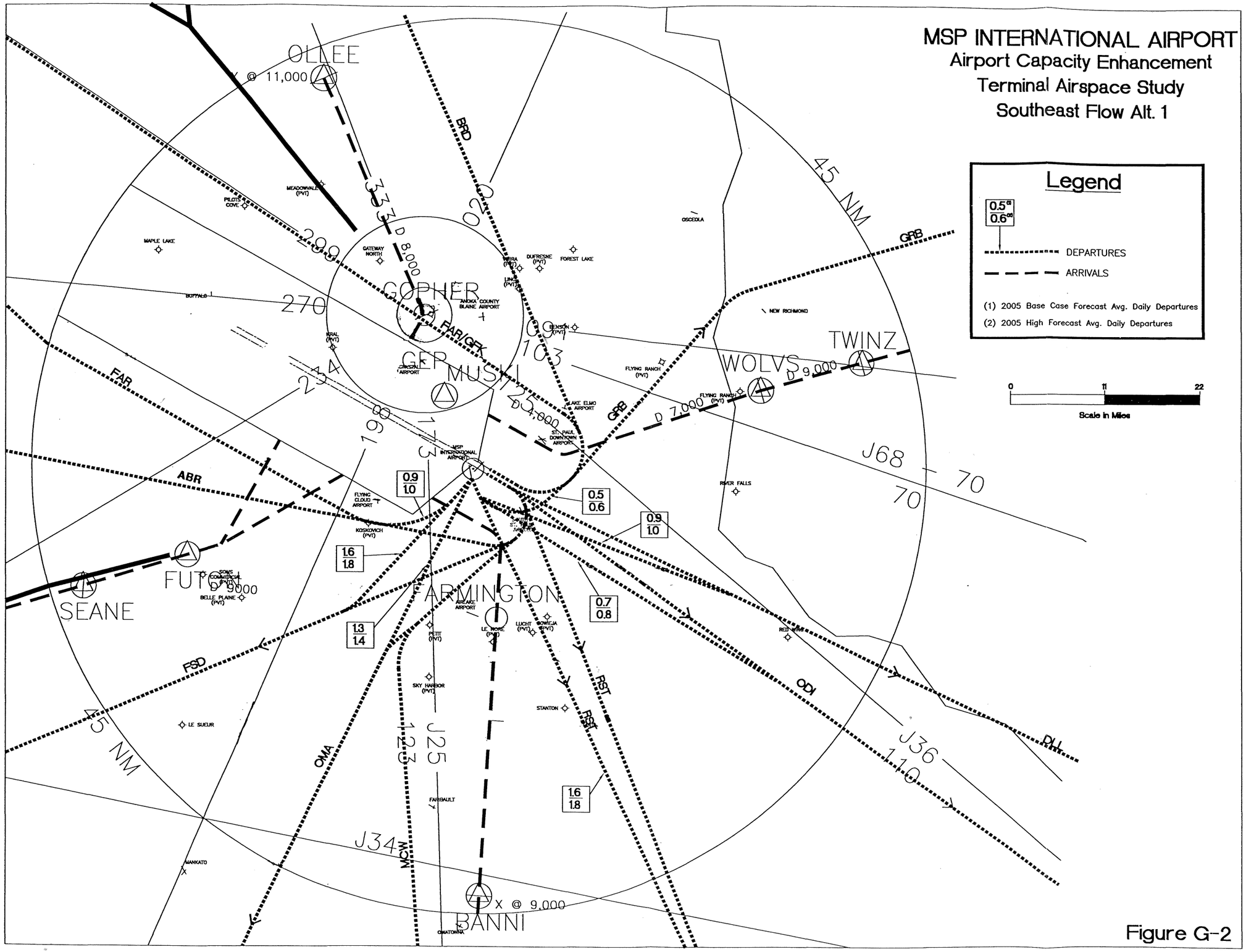
MCW

PLL

RST

Figure G-1

# MSP INTERNATIONAL AIRPORT
## Airport Capacity Enhancement
## Terminal Airspace Study
## Southeast Flow Alt. 1




## Legend

0.5 / 0.6 — DEPARTURES

ARRIVALS

(1) 2005 Base Case Forecast Avg. Daily Departures

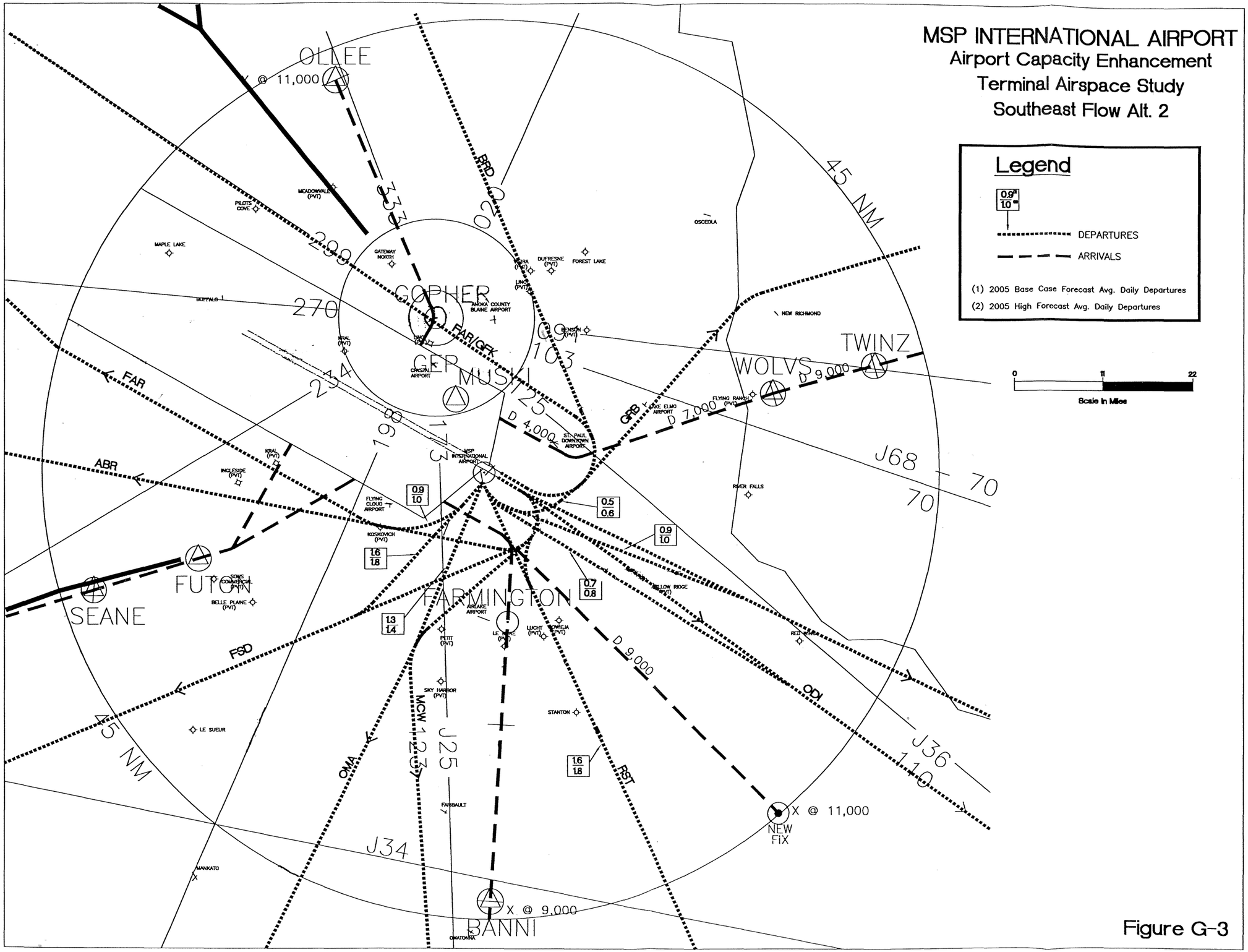
(2) 2005 High Forecast Avg. Daily Departures

0 — 11 — 22

Scale in Miles

Figure G-2

# MSP INTERNATIONAL AIRPORT
## Airport Capacity Enhancement
## Terminal Airspace Study
## Southeast Flow Alt. 2




### Legend

0.9/1.0

DEPARTURES

ARRIVALS

(1) 2005 Base Case Forecast Avg. Daily Departures

(2) 2005 High Forecast Avg. Daily Departures

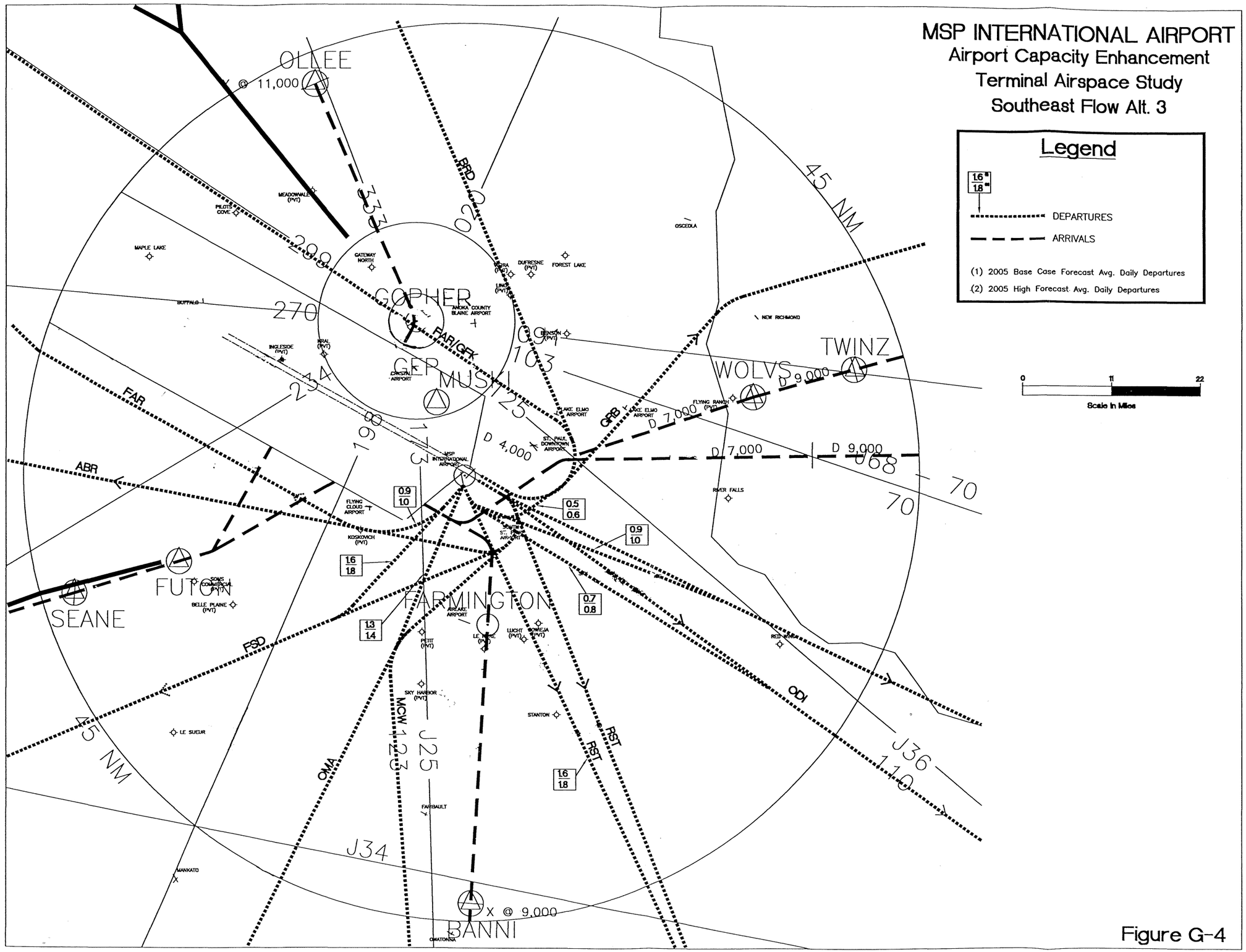
0 11 22

Scale in Miles

Figure G-3

# MSP INTERNATIONAL AIRPORT

## Airport Capacity Enhancement
## Terminal Airspace Study
## Southeast Flow Alt. 3




### Legend

1.6/1.8

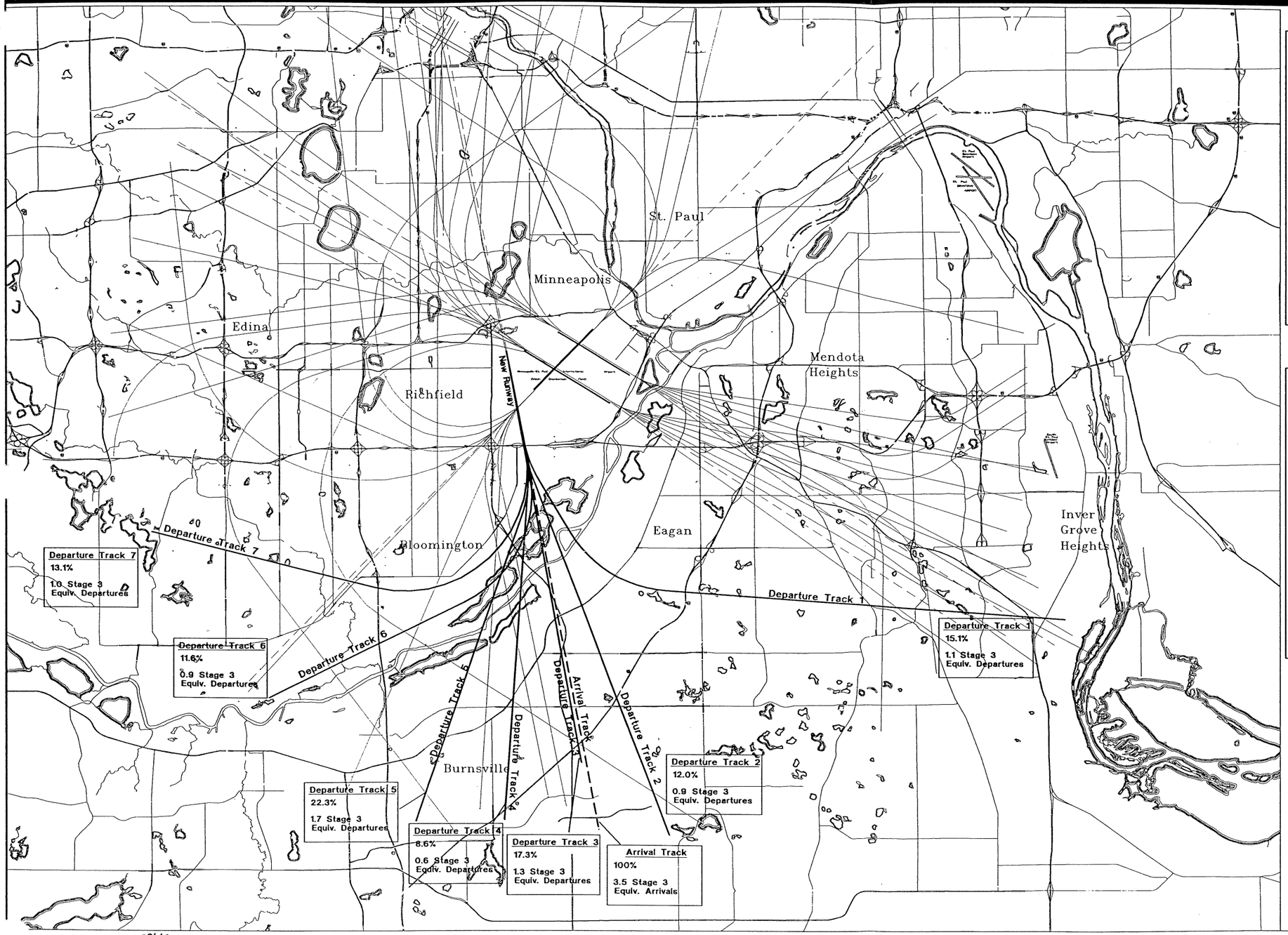
DEPARTURES

ARRIVALS

(1) 2005 Base Case Forecast Avg. Daily Departures

(2) 2005 High Forecast Avg. Daily Departures

Figure G-4




Total MSP Average Daily Jet Operations
Over 75,000 Pounds

406.7 Arrivals
406.7 Departures

---

20.3 Stage 3 Equiv. Arrivals
20.3 Stage 3 Equiv. Departures

Average Daily Jet Operations Runway 17 / 35

69.1 Arrivals on Runway 35
148.4 Departures on Runway 17

---

3.5 Stage 3 Equiv. Arrivals
7.4 Stage 3 Equiv. Departures

— — — — Arrival Tracks

——— Departure Tracks

Source: HNTB

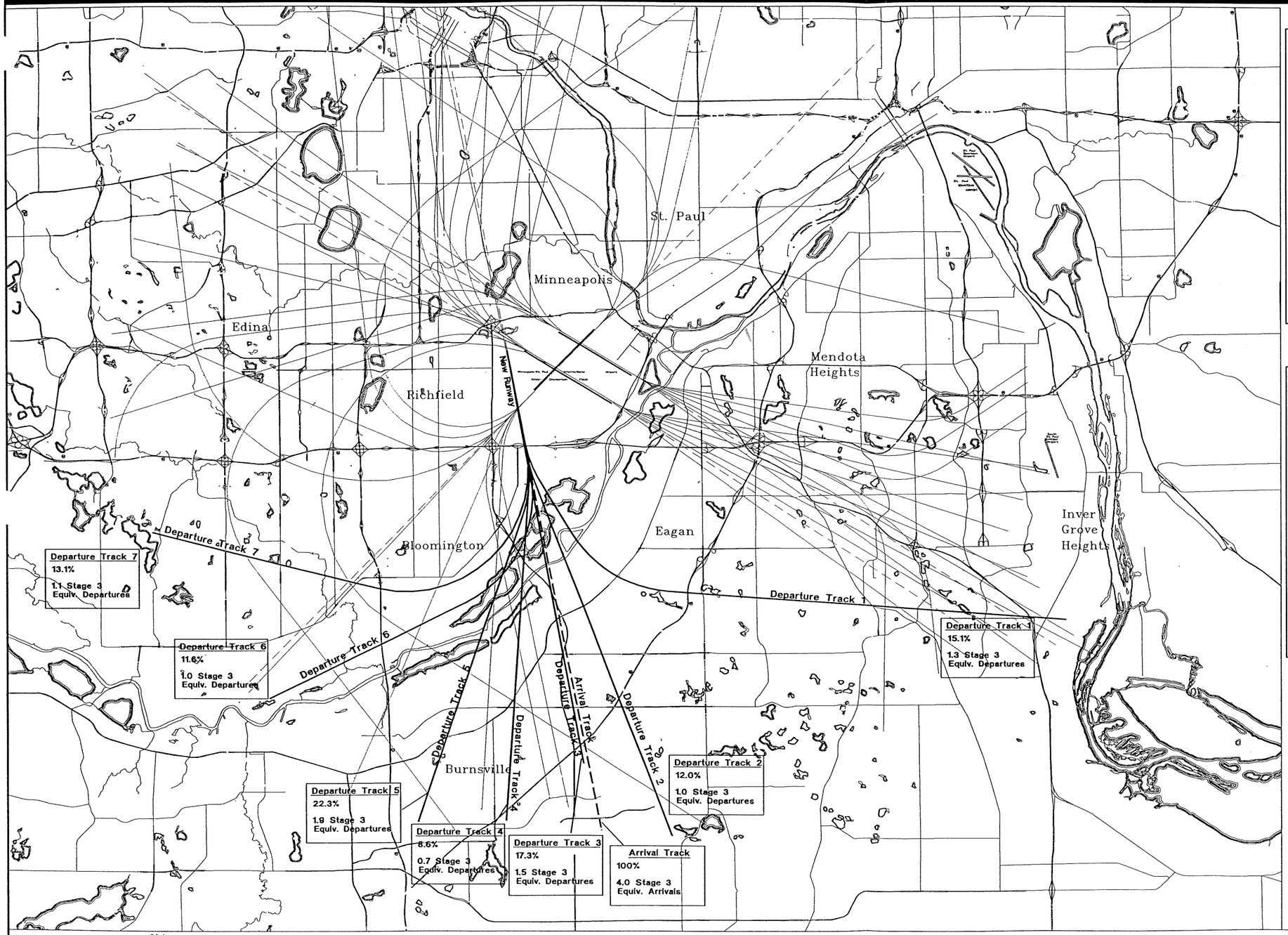
0 1 2
Scale in Miles

N

HNTB

Figure G-5

MSP Flight Tracks and Operations 2005 Base Case




Total MSP Average Daily Jet Operations
Over 75,000 Pounds

459.8 Arrivals
459.8 Departures

20.3 Stage 3 Equiv. Arrivals
20.3 Stage 3 Equiv. Departures

Average Daily Jet Operations Runway 17 / 35

78.1 Arrivals on Runway 35
167.8 Departures on Runway 17

4.0 Stage 3 Equiv. Arrivals
8.4 Stage 3 Equiv. Departures

Arrival Tracks

Departure Tracks

Source: HNTB

0 1 2
Scale in Miles

N

HNTB

MAC Minneapolis Saint Paul Metropolitan Airports Commission

Figure G-6

MSP Flight Tracks and Operations 2005 High Forecast

# *APPENDIX H SENSITIVITY OF IMPACT CATEGORIES TO MAC HIGH FORECAST*

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# *APPENDIX H SENSITIVITY OF IMPACT CATEGORIES TO MAC HIGH FORECAST*

**Purpose**

The purpose of this sensitivity analysis is to disclose the impacts of the proposed action (MSP 2010 LTCP) and the *potential* impacts of the MSP 2020 Concept Plan that would occur from a forecast of operations and enplanements greater than the forecasts used in the DEIS that was prepared in 1995. The need for this analysis is based on the following:

- the (1997) FAA 2010 forecast for MSP is significantly higher than the (1993) MAC baseline forecast used in the DEIS (658,900 versus 499,900 operations; 22,879,600 versus 15,030,000 enplanements)
- traffic levels at MSP have been growing at rates greater than the 1993 MAC baseline forecast (e.g., 1996 actual operations exceed the MAC baseline forecast for the year 2005)

The sensitivity analysis will use the MAC High Forecast discussed in Section II of the FEIS because it is representative of the FAA forecast and it has a forecast for 2020 whereas the FAA forecast only goes to 2010.

**Conclusion**

Based on the MAC High Forecast, no significant increases in environmental impacts were found for the proposed action in 2010. Therefore, the analyses of environmental impacts in Section V of the FEIS are based on the same forecast of airport demand as the DEIS. However, it is estimated that the increase of on-airport carbon monoxide emissions by 2020 would require mitigation of 886 tons per year. This is the only impact category for which additional mitigation was determined to be required beyond 2010 due to the MAC High Forecast.

**Sensitivity Analysis**

The MAC High Forecast used in the sensitivity analysis is given in **Table H-1** and is compared with the DEIS forecast.

**Table H-1 Comparison of MAC High Forecast with DEIS Forecast**

| | DEIS Forecast | | MAC High Forecast | |
|---|---|---|---|---|
| Year | Enplanements | Operations | Enplanements | Operations |
| 1996 Actual | 14,386,000 | 485,400 | | |
| 2000 | 12,704,000 | 473,000 | 16,714,000 | 550,200 |
| 2005 | 13,895,000 | 484,800 | 18,810,000 | 575,000 |
| 2010 | 15,030,000 | 499,900 | 20,828,000 | 603,800 |
| 2020 | 16.681,000 | 520,400 | 23,774,000 | 640,200 |

To test the sensitivity of environmental impacts to higher traffic levels, each of the impact categories in the FEIS were analyzed to determine if the MAC High Forecast would result in a significant increase – that is, have an effect that would require more mitigation for the proposed action than what was needed based on the DEIS Forecast. Where appropriate, the analyses used the 1996 actual operations shown in **Table H-1** for the No Action Alternative. A summary of the analyses is presented in **Table H-2**.

**Table H-2 Summary of Impacts of MAC High Forecast**

| Impact Category | Impact of MAC High Forecast | | | Comment |
|---|---|---|---|---|
| | No Impact | Increase Over DEIS Forecast | Will Increase Require Additional Mitigation? | |
| Air Quality | | X | No in 2010<br>Yes in 2020 | see air quality sensitivity analysis, Appendix H.1 |
| Archaeological Resources | X | | | |
| Biotic Communities | X | | | |
| Bird-Aircraft Hazards | | X | No | monthly operations less than 500 ft. over bird-concentration areas would increase by about 21% (1,030 overflights) in 2010 and by 23% (1,137 overflights) in 2020 |
| Construction | X | | | |
| Coastal Barriers | X | | | |
| Coastal Zone Management | X | | | |
| Endangered and Threatened Species | X | | | |
| Economic | | X | No | local and regional jobs and sales would increase |
| Energy & Natural Resources | | X | No | aircraft and vehicle fuel consumption would increase about 21% (33 million gallons per year (mgy)) to 193mgy, compared to 160mgy for no action |
| Farmland | X | | | |
| Floodplains | X | | | |
| Historical/Architectural | X | | | the Noise Mitigation Plan includes all NRHP eligible historic/architectural resources impacted by the *most current* 2005 DNL *60* contour |
| Induced Socioeconomic | | X | No | development patterns would not change; modest increase in hotel, office and industrial space could occur |
| Land Use | X | | | |
| Light Emissions | X | | | |
| Noise | | X | No | see noise sensitivity analysis, Appendix H.2 |
| Parks & Recreation | X | | | |
| Environmental Justice; Noise Effects | | X | No | see environmental justice sensitivity analysis in Appendix H.3. |
| Environmental Justice; Displacement Effects | X | | | |
| Social | X | | | |

| Impact Category | Impact of MAC High Forecast | | | Comment |
|---|---|---|---|---|
| | No Impact | Increase Over DEIS Forecast | Will Increase Require Additional Mitigation? | |
| Section 4(f) | | X | No | environmental education activities in refuge to be replaced; mitigation for wildlife recreation activities based on MAC High Forecast |
| Solid Waste | | X | No | annual solid waste generation would increase by about 4,250 tons to 15,620 tons (before recycling), which is 2% of the Hennepin County projected solid waste to be disposed in 2010; the county system can accommodate the increase |
| Transportation Access | | X | No | with a new west terminal in 2020, daily traffic would increase about 27.5% due to the 2020 High Forecast; the maximum peak-hour traffic on the most critical segment of the affected regional system (TH 62 between TH 77 and I-35W) would not require additional capacity improvements beyond what is called for in the FEIS (which includes an additional lane in each direction on TH 62 west of TH 77); without a new west terminal in 2010, the additional airport traffic due to the 2010 High Forecast could result in delays of varying duration during peak periods on the eastbound lane of TH 62 between TH 77 and I-35W; traffic conditions should be periodically evaluated on this metered highway segment. |
| Major Utilities | X | | | |
| Visual | X | | | |
| Wastewater | | X | No | peak daily flow would increase 37%(1.6mgd), which the regional system would accommodate |
| Water Supply | | X | No | peak daily usage would increase 38% (2.3mgd), which the Mpls. water system would accommodate |
| Surface Water | | X | No | see surface water sensitivity analysis, Appendix H.4 |
| Groundwater | | X | No | the *risk* of fuel spills would increase with the additional operations, but impact to the underlying aquifer is not anticipated because of its depth and natural protection |
| Wetlands | X | | | |
| Wild & Scenic Rivers | X | | | |
| Wildlife Refuges | | X | No | monthly overflights less than 2000 ft. would increase about 21% (1,168); maximum DNL noise increase would be less than 1.5 dBA; mitigation based on MAC High Forecast |

## H.1 Air Quality Sensitivity Analysis

A comparison is made between on-airport Carbon Monoxide (CO) and Sulfur Oxide (SOx) emissions for the years 2010 and 2020. **Table H.1-1** shows the annual operations and average delay per operation that were used in the analysis:

**Table H.1-1 - Assumed Operations and Delay**

| Alternative | Operations | Average Delay |
|---|---|---|
| No Action (2010 & 2020) | 485,000 | 6.00 minutes |
| MSP 2010 LTCP | 603,800 | 1.11 minutes |
| MSP 2020 Concept Plan | 640,200 | 1.11 minutes |

The 6-minute average delay was obtained from an airfield simulation analysis of the 1996 actual operations and facilities.

An average APU operating time per landing/takeoff cycle is 15 minutes, based upon information provided by Northwest Airlines. Ground motor vehicle traffic has been assumed proportional to operations. Assumptions used in the sensitivity analysis is attached at the end of H.1.2.

### H.1.1 On-Airport CO Emissions

The results of the analysis for CO is presented in **Table H.1-2**. The change in emissions for the MSP Alternative from the No Action alternative is also shown in accordance with the agreed upon methodology for meeting air quality conformity requirements.

**Table H.1-2 - On-Airport Carbon Monoxide Emissions (tons per year)**

| Source | No Action | MSP High Forecast | |
|---|---|---|---|
| | 2010/2020 | 2010 | 2020 |
| Roadways | 791 | 985 | 1167 |
| Parking facilities | 190 | 244 | 259 |
| Heating plants | 9 | 9 | 9 |
| Ground Service Equip | 659 | 888 | 975 |
| Aircraft operations | 4202 | 3655 | 4290 |
| Auxiliary Power Units | 44 | 72 | 79 |
| TH 77/66 St Interchange | 17 | 19 | 19 |
| TOTAL | 5912 | 5873 | 6798 |
| Change from No-Action | | -39 | +886 |

From **Table H.1-2**, it can be seen that the 2010 High Forecast does not exceed the 100 tons per year de minimis threshold for which CO mitigation measures must be adopted. The 2010 LTCP would have fewer emissions in 2010 (with more operations) than the No Action Alternative because of the substantially lower average airfield delay per operation (1.11 versus 6.0 minutes). By 2020, however, mitigation of 886 tons per year would be required. One measure that would provide the required mitigation is the conversion of the ground service equipment to either natural gas fuel or electricity, which would result in a decrease of 975 tons of CO emissions per year.

## H.1.2 On-Airport SOx Emissions

The change in SOx emissions for the MSP Alternative due to the MAC High Forecast compared to the No Action Alternative is shown in **Table H.1.3**. The analysis was performed in accordance with the agreed-upon methodology for meeting air quality conformity requirements. See Attachment H.1 for the assumptions used in the analysis.

**Table H.1-3 - On-Airport Sulfur Oxide Emissions (tons per year)**

| Source | No Action 2010/2020 | 2010 High Forecast | 2020 High Forecast |
|---|---|---|---|
| Roadways | 0 | 0 | 0 |
| Parking facilities | 0 | 0 | 0 |
| Heating plants | 51 | 51 | 51 |
| Ground Service Equip | 3 | 4 | 4 |
| Aircraft operations | 114 | 136 | 156 |
| Auxiliary Power Units | 6 | 8 | 9 |
| Total | 174 | 199 | 220 |
| Change from No-Action | | +25 | +46 |

From **Table H.1-3**, it can be seen that the MSP Alternative for both the 2010 and 2020 High Forecasts would not exceed the 100 tons per year de minimis threshold for which SOx mitigation measures must be adopted.

## H.1.3 Off-Airport CO Emissions

CO background concentrations for 2010 were estimated using a linear extrapolation between the observed 1996 values and the projected 2020 values presented in Section V.A.1.1. The CO background concentrations for these three years are shown in **Table H.1-4.**

**Table H.1-4 - Assumed CO Background (ppm)**

| Year | 1-Hour | 8-Hour |
|---|---|---|
| 1996 | 3.6 | 2.0 |
| 2010 | 5.5 | 3.1 |
| 2020 | 6.8 | 3.8 |

Regional network traffic volumes at the most critical intersection (TH 55 and TH 62) were adjusted on the basis of estimated average daily airport traffic volumes for each of the scenarios as shown in **Table H.1-5**. This adjustment was made to airport volumes only, with the assumption that background traffic in 2010 would be the same as that in 2020. This ensures a conservative estimate of CO emissions due to the MSP 2010 LTCP, since the actual 2010 background traffic would be less than the 2020 background traffic.

**Table H.1-5 - Average Daily Airport Traffic Volumes**

| Year | No Action | MSP High Forecast |
|---|---|---|
| 2010 | 121,500 | 151,800 |
| 2020 | 149,000 | 190,000 |

Airport traffic volumes for the No Action Alternative in 2010 were adjusted using 2010 no action traffic estimates on the regional network (provided by Metropolitan Council staff). The 2010 and 2020 PM peak-hour approach volumes at TH 55 and TH 62 are shown in **Table H.1-6.**

**Table H.1-6 - Approach PM Peak-Hour Traffic Volumes at TH 55 and TH 62**

| Year | No Action | MSP High Forecast |
|---|---|---|
| 2010 | 4,834 | 5,765 |
| 2020 | 5,607 | 7,206 |

A screening analysis (described in Section V.A, **Tables A-2** and **A-3**) using the 2020 high forecast traffic volumes was performed for the intersections of 66th Street at Portland, Nicollet and Lyndale Avenues. Based on that analysis, only the TH 55 and TH 62 intersection would have the potential for adverse air quality impacts.

Revised vehicle emissions were generated for the years 2010 and 2020 using the MOBILE 5A emissions model and incorporated into the CAL3QHC highway dispersion model for CO. Assumed CO background concentrations were added to the predicted roadway concentrations to yield overall levels. The results of this analysis are presented in **Table H.1-7.**

**Table H.1-7 - Predicted CO Concentrations at TH 55 and TH 62**
(ppm)

| Year | No Action 2010/2020 | MSP 2010 | MSP 2020 |
|---|---|---|---|
| 1-Hour | | | |
| Roadway | 3.4 | 3.7 | 4.4 |
| Background | 5.5 | 5.5 | 6.8 |
| Total | 8.9 | 9.2 | 11.2 |
| Standard | 30.0 | 30.0 | 30.0 |
| 8-Hour | | | |
| Roadway | 2.4 | 2.6 | 3.1 |
| Background | 3.1 | 3.1 | 3.8 |
| Total | 5.5 | 5.7 | 6.9 |
| CO Standard | 9.0 | 9.0 | 9.0 |

As shown in **Table H.1-7,** the CO concentrations at nearby intersection receptors due to the 2010 and 2020 high forecasts are below the 1-hour and 8-hour ambient air quality CO standards.

# Attachment H.1

## Table H.1-8 - Assumptions Used for Sensitivity Analysis of On-Airport Carbon Monoxide Emissions

Assumed Annual Aircraft Departures for EDMS Model

| EDMS Class | No Action 2010/2020 | MSP High Forecast 2010 | 2020 |
|---|---|---|---|
| 1-eng Pis | 3500 | 3139 | 6059 |
| 2-eng Pis | 4249 | 3869 | 7446 |
| 727 | 3107 | 9198 | 3723 |
| 737 | 11586 | 15476 | 33617 |
| 747 | 3257 | 7117 | 22265 |
| 757 | 19170 | 51538 | 114099 |
| 767 | 955 | 3321 | 9417 |
| A300 | 64771 | 44968 | 128663 |
| C130H | 1534 | 1496 | 2993 |
| DC10 | 4287 | 6315 | 11388 |
| DC8 | 804 | 1278 | 1460 |
| DC9 | 14191 | 36573 | 1241 |
| 737300/F100 | 10445 | 20842 | 120450 |
| Lear35 | 12281 | 11680 | 22338 |
| MD80 | 20519 | 17338 | 20367 |
| MU3001 | 5841 | 5621 | 11826 |
| SF340 | 62001 | 62123 | 127312 |
| Total Deps | 242,500 | 301,891 | 320,105 |
| Total Ops | 485,000 | 603,782 | 640,210 |

## Table H-1.9 - Assumed Aircraft LTO Cycles by APU Class

| APU Class | No Action 2010/2020 | MSP High Forecast 2010 | 2020 |
|---|---|---|---|
| DC10 | 4287 | 6315 | 5694 |
| 727/737 | 25139 | 45516 | 79789 |
| A300 | 64771 | 44968 | 64897 |
| 757/767 | 20125 | 54859 | 61758 |
| 747 | 3257 | 7117 | 11133 |
| DC8/DC9/MD80 | 35514 | 55188 | 11571 |
| Total | 153,093 | 213,963 | 234841 |

**Table H-1.10 - Adjustment Factors from No Action 2005 Ground Motor Vehicle Traffic Volumes to 2010/2020 Volumes**

| | No Action | MSP High Forecast | |
|---|---|---|---|
| | 2010/2020 | 2010 | 2020 |
| Adjustment | 1.027 | 1.279 | 1.375 |

**Table H-1.11 - EDMS Model Roadway Assumptions Average Annual Hourly Traffic Volumes**

| **Roadways (E. Terminal)** | No Action 2010/2020 | High 2010 | High 2020 |
|---|---|---|---|
| East Terminal Inbound | 1047 | 1305 | |
| East Terminal Outbound | 1833 | 2283 | |
| Terminal Roadway | 1027 | 1279 | |
| Admin Segment 1 | 161 | 201 | |
| Admin Segment 2 | 161 | 201 | |
| Air Cargo | 158 | 197 | |
| Service Road | 993 | 1237 | |
| **Roadways (W. Terminal)** | | | |
| Main Roadway Inbound | | | 1403 |
| Main Roadway Outbound | | | 2454 |
| West Terminal Inbound | | | 1403 |
| West Terminal Outbound | | | 2454 |
| Air Cargo | | | 212 |
| Service Road | | | 1330 |

| **Parking (E.Terminal)** | No Action 2010/2020 | High 2010 | High 2020 |
|---|---|---|---|
| East Term Ramp In | 257 | 320 | |
| East Term Ramp Out | 513 | 640 | |
| Car Rental Lot In | 185 | 230 | |
| Car Rental Lot Out | 257 | 320 | |
| Remote Parking In | 87 | 109 | |
| Remote Parking Out | 216 | 269 | |
| **Parking (W. Terminal)** | | | |
| West Term Ramp In | | | 344 |
| West Term Ramp Out | | | 688 |
| East Remote Ramp In | | | 117 |
| East Remote Ramp Out | | | 289 |
| Rental Car In | | | 248 |
| Rental Car Out | | | 344 |

## H.2 Noise Sensitivity Analysis

Appendix H.2 summarizes the assumptions used to model noise levels that would result from a higher level of aircraft operations at MSP in 2005 that was included in the baseline forecasts and FEIS analysis. Under the baseline FEIS forecast, aircraft activity at MSP is forecast to increase to 484,800 annual operations by 2005 and 520,400 annual operations by 2020. The contours developed for the FEIS reflect these operational levels.

As with the noise analysis presented in Section V.Q of the FEIS, 2005 was used in the High Forecast sensitivity analysis, since it represents the worst case year, with the most number of noisier, hushkitted Stage 3 aircraft. Although the high forecast scenario projects 603,800 total operations by 2010, the proportion of hushkitted Stage 3 aircraft operations will decline from approximately 18% in 2005 to 0.5% in 2010. This reduction in hushkitted Stage 3 operations offsets the increase in overall operations projected for 2010, making 2005 the worst case for noise analysis. The only change made due to the high forecast is the fleet mix; the fleet mix used for the high forecast is described in this appendix. The major inputs used for modeling the high scenario are discussed as follows.

**Fleet Mix**
A fleet mix representing operations in 2005 under the high scenario was developed and is presented in **Tables H.2-1A and H.2-1B**. It differs from the baseline mix (shown in **Tables A.3-3 and A.3-4**) in numbers as well as in percentages of aircraft types. NWA announced a change in future equipment purchases in February 1996. The 2005 high forecast scenario fleet mix was adjusted to incorporate NWA's decision to acquire 20 more B727-200 hushkits and an additional 12 DC9-30s hushkits. In addition to the hushkit purchases, NWA will add 20 more A320s to its fleet over the next several years and defer delivery of 16 A330s for 5 years. The fleet mix adjustment was completed to reflect a more up-to-date prediction of the NWA future fleet mix. The updated fleet mix contains slightly more hushkitted aircraft than originally projected and thereby portrays a larger contour than would be determined by increasing the operations with the baseline fleet mix in the DEIS. The high scenario forecast maintains approximately the same fleet mix percentages as the DEIS baseline forecast with NWA's fleet mix adjustment. As in the base case noise modeling effort, aircraft types not contained in the INM database were substituted with FAA-approved substitution aircraft.

**Flight Track and Runway Use**
The high scenario forecast noise analysis was based on the identical utilization of flight tracks and runway use as was used for development of the baseline contours in the FEIS.

**Integrated Noise Model Version**
The high forecast scenario contour was computed using INM Version 5.01, since this is the most recent version available and offers the most accurate way to calculate noise levels. In order to provide for a consistent comparison with the High Forecast noise levels, the Baseline Forecast noise levels in the FEIS were re-run with INM Version 5.01.

To determine whether or not a significant change in noise levels would result with the high forecast as compared to the baseline levels, DNL levels for the 42 grid points of noise-sensitive land uses included in the FEIS (**Figure Q-5**) were calculated for both scenarios. The gridpoint analysis did not reveal any points where DNL levels increased by 1.5 dB or more, the FAA threshold for significant change. The maximum change was 1.2 DNL, with an average change of approximately 1.0 dB. **Table H.2-4** presents all of the values. A comparison of the base and high forecast DNL contours is shown in **Figure H-1**.

As a further check to determine that no significant change in noise levels would occur in the high forecast scenario, the high forecast case was also run with the old INM Version 4.11, which was used for the DEIS and FEIS analysis. A comparison of the noise levels at the 42 grid points for the high scenario vs. FEIS

values with this version of the INM also does not result in any increase of 1.5 DNL or more. The maximum change with Version 4.11 was 1.3 dB (see **Table H.2-3**), with an average change of approximately 1.0 dB.

**Table H.2-1a - MSP 2005 Fleet Mix And Average Daily Arrivals High Forecast**

| Aircraft Type | Day | Night | Total |
|---|---|---|---|
| Air Carrier Jets | | | |
| DC8 | 1.1 | 1.7 | 2.8 |
| DC9-30 (HUSHKIT) | 110.1 | 13.5 | 123.6 |
| MD80 | 34.6 | 4.0 | 38.6 |
| MD90 | 6.3 | 0.7 | 7.0 |
| DC10 | 11.4 | 1.8 | 13.2 |
| MD11 | 3.8 | 0.8 | 4.6 |
| B727 (HUSHKIT) | 13.0 | 3.6 | 16.6 |
| B737-300/400/500 | 37.0 | 3.8 | 40.8 |
| B737 (HUSHKIT) | 0.2 | 0.1 | 0.3 |
| B747-200/300/400 | 7.9 | 1.1 | 9.0 |
| B757 | 89.1 | 11.7 | 100.8 |
| B767-200/300 | 3.6 | 0.4 | 4.0 |
| B777 | 1.4 | 0.1 | 1.5 |
| A300 | 0.5 | 0.7 | 1.2 |
| A320/321 | 66.3 | 8.7 | 75.0 |
| A330 | 5.3 | 0.6 | 5.9 |
| A340 | 0.4 | 0.1 | 0.5 |
| L1011 | 0.6 | 0.5 | 1.1 |
| Bae 146/RJ/F-70 | 1.3 | 0.2 | 1.5 |
| F100 | 10.4 | 1.1 | 11.5 |
| EM145/CanRJ | 10.7 | 1.5 | 12.2 |
| S U B T O T A L | 415.0 | 56.7 | 471.7 |
| Air Carrier Turboprops | | | |
| CNA/PAG/BEC | 3.4 | 3.5 | 6.9 |
| SWM/J31/BE1/BE9 | 42.2 | 11.0 | 53.2 |
| SF340/DH8/J41 | 93.5 | 13.5 | 107.0 |
| S2000 | 40.9 | 6.1 | 47.0 |
| L188/CVR/F27/ATP/A | 22.5 | 6.7 | 29.2 |
| S U B T O T A L | 202.5 | 40.8 | 243.3 |
| General Aviation | | | |
| GA Jet | 28.7 | 3.8 | 32.5 |
| GA Turboprop | 13.4 | 1.8 | 15.2 |
| GA Piston | 19.0 | 2.5 | 21.5 |
| S U B T O T A L | 61.1 | 8.1 | 69.2 |
| Military | | | |
| C130 | 4.0 | 0.1 | 4.1 |
| TOTAL ARRIVALS | 682.6 | 105.7 | 788.3 |

**Table H.2-1b - MSP 2005 Fleet Mix And Average Daily Departures High Forecast**

| Aircraft Type | Day | Night | Total |
|---|---|---|---|
| Air Carrier Jets | | | |
| DC8 | 1.0 | 1.8 | 2.8 |
| DC9-30 (HUSHKIT) | 108.2 | 15.4 | 123.6 |
| MD80 | 34.1 | 4.5 | 38.6 |
| MD90 | 6.2 | 0.8 | 7.0 |
| DC10 | 11.2 | 2.0 | 13.2 |
| MD11 | 3.8 | 0.8 | 4.6 |
| B727 (HUSHKIT) | 13.0 | 3.6 | 16.6 |
| B737-300/400/500 | 36.3 | 4.5 | 40.8 |
| B737 (HUSHKIT) | 0.2 | 0.1 | 0.3 |
| B747-200/300/400 | 7.9 | 1.1 | 9.0 |
| B757 | 87.5 | 13.3 | 100.8 |
| B767-200/300 | 3.6 | 0.4 | 4.0 |
| B777 | 1.3 | 0.2 | 1.5 |
| A300 | 0.5 | 0.7 | 1.2 |
| A320/321 | 65.4 | 9.6 | 75.0 |
| A330 | 5.2 | 0.7 | 5.9 |
| A340 | 0.4 | 0.1 | 0.5 |
| L1011 | 0.7 | 0.4 | 1.1 |
| Bae 146/RJ/F-70 | 1.4 | 0.1 | 1.5 |
| F100 | 10.3 | 1.2 | 11.5 |
| EM145/CanRJ | 11.2 | 1.0 | 12.2 |
| S U B T O T A L | 409.4 | 62.3 | 471.7 |
| Air Carrier Turboprops | | | |
| CNA/PAG/BEC | 3.4 | 3.5 | 6.9 |
| SWM/J31/BE1/BE9 | 43.7 | 9.5 | 53.2 |
| SF340/DH8/J41 | 97.6 | 9.4 | 107.0 |
| S2000 | 42.8 | 4.2 | 47.0 |
| L188/CVR/F27/ATP/AT | 23.2 | 6.0 | 29.2 |
| S U B T O T A L | 210.7 | 32.6 | 243.3 |
| General Aviation | | | |
| GA Jet | 27.5 | 5.0 | 32.5 |
| GA Turboprop | 12.8 | 2.4 | 15.2 |
| GA Piston | 18.2 | 3.3 | 21.5 |
| S U B T O T A L | 58.5 | 10.7 | 69.2 |
| Military | | | |
| C130 | 3.8 | 0.3 | 4.1 |
| TOTAL DEPARTURES | 682.4 | 105.9 | 788.3 |

## Table H.2-3 - MSP Grid Point Analysis Using INM Version 4.11

| Pt. No. | x | y | 2005 High DNL | DEIS DNL | Change |
|---|---|---|---|---|---|
| 1 | -5300 | -14200 | 57.7 | **56.7** | 1.0 |
| 2 | -8000 | -8200 | 54.4 | **54.4** | 0.0 |
| 3 | -6400 | -9000 | 54.7 | **53.9** | 0.8 |
| 4 | -4500 | -10000 | 59.0 | **58.0** | 1.0 |
| 5 | -4400 | -7100 | 61.0 | **60.0** | 1.0 |
| 6 | -12000 | -7700 | 53.2 | **53.8** | -0.6 |
| 7 | -1000 | -11000 | 69.9 | **69.0** | 0.9 |
| 8 | 12900 | | 56.0 | **54.8** | 1.2 |
| 9 | 15700 | -11100 | 53.2 | **52.1** | 1.1 |
| 10-- | 3900 | -21400 | 58.9 | **57.8** | 1.1 |
| 11 | 23000 | -9500 | 63.6 | **62.4** | 1.2 |
| 12 | 30100 | -13700 | 60.5 | **59.4** | 1.1 |
| 13 | 27200 | -10100 | 62.3 | **61.1** | 1.2 |
| 14 | 6500 | 9100 | 54.8 | **53.7** | 1.1 |
| 15 | 18200 | 3300 | 53.3 | **52.0** | 1.3 |
| 16 | 15000 | -4000 | 67.5 | **66.3** | 1.2 |
| 17 | 16000 | 0 | 65.7 | **64.5** | 1.2 |
| 18 | 15000 | -2800 | 67.2 | **66.0** | 1.2 |
| 19 | 23100 | -1200 | 59.8 | **58.5** | 1.3 |
| 20 | 28900 | -2200 | 57.4 | **56.1** | 1.3 |
| 21 | 23800 | 900 | 54.7 | **53.4** | 1.3 |
| 22 | -8700 | 8400 | 67.8 | **66.8** | 1.0 |
| 23 | -10100 | 15000 | 59.3 | **58.3** | 1.0 |
| 24 | -10400 | 15600 | 58.2 | **57.2** | 1.0 |
| 25 | -1900 | 8500 | 72.6 | **71.6** | 1.0 |
| 26 | 3600 | 9000 | 59.9 | **58.8** | 1.1 |
| 27 | -6800 | 10300 | 65.5 | **64.5** | 1.0 |
| 28 | -7200 | 15100 | 58.9 | **57.8** | 1.1 |
| 29 | -15100 | 15700 | 61.1 | **60.1** | 1.0 |
| 30 | -15800 | 17400 | 59.2 | **58.2** | 1.0 |
| 31 | -13500 | 12900 | 59.1 | **58.1** | 1.0 |
| 32 | -12700 | 7200 | 60.7 | **59.7** | 1.0 |
| 33 | -14300 | 9700 | 58.3 | **57.3** | 1.0 |
| 34 | -14900 | 11100 | 60.0 | **59.0** | 1.0 |
| 35 | -9900 | 1100 | 55.0 | **53.8** | 1.2 |
| 36 | -5100 | 5200 | 69.0 | **67.9** | 1.1 |
| 37 | -5200 | 2400 | 63.3 | **62.2** | 1.1 |
| 38 | -5900 | 200 | 57.3 | **56.2** | 1.1 |
| 39 | -10200 | -4800 | 49.6 | **49.0** | 0.6 |
| 40 | -5300 | -2700 | 58.9 | **57.9** | 1.0 |
| 41 | -7200 | -1000 | 54.1 | **53.0** | 1.1 |
| 42 | 12700 | 7200 | 51.1 | **50.0** | 1.1 |

0,0 point occurs at the end of Runway 4 prior to the extension

****XY Coordinates translated to NAD83 Coordinates in AutoCAD drawing based on runway end state plane coords. and then translated to Geographic Coordinates using CORPSCON v.3.01

## Table H.2-4 - MSP Grid Point Analysis Using INM Version 5.01

| Pt. No. | x | y | 2005 High DNL | DEIS DNL | Change |
|---|---|---|---|---|---|
| 1 | -5300 | -14200 | 58.2 | **57.1** | 1.1 |
| 2 | -8000 | -8200 | 54.1 | **54.0** | 0.1 |
| 3 | -6400 | -9000 | 55.2 | **54.3** | 0.9 |
| 4 | -4500 | -10000 | 59.8 | **58.7** | 1.1 |
| 5 | -4400 | -7100 | 61.3 | **60.3** | 1.0 |
| 6 | -12000 | -7700 | 51.7 | **51.9** | -0.2 |
| 7 | -1000 | -11000 | 71.4 | **70.3** | 1.1 |
| 8 | 12900 | -8900 | 55.0 | **53.9** | 1.1 |
| 9 | 15700 | -11100 | 52.9 | **51.8** | 1.1 |
| 10 | 3900 | -21400 | 59.3 | **58.2** | 1.1 |
| 11 | 23000 | -9500 | 62.7 | **61.6** | 1.1 |
| 12 | 30100 | -13700 | 59.8 | **58.8** | 1.0 |
| 13 | 27200 | -10100 | 61.4 | **60.4** | 1.0 |
| 14 | 6500 | 9100 | 54.4 | **53.3** | 1.1 |
| 15 | 18200 | 3300 | 53.1 | **51.9** | 1.2 |
| 16 | 15000 | -4000 | 66.5 | **65.3** | 1.2 |
| 17 | 16000 | 0 | 65.6 | **64.5** | 1.1 |
| 18 | 15000 | -2800 | 66.8 | **65.7** | 1.1 |
| 19 | 23100 | -1200 | 60.1 | **58.9** | 1.2 |
| 20 | 28900 | -2200 | 57.3 | **56.1** | 1.2 |
| 21 | 23800 | 900 | 54.5 | **53.3** | 1.2 |
| 22 | -8700 | 8400 | 67.1 | **66.1** | 1.0 |
| 23 | -10100 | 15000 | 59.4 | **58.4** | 1.0 |
| 24 | -10400 | 15600 | 58.4 | **57.3** | 1.1 |
| 25 | -1900 | 8500 | 72.2 | **71.2** | 1.0 |
| 26 | 3600 | 9000 | 59.8 | **58.6** | 1.2 |
| 27 | -6800 | 10300 | 65.2 | **64.2** | 1.0 |
| 28 | -7200 | 15100 | 59.0 | **57.9** | 1.1 |
| 29 | -15100 | 15700 | 60.6 | **59.7** | 0.9 |
| 30 | -15800 | 17400 | 59.0 | **58.0** | 1.0 |
| 31 | -13500 | 12900 | 59.3 | **58.2** | 1.1 |
| 32 | -12700 | 7200 | 60.9 | **59.9** | 1.0 |
| 33 | -14300 | 9700 | 58.5 | **57.5** | 1.0 |
| 34 | -14900 | 11100 | 59.8 | **58.8** | 1.0 |
| 35 | -9900 | 1100 | 55.5 | **54.3** | 1.2 |
| 36 | -5100 | 5200 | 69.1 | **68.0** | 1.1 |
| 37 | -5200 | 2400 | 64.1 | **63.0** | 1.1 |
| 38 | -5900 | 200 | 57.6 | **56.5** | 1.1 |
| 39 | -10200 | -4800 | 49.9 | **49.4** | 0.5 |
| 40 | -5300 | -2700 | 58.3 | **57.3** | 1.0 |
| 41 | -7200 | -1000 | 55.1 | **54.0** | 1.1 |
| 42 | 12700 | 7200 | 51.1 | **49.9** | 1.2 |

0,0 point occurs at the end of Runway 4 prior to the extension

****XY Coordinates translated to NAD83 Coordinates in AutoCAD drawing based on runway end state plane coords. and then translated to Geographic Coordinates using CORPSCON v.3.01

Additionally, a sensitivity analysis was completed to compare the 2005 high forecast scenario with the 2020 high forecast scenario. The high forecast scenario projects 640,200 annual operations by the year 2020. **Table H.2-5** provides a comparison of areas within the contours for the two forecast scenarios. A comparison of the 2005 high forecast and 2020 high forecast scenarios is shown in **Figure H-2**.

**Table H.2-5 - Comparison of 2005 and 2020 DNL Contour Areas - High Forecast Scenario**

| DNL Contour | DNL Contour Area | |
|---|---|---|
| | 2005 | 2020 |
| 75+ | 2.40 square miles | 1.64 square miles |
| 70-75 | 4.84 square miles | 3.74 square miles |
| 65-70 | 9.95 square miles | 8.76 square miles |
| 60-65 | 21.05 square miles | 19.16 square miles |

The conclusion of this analysis is that, even at the highest of the forecast scenarios, which approximates the trend of recent traffic increases, there would not be a significant change in noise levels around MSP, based on the FAA threshold of significance, compared to the baseline analysis in the FEIS. As such, the analysis in the FEIS adequately discloses noise impacts.

## H.3 Environmental Justice Analysis

Residential and employee displacement are not affected by the forecasts, but noise levels are. As discussed in Appendix H.2, the highest noise levels would occur in 2005 with 575,000 annual operations. A summary of the environmental justice impacts is given in **Table H.3-1**.

**Table H.3-1 - Summary of Aircraft Noise Environmental Justice Impacts**

| Household | % Households in Affected Block Groups | | % Households in Affected Jurisdictions |
|---|---|---|---|
| | MSP High | No Action | |
| Income < $10,000 | 14 | 14 | 15 |
| Income < $15,000 | 28 | 28 | 24 |
| Minority | 15 | 15 | 12 |

Note: For the high forecast -- there are 231,450 total households in the affected jurisdictions of Mendota, Minneapolis, Richfield, Bloomington and Eagan: 33,997 with incomes less than $10,000, 54,590 less than $15,000, and 27,520 that are minority; there are 3,820 total households in block groups affected by the DNL 65 and above. The No Action values are the same as the FEIS base case.

The MSP Alternative with the high forecast would not have a disproportionate effect on low-income or minority households, when compared with the No Action Alternative.

## H.4 Surface Water Quality Sensitivity Analysis

The only measurable way in which the increased flight activity associated with the MAC High Forecasts would impact surface water quality is the additional aircraft deicing material required for winter operations. There may be an additional potential for surface water impact resulting from additional fueling operations. However, any attempt to specifically quantify the added potential for environmental impact from the added fueling operations in a meaningful way would be difficult, if not impossible. Discharges from oil and grease have historically not been a problem at MSP, and the planned enhanced detention ponds should provide further control for this type of potential discharge, as well as for total suspended solids.

For the surface water quality ($CBOD_5$) sensitivity analysis, the same basic assumptions and methodologies were used as for the FEIS (Section V.BB) analysis. The only differences to the model inputs relative to the FEIS analysis concern volumes of glycol applied a) seasonally, and b) on the given spike day. These volumes were scaled according to: a) base and high forecast flight operations, respectively, for 2010, and b) high forecast flight operations for 2020.

Thus, the primary assumptions used for the sensitivity analysis model runs are as follows:

- 100 percent of aircraft deicing done on pads on extreme-case application day
- 7.5 percent blow-by (glycol escaping containment at the source and reaching detention ponds)
- routing the residual glycol-impacted storm water (GISW) through detention basins enhanced to meet National Urban Run-off Program (NURP) or equivalent performance standards, having the effect of attenuating $CBOD_5$ surges
- seasonal glycol application of 2.88 gallons/annual operation (see Appendix A.9)
- spike day glycol application of 0.14 gallons/annual operation (see Appendix A.9)
- FEIS forecast for MSP annual operations: 499,900
- 2010 MAC High Forecast for MSP annual flight operations: 603,800
- 2020 MAC High Forecast for MSP annual flight operations: 640,200

The inputs and outputs associated with the modeling which was done for this analysis are presented in the following tables:

**Table H.4-1 - $CBOD_5$ Loading on Extreme Case Day - 2010 FEIS Forecast**

| | MRN | ML | MRS | Total |
|---|---|---|---|---|
| Pond Volume (gal) | 7,429,000 | 3,251,000 | 6,325,000 | N/A |
| Antecedent $CBOD_5$ Concentration (mg/l) | 260 | 750 | 360 | N/A |
| Influent Concentration $CBOD_5$ (mg/l) | 510 | 2,040 | 1,740 | N/A |
| Influent Flow Rate (mgd) | 5.09 | 0.63 | 1.48 | N/A |
| Influent Load (lbs) | 21,440 | 10,719 | 21,438 | 53,600 |
| Effluent Concentration (mg/l) | 270 | 800 | 480 | N/A |
| Effluent Flow Rate(mgd) | 1.64 | 0.22 | 0.69 | N/A |
| Effluent Load (lbs) | 3,710 | 1,480 | 2,730 | 7,920 |

Note: MRN = Minnesota River North Watershed; MRS = Minnesota River South Watershed; SL = Snelling Lake Watershed

**Table H.4-2 $CBOD_5$ Loading on Extreme Case Day - 2010 MAC High Forecast**

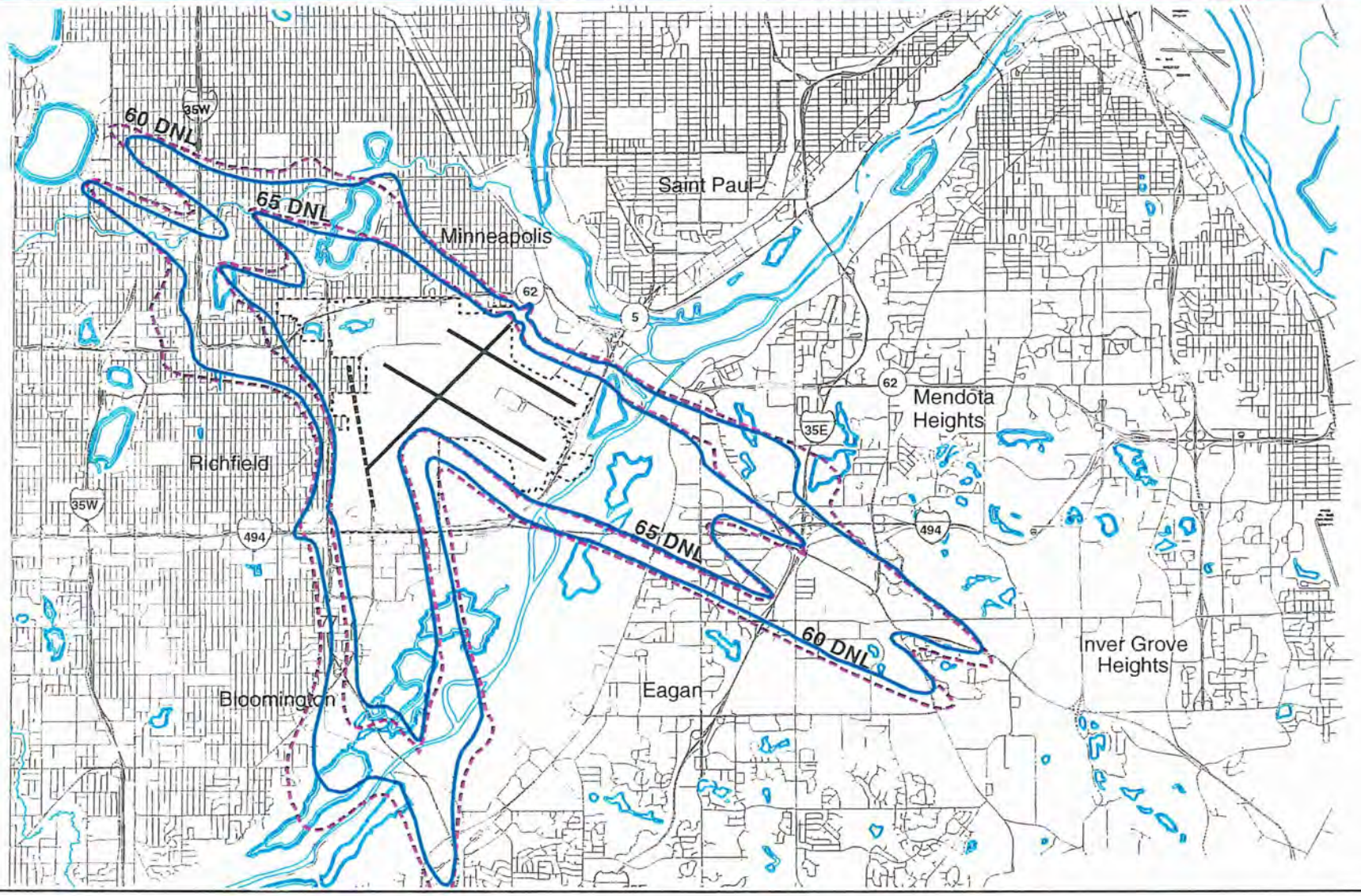
| | MRN | ML | MRS | Total |
|---|---|---|---|---|
| Pond Volume (gal) | 7,429,000 | 3,251,000 | 6,325,000 | N/A |
| Antecedent $CBOD_5$ Concentration (mg/l) | 300 | 880 | 420 | N/A |
| Influent Concentration $CBOD_5$ (mg/l) | 590 | 2,390 | 2,030 | N/A |
| Influent Flow Rate (mgd) | 5.09 | 0.63 | 1.48 | N/A |
| Influent Load (lbs) | 25,080 | 12,540 | 25,080 | 62,700 |
| Effluent Concentration (mg/l) | 320 | 950 | 560 | N/A |
| Effluent Flow Rate(mgd) | 1.64 | 0.22 | 0.69 | N/A |
| Effluent Load (lbs) | 4,350 | 1,740 | 3,250 | 9,340 |

**Table H.4-3 $CBOD_5$ Loading on Extreme Case Day - 2020 MAC High Forecast**

| | MRN | ML | MRS | Total |
|---|---|---|---|---|
| Pond Volume (gal) | 7,429,000 | 3,251,000 | 6,325,000 | N/A |
| Antecedent $CBOD_5$ Concentration (mg/l) | 320 | 930 | 450 | N/A |
| Influent Concentration $CBOD_5$ (mg/l) | 620 | 2,520 | 2,140 | N/A |
| Influent Flow Rate (mgd) | 5.09 | 0.63 | 1.48 | N/A |
| Influent Load (lbs) | 26,450 | 13,230 | 26,450 | 66,130 |
| Effluent Concentration (mg/l) | 340 | 1,000 | 600 | N/A |
| Effluent Flow Rate(mgd) | 1.64 | 0.22 | 0.69 | N/A |
| Effluent Load (lbs) | 4,590 | 1,840 | 3,420 | 9,850 |

Based on the modeling results presented in **Tables H.4-1** and **H.4-2,** the airport-wide, extreme-day discharge of $CBOD_5$ for the MSP Alternative associated with the 2010 MAC High Forecast (9,340 lbs.) would be about 18 percent greater than with the 2010 MAC FEIS forecast (7,920 lbs.). Similarly, the airport-wide, extreme-day discharge of $CBOD_5$ associated with the 2020 MAC High Forecast would be approximately 20 percent higher than with the 2020 MAC FEIS forecast (9,850lbs. versus 8,230 lbs., as shown in **Table H.4-3** and **Table BB-6**).

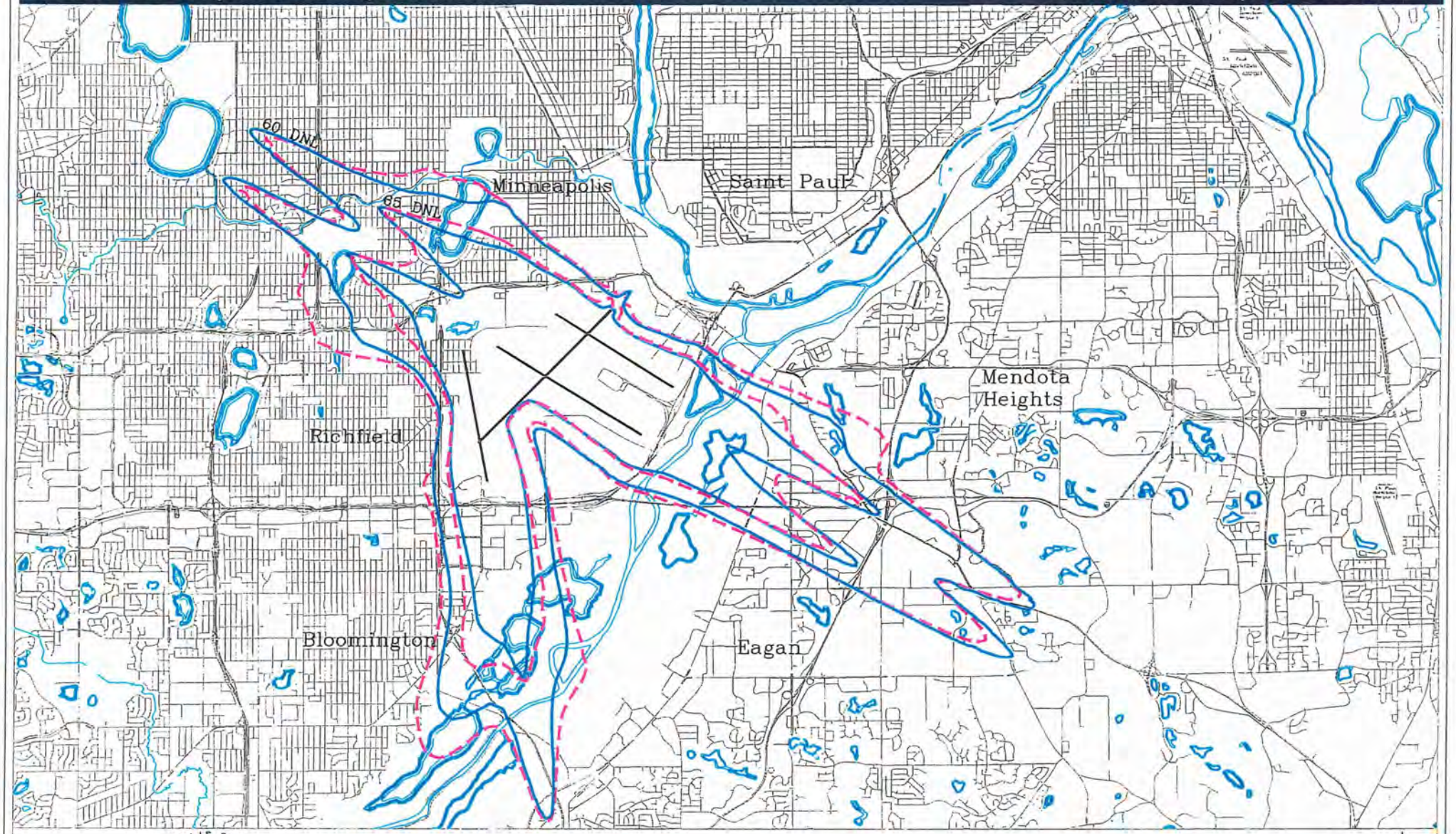
The modeled $CBOD_5$ outcomes for the MSP Alternative assuming the MAC FEIS forecasts for 2010 and 2020, respectively, are both lower than the modeled outcome for the No Action Alternative (see **Table BB-6**). The modeled outcome for the MSP Alternative assuming the MAC High forecast for 2010 is approximately one percent higher than the modeled outcome for No Action (9,340 lbs. $CBOD_5$ versus 9,220 lbs. $CBOD_5$). The modeled outcome for the MSP Alternative assuming the MAC High forecast for 2020 is approximately seven percent higher than the modeled outcome for No Action (9,850 lbs. $CBOD_5$ versus 9,220 lbs. $CBOD_5$).




HNTB

Figure H-1

2005 DNL Contours - Baseline and High Forecast Scenarios




Source: HNTB

HNTB

Figure H-2

2005 and 2020 DNL Contours - High Forecast Scenarios

# Appendix I

# Summary of Comments on Draft EIS and Responses

Appendix I contains responses to substantive oral and written comments on the Draft EIS. Comments were received at the public hearings and by mail and fax during the comment period. All written comments and transcripts of the hearings are available at the Metropolitan Airports Commission offices.

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## General Comments and Responses

The following are comments received from several persons or agencies and the responses.

| General Comment | General Response |
|---|---|
| **1. New Airport Alternative** - comments on issues, impacts, data and methodologies relating to the New Airport Alternative. | **1.** As discussed in Section III.C.2 of the FEIS, the New Airport Alternative has been eliminated from further consideration as a feasible and prudent alternative. Therefore, all text, tables and figures related to the impacts of this alternative in Section V are deleted, no further analysis or discussion of this alternative is warranted, and no revisions to the DEIS regarding this alternative are included in the FEIS. Furthermore, the Minnesota legislature has prohibited the preservation of land by planning, zoning or acquisition for a new major airport in the Twin Cities Metropolitan Area. |
| **2. Noise Mitigation** - operating procedures, nighttime operations and restrictions, use of runway 4-22, sound insulation for homes in the DNL 60 contour and beyond, the use of incentives to stabilize/enhance areas in the DNL 65 contour, and mitigation of ground level noise impacts due to aircraft and surface vehicles, should be included in the noise mitigation program. | **2.** After selection of the preferred alternative by the legislature in April 1996, and as provided for in the Airport Planning Act, MAC established a Noise Mitigation Committee to prepare a Noise Mitigation Program for the MSP Alternative. The committee included representatives of MAC, Metropolitan Council, MASAC, Northwest Airlines and mayors of the affected cities. The resulting Program includes mitigation activities and funding levels and is presented in Appendix B of the FEIS. The Noise Mitigation Program has been approved by MAC and recommended to the State Advisory Council on Metropolitan Airport Planning for review and comment. The State Advisory Council forwarded the program to the legislature without comment. |
| **3. Northwest Airlines Proposal** - this proposal should be addressed in the EIS as an alternative. | **3.** The phasing of the MSP Alternative is presented in Section III.D of the FEIS. The improvements through the year 2010 are essentially the same as the Northwest Airlines (NWA) proposal (Concept 6A). The primary difference between the NWA proposal and the MSP Alternative is the construction of a new west terminal and associated access roadways after 2010, which is in the MSP 2020 Concept Plan but not in the NWA proposal, and which requires affirmative action by the Minnesota legislature prior to implementation. After extensive discussion and review of expansion alternatives for MSP, MAC and NWA determined that the needs through 2010, and potentially longer, could be accommodated by continued phased development of the Lindbergh Terminal. However, for planning and environmental review purposes for the year 2020, both parties agreed that the MSP 2020 Concept Plan in the FEIS would be considered the preferred concept. MAC and NWA will continue to discuss and review current and future development needs at MSP. |
| **4. MSP Forecasts** - the forecasts for operations and passengers are too low, considering recent data. | **4.** Historically, while aircraft operations have grown at MSP over the long term, the growth has not been constant. For example, between 1985 and 1988 traffic decreased for three straight |

years. Growth rates will fluctuate over the forecast period, with faster growth for several years followed by slow or even negativ growth in other years. Two recent events, a 1993 consolidation of operations by Northwest to its three major hubs, including MSP, and a new more liberalized airspace policy between the U.S. and Canada in 1995, have resulted in "spikes" in airport traffic growth. Total passengers increased 9.5 percent and aircraft operations increased 2.9 percent from 1994 to 1995. These one-time events will not likely be repeated, and traffic growth rates should flatten compared to the growth rates in this year.

Aviation activity forecasting, by its very nature, is an inexact science, requiring numerous assumptions resulting in some level of uncertainty. In order to minimize this uncertainty, four "expert panel" workshops were convened in 1992 and 1993 by the MAC and Metropolitan Council to ensure that the forecasts incorporated the latest trends and considered all viewpoints. The panels consisted of airline representatives (particularly Northwest Airlines), economists, and others experienced in aviation forecasting, both at the local and national levels. Topics addressed by the panels included forecast methodologies, aviation assumptions, socioeconomic trends, and alternative scenarios. The advice and counsel of these groups are reflected in the methodologies and assumptions used to forecast future activity. A public hearing was also held to receive public input.

Aircraft operations forecasts are not only based on assumptions for average aircraft size (the number of seats per aircraft), but also for projections of average load factors (the percentage of seats occupied). The baseline forecasts for MSP assume that average aircraft size for Northwest Airlines will remain constant through 1998. After 1998, Northwest's average aircraft size is forecast to grow at the FAA projected national rate of growth through 2015 and then remain constant through 2020. For other airlines, aircraft size is forecast to increase at the FAA projected growth rate through 2020.

Although average aircraft size has decreased in recent years, average load factors have reached record levels. The net result is that the number of passengers per aircraft has, in fact, increased between 1990 and 1995 at the national level. This phenomenon is even more pronounced in the fast-growing regional (commuter) market, where the average number of passengers per flight has increased nearly 18 percent between 1990 and 1995 for the nation as a whole.

To ensure that MSP development could accommodate traffic levels higher than the 2020 forecast, alternative forecast scenarios were developed. The MSP Alternative was tested against the highest scenario (640,000 annual operations and 48 million annual passengers), and was found to work adequately, thereby providing confidence that accelerated future growth can be accommodated.

**5. New North Parallel Runway Alternative** - this alternative should not have been eliminated, and should be evaluated in the EIS.

Also, this runway may be needed in the future (beyond 2020) and its environmental impacts should therefore be included with the MSP Alternative.

**5.** The 1989 Minnesota legislature directed the MAC and the Metropolitan Council to determine how best to meet the future aviation demands of the region. In March of 1994 MAC determined through a public scoping process that four alternatives would be considered for the expansion of the existing Airport. An Alternative Environmental Document (AED) for the Long Term Comprehensive Plan was completed for the four alternatives considered as potential development strategies for the existing airport. Two of the four alternatives included development of a new third parallel runway. Detailed environmental and operational analyses for the required impact categories were completed for construction of a north third parallel as well as for a new north-south runway. The levels of analysis for differential impacts were the same as those in the DEIS. Operationally, both the north parallel and north-south runways would provide good benefits, with slightly more capacity from a north-south runway. This benefit was calculated both by MAC and an independent FAA study.

The environmental analysis found that, cumulatively, the construction of a third parallel runway would have a more significant adverse environmental impact than the construction of a north-south runway — primarily in the areas of noise, Section 4(f), and historical impacts. The results of this analysis are detailed in the Final AED for the Long Term Comprehensive Plan. On February 21, 1995, MAC determined the adequacy of the Final AED and selected the construction of a new 8,000-foot north-south runway on the west side of the Airport and a replacement terminal to be developed on the west side of the Airport as the MSP Alternative to be carried forward in the EIS. As further evidence of adequate analysis for elimination of the third parallel as a feasible and prudent alternative, the U.S.E.P.A. concurred with the range of alternatives proposed for assessment within the DEIS in its letter of July 5, 1996. Prior to the February 21, 1995, decision, a new north parallel runway was considered a feasible alternative, and was analyzed in the same level of detail as the selected alternative.

After consideration of the DEIS, the Minnesota Legislature determined in April 1996 that construction of Concept 6 with the north-south runway was the preferred alternative. The legislature went further than just making this selection; Minnesota law now prohibits the construction of a third (north) parallel runway unless all communities potentially affected by the construction of said runway agree to its construction.

**6. Economic Analysis** - inadequate discussion of regional and state economic impacts of each airport alternative

**6.** NEPA regulations do not require a cost-benefit analysis. The regional and state economic analysis included in the DEIS was performed by MAC in response to local concerns. The proposed scope and level of analysis for economic issues and impacts to be

addressed in the EIS were presented for public and agency review and comment in the Second Phase Scoping Report in May of 1995. MAC reviewed the comments received on this report and made its scoping decision in July 1995. The decision on the level of economic analysis is presented on page 12 of the Scoping Decision document. The decision did not include an analysis of the regional/state impacts on economic activity, which would require a detailed base analysis of the state economy. Also, such analysis was not requested by comments received during scoping. However, the final report, "Economic Impacts of the Alternative Airport Development Scenarios", MAC, February 1996, pp. 23-27, included a discussion of the regional economic base economy. The regional discussion highlights historic and projected changes in area industries, such as services and manufacturing. The purpose of the analysis was to highlight areas of projected growth and decline in the area economy over the forecast period. The results of several University of Minnesota economic base studies were reviewed as part of this analysis. The regional discussion also notes several area-wide development issues which may be significant to the airport development process. This information was used to create a context for evaluating the economic impacts created by each airport development scenario. The Minnesota legislature, in conjunction with its selection of the MSP Alternative, mandated a separate analysis by the University of Minnesota of the relationship between aviation service levels and the level of commercial and industrial activity in the state, including the relocation of commercial and industrial enterprises. A summary of the findings of this analysis is included in Section V.I of the Final EIS.

## Summary of Oral Comments at Public Hearings And Responses

The following summary does not include oral comments on the New Airport Alternative which has been eliminated from further consideration as a feasible and prudent alternative.

| Summary of Oral Comments at Public Hearings | Response |
|---|---|
| **7.** The DEIS is fundamentally flawed because the forecast of operations is low. | **7.** See General Response 4. |
| **8.** The economic study is inadequate and doesn't consider the effects of monopoly pricing and the ability of MSP to accommodate growth in operations beyond the (low) forecast. | **8.** See General Response 6 for the adequacy of the economic study. Analysis of airline industry trends indicated that monopoly pricing is an undefined issue. Since NWA competes with other airlines on a route-by-route basis, there will be considerable variability in the cost of air fares from MSP for any given route over time. The fares that NWA charges are a function of its competitive position with other airlines along specific routes. For example, if NWA reduces fares compete with another airline on a given route, fares |

| | |
|---|---|
| | for other NWA routes may need to be increased to recover lost revenue. Also, potential differences in fares from Minneapolis are partially offset by improved convenience, as hub airports provide direct service to many national and world destinations with far fewer connections. |
| **9.** The FAA DNL 65 guideline for residential noise impacts is too narrow; people are adversely impacted by aircraft noise well below DNL 65 levels. | **9.** See MSP Noise Mitigation Plan in Appendix B. |
| **10.** It is unrealistic to assume that the airlines will have all stage 3 jets by 2005 because the airline industry regularly disregards its promises. | **10.** Federal law requires airlines to have all stage 3 jets by 2000, and Minnesota law prohibits Stage 2 aircraft at MSP after December 31, 1999. |
| **11.** There should be an EIS on the proposed rezoning by the city of Minneapolis of the 24-block area on the south end of Lake Nokomis from residential to commercial. This would remove 580 homes which are not included in the Executive Summary. | **11.** The proposed redevelopment of this area has been scaled down; see revised Section V.O.1.2 and revised Figure O-2. Redevelopment would occur following opening of a new west terminal, when and if the Minnesota legislature approves it. |
| **12.** In 1991 MAC said in a report called Preliminary Selection of an Airport Concept that the noise cost of MSP is three billion dollars, but that is not mentioned in the EIS. | **12.** This was not a MAC estimate; it was an estimate by the cities' participating in the study as part of the MSP Interactive Planning Group (IPG).. MAC did not concur with this estimate. The 1991 report was by the IPG, not MAC. |
| **13.** The planning horizon of 2020 is too short for a major airport. | **13.** The planning horizon of 2020 was specified in the 1989 Dual Track legislation which was 30 years from the initiation of the process. 30 years is well beyond the normal 10 to 15-year planning horizon used for FAA project development. |
| **14.** What about a third parallel runway in the future when the proposed expansion of MSP is inadequate? | **14.** By law, a third parallel runway cannot be built at MSP unless agreed to by all cities affected by noise from the new runway. |
| **15.** The Northwest Airlines proposal should be addressed. | **15.** See General Response 3. |
| **16.** Is the proposed north-south runway safe with the Mall of America, hotels and offices at the south end? | **16.** Yes, it will be safe; the hotels and offices will be removed from the runway protection zone (RPZ), as required by FAA. |
| **17.** Why was the remote-runway concept dismissed? | **17.** See Section III.C.3. |
| **18.** The airspace at MSP is currently saturated; you cannot safely add any more flights because | **18.** The comments are incorrect and generalized statements of FAA rules. Departure-interval |

under FAA rules there must be a 3-minute interval between departures and a 5-mile distance between arrivals on that runway.

standards vary according to aircraft category; arrival separation also varies with aircraft category and control conditions. Most departures occur within 1 to 1½ minutes of a previous departure. The results of the current airspace structure is adequate to meet 2020 needs with an additional runway, Some adjustments to arrival fixes would further improve the system.

## Written Comments and Responses

The following written comments on the DEIS were submitted during the comment period, and are listed in the order that they are presented in this appendix;

- United States Environmental Protection Agency (U.S. EPA)
- United States Department of the Interior (U.S. DOI)
- Minnesota Department of Agriculture
- Minnesota Department of Natural Resources
- Minnesota Department of Transportation
- State Historic Preservation Officer (Minnesota Historical Society)
- Minnesota Pollution Control Agency
- Wisconsin Department of Natural Resources
- Wisconsin Department of Transportation
- Minnesota-Wisconsin Boundary Area Commission
- Metropolitan Council
- Metropolitan Council - Transportation Advisory Board
- Dakota County
- Washington County
- Dakota County Soil and Water Conservation District
- Minnehaha Creek Watershed District
- Vermillion River Watershed Management Commission
- City of Bloomington
- City of Eagan
- City of Hastings
- City of Mendota Heights
- City of Minneapolis
- City of Richfield
- City of Saint Paul
- City of Rosemount
- Southern Dakota County Townships
- Denmark Township
- Northwest Airlines, Inc.
- Nokomis East Steering Committee
- Sierra Club
- South Metropolitan Airport Action Council (SMAAC)
- Pierce County, Wisconsin Farm Bureau; Farmers Union and National Farmers Organization
- Representative Jean Wagenius and Senator Carol Flynn, Minnesota Legislature
- Senator Alice Clausing, Wisconsin Senate
- Marion Hall
- Wilbur Maki
- John Richter

- Jeff Schneider
- Al Wellnitz
- John Turner, Reliastar Financial Corp.
- Amy Salo
- Thomas Manion and Genevieve Lubbers
- Robert J. Kelly
- Gibson Batch
- R.W. Russell
- Wanda Brown and Phyllis Goldin

While preparing this FEIS, MAC and FAA also reviewed letters and statements received from the following organizations and individuals, through February 1996:

- Wisconsin Senator Alice Clausing (letter, 2/15/96)
- Minnesota Chamber of Commerce (letter, 2/16/96)
- Minnesota Public Library (letter, 2/7/96)
- Minnesota League of Women Voters (letter, 2/15/96)
- St. Croix County, Wisconsin
- Pierce County, Wisconsin (letter, 2/22/96)
- Bloomington Chamber of Commerce (letter, 2/15/96)
- City of Inver Grove Heights (letter, 2/16/96)
- Minneapolis Chamber of Commerce (letter, 1/24/96)
- City of Prescott, Wisconsin (resolution, 2/12/96)
- St. Paul Chamber of Commerce (policy statements, completed 2/13/96)
- Association for Sensible Airport Planning (letter, 2/15/96)
- Sun Country Airlines (letter, 2/15/96)
- Cy DeCosse, Inc. (letter, 2/19/96)
- Ray and Mary Glumack (letter, 1/23/96)
- Don Hauge (letter, 2/22/96)
- Eddie Maddox (letter, 2/15/96)
- Mike Schlax (letter, 1/8/96)
- Janice and Ellsworth Stein (letter, not dated)
- Steven Suppan (letter, 2/15/96)
- Kerry B. Wollin (letter, 2/19/96)

None of these letters addressed specific items presented in the DEIS or recommended any studies not already incorporated into the FEIS. All of their comments were related to the Dual Track Airport Planning Process in general, and all but a few were directed solely toward the legislative actions that followed soon after the DEIS public comment period. Therefore, it is not necessary to present and respond to the above letters in this appendix. Even so, MAC and FAA reviewed these and other comments while developing the FEIS recommendations and completing additional studies, such as the Noise Mitigation Program presented in Appendix B.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

FEB 2 1 1996

REPLY TO THE ATTENTION OF:

B-19J

Ms. Jenn Unruh
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, Minnesota 55450

Dear Ms. Unruh:

In accordance with our responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act, we have reviewed the Draft Environmental Impact Statement (EIS) on the Dual Track Airport Planning Process for the Minneapolis-St. Paul International Airport in Hennepin and Dakota Counties, Minnesota.

Two project alternatives were discussed in the Draft EIS in addition to the no action alternative; expansion of the Minneapolis-St. Paul International Airport (MSP) alternative, and construction of a new airport in Dakota County. Our concerns with the proposed alternatives include impacts to agricultural land, ground water, wetlands, air quality, water quality, threatened and endangered species, and woodlands. Also, each of the build alternatives include major road improvements as a part of the proposed alternative. Our concerns will be satisfied once these issues are addressed and a commitment is provided by your Agency that compensatory measures will be implemented for environmental impacts that are unavoidable.

Based upon our review, we have assigned the Draft EIS a rating of "EC-2." The "EC" indicates that we have environmental concerns with the project alternatives, and the "2" signifies that additional information is required and should be incorporated into the Final EIS.

We appreciate the opportunity to provide comments on the Draft EIS. If you have any questions on our comments, please contact Holly Wirick of my staff at (312) 353-6704.

Sincerely,

Michael W. MacMullen, NEPA Process Manager
Office of Strategic Environmental Analysis

Attachment

cc: Glen Orcutt, FAA, Minneapolis, MN

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U.S. Environmental Protection Agency
Region V Comments
Draft Environmental Impact Statement
Dual Track Airport Planning Process
Minneapolis-St. Paul International Airport
Hennepin and Dakota Counties, Minnesota

SUMMARY

Based on purpose and need criteria provided in the Draft EIS, we concur that a "build" alternative is justified in order to better serve present and projected future air traffic needs in the Minneapolis-St. Paul area. However, we have environmental concerns with the proposed project alternatives discussed in the Draft EIS. We are also dissatisfied with the alternatives analysis conducted in the Draft EIS.

ALTERNATIVES

The Alternatives Analysis section of the Draft EIS is incomplete. The Final EIS should include a summary of the project alternatives that were considered for implementation, along with the rationale for determining why these alternatives were eliminated from consideration. Also, the issue of the most effective project planning period should be further considered. In this regard, our Agency believes that it may be useful to extend the time frame out another 10 to 15 years. If the MSP expansion alternative is selected, and it is later determined that the existing site can no longer provide adequate service, it will be much harder to find a location near Minneapolis to build a major new airport, should that prove necessary in the future.

A.

B.

The alternatives that were discussed in the Draft EIS include no action, expansion of the Minneapolis-St. Paul International Airport (MSP), and construction of a new airport in Dakota County. The MSP expansion alternative includes the addition of a new 8,000-foot north-south runway, a new replacement terminal building, highway access roadways, and a parking/drop-off facility. The new airport alternative is proposed to be built on a site of 14,100 acres east of Vermillion and south of Hastings in Dakota County. The airfield would consist of four parallel runways and two crosswind runways. Main highway access would be from the north by a new eight-lane freeway to a centrally-located terminal. Neither build alternative has been identified as preferred in the Draft EIS.

Our concerns with the build alternatives proposed in the Draft EIS include impacts to agricultural land, ground water, wetlands, air quality, water quality, threatened and endangered species, and woodlands. Also, each of the build alternatives include major road improvements as a part of the proposed alternative; however, the Draft EIS does not adequately assess potentially significant environmental impacts that may occur as a result of the necessary access roadway construction projects. Also, information concerning proposed development associated with the new airport alternative was not provided in the Draft EIS. This includes commercial and residential development induced by the new airport alternative, impacts to land that would be acquired for the new airport, land affected by airport relocation related improvements to the regional transit system, land affected by the rerouting or designation of utility corridors, and land later acquired for the mitigation of wetlands. Environmental impacts resulting from roadway construction projects and development activities associated with the selected project alternative should be thoroughly assessed in the Final EIS. Mitigation measures that will be taken to compensate for any adverse environmental impacts must also be provided in the Final EIS.

C.

A. The Dual Track Airport Planning Process utilized a tiered approach (approved by the Minnesota Environmental Quality Board) to analyze environmental impacts of a series of new site, new airport, and MSP alternatives, and from this process selected the best new airport and MSP expansion alternative. In its July 5, 1995, letter on the EIS Scoping, U.S.E.P.A. stated that preliminarily there had been concern that the alternative selection for the New Airport site was made at a State level outside of the NEPA process. After receiving the state documentation, the U.S.E.P.A. was satisfied that the state process closely paralleled the NEPA process and stated it's support of the range of alternatives proposed for assessment in the Draft EIS. Detailed discussion of MSP alternatives and new airport alternatives are provided in the respective alternative environmental documents (AEDs), incorporated by reference in the EIS. Council on Environmental Quality (CEQ) Section § 1500.4 details several methods for reducing excessive paper work, including incorporation by reference. Section III of the EIS provides a summary of findings from these AEDs and describes why specific alternatives were either eliminated or carried forward to the final EIS.

B. The Year 2020 planning horizon (30 years from the initiation of the process in 1989) was stipulated in the Dual Track Legislation passed by the state legislature; therefore, the alternatives considered in the EIS were designed to meet baseline 2020 requirements. A 2020 planning horizon is beyond the 30-year planning period typically used for airports. The MAC has subsequently evaluated the MSP Alternative using a 2020 high forecast of 640,000 annual operations (approximately 23 percent higher than the 2020 base forecast of 520,000) and found that the MSP Alternative can accommodate these activity levels with 2020 facilities. This analysis accomplishes the same purpose as extending the planning period. There is also some flexibility for further developing the site beyond the recommended 2020 plan.

C. Environmental impacts due to the roadway improvement projects as a direct result of the alternatives are presented in the relevant sections of the FEIS and summarized in Table W-12 in Section V.W.4. Mitigation measures are presented in the relevant sections of the FEIS and summarized in the Executive Summary. As a condition of project approval, FAA will require MAC to take all reasonable steps to minimize significant adverse impacts on natural resources pursuant to 49 USC 47106(c)(1)(c). See also General Response 1.

AGRICULTURAL LAND

The new airport alternative would result in the development of several thousand acres of farmland. According to the Draft EIS, a minimum of 17,000 acres of agricultural land in Dakota County would be lost to development of the new airport alternative. This alternative would impact agricultural operations through the acquisition of land and buildings, severances of land, and changes in access to farm properties.

Farming is the predominant business within the affected environment. The removal of farming operations within the airport boundary and of businesses in the community would result in a reduction of opportunities for farming-related jobs for individuals living in adjacent rural areas of the county. Many businesses within the new airport boundary are dependent upon farming for their clientele. Most of the businesses anticipate a loss of at least 50% of their business volume as a result of the new airport alternative. Currently, there are approximately 200 agriculturally related businesses in Dakota County, employing approximately 4,000 to 5,000 individuals, and grossing $170 million annually.

If the new airport alternative is chosen, the Final EIS should indicate the number of acres that are considered to be "prime or unique" farmland. A description should then be provided on the types of measures that would be taken to minimize and compensate for impacts to prime or unique agricultural land as a result of project implementation activities. Measures that would be taken to compensate for impacts to the farming community should also be provided in the Final EIS.

**D.**

D. See General Response 1.

GROUND WATER

Based on the information provided in the Draft EIS, we concur with the conclusion on page V-290 (Section CC.4) which states that ground water is more vulnerable to contamination under the new airport alternative than under the MSP expansion and no action alternatives. This conclusion is supported by the highly permeable soils and presence of sinkholes at the proposed site. Also, downgradient drinking water wells would be vulnerable to contamination from the new site. Mitigation measures are proposed that could greatly reduce the chances of ground water contamination. If the new airport alternative is chosen, the Final EIS must provide a thorough description of specific measures that would be taken to protect ground water from contamination.

**E.**

E. See General Response 1.

WETLANDS

The MSP expansion alternative involves the placement of the terminal complex at the west end of the airport, which requires the construction of several bridge structures to allow vehicular access between the terminal complex and Trunk Highways 62 and 77. These structures will involve the placement of bridge deck over approximately 12.1 acres of wetlands. Implementation of the MSP expansion alternative would also impact wetlands through the construction of a new storm sewer outfall pipe. The MSP expansion alternative also requires the placement of fill in approximately 5 acres of Mother Lake to create a safety area off the end of the North-South runway.

If the MSP expansion alternative is chosen, information should be provided in the Final EIS on the types of measures that will be taken during construction and placement of the bridge structures and the storm sewer outfall pipe to ensure that wetland soils are left undisturbed. With regard to wetland impact mitigation for the impacts to Mother Lake, the Draft EIS states that the ratio of wetland acreage mitigated to wetland acreage taken would be at least 1:1. Our Agency almost always finds that a minimum of 1.5 acres of compensatory wetlands must be provided to adequately offset the loss of each acre of naturally-occurring wetlands. The specific details regarding wetland mitigation are to be determined during the 404 permitting process. We also recommend in-kind replacement for all destroyed wetlands, and concur with the plans for restoration of previously drained wetland rather than creation of new wetland out of upland. Once the preferred project alternative is selected, a wetlands mitigation plan should be developed and provided in the Final EIS.

**F.**

F. The new west terminal is a part of the 2020 Concept Plan, not the 2010 LTCP. Through ongoing coordination with the MPCA, it has been determined that the storm sewer outfall from MSP will no longer be routed to the Mississippi River; rather the existing outfall locations on the Minnesota River will be utilized. No new wetland impacts will occur at these locations.

If and when the Minnesota legislature approves the construction of a new west terminal and the preliminary design of ground access has been agreed to by MAC and Mn/DOT, MAC will coordinate with permitting agencies to identify specific measures to minimize wetland disturbance at Mother Lake due to any bridge construction. Potential measures may include the use of watertight caissons or forms during pier construction and silt curtains to control turbidity. Specific construction-related mitigation measures will be developed jointly with the appropriate regulatory agencies and are expected to be permit conditions.

The wetland replacement plan that is presented in Appendix D of this Final EIS reflects the amount of mitigation that these agencies have currently directed MAC to pursue. This mitigation plan will be further refined during the various wetland permit processes.

AIR QUALITY

With regard to receptor siting, the Final EIS should provide additional information on the methodology used to develop the receptor network. The points that should be addressed are the places where the maximum concentrations are expected, places of high population density or general public access, any topography issues, prevailing wind directions, and the general reasonableness of the receptor siting. We also request a discussion of the relationship between the 1-hour and the 8-hour CO concentrations (i.e., how the 8-hour concentration is derived from the 1-hour concentration).

A brief discussion of the temperature used in the EDMS, MOBILE5a, and CAL3QHC models should also be included in the Final EIS. This is necessary to assure consistency with the Minnesota State Implementation Plan (SIP).

G. An expanded discussion of receptor site location is contained in Section V.A., Methodology and Assumptions.

Estimates of 8-hour concentrations for roadway sources have been made using a persistence factor of 0.70 applied to the Peak Hour roadway concentration.

The relationship between 1-hour and 8-hour CO concentrations for on-airport sources is discussed in Section V.A., Methodology and Assumptions: On-Airport Sources: Pollutant Concentrations.

Temperature assumptions are also discussed in Section V.A.

WATER QUALITY

Water resources should be protected from nonpoint pollution sources. Water quality impacts resulting from either of the build alternatives include the effects of erosion, sedimentation and contaminants contained in airport runoff. An effective water quality protection plan is essential to prevent the degradation of spawning and feeding areas. The Final EIS should identify the types of measures that will be implemented, both during and after construction, to minimize the introduction of soil and contaminants into nearby water bodies.

H. Measures to be implemented during and after construction to minimize the loading of soils and other contaminants to receiving waters are provided in Section V.E.

According to the Draft EIS, the only significant source of ammonia loading and problematic pH conditions in MSP storm water is the use of urea as a ground surface snow/ice control agent. Urea will eventually be replaced by a combination of sodium formate and potassium acetate products which have been found to be environmentally benign. Urea has a significant nitrogen content; thus, has the potential for adverse environmental impacts. The Draft EIS states that the trial testing of the aforementioned urea replacement products has been ongoing since 1993. If these trials have been successful, we recommend that the facility begin to use these products as soon as possible to reduce water quality degradation. The Final EIS should provide information on the status of the field test trials of the urea substitutes, and should provide an indication on when these products will permanently replace urea.

I. It cannot be stated with confidence precisely when the use of urea at MSP will be eliminated. Because this is a critical safety issue, the MAC Operations and Field Maintenance Departments must approach product testing and replacement with care and deliberation.

The MAC began testing with potassium acetate, a liquid product, in 1993. Potassium acetate is now used on a full-scale basis as an anti-icing agent.

Sodium formate has only been used on a limited number of airports worldwide, to date. The MAC has performed testing with sodium formate for two winter seasons (1995/96 and 1996/97). The results have generally been positive. It is envisioned that sodium formate will be used on a full-scale basis once the necessary development actions to allow proper material storage and handling can be taken.

With regard to erosion control, the Draft EIS states that disturbed areas will be either revegetated or paved as soon as possible. We recommend that disturbed areas be revegetated, preferably with native flora. Natural vegetation would conserve water, increase the water storage capacity of the area, would work more efficiently as filters for contaminated runoff than mowed grass, and maintenance costs could be significantly reduced. Limiting mowing would also help to reduce emissions and conserve energy. We also recommend that native flora be planted along the access roadways. The Iowa Department of Transportation has been planting native flora along highways for several years, and may provide your Agency with information on how to establish a similar program. For information on Iowa's "Living Roadway Trust Fund," call (515) 239-1768.

J. Wherever possible, revegetation will be used to prevent post-construction erosion. Native seed mixes will be used in appropriate areas where mowing is not necessary.

WOODLANDS

Woodlands also help to control erosion and increase the drainage capacity of an area. Information was not provided in the Draft EIS concerning the impact the proposed project activities would have on woodlands. Activities that are associated with the proposed airport improvement project may impact woodland areas within the project area, including construction of the access roadways and development associated with the proposed project. Woodlands provide habitat for a large variety of wildlife species. The quality of habitats adjacent to these woodland areas may also become degraded due to a reduction in size, fragmentation, and increased levels of noise, traffic, lights, and other human activities. These areas serve as corridors for wildlife movement. Fragmentation of these areas would impact migration routes, potentially resulting in increased road kills. Every effort should be taken by your Agency to minimize impacts to woodland areas. For impacts that are unavoidable, compensation should be provided. The Final EIS should provide information on measures that would be taken to compensate for the removed trees and for the impacts to wildlife habitat. We recommend that removed trees be replaced with native saplings, if practicable, at a minimum ratio of 1:1. Setting aside a large tract of woodland for protection from future development is one measure that may be considered as compensation for lost wildlife habitat. With regard to the disposal of removed trees, we recommend that they either be placed in a forested area to provide wildlife habitat, or provided to the community as firewood or mulch, rather than disposing the trees in a landfill.

**K.** K. The MSP Alternative will not affect any woodlands.

THREATENED AND ENDANGERED SPECIES

The Draft EIS states that the project site for the new airport alternative encompasses three traditional loggerhead shrike nest sites; this species is listed on the state list of threatened, endangered and special concern species. The project would require the removal of a 17-acre breeding territory, which supported a pair of breeding shrikes in 1991, 1992, and 1993. If the new airport alternative is selected, the Final EIS should provide information on your Agency's coordination efforts (correspondence, etc.) with the Minnesota DNR on potential impacts regarding loggerhead shrike habitat. The Final EIS should also include what measures will be taken to mitigate unavoidable impacts to loggerhead shrike habitat.

It is stated in the Draft EIS that no threatened or endangered species are known to occur along any highway, power line or fuel pipeline corridors needed for the new airport alternative. Documentation to support this determination should be provided in the Final EIS. If the new airport alternative is selected, a survey for threatened and endangered species along these corridors may be necessary, and the results should be provided in the Final EIS. Mitigation measures for any unavoidable impacts to threatened or endangered species should be developed in coordination with the MDNR and included in the Final EIS.

The proposed runway extension at MSP will result in overflights of bald eagle nests. Bald eagles are Federally-listed as threatened. According to the Draft EIS, although the USFWS has indicated that a formal consultation probably would not be required for this alternative, the ultimate determination will be made after the selection of a preferred alternative. The Final EIS should provide a description on the status of USFWS consultation, along with supporting documentation with regard to the determination of impacts as a result of this project.

**L.** L. See General Response 1.

NOISE

[Comments will be sent under separate cover in the next few days and will not cause EPA to change its rating of this EIS.]

HISTORIC PRESERVATION

The Draft EIS states that in order to accommodate the MSP expansion alternative, it would be necessary to demolish the Original Wold-Chamberlain Terminal Historic District, which may be eligible for the National Register of Historic Places. The document also states that plans to add, change or remove structures to accommodate the MSP expansion alternative would physically impact portions of the archaeologically sensitive area.

It is stated in the Draft EIS that specific measures to mitigate adverse effects will be negotiated after an airport alternative is selected and plans are made to implement the project. The document also states that a professionally designed and executed data recovery plan is proposed to mitigate adverse effects to archeological properties. An archeological survey of the project area must be conducted before impacts can be assessed. The Final EIS should provide information on the selected mitigation measures for impacts to cultural and archaeological resources that may be impacted by the proposed project. Correspondence included in the Draft EIS indicates that your Agency is working closely with the Minnesota Historical Society regarding these issues. We concur with their recommendation that a specific assessment of effect on all National Register eligible properties, as well as appropriate avoidance and/or mitigation measures for each site be provided.

**M.**

M. A programmatic agreement for identifying historic properties, assessing effects, and mitigating adverse effects has been signed by the Federal Aviation Administration, the Minnesota State Historic Preservation Office, the Metropolitan Airports Commission, the Advisory Council on Historic Preservation, and other interested parties. (See Appendix C.)

SOLID WASTE

According to the Draft EIS, approximately 750,000 tons of non-recycled mixed municipal solid waste requiring processing/ disposal were generated within Hennepin County in 1994. The projected 2020 Hennepin Co. generation of municipal solid waste requiring processing/disposal is 805,000 tons. The Draft EIS states that the current airport tenants have municipal solid waste recycling programs in place which target paper products, aluminum and other metals and glass, and that the goal for the metro area is to recycle 45 percent of the waste stream by the end of 1996. Although this recycling goal is commendable, the ideal solution is to prevent the generation of the waste in the first place. Thus, we recommend that your Agency develop a waste reduction plan to reduce the volume of waste being generated at the facility. Please feel free to contact our Agency for suggestions on developing such a plan.

With regard to the construction-related solid waste that would be generated by the proposed project activities, we recommend that it be stated in the project contract that every effort be made to reuse construction debris to reduce the volume of material disposed of in a landfill. Construction waste can be used in a number of projects, including road construction, erosion control, and streambank protection. The Final EIS should include information on the proposed disposal plans for the construction waste including an indication of whether any of the debris will be recycled or reused.

**N.**

N. The MAC has commissioned and undertaken a major effort to characterize baseline waste management and recycling conditions and implement measures to minimize the amount of solid waste requiring disposal/ processing. This work is summarized in Solid Waste Management and Recycling at MSP: Summary of Work to Date and Further Administrative/Implementation Issues (B.A. Liesch Associates and EcoSource, Inc.; June 1996). While the MAC and MSP tenants evaluate and implement waste reduction measures on an on-going basis, there is no formal waste reduction plan for the overall facility. The MAC appreciates the opportunity to use the US Environmental Protection Agency as a resource to enhance existing waste reduction efforts.

ENERGY EFFICIENCY AND POLLUTION PREVENTION

The Draft EIS states that possible measures for reducing emissions include efficient terminal and facility design to minimize energy use and emissions. In this regard, we recommend that your Agency consider the installation of sky lights, energy-efficient electrical fixtures, energy efficient insulation, and energy efficient lighting throughout the facility, in the parking areas, and along the access roadways. We also recommend that water conservation devices be installed, such as toilet dams, low-volume or waterless toilets, and faucet aerators.

With regard to the proposed terminal area expansion, we recommend that items be purchased that promote recycling and/or source reduction during procurement procedures, and that environmentally-sound products be used during construction. Such products may include items made from recycled materials, such as subflooring, carpet board, underlayment, carpeting, insulation, wallboard, ceramic tile, and furniture. Environmentally-sound construction products include items that are water-based or made with natural ingredients (i.e., beeswax, carnauba wax, natural oils, chalk, plant extracts, and plant gums). There are a number of non-toxic products available, including paints, thinners, varnishes, waxes, cleansers, polishes, spackles, and adhesives. Please feel free to contact our Agency for suggestions.

With regard to the source of wood proposed for use in construction, we recommend that your Agency contract with a forest products supplier that practices sustainable silviculture, in which trees are selectively harvested to minimize impacts to the forest ecosystem.

Finally, it is stated in the Draft EIS that the use of alternative fuels for ground support vehicles and on-airport shuttles will be considered as measures to reduce emissions. We agree and strongly encourage your Agency to restrict all of your airport vehicle purchases to those that use alternative fuels.

O.

O. The MAC acknowledges these recommendations and comments, and will take them into consideration in the implementation of the project.

# Minnesota Department of Agriculture

January 17, 1996

Metropolitan Airports Commission
c/o Ms. Jenn Unruh
6040 - 28th Avenue South
Minneapolis, MN 55450

RE: Comments on the Dual Track Planning Process Draft Environmental Impact Statement

Dear Commission Members:

The purpose of this letter is two-fold; to comment on the adequacy of the Draft Environmental Impact Statement for the Dual Track Airport Planning Process and to express this agency's concerns regarding the environmental consequences of losing large amounts of valuable farmland in Dakota County.

Our review comments on the DEIS are detailed in an attachment to this letter, and are summarized below.

## Draft Environmental Impact Statement

We commend the Metropolitan Airports Commission and the authors of the DEIS for the thorough treatment of farmland loss in the Farmland section of the Environmental Consequences Chapter. Despite what we believe to be an underestimate of the potential farmland loss, the Farmland section does a very good job of describing the extent of potential impacts.

However, we have a major disagreement with the conclusion that the impact of the farmland loss to Minnesota would be minimal. We recognize that the loss of 17,000 acres of agricultural land due to the New Airport (a figure which we believe to be conservative) represents a small fraction of the total farmland acreage in Minnesota. However, farmland loss to development is a cumulative impact, occurring over an extended period of time.

When measured against the average yearly amount of farmland lost to development, this one-time loss of 17,000 acres is extremely large. 240,000 acres of farmland were lost to development in Minnesota between 1982 and 1992 (Source: 1992 National Resources Inventory, USDA Natural Resource Conservation Service). The loss of 17,000 acres represents seven percent of the total ten year loss figure of 240,000 acres, or over 70% of the average yearly loss.

Because of the cumulative nature of farmland loss, my department routinely comments upon private and public development proposals with potential farmland impacts that are much more modest than the impacts described in this DEIS.

We believe that extent of potential loss of farmland in Dakota County due to induced development has been seriously underestimated. According to the Land Use section of the DEIS, rural townships would have no induced employment and would gain only 380 additional households due to the airport. The estimated induced development in the County appears to be based on assumptions that the Metropolitan Council and local governments (Dakota County, townships, and cities) will be able to (and will choose to) tightly control land use surrounding the airport. This represents a "best case" scenario in terms of farmland impacts, and likely drastically understates the actual farmland loss due to induced development.

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We do not reject out-of-hand the possibility that the responsible jurisdictions will be successful in controlling growth over the long term in the rural townships. Nonetheless, the EIS should acknowledge the possibility that the Metropolitan Council and local governments may allow development to occur (or may be unable to prevent development from occurring) around the airport. In order to adequately describe potential impacts, the Land Use Section should outline and estimate possible development scenarios, including urban level residential, commercial, and industrial development in close proximity to the airport.

Additionally, the Induced Socioeconomic Impacts and Land Use sections do not adequately describe the effects of accelerating development of counties within the "growth corridor" extending from the Twin Cities to Rochester, particularly those to the south of the airport and outside the metropolitan area. In its Farmland section, the DEIS correctly points out that Goodhue County has never had to deal with strong growth pressures. The implication is that the County may be susceptible to those pressures, and that a considerable amount of development could result. These growth pressures would be accentuated by a new airport. This would be particularly the case if Dakota County were successful in displacing that growth from farmland near the airport.

### Concerns Regarding Loss of Farmland

Given what we believe will be heavy impacts to farmland and the agricultural economy of Dakota County, my agency is extremely concerned.

First, the farmland in the vicinity of the airport is valuable. The Land Evaluation and Site Assessment (LESA) in Appendix A of the DEIS shows that the agricultural land that would be impacted by the airport is of a very high quality, both in terms of the quality of the land itself, and in terms of the long-term stability of the agricultural uses.

This is supported by a 1993 article published by the American Farmland Trust, which states that agriculture on the edge of urban areas accounts for more than one half of gross agricultural sales in the U.S., since cities historically developed on some of the best soils. A map contained in the article shows Dakota County as what the article terms "condition red" farmland— an urban-influenced, high growth county with higher than national average values of products sold.

In addition to its high agricultural value, land in close proximity to urban areas, such as in Dakota County, has special value for "niche" farming, such as vegetable farming, pick-your-own farms, nurseries, and the like.

And, there are other reasons for our concern about farmland loss:

- If development induced by the airport is of a scattered nature, the cost of providing services to that land will be high. A study sponsored by MDA in 1989 demonstrated that the net cost of providing services to residential development in rural areas is four times the cost of providing services within cities.

- Additionally, introduction of development into agricultural areas tends to increase conflicts between urban and rural land uses; a factor which, along with increasing land prices and other "dynamics of development", drives agricultural uses from an area.

MDA's concerns are basically unchanged from the earlier Major New Airport Search Area Designation phase of the Dual Track Alternative Environmental Review Process. In a letter to Mr. John Kari, Metropolitan Council, dated March 25, 1991, this agency expressed concern that "areas around the Twin Cities which did a good job of protecting agricultural lands were particularly susceptible to designation as a candidate search area". We remain concerned today about consideration of the Dakota County site for the new airport—that it conveys the message that, if local government does a good job protecting farmland, it will eventually be penalized. We feel this is the wrong message, and one which is inconsistent with state policies, including the State Agricultural Land Preservation Policy, the Metropolitan Agricultural Preserves Act, and the Metropolitan Council Regional Blueprint.

I understand and appreciate the difficult and critical decisions that the Commission must make regarding future airport development for region and state. However, even given the incomplete information presented in the Draft EIS, we must conclude the potential new airport in Dakota County would adversely affect the vital Dakota County agricultural economy.

I very much appreciate the opportunity to provide input for your decision-making, and wish you the best of luck in this process.

Sincerely,

Gene Hugoson
Commissioner of Agriculture

GH:AgD:rp

Attachment
Detailed Comments of Minnesota Department of Agriculture on
Draft Environmental Impact Statement
Dual Track Planning Process

## A. Chapter V, Section K, Farmland

1. We commend the Metropolitan Airports Commission and the authors of the DEIS for the thorough treatment of farmland loss in the Farmland section of the Environmental Consequences Chapter. We concur with the conclusions in the section regarding the "impermanence syndrome" and dynamics of development, and the inferences from five airport case studies (significant urban development in the 13 rural townships).

2. We believe the farmland loss projections in the section are based upon flawed land use and growth assumptions (please see comments on Section N, Induced Socioeconomic Impacts, and Section O, Land Use). **A.**

3. Farmland loss totals should include acreage that would be lost due to new road and interchange construction necessary for the New Airport alternative.

4. Maps should be included in Appendix B, and referred to in this section, of prime farmland and Metropolitan Agricultural Preserve covenanted land. **B.**

5. We disagree with the conclusion in the summary that the impact on farmland in Minnesota would be minimal. We recognize that the loss of 17,000 acres of agricultural land due to the New Airport (a figure which we believe to be conservative) represents a small fraction of the total farmland acreage in Minnesota. However, farmland loss to development is a cumulative impact, occurring over an extended period of time. When measured against the average yearly amount of farmland lost to development, this one-time loss of 17,000 acres is extremely large. 240,000 acres of farmland were lost to development in Minnesota between 1982 and 1992 (Source: 1992 National Resources Inventory, USDA Natural Resource Conservation Service). The loss of 17,000 acres represents seven percent of the total ten year loss figure of 240,000 acres, or over 70% of the average yearly loss. Because of the cumulative nature of farmland loss, MDA routinely comments upon private and public development proposals with potential farmland impacts that are much more modest than the impacts described in this DEIS. **C.**

## B. Chapter V, Section N, Induced Development

1. This section should describe the methodology used for determining induced development figures. **D.**

2. Table N–4, on geographical distribution of employment, shows that rural townships would have no induced employment. We disagree with that assessment. (please see our comments under Section O, Land Use).

3. The Induced Socioeconomic Impacts and Land Use sections do not adequately describe the effects of accelerating development of counties within the "growth corridor" extending from the Twin Cities to Rochester, particularly those to the south of the airport and outside the metropolitan area. In its Farmland section, the DEIS correctly points out that Goodhue County has never had to deal with strong growth pressures. The implication is that the County may be susceptible to those pressures, and that a considerable amount of development could result. These growth pressures would be accentuated by a new airport. This would be particularly the case if Dakota County were successful in displacing that growth from farmland near the airport (please see our comments under Section O, Land Use).

4. It is unclear how induced development figures for Goodhue County (Table N–6) were determined. The township projections appear to be low. **E.**

5. Rice County is not discussed, although Section K, Farmland, on page V–93, acknowledged that greater development pressure will be felt. **F.**

A. See General Response 1.

B. See General Response 1.

C. See General Response 1.

D. See General Response 1.

E. See General Response 1.

F. See General Response 1.

## C. Chapter V, Section O, Land Use

1. The land use section does not adequately describe the potential land use impacts of the New Airport proposal. As acknowledged in the DEIS, employment tends to be a driver for development in an area, inducing residential development, and inducing additional employment. The additional employees require land on which to live and work, which can be estimated for the purposes of an EIS.

**G.** G. See General Response 1.

The main problem with the analysis in the DEIS is that the estimated induced development has been allocated according to a single set of assumptions, the assumptions being that the Metropolitan Council and local governments (Dakota County, townships, cities) will be able to (and will choose to) tightly control land use surrounding airport. This represents a "best case" scenario in terms of farmland impacts, and likely drastically understates the actual farmland loss due to induced development. As mentioned above, Table N–4 shows that rural townships would have no induced employment. Table also shows only 380 additional households.

**H.** H. See General Response 1.

We do not reject out-of-hand the possibility that the responsible jurisdictions will be successful in controlling growth over the long term in the rural townships. At the same time, the EIS should acknowledge the possibility that the Metropolitan Council and local governments will allow development to occur (or may be unable to prevent development from occurring) around the airport. As mentioned in the Farmland section of the DEIS, analysis of case studies would suggest that development is likely to occur in close proximity to the airport. Additionally, the DEIS does not adequately consider the impact of developing new major interchanges or creation of new major intersections, particularly the interchange between TH 55 and New Airport access road, and intersection of access road with County Road 48. The access provided to the metropolitan transportation system, combined with proximity to the airport, will lead to considerable development pressure at these locations.

**I.** I. See General Response 1.

In order to adequately describe potential impacts, the Land Use Section should outline and estimate possible development scenarios, the conditions that would be necessary for those scenarios to occur, and their implications. It appears that there are three scenarios for growth in close proximity to the airport that could be described:

a) **Agricultural uses are maintained** (the scenario described in the DEIS). Existing developable lots might be developed, but projected growth above the number of existing lots would be diverted to other areas. This would require maintenance of strong zoning controls, continued agricultural preserve participation by landowners, and probably new measures, such as purchase of development rights.

b) **Low density, predominantly residential development.** This scenario would entail expiration of agricultural preserve covenants and amendments to comprehensive plans and zoning ordinances. It could be accomplished without sewers, reducing a degree of leverage available to the Metropolitan Council.

c) **Urban level development.** This could be residential, commercial, industrial. A likely pattern would be airport-related commercial and industrial along major roads and interchanges surrounded by urban density residential development. The scenario would require sewer, increasing influence of the Metropolitan Council.

**J.** J. See General Response 1.

## D. Chapter V, Section T, Social

There are discrepancies between references to figures in the text and the numbering of figures. It appears that a reference to Figure T-2 is missing in the text in the second bullet under subsection T.1.2

**K.** K. Figure references have been corrected.

## E. Chapter V, Section W, Transportation

This section fails to adequately describe the interchanges that would be required for the new airport. Interchanges are actually shown in figures related to Section T, Social.

**L.** L. See General Response 1.

# Minnesota Department of Natural Resources

500 Lafayette Road
St. Paul, Minnesota 55155-40_10

February 12, 1996

Jenn Unruh
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, MN 55450

RE: Dual-Track Airport Planning Process
Draft Environmental Impact Statement (EIS)

Dear Ms. Unruh:

The Department of Natural Resources (DNR) has reviewed the Draft Environmental Impact Statement for the Dual-Track Airport Planning Process. Generally, the document provides an excellent comparison of the natural resources-related effects of each alternative.

We offer the following comments for your consideration as you prepare the final EIS.

**Endangered and Threatened Species**
We greatly appreciate the thoughtful and comprehensive assessment of the endangered and threatened species in the vicinity of the MSP and Dakota County sites. We extend our compliments to the MAC and its consultants on the time spent, both in the field and in extensive literature review, preparing an outstanding analysis of potential impacts to these resources.

H.2.2. Endangered and Threatened Species -- New Airport Alternative
Page V-51, second paragraph from the bottom. The EIS mentions additional field surveying conducted by the consultants to delineate potential loggerhead shrike habitat within the Dakota County site. I would appreciate receiving a copy of this assessment for our file on shrikes in Dakota County. **A.**

A. A copy of this field survey has been sent. See also General Response 1.

Page V-52, first line. It may not be correct to assume that loggerhead shrikes will habituate; our monitoring shows that these birds seem to lack site fidelity and are short-lived. **B.**

B. See General Response 1.

H.2.3. Mitigation Measures - New Airport Alternative
Page V-54. While we would encourage implementation of all options for mitigating impacts to loggerhead shrikes, Option 2 (nesting habitat acquisition) would be the most valuable since airport operations might discourage shrike use and preclude Option 1 (on-site habitat preservation). Option 3 (landowner education) would be more effective if the information were broadened to include education on biodiversity, landscape health, and the inherent importance of a rare species' continued existence. **C.**

C. See General Response 1.

As mentioned on pages V-54 and 55, DNR Non-game or Heritage personnel would be glad to work with the MAC on mitigation measures relative to rare plants, management of the Chimney Rock site, and shrike habitat mitigation at the new airport site, should this alternative move forward. **D.**

D. See General Response 1.

**Impacts to Mother Lake (MSP Alternative)**
Part V - C.1.2. and Part V - H.1.2. The EIS correctly describes the affected environment, and impacts, concluding that *[T]he MSP alternative cannot be implemented without some reduction in Mother Lake's habitat value to Forster's Terns.* In order to minimize these impacts, the MAC has incorporated our suggestions for bridging rather than filling for road access over Mother Lake and for prairie plantings around the lake shore. We believe this is an appropriate mitigation strategy. However the statements on page V-30 regarding higher, stable water levels benefitting the Forster's terns are premature, reflect a perfunctory assessment of the consequences of water level management, and are somewhat self-serving as they justify the proposed water management regime without consideration of other water level management strategies that might better mitigate impacts to Mother Lake, enhancing its future use by the terns and other waterbirds. **E.**

E. See response following letter.

We agree that eliminating the "bounce" to the lake level caused by surges of storm water run-off would benefit the Forster's terns, a state special concern species. However, *higher but more stable water levels* (mentioned on page V-30 and in H.1.3. page V-50) may not be the best management regime.

If the Legislature approves either the MSP or the No-build alternative, we recommend the MAC pursue further mitigation for the impacts to wildlife habitat at Mother Lake. After discussions with Dr. James Cooper at the University of Minnesota (who has worked with the MAC on goose management-related issues) we believe a relatively simple study could assess the value of Mother Lake as tern nesting habitat, and determine whether mitigation efforts there are effective or worthwhile.

We suggest you evaluate tern use of Mother, Grass, and Wood lakes in relation to the their history of water level fluctuation. We also recommend a literature review and analysis of Forster's Tern breeding habitat preferences. Grass and Wood lakes are about one mile west of Mother Lake and both have supported tern nesting. In combination, the three lakes may function as a tern nesting habitat "complex". If so, it may be more effective to focus management efforts on the two lakes not directly affected by airport improvements. The study would help develop recommendations for water level management strategies for all three lakes, assuring that adequate nesting habitat is retained within the airport vicinity.

We would be happy to develop a study proposal or provide technical recommendations if the MAC wishes to perform the study using its own, or contracted, staff.

**E.** E. (Cont'd) See response following letter.

**Surface Water/Wastewater/Floodplains**
A storm sewer is proposed between the Dakota County site and the Mississippi River. Seepage collars and trenchdams should be constructed within the utility trench to prevent it from acting as a ditch and permanently lowering the water table of the area.

**F.** F. See General Response 1.

The existence of the Vermillion River shoreland district was not in the discussion of the Dakota County site. It appears that the sewage treatment plant for the airport will be within the shoreland district of the river.

**G.** G. See General Response 1.

Floodplains occur on both sites. There are floodplains (although non-FEMA designated) around Duck Lake and Mother Lake in the MSP site; you should avoid construction within these areas. The Vermillion River has a FEMA-designated floodplain within the Dakota County site. The sewage treatment plant must be built according to the county floodplain regulations.

**H.** H. Construction within the floodplains around Duck Lake and Mother Lake is unavoidable under the MSP Alternative. Any loss in flood storage by the filling of Duck Lake would be compensated by creation of new flood storage elsewhere within the drainage area. The MAC will work through the permitting process of the Minnehaha Creek Watershed District to ensure that regulatory requirements are met.

Both alternatives would generate huge amounts of runoff. We encourage any efforts you can make to reduce its quantity. Establishing and maintaining prairie within the Dakota County site, as described in the draft EIS, would greatly benefit wildlife and surface water quality. We recommend you make greater use of native vegetation within the existing MSP site, as well.

**I.** I. Native vegetation will be used at MSP to the extent practical. See also General Response 1.

**Fort Snelling State Park and Historic Site**
We appreciate that the proposed improvements at MSP will not destroy or damage the upper area of Fort Snelling State Park or the Fort Snelling Historic Site. We believe the recreational and historical interpretation opportunities these areas provide will only increase in importance in the future.

**Impact to Snowmobile Trails**
The EIS correctly identifies impacts to the Dakota County Trail Association snowmobile trail. If the new airport option is selected, the MAC should work with the trail administrator, Ms. Roseann Schaack, (507)263-4482, to reroute the affected trail sections.

**J.** J. See General Response 1.

**Northwest Airlines Proposal**
We understand that the recent Northwest Airlines proposal is not part of the Dual-Track Study. However, if the MAC completes a written evaluation of the proposal, we would like to receive a copy. Although the proposal may not meet the MAC's long-term transportation needs, it interests us because it would involve little impact to state-protected waters.

**K.** K. See General Response 3.

Thank you for the opportunity to review this document. Again we commend you on the quality of the analysis it contains. Please don't hesitate to contact me with any questions regarding these comments.

Sincerely,

Rebecca A. Wooden
Environmental Planner
Office of Planning
(612)297-3355

*Copy List*

Rod Sando
Kathleen Wallace, Region VI
Bill Johnson, Region V
Steve Colvin
Brian McCann
Bill Weir
Pete Otterson
Gregg Downing, EQB
Jon Larson, EQB
Thomas Lovejoy, WDNR
Eric Macbeth, MWBAC

**Response E. Minnesota Department of Natural Resources:**
The commenter indicates that eliminating the "bounce" in the level of Mother lake would benefit Forster's Terns but questions whether higher but more stable water levels are the best management regime for this species. Several researchers have explored the nesting requirements of Forster's terns. The research perhaps most "on point" was conducted from 1964 to 1971 on Rush Lake in Palo Alto County, Iowa (Weller, M.W. and L.H. Frederickson. 1973). Rush Lake is an experimentally managed 400-acre semi-permanent marsh, which was drawn down in 1964 to regenerate emergent vegetation that had been eliminated by high water and muskrat activity. In this study, the researchers tracked the revegetation of the marsh over time and documented the corresponding nesting frequency of various bird species that utilized the marsh as breeding habitat. Immediately after the draw down, Rush Lake became approximately 90 percent vegetated by emergent plants and then experienced a steady increase in the percentage of open water each year through 1970. The number of nesting Forster's terns peaked in 1968, at a point when the marsh was approximately 72 percent open water; they then declined precipitously as open water coverage approached 100 percent. In comparing the responses of various bird species to the transition from a heavily vegetated small pool complex to open marsh, the authors indicated that "Forster's terns (*Sterna forsteri*) responded more slowly, as might be expected because they favor open water areas (Bergman, Swain and Weller 1970)".

Bergman, Swain and Weller (1970) found that Forster's terns prefer active muskrat (*Ondatra zibethicus*) houses as a nesting substrate though they observed no obvious pattern of nest success according to nest-site or area. The overall nest success observed in 107 Forster's tern nests between 1966 and 1968 was 12 percent (13 successful nests). Nest failures were attributed to wind/wave action, muskrat activity (i.e. covering of nests during house building activities), predation (primarily mink; *Mustela vison*) and intra-specific strife.

McNicholl (1982) observed similarly low nest success during 1968 and 1969 in Manitoba's Delta Marsh; 16.5 and 5.0 percent nest success, respectively. He indicated wave action to be the primary cause of nest failure and noted that "...the data do suggest that nests on muskrat houses have a better chance of survival than do floating nests". The author indicated that low reproductive success does not seem unusual for this species and noted a number of other studies where similar low success rates were observed but also noted that relatively high success rates could also occur under favorable conditions. For example, Houston (1973) reported 90 of 137 eggs (65.7 percent) hatching from 47 nests at La Creek Refuge in South Dakota. McNicholl (1982) suggested that Forster's terns were adapted to the unreliable water levels in marshes by reduced site tenacity and that, due to the generally long lifespan of tern species, it appeared that a pair could afford not to replace itself in a particular year provided that it is successful in at least one year of its reproductive life.

The research discussed above is consistent with statements made in the Dual Track DEIS that higher, more stable water levels in Mother Lake would be beneficial to Forster's terns. Water levels in Mother Lake vary according to annual precipitation and may fluctuate substantially with major storm events. Due to the amount of impervious surface around Mother Lake, these variations appear to be more exaggerated than for marshes in more rural environments. Under existing 1996 conditions, Mother Lake has a relatively small percentage of open water (roughly 20 percent), despite normal or above normal annual precipitation for the preceding 4 years. A higher, stable water level would break up some of the existing emergent vegetation in the lake and move it closer to the optimum ratio of open water to vegetation (about 70 to 75 percent).

It should be noted, however, that variations in muskrat populations in Mother Lake may also be having an important effect upon Forster's tern nesting. Muskrats are not trapped in Mother Lake and their population appears to fluctuate dramatically due to disease, changes in food availability and/or the presence or absence of water deep enough for the animals to overwinter. If water levels are consistently maintained at a higher level and high muskrat populations are allowed to remove too much emergent vegetation (i.e. >70-75 percent), nesting conditions for Forster's terns would again decline. Any increase in water levels in Mother Lake would best be combined with a controlled harvest of muskrats to retain the optimum balance of vegetation and open water. An additional mitigation measure that will be explored is experimentation with floating nest platforms that would reduce nest losses due to wave action or water level fluctuations. Ongoing coordination will be maintained with the Minnesota DNR regarding the overall management of Mother Lake and potential mitigation measures specifically oriented toward increasing the potential for tern nest success. However, regardless of the management scheme of Mother Lake, tern

nest success is destined to be good in some years and poor in others because there is a lack of control structures and water levels are controlled primarily by precipitation.

With regard to Wood and Grass Lakes, neither water body is within the control of the MAC and any management measures applied to these lakes would need to be undertaken by the Minnesota DNR and the applicable local governmental units.

Literature Cited:

Bergman, R.D., P. Swain and M.W. Weller. 1970. The Wilson Bulletin 82 (1): 435-444.

McNicholl, M.K. 1982. Factors affecting reproductive success of Forster's terns at Delta Marsh, Manitoba. Colonial Waterbirds 5: 32-38.

Weller, M.W. and L.H. Frederickson. 1973. Avian ecology of a managed glacial marsh. Journal paper No. 7403 of the Iowa Agri. and Home Econ. Expt. Stn., Iowa. Project No. 1504.

Minnesota Department of Transportation

Transportation Building
395 John Ireland Boulevard
Saint Paul, Minnesota 55155-1899

February 13, 1996

Mr. Nigel Finney
Metropolitan Airports Comm.
6040 28th Avenue South
Minneapolis, Minnesota 55450

Mr. Glen Orcutt
Federal Aviation Administration
6020 28th Ave. S., Suite 102
Minneapolis, Minnesota 55450

SUBJECT: COMMENTS ON DUAL TRACK AIRPORT DEIS

The Minnesota Department of Transportation (Mn/DOT) appreciates the opportunity to comment on the Dual Track Airport Draft Environmental Impact Statement (DEIS) and to have been involved in the Dual Track Airport Planning Process. Mn/DOT staff have reviewed the DEIS and is satisfied with the analysis of aviation and airport impacts. However, we continue to have significant concerns about ground access issues. It is imperative that the issue of ground access to either the Existing or New Airport site be adequately addressed in the Environmental Impact Statement (EIS) process so that decision makers are informed of the full impacts and costs of the airport decision.

The existing airport terminal with access from TH 5 is well served by major transportation corridors. As indicated in the DEIS (p. II-9), TH 5 is expected to operate within capacity and continue to provide adequate access in the year 2020. Both airport options described in the DEIS will require extensive modifications to the existing surface transportation system.

The MSP site is surrounded by established residential, commercial and industrial land uses. Major reconstruction of the existing transportation corridors which serve the airport will entail substantial cost, impacts, and disruption. The new airport site near Hastings is located in a mostly rural setting, and will cause several trunk highways to experience significant traffic increases and require extensive capacity improvements.

Although the majority of the vehicle trips generated by the airport will be handled by the improvements to the state highway system as listed in the DEIS, there will also be impacts to county and local roads which are not discussed. A new airport decision will also affect roadways in Wisconsin for which only two improvements are identified.

Transit considerations also need to be integrated into all stages of the airport and the surface transportation development, such that, it becomes a more viable option for passengers to access the airport.

An equal opportunity employer

The DEIS refers to roadway projects which are "needed" and "required" for each alternative. The "required" projects are improvements that are justified solely because airport alternative and the costs and some of the impacts of these projects are discussed in the DEIS. The DEIS also refers to "needed" roadway improvements. These projects have a defined need for improvements regardless of the airport alternative, but the need for the improvements will certainly be greater with a decision to implement one of the airport alternatives. These "needed" improvements currently do not rank high enough in the state's overall priorities and due to fiscal constraints these "needed" projects are not in the region's Transportation Policy Plan (TPP) and are not expected to be implemented within the next 20 years. The costs and impacts associated with these "needed" improvements are not identified in the DEIS. However, providing these "needed" and "required" improvements will become a critical issue if the selected airport alternative is to have surface transportation access that is both safe and meets anticipated traffic demands. **A.**

As stated in the DEIS under the heading "Consequences of failure to make needed transportation improvements" on p. V-230:

> "Each of the two build alternatives include major road improvements as part of the proposed alternative. These improvements are designed to provide the access necessary to serve the large volumes of traffic that travel to and from a major airport on a daily basis. The failure to make these improvements would have significant ramifications to the region's highway system and the local roads serving either of the sites."

Mn/DOT will need to conduct subsequent environmental documents for the trunk highway improvements. Most of the projects will require EIS level studies. To insure that these studies can be conducted in a reasonable time frame, the Federal Final Environmental Impact Statement for the Dual Track Process should provide sufficient detail on the purpose, need, and impacts for all of the roadway improvements to fulfill the requirements of a TIER I EIS for those subsequent studies. **B.**

Attached are more detailed comments on the Dual Track Airport Planning Process DEIS as developed by Mn/DOT staff. Thank you for the opportunity to comment and be involved in the Dual Track Process.

Sincerely,

James N. Denn
Commissioner

A. The needed improvement projects have since been included in the Metropolitan Council Transportation Policy Plan adopted in 1997, but without a source of funding. The TPP has an estimated $190,000,000 of unprogrammed revenues to the year 2020. The costs of these projects are included in Appendix F; the impacts will be determined in separate environmental reviews.

B. In completing this FEIS, the FAA, MAC, Mn/DOT, Federal Highway Administration (FHWA), and the Metropolitan Council coordinated further about airport-related roadway projects. See consensus document in Appendix F.

Minnesota Department of Transportation
Specific Comments on Dual Track Airport DEIS
February 13, 1996

Throughout the Dual Track Airport Planning Process the Minnesota Department of Transportation (Mn/DOT) has raised the issue of ground access to either the existing or new airport site. We have wanted to insure that the EIS address four points;

1) the roadway and transit needs necessary to serve either alternative,
2) costs of those needs,
3) impacts and mitigation associated with those needs, and
4) the consequences if those road and transit improvements are not undertaken.

These issues have been at least partially addressed. Following are the specific comments of Mn/DOT staff on the Dual Track Airport Draft Environmental Impact Statement (DEIS). They are organized as to comments on the ground access issue of the MSP alternative, the New Airport alternative, and the Impacts and Mitigation of providing ground access to either alternative.

MSP alternative (west access)

The current site is well served by the existing transportation system with access from TH 5 on the east side of the airport. As indicated on p. I-2 a full range of possible strategies to provide surface transportation access to an expanded MSP airport needs to be further explored, including retaining the east access. Retaining the existing east access would reduce the requirements for roadway improvements. C.

Although TH 5 is expected to continue to operate and provide good access to the airport, Interstate 494, Interstate 35W, and Trunk Highway 62 will be over capacity in the year 2020. Both the I-494 and I-35W corridors have undergone extensive studies and have found that major improvements are needed to address the existing needs in both corridors. The total estimated cost to address those needs is $2.2 billion. Neither project is currently in the metropolitan regions 20 year Transportation Policy Plan (TPP) due to funding constraints. Major improvements to Trunk Highway 62 are also not identified in the TPP. Unmet needs in these three corridors will be an issue no matter what airport alternative is selected.

Transportation improvements for the MSP alternative are shown in the following areas of the DEIS; page III-1, cost table I-26, table W-9, table W-19, page V-231, and figure W-16. The project lists are inconsistent in some areas or describe different projects or termini and are difficult to follow. However, they do describe the following composite list of surface transportation improvements that are essential to provide good access to the new MSP airport (west access):

C. This issue was studied and discussed with Mn/DOT in the course of the preparation of the DEIS. At this stage of the planning process, FAA and MAC believe the new west access, in combination with the existing east access, is needed to implement the 2020 long-term comprehensive plan. When a new west terminal is needed, additional study will be undertaken with Mn/DOT and FHWA to explore other alternatives and strategies for providing the access.

| | | |
|---|---|---|
| 1) On-site terminal circulation roads | | 42,000,000 |
| 2) Airport frontage road between 66th and 24th | | 3,000,000 |
| 3) East side access modifications | | 1,000,000 |
| 4) TH 62/77 interchange reconstruction, to accommodate west terminal (includes 66th St. interchange reconstruction) | | 27,000,000 |
| 5) TH 77 from TH 62 to 66th, reconstruction and widening | | 12,000,000 |
| 6) TH 62 from TH 77 to Portland Ave., reconstruction and widening | | 9,000,000 |
| 7) TH 62 from TH 77 to 28th reconstruction | | 6,000,000 |
| a. includes modifications to 28th St. ramps | | 1,000,000 |
| 8) I-35W/TH 62 common section, reconstruction and added lanes | * | 50,000,000 |
| a. includes additional capacity for southbound to eastbound ramp | | |
| b. includes additional capacity for westbound to northbound ramp | | |
| c. includes additional lane on I-35W, TH 62 to 46th St. S. | | |
| 9) TH 55/62 interchange, possible modification | * | 1,000,000 |
| 10) TH 5/55 interchange, possible additional capacity | * | 10,000,000 |
| 11) TH 62 from 28th to TH 55 reconstruction and widening (not in DEIS) | * | 6,000,000 |

* indicates costs not shown in DEIS

D.

Project 8, as listed above, entails improvements to I-35W and the I-35W/TH 62 common section, as indicated in Mn/DOT's report "Potential effects of Twin Cities Major airport alternatives on the Minnesota State Highway System, August 1995" table 4-3, even if the I-35W was developed to its ultimate design the SB to EB and the WB to NB ramps will be over capacity. Due to corridor limitations it is unlikely that these ramps could be designed to accommodate the forecasted traffic volumes and congestion will occur during peak periods. The fifty million indicated for improvements would take care of some of the operational, safety, and capacity problems which exist in the common section and will provide better access then currently exists to the MSP airport.

E.

Project 9, as indicated above, modifies the planned TH 55/62 interchange. Highway 55 (Hiawatha Ave.) is currently being ungraded between I-94 and TH 62. The TH 55/62 intersection will be upgraded to a partial cloverleaf interchange and includes some improvements along TH 62. It is expected that these improvements will be completed in 2001. The planned interchange is designed to accommodate forecasted traffic patterns, which includes access on the east side of the airport. If the access is moved to the west side additional modifications may need to occur.

F.

Project 10 calls for additional capacity to be added to the TH 5/55 interchange. This interchange has severe right-of-way restrictions due to its proximity to Fort Snelling. It is expected that any modifications to the interchange would be at substantial cost and cause impacts to Fort Snelling. The existing interchange provides a low capacity ramp with poor geometrics for the SB TH 5 to WB TH 55 move. Some travelers who currently use TH 5 in St. Paul to get to the airport via the current east access may choose to take I-35E to TH 110 to TH 55 to TH 62 to access the new west access or find other alternate routes to avoid the problems of the TH 5/55 interchange. If these trips divert to other routes, the impact of added traffic on these routes has not been investigated.

G.



D. These projects are not needed to implement the MSP Alternative. See Surface Transportation Consensus Document in Appendix F.

E. The FEIS indicates the need for improvements to I-35W and the I-35W/TH 62 common section for both the No-Action and MSP Alternatives. See Appendix F.

F. Table W-9 in the DEIS identified possible modifications to the TH 55/TH 62 interchange. The possibility for modifications was identified because of changes in traffic operations that would occur as a result of shifting from an east terminal to a west terminal. The movements most affected by this condition would be the southbound TH 55 to west- bound TH 62 and the eastbound TH 62 to northbound 55. These represent the movements that would provide the connection between TH 55 (Hiawatha Avenue) and a west terminal.

Table 4-2 of the Mn/DOT report "Potential Effects of Twin Cities Major Airport Alternatives on the Minnesota State Highway System", August 1995 indicates that the MSP alternative would increase the eastbound TH 62 to northbound TH 55 ramp movement by 100 vehicles per hour in the PM peak hour. The report did not show any change in volume for the ramp movement from southbound TH 55 to westbound TH 62 as a result of the MSP Alternative. Based on this information it appears that only minor modifications to the proposed TH 55/TH 62 interchange will be required to accommodate traffic operations related to a west terminal.

G. Improvements to this interchange are not required to provide reasonable access to the airport. Table 4-2 from the August 1995 Mn/DOT report indicates that the eastbound TH 55 to northbound TH 5 movement would increase by 250-300 vehicles in the PM peak hour under the MSP Alternative compared to the No-Action Alternative, which may place the facility over capacity. The southbound TH 5 to westbound TH 55 movement would also increase by 200-250 vehicles in the PM peak hour with the MSP Alternative, but the ramp movement is expected to accommodate this traffic.

Traffic impacts from diversions associated with any of these movements will likely be minimal given that there are several alternate routes for trips that may choose to avoid using this ramp. Few diversions of the southbound TH 5 to westbound TH 55 movement are anticipated because this movement is forecast to be able to accommodate the additional traffic associated with the west terminal option. Therefore, little adverse impact on alternate routes is expected.

Project 11 is not shown in the DEIS. However, after reviewing the layouts for the airports TH 62/77 interchange and the planned TH 62/55 interchange which both include providing three lanes in each direction on portions TH 62. There is about a 1.5 mile gap on TH 62 between 28th Avenue and TH 55 with only two lanes in each direction. Based on projected traffic volumes and to provide lane continuity, this gap should also be reconstructed and widened to three lanes. **H.**

Cost estimates provided to Mn/DOT by MAC's consultant have been reviewed and appear to be low but reasonable. The right-of-way costs shown in Cost Table I-26 for acquisition, demolition and relocation (due to roadway improvements) of $7,000,000 appears unrealistically low. Section T.1.2 on page V-180 shows that 62 households and 17 businesses would be relocated due to roadway improvements. Not enough information is provided in the EIS to determine how the estimated cost was derived. **I.**

In addition, only those costs associated with the "required" roadway improvements have been considered and not those of the "needed" projects. Since the Minnesota Legislature will need to provide funds for both categories of projects, it is important that those costs also be identified. The "needed" costs would add about $67,000,000 to the construction cost of the "required" projects cost of $101,000,000 for a total roadway construction cost of $168,000,000. Contingency costs, which are normally added to roadway cost estimates, were applied to the overall airport cost (table I-36) and was assumed to be 25%. This adjustment should be applied directly to the roadway cost to better reflect the construction cost of the roadway improvements. Therefore, the total roadway construction cost for the MSP alternative should be $210,000,000 and does not reflect right-of-way costs. **J.**

<u>New Airport alternative</u>

The selected site in Dakota County for the new airport is not currently served by any major highway corridors and requires extensive roadway construction to provide reasonable access to the site. Roadway improvements are listed in the DEIS to the Minnesota trunk highway system and roadways in Wisconsin but does not identify any improvements to county or local roadways, with the exception of the realignment of CSAH 47.

Transportation improvements for the New Airport alternative are shown in the following areas of the DEIS; page III-5, cost table I-26, table W-14, page V-231, figure W-17 and figure W-18. The project lists are inconsistent in some areas or describe different projects or termini, have mislabeled roads, and are difficult to follow. However, they do describe the following composite list of surface transportation improvements that should be built to provide good access to the new airport:

1) On-site terminal circulation roadways 16,000,000

2) On-site internal roadway system 23,000,000

3) TH 55 improvements, I-494 to TH 52 (south Jct.) 147,000,000
   a) TH 55/I-494 interchange improvements (provides access to/from west)
   b) I-494 to TH 52 (north jct.), reconstruct and widen
   c) TH 55 (north jct. to south jct.), improve to 8-lane freeway [a.k.a. TH 52]

4) New 8-lane freeway, TH 52 to airport site 40,000,000

5) TH 52 improvements
   a) I-94 to TH 56, widen from 4 to 6 lanes * 55,000,000
      (includes TH 52/I-94 Interchange improvements)
      (includes replacing the Lafayette bridge)
   b) TH 56 to I-494, widen from 4 to 6 lanes 60,000,000
   c) TH 55 to TH 50, intersection modifications * 5,000,000

H. Widening TH 62 between 28th Avenue and TH 55 from four to six lanes may have some benefit from providing lane continuity along TH 62, but it is not needed to provide reasonable airport access.

I. All affected properties are located in the cities of Minneapolis and Richfield. Acquisition costs were based on Hennepin County assessed valuations. Relocation and demolition costs were based on the guidelines in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Recalculation of the costs, based on Hennepin County assessed valuations and Uniform Act guidelines, has resulted in a revised cost of approximately $11,900,000 for acquisition, demolition and relocation for MSP Alternative highway improvements, and includes a 25% contingency.

J. The costs for the other needed projects have been included, with the exception of project 11. See Response G.

6) CSAH 47 improvements
   a) realignment CR 85 to new freeway, 2-lane highway 12,000,000
   b) realignment new freeway to TH 61, 4-lane highway
   c) intersection improvements at TH 61 in Hastings

7) TH 61 modifications
   a) TH 61, replace bridge over Mississippi River * 12,000,000
   b) TH 61/55 intersection improvement * 1,000,000
   c) realignment around RPZ (DEIS p.V-217) * 2,500,000

8) I-494 bridge over Mississippi River * 40,000,000
   (includes capacity improvements at I-494/TH 61 interchange and improvements on TH 61 to CSAH 22)

9) TH 95, TH 61 to I-94, capacity improvements * 10,000,000
   (signals and intersection modifications at misc. intersections)

10) TH 10, TH 61 to the St.Croix River crossing, widen from 2 to 4 lanes * 20,000,000

11) TH 316, TH 61 to Dakota/Goodhue County Line, widen roadway * 15,000,000

* indicates costs not shown in DEIS

Project 5a includes adding an additional lane to TH 52 south of I-94 and modifying the I-94 interchange. Adding a lane in this segment would require replacing 3400' long Lafayette bridge over the Mississippi River.

**K.** K. See General Response 1.

Project 6 includes the realignment of CSAH 47. MAC's consultant indicated that the cost may have been under estimated and was going to check the figures. We were unable to find out if the cost was revised prior to the close of the comment period.

**L.** L. See General Response 1.

Project 7a in the EIS describes the need to provide two additional lanes on the TH 61 bridge over the Mississippi River. The existing bridge is a overhead truss bridge and cannot be widened, therefore the entire 1825 ft. bridge would have to be replaced.

**M.** M. See General Response 1.

Project 7b which calls for an additional right-turn lane at the TH 61/55 intersection. It appears that any modifications to this intersection, including adding a right-turn lane, will be difficult at this intersection due to severe R/W restrictions. The football field in the NW quadrant abuts the highway right-of-way and is significantly below the roadway elevation.

**N.** N. See General Response 1.

Project 7c is identified as realignment of TH 61 around the RPZ (page V-217) and has not been studied to determine an estimated cost or impacts. The section of TH 61 which is in the RPZ will need to be shifted about 1/4 mile to the east and will impact agricultural properties not currently identified in the DEIS.

**O.** O. See General Response 1.

Project 8 as described above widens the I-494 bridge over the Mississippi River. Mn/DOT is conducting a Major Investment Study (MIS) on this project to determine the scope of the needed improvements in this area. Of the $90,000,000 estimated cost $50,000,000 is currently in the TPP. Therefore, $40,000,000 is not currently funded.

**P.** P. See General Response 1.

Project 9 calls for intersection improvements along TH 95 from TH 61 to I-94. Washington County has approached Mn/DOT to consider turning back TH 95 through Afton in exchange for County Road 15 from I-94 to Baily Road. This would provide a straight road between I-94 and TH 61. However, the road does have vertical problems that would require extensive reconstruction and the major intersections should be modified. The cost shown would provide for some minor modifications and upgrade a couple of the intersections.

**Q.** Q. See General Response 1.

Project 10 calls to widen TH 10 between the St.Croix River and TH 61. Improvements are currently programmed for the year 2000 to realign portions of TH 10 and some maintenance work. Burial mounds, historic sites, a nature center, wetlands, and extensive rock cuts have made this project difficult to implement. Expanding this road to four lanes in this sensitive area will be difficult. **R.**

R. See General Response 1.

Project 11 as described above improves TH 316. Mn/DOT is just beginning a corridor study of TH 316 and TH 61 in this area to determine which should be considered the principal arterial and which should be turned back as a county road. The study will also address which types of improvements will be needed for the principal arterial.

Cost estimates provided to Mn/DOT by MAC's consultant have been reviewed and appear to be low but reasonable. The right-of-way costs shown in Cost Table I-26 for acquisition, demolition and relocation (due to roadway improvements) of $34,000,000 appears low and only takes into account R/W needs for TH 55 and the realignment of CSAH 47. Some of the other projects listed in the EIS will also have R/W needs. Table T-15 on page V-190 shows that 80 households and 37 businesses would be relocated due to the TH 55 and CSAH 47 improvements. Not enough information is provided in the EIS to determine how the estimated cost was derived. **S.**

S. See General Response 1.

In addition, only the costs associated with the "required" roadway improvements have been considered. Cots of the "needed" projects are have not been considered. Since the Minnesota legislature will need to provide funds for both categories of projects it is important that those costs also be identified. The "needed" costs add about $160,000,000 to the construction cost of the "required" projects cost of $298,000,000 for a total roadway construction cost of $458,000,000. Contingency costs which are normally added to roadway cost estimates were applied to the overall airport cost (table I-36) and was assumed to be 25%. This adjustment should be applied directly to the roadway cost to better reflect the construction cost of the roadway improvements. Therefore, the total roadway construction cost for the New Airport alternative should be $572,500,000 and does not reflect right-of-way costs. **T.**

T. See General Response 1.

Construction Cost Summary (Surface Transportation):

| | MSP Alternative | New Airport |
|---|---|---|
| EIS Cost Est. | 101,000,000 | 298,000,000 |
| Revised Est. | 67,000,000 | 160,000,000 |
| Contingencies (25%) | 42,000,000 | 114,500,000 |
| Total | $210,000,000 | $572,500,000 |

NOTE: Right-of-way costs are not included in this summary.

Impacts and Mitigation

In the Air quality section on page V-11, the DEIS states that "While the New Airport site is located outside of the 7-county designated Non-Attainment Area for CO, emissions from travel on the entire regional network are included in the emission inventory for the Seven-County Metropolitan Area." After discussions with staff of both the Mn Pollution Control Agency and the Metropolitan Council, we believe that traffic generated by a new airport site is not included in the current emissions inventory, nor is it included in assumptions used to develop any future emissions budget. **U.**

U. See General Response 1.

Under the Air Quality "Methods and Assumptions", the MOBILE 5a model assumes non-tampering for the year 2020, but also assumes no Vehicle Inspection and Maintenance Program. We do not understand how non-tampering can be assumed if there is no inspection program in place to check for non-tampering. **V.**

V. The air quality analysis has been revised without the anti-tampering program assumption.

Under section A.1.1., Affected Environment, MSP alternative, the assumption is made that most of the traffic accessing the airport will be on controlled access highways with no at-grade intersections, and therefore analysis of at-grade intersections is limited. However, queuing at cross streets and at ramps should also be analyzed in order to assess air quality impacts.

V.

Regarding Surface Transportation Noise Impacts:

On page V-159, the State night-time noise standard of 55 dBA L10 also needs to be addressed.

On page V-160, tabulation of the number of homes within the night-time noise contour needs to be included in the procedure. The night-time assumptions for calculations of noise levels must include the 6-7AM traffic estimates. Also why aren't frontage road and ramp noise levels not considered?

On page V-161, Tables Q-19 and Q-20 should be expanded to include number of residences impacted in the 6-7AM night-time hour. The percent increases for night-time impacts should be included in the analysis.

W.

On Page V-234 in Table W-23, it is stated that no parks, recreation lands, or historic sites are potentially impacted by roadway improvements. Proximity of several parks and one historic site to needed and required highway improvements on TH62, TH77, and TH5/55 raise at least the potential of Section 4(f) impacts due to surface transportation projects for the MSP alternative. Bossen Field in Minneapolis and Veterans Memorial Park in Richfield are adjacent to TH62. Taft Park in Richfield is adjacent to Both TH62 and TH77. Fort Snelling National Historic Landmark is adjacent to TH5 and TH55. In addition, several historic structures are in close proximity to TH10 between TH61 and the St. Croix River. These are also potentially affected by a surface transportation project of the New Airport Alternative. While exact impacts are not known at this time, the potential exists that one or more of these properties cannot be avoided by needed and required projects on these highways, should either the MSP or New Airport alternative be selected. Table W-23 should be modified accordingly.

X.

Thank you for the opportunity to comment on the DEIS for the Dual Track Airport Planning Process.

6

V. (Cont'd) Queuing at cross streets may occur but only those intersections meeting the air quality analysis screening criteria have been addressed. Queuing at metered ramps is discussed in Section V. A. Methodology and Assumptions.

W. The FEIS has been revised to include nighttime noise impacts.

The surface transportation noise impact analysis documented in the DEIS used a number of simplifying assumptions to develop a comparative estimate of the number of homes along roadways serving the airport sites that would be impacted by noise from traffic accessing the airport. One simplifying assumption was to not consider traffic noise from ramps and frontage roads. This simplifying assumption was made for the following reasons:

The DEIS identified the need for additional roadway capacity in a number of areas to accommodate the forecast traffic volumes. The additional roadway capacity was defined in terms of additional through lanes required and did not specify more detailed design features such as ramp and/or frontage road locations.

Traffic volumes on ramps and frontage roads are generally substantially less than mainline traffic volumes and the mainline is the dominant traffic noise source. Therefore, traffic on ramps and frontage roads would generally contribute very little to total noise levels adjacent to the road.

Travel forecasting for the airport alternatives were completed using the regional travel model. The level of detail in the regional travel model allows for daily traffic forecasting on mainline facilities but does not produce accurate forecasts on minor road segments such as ramps and frontage roads.

X. While these highway improvements for the MSP Alternative are yet to be designed, preliminary analysis of the proposed improvements and the existing rights-of-way indicate that highway construction would not impact adjacent parks, recreation lands or historic sites. Any subsequent environmental review prepared by MN/DOT for these proposed highway improvements would analyze these impacts in more detail.

February 13, 1996

MINNESOTA HISTORICAL SOCIETY

Ms. Jenn Unruh
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, Minnesota 55450

Dear Ms. Unruh:

RE: Major Airport Development; Dual Track Planning Process
Draft Environmental Impact Statement, Dakota and Hennepin Counties
SHPO Number: 95-3034

Thank you for the opportunity to review and comment on the above report. It has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the Advisory Council on Historic Preservation (36CFR800), and to the responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act.

We have the following comments on the DEIS:

1. The Summary of Impacts Chart, the discussion of Archaeological Resources (Chapter V.B.) and the discussion of Historic/Architectural Resources (Chapter V.M.) all report properties in the project area that are listed on the National Register of Historic Places or that have been evaluated as eligible. This information provides a cultural resource base line. In reviewing this information, the following should be kept in mind:

   A. Some areas still need to be surveyed, and if additional properties are identified they will need to be evaluated. As the DEIS indicates, these areas include those related to regional transportation development, off-site mitigation, induced socioeconomic impacts, and land use impacts, as well as those areas which were inaccessible for archaeological survey due to physical barriers or landowner consent.

   B. Some properties which have been identified in surveys still need to be evaluated for National Register eligibility.

   C. The DEIS acknowledges the need to develop a comprehensive survey research design to address the remaining survey and evaluation needs. Given the length of time for project implementation, this research design will need to incorporate any appropriate measures for updating cultural resource information. The items detailed in our comment letter of 2 March 1994 should also be included.

A. A. Evaluation of the National Register potential of all above-ground properties in the Area of Potential Effect has been completed.

B. B. See Programmatic Agreement in Appendix C.

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2. The DEIS includes a discussion of project impacts on National Register properties, and acknowledges that more detailed assessment will be necessary to evaluate certain types of effects. Appropriate mitigation measures are proposed, although it should be noted that these measures will need to be further discussed through the 106 process and incorporated into a Memorandum of Agreement. Additional mitigation measures may emerge in that discussion.

**C.** C. See Programmatic Agreement in Appendix C.

3. The discussion of mitigation measures in section V.B.1.3. indicates that data recovery is typically considered as sufficient mitigation for adverse effects to archaeological properties. While we acknowledge that this approach is appropriate for many sites, we would also note that other sites many include values or associations that place a higher priority on site preservation. This issue may need to be addressed as the identification and evaluation of archaeological sites is completed.

**D.** D. See Programmatic Agreement in Appendix C.

4. The discussion of Section 4(f) should include an indication that the identification and evaluation of archaeological properties and historic/architectural properties is not yet complete and that the Section 4(f) discussion may need to be updated.

**E.** E. As with the Section 106 process, the Section 4(f) process will be ongoing as additional impacts are identified. Also, cultural resource assessments will be updated during the duration of the project as necessary.

We look forward to working with you in continuing the Section 106 review process for this project. If you have any questions regarding our review of the DEIS, please contact our Review and Compliance Section at 612-296-5462.

Sincerely,

Britta L. Bloomberg
Deputy State Historic Preservation Officer

BLB:dmb

cc: Glen Orcutt, FAA
Larry Dallam, HNTB
Charlene Roise, Hess Roise
Christina Harrison, Archaeological Research Services

# Minnesota Pollution Control Agency

February 13, 1996

Mr. Nigel Finney, Deputy Executive Director
Planning and Environment
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, Minnesota 55450

Dear Mr. Finney:

RE: Draft Environmental Impact Statement for the Dual Track Airport Planning Process

Thank you for the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the airport planning process. Minnesota Pollution Control Agency staff from the Water Quality, Air Quality, Tanks and Emergency Response, Noise, and Ground Water programs have reviewed the DEIS. We can appreciate the magnitude and complexity of this task, along with the controversy, and we offer the attached comments for your consideration as you prepare responses for the final EIS. We hope you will find our comments both candid and constructive, and reflective of the level of detail we will need for the Minnesota Pollution Control Agency's regulatory process, should either alternative proceed.

Thus far, the planning process has been viewed as a way to choose between no action, the Minneapolis-St. Paul International Airport (MSP) site or the Dakota county site. The DEIS is the final environmental review document for any one of the three alternatives. If this document is to stand as the EIS for expansion of MSP or the EIS for a new airport, it falls short. An EIS for projects with much less potential for broad environmental impact contain far more detailed analyses.

People seem to view the DEIS as the culmination of six years of work, which it is, but it is not a comprehensive summary of the study that has been made during the last six years. Some things were 'scoped out' of the EIS because they were reviewed earlier in the environmental review process ( in an earlier document). This makes for an uneven discussion of potential impacts for the three alternatives in the DEIS. The DEIS should have referenced past documents where information could be found if it had been scoped out of the DEIS. **A.**

It is unfortunate that a recommendation will be made to the legislature before the response to comments has been prepared. If the legislators make a decision based on this document, they will be doing so without the benefit of the numerous comments that the Metropolitan Airports Commission will receive and without the additional analysis that responding to those comments will require.

As a means to enable a choice between sites, the process may succeed. As a thorough environmental review of a selected alternative, the process has not served us as well. Additional analysis must be completed before environmental review can be considered complete for either build alternative.

We appreciate the opportunity to participate in the dual track airport planning process and look forward to receiving responses to our comments. If you have any questions regarding our comments, please contact Kathryn Kramer of my staff at (612) 297-8604.

Sincerely,

Paul Hoff

Paul Hoff, Director
Environmental Planning and Review Office
Administrative Services Division

PH:smm

Enclosure

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A. Past documents were referenced in the DEIS Section I, Introduction, including the scoping documents, in Section IX by impact category, and in Appendix A (supporting documents).

## Specific MPCA Staff Comments

- Please note that the page numbers of the Draft Environmental Impact Statement (DEIS) vary somewhat between the copies that we received in December 1995 and the copies that we received in January 1996. The page numbers referred to in our comments may not match the page numbers on your copy of the DEIS.

### A. General Comments

The DEIS scope states that development issues associated with conveyance of storm water to the Mississippi River would be evaluated. The DEIS does not include that evaluation.

The DEIS lacks the detail required for an EIS-level of analysis of the stormsewer line proposed to run to the Mississippi River. What would the potential impacts be to surface water (wetlands and lakes) and ground water? What entity would regulate the line? Does the Metropolitan Airports Commission (MAC) have eminent domain? The right-of-way issues should be discussed in the EIS. The construction, restoration and maintenance of the line should be discussed in the EIS.

Once a stormsewer route is chosen going from the airport site to the Mississippi River, a review of the potential environmental impacts would have to be conducted before that alternative was implemented. A discussion of the general potential environmental impacts should be included in this EIS with further detailed analysis completed later when the route is identified.

### B. Wastewater and Surface water Quality

1. We understand the logic of creating a surrogate discharge from the existing airport to the Mississippi River, although the rationale for doing so is not clearly stated in the DEIS and it should be. It allowed a somewhat equal comparison to the proposed Dakota County (downstream) site and its discharge to the Mississippi River. However that comparison does not relieve the document from also reviewing, in depth, the water quality impacts from continuing to discharge to the Minnesota River. The EIS should fully discuss the rationale for using an "analytical" upper Mississippi River discharge location. It should also discuss the relative likelihood of keeping the existing discharge site on the Minnesota River.

2. The EIS (page V-253) relies almost entirely on a July 14, 1995, Minnesota Pollution Control Agency (MPCA) memorandum, which discusses river standards and potential assimilative capacities (AC). There are numerous clarifications and qualifiers that must be supplied whenever the AC values are used in the EIS.

   a. The measure of a river's ability to assimilate an organic (mass) loading without depressing dissolved oxygen concentrations beyond acceptable standards is not a single, easily defined quantity. Any estimate of assimilative capacity for a specific location in a river must be stated in context with the prevailing flow, physical and chemical conditions of the river, a specific time frame (often seasonal), and an accounting of all external loading to the river. Waste load allocations are derived from an analysis of a river's ability to assimilate projected point and nonpoint pollutant loads under prescribed design conditions in the river, conditions that are normally critical to water quality. For biodegradable organic loads, these critical conditions usually occur during late summer, under low stream flow conditions. However, in some rivers, the critical design conditions can occur during other seasons as well. Winter is often critical under complete ice cover situations.

   The July 1995 MPCA internal memo that was cited in the MAC DEIS included rough estimates of excess AC for the Mississippi River, calculated for a discharge point near the airport and the alternate point downstream from the St. Croix River. To generate these estimates, we applied the WASP model to data representing average conditions that occurred during the relatively low flow, 1988 summer season. The numerical estimates were useful to illustrate the relative difference between the AC in the river at the two distant locations under conditions prevailing in 1988. The estimates also show that excess AC exists at river flows exceeding the low flow, $7Q_{10}$ design condition. They were not intended to be used out of context, as the EIS did, nor to be a definitive measure of the Mississippi River's ability to accommodate the contaminated runoff from the airport under all low flow conditions.

**B.** B. The pipeline to the Mississippi River for the MSP Alternative has been eliminated. See also General Response 1.

C. The concept of utilizing a "surrogate" discharge from MSP to the Mississippi River for analytical purposes was suggested to MAC by MPCA staff. MAC considered this to be a good approach, and utilized it in the DEIS. The rationale behind this methodological approach was clarified in the scoping documents for the DEIS and in the December 1995 DEIS itself (see pages V-251,252). It is now assumed that storm water drainage from MSP will be discharged to the Minnesota River through the Design Year (2010) and beyond.

**C.** As was agreed at a May 30, 1996 meeting between representatives of the MAC and MPCA Staff to discuss surface water issues raised in the February 13, 1996 MPCA letter, there is insufficient winter low flow data/analysis on this stretch of the Minnesota River to project the impacts of the modeled discharge (see Table BB-6) on the DO levels of the Minnesota River with an adequate degree of confidence. Actual low flow data and additional corresponding study is necessary to determine the impact of airport discharge on the Minnesota River.

D. The methodology of comparing an extreme case "slug" of $CBOD_5$ load discharged from MSP with an analytical low flow (e.g., 1988 summer low flow) assimilative capacity for the Mississippi River as estimated by the MPCA was discussed on various occasions between MAC consultants and MPCA staff. MPCA staff agreed that this was an appropriate methodology to use. This approach was clearly detailed in the scoping documents for the DEIS. Thus, when the July 14, 1995 MPCA memo providing estimates regarding the assimilative capacity of the Mississippi River at the assumed discharge points for MSP/No Action and New Airport Alternatives was received by MAC consultants from the MPCA, there was no reason to believe that these estimates were not to be used as had been discussed and documented. As noted above, discharge to the Mississippi is no longer under consideration.

**D.**

b. The EIS needs to acknowledge that current waste load allocations are based on full utilization of the AC of both the Mississippi and Minnesota Rivers in the metro area under summer and winter design conditions at the $7Q_{10}$ flow. There is no excess AC for a large, organic loading as projected from the existing airport under these established low flow design conditions. Therefore, to accommodate a designed airport discharge of organic deicing compounds, the MPCA would need to initiate a process to reallocate (and re-permit) the existing waste loads assigned to current dischargers. This process would necessitate additional analyses, re-examining design condition assumptions, and additional modeling of both rivers to incorporate the updated information collected on the rivers. Alternatively, the airport would need to design a containment and/or treatment system that would control or restrict its discharge to comply with existing waste load allocations, especially under critical low flow conditions. Control systems must be sized and designed to protect water quality during low flow, $7Q_{10}$ conditions. During other, less critical conditions at higher river flows, excess AC may be available to allow consideration for some degree of variable discharge standards.

**E.**

c. The current waste load allocations imply that some excess AC exists for the design spring and fall seasons because of generally higher river flows and lower temperatures. A reallocation process would also need to study the impacts of any proposed airport discharge during these seasons and to allocate an appropriate load.

**F.**

3. The EIS does a good job projecting storm water discharge rates and loading to the river for each alternative; however, the EIS does not adequately describe storm water treatment technologies, treatability of the ice and snow control chemicals, and economics of treatment.

For the "blow-by" glycol which escapes containment and finds its way to the storm drainage system, the EIS only talks of CBOD attenuation (no treatment) through a proposed, reconfigured detention pond system. The EIS should address the feasibility and associated costs to provide a range of CBOD reduction in the storm water using available treatment technologies.

**G.**

4. The dissolved oxygen standard for the Minnesota River in the vicinity of the airport is 5.0 milligrams per liter (mg/L) as a daily average, year-round. For the Mississippi River near the existing airport, the standard is 5.0 mg/L instantaneous, year-round. For the Mississippi from the outlet of the metro treatment plant (River Mile (RM) 835) to Lock and Dam 2 at Hastings (RM 815), the standard is 5.0 mg/L as a daily average from April 1 through November 30 and not less than 4.0 mg/L instantaneous the rest of the year. These specific standards must be kept in mind in all analyses and discussions.

**H.**

E. For some time, it has been MAC's position that establishing a year-round 100 lb. per day limit for $CBOD_5$ discharge from MSP on the basis of the 1985/87 waste load allocation (WLA) study is not appropriate. This is because the 1985/87 WLA did not address baseline discharge from MSP during the winter/spring months, which is when the highest $CBOD_5$ discharges from the airport occur. Also, such a limit would simply be unattainable for MSP. With the large volume of drainage from the airport during significant run-off events, any detectable $CBOD_5$ concentration would translate to an exceedance of a 100 lb. per day mass limit. This issue was discussed at some length in the MAC 1994 MSP Decision Report for Storm Water Control Measures.

F. Because of the above factors, it is the MAC's understanding that it will be necessary for a new low-flow WLA monitoring and analysis to be conducted for winter/spring months before any final concentration or mass limits for $CBOD_5$ discharge from MSP to the Minnesota River could be established. Text to address this issue has been inserted in the FEIS in the introduction to Section V.BB.

G. The viability of treating residual GISW (that which escapes designed source containment) was addressed in the 1994 MSP Decision Report. This approach would necessitate treating all storm water generated on the airport during the winter/spring months. The 1994 Decision Report concluded that treatment of residual GISW is not viable at MSP.

Any system to treat residual GISW would face four severe design constraints:

- cold water temperatures, which greatly restrict biological (treatment) activity;
- large and highly variable volume of flow;
- highly variable organic lands; and
- limited space for pond development at the MSP site.

These factors are addressed in more detail in new text provided in Section BB.1.2, and Appendix A.11.

H. See Response C. Section V.BB of the FEIS was modified to discuss the dissolved oxygen standard of the Minnesota River.

5. The July 1995, memorandum expressed a concern that the potential discharge results in a dissolved oxygen sag that overlaps the existing Metro Wastewater Treatment Plant discharge and sag. This was not discussed in the EIS. This is a very important point and could further reduce the available AC significantly, especially during periods that stress the dissolved oxygen concentrations.

I. See Response C.

6. Toxic discharges are an area of concern that was not fully addressed in the EIS, especially if the discharge remains to the Minnesota River. Discharges from the existing or proposed new sites must not be acutely toxic at the end-of-pipe. Toxicity will need to be eliminated in the near term, rather than waiting for the development of new technology.

   Based on the limited information from the most recent MAC permit and from the EIS, the MAC facility will not be able to meet the water quality criteria for either ethylene or propylene glycol. One of the references used in the EIS, (Beak Consultants Limited), has toxicity expressed in microliters per liter (µl/L) for the deicer compounds UCAR and ARCOPLUS. Without knowing the density of these compounds, MPCA staff cannot convert the toxicity to micrograms per liter (µg/L) which is the normal expression used in aquatic toxicity. As such, the toxicity of these two compounds cannot be compared to other glycol standards.

   The EIS states that by the year 2020, the toxicity problem should be addressed by advances in deicing technology. The EIS is correct in that the current additives used in the deicers contribute to making the deicers much more toxic. However, the EIS puts a great deal of faith in future technology to make deicers less toxic. The MPCA staff cannot agree or disagree with this premise. The EIS is assuming future technology will address much of their toxicity problems.

   The current deicers used create a three-fold problem in that they cause toxicity from the additives, they are toxic to aquatic life based on the elemental form of the deicer (the glycols and urea), and they create a high oxygen demand in the water column during their decay process. Instead of relying on future deicing products which may or may not be as toxic as the current deicers, a greater emphasis should be put on collecting and treating more of the free flow product which is now entering the Minnesota River.

J. The MAC has taken steps to meet the MPCA's- target 1 mg/l limit for un-ionized ammonia by pilot testing alternatives to urea for runway deicing purposes with the ultimate goal of eliminating the use of urea at MSP. However, overall aquatic toxicity of MSP storm water discharge has been a relatively recent area of discussion between the MPCA and MAC. As discussed at the May 30, 1996 meeting at the MPCA, the MPCA currently does not have enough information to give the MAC a clear idea of what future NPDES requirements will be for MSP regarding total effluent toxicity.

The text of this section has been revised. Aquatic toxicity information specific to the current suppliers of aircraft deicing fluid (ADF) is provided. Also presented is clarification regarding the program envisioned by the MAC to limit the aquatic toxicity associated with MSP discharge to receiving waters (see "Aquatic Toxicity" Leading under Section V.BB.1.2).

Section V.BB.1.2 was modified to discuss the toxicity of potassium acetate and sodium formate.

7. Based on the 1985/7 MPCA Minnesota River Waste Load Allocation, there is essentially no excess AC in the lower Minnesota River where the airport discharges, during the summer (page V-251). The storm water mitigation measures noted in Appendix A (page A.9-3) should be strongly considered if summer discharges continue to occur. **K.**

8. Several clarifications or corrections are necessary regarding comments on page V-251:

   a. Although it is recognized that Winter WLAs are needed for the lower Minnesota River and the Metro stretch of the Mississippi River, the MPCA has not committed to conducting them. The MAC EIS should be revised accordingly. **L.**

   b. The AC is a rough estimate only because non-summer coefficients and parameters required for the WASP Water Quality model are not available. This caveat should be noted whenever the AC value is used in the EIS. **M.**

9. The EIS should have fully discussed the current MAC National Pollutant Discharge Elimination System (NPDES) permit and provided some detailed information as to how the discharger intends to reach full compliance with water quality standards. It was very insufficient in this topic. Also, the EIS consistently uses the year 2020 as the design year and compliance year goal. Justification for this end-point must be established since the MPCA believes compliance must be achieved much sooner than that. As noted earlier, toxicity will need to be eliminated in the near term, rather than waiting for the development of new technology. Water quality standards in the Mississippi and Minnesota Rivers, and any other waters of the state, must be met in the near term, and MAC is going to need to determine how this is going to be accomplished. **N.**

10. V-249, second paragraph, refers to "a detention pond which is referred to as Duck Lake." Duck Lake is a water of the state, and it needs to meet state water quality standards. The MPCA has made this comment to the MAC on previous documents prepared by MAC during the airport siting process. Discharges to Duck Lake are subject to discharge limitations, and prohibitions on end-of-pipe toxicity. **O.**

11. The treatment of surface runoff is curtailed at the present location because the airport is landlocked. It is unclear how treatment will be upgraded if the airport is expands, leaving even less room for waste treatment facilities. **P.**

12. The impact to lakes and wetlands from airport discharges was not discussed in the necessary detail. The final EIS needs to include a discuss of the potential impacts. **Q.**



K. See Response C.

L. See revised text on this issue in the introduction to Section V.BB.

M. See Responses C and D.

N. See revised text on this issue under the Regulatory Background heading on Section V.BB.

The EIS process has required the definition of the various airport development alternatives in terms of their potential for environmental impact. These definitions must be established so as to allow for meaningful comparison between the alternatives. This, in turn, has necessitated the utilization of a "design year", for which projections of air traffic, ground vehicle traffic, and other related factors are used to define the analytical scenarios and assess absolute and relative potential for environmental impact. The year 2020 was used in the DEIS because this was the target year defined by the Minnesota State legislature for which air transportation requirements would have to be met through the Dual Track Airport Planning Process. The FEIS includes 2010 as the design year.

The MAC cannot project with confidence the detailed timing of uture implementation/development efforts regarding storm water control measures. This scheduling will be established through NPDES permit and compliance actions.

The MAC has worked with the MPCA Point Source Compliance Section of the Water Quality Division to implement on-going enhancements to the storm water control program at MSP. The MAC has, to date, made major efforts to comply with NPDES requirements as established by the MPCA. The MAC will continue to work with the MPCA to maintain NPDES compliance and improve storm-water control through measures and schedules which are feasible and which provide appropriate protection for waters of the state.

Refer to FEIS text on this overall issue in the introduction to Section V.BB.

O. This passage has been revised to address the perspective raised in this comment.

Duck Lake has received untreated runoff from the airport for many years. This use was acknowledged by the Minnesota DNR in a July 1, 1993 letter to the MPCA and permitted to continue so long as the lake basin remains natural and runoff entering the lake is of no worse water quality than has been historically discharged.

Under the MSP Alternative, Duck Lake would be filled because of construction requirements and replaced with a detention pond meeting NURP design criteria.

P. It is true that significant physical and spatial limitations exist at the overall airport site regarding the development of surface water treatment (detention) facilities. These limitations will become more pronounced with the development associated with the MSP Alternative. However, preliminary engineering analysis indicates that there is sufficient space available to develop detention ponds meeting National Urban Runoff Program (NURP) design criteria or appropriate equivalents. MPCA staff has indicated that meeting NURP design criteria will be an appropriate sizing/design approach for enhancing existing surface water detention facilities.

Q. Text has been added in Section V.BB.1.2 to address this comment.

C. Ground Water

1. Page V-273, paragraph 4. The deep bedrock valley discussed and shown in figure CC-1 may not be as extensive as depicted. The interpretation for this bedrock valley is based on only one data point. A clearer picture of the geology in this area and the rest of the Minneapolis-St. Paul (MSP) airport should be in the report that is due this spring on the area-wide investigation that is ongoing at MSP. This information should be reviewed for inclusion in the final EIS. **R.**

2. V-274, paragraph 2. Ground water sampling has been completed of the newly installed perimeter monitoring wells at MSP. Based on two rounds of sampling, it is true that there are negligible impacts to the St. Peter aquifer. However, preliminary data from a third round may indicate a greater impact than thought. Several more rounds of ground water sampling would have to completed to establish if this is the case. There is currently very little data on ground water quality of the Prairie du Chien and Jordan aquifers to make the same claim. **S.**

3. V-275, Fueling Operations. Currently, regulation of the hydrant pipeline system used to fuel planes is unknown. We do not know of any maintenance or leak detection procedures used on this pipeline. This presents a great risk to unknown and undetected releases at the current MSP airport. The final EIS should provide information on leak detection and prevention for the hydrant system pipeline. **T.**

4. V-277, Overall Environmental Consequences. There are numerous spill and leak sites at MSP with ongoing cleanup. The level of cleanup that would be required at the MSP site would depend on the intended use of the land after the airport relocated. There would certainty be extensive soil and ground water cleanup.

5. V-277, CC.1.3 In addition to the spill control and countermeasure plan (SPCCP) mentioned in the DEIS, the Federal Oil Pollution Act requires a Facility Response Plan for the aboveground storage tank farm and the hydrant pipeline system. A federal SPCCP is required for all aboveground storage tanks over 660 gallon capacity. A state "spill bill" (Minn. Stat ch. 155E) Prevention and Response Plan is required for all aboveground storage tanks greater than 10,000 gallons capacity and for the hydrant pipeline system. The MPCA has not requested submittal of these various plans for formal review, and does not know if they have been completed as required. The final EIS should document the existence of the additional required spill prevention plans. Although technically the responsibility of the Fuel Consortium and individual tenants, it is the MAC responsibility that these issues are addressed in the EIS. **U.**

6. V-288, paragraph 1. Although remedial technology has greatly progressed in recent years, cleanup of fractured bedrock present at the new airport alternative site is still extremely difficult. In addition, ground water contamination at the location of the new airport alternative is a greater risk to public health and the environment that the current airport. This is due to drinking water wells located downgradient. **V.**



R. The bedrock surface and trends for the MSP site were initially obtained from the bedrock topographic map developed by Bruce Bloomgren of the Minnesota Geological Survey. This map was refined based on the comprehensive compilation of boring logs for the MSP site. While the MPCA observation that there is only one boring within the bedrock valley on the MSP property is correct, there are additional borings on the flanks of the valley that help define its location. In addition, Bloomgren (1985) utilized numerous borings or wells south of the MSP site to define the bedrock trends.

The discussion of the bedrock surface and the associated valleys has been enhanced in the modified EIS text. The discussion includes a brief review of the nature of the various bedrock units along with a description of the bedrocks surface and the uppermost bedrock units encountered across the site. To illustrate site geologic conditions and trends, geologic cross-sections have been included along with the previously provided bedrock contour map to better illustrate site conditions.

S. The sampling results collected to-date have not identified significant impacts to the St. Peter or deeper overburden aquifers beneath the MSP site. The third round of sampling referred to by MPCA is the November 1995 sampling in MW-4B which identified a number of volatile organic compounds which had not been previously detected in MW-4B or in samples from a shallow well (MW-4A) in this area. Owing to these unexpected results, another sample was collected to assess whether the reported compounds were present or were apparently associated with external (laboratory or other source) contamination. The December 1995 sample did not detect any compounds, which was similar to the historic sampling results from MW-4B. It is concluded that the November 1995 sampling was not representative of aquifer conditions in the area.

In the modified EIS text, the fact that five rounds of sampling (through 1996) have not observed significant impacts to deeper (St. Peter and deep overburden) aquifers at the site has been referenced. It is also noted that, while there is little information regarding the Prairie du Chien/Jordan aquifer water quality, with limited impacts to shallower aquifers, impacts to these deeper aquifers are not anticipated.

T. As reported by Signature Flight Support, there are no design requirements for pipeline construction which are specifically related to state or federal environmental regulations. The need for leak protection has been addressed by meeting all applicable general design and construction standards with measures such as shrink wrap sealing of piping and cathodic protection against rust.

There are no designed leak detection elements of the pipeline per se. However, the pipeline system is typically not operational between the hours of midnight and 5 AM. The pressure within the system is monitored during these hours; a marked drop in pressure would be indication of a leak in the system.

U. Text has been added to Section V.CC.3 to reference Signature spill prevention and response documentation.

V. See General Response 1.

As a preface to the comments provided below, the MPCA staff reviewer could not draw a conclusion as to the potential for ground water impacts. The DEIS lacks detailed information needed. Some of the statements made cannot be substantiated because data and footnotes or references are not provided. Much of the analyses that has been conducted as part of this six year environmental review odyssey has not been included or referenced.

7. The ground water discussion is extremely uneven with far more focus placed on the Dakota County site than the MSP site. Although this was the way the scope said the DEIS would be prepared, it does not allow decision makers an opportunity to really compare the two sites because the DEIS does not present much information on the MSP site.

   This DEIS is the culmination of the environmental review process for a new airport. Although further analyses of MSP site hydrogeology was 'scoped out' of the EIS, there has been information gathered and presented earlier in this process that should be included in the DEIS to present a more balanced review.

8. The interconnectedness of surface and ground water require a thorough understanding of surface features, soils, runoff and infiltration patterns, and the location of certain airport activities to piece together an impression of the potential for ground water contamination. The DEIS should provide this type of comprehensive discussion for each site.

9. To provide a more complete picture of the potential for ground water contamination the DEIS should include the following:

   - A location map of the nearby off-site private and public wells surrounding each site. The DEIS discussed the potential for contamination of public wells; it should also discuss the potential for contamination of nearby off-site private wells.
   - A location map of the findings from the search of the MPCA dump site files that was conducted early in the alternative environmental review process.
   - A location map of the findings from the search that was conducted early in the alternative environmental review process of mining operations (sand pits, gravel pits, quarries) on or near the site, including an indication as to whether the site is active.

10. The EIS should discuss the potential for ground water contamination resulting from the proposed surface water management scheme.

11. An EIS typically reviews operation and maintenance plans to help assess the potential for environmental impact. As the landlord, the MAC may not be responsible for operation and maintenance but somehow the EIS process needs to evaluate standard operating procedures in order to fully assess the potential for ground water impacts.

W. See Response A regarding referenced documents. The following responses address specific references to needed information.

As noted in Comment 7, Section V.CC was prepared consistent with the Scoping Decision. However, to address the MPCA's more recent comments, the characterization of existing geological and hydrogeological conditions at the site in Section V.CC.1 has been enhanced with additional text and graphics.

**W.**

X. The discussion of site geologic conditions has been expanded to include a presentation of surface geologic trends, differentiating surface materials as clayey or sandy. The trends are illustrated on a figure overlaying the MAC facility map. This will illustrate areas with a higher vs. lower potential for releases to the shallow ground water. It has also been noted that once any impacts hit the water table, the subsurface geologic materials and the associated hydraulic interactions will dictate where contaminants will likely migrate. This information, along with the more detailed discussion of geologic trends will help identify areas with a higher risk of impact to shallow and deeper ground water. It is concluded that the geologic materials beneath the MSP site provide natural barriers that should minimize the vertical migration of contamination to deeper aquifers.

**X.**

Y. As discussed at the June 18, 1996 meeting, this comment generally pertains to the New Airport Alternative. The revised geologic characterization has further addressed the limited risk to potable aquifers underlying MSP. See also General Response 1.

**Y.**

Z. Surface water run-off from all operational areas is directed to the storm sewer system. Most grassed areas adjacent to paved areas are also served by storm sewer intakes. The potential for ground water impact from the storm sewer system is represented by exfiltration from the storm sewer piping, and infiltration into soils underlying the detention basins.

Refer to Response X for discussion of the relationship between surface water drainage and the potential for environmental impact to subsurface waters.

**Z.**

AA. The level of detail identified in this comment was not called for in the MPCA's June 30, 1995 comment letter on the Second Phase Scoping Report or proposed in the Scoping Decision. As discussed at the June 18, 1996 meeting at the MPCA, to identify and assess all significant operation and maintenance plans at the airport in terms of adequacy of addressing safeguards against ground water quality impact would be beyond the scope of the EIS process. Individual tenants with facilities and operations which have the potential to impact ground water resources must meet state and federal regulatory requirements for engineering/design and for operations. Releases to the environment must be reported and addressed through cleanup actions according to regulatory requirements.

**AA.**

As addressed in the Response X, once any impacts from operational or storage/handling practices reach the water table, subsurface geologic materials and the hydraulic interactions will dictate where contaminants would migrate. Relevant information characterizing the geologic and hydrogeologic setting of the site is presented in Section V.CC.1, which has been enhanced. Geologic materials beneath the MSP site provide natural barriers that should minimize vertical migration of contamination to deeper aquifers.

12. Tenants at MSP are licensed hazardous waste generators. The EIS should list those that are licensed, list the waste that they generate and briefly detail the storage, handling, and contingency action planning.

13. There have been numerous spills and leaks reported at MSP over the years, many resulting in soil and ground water contamination. Spills and leaks are an inevitable consequence of operating an airport. The EIS needs to provide the reader with a feel for how common spills and leaks are at the current airport and what, if anything, would be different about the new airport (expanded MSP or Dakota county site) that would reduce the likelihood of spills and leaks and resulting environmental contamination. The discussion of the potential for ground water contamination is incomplete without this information.

14. The storage and distribution method and the quantity of deicing chemicals (including decaking agents) at the airport should be included in the EIS. Describe the chemical constituents of the decaking agents. A list of any other hazardous substances and their storage and distribution methods should also be included.

15. Health Risk Level (HRL) values have replace Recommended Allowable Limits (RAL) values. Please update all appropriate information to reflect the change.

16. Figure CC-1 needs to be revised. The key does not match the map (Og in the key is Osp on the map). The features mentioned in the text need to be labeled on the map (Post Road and Gold Concourse, etc.). Flow direction arrows would be helpful.

17. The EIS should reference all materials that support the following statement, made on page V-274 under the heading: *Aquifer Sensitivity*. "The confining layer provide a barrier to potential downward migration of contaminants."

18. The DEIS did not evaluate the potential environmental impacts during construction of the airport and discuss mitigation measures.

    The potential impacts to surface and ground water and air during construction should be included in the DEIS.

    The EIS should indicate how MAC will assure that construction is carried out in an environmentally sound manner.

    The EIS should list the hazardous substances, including explosives, that would be on-site during construction periods and discuss the potential for environmental contamination.

    The EIS should discuss staging areas during construction and the potential for environmental contamination.

19. The changes that have to be made to the ground water section of the DEIS to address the MPCA staff comments are substantial. The MPCA staff requests an opportunity to review the revised section or other response to our comments before the final EIS is printed. We can be available for discussion and will provide nearly immediate turnaround on review.

BB. The level of detail identified in this comment was not called for in the MPCA's June 30, 1995 comment letter on the Second Phase Scoping Report or proposed in the Scoping Decision. As discussed at the June 18, 1996 meeting at the MPCA, it is beyond the scope of this EIS process to document all of the information called for in this comment. See also Response AA.

CC. This comment has been addressed with additional text in Section V.CC.2. This text states that, in light of the large number of fueling operations at the airport, spills do occur with some regularity. Reporting and response requirements to individual spills are established and administered by state and federal regulatory bodies.

DD. The primary ground surface deicing chemicals used at MSP are urea and salt. Quantities of potassium acetate and sodium formate are also stored at MSP. Urea and salt are stored inside buildings. Potassium acetate, a liquid product, is stored in tanks. Sodium formate is currently stored in one ton bags on pallets adjacent to the salt storage facility. It is anticipated that sodium formate will eventually become the primary runway deicing chemical (replacing urea). Under these circumstances, the sodium formate will be stored in an enclosed facility.

EE. Text has been revised to reference HRL values only as suggested.

FF. The previous Figure CC-1 is now Figure CC-6. The key for this figure has been revised as suggested, and Post Road has been depicted on the new Figure CC-1. Groundwater flow directions are depicted on Figures CC-8 and CC-9.

GG. The wording has been revised from "The confining layers provide a barrier to potential downward migration of contaminants." to "The confining layers limit the potential for downward vertical migration of contaminants." This provides a more generalized statement.

HH. Section V.E, Construction Impacts, has been revised to address the impacts of the staging of the 2020 plan.

II. The revised section and comment responses were submitted to the MPCA in July 1996.

D. Noise

MPCA noise program staff have no comments on the DEIS. The analysis seems to quantify noise impacts appropriately.

E. Wetlands

1. The DEIS should indicate that Clean Water Act requirements would also be applicable to impacts to wetland caused by draining or excavating, not just filling.

2. It should be noted that an individual Clean Water Act Section 401 Water Quality Certification from the MPCA will be required as part of any individual 404 permit obtained from the U.S. Army Corps of Engineers.

JJ.

JJ. Item 1. It is not anticipated that the MSP Alternative will involve any wetland drainage or excavation; thus, only filling impacts have been discussed.

Item 2. Section I.D. on page 1-4 of DEIS lists a Section 401 water quality certification as one of the governmental approvals required for the MSP Alternative.

3. The Tables DD-1 and DD-2 for the MSP alternative and Tables DD-3 for the New Airport Alternative indicate the wetlands on site and the proposed impacts to those wetlands. The DEIS indicates the proposed impacts to wetlands are unavoidable and that it was not possible to provide compensatory wetland mitigation on-site. There was no information in the DEIS to justify these statements.

   The DEIS should provide justification information in order that the MPCA can concur that the proposed impacts to wetlands and potential mitigation are accurately and completely described in the DEIS.

   The applicant for any Clean Water Act Permit and Water Quality Certification will be required to satisfy the requirements of Minn. R. pt. 7050.0186. This water quality rule requires the applicant to establish there are no prudent and feasible alternatives for any proposed physical alteration of any wetlands and that the sequence mitigation of avoid, minimize and compensatory mitigation is provided for in accordance with the rules.

KK.

KK. The airport improvements called for under the MSP Long Term Comprehensive Plan will occupy essentially all of the undeveloped land remaining within MSP boundaries. Given the distribution of wetlands on MSP property, there is no way that any of these areas can reasonably be avoided given the spatial density of structural improvements to occur at MSP(see Figures 6 and DD-1 of the DEIS). Further, if preservation of such areas could be accomplished, their functions and values would be substantially reduced by the level of development to occur on surrounding uplands. A more detailed sequencing analysis will be included in wetland permit applications for the MSP Alternative.

4. Item DD.1.3. indicates that a stormwater outfall will be constructed in wetlands for the MSP alternative. There is not enough detail in the DEIS to determine if the proposed discharge of stormwater to wetlands will alter and impact the wetland either by excavation, inundation or pollutant impact by the discharge. This evaluation should be provided in order to evaluate the potential impact to wetlands that will have a stormwater discharge. These wetlands may also be considered as significantly adversely impacted and need to be evaluated.

LL.

LL. See U.S. Environmental Protection Agency Response F.

F. Air Quality

1. Indirect Source Permit (ISP) Requirements: Regardless of the alternative chosen, an ISP would be required for this project. A detailed air quality analysis will be needed for the terminal and associated roadways as part of the ISP review process.

MM.

MM. Comment noted.

2. Transportation Access: The DEIS states that several roadway improvements would be needed to provide adequate access and capacity to either the MSP or the Dakota County airport alternative. The DEIS does not fully address the transit options that must be considered to meet the demands. The 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) makes clear that alternative modes of transit must not be considered secondary to highway construction for meeting travel demand. By its explicit designation of equal federal participation in funding roadway and transits projects, and its even greater funding of high occupancy vehicle (HOV) lanes, Congress has given guidance that should be applied to either airport alternative. Though the source of funding for the necessary improvements has not yet been clarified, MPCA staff believes that transit options (busways, light rail transit, and HOV lanes ) should be considered for both alternatives.

**NN.**

NN. Further environmental evaluation of the road projects will be required and will consider transit options as appropriate and required under the requirements of the ISTEA. The use of transit as a mode serving each of the three alternatives was considered in the modeling assumptions. However, given funding considerations, only a transit level-of-service similar to current service levels was assumed, so as to provide a worst case evaluation for the DEIS.

Impacts from the proposed project on the non-trunk highways especially county roads expected to be affected by the project and major deficiencies on other existing systems should be fully addressed. Projected development expected to be induced by the New Airport alternative in Dakota County appears to be in the low end. This projection seems to affect the reliability of the traffic forecast provided for the county road system in Dakota County, specifically County Road 42. The forecast volumes for this roadway should be rechecked in the final EIS.

**OO.**

OO. See General Response 1.

3. Although the Dakota County airport site is located outside of the nonattainment area and is not directly governed by the rules affecting such areas, a conformity analysis is required. While the Dakota County airport is not itself subject to a regional emission analysis and transportation conformity determination, the regionally significant roadways needed to serve the new site or the existing MSP site would be subject to both regional and project level conformity requirements. Additionally, the vehicle miles traveled estimates used in our emission inventory included all roadways in the seven-county metro area and Wright County regardless of the attainment boundary.

**PP.**

PP. See General Response 1.

4. The DEIS listed several roadways that needed improvements for both the MSP and the Dakota County alternatives, but the DEIS fails to clearly identify the sources of funding for these improvements. If federal funding is proposed, it must come from a fiscally constrained transportation plan and TIP consistent with 23 CFR part 450 and 40 Chapter 1, part 51.408. The extent to which each alternative can meets these requirements should be discussed in the final EIS.

**QQ.**

QQ. All highway projects proposed for the MSP Alternative will have to be included in a conforming Transportation Improvement Program (TIP) before they can be funded. The Metropolitan Council Transportation Policy Plan adopted in 1997 includes the projects needed for the MSP Alternative, without a source of funding. Funding for these projects will be identified if and when the legislature authorizes implementation of the 2020 comprehensive plan. See also Appendix F and General Response 1.

5. In the DEIS section: *Methodology and Assumptions*, the MOBILE5a model assumes an anti-tampering program, but does not assume the Inspection and Maintenance (I/M) program for the 2020 emission estimates. Currently, the two programs are being administered together and cannot be conducted separately. Therefore, if the I/M program is not assumed as one of the input parameters, the anti-tampering program should also be dropped.

Also, the microscale analysis should be extended to include more intersections and on- and off-ramps in the MSP alternative.

**RR.**

RR. The air quality analysis has been revised without the anti-tampering program assumption. For additional microscale analysis and metered ramp analysis, see revised Section V.A.1.2 and City of Richfield Responses BB and CC.

6. The design of the chosen alternative should include detailed construction staging plans that outline the sequence of construction activities, including strategies for managing traffic during construction of these proposed improvements. The changes in traffic patterns which will occur during the improvements of the proposed roadways will impact air quality in some street intersections adjacent to the project areas. Detailed assessments of these impacts should be presented in the ISP when detailed designs are developed. The ISP application should include a description of the construction phasing and the traffic control plan for each phase, and also assess how traffic on local streets would be affected by the diversions caused by the proposed project.

**SS.**

SS. Detailed staging plans for the 2010 LTCP have not been completed. An expanded discussion of potential impacts due to roadway improvements and construction activity are contained in Section V.A.1.2 Air Quality Impacts - MSP Alternative. The need for a traffic management plan is mentioned under A.1.3 Mitigation Measures - MSP Alternative and A.2.3. Mitigation Measures - No Action Alternative.

WISCONSIN DEPT. OF NATURAL RESOURCES

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January 10, 1996 IN REPLY REFER TO: 1600

Ms. Jenn Unruh
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, MN 55450

SUBJECT: MSP Dual Track Airport Planning Process, Draft Environmental Impact Statement (DEIS)

Dear Ms. Unruh:

The Department appreciates the opportunity to comment on the above document. We recognize the substantial efforts of the Metropolitan Airports Commission (MAC), cooperating agencies and consultants to develop a comprehensive DEIS that is responsive to the long list of issues identified by the public and interested parties.

The recent announcement by Northwest Airlines of a modified MSP alternative warrants consideration as part of the EIS process. The final EIS should include an evaluation of such degree necessary as to fully determine the viability of this option. **A.**

A. See General Response 3.

There are many points in the DEIS which the Department agrees with or has no comment. Comments provided below list points with which we have questions or disagree and believe should be modified in the final EIS. These are listed in the same order as presented in the draft.

1. Executive Summary (Supporting discussion may follow on comments regarding subsequent sections of the document).

   a. Page ii. Description of the No Action alternative does not clearly point out Runway 4-22 extension is the base condition. Any additional projects beyond the 95-97 Capital Improvement Program could be permitted, but only by MAC and/or legislative approval. **B.**

   B. Runway 4-22 extension is clearly identified as part of this alternative in Section III. The text has been revised regarding projects beyond 1997.

   b. Page iv, third full paragraph. Add language to first sentence: Although there are substantial impacts for each of the alternatives, the environmental evaluation... **C.**

   C. The text has been revised.

   c. Page iv, third paragraph. We strongly disagree, as noted in subsequent comments, to the third sentence, and suggest it be changed to: Substantive differences occur in both the social/economic and natural environment categories. **D.**

   D. The text has been revised.

   d. We do not agree with the highlighted findings on page iv. Specifically, a bullet should be added describing significant induced development that would occur around the New Airport alternative resulting in land use changes from rural to commercial, industrial, and residential covering thousands of acres; and the inconsistency of such development with Metropolitan Council attempts to contain urban sprawl within existing Metro Area boundaries and an associated increased demand for public services to impacted communities. Secondly, it is incredulous to conclude that impacts on the natural environment for all alternatives are relatively minor. Considering the New Airport footprint covers over 14,000 acres and considering the thousands of additional acreage resulting from induced development, easily 20,000 acres of undeveloped land would be lost or greatly diminished in value as viable wildlife habitat. This does not consider the indirect habitat degradation to land-based and water based biological communities resulting from human use, pollution generated, road kills, etc. From our perspective, to not acknowledge the significant environmental disturbance from a New Airport alternative and its associated induced development in the singlemost major deficiency of the DEIS. **E.**

   E. See General Response 1.

e. Summary of Impacts Table

- #7. Wildlife habitat will be lost or severely degraded, not displaced. To limit the New Airport impacted area to only the 6865 acres that will be graded fails to acknowledge the full acreage impacted due to human use disturbance, induced development, etc. We believe this number would easily exceed 20,000 acres through the 2020 planning period. **F.**

- #23-25, Induced Socioeconomic (Development) Impacts. Acreage impacted by induced development should be provided. **G.**

- Review is needed of the No Action alternative listed impacts. For instance, how is 120 acres of biotic communities impacted by No Action? Why should 2800 acres of farmland be lost (#17)? **H.**

- We agree with page III-5 that "implicit with New Airport alternative is that the existing MSP site would be redeveloped." We disagree that the impact/cost of this should be deferred to a possible later environmental review. If impact/costs cannot yet be calculated, the FEIS, including the Executive Summary, should clearly describe the potential for significant effects resulting from redevelopment, including ultimate disposition of the property, demolition costs, redevelopment costs, and potential for significant environmental clean-up costs. These costs impacts could substantially alter total project costs for the New Airport alternative. At earlier Task Force meetings we have heard statements that any demolition/clean-up costs would be a "wash" if the existing MSP property were sold for private development. **I.**

  If the FEIS contains such a conclusion, the basis/justification should be provided.

2. Section III, Alternatives

This section should not include "project goals" or "measures of performance" for any of the alternatives. Goal discussion is suitable for the Purpose and Need section; "measures of performance" in the Environmental Consequences section. Accordingly, sections B.1.2, B.2.2, and B.3.1 should be deleted or moved as indicated above. **J.**

a. Page III-5, last paragraph in Section B.2. The last two sentences should be deleted and a new section added in Environmental Consequences discussing MSP redevelopment under a New Airport alternative. To simply defer this issue to a possible later environmental review fails to evaluate a reasonably foreseeable outcome of the New Airport alternative, and warrants full consideration under NEPA regulations. **K.**

b. If section B.2.2 is not deleted or relocated, we suggest: **L.**

- goal A, bullet #1, include energy losses from increased travel distance to the New Airport.

- goal A, bullet #3, include acreage lossed from induced development,

- goal B, bullet #1, note that improved aviation system efficiency with the New Airport alternative is offset by decreased access efficiency for airport users.

c. Section B.3, last sentence. Note that subsequent separate MAC or legislative action to expand capacity (i.e., such as by recent approval of runway 4-22 extension) is possible. **M.**

d. If section B.3.1 is not deleted or relocated, we suggest bullet #2, regional economic development, is strongly biased in favor of either build alternative. This section discusses, in three locations, the <u>significant</u> adverse impact to level of service by the No Action alternative. It is the only reference found in the entire DEIS to a significant impact for any alternative. The comparative casual disregard, as shown when describing impacts to the natural environment as relatively minor (page iv), is inexcusable considering that 20,000 acres or more of wildlife habitat will be eliminated or severely degraded under the New Airport alternative (from direct loss or induced secondary development). **N.**

F. See General Response 1.

G. See General Response 1.

H. This would be the no action effect of estimated residential development related to the new airport affected environment. See General Response 1.

I. See General Response 1.

J. The goals and objectives described in Section II, Purpose and Need, establish the general requirements to be addressed by the alternatives. The more detailed measures of performance included in Section III, Alternatives, are provided in accordance with CEQ Regulations to "present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision-maker and the public."

K. See General Response 1.

L. See General Response 1.

M. The purpose of a no action alternative is to compare the impacts associated with implementing a proposed action with the impacts of not implementing the action. For the Dual Track process, the proposed action is the expanded/improved airport-related facilities required to meet 2010 demand levels, as shown in the MSP 2010 Long Term Comprehensive Plan. The no action alternative, therefore, reflects the airport without these capacity enhancements.

N. The Executive Summary has been revised. See also General Response 1.

3. Section IV, Affected Environment.

This section is extremely underdescribed, particularly compared to the Alternatives section. We recognize that additional discussion on the environmental setting is provided in the subsequent "consequences" section. If this section is left as is, it would be even more appropriate to delete/relocate "measures of performance" discussion from the Alternatives section.

**O.**

O. This section has been revised, but still remains a brief description of the *general* setting for the alternatives under consideration,a detailed description for each impact category is included in Section V.

4. Section V, Environmental Consequences

a. Part B, Biotic Communities

1. Limiting the Area of Potential Effect (APE) to the airport property (MSP or New) and limited off-site areas (i.e., roads, storm sewer, bird-aircraft hazard, wetlands, etc.) fails to fully describe biotic communities impacted, particularly for the New Airport alternative.

   For example, page V-91 describes induced development impacts resulting in the loss of 6,000-10,000 acres of off-site farmland around the New Airport site due to new residence lot size ~~done~~ alone. There is no consideration of the associated loss of wildlife habitat and impact to the biotic community.

**P.**

P. The APE for MSP is not limited to airport property. It includes off-airport roadway improvements.

2. Section C.2.2 and table C-2 characterizes the wildlife habitat affected by the New Airport as those areas to be graded. This acreage is further reduced in table C-3 considering already developed land provides no wildlife habitat, and table C-3 totals are carried forward to the Executive Summary table. Not only does this fail to reflect habitat losses associated with induced development on farmland (previous comment), it also fails to acknowledge the degradation to wildlife habitat caused by airport operation and associated human use disturbances on the +6,400 acres of non-graded airport property.

**Q.**

Q. See General Response 1.

3. Page V - 33, bottom, notes all overflights will be at altitudes above 2,000 feet from select identified waterfowl use areas. This conflicts with statements at the top of pages V-44 and 45 that say New Airport approach flight tracks will result in a substantial proportion of aircraft arrival over these same areas at altitudes of 2,000 feet or less.

**R.**

R. See General Response 1.

b. Part H.2.1, Endangered and Threatened Species. APE fails to acknowledge potential impacts resulting from thousands of acres of induced development around the New Airport site.

**S.**

S. See General Response 1.

c. Part I, Economics. This section is inadequate in that it does not describe the potentially significant adverse economic impacts (i.e., lost revenue, possible relocation) to existing businesses around MSP resulting from its closure and relocation to the New Airport site. This discussion is particularly important given points raised about the adverse economic impacts resulting from the No Action alternative on pages III-9 and 10.

**T.**

T. See General Response 1.

d. Page V-56, Part I. It is essential that financing plans for each alternative are provided in the FEIS in order to determine if implementation is feasible/viable and funding sources.

**U.**

U. Financial plans for the alternatives are discussed in the Dual Track Technical Report. This document is incorporated by reference in Section IX of the FEIS.

e. Part J, Energy Supply and Natural Resources. Given its more remote distance from the Twin Cities, it is hard to imagine that motor vehicle fuel consumption to access the New Airport site is only slightly higher than that expected for the MSP/No Action alternatives.

**V.**

V. See General Response 1.

f. Park K, Farmland

Section K.2.2 seems to present conflicting statements in itself and other sections of the DEIS regarding farmland losses from induced development for the New Airport alternative. Page V-89 says 17,000-19,000 acres of agricultural land, including 3,000-5,000 around the site, would be lost to development. Pages V-89 and 90 note Metropolitan Council forecasts that expected commercial/industrial development would not be located in rural townships or near highway interchanges. Five case studies suggest otherwise. Page V-91 forecasts 1075 new residences in the four townships closest to the New Airport, with an expected loss of 6,000-10,000 acres of farmland due to lot size alone. These inconsistencies should be corrected here, in Section K.4 and in the Executive Summary.

**W.**

W. See General Response 1.

Page V-91 gives mention to the possible prospect of higher density planned residential communities and an outward shift for the MUSA line to provide sewer service. It should be clearly noted that such a shift and the New Airport alternative overall is directly contrary to farmland preservation efforts noted on page V-85, not to mention other Minnesota planning efforts to control urban sprawl from the Twin Cities (Minnesota EQB, Redefining Progress, Working Toward a Sustainable Future, 1994).

**X.**

X. See General Response 1.

We agree with the statement near the top of page V-94 that the New Airport alternative would convert Dakota County to a non-agricultural community. We disagree with statements in Section K.4 noting the impact of the New Airport alternative would be minimal in terms of lost Minnesota farmland and agricultural economy. While recognizing Dakota County impacts would be major (significant is a better word here), it is exactly these kinds of incremental conversions of rural lands to urban lands that have prompted efforts to preserve farmland and control sprawl.

**Y.**

Y. See General Response 1.

g. Induced Socioeconomic Impacts

This section is a disappointment. The scope of this analysis, limited to population, number of household, employment, lodging rooms, office and manufacturing space needs etc. is too narrow to provide a full reflection of induced development, particularly that associated with the New Airport alternative. How much land would be needed to accommodate population and business expansion? Where would this expansion be located? What added public service demands would be placed on nearby communities? What are the abilities of those communities to accommodate such demands?

Answers to these questions are needed for Wisconsin communities to properly plan for future development, especially considering the roughly projected additional 10% population and household growth anticipated with a New Airport alternative. It is particularly relevant in Prescott where projected population/household growth without a New Airport is projected to increase about 50%, but double that with a New Airport.

We also wonder if estimates are understated given such intangibles as: lower Wisconsin property acquisition costs; lower property taxes; lower Wisconsin worker compensation rates; and highway access improvements to the New Airport site also improving business access to Twin Cities markets. We expect Prescott and other Wisconsin communities could experience the same explosion of Twin Cities outmigration that has emerged recently in Hudson.

**Z.**

Z. See General Response 1.

Furthermore, regarding the projected 1125 new households in outlying Pierce County areas projected in Table N-11, expecting this development to occur in rural areas with residential zoning requiring large lot sizes (i.e., five acres or more), it can be expected that 5000 acres or more of rural farmland, woodland, etc. may be lost or degraded as a result of New Airport induced development. Such an impact is contrary to the statement on page V-93 that indicates induced development impacts on agricultural land will be negligible. The DEIS further fails to consider the associated impacts of such development on lost or degraded wildlife habitat in Wisconsin.

**AA.**

AA. See General Response 1.

Finally, there is no proposed mitigation to help Wisconsin communities deal with dramatic new growth pressures resulting from a New Airport. This could be perceived to demonstrate an unneighborly attitude from Minnesota that there will be induced development in Wisconsin from the Minnesota's New Airport, but this is solely Wisconsin's issue to deal with.

**BB.**

BB. See General Response 1.

h. Part O - Land Use

Given earlier comments 4.a., 4.b., and 4.i., it appears that the total acreage of land use changes could easily be higher than the 24,510 acres described in Table O-1. These numbers should be modified accordingly. We note that Table O-1 agricultural land totals are nearly 22,000 acres (not counting a possible 5,000 acre or more impact in Wisconsin - see above comment). This is considerably different than numbers shown in the Executive Summary or Farmland sections.

**CC.**

CC. See General Response 1.

i. Section Q - Noise

The summary noise sections (Q.1.4 and Q.2.2s) should clearly explain that FAA regulations require areas impacted by aircraft noise greater than DNL 65 require mitigation. It should emphasize that the number of persons within DNL 65 contour at existing MSP will decrease from 22,090 in 1994 to 7350 by 2005. It should point out that most, if not all, of the people who reside near the existing airport are already exposed to other background noise levels due to the surrounding urban setting. It should point out that, though fewer people (175) would be exposed to DNL 65 noise levels at and around the New Airport, many other people who reside in the comparatively rural and background noise quieter setting surrounding the new site will be exposed to a much more dramatic increase in noise (even if lower than DNL 65) than compared to existing MSP. Finally, this section should conclude that the noise impact from the New Airport would be significantly greater than the noise impact relief provided by relocation away from existing MSP.

**DD.**

DD. Mitigation is based not only on the level of sound exposure (i.e., DNL) but also on the type of land use. Certain land uses are considered compatible within the DNL 65, while others would require mitigation. Appendix A.3 presents noise compatibility criteria based on FAA guidelines and lists the level of mitigation that would be required. The mitigation plan developed by the MSP Noise Mitigation Committee is presented in Appendix B of the FEIS. See also General Response 1.

j. Part R, Parks and Recreation

This section should note that, while park and recreation nearby the New Airport may not be exposed to noise levels within the DNL 65 contour, increased and persistent noise levels will occur above existing levels and thereby adversely impact the quality of the recreation experience, including those for users on the Lower St. Croix National Scenic Riverway.

**EE.**

EE. See General Response 1.

k. Part W, Transportation Access

This section needs to be expanded to evaluate the economic and operation impacts on surrounding public and private airports as a result of a New Airport alternative.

**FF.**

FF. See General Response 1.

l. Part U, Section 4(f) Impacts

Section V.2.2 should note that while there are both direct and indirect impacts to parks/recreation and wildlife lands from the New Airport alternative, and though these may be considered minor, there is still an impact. For instance, there will be elevated noise levels from airport overflights, though perhaps not within the DNL 65 contour. There will also be increased area population from induced development that can be expected to increase recreation use demand on park/recreation lands.

**GG.**

GG. See General Response 1.

m. Part V, Solid Waste Impacts

This section ignores the prospect of potential hazardous waste issues such as spills, hazard materials storage, and hazardous waste transport. These issues should be addressed for each alternative. In particularly, the DEIS notes on page III-5 that if a New Airport is developed, the existing MSP site would be redeveloped. As part of the redevelopment, it can be expected that hazardous material waste and spill sites would be encountered and possibly require clean-up at considerable cost. This issue should not be deferred for possible later consideration.

**HH.**

HH. The potential for fuel spills at MSP was discussed in Section V.CC.1.2 of the DEIS. See General Response 1.

n. Part BB, Surface Water Quality

Onsite treatment (detention) of stormwater before discharge to the Mississippi River is acceptable. The detention basins should be designed to maximize the removal of BOD, solids, and nutrients before their discharge to surface water.

The proposed discharge location to the Mississippi River is not water quality limited with respect to dissolved oxygen at the present time. However, it is not clear how the assimilative capacity of the Mississippi River was calculated with respect to the zone of impact. Further, it is not clear if other potential impacts of other new (i.e., SE Regional Plant) or other wastewater discharges were considered in this evaluation.

**II.**

II. See General Response 1.

The site of the proposed discharge is a section of the Mississippi River that has very high recreational boating use. The discharge of pollutants typical of stormwater runoff (oils, solids, and other debris) can be expected. Efforts to contain this material using properly designed and operated stormwater detention basins or wastewater treatment systems will be highly desirable. **JJ.**

If the New Airport alternative is forwarded for implementation, the Department will be interested in evaluating proposed NPDES permits for wastewater or large stormwater discharges to Pool 2 or 3 of the Mississippi River.

JJ. See General Response 1.

o. Part EE, Wild and Scenic Rivers

This section should explain that, though neither DNL 65 noise levels or overflights under 2000 feet from New Airport operations would occur over the Lower St. Croix, there will still be elevated and persistent noise levels from overflights. These will adversely impact recreation users. This is particularly evident given the described likely general aviation diversion caused by designated New Airport airspace. This section should also mention the probable increased recreation demands on the St. Croix National Scenic Riverway resulting from the New Airport. This is notable considering Riverway managing agency ongoing efforts to limit boating pressure due to overcrowding, user conflicts, and safety problems. **KK.**

KK. See General Response 1.

5. Summary Comment

The DEIS is a lengthy document and contains a tremendous amount of information. As noted above, we believe some discussion of several issues needs revision. We also believe the FEIS should attempt to better synthesize this information in the Executive Summary to clearly explain and compare the costs and benefits of the various options.

It appears clear to us that the New Airport alternative should not be selected. The cost difference of building a New Airport compared to the MSP alternative is dramatic. The reduced revenues or cost of relocation to businesses near MSP, though not even mentioned in the DEIS, can be expected to be in the millions of dollars, and would certainly adversely impact the local and regional economy.

The rural character of Dakota County and portions of other Wisconsin and Minnesota counties would be severely changed by a New Airport to a more urban setting, adversely impacting agricultural sustainability not to mention the quality of life for thousands of residents. Such development is contrary to ongoing Minnesota and Wisconsin efforts to preserve agricultural lands and control urban sprawl.

The direct and indirect loss or degration to biotic communities from a New Airport covers more than 20,000 acres and represents a significant loss to biological diversity and sustainability to the region. Little impacts such as these would occur for either the No Action or MSP alternative.

Though noise levels around MSP are undoubtedly a nuisance, the extent of the problem will be dramatically reduced within the next decade. Background urban noise levels nearing those just outside MSP's DNL 65 noise contour will persist so that overflight generated noise is indistinguishable. Quieter background noise levels in rural areas surrounding the New Airport site will be severely altered, even if not at or above DNL 65 levels. Thus, it can be expected that a greater adverse noise impact would occur by airport relocation to the new site, than any anticipated relief benefits provided by MSP closure.

These factors should be clearly explained in the FEIS so that decision-makers can plainly see relocation to the New Airport site is not justified.

Thank you for the opportunity to comment. If you have questions, please contact me at (715) 839-3747.

Sincerely,

Tom Lovejoy
Environmental Impact Coordinator

c: Don Winter - WD
Marty Beekman - DOT 6, Eau Claire
Senator Alice Clausing
Representative Sheila Harsdorf

## Wisconsin Department Of Transportation

*Division of Highways*
*Office of Environmental Analysis*
*4802 Sheboygan Avenue/Room 451*
*Madison, WI 53707-7916*
*Telephone: (608) 266-3761*
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February 13, 1996

Ms. Jenn Unruh
Metropolitan Airports Commission
6040 - 28th Avenue South
Minneapolis, MN 55450

Ms. Unruh:

We have reviewed the Draft Environmental Impact Statement (DEIS) for the "Dual Track Airport Planning Process", Hennepin and Dakota Counties, MN. Our comments are directed to the effects the different alternatives would have on the transportation infrastructure and traffic in the State of Wisconsin. The following people should be contacted as needed regarding the subjects indicated:

Marty Beekman, P.E. of the Wisconsin Department of Transportation's (WisDOT's) Eau Claire Office should be contacted if you need clarification of the comments. Mr. Beekman's telephone number is (715) 836-4628.

If you have questions regarding the environmental or commenting processes of WisDOT, you should contact Jon Novick of my staff at (608) 266-8287.

Questions concerning travel forecasting and traffic modeling should be directed to Don Uelmen at (608) 266-1857.

Dan Finkelmeyer should be contacted regarding issues related to Wisconsin airspace and airports. Mr. Finkelmeyer's telephone number is (608) 266-7655.

It is felt that the discussion of induced development impacts in Wisconsin for the Dakota County site have, in general, been addressed. We assume that the local planners in Pierce County will comment on the details of induced development from their perspective.

Based on the traffic projections and capacity criteria outlined in the DEIS, it is noted that two segments of Wisconsin highway entering Prescott will need capacity expansion to four lanes. We are concerned, however, that the traffic in Wisconsin traveling to the Dakota County site was too widely distributed over various Wisconsin and Minnesota routes. It is our opinion that this results in the misleading assumption that no serious problems would ensue in the State of Wisconsin or on the TH 95/CH 15 corridor in Minnesota. Furthermore, the various routes are not compatible with user expectations of interstate access to an International Airport. **A.**

A. See General Response 1.

Shown below are more detailed comments:

Executive Summary

- Page III Supplemental Airport Concept
  The first paragraph concludes by implying that the study of this issue is not completed, e.g., "... findings to date ... ". The request by the officials that the Chippewa Valley Regional Airport (CVRA) be included in the analysis has not materialized. The study findings to date seem to imply that this entire matter is moot. **B.**

B. The "Supplemental Airport Study" has been completed and the findings cited in the Draft EIS remain unchanged. As stated, a supplemental airport concept would not meet the Twin Cities' aviation requirements for 2020. See also General Response 1.

- Page V Transportation Access

  It does not appear that the lane miles of improvements include those required by the No Action alternative. This is an important and critical issue since the premise of the DEIS is that MnDOT will fund these capacity projects - on the other hand, MnDOT says these projects, for the most part, are not programmed and exceed present level funding capabilities. All of the projects listed below are vital to Wisconsin users if the decision is made to use the Dakota County site. It is our opinion that if the below listed highway capacity projects are not funded in anticipation of the Dakota County site airport, the airport project at that location is not viable. **C.**

  For the Dakota County site alternative, these No Action projects include:

  1) Widening of TH 61 Mississippi River Bridge at Hastings
  2) Widening of USH 10 from the St. Croix River at Prescott to USH 61 (MN)
  3) Intersection improvements on TH 61 through Hastings.

  In addition, we feel that the Minnesota TH 95/ CH 15 corridor between I-94 and Hastings will become a desirous route requiring improvements (4 lanes).

- Page VIII Items 39 through 45

  It appears that the travel times reflect the assumption that the "No Action" highway improvements are (have been) funded and built by MnDOT **D.**

Introduction

- Pages I-2 Lead and Cooperating Agencies

  No mention of WisDOT in the third paragraph, even though WisDOT has been involved in the Dual Track Process. WisDOT, as with MnDOT, has not formally entered into a Cooperating Agency Agreement. WisDOT has "piggy backed" MnDOT concerns relative to the existing MSP site alternative, e.g., we would endorse the concern expressed in the third sentence of the second paragraph which addresses airport access at TH 77/TH 62 interchange. **E.**

- Page I-2 Related Environmental Documents

  It is our understanding that the Federal Aviation Administration (FAA) still has work to do regarding airspace for whichever alternative is recommended. We suggest that additional work being done by FAA should be included in this section of the document. **F.**

II. Purpose and Need

- Page II-1 Purpose

  It is our opinion that the discussion on this page should include Wisconsin concerns within its purview. That is, we feel that portions of Wisconsin will be affected by this proposal and should be included within the perspective of such terms as the "Twin Cities region" or "Twin Cities Metropolitan area". We also request that the goals listed on this page and repeatedly referenced throughout the DEIS clearly state the broader geographic perspective. **G.**

III. Alternatives

- Page III-5

  The first listing of projects properly includes Wisconsin highways STH 29 and USH 10. The second listing of projects refers to the No Action highway improvements and should indicate those improvements which affect or are affected by the State of Wisconsin. (See the comment above addressing a similar issue on page v of the Executive Summary.) **H.**

V. Environmental Consequences

- Table I-26

  The New Airports column of this table should be revised to include the two Wisconsin projects listed on page III-5, i.e., "Widening of Wisconsin Highway 29 to County Highway F" and "Widening of U.S. Highway 10 for two or three miles east of Wisconsin Highway 29" **I.**

C. See General Response 1.

D. Travel times are based on travel demand forecast modeling that assumed those improvements that were included in the adopted regional Transportation Policy Plan in force at that time, with the roadway improvement necessary to provide access to the airport (such as the redesigned TH 62/TH77 interchange and ramps for the MSP Alternative). See also General Response 1.

E. The Introduction has been changed to include the involvement of WisDOT (p. I-2).

F. The FEIS (Section I.E.1.1) discusses the process for making changes to the MSP airspace to accommodate the north-south runway. These changes were also subject to environmental review (especially with regard to aircraft noise impacts). Under the MSP Long Term Comprehensive Plan, the new north-south runway would be constructed in the 2002-2005 time period, which would provide ample time for final approval of the necessary airspace configuration changes.

The FAA and MAC studies relating to airspace issues are not specifically considered "related environmental document(s)." However, we agree that the results indirectly affect the outcome of the various environmental analyses. Therefore, portions of the documents were cited in the DEIS and each is included in the "List Of Technical Reports" in Section IX of the FEIS.

G. See General Response 1.

H. See General Response 1.

I. See General Response 1.

- Table N-10 and N-11
  We believe that the percentage allocation to the remainder of Pierce County of population and households seems quite high at 55% when distributed to the rural townships within Pierce County. Our analysis of induced development indicated growth concentrated in the principal communities of Ellsworth, Prescott, and River Falls.

**J.** J. See General Response 1.

- Tables W-6 and W-11
  We believe it is important to identify the increased travel time in Wisconsin when the MSP and Dakota site are compared.

**K.** K. See General Response 1.

- Table W-10
  We suggest that the Dakota site alternative should identify and address the fact that two segments of roads in Wisconsin will require four-lane roadways, i.e., STH 29/35 between USH 10 and CTH "F" and USH 10 east of the intersection with STH 29/35 .

**L.** L. See General Response 1.

- Page V-217 TH 10/TH 61
  The third paragraph should be revised to identify the bridge across the St. Croix River at TH 10 is a lift bridge.

**M.** M. See General Response 1.

- Page V-221 Inter-Region Connectivity
  We believe that Wisconsin travel will be significantly influenced by the development of the Dakota County site. We request the statement which says that travel to "...other states is not expected to be influenced significantly by the move of the airport to Dakota County" should be revised to reflect that Wisconsin would be significantly influenced.

**N.** N. See General Response 1.

- Table W-14
  The improvement description for TH 10 from St. Croix River crossing to TH 61 should specifically state that it will need to be four lanes.

**O.** O. See General Response 1.

- Page V-222
  The discussion below Table W-14 states that "An estimate of the cost of these improvements is not available at this time." The last sentence on page V-221 and another near the bottom of page V-231 indicate that the estimated cost to be $366,200,000. It is our understanding that MnDOT has recently stated that even these estimates are significantly low.

**P.** P. See General Response 1.

- Page V-230 Consequences of Failure to Make Needed Transportation Improvements.
  We suggest that this portion of the document should include a statement which says that without adding the highway improvements of the No Action alternative the airport at the Dakota site is <u>not</u> viable.

**Q.** Q. See General Response 1.

<u>Appendix B Figures</u>

- Figure W-8
  This figure includes an insert of Prescott, Wisconsin which has an ADT of 5300 for USH 10 east of STH 29/35. This is a different number from that reported on Table W-10 on page V-216. An ADT of 5300 would not require capacity improvement as stated in the text of the DEIS. We suggest that this be corrected. This figure also needs to be revised because it shows a mix of the No Action alternative and Dakota County site AADT for the year 2020.

**R.** R. DEIS Figure W-8 has been deleted. See General Response 1.

- Figure W-17
  We note that only one intersection is proposed for improvement along TH 61 through Hastings. We suggest that this route may well be the main route Wisconsinites would use to access the Dakota County site. **S.**

S. See General Response 1.

**ADDITIONAL COMMENTS** (These comments are for your information and are not necessarily related to effects in Wisconsin.)

III Alternatives

- Page III-2 B.1.2 The MSP Alternative and the Project Goals
  NOTE: The capital cost of the MSP alternative is estimated at $2.8 billion, compared to $4.7 billion for the Dakota County site as shown on page III-7. The No Action alternative is estimated to cost $20 million.

V. Environmental Consequences

- Tables W-6, W-11, W-16
  For the MSP alternative, it is not clear to us why the peak hour travel time is less than the off-peak travel time. We also feel that these travel times may not have considered the change in terminal location and its effects on people traveling from Hudson and Ellsworth, Wisconsin. **T.**

T. Tables W-6, W-11 and W-16 have been corrected. Peak and off-peak travel times were transposed. Travel times were based on modeled and estimated travel times to the terminal location proposed under each of the alternatives.

Appendix B Figures

- Table W-18
  USH 1 should be changed to USH 10. **U.**

U. See General Response 1.

Thank you for the opportunity to review and comment on this document. We look forward to working with you and MnDOT on this and future projects.

Sincerely,

Carol D Cutshall

Carol D. Cutshall
Director

JBN
cc: Senator Clausing, R.W. Kunkel
M.L. Beekman, D.R. Uelmen, D.J. Finkelmeyer

MINNESOTA-WISCONSIN BOUNDARY AREA COMMISSION
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February 8, 1996

Mr. Nigel Finney
Metropolitan Airports Commission
6040 - 28th Avenue South
Minneapolis, Minnesota 55450

Dear Mr. Finney:

On behalf of the Minnesota-Wisconsin Boundary Area Commission (MWBAC), thank you for the opportunity to comment on the Dual Track Airport Planning Process Draft Environmental Impact Statement (DEIS). As you are no doubt aware, the commissioners on the MWBAC, appointed by the governors of their respective states, share a fairly large concern regarding the impacts an airport relocation would have on the boundary area we are charged with overseeing. As such, it is not simply the Hastings area our commission is interested in but the boundary area between Wabasha, Minnesota and St. Croix Falls, Wisconsin which would be impacted by such an endeavor. On behalf of the commissioners, the MWBAC staff, and the residents of this extensive river valley system, I hope you will pass the following comments on to our fellow commission members of the Metropolitan Airports Commission.

The troubles we see in the DEIS start on the second page of Executive Summary under the No Action Alternative (page ii):

- The DEIS states, "Projects that increase capacity (terminal, airfield, other) would not be permitted beyond 1997." (Our emphasis added). Should the No Action alternative be the chosen direction, it seems inconceivable that there would be no capacity increases allowed following 1997. Logic points to the continual upgrade process within the physical boundaries of the existing facility to maximize the amount of traffic serviced. As pointed out by Northwest Airlines, there is a considerable amount of construction and updating that can be done to the current facility to increase its capacity. We would suggest this No Action Alternative not be defined within such tight constraints, rather that it be looked at as the least expensive alternative between two massively expensive complete rebuilding projects. **A.**

We believe additional problems exist in the Executive Summary:

- On page (iv) there is the following statement in the Natural Environment section, "Impacts of the alternatives on the natural environment are relatively minor (air quality, water quality, wetlands,...biotic communities, flood plains,....).

  (Our emphasis added). However, the table on page (vi) lists, under biotic community impacts, 6,865 acres of wildlife habitat "displaced." First, it is difficult for us to conceive of "displacing" habitat, when in fact it would be removed. Second, these two pieces of information seem, from our perspective, to be contradictory. Further along in the DEIS text, on page (V-33), Table C-2 indicates that there will be "affected" a total of 7,684 acres of different cover types utilized by wildlife. Why is there such discrepancy in these acreage figures? It is our perspective that such numbers do not qualify as being "relatively minor" impacts. **B.**

A. The purpose of a no action alternative is to compare the impacts associated with implementing a proposed action with the impacts of not implementing the action. For the Dual Track process, the proposed action is the expanded/improved airport-related facilities required to meet 2010 demand levels, as shown in the MSP 2010 Long Term Comprehensive Plan. The no action alternative, therefore, reflects the airport without these capacity improvements.

B. This has been revised. See General Response 1.

- In the summary discussion on environmental impacts of the Dakota County site, potential pollution of the ground water is not even mentioned. Yet the aquifers found within this area are enormously important in the boundary region, and considering the table on page (viii) indicated "high to very high" groundwater contamination potential, these potential impacts must be at least identified in the summary.

**C.** C. See General Response 1.

- In the table on page (vii), under the Farmland section, it is indicated there would be 2,800 acres lost under the No Action Alternative. We question the validity of this statement.

**D.** D. This represents the estimated effect of no action on farmland acreage that would be lost due to residential development in the affected environment of the new airport alternative. See also General Response 1.

Within the body of the DEIS we find a number of omissions and contradictions in the discussion of both induced development and infrastructure requirements regarding the Dakota County site:

- The page (III-5) discussion of transportation needs for the new airport site does not mention the changes that would be required for MN Hwy 95 from Stillwater to Hastings and Washington County Roads 15, 19 and 21 providing north-south movement from populated eastern suburbs of the metropolitan area and within the St. Croix River watershed.

**E.** E. See General Response 1.

- There is no discussion of changes required in transportation corridors from Red Wing, Rochester, or other cities, nor discussion of the need for new river crossings caused by the influx of new airport employees moving to western Wisconsin.

**F.** F. See General Response 1.

- Page (III-6) discusses the Goal of a new airport in Dakota County as "...help(ing) promote the orderly growth and economic development of the region." And on the following page a subsection discusses the induced development brought by a new airport. Minnesota's passage of the 1968 Green Acres Program, The Metropolitan Councils' passage of the 1980 Agriculture Preserves Act, and The Regional Blueprint recently published by the Metropolitan Council (which identifies protecting Dakota County farmland as a number one priority within this region) are all clearly at odds with the statements made regarding development on these DEIS pages.

**G.** G. See General Response 1.

- On page (V-29) the reference to "hestrals" in the second paragraph should read, "**American kestrel (Falco sparvarius),**" bold print indicating where corrections are needed.

**H.** H. This correction has been made in the FEIS. See also General Response 1.

- On page (V-89) the first sentence of section K.2.2 states, "A minimum of 17,000 to 19,000 acres of agriculture land in Dakota County ...would be lost to development..." under the New Airport alternative. Yet all of the tabular information refers to the total loss at 14,100 acres. Calculations in the DEIS should be based on total lost including that from induced development, noise contours, and safety zones (see Table O-1 on page (V-123) showing over 24,000 acres of affected land). Further, in this section on page (V-124), the last paragraph states, "The airport development area may consist of all or a portion of the property extending out three miles from the proposed boundaries of the new airport site. The airport development area may extend five miles in any direction from the airport site if the Metropolitan Council determines the extension is necessary...) Just how much acreage does this project propose to encompass?

**I.** I. See General Response 1.

**J.** J. See General Response 1.

- In last paragraph on page (V-89), the discussion of residences and development in the 13 townships is extremely confusing. In one paragraph the DEIS reports the Met Council as saying everything will happen outside the 13 townships or within the airport. Later in the same section, the first paragraph on page (V-90) states, "There would be almost no induced development around the airport in rural townships, nor along the eight lane highway and interchanges." Two paragraphs later, the DEIS states, if patterns from other airports follow, "...significant commercial, industrial, office and hotel development, accompanied by planned residential communities, in the 13 rural townships" will result. In short, we believe the entire discussion of induced development to be poorly handled. **K.**

- On page (V-93) the DEIS states that the area affected in Pierce County, Wisconsin is not agricultural and therefore needs no discussion under this topic. With the exception of the residential areas along the river bluffs, most of Pierce County is agricultural. Changes in residential densities and smaller but expanding urban areas within the county cannot help but have a radical impact not only upon the agricultural communities in Wisconsin but on the transportation needs of these expanding populations to get to the new airport. **L.**

- No where in Section Q. on noise could we find any detailed discussion regarding the FAA requirements for quieter aircraft and the timetable for its implementation and what effects this implementation will have on much of the tabular data involving affected residents of the current MSP site. **M.**

* Section R. on Parks and Recreation talks about the APE including the highway improvements and power lines yet makes no reference to the fact that some of these improvements must happen within the St. Croix and Mississippi River valleys. It also fails to discuss potential flights over the Lower St. Croix National Wild and Scenic river that would be at a significantly reduced elevation than currently exists and will have an impact. **N.**

- Section W. on Transportation Access has some amazing numbers requiring us to question both the models and the process. Table W-10 on page (V-216) indicates that US 61/Mississippi River crossing would increase by 11,270 vehicles, if the airport moves. This table also shows that US 10/St. Croix River crossing at Prescott would increase by 6,700 vehicles. This means the difference of only 4,570 vehicles represents the increase coming from growing communities of Cottage Grove, Woodbury, Oakdale, Hudson, and Stillwater (with a potential new bridge built there.) Yet later in the first paragraph on page (V-218), it is stated, "It is projected approximately 3,800 daily airport trips will use TH 95 if the airport is moved to Dakota County." This then must mean an increase of only 800 cars are expected on 61, but the numbers coming off the I-494 Wacouta Bridge indicate there will be an increase of over 10,000. These numbers don't support each other. **O.**

Summary

The DEIS is an enormous document. This is as it should be for such an extremely large and potentially devastating project. What is amazing is lay people will be reading and trying to make sense of this huge document, but many of them will have time only to read the Executive Summary. From the perspective of those on the Minnesota-Wisconsin Boundary Area Commission, the Executive Summary gave little sense and even less information upon which to try to make a decision of this magnitude.

K. See General Response 1.

L. See General Response 1.

M. Appendix A.3 discusses the federally mandated phase-out of Stage 2 aircraft on page A.3-1. As noted in the text concerning noise impacts (DEIS Section V.Q.1, pg. V-132), using the 2005 fleet mix is a "worst case" scenario because it contains Stage 2 aircraft "hush-kitted" to meet Stage 3 requirements. These hush-kitted aircraft are noisier than "new technology" Stage 3 aircraft. Noise contours for late years, including 2020, resulted in smaller contours due to the elimination of operations by hush-kitted aircraft.

N. See General Response 1.

O. See General Response 1.

Having read the document and its appendixes and addenda, we can find no reason for choosing the Dakota County site for a new airport. The wide spread turmoil and economic chaos this move would create is extremely difficult to support. The movement of business away from Richfield, Bloomington, and Burnsville and the subsequent urbanization and loss of farmland in rural Dakota County is a predictable progression. Noise mitigation needs and residential construction would soon follow and the same arguments would again play themselves out in relation to a new larger airport. This move would carry with it not only an incredible loss of convenience for the business communities of St. Paul and Minneapolis but an almost debilitating and certainly overwhelming expense to constructing the facility and its associated infrastructure and community development needs.

The Boundary Commission has had a chance to review some other comment letters regarding this DEIS. It is our recommendation that you look seriously at a letter from Mr. Tom Lovejoy of the Wisconsin Department of Natural Resources. His position further outlines other areas of concern that we share regarding this DEIS document.

As a Commission charged with overseeing public and private projects which would impact the many communities and river valleys of our constituency, we appreciate the long road you have taken in producing the DEIS document and the enormous amount of work it represents. The people of Minnesota and Wisconsin are fortunate that such detailed scrutiny has been undertaken on their behalf and are much richer for the process. Such a detailed study has proven to our satisfaction that the new Dakota County Site should be forever dropped from consideration.

It is our recommendation that you make the above mentioned adjustments to the FEIS and look to enhancing the existing airport in a way that is most feasible and affordable.

Again thank you for the opportunity to comment. We look forward to this process's logical completion.

Sincerely,

Robin Grawe

Minnesota-Wisconsin Boundary Area Commission
Robin Grawe, Chair

**Metropolitan Council**
*Working for the Region, Planning for the Future*

February 9, 1996

Ms. Jenn Unruh
Metropolitan Airports Commission
6040 - 28th Avenue South
Minneapolis, MN 55450

RE: Draft Environmental Impact Statement
Dual Track Airport Planning Process
Council Districts 5, 16
Referral File No. 16041-8

Dear Ms. Unruh:

Metropolitan Council staff has reviewed the Draft Environmental Impact Statement (DEIS) for the Dual Track Airport Planning Process to determine its adequacy and accuracy in addressing regional concerns.

Staff has identified two areas of concern with the DEIS:

- Surface Water Quality

  The construction of a new surface water runoff outfall to the Mississippi River which is proposed for both the MSP and No Action alternatives could have a substantial effect on the metropolitan sanitary sewer system and on water quality protection efforts in the metropolitan area. The DEIS analysis assumes that the river has assimilative capacity available that has already been allocated to the Metropolitan Council for assimilation of metropolitan area wastewater treatment facility effluent. The final EIS needs to include all restrictions on assimilative capacity of the river to more accurately present the constraints under which any future new discharges to the Mississippi River would be allowed.

  Design pollutant removal efficiencies for water quality basins for the new airport site are inadequate to meet minimum acceptable Council *Interim Strategy* design guidelines. The final EIS will need to revise the basic design to provide at least Nationwide Urban Runoff Program wet detention basic design pollutant removal efficiencies.

  More extensive comments are provided in Attachment 1 (Council staff contact: Jim Larsen at 291-6404).

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- 1995 Amendment to the *Transportation Development Guide/Policy Plan*

  The DEIS transportation analysis was prepared before the Council amended its transportation policy plan in response to the Federal Intermodal Surface Transportation Efficiency Act (ISTEA). Some of the major projects assumed in the DEIS to be constructed within the 2020 timeframe of the DEIS do not have financial commitments within the 20-year horizon of the Council plan as amended. The final EIS should acknowledge that the funding for these projects is uncertain. A description of the amendment and its relationship to transportation projects related to airport alternatives is provided in Attachment 2 (Council staff contact: Carl Ohrn at 229-2719).

In addition to the above concerns prepared by Council staff, the Transportation Advisory Board (TAB) of the Metropolitan Council has reviewed the DEIS and provided comments about concerns that need to be addressed in the final EIS. The concerns include inadequate analysis of the effects of a new airport on the Dakota County road system, underestimation of vehicle fuel consumed for travel to the new airport, ability of the freeway system to handle peak hour traffic in 2020 and an overly optimistic projection of travel shed times in some areas of the region. Complete comments are included in Attachment 3 (TAB Contact: Emil Brandt at 229-2721).

Thank you for the opportunity to comment on the DEIS.

Sincerely yours,

Charles Ballentine, Director
Office of Local Assistance

Enclosure

cc: Neil Peterson, Metropolitan Council District 5
Terry Flower, Metropolitan Council District 16
Emil Brandt, Transportation Advisory Board
Connie Kozlak, Metropolitan Council

A. A. The text in Section V.W.3.2 regarding the No-Action Alternative has been amended as follows:

> " The planned permanent improvements to add high-occupancy vehicle (HOV) lanes to I-494 and I-35W were deleted from the regional Transportation Policy Plan when it was adopted by the Metropolitan Council in May of 1995. That plan now includes only interim HOV lanes for I-35W from the Minneapolis central business district to I-494 and for I-494 from TH 169 to 34th Avenue. If further fiscal constraints eliminate these interim lanes from construction, additional capacity in the form of an additional lane in each direction would be needed on the TH62/I-35W common section."

## ATTACHMENT 1

ENVIRONMENTAL DIVISION COMMENTS ON DUAL TRACK DEIS

Surface Water Quality

Both the MSP and No Action (NA) alternatives propose construction of a new surface water runoff outfall to the Mississippi River which could have a substantial impact on the Metropolitan Sanitary Sewer System and upon water quality protection efforts in the metropolitan area. Tables BB-2 and BB-3 project future surface water runoff $CBOD_5$ loads to the Mississippi River which are far greater than allowed under MSP's current Minnesota River NPDES permit. Projected peak-day airport runoff loads, under either the MSP or NA alternative, are approximately equivalent to the current total daily $CBOD_5$ load discharged from the Blue Lake, Seneca, and Metro wastewater treatment plants, combined. The current NPDES permit targets 100 pounds per day of $CBOD_5$ as a discharge limit for MSP, as contained in MPCA's 1985/87 Minnesota River waste load allocation study.

**B.** B. The new surface water runoff outfall to the Mississippi River is no longer being considered. The current (September 1993) NPDES permit identifies 100 lbs CBOD5 per day as a target standard only, to be used for analytical proposes for the preparation of a compliance document (the MSP Decision Report for Surface Water Control Measures). This target was based upon the 1985/87 WLA study which focused only upon summer (June through September) discharge. Since the promulgation of the September 1993 NPDES permit, the MPCA has acknowledged that basing a standard for CBOD5 discharge from the airport on the 1985/87 WLA study would be inappropriate, since that study did not account for the most significant MSP discharges.

New low flow and waste load allocation studies will need to be performed on both the Minnesota and Mississippi Rivers to determine the water quality implications of *any* increase in loading above current NPDES permit limitations from MSP to either river. Currently, all available $CBOD_5$ load assimilative capacity in the lower 21 miles of Minnesota River and pool 2 of the Mississippi River within the Twin Cities Metropolitan Area has been allocated (during both summer and winter) to the Metropolitan Council for assimilation of metro area wastewater treatment facility effluent.

**C.** C. The CBOD5 discharges from MSP to the Minnesota River under the MSP Alternative are anticipated to be significantly lower than current and historical conditions. The current waste load allocation for the lower reach of the Minnesota River is based upon flawed utilization of the 1985/87 WLA Study.

Draft EIS assumptions of Mississippi River pollutant load assimilative capacity referenced to an internal MPCA memo overlook numerous factors that would negatively affect assimilative capacity which might be available for all EIS alternatives. Those factors include unknown levels of toxicity of projected MSP runoff, effects of ice cover, and the general lack of understanding of the effects of winter assimilation of glycol contaminated runoff. The final EIS needs to include all restrictions and caveats placed upon the stated assimilative capacity by MPCA staff to more accurately present the constraints under which any future new discharges to the Mississippi River would be allowed.

**D.** D. The new surface water runoff outfall to the Mississippi River is no longer being considered; runoff will be to the Minnesota River.

This EIS process does not replace or eliminate any part of the NPDES permit process that will be necessary to effectuate any of the hypothetical revisions in either MSP's current permit, or a new permit for a new point discharge as proposed in the draft EIS.

The final EIS should discuss the known potential toxicity of sodium formate and potassium acetate (proposed for use in the near future to replace urea as ground surface snow/ice control agents) as was done with the glycol-based aircraft deicing products in the draft EIS.

**E.** E. This comment has been addressed with revisions to Section V.BB.

Design pollutant removal efficiencies for water quality basins for the new airport site are inadequate to meet minimum acceptable Council *Interim Strategy* design guidelines. The final EIS will need to revise the basin design to provide at least Nationwide Urban Runoff Program (NURP) wet detention basin design pollutant removal efficiencies. These design criteria would be met if the New Airport alternative used the same Detpond criteria utilized to design the proposed basins for the MSP and NA alternatives.

**F.** F. See General Response 1.

Wildlife Refuge

The DEIS documents that the MSP alternative could have a potentially significant negative impact upon the Minnesota Valley National Wildlife Refuge. Currently, the FAA has an interagency agreement with the National Park Service and U.S. Fish and Wildlife Service establishing a 2000-foot overflight altitude threshold over the Refuge to reduce potential interference with wildlife. The draft EIS states that construction of a new north-south runway would result in 5620 monthly overflights between 500 and 2000 feet over Long Meadow and Black Dog Lakes and Bass Ponds within the Refuge. The final EIS should indicate that this planned action is inconsistent with the Refuge's comprehensive plan as well as the Council's *Recreation Open Space Development Guide/Policy Plan.*

**G.** G. The FEIS discloses the impact on the refuge. See Section V.U, Section 4(f) and Section V.FF, Wildlife Refuge for a discussion of the impacts and their mitigation.

Findings and Conclusions

- Both the MSP and No Action alternatives propose construction of a new surface water runoff outfall to the Mississippi River which could have a substantial impact on the Metropolitan Sanitary Sewer System and upon water quality protection efforts in the metropolitan area.
- New low flow and waste load allocation studies will need to be performed on both the Minnesota and Mississippi Rivers to determine the water quality implications of *any* increase in loading above current NPDES permit limitations from MSP to either river.
- Draft EIS assumptions of Mississippi River pollutant load assimilative capacity referenced to an internal MPCA memo overlook numerous factors that would negatively affect assimilative capacity which might be available for all EIS alternatives.
- This EIS process does not replace or eliminate any part of the NPDES permit process that will be necessary to effectuate any of the hypothetical revisions in either MSP's current permit, or a new permit for a new point discharge as proposed in the draft EIS.
- Design pollutant removal efficiencies for water quality basins for the new airport site are inadequate to meet minimum acceptable Council *Interim Strategy* design guidelines.
- Overflights below 2000 feet resulting from construction of a new north-south runway could have a potentially significant negative impact upon the Minnesota Valley National Wildlife Refuge and would be inconsistent with the Council's *Regional Recreation Open Space Development Guide/Policy Plan.*

Recommendations

- The final EIS should discuss the known potential toxicity of sodium formate and potassium acetate (proposed for use in the near future to replace urea as ground surface snow/ice control agents) as was done with the glycol-based aircraft deicing products in the draft EIS.

**H.** H. This has been addressed with revisions to Section V.BB.

- The final EIS will need to revise the design of stormwater runoff basins for the New Airport alternative to provide at least Nationwide Urban Runoff Program (NURP) wet detention basin design pollutant removal efficiencies.

**I.** I. See General Response 1.

Staff Contact: Jim Larsen, 291-6404

## ATTACHMENT 2

1995 AMENDMENT TO THE TRANSPORTATION DEVELOPMENT GUIDE CHAPTER/POLICY PLAN

On May 25, 1995, the Metropolitan Council amended its regional transportation plan. This amendment was prepared in response to Federal Intermodal Surface Transportation Efficiency Act (ISTEA) requirements that plans for regions that are not in conformance with the Clean Air Act amendments of 1990 be financially constrained. The planned transportation facilities and improvements must be in balance with the resources available over the 20-year planning period.

In response to these requirements, a number of major expansion projects included in the 1993 plan and still under study do not have financial commitments within the 20-year plan horizon. Some of these corridors provide access to the south and southeast quadrants of the region and therefore could affect access to and from either MSP or the Dakota County site.

Specifically these Regional Needs Not Yet Fully Studied include:

| | |
|---|---|
| I-35W | From Mpls CBD to I-35E; add HOV lane, LRT, and a segment of Mixed-Use land according to EIS |
| I-494 | From I-394 to 34th Av.; meter, by-pass ramps, add HOV lane, a Mixed-Use lane and preserve ROW |

The 1995 Plan does provide funding of some reconstruction work in both I-35 and I-494. Interim HOV lanes are recommended and funds provided in the I-35W corridor from the Minneapolis CBD to I-494 and in the I-494 corridor from TH 169 to 34th Av.

A number of points need to be made concerning these needs and their future funding.

- All the needs identified in the Plan, be they highway or transit, were generated based on a constrained travel demand scenario. The region is following a strategy to modify travel behavior to make the highway and transit system more efficient.
- All the expansion projects without a financial commitment remain in the Plan as "studies" and therefore a unprejudiced analysis of priorities can be made as the Plan is revised to reflect and implement the Regional Blueprint.
- Additional funding is currently being pursued through the legislature, federal government and local initiatives in recognition of the shortfall in current funding. These initiatives include a legislatively mandated study of road pricing/congestion pricing by the Minnesota Department of Transportation and the Metropolitan Council.
- The implementation of these expansion projects should not be prejudiced should they secure funding during the transportation plan update.

Staff Contact: Carl Ohrn, 229-2719

**Metropolitan Council**
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ATTACHMENT 3

TRANSPORTATION ADVISORY BOARD

January 19, 1996

James Solem, Regional Administrator
Metropolitan Council
230 East Fifth Street
St. Paul, Minnesota 55101

Re: TAB Comments on the Draft Environmental Impact Statement (DEIS) for the Dual Track Airport Planning Process

Dear Mr. Solem:

At the January 18, 1996 meeting of the Transportation Advisory Board, the Board approved the attached report and comments concerning the DEIS for the Dual Track Airport Planning Process. The Aviation Committee of the TAB and the Technical Advisory Committee jointly reviewed the DEIS under a very constrained time frame and were primarily responsible for developing the report.

The TAB action is forwarded to the Metropolitan Council for consideration with its review of the Dual Track DEIS.

Sincerely,

Emil Brandt
Transportation Coordinator

cc: John Johnson,Chair
TAB Aviation Committee
Nacho Diaz, Manager, Transportation Dept.
Linda Voge, Referrals Coordinator

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## TRANSPORTATION ADVISORY BOARD

Mears Park Centre, 230 East Fifth Street, St. Paul, Minnesota 55101

**Date:** January 17, 1996

**To:** Metropolitan Council

**From:** Transportation Advisory Board

**Subject:** Review of Draft Environmental Impact Statement (DEIS) for Dual Track Airport Planning Process

A DEIS on the Dual Track Airport Planning Process has been prepared under the direction of the Metropolitan Airports Commission (MAC). The Metropolitan Council, the Minnesota Department of Transportation (Mn/DOT), and the Federal Highway Administration are cooperating agencies in the preparation of the DEIS.

The DEIS serves as the basis for both a state and federal EIS. The MAC is the lead agency for the state EIS and will receive and coordinate comments on the DEIS for state and federal agencies. The Federal Aviation Administration (FAA) is the lead agency for the final federal EIS, which will be prepared after the state makes its decision on which airport development alternative to pursue.

The purpose of an EIS is to provide information for governmental units, the proposer of the project, and other persons to evaluate proposed projects which have the potential for significant environmental effects, to consider alternatives to the proposed project, and to explore methods for reducing adverse environmental impacts. The DEIS is circulated for the purpose of obtaining public comment on the adequacy and accuracy of the information contained in the document.

The Metropolitan Council, as an agency issuing a permit or making a decision on the project, receives a copy of the DEIS for review and comment to the Responsible Government Unit (RGU) on the adequacy and accuracy of the document. The TAB's role is to advise the Council on the issues with the document so that the Council may incorporate those issues into its comments. Members of the TAB and TAC may also comment as individuals or as representatives of the jurisdictions separate from any formal TAB comments.

Following the review and comment period, the Metropolitan Airports Commission, as the RGU for the EIS, will review comments made during the public review period, respond to those comments, and act on a final EIS in March. The EIS will be submitted to the Minnesota Environmental Quality Board, which is expected to make its final determination on adequacy of the document in May.

Information contained in the DEIS will be used in the decision-making process by the Council and the MAC. In addition to the information in the DEIS, additional technical information will be provided in the Dual Track Technical Report, which will analyze issues relating to airport operations, financing, economic impacts and site preservation.

The Council and the MAC are required to prepare by July 1, 1996 a recommendation for the Legislature on which airport development alternative to pursue.

The TAB approved the following comments and attachments concerning the DEIS Dual Track Airport Planning Process for consideration by the Metropolitan Council. The comments are the result of a joint effort of the TAB and TAC Aviation Committees:

1. The review is broad and general because of the limited availability of the DEIS document and Metropolitan Council review sequence requirements.

2. Only certain sections of the document were reviewed. The major emphasis was on the Transportation Access section. Other areas discussed included economics, social, site preservation, induced socio-economics, air quality, land use, and noise.

3. Concerns raised about specific issues and items in the DEIS that need to be addressed in the final document:

   a. The county road system in Dakota County was not given adequate analysis in terms of reliable forecasts and cost, especially Average Daily Traffic levels on County Road 42 in Dakota County are understated. **A**

   b. The amount of energy consumpton, in terms of vehicle fuel, to travel to the new airport is substantially underestimated. **B**

   c. Travel during peak times of the day, as opposed to off-peak, assumes the freeway system has the capacity to handle traffic in 2020. **C**

   d. Travel shed times are optimistic in some areas of the region. **D**

   e. Comments of Mn/DOT and Metropolitan Council are incorporated herein.

4. The DEIS identifies the need for an improved major airport facility to be important to the metropolitan area. The Dual Track Planning Process should move forward to meet the areas' aviation goals as proposed in the accelerated time process.

5. Based on the information available in the DEIS, as available December 1995, the TAB recommends the focus be placed on the M.S.P. Alternative.

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A. See General Response 1.

B. See General Response 1.

C. The modeling process used included capacities consistent with the regional travel demand model for all roadways in the model network. Travel demand assignments used an equilibrium loading model that varies link speed based on a relationship between assigned volume and model capacity. Trips are assigned to different paths for travel until no trip can save time by taking an alternative route. The model indicates that the freeways will not have sufficient capacity in all areas to handle the travel demand in the year 2020. However, this is a region-wide problem, not one due to the airport.

D. The travel times are provided as indicators of relative changes of accessibility between the alternatives. The travel times for travel to the three alternatives are based on the modeled speeds on the roadway system. Depending on the route taken by any given trip, the estimated time to travel to the airport may be high or low. However, the same freeflow highway speed assumptions were used for the three alternatives, so the relative ranking of the three alternatives, in terms of travel times, should remain the same, whether or not one argues that the travel times are too high or too low.

METROPOLITAN COUNCIL
Mears Park Centre, 230 East Fifth Street, St. Paul, Minnesota 55101-1634
Phone (612) 291-6359 TDD (612) 291-0904 FAX (612) 291-6550 Metro Info (612) 229-3780

DATE: December 21, 1995

TO: Aviation Subcommittees of the Transportation Advisory Board and the Technical Advisory Committee

FROM: Pat Pahl

SUBJECT: Blueprint Direction on Development Issues in the Event of a Relocation of the Airport to Dakota County

The Blueprint's strategy for orderly and economic development in the region is to achieve compact contiguous development adjacent to existing urban development through decisions arrived at jointly by the Council and local communities using the comprehensive land use planning process. The Blueprint includes forecasts of overall growth for the region as well as forecasts of growth for individual communities within the region. The Council is committed to provide regional services necessary for growth at the levels forecasted in the Blueprint.

Relocation of the airport to Dakota County will result in some additional development in Dakota County beyond the development forecasted in the Regional Blueprint. Only a small portion of the induced development is likely to be new to the region; most of it is development already anticipated in the region whose location will shift because of the relocation of the airport. The Council needs to provide a policy context for addressing the following issues related to induced development:

- the amount of induced development
- the location of the development
- infrastructure/services for the development
- protection of commercial agriculture land
- fiscal issues arising from induced development

## AMOUNT OF DEVELOPMENT

The Council in the Blueprint projected development in Dakota County in the year 2020 at 182,150 households and 169,370 jobs. For purposes of analyzing in the EIS the impacts of a new airport, Council staff together with Dakota County staff and representatives of affected Dakota County communities projected year 2020 development attributable to a new airport in Dakota County as 3,790 households and 51,500 jobs (41,000 on the airport site and 10,500 elsewhere in Dakota County). These projections assume that a new airport in Dakota County will be in

County communities projected year 2020 development attributable to a new airport in Dakota County as 3,790 households and 51,500 jobs (41,000 on the airport site and 10,500 elsewhere in Dakota County). These projections assume that a new airport in Dakota County will be in operation in 2005.

The induced development projections used in the EIS analysis, while within a reasonable range of likely development, are probably at the low end of the range. Projections of induced development resulting from location of the airport in Dakota County could be two to three times higher than the numbers used for the EIS analysis and still be reasonable.

For the Council, the critical issue is not whether the projections used for the EIS analysis are at the low end of the range of reasonable estimates but how the Council can ensure that whatever development is induced by the airport relocation occurs in a orderly and economic manner in areas that are contiguous to existing urban areas and can be provided with cost-effective urban services.

The Council's direction in the Regional Blueprint supports expansion of the MUSA in response to market forces consistent with the ability of both the region and local government to provide the essential services to accommodate additional development.

LOCATION OF DEVELOPMENT

The Council expects that most of this development will be located in cities in the county that have urban services. The Blueprint states that freestanding growth centers, such as the city of Hastings, should be the focus for growth that occurs in the rural area. The Council will support local plans that ensure sufficient land with urban services is available to meet the projected induced development. The Council will work with affected local governments through the comprehensive planning process to determine the location and staging of development, using its Metropolitan Urban Service Area (MUSA) expansion policies to guide the growth. It may be appropriate to use a cluster planning approach to address issues that cut across jurisdictional boundaries.

Annexation

Where MUSA expansion requests include land currently in unincorporated townships, the Council prefers that the land be annexed through orderly annexation to the city providing urban services. Joint power agreements, although not the Council's preferred option, may be acceptable provided that the MUSA expansion otherwise meets Blueprint requirements for MUSA expansion.

Commercial-Industrial Development on the Airport Site

The EIS assumes that the airport and airport-related business on the airport site will result in 41,000 jobs on the site. In addition to the anticipated development on site, other commercial-industrial development may seek to locate on site. Site constraints suggest very limited development would occur on site beyond that assumed in the EIS. Other development on the site would be acceptable if it is within the capacity of the sewage treatment system and the transportation facilities.

INFRASTRUCTURE/SERVICES FOR DEVELOPMENT

Wastewater Collection and Treatment

The induced development expected to locate in the city of Hastings will make an expansion of the Hastings plant necessary by about the year 2008 and require future capacity of 3.6 to 4 mgd. The Hastings treatment plant has a design capacity of 2.34 mgd. and could possibly be expanded at the existing site by no more than 20 percent. The future capacity of 3.6 to 4 mgd. cannot be achieved at the existing site, particularly when higher degrees of treatment and phosphorus removal are considered. Consequently, the Council must consider treatment of part or all of the wastewater from Hastings elsewhere.

Plans currently underway to increase capacity in the Empire treatment plant to 12 mgd. will meet needs to the timeframe of 2005-2010. The Empire plant is projected to expand to 20 mgd in the year 2040. Expansion of the Empire plant to 20 mgd. may not be desirable based on the limited flow of the Vermillion river.

The EIS analysis assumes that wastewater treatment facilities would be developed on the airport site to serve airport operations and airport-related activity on the site. Regional Blueprint policies do not support the extension of wastewater services from an onsite facility at the airport to adjacent land. The land surrounding the airport site is considered to be in long term agricultural use and protected by the Council from urban-scale development.

If a decision is made to relocate the airport to the Dakota county site, the Council in planning future wastewater treatment facilities will review other alternatives for serving the airport site and induced development in the county that may be more cost-effective. One of those alternatives is to convey wastewater in the Vermillion river basin through an interceptor along the Vermillion river to a regional plant south of Hastings and to extend an interceptor up the Vermillion river to the area of the airport to collect wastewater from the airport. All or part of the wastewater from Hastings would also go to the new plant.

Transportation Facilities

Airport development plans assume that regional transportation facilities requiring expansion or upgrading to meet current traffic demands will be in place or programmed for funding in state and regional transportation improvement plans. Adequate capacity to meet any reasonable level of induced development should be available within the 2020 timeframe provided that additional transportation funds become available to the Council to complete the needed improvements or that the Council shifts funds from projects elsewhere in the region to Dakota County.

PROTECTION OF COMMERCIAL AGRICULTURAL LAND

The Council supports agriculture as the primary long-term land use in the rural service area. The Blueprint provides protection for prime agricultural lands most capable of supporting long-term agricultural production by (1) prohibiting urban facilities in agricultural preserves unless there is strong documentation that no other locations in the Metropolitan Area can adequately meet the siting and selection criteria; (2) not locating urban facilities in land certified for agricultural preserves unless there is strong evidence that the use cannot be located in the general rural use area; and (3) discouraging urban facilities on land with Class I,II,III and irrigated Class IV soils.

The Blueprint recognizes that some urban facilities that serve the urban or entire metropolitan area public may need to be sited in the rural area. The choice of a site for a new airport in an area of commercial agricultural land in Dakota County resulted from studies that documented that no other locations in the Metropolitan Area could adequately meet siting and selection criteria for the facility.

The Council recognizes that adequate public services need to be provided if an urban facility must be located in the rural area but expects that, to the extent possible, the facility not interfere with agricultural activities. The Council, working in partnership with local townships, will continue to support agriculture as the primary land use in areas surrounding the airport site. No urban services will be extended from the airport site to surrounding rural areas. Current Council policies for areas of commercial agriculture support housing densities of one unit per forty acres.

The magnitude of the impact of a new airport on commercial agricultural land makes it likely that current Council policies are not adequate to provide significant protection for agricultural land in the event of a new airport. The Council should review the tools used in other areas that have dealt with the issue of locating a major urban facility in an area of prime agricultural land. Measures such as requiring very low densities of one unit per 160 acres, purchase of development rights, assistance with legal challenges and technical assistance to townships may be necessary to maintain agriculture in the area surrounding the airport.

FISCAL ISSUES ARISING FROM INDUCED DEVELOPMENT

Revenues from Businesses on the Airport Site

To help defray costs of a new airport, the airport commission may allow the location of compatible businesses on the airport site. As noted above, only a limited amount of such development could be accommodated on the airport site. Most of these businesses will not be new to the region but represent a change in location of business activity because of the relocation of the airport. The businesses should be required to contribute to the fiscal disparities pool in an amount comparable to what they would pay if they were located off the airport site.

Costs of Local Infrastructure/Services

The analysis of induced development assumes that the cost of local infrastructure or services to support development induced by the airport can be funded by the new development in the same way any additional development in a community is currently funded. The economic analysis accompanying the EIS document should provide some information on what the fiscal impacts of an airport relocation will be on Dakota County and its communities. If that information indicates some mitigating actions are appropriate, the Council should address options for mitigation in the dual track decision-making process.

Metropolitan Council
*Working for the Region, Planning for the Future*

*Memorandum*

Date: December 20, 1995

To: TAB and TAC Aviation Committees

From: Mark Filipi

Subject: Transportation Policy Concerns with Draft EIS

**Policies of the Transportation Policy Plan (TPP)**

1. Policy 11 of the TPP states that "Metropolitan highway system investments shall ensure preservation of existing facilities, . . .". The construction of either build alternative will require roadway improvements which may cause the redirection of regional highway funds. Depending on changes in project prioritization in response to the need to provide access to the airport (wherever it may be), preservation projects may be delayed, affecting the well being of the remainder of the regional highway system.

**Policies of the Aviation Guide Chapter**

1. Policy 1 encourages the provision of state-of-the-art facilities at the major airport and that public investments should respond to forecast needs. The build alternatives are consistent with these statements, however, the no-build alternative would begin to restrict operations in the year 2020.

2. Policy 3 states the plans for the major airport must include provisions for achieving high-quality ground accessibility, as measured in travel time. The build alternatives provide high levels of accessibility in terms of travel speed. However, due to its location, the New Airport Alternative provides poorer accessibility to the region as a whole.

# Mn/DOT Concerns* for Ground Access

## Dual Track Airport EIS Process
## Joint TAB/TAC Meeting
## December 21, 1995

- **Surface transportation improvements**
  - ✓ "Needed" to accommodate changes from airport alternatives must be clearly identified
  - ✓ "Required" to address a deficiency of the existing system must be clearly identified
  - ✓ Non-trunk highway improvements are not fully addressed
  - ✓ Consideration of transit alternatives (e.g., busways, LRT, HOV lanes) must be expanded in the development of an airport alternative
- **Estimated costs**
  - ✓ Estimated costs are low for "required" roadway improvements
  - ✓ No costs have been identified for "needed" roadway improvements
- **Funding for "required" and "needed" improvements is a concern**
- **Social, economic, & environmental impacts of roadway improvements**
  - ✓ Tier I EIS for roadways: Is the detail sufficient to document purpose and need and corridor selection?
  - ✓ Social, economic, and environmental impact mitigation measures for surface transportation
- **Specific Issues**
  - ✓ TH 61 relocation
  - ✓ MSP access (the west terminal access will require considerably more investment in the surface transportation system

*These represent Mn/DOT's concerns, based on a preliminary review of the Dual Track DEIS and are subject to further clarification.

DAKOTA COUNTY

OFFICE OF THE
COUNTY BOARD
(612) 438-4418

DAKOTA COUNTY GOVERNMENT COMPLEX 1590 HWY 55 • HASTINGS, MINNESOTA 55033-2372

February 6, 1996

Mr. Nigel Finney, Deputy Executive Director
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, MN 55450

Mr. Glenn Orcutt, Program Manager
Federal Aviation Administration
6020 28th Avenue South
Minneapolis, MN 55450

Gentlemen:

In reviewing the Dual Track Airport Planning Process Draft Environmental Impact Statement (DEIS), Dakota County finds the document to be a thorough investigation of the physical characteristics and environmental consequences of either expanding Minneapolis-St. Paul International Airport (MSP) or constructing a new major international airport in Dakota County. However, Dakota County finds significant weaknesses in the Economic Section of the DEIS that specifically relate to local impacts at either MSP or a New Airport, as well as to induced development issues associated with a New Airport in Dakota County.

At its October 3, 1995, meeting, the Dakota County Board of Commissioners adopted a resolution outlining the County Board's position on the Dual Track Airport Planning Process. The resolution states that Dakota County (1) is opposed to the relocation of a new major international airport to Dakota County; (2) supports the northern Dakota County cities in obtaining additional noise mitigation and corridor management measures associated with the expansion of MSP; and (3) is opposed to any form of initiative which would have the effect of "landbanking" a site for a future new international airport in Dakota County.

Since that time, Washington, Ramsey, Scott, Anoka, Carver, and Goodhue Counties have passed similar resolutions opposing both the New Airport Alternative and landbanking for a future airport in Dakota County. Further, the Association of Minnesota Counties has withdrawn its legislative support for the Dual Track Airport Planning Process, and the Metropolitan Inter-County Association has passed a resolution opposing the relocation of the airport to Dakota County and calling for the Legislature to discontinue the Dual-Track Airport Planning Process.

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These actions speak to what is apparent after reviewing the DEIS --Minnesota does not need a new international airport in Dakota County. All future potential aviation activity can be accommodated at an expanded MSP. The DEIS shows the same number of aircraft operations at either an expanded MSP or a New Airport in the year 2020. According to Figures 7 and 11 in the DEIS Appendix, the Instrument Flight Rating (IFR) average combined delay per operation was greater under the New Airport Alternative than at an improved MSP.

Minnesota cannot afford a New Airport at a combined construction and financing cost of over $9 Billion. The Economic Section of the DEIS asserts that the economic return to Minnesota's and the Twin Cities Metropolitan Area's (TCMA) investment would be the same for both alternatives, even with an additional $2 Billion to $4 Billion investment for a New Airport. The MAC should not recommend that Minnesota spend an extra $2 Billion without any demonstrated return on that investment.

In recent meetings of the Metropolitan Airports Commission, it has become apparent that there is at least one additional MSP terminal scenario within the MSP Alternative that is not included in the DEIS. This alternative calls for an incremental expansion of the existing terminal and could potentially cost one-tenth of the proposed New Airport Alternative. Dakota County urges the MAC to seriously explore this scenario, and, if feasible, include the Incremental Expansion Alternative-6A in the Final EIS.

**A.** A. See General Response 3.

In general, the Economic Section is weak. There is an over-reliance on BEA (Bureau of Economic Analysis) multipliers and factored enplanements. This type of analysis stylistically runs a close parallel to the type of analysis done by Metropolitan Council consultants that was severely criticized by the Legislative Auditor in 1993. The Final EIS should make every attempt to demonstrate a more rigorous analysis and explanation of the economic consequences of both alternatives.

**B.** B. See General Response 6 and the final report "Economic Impacts of the Alternative Airport Development Scenarios", MAC, February 1996.

In the Economic Section, the tax capacity analysis does not evaluate the additional public services required, and the implications to Dakota County, its cities and townships, for any development that would occur as a result of a New Airport.

**C.** C. See General Response 1.

Dakota County continues to disagree with the induced development numbers prepared by Metropolitan Council consultants and used by the MAC consultants in the preparation of the DEIS. Dakota County specifically asserts that the induced development household number is very low. The number of induced households in the rural townships of Dakota County, while extremely low, still plays a significant role in the analysis of agricultural impacts in the Farmland Section of the DEIS.

**D.** D. See General Response 1.

The Farmland Section includes perhaps the most thorough and professional analysis of the DEIS. It concludes that the loss of 17,000 acres in the four townships of Vermillion, Marshan, Douglas, and Hampton - the heart of agriculture in the County - would set the dynamics of development in motion.

The Farmland Section states, in part,

> *"...the direction it would take towards development is manifest and well known. Once started, it would change the agricultural character of Dakota County, only the extent of change is in doubt. The various elements of development dynamics interact...creating a snowball effect. The end result of these dynamics of induced development is that the agricultural community would reach a transition point transforming it into a non-agricultural community."*

This is unacceptable to Dakota County.

Dakota County would like to take this opportunity to remind the MAC that the FAA is required to consider other sites or make significant attempts to reduce the land removed from agricultural use if the LESA (Land Evaluation Site Assessment) rating is above 160 points. The Dakota County New Airport Site has a non-irrigated LESA of 209 points and an irrigated LESA of 237 points out of a possible 260 points. **E.**

E. See General Response 1.

Dakota County would assert to the FAA, that, given the New Airport site contains 14,000 acres and the existing MSP site contains 3200 acres, and given that both sites handle the same number of aircraft operations in year 2020, the MAC has not made sufficient effort to reduce, or cannot reduce the size of the New Airport in Dakota County. Therefore, Dakota County believes the FAA has the responsibility and obligation to select the MSP Alternative as the preferred alternative.

Because northern Dakota County cities are seriously impacted by aircraft operations at MSP, Dakota County supports their efforts to reduce those impacts with the help of the MAC and the FAA through noise mitigation and corridor management. Dakota County encourages the MAC to facilitate those cities' requests for an enhanced and accelerated Part 150 Program as well as other MAC-FAA collaborations that would improve the current noise impacts in the northern Dakota County cities. **F.**

F. See General Response 2.

There needs to be additional Environmental Justice Analysis that goes beyond the impact of noise, to explore in more detail the negative social impacts of site preservation, ie. landbanking, in Dakota County. At a cost approaching $150 million and the identified "impermanence syndrome" it would create for people in rural townships, Dakota County remains steadfastly opposed to any form of landbanking. **G.**

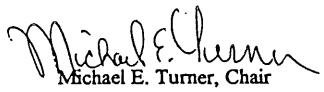
G. See General Response 1.

Dakota County believes the Transportation Access Section of the DEIS is incomplete. There needs to be additional analysis of the impacts on Dakota County roads. As it is, the DEIS identifies $366 million in roadway projects for the New Airport Alternative, taking for granted other significant roadway projects will occur in the Metropolitan Area even though they are not currently included in the Mn/DOT Statewide Transportation Improvement Program (STIP). Further, the DEIS does not evaluate the impact of the airport roadway projects on other roadway projects in Greater Minnesota. **H.**

H. See General Response 1.

Dakota County would like to express its appreciation to both the Metropolitan Airports Commission and Federal Aviation Administration for this opportunity to comment on the Dual Track Airport Planning Process, Draft Environmental Impact Statement.

Sincerely,



Michael E. Turner, Chair
Dakota County Board of Commissioners

N:DEIS-LTR

cc: Dakota County Board of Commissioners
Brandt Richardson, County Administrator
Louis J. Breimhurst, Physical Development Director

BOARD OF COUNTY COMMISSIONERS
DAKOTA COUNTY, MINNESOTA

February 6, 1996 — Resolution No. 96-91

Motion by Commissioner Harris — Second by Commissioner Krause

**Approval of Comments on the Draft Environmental Impact Statement (DEIS) for the Dual Track Airport Planning Process**

WHEREAS, Dakota County has actively participated in the Dual Track Airport Planning Process on various policy and technical committees during the previous six years of the process; and

WHEREAS, the Metropolitan Airports Commission (MAC), in coordination with the Federal Aviation Administration (FAA), has completed a state and federal Draft Environmental Impact Statement (DEIS) for public comment; and

WHEREAS, the DEIS 60-day public comment period began on December 15, 1995 and will close on February 13, 1996.

NOW, THEREFORE, BE IT RESOLVED, That the Dakota County Board of Commissioners hereby directs staff to prepare a Letter of Comment addressing the following issues and concerns:

1. Dakota County's official position with regard to the Dual Track Airport Planning Process passed by the County Board at its October 3, 1995, meeting.
2. The Association of Minnesota Counties has removed their support for the Dual Track Airport Planning Process.
3. After reviewing the DEIS it is apparent Minnesota does not need a new international airport. The DEIS shows the same year 2020 operations at either an expanded Minneapolis-St. Paul International Airport (MSP) or at a new airport.
4. Minnesota cannot afford a new airport at a combined construction and financing cost of over $9 billion.
5. Dakota County urges the MAC to explore the recently proposed incremental expansion of MSP alternative.
6. Dakota County remains concerned about the weak and incomplete Economic Section of the DEIS. Dakota County does not agree with the induced development forecasts.
7. Dakota County would lose 17,000 acres of farmland, approximately 335 homes, and have over 1000 citizens displaced if a new airport were constructed. This would set the dynamics of development in motion, with the result being the agricultural community would reach a transition point transforming it into a non-agricultural community.
8. The DEIS needs to explore the negative social impacts of any potential landbanking, specifically the "impermanence syndrome" it would create in rural townships.
9. Dakota County believes the Transportation Section is incomplete and there needs to be additional analysis of the impacts on Dakota County roads; and

BE IT FURTHER RESOLVED, That the Letter of Comment include the position of the Dakota County Board of Commissioners that it is imperative noise mitigation measures to meet the needs of northern Dakota County cities be implemented for the existing and future impacts of aircraft noise from the Minneapolis-St. Paul International Airport; and

BE IT FURTHER RESOLVED, That the Letter of Comment is hereby approved as presented February 6, 1996.

STATE OF MINNESOTA
County of Dakota

| | YES | | NO |
|---|---|---|---|
| Harris | X | Harris | |
| Maher | X | Maher | |
| Bataglia | X | Bataglia | |
| Mueller | X | Mueller | |
| Turner | X | Turner | |
| Krause | X | Krause | |
| Loeding | X | Loeding | |

I, Mary S. Scheide, Clerk to the Board of the County of Dakota, State of Minnesota, do hereby certify that I have compared the foregoing copy of a resolution with the original minutes of the proceedings of the Board of County Commissioners, Dakota County, Minnesota, at their session held on the 6th day of February 1996, now on file in the County Administration Department, and have found the same to be a true and correct copy thereof.

Witness my hand and official seal of Dakota County this 7th day of February 1996.

Mary S. Scheide
Clerk to the Board

# BOARD OF COUNTY COMMISSIONERS
## DAKOTA COUNTY, MINNESOTA

DATE October 3, 1995 RESOLUTION NO. 95-652

Motion by Commissioner Harris Seconded by Commissioner Loeding

WHEREAS, in 1989 the Minnesota Legislature created a "Dual-Track Airport Planning Process" to determine how to best meet the region's aviation needs through the year 2020; and

WHEREAS, in December 1991 Dakota County was selected as the site for a potential new international airport if a decision is made to construct a new replacement airport; and

WHEREAS, Dakota County has actively participated in the Dual-Track Airport Planning Process since 1990; and

WHEREAS, Dakota County Commissioners, staff, and citizens have participated actively on committees and task groups of the Metropolitan Council and the Metropolitan Airports Commission studying options for meeting the region's aviation needs; and

WHEREAS, while the Dakota County Board of Commissioners recognizes that not all studies in the Dual-Track Airport Planning Process have been completed, the Board of Commissioners has determined there is sufficient evidence and reason for the Board of Commissioners to conclude the economic and social costs of locating a major new international airport in Dakota County outweigh any potential benefits of such a decision and to adopt a position in opposition to the relocation of a major new international airport in Dakota County; and

WHEREAS, the Board of Commissioners recognizes flights from and to the existing Minneapolis-St. Paul International Airport (MSP) create excessive aircraft noise affecting residents of cities in northern Dakota County and the expansion of MSP will result in additional aircraft noise for which it is imperative that noise mitigation measures be provided.

NOW, THEREFORE, BE IT RESOLVED, That the Dakota County Board of Commissioners hereby opposes the relocation of a major new international airport to Dakota County; and

| | YES | | NO |
|---|---|---|---|
| Harris | X | Harris | |
| Maher | X | Maher | |
| Bataglia | | Bataglia | X |
| Mueller | X | Mueller | |
| Turner | X | Turner | |
| Krause | X | Krause | |
| Loeding | X | Loeding | |

State of Minnesota
County of Dakota

I, Mary S. Scheide, Clerk to the Board of the County of Dakota, State of Minnesota, do hereby certify that I have compared the foregoing copy of a resolution with the original minutes of the proceedings of the Board of County Commissioners, Dakota County, Minnesota, at their session held on the 3rd day of October 19 95, now on file in the County Administration Department, and have found the same to be a true and correct copy thereof.

Witness my hand and official seal of Dakota County this 4th day of October, 1995

Mary S. Scheide
Clerk to the Board

BE IT FURTHER RESOLVED, That the Dakota County Board of Commissioners finds it to be imperative that noise mitigation measures to meet the needs of northern Dakota County cities be implemented for the existing and future impacts of aircraft noise as the result of the continuation and/or expansion of Minneapolis-St. Paul International Airport at its current location, and is committed to working with northern Dakota County cities to assure implementation of such measures; and

BE IT FURTHER RESOLVED, That the Dakota County Board of Commissioners opposes any form of initiative which will have the effect of "landbanking" land for a new airport in Dakota County in the future.

# WASHINGTON COUNTY

**BOARD OF COMMISSIONERS**

GOVERNMENT CENTER
14900 61ST STREET NORTH • STILLWATER, MINNESOTA 55082-0006
612-430-6000 Facsimile Machine 612-430-6017

Dennis C. Hegberg
District 1
Mary Hauser
District 2
Wally Abrahamson
District 3
Myra Peterson
District 4
Dave Engstrom
District 5/Chair


February 1, 1996

Ms. Jenn Unruh
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, MN 55450

Dear Ms. Unruh:

Thank you for the opportunity to review and comment on the Dual Track Planning Process Draft Environmental Impact Statement. I would like to remind the Metropolitan Airports Commission that the Washington County Board of Commissioners passed the attached resolution opposing the relocation of a major new international airport to Dakota County. Despite this position, we realize that the planning process is at this time still continuing. We offer the following comments in an attempt to make the Final EIS more accurate and complete.

In past correspondence on this matter Washington County expressed concern regarding the following:

1. Increased growth pressures and related land use impacts,

2. Transportation impacts along the principal arterial routes in the southern part of the County, and

3. Negative impacts from noise and plane sightings on visitors to Grey Cloud Island Regional Park.

4. Impacts on migratory waterfowl.

Land Use Impacts

Relocation of the airport will bring significant growth pressures on the communities in southern Washington County. We are pleased to see that the EIS addresses the induced development issues. However, we disagree with how the EIS portrays the current land use in the part of Washington County that will experience airport-related impacts.

Section 0.2.1 Affected Environment - New Airport Alternative, page V-93

This section of the report states "The transformation from an agricultural to a non-agricultural community has already occurred in Washington County." The report than goes on to state County-wide figures and discuss zoning in the northern part of the County. In the northern part of the County this transformation is currently occurring for conventional agriculture. However, in the southern part of the County, particularly eastern Cottage Grove and Denmark Township, the transformation has not occurred, is not occurring and is not planned for.

The draft of the 2015 Washington County Comprehensive Plan, expected to be approved by the County Board this winter, states "The County will take actions to ensure the farmer's ability to maintain his farm and to provide for a variety of farming opportunities to occur. Prime agricultural land, such as is located in the southern townships and eastern Cottage Grove, will be preserved for that use through housing density restrictions." Much of the land in the southern communities is still planned and zoned for 1/40.

We ask that the EIS accurately reflect the commitment that the County and the local communities have to maintaining agriculture in the southern part of the County so that the impacts of the New Airport Alternative can be more accurately and fully understood. To be complete, a discussion of land use impacts in Washington County must be included in Section 0.2.2 Induced Socioeconomic Impacts - New Airport Alternative.

A. A. See General Response 1.

Transportation Impacts

The EIS does recognize that the New Airport Alternative will have impacts that require capacity improvements to TH 10 from the St. Croix River to TH 61 and TH 95/CSAH 15 from TH 61 to I-94. The County would expect the Final EIS to include the actual capacity improvement needs for these routes in Table W-14. **B.**

B. See General Response 1.

Capacity improvements to TH 61 through Newport and St. Paul Park are not discussed in either the New Airport Alternative or No Action Alternative. This segment of TH 61 has been identified as needing capacity and safety improvements by MNDOT and the Metropolitan MPO. Past modeling of traffic flows through this area shows artificially low numbers because of the current capacity problems. Any additional new airport traffic will exacerbate the current situation. The County would like this impact addressed in the Final EIS. **C.**

C. See General Response 1.

Parks and Recreation Impacts

Grey Cloud Island Regional Park is expected to experience an ambient DNL lower than the threshold set in the EIS. We would like to restate our concern about the potential for negative impacts on park visitors from noise and from the sight of planes and/or vapor trails. Recreation research on airplane overflights supports the fact that noise from airplanes detracts from visitor experiences. It also shows that even the sight of airplanes or vapor trails can contribute to negative recreation experiences. Even though the projected level of DNL is deemed an acceptable level by the FAA, the fact that most activities in this regional park take place outdoors makes the projected noise from overhead aircraft a real concern. We would like to see some discussion of this impact in the Final EIS. **D.**

D. See General Response 1.

Wildlife Impacts

Since there is not a lot of research on the impacts of airplane overflights on resident and/or migrating birds in the Mississippi Flyway planning must move ahead cautiously to avoid creating problems. The Metropolitan Airports Commission should pursue more research in this area. **E.**

E. See General Response 1.

Thank you for considering these comments in your adoption of the Final EIS.

Sincerely,

Dave Engstrom

Dave Engstrom, Chair
Washington County Board of Commissioners

c. Washington County Board of Commissioners
Jim Schug, County Administrator
Don Wisniewski, Public Works Director
Jane Harper, Principal Planner

BOARD OF COUNTY COMMISSIONERS
WASHINGTON COUNTY, MINNESOTA

RESOLUTION NO. 95-191

DATE October 17, 1995 DEPARTMENT Administration

MOTION BY COMMISSIONER Engstrom SECONDED BY COMMISSIONER Peterson

## DUAL TRACK AIRPORT PLANNING PROCESS

WHEREAS, in 1989, the Minnesota Legislature created a dual track airport planning process to determine how to best meet the region's aviation needs through the year 2020; and,

WHEREAS, in December, 1991, Dakota County was selected as the site for a potential new international airport, if a decision is made to construct a new replacement airport; and,

WHEREAS, while the Washington County Board of Commissioners recognizes that not all studies in the dual track airport planning process have been completed, the Board of Commissioners has determined there is sufficient evidence and reason to conclude the economic and social costs of locating a major new international airport in Dakota County outweigh any potential benefits of such a decision; and,

WHEREAS, a new airport, located in Dakota County, would have an impact on infrastructure needs in southern Washington County;

NOW, THEREFORE, BE IT RESOLVED that the Washington County Board of Commissioners hereby opposes the relocation of a major new international airport to Dakota County; and,

BE IT FURTHER RESOLVED, that the Washington County Board of Commissioners opposes any form of initiative which will have the effect of "land banking" for a new airport in Dakota County, in the future.

ATTEST: James R. Schug
COUNTY ADMINISTRATOR

Wally Abrahamson
CHAIRMAN, COUNTY BOARD

| | YES | NO |
|---|---|---|
| ABRAHAMSON | X | |
| ENGSTROM | X | |
| HAUSER | X | |
| HEGBERG | X | |
| PETERSON | X | |

*DAKOTA COUNTY SOIL AND WATER CONSERVATION DISTRICT*

Farmington Professional Building
821 Third Street
Suite 100
Farmington, MN 55024
Phone: (612) 460-8004
FAX: (612) 460-8401

February 13, 1996

Ms. Jenn Unruh
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, Minnesota 55450

**RE: DEIS PREPARED FOR THE DUAL TRACK AIRPORT**

Dear Ms. Unruh:

The Dakota Soil and Water Conservation District (District) is submitting the following comments on the Draft Environmental Impact Statement (DEIS) prepared for the Dual Track Airport Planning Process. These comments pertain to the new airport alternative site in Dakota County.

**Affected Farmlands**

Prime, statewide or locally important farmlands, as defined by the NRCS, comprise approximately eighty two percent (82%) of the site. On a county wide basis, this is nearly four percent (4%) of Dakota county's best farming resources. This would constitute a significant and irretrievable loss of farm produce, as well as, agricultural support businesses located within the surrounding area. **A.**

A. See General Response 1.

**Affected Wetlands/Floodplains**

The two runways and associated airline maintenance buildings that are set in the northwest corner of the site are placed within approximately two thousand feet (2000') of the main branch of the Vermillion River. This orientation may have potential detrimental effects on the natural flood zone and wetland complex adjacent to the river. **B.**

B. See General Response 1.

Additionally, the FEMA flood insurance rate map (community-panel number 270101 0175 B, dated April 1, 1981) depicts 100 year flood zones (Zone A) for two tributaries that drain to the northwest through the site. The larger of these tributaries is orientated in a northeast/southwest manner and passes through sections 8 and 9 in the northeast, continues south and west through sections 17, 19, 20, 24, 25 and then westerly through the south half of section 26. **C.**

C. See General Response 1.

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Based on the general runway layout and the location of the terminal area, there would be significant impacts to these 100 year flood zones shown on the FEMA maps. The DEIS does not appear to address any impacts to these 100 year flood zones nor does it suggest any necessary mitigation measures. **C.**

C. See General Response 1. (Cont'd)

Surface Water Quality

Based on the limited information provided on this stormwater management system, we are unable to adequately asses the probable impacts as a result of the increased impervious area and altered drainage patterns. Further discussion and figures would be needed to detail the intricacies of the stormwater management system. **D.**

D. See General Response 1.

Land Use Impacts

It is foreseeable that expansion to both commercial and residential facilities will occur within the surrounding area due to the development of a regional airport within Dakota County. The demand for better transportation, the loss of additional farmlands, the increase in impervious surfaces creating water quality concerns, and the segmentation and loss of wildlife habitat will all lead to extreme land use changes within the eastern one-half of Dakota County. The DEIS and planning process does not appear to have adequately addressed all foreseeable impacts which would result from this development. **E.**

E. See General Response 1.

If you should have any questions regarding these comments you can contact either Mitch Johnson or myself at (612) 460-8004.

Sincerely,

Brian Watson

Brian Watson
Dakota Soil and Water Conservation District
*

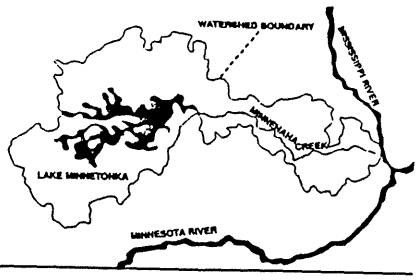
*96VER003

**MINNEHAHA CREEK WATERSHED DISTRICT**

Gray Freshwater Center, Navarre
2500 Shadywood Road, Suite 37
Excelsior, Minnesota 55331

Phone: 612/471-0590 Fax: 612/471-0682

BOARD OF MANAGERS: John E. Thomas, President; Pamela G. Bibb, Vice President; Martha S. Hartfiel, Secretary; Thomas W. LaBounty, Treasurer; Monica Gross; C. Woodrow Love; Thomas Maple, Jr.




February 13, 1996

Ms. Jean Unruh
Metropolitan Airports Commission
6040 - 28th Avenue South
Minneapolis, MN 55450

Re: Dual Track Airport Planning Process
Draft Environmental Impact Statement (December 1995)

Dear Ms. Unruh:

The Minnehaha Creek Watershed District (MCWD), an organization charged with the responsibility of protecting the water resources of the Minnehaha Creek watershed, has reviewed the above document. The MCWD is a special purpose, local unit of government charged by state law to manage and protect waters within a hydrologically defined area. The MCWD was formed in 1967 and is governed by a board of seven managers. The watershed of the MCWD includes all of the areas draining into Lake Minnetonka, along the Minnehaha Creek, through the Minneapolis Chain of Lakes, to the Mississippi River. The MCWD spans approximately 181 square miles and includes 129 lakes as well as numerous wetlands and streams. Local government units within the MCWD include two counties, twenty-seven cities, and three townships. The MCWD's geographic location and size make it one of the larger urban watershed districts in Minnesota. The MCWD is a highly urbanized watershed district with less than 50 percent of its presettlement wetlands still in existence.

Pursuant to Minnesota Statutes Chapter 103D, and (WCA cite), the MAC will need to apply for and receive from the Minnehaha Creek Watershed District (the "District") a permit before starting any excavation if the "MSP Alternative" is chosen. Accordingly, the District is very interested in the Draft EIS and has reviewed it thoroughly. We have two primary concerns: stormwater management and wetland filling. The former is primarily focused on the "MSP Alternative" and the latter on both alternatives.

1. Stormwater Management

A portion of the airport property presently drains northwest to Mother Lake, east under State Highway No. 77 to Taft Lake, and then north under State Highway No. 62 to Lake Nokomis and ultimately Minnehaha Creek. Much of the planned improvements are within both the hydrologic and legal boundaries of the MCWD. The District has a particular interest in improving the water quality of Lake Nokomis and has scheduled an investigation and diagnostic study of the lake. Lake Nokomis is a regional resource which has very high public and private use. The water quality of the lake is presently poor with frequent algae blooms. The District has identified the Lake Nokomis Water Quality Improvement Project as a high priority in its proposed capital improvements plan.

The "MSP Alternative," as described in the Draft EIS, would significantly increase hardsurface, fill existing detention basins and wetland areas in an already compromised subwatershed, and introduce harmful deicing (runway and aircraft) chemicals to downstream lakes, streams and rivers. The District needs to know the potential impact to Mother Lake and the other downstream receiving bodies from these chemicals and also needs substantially more detail regarding the resulting stormwater flow in the Mother Lake Subwatershed.

Accordingly, please include, at a minimum, the following items in both the final EIS and in your permit application to the District:

- A determination and analysis of existing and planned drainage areas and runoff volumes to (i) Mother Lake and (ii) the Mississippi River via the described potential diversion from Mother Lake. **A.**
- A comprehensive evaluation of existing and planned nutrient loadings (particularly phosphorus) to Mother Lake and downstream using Pondnet or an equivalent model. **B.**
- A comprehensive evaluation of planned and wet detention basin design using Pondnet, which also documents conformity with MPCA design recommendations published in "*Protecting Water Quality in Urban Areas 1991*". **C.**
- Evaluation of existing and planned peak runoff rates using a storm routing analysis documenting conformance to District peak runoff rate control standards. **D.**
- Operational criteria for the planned wet detention basin(s) demonstrating that deicing chemicals will not adversely impact downstream water bodies. **E.**
- An evaluation of the capacity of existing stormsewer(s) in the event that all or part of Mother Lake outflow is diverted directly to the Mississippi. **F.**

2. Wetland Impacts

The MSP Alternative involves filling 14 on-site wetlands and small portions of four other wetlands located off-site. The total wetland filling is approximately 34 acres. Approximately 19 of the 34 acres are DNR protected wetlands. A majority of the remaining 15 acres are wetlands located within the District's legal boundaries and are regulated by the District pursuant to the Wetland Conservation Act. Accordingly, a comprehensive sequencing analysis must be contained in the final EIS. **G.**

While the District recognizes the difficulty of replacing wetlands exclusively on-site, mitigation outside of the particular subwatershed is discouraged and mitigation outside the District is clearly not appropriate and against District guidelines. The intention of the Wetlands Conservation Act is to locate replacement wetlands as close to the impacted wetland as possible. The District requests that further evaluation of potential wetland mitigation sites be completed in the area. **H.**

The District has other concerns which I am confident can be adequately addressed during the design phase and District permit application process.

Thank you for this opportunity to comment on the Dual Track Airport Planning Process draft EIS. We look forward to working with the Metropolitan Airports Commission on this project to protect and improve the surface waters of the MCWD and the needs of the Metropolitan area.

Sincerely,

MINNEHAHA CREEK WATERSHED DISTRICT

John E. Thomas

John Thomas, President

JT:ljv

cc: Gene Strommen
Louis Smith

A. This information has been provided in Appendix A.8 of the FEIS. Please note that the information presented in Appendix A.8 is based upon a preliminary engineering analysis. More detailed analysis and data will be generated when the MAC applies for Minnehaha Creek Watershed District permits as required for future development work. Also note that runoff will continue to go to the Minnesota River rather than the Mississippi (see MPCA Response C).

B. This information has been provided in Appendix A.8.

C. This information has been provided in Appendix A.8.

D. Extreme case flooding conditions regarding the Mother Lake drainage area are addressed in Appendix A.8.

E. It is anticipated that all storm water associated with Aircraft Operating Area (AOA) surfaces within the current boundaries of the Mother Lake watershed will, under the MSP Alternative, be permanently routed to the Minnesota River South watershed control and discharge system. This would include runways, taxiways, and aircraft deicing areas. See Appendix A.8 for further discussion.

F. It is no longer being considered for analytical purposes that drainage from the Mother Lake watershed would be diverted to the Mississippi River. Instead, it is envisioned that this diversion for AOA surfaces will be permanently routed to the Minnesota River through MSP's Minnesota River South control end discharge system.

The MAC will ensure that sufficient capacity is in place to address requirements associated with rerouting Mother Lake drainage to the Minnesota River South watershed. Measures available to enhance conveyance capacity as may be required include:

- continue existing program of increasing the use of grassy swales adjacent to runways and taxiways;
- design/utilize temporary storage in grassed medians and islands; and
- increase pipe capacities.

G. See MPCA Response KK. A detailed sequencing analysis will be done at the time when wetland permits are applied for.

H. The proposed configuration of new airport facilities leaves very little unused land and none that would be suitable for the construction of wetland mitigation. There clearly is insufficient land available to provide sufficient on-site wetland replacement to comply with the Wetland Conservation Act (WCA). Further, on-site wetland replacement could generate bird-aircraft conflicts. See Appendix D for the proposed wetland mitigation plan.

MONTGOMERY WATSON

January 25, 1996

Ms. Jenn Unruh
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, MN 55450

Dear Ms. Unruh:

We have reviewed the Draft Environmental Impact Statement (DEIS) for the Dual Track Airport Planning Process for the Vermillion River Watershed Management Commission (VRWMC) and are submitting the following comments and concerns regarding the proposed new site located in Dakota County.

**Floodplain / Hydrologic Impact Analysis**

1. The assumptions for the hydrologic analysis were difficult to assess as they were scattered throughout the section. It would be helpful to state the assumptions in a paragraph early in this section, especially in regards to the following comments. **A.**

2. Peak runoff rate and runoff volume are not the only concerns regarding hydrology and floodplains. Floodplain fill is also a concern. Overlaying the floodplain map and the proposed site plan shows that the new airport would be built over a large part of a floodplain. It seems likely that grading activities will reduce some of the existing flood storage. This is a potentially significant impact. This floodplain encroachment requires mitigation. **B.**

3. It is unclear what changes in runoff patterns would be made as a result of this project. There is some vague discussion of this in the second paragraph on page V-103. A figure should be included in the hydrologic impact analysis that shows the existing and proposed runoff routing to aid in understanding the changes in drainage patterns that would be made as a part of this project. **C.**

4. The EIS states that site development would result in rerouting the existing drainage patterns. The resulting boundaries would no longer correspond to the VRWMC Runoff Management Sectors, and therefore, a direct comparison with VRWMC requirements is difficult. We agree with this; however, we also believe that a more comprehensive effort to address this issue should have been conducted as part of this analysis. **D.**

5. The predicted peak 100-year runoff rate from the proposed site under current conditions appears exceptionally high. The predicted peak runoff rate for the project area (4,428 cfs) is greater than the peak runoff rates for all of the affected Runoff Management Sectors combined (3,510 cfs). It is unclear how this estimate of runoff rate was derived. **E.**

**Water Quality Impact Analysis**

6) It is our understanding that runoff from the 41 percent of the site that is potentially "contaminated" will be collected in treatment basins and pumped to the Mississippi River. For this reason, water quality impacts to the Vermillion River will probably be minor and best dealt with on a specific proposal basis.

A. See General Response 1.

B. See General Response 1.

C. See General Response 1.

D. See General Response 1.

E. See General Response 1.

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7. De-icing chemicals will be mostly dissolved and therefore, when these chemicals occur in areas not serviced by the recycling system the runoff will not be effectively treated by the sedimentation basins. This may be a potential impact to the Mississippi River.

F. F. See General Response 1.

8. The DEIS does not address water quality for the remaining 59% of the site. Water quality treatment for areas considered "non-contaminated" is not provided. Water quality treatment will be required for the entire project site.

G. G. See General Response 1.

9. This section does not mention construction related water quality impacts (e.g., erosion) and how these impacts will be addressed. In particular, a large scale grading operation in several floodplain areas and flowages presents a significant threat to water quality.

H. H. See General Response 1.

**Land Use Impact Analysis**

10. The development of a major airport in Dakota County will significantly increase other development in the area including commercial, industrial, and transportation support facilities resulting in further increases in imperviousness. Because this development is a direct result of the airport development, the impact of this development should be included in the analysis (hydrologic, water quality, etc.).

I. I. See General Response 1.

If you have any questions regarding these comments, please contact either Steve Kloiber at (612) 595-5289 or me at (612) 595-5275.

Sincerely,

MONTGOMERY WATSON

Steven C. Woods, P.E.
Engineer for the Commission

:crs

city of
bloomington, minnesota

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Coral S. Houle
Mayor

Mark Bernhardson
City Manager

January 30, 1996

Nigel D. Finney
Deputy Executive Director
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, MN 55450

RE: Draft Environmental Impact Statement: Dual Track Airport Planning Process

Dear Mr. Finney:

The Bloomington City Council has reviewed the Dual Track DEIS distributed in December 1995, and has the following comments:

- **North-South Runway** Figures Q-2 and FF-1 show 660 monthly departures using a 280° (east to west) heading over the residential midsection of Bloomington. As a noise mitigation measure, these departures should use turning points and headings for a flight track over the Minnesota River. The 240° heading illustrated in figure Q-2 would not minimize noise impacts on residential uses because it is not centered over the industrial and open space corridor along the Minnesota River.

  In March 1995, the Bloomington City Council adopted a policy supporting a new north-south runway because it offers the opportunity to increase airport capacity and mitigate noise in residential areas if careful attention is given to designing noise-mitigating flight tracks and procedures. The City of Bloomington expects that departure flight tracks and procedures for runway 17-35 will be developed in consultation with the affected cities. New technology, such as global positioning systems, may allow runway 35 approaches on tracks in addition to the one illustrated in figure Q-2. The City of Bloomington expects that arrival flight tracks for runway 17-35 will be developed in consultation with the affected cities.

- **Noise Mitigation** Appropriate noise mitigation is perhaps the preeminent issue of the MSP Development and No Action alternatives. The land use compatibility measures on pages V-141 to V-143 need further refinement to narrow the measures to those that mitigate noise impacts. The area eligible for noise mitigation needs to be expanded beyond the forecast 2005 LDN 65 contour. In several places the DEIS recognizes that the "area of potential effect" for noise is within the 2005 LDN 60 contour and this should be the minimum area for noise mitigation measures required in a record of decision.

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**A.** A. Flight tracks for Runway 17 departures were developed in consultation with FAA air traffic control tower personnel. The flight tracks were established to get the full capacity benefit of the new runway, given the likely airspace structure. A single track for all departures would not provide for full capacity, would result in additional flight time, and would have a major impact on communities along the Minnesota River. A similar track investigated as part of the Runway 4-22 EIS was determined to be unacceptable by FAA. However, departure procedures and tracks will be evaluated in the Part 150 update.

**B.** B. Arrival flight tracks to runways are typically straight-in for a minimum amount of miles to ensure a stabilized approach. New technology may change the course further out, but a 3-mile straight-in segment is still likely.

**C.** C. The expansion of mitigation beyond DNL 65 will be addressed in a Part 150 update. See the noise mitigation program in Appendix B..

- **Additional Terminal Alternative(s)** In DEIS information meetings, it appears that MAC intends to consider additional terminal alternative(s) based on concepts proposed by Northwest Airlines. These alternatives will be substantially different from Alternative 5 evaluated as part of the MSP Alternative Environmental Document. The City of Bloomington requests an opportunity to review a supplemental impact analysis of any new terminal alternatives MAC decides to develop. The City of Bloomington has no preference for location of the terminal, but does desire to see a long-term terminal plan which can accommodate projected passenger growth and makes economic sense. The City also wants to review the impact of terminal alternatives on surrounding highway traffic volumes. **D.**

  Figure W-16 shows highway improvements required due to the airport alternative. Based on year 2020 traffic volumes contained in the *MSP Long Term Comprehensive Plan,* the gold area labeled as segment 4 in Figure W-16 should be extended to clearly include the TH77 /I-494 interchange. If an expanded southeast terminal concept is preferred, this figure will need to be revised to consider the shift in traffic volumes to TH5 and I-494. In figure W-2, the 2020 daily traffic volumes on I-494 are up to 17% lower and traffic volumes for TH77 are up to 50% lower than traffic volumes for the same segments illustrated in figure 29 of the *Long-Term Comprehensive Plan: Alternative Environmental Document (replacement figures mailed on 10/3/94).* What accounts for these sharp changes in projected trip volumes? **E.**

- **Economic Impacts** Overall, the Economic Impact study seems superficial for one of the most important impacts of this study. For example:
  - The economic impact study does not identify the amount of indirect employment relocated from the area around MSP to Dakota County for the New Airport alternative. There is a category of induced development for the New Airport alternative, but no indication whether all or part of this induced development is expected to be relocated from the area around MSP, the central cities or elsewhere.
  - Under the New Airport alternative, the DEIS should refer to potential economic impacts associated with reuse of the MSP site. **F.**
  - The comparative costs in table I-26 (page V-77) do not recognize the costs associated with the timing of expenditures. For example, expenditures for the MSP Expansion alternative can be spread over the 20-year planning period, while expenditure on a new airport would be front loaded at the beginning of the implementation period. Taking this into account would widen the difference between costs of the MSP expansion and new airport alternatives.

  - The DEIS states that process planning goal #1 is to "Develop airport facilities to meet future aviation needs, to provide enhanced levels of air service, and to further the economic development of the State of Minnesota." A rigorous economic analysis of an airport's ability to further Minnesota's economic development would evaluate whether investing similar amounts of money on other public goods (education, highways, telecommunication infrastructure, etc.) would be more effective in achieving the goal. **G.**

- **Minor Errors** Our reviewers found a few errors and omissions which are listed on the attached page.

By its nature, a comment letter is a list of the reviewing agency's perceptions of an environmental document's shortcomings. Overall the Dual Track DEIS is well organized and does an admirable job of comparing the impacts of a very complex, costly and contentious set of airport alternatives. The City of Bloomington feels that the work to date contains conclusive data which the Metropolitan Airports Commission, Metropolitan Council and FAA can use to make a recommendation that the Minnesota Legislature select the MSP Development alternative as the preferred alternative.

Any questions about this comment letter should be directed to Larry Lee, Director of Community Development, 948-8947.

Sincerely,

Coral Houle

Coral Houle
Mayor

D. See General Response 3.

E. The differences are due to different forecasts. The MSP LTCP used forecasts from the old regional travel model, and the DEIS used forecasts prepared from the new model.

The roadway improvements along TH 77 illustrated on Figure W-16 in the DEIS refer to adding an additional lane in each direction between I-494 and the proposed west terminal access ramps. The additional northbound TH 77 traffic lane would extend from the eastbound/ westbound I-494 access ramp onto northbound TH 77 to the exit ramp to the west terminal. The additional southbound TH 77 traffic lane would extend from the west terminal access ramps to the exit ramp/CD-road at the I-494 interchange. Traffic forecasts do not warrant extending the additional lanes through the I-494/TH 77 interchange.

A southeast terminal expansion alternative is the Northwest Airlines proposal. See General Response 3.

F. The modeling conducted for the long-term comprehensive plan was prepared using the previous model with model parameters set by the 1970 and 198[illegible] Travel Behavior Inventories, using 1992 socio-economi demographic forecasts. The travel demand forecasts used in the preparation of the Draft Environmental Impact Statement were prepared using the updated version of the regional travel demand model. This version incorporated data produced by the 1990 Travel Behavior Inventory. The use of these more current model parameters resulted in differences from earlier forecasts.

G. The goal focuses on the development of *airport* facilities to further economic development; investing in other pubic endeavors is not a feasible alternative for accommodating the future aviation needs of the region.

**Errata**

| | | | |
|---|---|---|---|
| p. V-60 | Table I-6.<br>2005 Anoka County population and 1995 Scott County population figures appear to be incorrect. As a result, totals for these years are also incorrect. | H. | H. This has been corrected. |
| p. V-66 | Last paragraph<br>Bloomington was defined as a central city after the 1980 census, but was not a central city after the 1990 census. | I. | I. This has been corrected. |
| p. V-126 | Missing in our review draft | | |
| Noise Section and Figure T-3 | Does not identify the noise sensitive use of Trinity School at River Ridge located within the LDN65 contour at 2300 East 88th Street. This school would probably experience a 15+dBA increase from the MSP alternative, similar to the nearby Long Meadow Lake/Bass Ponds receptor. | J. | J. This has been corrected. |
| p. A.3-18 | Runway headings seem to be omitted from Table A.3-9 | K. | K. This has been corrected. |

city of eagan

THOMAS EGAN
Mayor

PATRICIA AWADA
SHAWN HUNTER
SANDRA A. MASIN
THEODORE WACHTER
Council Members

THOMAS HEDGES
City Administrator

E. J. VAN OVERBEKE
City Clerk

January 17, 1996

NIGEL FINNEY
DEPUTY EXECUTIVE DIRECTOR
METROPOLITAN AIRPORTS COMMISSION
6040 28TH AVENUE SOUTH
MINNEAPOLIS, MN 55450

RE: Draft Environmental Impact Statement: Dual Track Airport Planning Process

Dear Mr. Finney:

In action taken at its meeting of January 16, the Eagan City Council formally adopted the attached comments with respect to the Dual Track DEIS. In general, the document does a good job of attempting to analyze and differentiate between the alternatives. The issue is admittedly extremely complex and inspires significant responses and, as such, the DEIS is likely to be criticized by many. The comments of the City of Eagan are intended to clarify or amplify certain points raised in the document.

Among the areas which raise the most concern are the relationship of actual growth to that projected in the Dual Track study, the need to ensure that all costs directly related to each alternative are part of the deliberation and decision and that significant and meaningful noise mitigation funds and tools are integral to the cost estimates and the final decision. We believe that such mitigation must extend well beyond the 60 DNL contour, especially in the areas south of the north-south runway which will be subject to dramatic new noise impacts.

You will note that our comments exclude any reference to the Northwest Airlines proposal for incremental changes to the current airport. We would request that the relationship of the NWA proposal to the DEIS process be clarified and that all agencies be given an opportunity to review supplemental impact analysis so that all alternatives to be considered receive the same scrutiny.

A. A. See General Response 3.

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Given the information in the DEIS, current traffic growth estimates and our own public process, the City of Eagan believes that the airport should only be expanded at the current location if:

1. The Dakota County site is preserved through land use regulation or purchase to ensure that the region need not repeat an airport siting process if traffic growth exceeds the study projections. This will also ensure that there is an alternative to acquisition of developed urbanized property for future expansion of the airport if it becomes necessary. **B.**

2. Noise abatement funds and tools sufficient to meet the needs of the true noise impact area are provided as a part of the Dual Track decision. These include sound insulation, property value guarantees, expanded tax increment authority and other means of encouraging noise compatible land uses and to make the noise environment tolerable in those areas where redevelopment is not possible. **C.**

3. No expansion is permitted to occur until the airline industry achieves an all Stage III fleet. **D.**

Without these conditions, the City of Eagan cannot support expansion at the airport at its current site. The City of Eagan also supports the completion of the Dual Track Planning Process and all of its environmental reviews to ensure that the funds spent to date have not been wasted.

Thank you for this opportunity to comment. If you have any questions about the City's comments or position, please contact Jon Hohenstein of our staff.

Sincerely,

Thomas L. Hedges
City Administrator

B. The Minnesota legislature enacted legislation prohibiting the preservation of land by planning, regulation or purchase for a new major airport.

C. See General Response 2.

D. State legislation prohibits operations at MSP of aircraft not complying with stage 3 noise levels after December 31, 1999; the north south runway is scheduled for completion in 2003.

## II. PURPOSE & NEED

The dual track airport planning process is predicated on several assumptions. Among the most critical are the operations forecasts which determine the capacity needs upon which all of the costs and environmental consequences for each alternative are based.

The forecasts anticipate an increase in total passengers of 36% from a 1994 actual total of 24.5 million passengers to a 2020 projection of 33.4 million passengers. At the same time, aircraft operations are expected to increase by 14% from 454,700 to 520,400, the difference being based on more wide-bodied aircraft, a trend which has not emerged in the seven years since the projections began to be developed nor in the fifteen years since hubbing began to dominate the deregulated airline economy. If it fails to emerge in the next twenty-five years, and operations are increased to correspond with passenger growth, total 2020 operations will be in the neighborhood of 620,000 operations per year.

The growth in aircraft operations under the projections is one-half of 1% per year. This compares with over 8% annual growth in operations at MSP since deregulation. While it is unlikely that a growth factor on the scale of deregulation would occur in the near future, the magnitude of the reduction is excessive.

**E.** E. See General Response 4.

The EIS itself acknowledges a revised estimate for mid-year 1995 that represents a 1% growth rate. The actual traffic level for all of 1995 is likely to dramatically exceed that. Year-end totals will be available to the MAC in late January or early February and estimates can be derived from the MAC's ANOMS monitoring system based on monthly totals which they compile.

Based on unofficial estimates from ANOMS data, it appears that the actual growth rate in 1995 may be as high as 4%. Such an estimate would correspond more favorably with the FAA's terminal area forecasts which anticipate an annual growth rate of 2.4%. If the FAA forecasts are more accurate, MSP could reach the dual track study's forecast of 520,400 operations twenty years early.

While growth at this rate will be constrained during the reconstruction of the south parallel runway in 1997, it is not unreasonable to expect that the availability of capacity form the parallels and an extended Runway 4/22 beginning in 1998 will permit additional growth in peak hour scheduling.

The EIS suggests that the 1995 growth level is an anomaly, at least in part, because "the addition of a tenth connecting bank during late afternoon hour . . . fills out the operating day." This observation tends to contradict the suggestion that demand will be the same regardless of capacity available. If the presence of additional capacity either at MSP or at the new airport could have a potential of attracting more aircraft and economic activity, a large portion of the assumptions about the alternative, their costs and benefits would be inaccurate.

**F.** F. The forecasts used for MSP are in fact "unconstrained." The reference to "the addition of a tenth connecting bank...fills out the operating day" in t DEIS does not suggest that MSP is at capacity. Rathe most large airline hubs have between eight and 11 connecting banks in a day. This range does not reflect a shortage in airport capacity, but rather limitations on when people want to fly, aircraft economics, and network scheduling. Northwest has stated it would not likely add an 11th bank at MSP during the forecast period, but would slowly increase the number of flights as overall growth warrants.

With respect to airport capacity, the region has engaged in the dual track study on the basis of levels of demand which result in a cost of delay of $26 million. Even with the improvements anticipated by the expansion alternative, it is forecast that operations in the year 2020 will experience $38 million in annual delay costs, as illustrated in Figure 5. At the traffic levels anticipated by the FAA projections, the delay costs are even more significant.

**G.** G. The MSP Alternative reflects a balance of the costs of delay with the costs of facility improvements. Capacity improvements are usually made only when they become cost effective.

On page II-10, the constraints on the current airport are delineated in significant detail. It is essential that the State be satisfied that future demands through the year 2020 and beyond can be accommodated at the existing site or it is likely that the dual track process will be replicated within the foreseeable future at additional cost to the public and with the alternatives being far more costly than those defined by the EIS.

**H.** H. MAC and FAA are satisfied that MSP can accommodate future demand to 2020 and beyond. See General Response 4.

## III. ALTERNATIVES

The alternative section makes a number of observations which will be addressed elsewhere in these comments. A significant issue is not addressed elsewhere in the EIS and is appropriate for comment in this section.

Page III-4 indicates that the flexibility of the MSP alternative to accommodate demand greater than that forecast for the year 2020 is limited. It is indicated that additional airport development not provided under this alternative will be necessary to prevent significant levels of congestion and delay. In particular, it will be necessary to provide at least one additional parallel runway to accommodate this demand. The estimates do not incorporate any costs for land acquisition, demolition or construction of such additional runways. It should be assumed that these costs will exceed the $100 million identified in the EIS for costs associated with the north-south runway. Further expansion at the current site will require the acquisition of developed property surrounding the site at an even greater cost. An estimate of average costs of acquisition of developed property in the vicinity of the airport is approximately $250,000 per acre. **I.**

I. A third parallel runway is not part of the MSP Alternative. See General Responses 4 and 5.

## V. ENVIRONMENTAL CONSEQUENCES

### A. Air Quality

In the course of the dual track study, it has been asserted that the terminal and parking facilities for each alternative would have similar costs due to their similar configuration. In that regard, the tables on pages V-8 and V-13 raise several questions. First, if the terminal facilities are configured similarly, what is the difference in carbon monoxide emissions for the parking facilities under this analysis? In addition, it is assumed that the higher carbon monoxide emissions for roadways at the new airport as compared to the MSP alternative are a result of their length and the size of the site. Does this reflect en route emissions as well? Does the environmental review consider concentrations over area as opposed to gross emissions? In addition, how does this correlate with the fact that aircraft and vehicle fuel consumption in the year 2020 is 4 million gallons less at the new airport than at the expanded MSP? **J.**

J. See General Response 1. En route emissions are in Table A-10. The environmental review includes concentrations at sensitive receptors around the airport and at high volume intersections, in addition to gross emissions.

**L. Economic**

While the Purpose and Need section discusses the cost of delay at the various alternatives, this information does not appear to be reflected in the economic analysis.

In addition, the analysis reviews net tax capacity "loss" by the various municipalities, but does not reflect tax capacity increases associated with induced development. While some of this development may occur in communities other than those which lost tax capacity, they would certainly occur within the affected impact area and would reflect an offset of the impacts for both alternatives.

It would also appear that the tax capacity affected by each alternative should be expressed both in the form of percentage and actual dollar figure to provide an accurate picture of the effects on the local units of government, region and State. This could be similar to the analysis of farmland impacts which consider the context of the County and State in addition to the land area itself.

As will be discussed more fully under the section on noise, the mitigation proposed under the MSP alternative cost estimates is grossly understated and could exceed $500 million.

It also appears that the gross tax capacity losses are predicated on the squared-off airport site. As noted in the discussion of farmland below, it is not unreasonable to assume that up to one-quarter of the new airport site could be returned to private ownership, production and tax paying status.

It would also be constructive to know whether any of the economic output benefits associated with the construction of either alternative can be recaptured in a way that modifies the capital construction costs. Even if only in the form of income and sales taxes, the significant economic activity represented by both construction projects would generate hundreds of millions of dollars of State revenue.

**K. Farmland**

The executive summary indicates that 2,800 acres of farmland would be lost under the no action alternative. This is despite an assertion on page V-94 that the no action alternative would have no impacts on existing farmland.

Much of the analysis is based on the assumption that all of the property taken for the airport would be necessary for its development. It should be noted that the initial estimates indicated that only 9,700 acres were necessary for development of the airport itself. Through the dual track process, it was suggested that it would actually be necessary to acquire entire properties rather than severing them, leaving small or irregular remnants. As a consequence, at least one-quarter of the site under analysis would not be necessary for airport use and could be returned to agricultural uses through either sale or lease. Because agricultural uses are extremely compatible with airport uses, this would be a practical use for the land while reducing the impact on the County's agricultural economy. In addition, the agricultural productivity level of one-third of the airport site depends upon irrigation which has impacts on the aquifer which will be discussed in the ground water section.

A minor point is that pages V-89 and V-95 indicate in error that 45% of Dakota County's irrigated farmland is included within the new airport site. On page V-85, it indicates that it is actually 11.23% of the County's irrigated farmland.

K. The FEIS includes the analysis contained in the report "Economic Impacts of the Alternative Airport Development Scenarios", February 1996, available at MAC. In this report, the 15-year induced development for the MSP Alternative is calculated at 420,000 square feet of office space, 1,050,000 square feet of industrial space and 2,500 hotel rooms. These figures were based on an analysis of case studies of induced development at other major airports in recent years, as well as on an analysis of historical land use development trends in the metropolitan region. Based on these figures, it was calculated that development induced by the MSP Alternative would generate an additional $5,400,000 in property taxes for each five-year period during the 20-year Dual Track planning period. Most of these property tax revenues would be generated by new hotel rooms. These figures were calculated on an assumed effective tax rate of 6 percent over the forecast period, following an analysis of current effective property tax rates for the municipalities of Bloomington, Minneapolis, Mendota Heights and Eagan.

L. See General Response 1.

M. See "Economic Impacts of the Alternative Airport Development Scenarios", MAC, February 1996, page 153.

N. The 2,800 acres is the estimated farmland that would be lost by 2020 in Dakota County due to residential development under the No Action Alternative. The assertion on page V-94 of the DEIS was incorrect.

O. See General Response 1.

P. See General Response 1.

Q. Noise

Regardless of whether the airport expands or relocates, significant attention must be given to the noise consequences of operating a major international airport. Absent effective mitigation, affected residential areas will absorb the actual hidden costs of airport operations. As such, adequate and effective mitigation tools and appropriate levels of funding need to be applied to a sufficiently broad area. In addition, the MAC, FAA and airlines must implement operating procedures which maintain the impacts in a manner consistent with the impact study within the EIS and, to reduce those impacts utilizing appropriate means.

**Q.** Q. See General Response 2.

It is essential that the assumptions used in the study reflect as accurately as possible the situation which will actually be experienced by residents on the ground. The flight tracks referenced on page V-132 and reflected in figure Q2 show that a significant majority of traffic maintains initial headings to the southeast from the parallel runways. Under current operating procedures, aircraft traveling to the south and west begin turns to destinations as early as three miles from the runway end tracking over eastern and southern Eagan. It does not appear that this is accurately depicted in tracking data shown. This deficiency may affect the contours which were based on these tracks and have implications for the mitigation necessary, particularly in the City of Eagan.

**R.** R. The flight tracks used in the EIS reflect data provided by the Airport Noise and Operations Monitoring System (ANOMS) which details actual flight tracks. The tracks shown in Figure Q-2 are center-weighted. This means that the tracks reflect a weighted average path to and from the runways. If all individual tracks were shown, the figure would be very confusing.

Attached to these comments is a copy of the City's statement concerning MSP airport noise mitigation needs. It notes a series of requirements for operations changes which will be necessary as long as MSP functions at its current site. These are in addition to the operating procedures outlined on page V-141.

**S.** S. See General Response 2.

In the discussion of the runway use system on page V-141, it refers to Table A.3-7 which outlines the runway use system's assumptions anticipated with the expansion of MSP. It should be noted that a significant portion of the procedures for noise mitigation southeast of the airport are predicated on equal volumes of departure traffic from Runways 11 left and 11 right. If the disparity noted in the table is to be the actual operating configuration of the expanded airport, it will place an even greater requirement on the airport, FAA and airlines to ensure that operations stay within the preferred operating corridors and north of residential areas of Eagan.

**T.** T. A revised runway use system (RUS), consistent with the conditions set forth in this FEIS, will be developed to reflect the use of the north-south runway. As with the expanded use RUS evaluated in the runway 4/22 FEIS, the revised RUS will balance noise impacts with the need to operate MSP safely and efficiently. See General Response 2 and page A.3-7.

With respect to the land use planning measures on pages V-142 through 143, the EIS makes significant use of the recommendations developed by the Metropolitan Council, MAC and the Cities of Bloomington, Eagan, Mendota Heights, Minneapolis and Richfield. The EIS refers to focusing mitigation in areas of DNL 65 or greater. The group which developed the community protection concept package anticipated it to apply to a much broader area. Specifically, the group recommended that all tools be available to all areas within one mile of the 60 DNL contour. This recommendation was based on the perception that noise nuisance and the need for mitigation goes substantially beyond the federally recognized DNL 65 level. In addition, the City of Eagan is recommending that all land use planning measures be available on a graduated basis at two to three miles from the 60 DNL contour such that there would be a progression from no land use measures to some land use measures to all land use measures, thereby diminishing the effects of boundaries between eligible areas and ineligible areas. In particular, it would appear that sound insulation improvements should be made available to all residents within one mile of the 60 DNL contour, that two-thirds of the cost for such improvements be made available to residents within two miles of the Ldn 60 contour and that one-third of the cost of sound insulation improvements be made available to residents within three miles of the 60 DNL contour. This is especially important in the area south of the 17/35 runway in Burnsville and Eagan because of the substantial amounts of new noise generated by more than a third of all departures being routed over this new impact area. Using population counts in the L10 65 contour as a surrogate for the population within a mile of the DNL 60, this mitigation would cost in excess of $500 million if the current airport were expanded.

**U.** U. See General Response 2.

The City of Eagan further recommends that noise compatible commercial development be encouraged in communities most affected by aircraft noise through the reduction and elimination of fiscal disparities, contributions in noise impact areas and payments in lieu of taxes for private commercial development occurring on either airport site which could otherwise be located in the noise affected communities.

**V.** V. See General Response 2.

**S. Site Preservation**

The City of Eagan supports the preservation of the new airport site as an essential element of expansion of MSP. This position is predicated on the belief that prudent options should be maintained in the event that the operations forecast are significantly exceeded and because a substantial investment has been made by the public in the study of alternative means of meeting the airport's capacity needs. To abandon the work done to date and reiterate such a study in ten to fifteen years would result in a duplication of public costs for the analysis of alternatives which would be more distant and more expensive than those outlined under the dual track study. W.

It is clear that site preservation could be accomplished through regulation. In the event that acquisition were necessary, it is apparent that the cost of acquisition and management could be offset by lease revenue and the sale of land if relocation were not necessary during the dual track study horizon.

While land banking through acquisition would represent an impact on the social structure of family farming in that portion of Dakota County, tax capacity would actually increase as a consequence of the elimination of the homestead credit. In addition, since State school funding is based on a per pupil formula, it would appear that funding should continue at a level commensurate with the number of students continuing to reside in the area.

W. The Minnesota legislature determined that land for a new major airport cannot be preserved by any means.

**T. Social**

As noted under the Noise section, because of the significant fraction of MSP traffic which would be directed to the south over new flight tracks from the 17/35 runway, areas of western, central and southern Eagan, as well as north and east Burnsville, should be analyzed for the social implications of addition of that runway. X.

X. As noted in the introduction to Section V.T, social impacts analyzed are those directly related to airport development, including, for example, displacement and relocation of residents and businesses, as well as job displacement. The impacts of airport development in addition to the direct impacts included in Section V.T are discussed in Section V.Q (Noise). Tables Q-1 and Q-2 describe the estimated 2000 population and dwellings, and the noise sensitive uses within the 2005 DNL 60 + noise contours for the MSP Alternative. The noise contours are depicted in Figure Q-3.

**CC. Ground Water Quality**

The executive summary is misleading with respect to ground water findings because of the criteria should and that summary nature of the matrix. While the aquifer at the new airport site is very sensitive to contamination, the EIS states on page V-284 that the ground water in the aquifer at the new airport site is probably contaminated at the present time or will be in the near future. As indicated on page V-287, shifting from agricultural land use to an airport use may actually reduce contaminate input to the aquifers in the area. In addition, because the application of agricultural chemicals to the ground is integral to their effectiveness, potential contamination from airport uses, which could be better mitigated, represents less of a threat to the ground water and downstream wells than the current use of the property. Y.

By focusing only on the sensitivity of the area in the executive summary, it gives the impression that the proposed use would be detrimental, while the body of the EIS suggests that demands on the aquifer and its potential contamination would actually be reduced by the change to an airport land use.

Except for rural residential wells, which are likely to require treatment because of current chemical contamination anyway, the only water system which is downrange from the new airport site is the Hastings Municipal System which utilizes a much deeper and more protected aquifer.

Y. See General Response 1.

**APPENDIX B**

Figure Q-5 attempts to reflect differential noise contours without differentiating between the appearance of the lines themselves. It would appear that a dashed line for one contour or the other would permit easier interpretation. Z.

Z. Figure Q-5 has been revised.

CITY OF EAGAN

MSP AIRPORT NOISE MITIGATION NEEDS

The City of Eagan experiences severe aircraft noise impacts due to its location southeast of the airport and the priorities of the Runway Use System. These impacts are made worse by the failure of the FAA and airlines to comply with procedures to maintain traffic over noise-compatible land uses which the Cities of Eagan and Mendota Heights have set aside for this purpose. As a consequence of current impacts, the City of Eagan is very concerned about the effects of current operations and the possible expansion of the airport at its present location.

As a part of the Dual Track Airport Planning Process, the City of Eagan has worked closely with the Metropolitan Council and other cities around the airport to develop the Minneapolis-St. Paul Area Community Protection Concept Package. The tools will be necessary for affected communities regardless of the alternative chosen. If the airport expands at its current location, the tools outlined in the Package will be essential. The City of Eagan supports the adoption of the Community Protection Concept Package as a necessary part of the Dual Track decision with the qualifications outlined below. Even if the decision is made to relocate the airport, some of tools will be important to mitigate aircraft noise impacts in Eagan until a new airport would be operational.

Even though the City of Eagan has been able to plan its land use in consideration of the airport, the dramatic increases in operations since airline deregulation have resulted in unacceptable levels of noise in residential areas outside the commercial and industrial land uses planned for aircraft noise. If the airport is expanded at its current location, it would increase the exposure of even more areas of the City, the aggressive application of Community Protection tools such as expanded sound insulation, property value guarantees, preferential tax treatments and the other tools outlined in the package are essential. Absent the availability and application of these tools, the expansion of the airport will result in significant levels of hidden costs borne by our tax payers and reflected in our tax base.

As the City has matured, the potential for additional land use restrictions outside of the Metropolitan Council noise zones has become limited. While the City will continue to discourage incompatible land uses within the industrial areas and traditional noise impact areas, the extensive development throughout the community prevents any substantial benefit from extending such controls to other areas.

The City of Eagan has responsibly planned and developed its land uses to take into account the aircraft noise issues which could be anticipated. The City would not support the creation of additional levels of government which would limit Cities' authorities to determine appropriate land use solutions. The City does recognize however the traditional and continuing role of the Metropolitan Council in maintaining policies and standards to assist and support City decisions in this regard.

To make the application of the Community Protection Concept Package effective, the following additions are essential:

1. Certain of the community protection tools should be implemented in a graduated fashion at 2 and 3 miles from 60 DNL contour so that there is a progression from no tools to some tools to all tools. These include sound insulation, property value guarantees, tax increment financing and preferential tax programs. Such programs should benefit the noise affected residents without penalizing the local jurisdictions.

2. New commercial development should be encouraged in the communities most affected by aircraft noise rather than on airport property.

3. New commercial development within airport property at either the existing or Dakota County location should be required to make payments in lieu of taxes and fiscal disparities contributions. Fiscal disparities distributions equal to these contributions should be made to the communities most affected by aircraft noise.

4. Eliminate Fiscal Disparities contribution for communities most affected by aircraft noise or at least within the 60 DNL contour.

In addition, long term compatibility of MSP with its neighboring communities is dependent upon certain operational assumptions and changes which must be vigorously enforced on and by the MAC.

1. The Corridor operations should be narrowed using to the fullest extent possible newly available technology such as Global Positioning Satellite navigation and other air traffic control enhancements. These improvements should be used to better utilize the airspace around MSP and to minimize aircraft noise impacts in areas which were not planned for them.

   It is becoming increasingly apparent that the noise abatement capacity of the corridor is finite. It is essential that mechanisms be put in place to insure compliance with the corridor. If this is not possible, then it is unfair to concentrate impacts on the residents of the communities adjacent to the corridor. Absent effective and acceptable corridor compliance, the Runway Use System should be dismantled, parallel crosswind runways should be added to provide equal capacity in every direction and every effort should be made to equitably distribute air traffic on all sides of the airport.

2. The airport should place equitable impacts on all communities it abuts and reduce its inequitable reliance on the communities southeast of the airport. If air traffic is redistributed in other directions, it should be done in such a way that it does not further impact cities which already receive the majority of aircraft noise, such as Eagan and Mendota Heights. In particular, operations utilizing an extended Runway 4/22 or a north-south runway should use Standard Instrument Departures and other means of preventing additional overflights of the City of Eagan.

3. Aircraft departing and arriving at MSP should be directed to use, to the greatest extent possible, those areas which were planned by the region and the communities to absorb the worst of the aircraft noise. In large part, these areas are made up of less noise sensitive land uses such as agricultural and industrial park properties. Optimum flight tracks should be established and implemented which best utilize these areas and recognize the planning efforts of the communities to provide them.

4. Once modified in the ways outlined above, the boundaries of the arrival and departure corridors should be specifically defined and aircraft noise exposure standards should be established for residential areas along the corridor. The MAC should be responsible for monetary fines and documentation for aircraft operations violating these standards. The fine proceeds should be paid as compensation to the city or cities affected by the violation for the benefit of the residents most affected by aircraft noise.

5. Nighttime aircraft restrictions should be put into place immediately to ensure that only quieter Stage III aircraft are flown between the hours of 10:00 p.m. and 7:00 a.m. Such restrictions should be mandatory and violation of the standards should result in monetary fines to the offending carrier with the proceeds to the affected city or cities for the benefit of the residents most affected by aircraft noise.

6. Departure and arrival procedures should be reviewed and adjusted to ensure that the full performance capabilities of all aircraft are being utilized to optimize the rate of climb or descent relative to the noise compatible and noise sensitive areas in the surrounding communities. This should include consideration of Noise Abatement Departure Profiles, full-thrust departure procedures, steeper arrival glide slopes and other means of ensuring that the worst of the noise impact is concentrated in the noise compatible areas.

   This is especially important in the areas affected by the possible addition of the north-south runway due to its potential to significantly degrade residential uses in Dakota County communities, if no operational changes are implemented.

7. The airport should be responsible for ensuring that any expansion of the current airport be "noise neutral" to the urbanized areas, whether it be the extension of Runway 4/22, the addition of the north-south runway or the addition of a third parallel runway. This means that no new noise impacts would be generated in off-airport properties as a result of these activities.

8. The MAC should establish measurable criteria by which the performance of MSP is to be judged in deciding whether or not airport expansion is warranted. These performance criteria should be frequently and regularly reported to allow interested parties to monitor the need to undertake the improvements described in the MAC Comprehensive Plan.

9. When subsequent aircraft stages are defined which can further reduce off-airport noise impacts, nighttime restrictions of older aircraft and other efforts outlined above should be implemented to require the use of such aircraft technologies to ensure further noise reductions for neighboring communities.

# City of Hastings

HASTINGS
ON THE
MISSISSIPPI

101 4th Street E. • Hastings, Minnesota 55033-1955
612 • 437 • 4127 • Fax: 612 • 437 • 7082

February 7, 1996

Ms. Jenn Unruh
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, Minnesota 55450

Dear Jenn:

Enclosed please find a copy of a resolution adopted by the Hastings City Council at its meeting on February 5, 1996 regarding the draft environmental impact statement for the dual-track airport planning process. Please make certain that this resolution is included as the officicial document submitted on behalf of this City Council as it relates to the draft environmental impact statement. Should you have any questions or require any additional information, please do not hesitate to contact me.

Sincerely,
CITY OF HASTINGS

David M. Osberg
City Administrator

An Equal Opportunity Employer

RESOLUTION # 2-20-96

# RESOLUTION OF THE CITY OF HASTING PROVIDING COMMENTS ON THE DUAL TRACK AIRPORT PLANNING PROCESS DRAFT ENVIRONMENTAL IMPACT STATEMENT

WHEREAS, The Draft Environmental Impact Statement (EIS) addresses the environmental impacts associated with major airport development options for the Twin Cities; and

WHEREAS, One option would provide the needed capacity and facilities at Minneapolis-St. Paul International Airport in Hennepin County; and

WHEREAS, The other option would provide the needed capacity and facilities at a potential replacement airport in the designated search area in Dakota County, directly adjacent to the City of Hastings; and

WHEREAS, The Federal Aviation Administration (FAA) and the Metropolitan Airports Commission (MAC) have jointly prepared the Draft EIS on the potential effects of the alternatives to accommodate the long term air transportation needs of the Minneapolis-St. Paul metropolitan region; and

WHEREAS, The FAA is responsible for the federal environmental process and the MAC is responsible for the state environmental process, with the Minnesota Environmental Quality Board responsible for making the Determination of Adequacy on the Final State EIS; and

WHEREAS, public comment period on the Draft Environmental Impact Statement extends until February 13, 1996; and

NOW, THEREFORE BE IT RESOLVED THAT THE CITY COUNCIL OF THE CITY OF HASTINGS HEREBY ADOPTS THE FOLLOWING AS ITS OFFICIAL COMMENTS ON THE DUAL TRACK AIRPORT PLANNING PROCESS DRAFT ENVIRONMENTAL IMPACT STATEMENT:

## FLOODPLAINS

Page V-107 of the EIS states that, "If the site is actually selected for development of a new airport, it may be necessary to remodel the entire watershed based on a common set of characteristics and assumptions agreed to by the VRWMO, COE, Dakota County and other agencies involved in surface water management for the Vermillion basin." This discussion on the common set of characteristics and assumptions should include the City of Hastings, since the Vermillion River bisects the southern portion of the City.

**A.**

A. See General Response 1.

## HISTORICAL/ARCHITECTURAL RESOURCES

The City of Hastings is concerned that the EIS does not address the potential impact of the many buildings in the downtown Hastings area, most notably the Hastings City Hall, that are on the National Register, in the event infrastructure improvements are needed as a result of the location of the airport near Hastings.

**B.**

B. See General Response 1.

## INDUCED SOCIOECONOMIC IMPACTS

The EIS identifies on Page V-115 that the City of Hastings will experience induced development resulting in 4,615 additional residents and 1,705 additional households as a result of the airport location in Dakota County. While the City of Hastings does not dispute these projections at this time, the City of Hastings recommends that the EIS include documentation acknowledging that expansions of the Municipal Urban Service Area (MUSA) and wastewater treatment plant capacity will be necessary if these growth projections are to be accommodated.

**C.**

C. See General Response 1.

LIGHT EMISSIONS

Further discussion of the impacts on the City of Hastings regarding the light emissions from aircraft using the proposed north-south runway, both approaching and departing the new airport during either nighttime or inclement weather should be included in the EIS. In addition, the spillover lighting from buildings such as the terminal and parking ramps, and other landslide facilities, must be designed in such a way to minimize the impact on the City of Hastings. Finally, the EIS should be amended accordingly so as to properly describe the light emissions from lights illuminating new roadways, and the impact on the City of Hastings.

**D.**

D. See General Response 1.

NOISE

Page V-147 notes that, "The noise associated with taxing and run-up operations was found to be insignificant in comparison to the noise associated with aircraft arrivals and departures." This does not provide residents of Hastings an understanding of the increase noise that will be evident due to the location of the airport in Dakota County. To suggest that the noise levels would be "insignificant" without any measurement or analysis of the increased noise levels is not satisfactory. "The noise associated with taxing and run-up operations" will certainly be "significant" if its measured against the peace and quite that now exists at the airport site. The incremental increase in the noise levels should be identified.

**E.**

E. See General Response 1.

Page V-149 of the EIS suggests that, "Limits on aircraft types and nighttime operations restrictions on use of reverse thrust, flight training, and nighttime powerbacks may not be necessary but would be evaluated in the FAR 150 process." The City of Hastings suggests that the impact of eliminating those noise abatement measures in the event a new airport is constructed in Dakota County, be further analyzed and discussed in this EIS process.

**F.**

F. See General Response 1.

SITE PRESERVATION

The City of Hastings is opposed to any specific action by the State Legislature, Metropolitan Airports Commission or Metropolitan Council to protect the airport site in Dakota County, beyond that currently available under existing laws.

Should site preservation be considered for airport development in the EIS, then there must be a thorough analysis of the impact on site preservation for properties which would be needed for construction of highway access to the new airport, or for powerlines and pipelines to serve airport activities. The EIS suggests that corridors for these infrastructure improvements would be the subject of an in-depth analysis in a subsequent Environmental Impact Statement following selection of the New Airport Alternative as the preferred alternative. The City of Hastings position is such that if the process is going to discuss site preservation, it must address all site preservation, not simply airport site preservation. Either study the impacts of all site preservation, or do not study any site preservation.

**G.**

G. See General Response 1.

The City of Hastings is opposed to any attempt by the Metropolitan Airports Commission to secure a property tax exemption from the State Legislature that would further enhance the opportunity for site preservation, as contemplated on page V-171 of the EIS.

While page V-171 identifies the lost revenues available to Independent School District #200 due to site preservation activities, there is no analysis of the potential impacts on the School District and the cities in the School District, such as the City of Hastings.

**H.**

H. See General Response 1.

The City of Hastings disagrees with the statement on page V-177 that essentially states, "Local jurisdictions would not be affected financially" by the land regulation approach of site preservation. This statement is shortsighted, as it does not identify the tax base expansions that would be lost if development and growth opportunities went to other communities not impacted by the land regulations associated with site preservation.

**I.**

I. See General Response 1.

SECTION 4-F

The City of Hastings is opposed to any EIS that refuses to identify the impacts to the downtown areas on the National Register, particularly the City Hall, as a result of the Highway #61 improvement that will be necessary. Page V-222 of the EIS states that, "In addition to the above highway improvements required by the New Airport Alternative, the following No action projects on the regional highway system to serve the region by 2020 without the new airport, are also needed to serve the New Airport"; with "widening of TH 61 Mississippi River bridge in Hastings" listed as the first project. The EIS recognizes that widening of the bridge is necessary to serve the new airport. The EIS does not identify the impacts this widening will have on the many historic buildings in the downtown Hastings area.

**J.** J. See General Response 1.

TRANSPORTATION

Page V-217 of the EIS states that, "TH 61 south of Hastings crosses the RPZ of a crosswind runway on the airport. FAA just recently completed its review of the airport layout plan and notified MAC that the highway cannot remain in this safety zone. TH 61 would therefore be relocated around the RPZ. The impacts on this relocation have not been determined." These impacts should be determined, particularly any change in traffic patterns on Highway #61 in the city limits of the City of Hastings and Highway #316. Furthermore, the cost estimates identified on page V-222 should be changed to reflect the costs associated with relocating Highway #61 around the RPZ.

**K.** K. See General Response 1.

SURFACE WATER QUALITY

This section addresses the proposed wastewater treatment system for the new airport on page V-265. In order to complete the analysis of the impact of the wastewater treatment plant, there should be some discussion of the potential location of the new wastewater treatment plant. In addition the EIS should include a description of the sludge management plan, identifying the amount of sludge that will require disposal, the contents of the sludge and disposal sites and haul routes for the sludge disposal.

**L.** L. See General Response 1.

GROUNDWATER QUALITY IMPACTS

The EIS very clearly identifies a major concern of the City of Hastings, yet comes up short in its conclusion: (Page V-286) "An important issue is whether groundwater contaminants originating beneath the site can impact the Hastings Praire du Chien-Jordan municipal wells to the northeast of the bedrock valley."

Later, the EIS states that, "Insufficient information is available to conclude whether water from the site will be transported to the Hastings wells or whether it will diverge around the municipal wells due, at least in part, to the bedrock valley." It concludes later that, ". . . groundwater travel time from the northern site boundary to the nearest Hastings municipal well (Number 6) is therefore estimated to be on the order of 5-25 years." Whether the EIS states that there is "insufficient information" or that contamination will take place, "on the order of 5-25 years", is completely unacceptable to the City of Hastings.

**M.** M. See General Response 1.

ADOPTED BY THE CITY COUNCIL OF THE CITY OF HASTINGS THIS 5TH DAY OF FEBRUARY, 1996

ayes: Councilmember Plan, Johnson, Simacek, Hicks, Moratzka and Mayor Werner
nays: None
Absent: Councilmember Riveness

MICHAEL D. WERNER
MAYOR

attest:

BARBARA C. THOMPSON
CITY CLERK-TREASURER

SEAL

# City of Mendota Heights

February 12, 1996

Metropolitan Airports Commission
c/o Ms. Jean Unruh
6040 - 28th Avenue South
Minneapolis, MN 55450

RE: Comments on the Dual Track Airport Planning Process Draft Environmental Impact Statement

Dear Commission Members:

This letter is to serve as the City of Mendota Heights comments on the Draft Environmental Impact Statement for the Dual Track Airport Planning Process and is also to serve to express our concerns about the Dual Track Airport Study.

DRAFT ENVIRONMENTAL IMPACT STATEMENT

The City of Mendota Heights offers the following comments to the published Draft Environmental Impact Statement:

1. The DEIS does not identify, or examine, all the true costs and benefits for either airport track that has been studied. In addition, the DEIS lacks a true cost comparison or impact analysis for all possible options that could be undertaken, or that are currently being considered, including Northwest Airlines Concept 6A and the Rosemount Option supported by the Minnesota Public Lobby. **A.**

2. The DEIS does not quantify the benefits from the potential redevelopment of the existing MSP site if the airport were to be relocated to Dakota County. An analysis has not been completed that examines the economic benefits and the tax base impacts that would accrue due to the redevelopment of the MSP site. **B.**

3. The DEIS analysis of the external costs on the communities that currently surround MSP, due to the impact of increased noise pollution caused by expanding the current airport, are inadequate. The amount of money estimated for noise mitigation is based upon the existing Part 150 program and is grossly inadequate under a scenario of an expanded MSP. The DEIS assumes that the existing home insulation program is adequate to alleviate the noise pollution problem and the estimates for noise mitigation costs are based upon the current home insulation program and the amount of money currently available for this Part 150 program. The DEIS states this is adequate to alleviate the noise pollution problem. There is no substantiation for this claim, nor does the DEIS adequately address this issue. No other noise mitigation efforts are included in the DEIS analysis, outside the noise insulation program. For the DEIS to be a credible document, further review is necessary to adequately analyze the external costs of noise pollution on communities surrounding an expanded MSP, to identify noise mitigation efforts other than sound insulation and to analyze the costs and benefits of these other noise mitigation efforts. **C.**

1101 Victoria Curve · Mendota Heights, MN · 55118 452·1850

A. The EIS does not attempt to quantify all the costs of all possible options that could be undertaken; it examines only the direct costs of reasonable options that could meet the region's commercial aviation needs. Section III of the EIS describes the reasons for eliminating other alternatives. See also General Response 3.

B. See General Response 1.

C. The costs have been revised. See General Response 2.

4. The DEIS does not address the impact from noise pollution on housing values for communities surrounding MSP under a scenario of an expanded airport. For the DEIS to remain a credible document, the costs of housing value depreciation must be included in the review of impacts for an expanded MSP. The costs of community stabilization and economic revitalization should be included in the DEIS, for both tracks of the study. The costs of property value guarantee programs, tax credits for housing revitalization programs and other community stabilization programs should be included in the DEIS.

**D.** D. See City of Richfield Response JJ for discussion of noise impact on housing values and General Response 2 for noise mitigation.

5. The DEIS does not adequately address, or identify, the area to be included for sound insulation purposes, or for other noise mitigation efforts, as mentioned above. Therefore, the costs for this program are again grossly underestimated. Further review is necessary.

**E.** E. See General Response 2.

6. The DEIS assumptions for the growth in operations are inadequate and do not equate with current, real growth rates in operations. Further review is necessary to adequately determine if an expanded MSP will reach capacity before the end of the current study time line in the year 2020.

   Should an expanded MSP reach capacity before the year 2020, additional runways may be necessary. The DEIS has not addressed future additional runways at an expanded MSP and their potential impacts in terms of noise exposure and environmental impacts, community disruption, economic development and/or decline and tax base impacts. This is a serious flaw in the DEIS, based on an assumption that this impact will occur after the time line assumed for the study. Further review is needed.

**F.** F. See General Response 4.

7. The DEIS underestimates the induced development benefits for a relocated airport and the economic benefits that would accrue to Dakota County.

**G.** G. See General Response 1.

8. The DEIS does not adequately address the costs and benefits of regulating air noise generation and exposure. If MSP is to continue to exist its present location, it is essential that "teeth" also be put into the regulations affection the operation of the airport. The DEIS assumes that current operational procedures will remain in place with an expanded MSP. There is no analysis to substantiate the costs and benefits of this assumption. Long term community compatibility with MSP has not been fully analyzed in the context of operational changes that could more equitably distribute air noise generation. The following operational considerations should be included in the cost and benefit analysis of the DEIS:

**H.** H. The DEIS did not assume that current operating procedures will continue under the MSP Alternative. With the addition of the north south runway, new operating procedures will result. See General Response 2.

   a. The aircraft departure corridor should be narrowed over Mendota Heights and Eagan to take full advantage of the latest air traffic control technology. The introduction of a Global Positioning Satellite navigation system at MSP should greatly improve the safety of airspace management, and will also lessen the distance aircraft need to be separated from one another to ensure passenger safety. Other precision air traffic control advancements on the horizon will only help the MAC and FAA better utilize the airspace surrounding MSP to minimize air noise impacts over residential areas.

**I.** I. In the future, the use of a Global Positioning Satellite (GPS) navigation system has the potential to narrow the Eagan-Mendota Heights Corridor. The *potential* narrowing would be accomplished by more precise tracking of aircraft after departure and by reducing the current 15 degree convergence requirement for parallel departures on Runways 12L and 12R. The existing divergence requirement for parallel departures on Runways 12L and 12R provides the necessary aircraft separation on departure for closely-spaced parallel runways. At this time, technology has not developed to the point that all aircraft are GPS-equipped. All aircraft should be GPS-equipped to effectively narrow the corridor. Narrowing the corridor could be a consideration in a FAR Part 150 update at MSP. See also General Response 2.

b) The inequitable reliance on the Mendota Heights/Eagan corridor should be eliminated. The capacity of the corridor is finite, and communities overflown by aircraft using the corridor ought not be expected to endure air noise exposure beyond a fair limit. All communities surrounding MSP receive significant economic benefit from its close proximity. Similarly, all should be expected to bear a reasonable and equitable share of the associated noise burden as well.

**J.** J. Airport operating procedures are designed to safely and efficiently accommodate aircraft operation and reduce environmental impacts when possible. Existing runway use and flight track utilization are based on wind and weather conditions and the origination/ destination of the flight. The noise abatement procedures incorporated in the FEIS do consider restricting operations during nighttime and other non-busy hours to the least-sensitive runways and flight tracks. See General Response 2.

c) Over the Mendota Heights/Eagan area, departing aircraft should be directed to utilize, to the fullest extent possible, less noise sensitive areas, such as industrial park property and highway rights of way. These areas have been planned in conformance with existing and approved airport runway configurations, are in conformance with Metropolitan Council guidelines, and have been approved by the Metropolitan Council. To fully accomplish this goal, aircraft during non-busy hours should be directed to fly a crossing pattern in the corridor, rather than being given departure headings which overfly close-in residential areas. This crossing procedure during non-busy times has been approved by the Metropolitan Airports Commission and is currently awaiting implementation by the Federal Aviation Administration.

**K.** K. An Environmental Assessment for Revised Air Traffic Control Procedures in the Eagan-Mendota Heights Corridor at MSP analyzed the crossing procedures described. The FAA issued a FONSI stating that the further concentration of aircraft in the Eagan-Mendota Heights Corridor would not adversely impact noise-sensitive locations in the affected area. The crossing procedure should be implemented in the near future. See also General Response 2.

d) Once modified to take advantage of the latest air traffic control technology and adjusted to correct for air noise distribution inequities, the boundaries of the aircraft departure and arrival corridors should be specifically defined, and air noise exposure standards should be established along this corridor. Aircraft operators violating these standards should be subject to substantial monetary fines.

**L.** L. The MAC will continue to encourage ATC and aircraft to follow established corridors; however, 100 percent consistency with such corridors is not possible due to capacity, weather and pilot judgment considerations. See General Response 2.

e) Nighttime aircraft restrictions should be put into place immediately to ensure that only Stage III, quieter aircraft are flown between the hours of 10:30 p.m. and 6:00 a.m. Such restrictions should be mandatory and violation of the standards should result in a monetary fine to the offending air carrier.

**M.** M. Additional nighttime restrictions were assessed as part of the work of the MSP Noise Mitigation Committee (see General Response 2). By 2000, the FAA- mandated phase-out of Stage 2 aircraft should result in close-to an al Stage 3 fleet in the daytime as well as at night. While the FAA has the power to grant waivers up to the year 2003, they have indicated an unwillingness to do so. In addition, Northwest Airlines has publicly stated that they have no intention of requesting a waiver, and Minnesota legislation prohibits Stage 2 aircraft operations at MSP after December 31, 1999.

f) Noise Abatement Departure Procedures (related to how quickly aircraft gain altitude upon departure) should be reviewed and adjusted to ensure that the full performance capabilities of all aircraft are being utilized. The ability of aircraft to rapidly gain altitude, thereby minimizing aircraft noise levels experienced on the ground, should be quantified and made part of air traffic departure procedures at MSP. This is especially true for Stage III aircraft.

**N.** N. The MAC is currently investigating the noise impact benefits of changing departure profiles at MSP as part of a separate study. For the EIS, consistent departure procedures were used for all alternatives.

g) In its MSP Comprehensive Plan, the MAC has identified a future runway construction project located on the west side of the airport property. This new North/South runway, if built, is expected to accommodate air traffic needs well beyond 2020. The face of aviation will be considerably different by that time and will hopefully include later generation aircraft which will be substantially quieter than the current Stage III quiet aircraft, and high precision air traffic control technology which will ensure safe airspace management with a minimum of aircraft separation. With this in mind, the MAC should commit that any airport expansion identified in subsequent MSP Comprehensive Plans will be "noise-neutral", meaning that no new noise impacts over residential areas will be generated off of the airport property as a result of the future addition of new runways.

**O.** O. It is unrealistic to require that future capacity improvements such as a new runway would not change the pattern of noise impacts. The location and orientation of a new runway is determined by capacity needs, wind and weather factors, safety considerations and available land.

h) Also related to the MSP Comprehensive Plan, the MAC should establish measurable criteria by which the performance of MSP is to be judged in deciding whether or not airport expansion is warranted. These performance criteria should be frequently and regularly reported to allow interested parties to monitor the need to undertake the improvements described in the Comprehensive Plan.

**P.** P. In practice, stringent performance criteria are applied to airport capacity expansion projects. Airports and airlines examine the cost-benefit of any capacity improvement. The most common method of determining when a project may provide benefits is by tracking the annual cost of aircraft delay. When these costs approach those of implementing a capacity enhancement project, additional study is warranted. In general, facilities should not be built based on forecast demand, but rather on actual demand.

CONCERNS WITH THE VOID IN THE DEIS

The City of Mendota Heights is concerned with the recent appearance of the Northwest Airlines Concept Plan 6A and the likelihood that it will receive consideration from the decision makers on the Metropolitan Airports Commission and at the Legislature. This plan has not been included in the review for the Draft Environmental Impact Statement. If NWA Concept 6A plan is to be considered, it will be necessary for the Metropolitan Airports Commission to re-open the Environmental Impact Statement study to include this plan in all phases of impact analysis. **Q.**

Q. See General Response 3.

As stated above, the DEIS fails to address any impacts for additional runways beyond the year 2020, or before the year 2020 if the growth projections are discovered to be underestimated. The Northwest Airlines Concept 6A includes a projected north parallel runway. The DEIS fails to address any potential impacts that a north parallel runway would have including community disruption, declines in property tax base values, noise pollution and other environmental impacts that would occur under the Northwest Airlines Concept 6A. **R.**

R. See General Responses 4 and 5.

The City Council of Mendota Heights disagrees with the Metropolitan Airports Commission's decision to speed up the Dual Track Study Process to report to the Legislature in March of 1996. The public comment period for the DEIS concludes on February 13, 1996. The Metropolitan Airports Commission will need more than one month to adequately address each communities comments and to address all the areas where the DEIS may be inadequate or in need of further review. Mendota Heights supports the original schedule, as prescribed in current state law, for the completion of the Dual Track Airports Study.

We appreciate the opportunity to comment on the Draft Environmental Impact Statement. We eagerly await your reply and response to our comments and concerns.

Sincerely,

Charles E. Mertensotto
Mayor

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9 February, 1996

Nigel D. Finney
Deputy Executive Director
Metropolitan Airports Commission
6040 28th Av. S.
Minneapolis, Mn. 55450

RE: Draft Environmental Impact Statement on the Dual Track Airport Planning Process

Dear Mr. Finney,

Enclosed herewith is a copy of the City of Minneapolis comments concerning the Environmental Impact Statement on the Dual Track Airport Planning Process.

Sincerely yours,

Paul Farmer, AICP
Planning Director

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# COMMENTS OF THE CITY OF MINNEAPOLIS REGARDING THE DUAL TRACK AIRPORT PLANNING PROCESS DRAFT ENVIRONMENTAL IMPACT STATEMENT

**Approved by the Minneapolis City Council**
**9 February 1996**

Because of its physical proximity to the Minneapolis-St. Paul International Airport (MSP), the City of Minneapolis is affected by MSP in two major ways. While there are severe environmental impacts from the airport on nearby residential areas, residents and businesses both benefit from the convenience afforded by the proximity. This dual-edged sword means that the City has been and continues to be a very interested party in the airport planning process. While MSP's effect is largely positive for the state and the rest of the metropolitan area, it has a negative impact on a handful of communities. There is a regional imbalance in costs and benefits.

Throughout the six years of planning mandated by the State Legislature's 1989 Dual Track Airport Planning Process law, numerous informational meetings and required public hearings have been held in the City. The City has responded formally to various documents that have been circulated as part of the process. This statement is the City's formal response to the Draft Environmental Impact Statement on the Dual Track Airport Planning Process (DEIS). The City also expects to comment on the Final EIS when it is available.

## A. COMMENTS ON THE DUAL TRACK AIRPORT PLANNING PROCESS DRAFT ENVIRONMENTAL IMPACT STATEMENT

The City of Minneapolis agrees with the Metropolitan Council that the paramount need driving this long planning process is to accommodate the future demand for air transportation. The Metropolitan Council's Airport Adequacy Study in the mid 1980s concluded that the present airport would not be able to accomplish that task. However, the City questions whether the DEIS adequately addresses the true scale of that air transportation demand and the best methods to address it.

### 1. Growth Forecasts

Pages II-1 through II-10 of the DEIS provide a capsule history of the project and clearly state the Metropolitan Council's Regional Goals for the project as well as the six Planning Goals adopted to guide the two tracks of the planning process.

The City is concerned that the following two Planning Goals are not fully met by the plans for the redevelopment of MSP as evaluated in the DEIS:

**Goal #1:** "Develop airport facilities to meet future aviation needs, to provide enhanced levels of air service and to further the economic development of the State of Minnesota."

**Goal #6:** "Develop the airport and airport vicinity to minimize and reduce adverse aircraft noise and other environmental effects."

The real problem in the development of adequate facilities to meet future aviation needs concerns the long term. The planning horizon adopted was 2020. While the planning detailed in the DEIS seems to indicate that MSP could just meet the needs of 2020 using very modest growth forecasts, the City is concerned about the years after that horizon. **A.**

The DEIS is based too heavily on the belief that current operating procedures of Northwest Airlines (NWA) will continue until 2020. Yet, operating procedures of NWA and the airline industry were radically different twenty five years ago. The Final EIS should evaluate the effects of several different scenarios.

A. The Year 2020 planning horizon (30 years from the initiation of the process in 1989) was stipulated in the Dual Track legislation passed by the state legislature; therefore, the alternatives considered in the EIS were designed to meet baseline 2020 requirements. A 2020 planning horizon is well beyond the planning period typically used for airports. The MAC has subsequently evaluated the MSP

There is the real possibility that the Metropolitan Airports Commission (MAC) has underestimated actual growth in operations. The MAC and Northwest agreed to use a set of figures that are far below the predicted levels of the Federal Aviation Administration (FAA) (refer to page II-8 of the DEIS). While it may be too soon to tell if recent phenomenal growth is an aberration or a trend, the number of passengers and operations have been greater than predicted in the past years. For example, in 1996 the level of operations will reach that predicted for the year 2000. Northwest asserts that the recent type of growth will not continue. But what if it does?

A. A. (continued from previous page) Alternative using a 2020 high forecast of 640,000 annual operations (approximately 23 percent higher than the 2020 base forecast of 520,000) and found that the MSP 2020 Concept Plan can accommodate these activity levels. This analysis accomplishes the same purpose as extending the planning period. See also General Response 4.

The limits of growth at MSP are best stated on page II-10: "Physical and environmental constraints surrounding MSP complicate development options. Expansion of MSP is constrained by the proximity of the Minnesota River (with its Wildlife Refuge), several major highways, a state park, historic district, cemetery, and adjoining residential and commercial development."

B. B. As stated by the City of Minneapolis, the planning horizon is the year 2020. The concept adopted by the MAC for expansion of MSP meets the facility requirements identified using the baseline forecasts. In addition, MAC has tested the MSP Alternative at higher levels of activity and determined that this alternative would be able to support a 23 percent increase over the year 2020 forecasts (See Response A). Based on the forecasts, a fifth runway is not required to accommodate the increased activity and was therefore not incorporated into the MSP Alternative. Should another runway be necessary in the future, a separate EIS would have to be completed. See General Responses 4 and 5.

The DEIS states that a third parallel runway could be built after 2020 to accommodate the growth. However, no environmental review was completed for this possibility. If the MAC or the FAA have forecasted the need for this third parallel runway, then, regardless of the somewhat arbitrary 2020 planning horizon, the Final EIS should disclose these forecasts and all the background information needed for the public to make an informed review of this information. If the forecasts predict a need for the runway relatively close to the year 2020, the Final EIS planning period should be amended to encompass this additional period of time. Furthermore, the Final EIS should account for potential impacts on the residential communities off both ends of the proposed runway in Minneapolis and Mendota Heights; the impact and cost of depressing a major highway, Highway 62, the Crosstown; the additional impacts on Fort Snelling National Park; and other impacts.

C. C. See Response A and General Response 5. The MSP Alternative does not include a third parallel runway.

Without appropriate analysis of the environmental impact of the third parallel runway, all mention of it should be removed from the Final EIS. Otherwise, the Final EIS could be misapplied to argue that this document addressed the impacts of the third parallel runway when, in truth, it has not.

2. **Noise**

The increase in the number of annual operations over South Minneapolis since 1978 is equal to the total annual operations at Kansas City Airport (MAC report of other airport operations). But these local increases and noise have not been shared equally among the various communities impacted by MSP. Operations over the affected suburban communities has actually gone down while Minneapolis has had to endure the noise equivalent of an additional medium-sized airport.

Missing from the DEIS are analyses of neighborhood and community concerns and resident perceptions of local airport impacts. What levels of risk and uncertainty must we associate with the implications of these concerns and perceptions for each airport alternative? The report apparently assumes a risk free world as if the projections, based on certain arguable assumptions, are error-free predictions. Obviously they are not. Therefore, what costs, if any, are included in the various governmental and private sector efforts to cope with these concerns and perceptions in the case of each airport alternative? The net result of not responding to these sorts of questions may be a report that technically meets its stated purpose but, yet, fails to provide a sound factual basis for a realistic perspective on each airport alternative. The Final EIS should appropriately evaluate those impacts which may be difficult to measure but are very real.

D. D. It is not clear what these "neighborhood and community concerns and resident perceptions" are. The purpose of the EIS is to identify, assess and describe reasonably foreseeable environmental impacts and to identify possible mitigation measures for potentially significant environmental impacts associated with a particular action. Section I.F lists the process used to prepare the environmental analysis. Numerous public scoping sessions, public information meetings and public hearings were held to gather community input. The EIS Scoping Decision includes the list of issues that were to be addressed in the EIS.

On page V-132 the DEIS states that for the MSP alternative, "forecast runway use incorporates the new North-South Runway.... The operating modes identified by ATC personnel was balanced with environmental considerations." These modes of operation were not spelled out. This should be done to permit review and comment.

E. Table A.3-7 in Appendix A.3 shows the percentage of runway use for the MSP Alternative.

Given that aircraft noise and its effects on the community have been the subject of newspaper stories, public meetings, demonstration, etc. for more than 25 years, it seems very odd that only one reference for noise impacts is given in the List of References on page IX-4. This is in contrast to 24 listed regarding farm land impact and 24 concerning groundwater/hydrology.

F. Appendix A.3 references six additional sources of information on noise analysis.

Figure A.3-2 is a graph depicting Community Reaction to Noise Level. It indicates that at DNL 65 about 13% of people say they are "Highly annoyed." In the past, FAA documents show that at DNL 65 approximately 30% of people say they are "highly annoyed." If the standard for DNL 65 has changed, it should be explained somewhere. Otherwise, the newly defined DNL measurement is a much more stringent measure which might be used to "move" people out of a noise area without actually improving their situation while minimizing the noise problem.

G. Figure A.3-2 represents two studies relating percent of people annoyed to DNL noise level. The Schultz Curve is the federal guideline for noise compatibility planning.

3. **Noise Mitigation Measures**

**a. Off-Airport Mitigation Costs**

The draft DEIS is inadequate in its analysis of off-airport mitigation costs for expanding MSP. There is some money set aside in the program for sound proofing within the DNL 65 noise contour, but communities around MSP have been working on a broader package of measures that would need to be implemented if the airport were to expand. This package includes sound insulation beyond the DNL 65 contour as well as assistance in converting land uses to more compatible ones. The work of the Communities Collaborative Group should be included in the cost estimates for MSP expansion in order to make a fairer comparison between a new airport and expansion of the present one.

H. See General Response 2.

While there is acknowledgment that noise impacts occur beyond the generally accepted DNL 65 contour line, there is no mitigation plan proposed for the areas within the DNL 60 and lower contour lines. Further, there was not adequate disclosure of the noise levels measured at monitoring stations, such as stations one, two, and seven. The FEIS should adequately disclose this information.

I. See General Response 2.

Although the DEIS includes substantial information regarding the economic and transportation service benefits generated by the airport and the noise impacts, it is much less thorough in describing the imbalance in airport benefits and disbenefits. The flying public, the regional economy and NWA are the greatest benefactors but the people under the flightpaths pay the highest cost in terms of noise. The DEIS inadequately analyses the externality costs borne by the impacted residents and it inadequately discloses methods that would help to equalize benefits and disbenefits.

J. See General Response 2.

It is noted that in prior documents the Concept 6 plan predicted the need for $3 billion in improvements at MSP and the DEIS lists only $13 million. Minneapolis wants to know what has changed that has resulted in such a substantially lower number.

K. The $3 billion cost was developed through the MAC's Interactive Planning Group (IPG). It reflects projects identified by participating jurisdictions to ameliorate possible impacts. These projects were not necessarily based on federal or state criteria. The $13 million estimate represents the cost of soundproofing and/or purchasing homes within the DNL 65. The legislation enacting the Dual Track directs MAC to spend at least $180 million for noise mitigation between 1996-2002. See General Response 2.

**b. Reducing Noise by Reducing Aircraft Operations – Demand Side Management**

When NWA (and other airlines) offer fares that cut hundreds of dollars off the regular price of a ticket, demand is created that would not otherwise exist. This obviously makes economic sense for NWA. Demand is created which increases load factors, but the increased demand created for price discrimination in favor of those with a high elasticity of demand adds to the burden borne by the noise impacted residents. The DEIS does not apply a similar pricing analysis to potential demand reduction strategies.

L. Airline ticket prices are determined by carriers serving the airport, not the MAC. The forecast demand is not based specifically on ticket pricing; it is based on growth rates and hubbing percentages. See Section II.B.1.3.

The DEIS employs an extreme linear approach to assessing environmental impacts. The analysis accepts a specific forecast of aircraft operations at one end and predicts impacts at the other. These initial forecasts are never questioned. Unlike transportation and electrical power planning, the DEIS ignores demand side management approaches, that is, mitigation measures designed to reduce the demand for air transportation and thereby reduce its negative impacts (section V-A of the DEIS). The Final EIS should disclose the potential to reduce the number of aircraft operations and, thereby, mitigate noise impacts by addressing the following:

* **Modify the Hub-and-Spoke System:** According to page II-6 of the DEIS, 58% of the passengers in years 2000 through 2020 will be connecting passengers. Most of these passengers do not have MSP as an origin or destination because of NWA's hub-and-spoke system. This system which maximizes load factors on hub routes leads to low load factors per plane on "feeder routes" and contributes to peak-hour congestion and delays.

  What would be the impact on the number of operations if NWA were to revise their fleet mix and increase the average size of aircraft utilizing MSP? What would be the impact on the number of operations if NWA revised their hub-and-spoke system such that the number of connecting flights was minimized and the number of passengers per plane was maximized?

* **Limited Implementation of Supplemental Airport Concept and High-Speed Rail Concept:** Two alternatives, the supplemental airport concept and the high-speed rail concept, were eliminated from detailed study in the DEIS because previous analyses concluded that neither could completely displace the need for the major expansion at MSP or a new airport (DEIS page III-14 & 16). However, the DEIS ignores the fact that these alternatives could help to some degree to reduce aircraft operations and noise. They might also postpone the projected levels of on-airport congestion and delay and thereby mitigate economic impacts as well.

  What would be the impact on the number of operations if there were regional investments to create high-speed inter-city rail service as a viable alternative to air service? What would be the impact on the number of operations and the projected levels of on-airport congestion and delay if the supplemental airport concept were implemented to some degree?

* **Impact of Externality Taxes on Ticket Prices and Demand:** What would be the impact on the number of operations if the price of a airline ticket included a fair share of the full cost of environmental externalities? A reasonable externalities tax would account for the true costs of greenhouse gas emissions and other polluting emissions as described below. It should also account for the full costs of quieting aircraft, noise-proofing structures located within the DNL 60 contour line, and other noise mitigation measures.

**M.** M. See Response L above. As with ticket prices, airlines determine flight routings; airports have a very limited opportunity to constrain operations in a deregulated environment. The reference to a 58 percent connection factor on page II-6 of the DEIS actually refers to a previous forecast effort completed in 1990. The forecasts used for EIS analysis were completed in 1993 and do not assume a connection factor of 58 percent. The revised forecasts assume a connection factor of 53 percent. The primary purpose of a hub is to increase load factors on all flights. If average aircraft size were to increase faster than anticipated, aircraft operations would decrease. Based on discussions with Northwest and a review of aircraft purchases and orders, the average aircraft size assumptions are reasonable.

**N.** N. As summarized in Section C.3.a of the EIS, the Minnesota DOT cosponsored a study of high-speed rail service to Chicago. The report, entitled "Tri-State Study of High Speed Rail Service" (May 1991) suggests that high speed rail would decrease aircraft operations by 3 percent or less at MSP. There are no plans for high speed rail. It is also extremely unlikely that there would be sufficient funding for both high speed rail and airport expansion. Any reduction in operations would simply postpone expansion by several years.

Six different alternatives were examined under the supplemental airport concept. The three alternatives providing the greatest reduction in aircraft operations (i.e., diverting regional, major market, or GA operations) would postpone expansion by only a few years and would result in significant disruption to airport users.

**O.** O. See Response V.

4. **Economic Impacts**

**a. State and Regional Economy**

Missing from the DEIS is adequate discussion of the regional economic impacts of each airport alternative. The economic impacts presented in the DEIS are essentially those associated with airport construction and operation, plus some local business-related considerations. Missing entirely is the rationale for having an adequate airport, namely, to provide an economic environment for sustaining the essential domestic and global market linkages of existing and new exports-producing commercial enterprises. Existing and new businesses, as well as NWA, can adjust to the lack of air access by expanding at another place that provides the superior air access. The State of Minnesota and the City of Minneapolis lack this flexibility, of course. The Final EIS should include a detailed regional economic analysis which is entirely absent from the DEIS.

P. See General Response 6.

**b. Impact on Existing Businesses**

The DEIS is inadequate because it does not fully describe the potential impacts of the various alternatives on Downtown Minneapolis' business. It also does not describe the impacts on the Mall of America or the rest of the 494 corridor. The answers to these questions are vital to decision makers if they are to make an enlightened decision about the future of the region.

Q. See General Responses 1 and 6, and the report, "Economic Impacts of the Alternative Airport Development Scenarios", MAC, February 1996.

Minneapolis and its downtown business district, like most other major air node cities, is the nerve center of its extended economic region. Most high-order producer services, like banking, finance, real estate, and business, legal, management, consulting, and other professional services, are concentrated in the air node region's core area, particularly its principal downtown business district. In 1990, the Minneapolis downtown district had more than 3,000 businesses, of which roughly 80 percent were engaged in two or more strategic management functions. Without easy and quick access, the many technology-intensive businesses that now characterize much of the economic base of the MSP economic region could not exist in an increasingly competitive economic environment. The Final EIS should include an analysis of the likely effects, over time, of each alternative on Downtown businesses and Downtown as a business location.

R. See General Responses 1 and 6, and the report, "Economic Impacts of the Alternative Airport Development Scenarios", MAC, February 1996.

**c. Savings Resulting From Delayed Improvements**

The DEIS indicates that the forecasted level of on-airport congestion and delays is driving the need for expansion and other improvements at MSP (refer to "Future Needs" on page i). The DEIS ignores the potential savings that could result from delaying these improvements at MSP by reducing the number of aircraft operations by means of the above-described noise-mitigating measures (refer to 3. b.)

S. See Responses L, M, N and V.

**d. Impact of Redevelopment of MSP Site**

The DEIS neither attempts to describe the amount of development, jobs, and tax base generated on the existing MSP site if the airport were moved nor the impact on job centers such as Downtown Minneapolis, Downtown St. Paul, or Bloomington.

T. See General Response 1.

**5. Air Quality and Greenhouse Gas Concerns**

The DEIS limits the air quality discussion to two pollutants of concern, carbon monoxide and sulfur dioxide. The analysis ignores greenhouse gases and externality costs and the potential effects of carbon or energy taxes.

For decades scientists have known of the direct relationship between greenhouse gases and global climate change. The international scientific body most knowledgeable on this matter, the United Nations' Intergovernmental Panel on Climate Change (IPCC), has concluded that, unless greenhouse gas emissions are significantly reduced, the delicate balance of world climatic conditions will be destabilized over the next few decades. The IPCC predicts coastal flooding, more frequent and violent storms, heat waves and cold snaps, northward migration of tropical diseases, disruption of agriculture and forestry, and severe economic and human consequences.

This level of certainty no longer makes it allowable for responsible governmental agencies to deny the importance of accounting for greenhouse gasses and global climate change.

The accompanying Attachment 1 shows that 1.6 million tons of carbon dioxide ($CO_2$), the primary greenhouse gas, are associated with annual operations at MSP (year 2020; refer to Attachment 1). Since this calculation was based on the data in the DEIS, it also includes the fuel consumed by aircraft flying to and from the airport. The Final EIS should disclose the fact that airport operations result in significant contributions of greenhouse gases.

**6. Air Quality Mitigating Measures**

**a. Environmental Externalities**

The second accompanying table (Attachment 2), taken from the book Steering a New Course by Deborah Gordon (1991), shows the emissions associated with a variety of modes of transportation. Based on the assumptions in the book, a diesel bus will emit about 45% less $CO_2$ on a passenger-mile basis than the average jet. An Amtrak train emits 62% fewer emissions.

Few people make travel plans on the basis of which mode of transportation causes the least harm to the environment. However, within the not-to-distant future, this may no longer be so. The price of a ticket does not include externalities such as the environmental costs of burning fossil fuels. Over the past decade, numerous governments all over the world have considered laws and taxes to address this issue. Norway, Sweden and Denmark have already added carbon dioxide taxes to the price of fuel and have dedicated the revenues to the development of alternatives that are more environmentally sustainable.

Minnesota state law requires the Public Utilities Commission to consider the environmental costs of power production when evaluating new power plants. This EIS should do no less. The Final EIS should account for the effects on passenger demand given the possibility of an externality tax during the planning period.

**U.** U. The calculation of $CO_2$ emissions submitted by the City includes aircraft block fuel, which is the total fuel consumed between airports (gate to gate). Most of this fuel is expended at higher altitudes outside the metropolitan area. Assuming 5% of the block fuel is consumed within the metropolitan area (a very conservative assumption) and the conversion factors cited by the City, the total $CO_2$ emissions would be about 470 thousand tons per year for the MSP Alternative — compared to about 510 thousand tons for the No Action Alternative, and 11.2 million tons for the metropolitan area.

The MSP Alternative would therefore contribute less than 5% of the region's $CO_2$ emissions in 2020. Targets for limiting these emissions is an unresolved issue currently being addressed by international organizations.

**V.** V. The imposition of a carbon or energy externality tax could eventually lead to purchases of more efficient aircraft. However, initially a tax would be translated into increased ticket prices. Such a tax would, however, also apply to gasoline and other energy sources and would therefore raise transportation costs generally across the board. The effect of such cost increases in transportation with available communication options is difficult to determine and beyond the scope of this environmental impact study. This issue must be addressed internationally, as well as by the United States and individual states. Metropolitan areas and individual airports will have to respond to these changes as they occur.

A decrease in passenger demand because of an externality tax would not alter the MSP LTCP, but could change the *timing* for the addition of gates and related facilities. See General Response 4.

ATTACHMENT 1

| Carbon Dioxide Emissions Associated With the Airport Alternatives | | | | |
|---|---|---|---|---|
| Carbon Dioxide (CO2) in thousands of tons per year | | | | |
| Factor | MSP Expansion | New Airport | No Action | MSP Exp. V. New |
| Fuel consumption (1) | | | | |
| Aircraft | 120.96 | 114.85 | 121.49 | 5% |
| Vehicles | 39.18 | 41.00 | 39.28 | -4% |
| Total | 160.14 | 155.85 | 160.77 | 3% |
| | | | | |
| CO2 Generation | | | | |
| Aircraft (2) | 1,227.7 | 1,165.7 | 1,233.1 | 5% |
| Vehicles (3) | 392.0 | 410.2 | 393.0 | -4% |
| **Total** | **1,619.7** | **1,575.9** | **1,626.1** | **3%** |
| | | | | |
| (1) Millions of gallons per year in the year 2020. | | | | |
| Source: Table J-10 of the Airport EIS | | | | |
| (2) Conversion factor: 20.30 pounds of CO2 per gallon of jet fuel. | | | | |
| Source: "1991 Transportation Data Book," U.S. Dept. of Energy | | | | |
| (3) Conversion factor: 20.01 pounds of CO2 per gallon of gasoline. | | | | |
| Source: "State of Minnesota Maxi-Audit Instruction manual" | | | | |
| | | | | |
| (CO2; JMO/mo; 1/23/96) | | | | |

## Table 10
## Comparison of Emissions Between Various Passenger-Transport Modes*

| Transport Mode | $CO_2$ (kg/pass-mi) | NMHC[1] | CO | $NO_x$ | TSP | $SO_2$[2] |
|---|---|---|---|---|---|---|
| | | (in grams/passenger-mile) | | | | |
| TRUCK (gasoline): | | | | | | |
| –Single occupancy | 0.70 | 3.20 | 27.46 | 2.05 | 0.01 | 0.23 |
| –Average occupancy | 0.37 | 1.68 | 14.45 | 1.08 | 0.01 | 0.12 |
| CAR: | | | | | | |
| –Single occupancy | 0.51 | 2.57 | 20.36 | 1.61 | 0.04 | 0.07 |
| –Average occupancy | 0.31 | 1.51 | 11.98 | 0.95 | 0.03 | 0.04 |
| VEHICLE RIDESHARE: | | | | | | |
| –3 person carpool | 0.33 | 0.86 | 6.79 | 0.54 | 0.01 | 0.05 |
| –4 person carpool | 0.22 | 0.64 | 5.09 | 0.40 | 0.01 | 0.03 |
| –9 person vanpool | 0.07 | 0.36 | 3.05 | 0.23 | <0.01 | 0.03 |
| BUS (diesel): | | | | | | |
| –Transit | 0.29 | 0.25 | 1.21 | 1.82 | 0.17 | n/a |
| RAIL: | | | | | | |
| –Amtrak/intercity | | | | | | |
| diesel | 0.20 | 0.12 | 0.6 | 0.9 | 0.08 | 0.51 |
| electric | 0.12 | neg | 0.05 | 1.1 | 0.08 | 2.07 |
| –Commuter (diesel) | 0.24 | 1.04 | 1.44 | 4.10 | 0.28 | 0.63 |
| –Transit (electric) | 0.17 | neg | 0.06 | 1.48 | 0.11 | 2.89 |
| AIRCRAFT[3] | 0.53 | 0.05 | 0.52 | 1.08 | n/a | 0.08 |
| BICYCLE | 0 | 0 | 0 | 0 | 0 | 0 |
| WALK | 0 | 0 | 0 | 0 | 0 | 0 |

Notes:
* Emission factors (convert from emissions in vehicle-miles to emissions in passenger-miles using occupancy factors from Table 2):
Diesel: 1.68 x $10^{-4}$ lb $CO_2$/Btu
Gasoline: 1.71 x $10^{-4}$ lb $CO_2$/Btu
Jet fuel: 1.66 x $10^{-4}$ lb $CO_2$/Btu
Electricity: 1.04 x $10^{-4}$ lb $CO_2$/Btu-equivalent; neg NMHC; 0.04 lb CO/MBtu; 0.92 lb $NO_x$/MBtu; 1.8 lb $SO_2$/MBtu; 0.067 lb TSP/MBtu (Average 1987 power plant emission in U.S.).
Heavy-duty diesel engines: 2.51g NMHC/veh-mi; 12.3g CO/veh-mi; 18.5g $NO_x$/veh-mi; 1.7g TSP/veh-mi.
Single passenger auto: 2.57g NMHC/veh-mi; 20.36g CO/veh-mi; 1.61g $NO_x$/veh-mi; 0.04g TSP/veh-mi.
Single passenger light truck: 3.2g NMHC/veh-mi; 27.5g CO/veh-mi; 2.1g $NO_x$/veh-mi; 0.01g TSP/veh-mi.

1. NMHC—Nonmethane hydrocarbons or reactive organic compounds, 9 RVP.
2. $SO_2$ emissions calculated based on 0.03 weight percent sulfur in gasoline fuel.
3. Assumes a PW4050-powered 767-200 flying 288 statute miles (250 nautical miles) seating 65% of its 240-passenger capacity. (Note: emissions per passenger-mile change proportionately with passenger occupancy—e.g., if this aircraft was only 25% full, emission factors would increase by a factor of 2.6.)

*Sources: Davis (ORNL) 1989; EIA, May 1989; author's calculations; EPA Mobile4 model and personal communications with Lois Platte (EPA Ann Arbor Laboratory); personal communications with Walt Stevenson (EPA Research Triangle Park, NC); personal communications with Frank Pane, United Technologies-Pratt and Whitney, East Hartford, CT.*

b. **Reducing Emissions by Reducing Operations**

Like the above point regarding demand side management as a noise mitigation measure, the DEIS ignores the potential to reduce air emissions by reducing the number of flight operations. The Final EIS should disclose the potential impact on emissions by reducing the number of aircraft operations by means of the above-described noise-mitigating measures (refer to 3. b.) or measures such as the movement ot a fleet with larger average sized aircraft.

W. See Response L. Also, MAC cannot legally limit commercial operations at MSP or force carriers to use larger aircraft to address air quality concerns. The proposed action will have less CO emissions than no action.

c. **Transportation To and From the Airport**

The DEIS assumes no change in ground transportation mode share (refer to DEIS, section V-W). On page V-213, the DEIS states that public bus service is expected to continue to represent less than 1% of all the travel demand generated to and from MSP. The DEIS ignores the potential for mass transit to mitigate air quality impacts. As Attachments 1 and 2 point out, vehicles contribute about 400,000 tons of $CO_2$ per year and, compared to a single-occupant car, a city bus contributes 43% less $CO_2$.

Given the above facts regarding the likelihood of carbon or energy taxes during the 20-year planning period and future highway congestion, the mode share should shift in favor of transit alternatives which are more environmentally benign. The Metropolitan Council's current Travel Behavior Inventory indicates that approximately 1 out of every 3 non-resident trips to or from the airport has Downtown Minneapolis as its origin or destination. This represents a substantial opportunity for improved transit service, especially if the terminal were moved 5 miles closer to Downtown. The Final EIS should disclose the potential to mitigate air quality impacts through increased transit use.

X. The 1990 Travel Behavior Inventory (TBI) reported that thirty-two percent (32%) of the non-resident trips from the main terminal were bound for the Minneapolis Central Business District (CBD). In 1990, of the 91,208 daily vehicle trips to and from the airport, 7,151 were reported by the TBI as being non-resident oriented vehicle trips. These relationships, applied to the forecast year, results in an estimated 3,380 vehicles bound for the Minneapolis CBD, carrying approximately 5,250 persons. The conversion of these person trips from automobiles to transit could result in a reduction in carbon monoxide (CO) levels of 510,300 grams per day for the No Action Alternative and 279,300 grams per day for the MSP Alternative.

It would seem that section V-J dealing with energy consumption relied upon the extensive transportation access information contained in section V-W of the DEIS. What is not clear in section V-J is why fuel consumption for vehicles is only 4% less for the MSP Alternative versus the New Airport Alternative (refer to Attachment 1) even though the New Airport would be located 15 miles further away from the region's population center which is located near Downtown Minneapolis.

Y. The calculation of energy consumption is not solely a function of distance. Road congestion and its impact on speed affects the rate of fuel consumption. Also, trips to the airport come from all around the region, not all would experience an increase in distance.

The mechanics of a travel demand model, with its use of a gravity model function to distribute trips among transportation analysis zones, reduces the difference between the alternatives. Whether the site is at the current location or a new location, the model distributes some trips based on the magnitude and proximity of other land uses. For example, workers at a new airport site may be more inclined to find homes in Dakota County closer to that site than if the airport remains at its current location. Only those trip demands that cannot be met at some other location ( i.e., some trips to the central business districts) can be expected to have the same destination under the different alternatives.

7. **Archaeological Resources**

The limitation of the time frame to 2020 for needed improvements to the air transportation capacity facilities has a detrimental impact on the evaluation process. For example, the MSP alternative evaluated in the DEIS notes little impact on Archeological Resources (refer to page V-25). However, a third parallel runway that would not be needed until after 2020 to accommodate forecasted growth, would likely have significant impact on archeological resources in the Fort Snelling National Park area. Also, the recreational aspects of Fort Snelling would also be severely compromised.

Z. See General Response 5 for discussion of third parallel runway. Comment noted on Forster's terns.

7. **Biotic Communities**

The DEIS states that potential impacts on the Forster's Tern -- a bird that has been designated as one of "state special species concern" -- are unavoidable with expansion of MSP (page V- 48). In the past these birds have nested in Mother's Lake, an area which would be subject to significant construction nearby using the Concept 6 expansion scheme.

**8. Increased Risk of Accidents Due to Bird-Aircraft Hazards**

Given the terrain around MSP, as stated on page V-41, there is always the potential for a aircraft bird strike. The DEIS notes that those strikes are a safety concern, especially when the aircraft is below 500 feet. The MSP Alternative involves thousands of overflights over Mother's Lake with almost half below 500 feet. Just beyond Mother's Lake are densely populated residential neighborhoods, complete with schools, churches and parks. Even though the possibility of aircraft accidents is extremely low, the potential for an increased risk of an accident over this densely populated area because of a bird strike should be noted in the Final EIS.

AA. AA. The DEIS acknowledged this risk in the Summary on p. V-46, as does the FEIS in Section V.D. The new north south runway will normally have no operations over Mother Lake.

**9. Endangered and Threatened Species**

The DEIS deals with the issue of bald eagles differently between the MSP Alternative and the New Airport Alternative. On page V-48 there is no discussion about any agreement between the FAA and the United States Fish and Wildlife Service, the Minnesota Department of Natural Resources and the Minnesota Valley National Wildlife Refuge regarding the bald eagle nesting areas near MSP.

However, on page V-52, under the New Airport Alternative analysis, there is reference to a Memoranda of Agreement between the FAA and the United States Fish and Wildlife Service and the National Park Service that limits flights over national wildlife refuges to 2,000 feet above ground level. If this agreement is to be operative at the MSP site, it should be so stated in the Final EIS.

BB. BB. The Interagency Agreement between FAA, U.S. Fish and Wildlife Service and National Park Service regarding overflight altitudes over national wildlife refuges applies nationwide. The Agreement does not "limit" flights below 2,000 feet AGL; it establishes 2,000 feet AGL as a requested minimum altitude which FAA is to communicate to airlines and pilots.

**10. Historic/Architectural Resources**

The DEIS, on page V-109, states that the MSP airport poses an ongoing threat to the preservation of nearby historic districts. The Final EIS should also note that funeral services and grave visitations at the Fort Snelling National Cemetery are disrupted by aircraft operations. This will only grow worse with additional flights at MSP.

CC. CC. This is stated on p. V-109 (next to last paragraph) in the DEIS.

**11. Land Use**

On page V-122, the DEIS states that there will be no acquisition of land in Minneapolis. However, in other places there are references to number of people displaced. For example, on page V-180, there is acknowledgment that residences would need to be acquired for highway construction. It seems to make little sense to differentiate homes taken for actual airport expansion versus those taken in order to construct a highway to get to the airport. Also MAC representatives have commented about the MAC acquiring land within the "natural boundaries" of the airport. Some of this land, the Navy Annex and St. Kevin's area, is in Minneapolis. Clarification of this point is required.

DD. DD. This has been corrected.

On page V-123, the DEIS notes that the Metropolitan Council and the MAC have been working with the communities around the airport to develop a set of land use mitigation measures. These measures should be included in the document and the cost of them included in the cost of the MSP expansion alternative.

EE. EE. See Appendix B of the FEIS for a complete description of proposed noise mitigation measures.

**12. Induced Socioeconomic Impacts**

The City of Minneapolis believes that the statement in the first paragraph under the table on V-114 needs to be clarified. That statement reads ". . . if the terminal building is moved, there will be an opportunity for the conversion of the single family area directly abutting the new entrance to be converted to commercial, office, or hotel uses relating to the new "front dooor" of the airport." The City's professional planning staff would agree with this professional judgement of MAC and the consultants. However, the City Council did not make this finding and did not generate any of the figures in the accompanying table, N-2. FF.

FF. See revised Section V.O.1.2, Land Use Impacts -- MSP Alternative.

**13. Delays on the Ground**

Although the DEIS describes the delay expected for aircraft operations, it does not provide a comparison of the total landside delay for the 3 alternatives. The Final EIS should include a table that shows average trip time to or from the airport plus the potential delay caused by on-airport aircraft operations. GG.

GG. The DEIS analyzed airfield delay (see Section V.B.1.4., Airport Capacity) and driving time delay (see Section V.W. Transportation Access). The time variables related to typical landside delay for such functions as parking, rental car return and walking were not accounted for within the DEIS for any of the alternatives. These variables involve many subjective assumptions and also require a detailed terminal design for each alternative to properly assess the total delay time. The key factors identified in the Scoping Decision were driving time and airport capacity.

**14. Delay Costs and Savings**

The delay saving in building a new airport is $58 million as opposed to $28 for expansion of MSP (Figure 5). Computations should be continued as to what would happen beyond 2020 if a third parallel runway could not be built at MSP. With no improvements to the existing field there would be $66 million in delay costs. A North-South Runway built between now and 2020, but with no new third parallel runway, might result in the same sort of delay cost numbers. HH.

HH. The planning horizon for the EIS is the year 2020. The concept adopted by the MAC for expansion of MSP meets the facility requirements identified using the baseline forecasts. Based on the forecasts, a fifth runway is not required to accommodate the increased activity and was therefore not incorporated into the MSP Alternative. Should another runway be necessary in the future, a separate EIS would have to be completed and potential delay costs determined for a no-build action. See also U.S. EPA Response B and General Responses 4 and 5.

## B. COMMENTS REGARDING NORTHWEST AIRLINE'S PLAN FOR EXPANSION OF THE PRESENT AIRPORT

Although Northwest Airline's plan was not studied throughout the EIS process, it has been introduced into the process, albeit very late, and therefore, the City feels compelled to at least comment on some aspects of the plan. Nonetheless, Northwest's plan should either be fully analyzed as a new alternative in the Final EIS or the Final EIS should state clearly that this plan has not been analyzed on a par with the other alternatives. II.

II. See General Response 3.

Northwest is the dominant carrier in the Minneapolis-St. Paul market and wants to continue in that near monopoly role because it is financially beneficial for the company's stockholders. This hub that NWA has assembled at MSP may not, however, be in the best interest of the region's flying public since competition could drive down prices and possibly improve service. Minneapolis believes that any new airport or expansion of MSP should be at a scale that allows the entry into this market of another airline that may want to compete with NWA. Expansion should not proceed so incrementally that only a few gates are opened at any one time. JJ.

JJ. See General Response 3.

Northwest Airlines claims that by making relatively minor changes to the present airport, the facility could meet the forecasted 2020 demand. While appealing on the surface because of its unverified low price tag, Northwest's plan could ultimately leave the region with an inadequate facility and no room for expansion if traffic growth should exceed the forecasts on which it is predicated. It is also unclear how NWA would meet the demand after 2020. KK.

KK. See General Response 3.

Since no written documentation had been provided to the public by Northwest Airlines as of 9 January 1996, these comments are based on verbal presentations made by NWA to the Metropolitan Airports Commission (MAC), the MAC Dual Track Task Force and the State Legislative Advisory Committee.

It would appear that the NWA plan for expanding the present terminal facility to meet future needs is quite flawed. First and foremost, the FAA (at the Dual Track Task Force meeting) has expressed reservations regarding the ability to move aircraft from the gates to operational runway positions using this plan. Delays would be common and exacerbated by instrument flight rule conditions.

LL. LL. See General Response 3.

The plan adopted by the MAC for expansion purposes -- Concept 6 -- calls for a crossover taxiway at the east end of the parallel runways. This could be accommodated because of the new West Terminal envisioned in that plan. MAC's Concept 6 plan has strong support from the FAA because it would facilitate aircraft ground movements and lessen delays. The NWA plan does not call for this crossover taxiway until far into the future, and at a different location than that identified by the MAC since the NWA plan does not call for a new West Terminal. Construction of the crossover taxiway with the present terminal configuration would cause considerable problems, such as construction over the inbound roadway to the terminal. At this time no Simulation Modeling has been run on the NWA plan (SIMMOD is an FAA computer program designed to analyze aircraft movements leading to delay identification points and to calculate delay costs). This should be a number one priority in order to adequately assess the plans capabilities.

MM. MM. See General Response 3.

The NWA plan provides minimal terminal expansion space during a time when the number of passengers is projected to increase by 50%. The NWA plan is also 8,000 parking spaces short of the number proposed by the MAC in Concept 6. Given the fact that parking is already a problem at MSP on many occasions, this shortfall would be highly significant.

NN NN. See General Response 3.

The NWA plan is based on very small operational increases -- 1.0% and 0.5% a year as compared to the FAA forecast of 2.4% annual increases through 2010. These larger increases compounded over time would have MSP needing a third parallel runway, in addition to the proposed North-South runway much sooner than the currently projected 2020. Environmental impacts of that third parallel runway have never been fully assessed. A cursory analysis, however, shows that the third parallel has tremendous environmental implications for neighborhoods in south Minneapolis and Mendota Heights and would impact a national landmark, Fort Snelling.

OO. OO. See General Response 5 related to the potential for a third parallel runway and General Response 4 related to forecasts.

Northwest's plan does not take into account any off-airport mitigation costs. Clearly, the level of expansion envisioned in the plan would cause dramatic upheavals in the area directly adjacent to the airport.

PP. PP. See General Response 3.

NWA talks about orchestrating incremental capacity increases at MSP. Others would argue that those increments would translate into constant construction and turmoil at the airport into the foreseeable future. The roadway construction in front of the terminal for the past three years has been a logistical nightmare for the MAC staff, and certainly not a pleasant experience for the flying public. This kind of upheaval would be the constant norm of the future at MSP under the Northwest plan.

QQ. QQ. See General Response 3.

NWA's alternative should not be included in the Final EIS unless the analysis of the NWA plan is brought up to the standard of the other alternatives and a public comment period of reasonable length is established.

RR. RR. See General Response 3.

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February 5, 1996

Mr. Nigel Finney
Metropolitan Airports Commission
West Terminal Area
Minneapolis-St. Paul International Airport
6040 28th Avenue South
Minneapolis, Minnesota 55450

Mr. Glen Orcutt
Airport Planner
U.S. Department of Transportation
Federal Aviation Administration
Airport Districts Office
6020 28th Avenue South
Suite 102
Minneapolis, Minnesota 55450

Re: Draft Environmental Impact Statement Regarding Dual Track Airport Planning Process, Hennepin and Dakota Counties, Minnesota

Dear Mr. Finney and Mr. Orcutt:

I am writing on behalf of the City of Richfield, Minnesota ("Richfield"), to request an extension of time in which to submit Richfield's comments on the Draft EIS for the Dual Track Airport Planning Process. Despite Richfield's best efforts to complete its review of the Draft EIS by the current February 13, 1996 deadline, the complexity of the issues raised by the Draft EIS and the need to obtain assistance from various consultants in addressing technical issues have made it impossible to meet the current deadline.

Richfield will continue to give this matter the highest priority and will devote all resources necessary to complete its comments as soon as possible. In light of the substantial amount of work remaining to be completed, Richfield respectfully requests a 45-day extension of time, until March 29, 1996, in which to submit its comments. Richfield believes that this additional time is necessary for it to have a meaningful opportunity to comment on this exceptionally important document. The requested extension will leave abundant time to complete the final EIS, as well as the related reports from the Metropolitan Airports Commission and Metropolitan Council, in accordance with the Dual Track Airport Planning Process prescribed by the Minnesota Legislature.

Thank you very much for your consideration of this request.

Sincerely,

Steven F. Pflaum

SFP:gr

cc: Ms. Jenn Unruh
Mr. James D. Prosser

U.S. Department
of Transportation
Federal Aviation
Administration

Airport District Office - Minneapolis
6020-28th Avenue S. Rm 102
Minneapolis, MN 55450-2706

February 9, 1996

Mr. Steven F. Pflaum
McDermott, Will & Emery
227 West Monroe Street
Chicago, IL 60606-5096

Draft Environmental Impact Statement
Dual Track Airport Planning Process

Dear Mr. Pflaum:

This is in response to your letter of February 5, 1996, sent to both me and Nigel Finney, of the Metropolitan Airports Commission requesting a 45 day extension of time, until March 29, 1996, for the City of Richfield to submit its comments on the subject document.

The involvement of the public and government agencies was an integral part in the Dual Track Airport Planning Process starting with the enactment of the Metropolitan Airport Planning Act by the Minnesota legislature in 1989. Early coordination with the public, agencies, and affected jurisdictions began with the preparation of the First Phase Scoping Report and public scoping meetings.

Following the First Phase Scoping, two technical committees were formed, the MSP Technical Committee and the New Airport Technical Committee. Members of these committees included affected cities, regional state and federal agencies, airport users and interest groups. Monthly meeting were held to review the technical approach and the products of the airport planning process. Committee members and others received copies of each document in the Dual Track Process and were invited to submit comments on issues discussed and methodologies used.

Also, the Dual Track Airport Planning Process Task Force, consisting of representatives from the affected jurisdictions, agencies, airport users and interest groups was formed.

There have been opportunities to comment, both formally and informally, throughout the Planning Process. Formal input was solicited at a series of public hearings conducted on each of the scoping reports and environmental documents and held both in the Twin Cities and Dakota County.

We believe sufficient information has been available, and ample opportunity existed for the public and decision makers to make informed decisions. Other opportunities for public involvement will be available at key dates during the Dual Track Process. As you are aware, the MAC and Metropolitan Council will take action on their recommendations to the Legislature in mid-March. We feel that it is important to have comments on the DEIS by the previously announced February 13, date, for this information to be available as part of the decision making process. For these reasons your request for an extension of time is denied.

If you have any questions on this matter, please feel free to contact me.

Sincerely,

Glen Orcutt
Program Manager

cc: Mr. James D. Prosser
City Manager
6700 Portland Avenue
Richfield, Minnesota 55423-2599

Nigel Finney, MAC

CITY OF RICHFIELD

6700 Portland Avenue • Richfield, Minnesota 55423-2599

City Manager: James D. Prosser
Mayor: Martin Kirsch
Council: Don Priebe, Susan Rosenberg, Michael Sandahl, Russ Susag

February 13, 1996

Mr. Nigel Finney, Deputy Executive Director
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, MN 55450

## I. INTRODUCTION

The City of Richfield, Minnesota ("Richfield") submits these comments on the Draft Environmental Impact Statement ("DEIS") for the Dual Track Airport Planning Process at Minneapolis/St. Paul Airport ("MSP"). As explained below, these comments are preliminary in nature because Richfield has been denied the time necessary to provide it a meaningful opportunity to comments.

The public has been afforded only 50 days, including the Christmas and New Year's holidays, in which to comment on the DEIS. In a February 5, 1996 letter to the FAA and the Metropolitan Airports Commission (MAC) by Steven F. Pflaum, Richfield's special airport counsel, Richfield requested a 45-day extension of time in which to submit its comments on the DEIS. Mr. Pflaum explained the basis for the requested extension as follows:

> "Despite Richfield's best efforts to complete its review of the Draft EIS by the current February 13, 1996 deadline, the complexity of the issues raised by the Draft EIS and the need to obtain assistance form various consultants in addressing technical issues have made it impossible to meet the current deadline." (A copy of Mr. Pflaum's letter is included in Appendix A hereto.)

The requested extension was denied in a letter sent on behalf of the FAA and MAC by Glen Orcutt, FAA Program manager, on February 9, 1996. (A copy of Mr. Orcutt's letter is included in Appendix B hereto.) Mr. Orcutt justified denying Richfield any additional time to submit comments on the basis of purported past and future opportunities to comment *on the merits of the proposals* and to arrive at informed decisions:

> "There have been opportunities to comment, both formally and informally, throughout the planning Process. Formal input was solicited at a series of public

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hearings conducted on each of the scoping reports and environmental documents and held both in the Twin Cities and Dakota County.

"We believe sufficient information has been available, and ample opportunity existed for the public and decision makers to make informed decisions. Other opportunities for public involvement will be available at key dates during the Dual Track Process." Appendix B at 1-2.

The denial of the requested extension violates federal law. Paragraph 76 of FAA Order 1050.1D requires the FAA to grant an extension of time in circumstances such as these:

"A time period for comment may not be fewer than 45 days. . . . Requests for reasonable extension of time, when warranted by the magnitude and complexity of the statement or the extent of citizen interest, shall be granted." (Emphasis added.)

A.

The denial of the requested extension on the asserted ground that the there have been opportunities to comment on the planning process belies a fundamental misunderstanding of the National Environmental Policy Act (NEPA) and Minnesota Environmental Policy Act (MPEA) processes. Richfield desires to comment on the adequacy of the DEIS, not just on the merits of the project. See CEQ Regs., 40 C.F.R. State Statute 1503.3(a). Richfield obviously had no opportunity to comment on the adequacy of the DEIS before it was released for public comment in December 1995. Moreover, without additional time, Richfield cannot discharge its responsibility to apprise its citizenry of the impacts that they can reasonably expect to experience from approval of the proposed project.

Because Richfield has been denied a meaningful opportunity to comment on the DEIS, it is unable at the time to provide the kind of thorough, specific comments that are contemplated by Section 1503.3 of the CEQ Regulations. The following preliminary comments consist of conceptual-level criticisms of the DEIS. Richfield reserves the right (1) to rely on the denial of its meaningful opportunity to comment as a basis for challenging any decision by the responsible government agencies to approve the adequacy of the DEIS or to undertake the north-south runway project, and (2) to contend that the administrative record is incomplete and/or that Richfield is entitled to supplement it.

B.

The City of Richfield has actively participated in all phases of the Dual Track process, including attendance at MSP Technical Committee meetings and submission of comments to public documents. We have requested information regarding how the INM calculates the ground level noise impact into the noise contours. Without this information, we cannot determine if the DEIS adequately addresses the need for mitigation of single-family residential properties. It is the responsibility of the City's elected officials and staff to pursue answers to information which is vague and/or incomplete. Lacking the detailed information that is an inherent requirement of an environmental impact statement, the City cannot effectively plan for the future.

C.

The City is further concerned that our requests will never be adequately answered. The timeline for the environmental documentation which will provide the backdrop for a MAC and Met Council recommendation, and subsequent legislative decision, has been driven by external forces. This truncated timeline has effectively limited any further opportunity for impacted communities to receive the information which is so crucial.

D.

It is within this context that the City provides comments which question the sufficiency of the Dual Track DEIS.

A. MAC and FAA provided a 68-day comment period, which is longer than the required minimum 45-day comment period as stated in FAA Order 5050.4A, Chapter 91e. It was also necessary to close the official comment period on February 13, 1996 to allow the concerns expressed during the comment period to be reviewed by the MAC and Metropolitan Council prior to making a recommendation to the Minnesota legislature by mid-March (as requested by the Governor and several state legislators). An extension of the comment period to March 26 would have unnecessarily delayed MAC's recommendation.

Ample opportunity was provided to both agencies and citizens, including the City of Richfield, to provide input and become familiar with the issues, impacts, concepts and alternatives developed early in the process and presented in the Draft EIS. In addition, the February 13 deadline for comment on the Draft EIS did not and will not preclude any party from offering further input to the decision-making process. Under these circumstances, a denial for extension of the official comment period is consistent with Paragraph 76 of FAA Order 1050.1D.

B. Although the Draft EIS was not available for comment prior to its release to the public in December 1995, the merits of the project alternatives and substantial content have been addressed throughout the Dual Track Process in the environmental, scoping, and long-term comprehensive plan documents. This, and a nearly 10-week comment period for the Draft EIS, allowed ample opportunity for both agencies and the general public to provide specific comments on bo the merits of the alternatives discussed and the adequacy o the Draft EIS consistent with 40 C.F.R. 1503.3 (a).

The FAA and MAC welcome agency and public input at any time; however, it was necessary to close the Draft EIS public comment period on February 13 for the reasons described above.

C. The requested INM information has been provided to Richfield. A more detailed discussion of typical aircraft noise included within the INM that are experienced at the ground level is included in Section V.Q of the FEIS.

D. The FEIS affords affected communities the opportunity to receive, review and comment on additional information. The DEIS comments by affected communities were available to the MAC, Metropolitan Council and Legislature, as was the opportunity to testify.

## II. Overall Comments

In reviewing the document, we have found that the DEIS is incomplete and lacks substantial information. This information is essential not only for the impacted communities to conduct an adequate review and make informed decisions, but also for the political bodies which must make decisions, regarding the long-term issues. The DEIS, overall, is more of a summary report of past work related to the Dual Track Airport Planning Process with few detailed analyses and completely omits the backup. **E.**

The largest weakness of the DEIS is that it fails the test of reasonableness and fairness. The DEIS compares a partially developed, four runway MSP to a fully developed, six runway "ultimate" airport. This is an inequitable comparison. The DEIS segments the MSP improvements and compares the segmented components to a fully developed site. Further, such a comparison will result in a decision by state and regional political bodies that, not only is based on an incomplete analysis, but may also be "predetermined." A fairer comparison would be a five runway MSP to a five runway new airport. This would permit a more reasonable comparison of capacity, costs, and impacts, and therefore, a fairer planning and decision-making process. **F.**

By taking the more regional, macro level approach, the DEIS minimizes the impacts at the local, or micro level. This is a significant deficiency, as the micro level issues are truly macro level to the impacted communities. The larger issue for the region may be whether the airport should remain at its current location or should move to a new location, but whichever alternative is selected, many communities will be dramatically and drastically impacted. These communities must thoroughly review and assess the micro level impacts to ensure their long-term livability and sustainability. Without addressing these specific impacts, each affected community cannot determine the costs and impacts, and therefore, make decision. **G.**

In addition to the lack of detailed analyses, the DEIS mitigation sections are also incomplete and lacking substance. In many sections, there are only a few sentences discussing mitigation and in some sections mitigation is not mentioned at all. A key purpose of an EIS is to describe, in detail, how impacts will be mitigated and the costs of the mitigation program. With little or no discussion of mitigation, Richfield cannot ascertain the soundness of the planning process. **H.**

The DEIS does not account for all of the costs attributed to the MSP alternative. Costs such as mitigation costs, economic assessments, and local transportation improvements have been omitted. Again, this information is key for review and decision-making. These are critical elements from Richfield's perspective. An independent audit is warranted to determine if all of the costs have been appropriately accounted for and to ensure that a selection of one alternative has not been predetermined. **I.**

In many sections, the impacts to communities are combined together for a cumulative impact. While this may be necessary to assess the overall impact of the alternative, it is impossible for each community to determine the impact to their individual community. Without breaking out this information by community, Richfield cannot accurately assess the community impacts. **J.**

The document is not developed fully enough to address the sequencing or phasing of the improvements. The phasing of improvement may significantly impact the economic benefits to Richfield as well as the mitigation plans. This issue must be addressed for Richfield to adequately respond to the document. **K.**

E. The DEIS contained sufficient information to adequately disclose potential environmental consequences and to allow opportunity for meaningful comment by the public. However, there is an opportunity to comment on the information contained in this FEIS. The "backup" material is included in the EIS by reference and in Appendix A, which is consistent with the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA.

F. The recommended MSP development concept (Concept 6) and the recommended New Airport development concept reflected the culmination of detailed and thorough technical and environmental analyses. A five-runway MSP concept was not proposed because the extraordinary cost of land acquisition, construction and mitigation would not offset the financial benefit resulting from fewer air delays with a fifth runway. The New Airport plan included six runways because it would be built on a new site, which would inherently make the cost of six runways less expensive. Differences in airfield capacity were addressed in the comparison of alternatives to permit an informed decision. Both alternatives would only add capacity that is cost effective. See 1996 Minnesota legislation, Ch. 464, Art. 3, Sec. 6 and 7 in Appendix A.14.

G. The local and regional impacts in the DEIS are consistent with the level of analysis presented in the Scoping Decision for the EIS, a draft of which was sent to Richfield in June 1995 for review and comment. Three public scoping meetings were held on the Draft Scoping Decision, and several affected communities submitted written comments on the alternatives and impacts to be addressed in the EIS. The city of Richfield did not respond in writing, but comments by a staff member at the June 27, 1995 public meeting focused on the analysis of the impacts of ground noise and the loss of Rich Acres golf course.

H. The DEIS contained measures to mitigate adverse impacts of each alternative. More detailed information on mitigation measures is included in the FEIS. Some mitigation sections have been revised and the Executive Summary includes those mitigation measures that will be implemented. See also Response E.

I. The FEIS includes mitigation costs and the costs for roadway improvements caused by the proposed action. To the extent reasonably foreseeable, the FEIS contains this information for the MSP 2020 Concept Plan.

J. The FEIS has included impacts by city. See Sections V.M, O, Q, R, and T.

K. See revised Section I.D.

## III. SEGMENTED ENVIRONMENTAL REVIEW OF THE DUAL TRACK PLANNING PROCESS VIOLATES NEPA AND MEPA

One of the most telling disclosures in the DEIS does not even appear in the body of that document. The DEIS is accompanied by a table of cross-reference to the FAA's Airport Environmental Handbook, FAA Order 5050.4A, which is prefaced by the acknowledgment that "[t]he format of this Draft EIS does not follow the usual format of a Federal Aviation Administration (FAA) EIS." **L.**

In truth, neither the format nor the content of the DIES follows the usual format or content of an EIS. The DEIS represents one step of a segmented environmental review process that was apparently accepted by the Minnesota Environmental Quality Board. Pursuant to that process, separate environmental documents, denominated "Alternative Environmental Documents" (AEDs), were prepared with respect to the MSP and New Airport alternatives, respectively. Following the preparation of the AEDs--a process which was conducted entirely pursuant to MEPA and not NEPA--the "best" MSP and New Airport alternatives were selected. Analysis of other MSP and New Airport alternatives was completely omitted from the subsequent DEIS. **M.**

Regardless of the permissibility of the foregoing process under MEPA, it plainly violated NEPA. That Process has resulted in a grossly inadequate analysis of alternatives in the DIES -- a document which, after all, is the only NEPA document analyzing the dual track alternatives. The consideration of additional MSP and New Airport alternatives in the AEDs is irrelevant for NEPA purposes because those documents were expressly prepared entirely for MAC and were not prepared, reviewed, or approve by the FAA. **N.**

NEPA does not permit the federal environmental review process to begin once important alternatives have already been rejected from consideration. The DEIS must be recirculated for public comment after it has been revised to address the environmental impacts of a reasonable range of MSP and New Airport alternatives. In addition to violating NEPA, FAA action on the basis of the current DEIS would violate the following federal statues: **O.**

1. Because each of the alternatives discussed in the DEIS has significant adverse environmental impacts, the FAA would violate 49 U.S.C. State Statute 47106(c) (1) (C) by approving any of those alternatives without a sufficient basis for concluding that (1) there are not possible and prudent alternatives and (2) there are no reasonable mitigation measures to reduce the project's unmitigated significant adverse impacts; **P.**

L. The only change in FAA format is in Section V, Environmental Consequences, where the impact categories are listed alphabetically rather than as listed in the FAA order, as a convenience to the public in finding the impact categories.

M. Section III (Alternatives) describes each alternative and summarizes the reasons for eliminating previous alternatives from further consideration. For manage-ability purposes, all studies pertaining to previous environmental and technical analysis on other alternatives are incorporated by reference and legally considered supporting material for the DEIS. (See Appendix A of DEIS.) See also U.S. EPA Response A.

N. The Draft EIS was not the only NEPA document produced during the Dual Track process. The first and second phase scoping reports, alternative environmental documents and Draft EIS were all vital elements of the NEPA process. The U.S. EPA concurred with the Dual Track environmental process by letter on September 7, 1990, and reaffirmed their support of the Dual Track environmental review process by letter on July 5, 1995.

The consideration of additional MSP and New Airport alternatives in the alternative environmental documents was an essential element of the NEPA process. As mentioned above, the U.S. EPA approved the Dual Track environmental review process, including the role of the alternative environmental documents in alternative evaluation, in September 1990 and July 1995. NEPA does not require that every alternative receive detailed analysis in a Draft EIS. 40 CFR 1502.14(a) requires "for all alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated". The Final EIS also discusses alternatives which were removed from detailed consideration and the main reasons for doing so. The FAA was involved in the development and review of the afore-mentioned documents produced prior to the Draft EIS. The FAA is involved in the Dual Track Process as a joint lead agency with the MAC. The FAA was also involved in all public hearings and meetings regarding the previously-mentioned environmental documents. See also CEQ Regulation #40 CFR 1500.20.

O. The NEPA process did not begin after alternatives had been eliminated from consideration. All reasonable alternatives to serve the Twin Cities' air transport needs were evaluated during the Dual Track airport planning process. As noted in Response N above, the U.S. EPA supports the Dual Track environmental review process and has stated that it adequately fulfills NEPA requirements. The Dual Track process included the first and second phase scoping documents, alternative environmental documents, and Draft and Final EIS. See Section VIII, Public Involvement.

P. The FAA has sufficient basis for concluding that there are no feasible and prudent alternatives to the proposed action. Reasonable mitigation measures will be undertaken to mitigate the project's impact. The Final EIS describes these mitigation measures.

2. Because certain of the alternatives discussed in the DEIS would involve the construction use of land used for public parks and recreation areas or the actual taking of farmland, the FAA would violate 49 U.S.C. State Statute 303 (f) by approving any such alternative without a sufficient basis for concluding that (1) there are not feasible and prudent alternatives to the use of such land and (2) there are no possible mitigation measures to minimize harm; and

Q.

3. Because certain of the alternatives dismissed in the DEIS are inconsistent with plans of public agencies, including Richfield, that are authorized by the State of Minnesota to plan for the development of the area affected by those alternatives, the FAA's approval of those alternatives would violate 49 U.S.C. State Statute 47106 (a) (1).

R.

The DEIS also violates MEPA by deviating from the standard NEPA procedures. Alternative forms of environmental review under Minnesota Rules part 4410.3600, such as that which was utilized through the use of AEDs, cannot be employed with respect to projects for which an EIS is prepared pursuant to NEPA. Minnesota Rues part 4410.3900, subp. 3, states:

> "If a federal EIS will be or has been prepared for a project, the *RGU shall utilize the draft of final federal EIS as the draft state EIS* if the federal EIS addresses the scoped issues and satisfies the standards set forth in part 4410.2300." (Emphasis added.)

S.

In short, a traditional DEIS that analyzes a full range of alternatives, including MSP and New Airport alternatives, must be prepared and that DEIS must be used as the basis for both the NEPA and MEPA review of the project.

## IV. Alternatives

For the MSP alternative, six options were originally considered. No information is provided in the DEIS (other than figures provided in Appendix B) regarding the comparison of alternatives. It is stated that this analysis is provided in the *Long-Term Comprehensive Plan Alternative Environmental Document (AED)*. In fact, the afore-mentioned document does not provide an adequate comparison of the operational components and related impacts of each alternative. To review the operational analysis, one must go back to the *Long-Term Comprehensive Plan, Airport Development Concepts*. However, this document does not provide backup information on the assumptions and inputs of the SIMMOD and other modeling and analyses. A review of these assumptions and inputs is important to determine if the planning process was conducted thoroughly and objectively.

T.

Q. The FAA has sufficient basis for concluding that there are no feasible and prudent alternatives to the use. Possible mitigation measures will be undertaken to minimize the harm from the use. The Final EIS describes these mitigation measures. The MSP Alternative will not require the acquisition of farmland.

The U.S. Fish and Wildlife Service, which operates the Minnesota Valley National Wildlife Refuge, agrees that there are no feasible and prudent alternatives to expansion of the existing MSP Airport. The refuge is the only park or recreation area subject to Section 4(f) of the 1996 Department of Transportation Act that would be affected by the MSP Alternative. See Appendix E.

R. Comment noted.

S. The requirement that the draft federal EIS be used as the draft state EIS is not absolute. Under Minn. Rules Part 4410.3900, subp. 3, if the federal EIS does not address the state EIS scoped issues or does not satisfy the state standards for EIS content, then the MAC could produce its own state draft EIS without violating MEPA.

The Minnesota Environmental Quality Board (MEQB) specifically approved the process being used by the MAC including a State Dual Track EIS which relies on and refers back to the Alternative Environmental Documents and is coordinated with the federal process. Early in the Dual Track Planning Process, the MAC proposed to the MEQB the alternative environmental review process as permitted under Minn. Rules Part 4410.3600. The use of Alternative Environmental Documents to address selection of search area, site selection within the chosen search area, preferred new airport layout, and preferred MSP alternative, followed by an EIS to compare the new airport and MSP expansion alternatives, was approved by the MEQB. Indeed, this approach was patterned on the process of tiering one EIS on another which is specifically permitted in federal environmental reviews under NEPA. The MEQB's approval also contemplated a state draft EIS process coordinated with the federal draft EIS process with the MEQB making the adequacy determination on the state final EIS.

T. The MSP AED does, in fact, present the environmental impacts associated with four of the six initial alternatives identified for MSP expansion. (Two of the alternatives were eliminated during the scoping process.) Technical analysis is described in a draft copy of Volume 7 of the MSP LTCP available for review at MAC and FAA offices. Both MAC and FAA used SIMMOD to evaluate the alternatives; this information is available from both agencies.

The north-south preferred alternative is recommended as a needed improvement to increase airport capacity and reduce delay. In our review, the case is not made that the north-south runway is the preferred alternative from a capacity standpoint. The SIMMOD analysis reports only a small advantage for the Runway 17/35 layout. There may have been certain assumptions included which essentially predetermined the result. Only a detailed review of that planning exercise could reveal whether this is the case. Since the advantage of Runway 17/35 is marginal when viewed strictly on the basis of capacity, the decision to reject the north parallel concept is actually a toss up.

**U.**

The fact that the north-south and north parallel runway alternatives are so close, both alternatives should have been brought forward to the DEIS, a significant omission rendering the DEIS incomplete. In fact, the *LTCP Airport Development Concepts* report includes both the north-south and north parallel runways as part of the ultimate long-term plan. Both runway alternatives should be included as part of the MSP alternative to adequately compare impacts and costs to a new airport alternative. It is especially important that an analysis of runway alternative environmental impacts be part of this statement. This supports the overall finding that the DEIS provides an inequitable comparison between the MSP alternative and the new airport alternative.

**V.**

The location of the north-south runway is attractive for development of the depicted cargo operations and airline maintenance facilities. Peak use of these areas will occur during the night period. The proposed runway is also the preferred departure runway and the most heavily used departure runway, both day and night, among all the available runways at MSP. The DEIS does not adequately address night period operations or related noise impacts in isolation, especially as they may relate to cities located in close proximity to night period operations areas, or specify the effects on residential areas.

**W.**

The north-south runway has far greater environmental implications for the future well-being of eastern Richfield than has been acknowledged in the DEIS. Additionally, no funding has been set aside to mitigate for these impacts. This is a significant omission. Richfield has undertaken significant efforts to assure the stability of residential neighborhoods. The report provides no data regarding how the environmental impacts will affect these single- and multi-family properties.

**X.**

A major weakness of the north-south runway may be revealed by a review of the total costs, which is not included in the DEIS for our review. Including such costs as the removal of hotels to the south, the erection of a noise barrier, the loss of revenue-producing on-airport space if a berm is used, and other costs which will be imposed on the City of Richfield such as loss in tax revenues, additional planning studies, etc. might tip the financial equation in favor of the north parallel.

**Y.**

The use of the north-south runway is described as being "almost exclusively to and from the south for both takeoffs and landings." This effectively reduces this concept to a "south-south" runway. Although this may occur infrequently, the DEIS does not address this issue or possible impacts should the runway be used to or from the north.

**Z.**

U. Separate studies conducted by MAC and the FAA confirm that the north-south runway provides superior capacity improvements versus a north parallel, although the north parallel runway benefits are also good. The MAC analysis has been presented in the MSP LTCP and in presentations to the Technical Committees and the Commission indicating an advantage for the north-south runway. The FAA's MSP Capacity Enhancement Plan, which was published in December of 1993, was developed by a team of industry experts and representatives from the state. The FAA study also concluded that while both alternatives performed well, the north-south runway was superior. The north-south runway is also the environmentally preferred alternative. Compared to the north-south alternative (as presented in the Final Alternative Environmental Document for the MSP Long Term Comprehensive Plan, February 1995), the north parallel alternative would -- demolish contributing components of both the Fort Snelling National Landmark Historic District and the Old Fort Snelling National Register Historic District – displace a Section 4(f) 9-hole golf course and directly impact Bossen Field, a Section 4(f) park – displace 601 more residents -- and subject 3,030 more residents to aircraft noise levels greater than DNL 60. See also General Response 5.

V. See General Response 5.

W. DNL contours are a measure of daily average day-night sound level. The DNL contours developed for 2005 incorporate the larger percentage of nighttime operations departing on Runway 17. The INM penalizes nighttime operations by 10dB (each nighttime operation equals 10 daytime operations). Although nighttime operations on Runway 17-35 are not isolated for evaluation, they do play a significant role in resultant DNL contours.

X. The greatest environmental impact on eastern Richfield is identified as noise. The noise mitigation plan in Appendix B describes the mitigation measures and funding to address these impacts. It also includes the formulation of a Working Group to identify impacts and recommend Community Stabilization measures.

Y. Total development costs for the new runway are included in Table I-26 of the DEIS. These costs include land acquisition and demolition as necessary on the properties to be acquired. The Dual Track Airport Planning Process Technical Report provides a more detailed financial analysis of the MSP Alternative, as referenced in Appendix A of the FEIS.

Z. The only time the runway would be used to the north or from the north is during periods of strong southerly or northerly winds (less than one percent of the time) Tower personnel will utilize Runway 17/35 so that the runway is not used to and from the north, except under the following limited circumstances that are described in the FEIS: (1) safety reasons, (2) weather conditions; (3) temporary runway closures due to snow removal, due to construction or due to other activities at the airport when the parallel runways could not be used, or periods when the parallel runways are closed due to bad weather or snow removal. This level of activity would not affect the noise analyses conducted in the EIS.

As a converging runway, the north-south runway is inconsistent with airfield improvements across the country. The FAA Airport Design Standards Handbook strongly recommends runways added to increase capacity at existing airports be constructed parallel to existing runways. Without exception, airports in the U.S. proposing one or more new runways are planning parallel runways. While these facts do not prove the north-south runway is unwise, there appear to be factors other than capacity that have been considered, but not addressed, in the DEIS. **AA.**

AA. MAC agrees that parallel runways can provide significant capacity improvements, and for this reason, both north parallel and south parallel runway options were considered as ways of providing greater capacity. Because of site constraints, these new parallels would be separated by 1,000 feet or less from an existing parallel runway, diminishing overall capacity. Parallel runways separated by less than 2,500 feet are treated as a single runway by ATC when wake turbulence caused by heavy aircraft is a factor. During instrument conditions, a third parallel could not be used independently. For these reasons, the proposed north south runway would provide slightly more capacity than a third parallel runway. As noted in Response U, this runway would have fewer environmental impacts than a third parallel runway. In combination, these two benefits resulted in the selection of the north-south runway.

## V. Environmental Consequences

### Air Quality Impacts

An air quality analysis (microscale carbon monoxide analysis) for off-airport sources (motor vehicles) was conducted for those intersections which meet Metropolitan Council screening criteria of 2,400 vehicles per hour during the P.M. peak hour, of which at least 480 (20 percent) are airport-related traffic. The DEIS only analyzed the one intersection that meets the Metropolitan Council screening criteria: TH 55 at TH 62. The DEIS states that only this intersection meets the criteria since almost all travel to MSP takes place on limited access roadways with no at-grade intersections. Although there are no at-grade intersections on those facilities with proposed improvements, all of the interchanges are or will be metered, not free-flow. Additionally, the metered interchanges will experience significant queuing. These should be included in the microscale analysis. **BB.**

BB. Queuing at metered ramps is discussed in Appendix A.1.

Since a number of roadway improvements are proposed as part of the MSP alternative (as discussed under Transportation Access), it would be prudent to conduct an air quality analysis for each new and proposed intersection and interchange in the affected area, such as 66th Street at TH 77, TH 62 at TH 77, 62nd Street frontage road access points, and the airport's western access entrance. The roadway improvements were determined based on an analysis of state roads. However, local roads such as 66th Street will be impacted and should be included in the analysis. **CC.**

CC. Two proposed new interchanges associated with the new terminal location at the northwest corner of MSP have been analyzed for air quality impacts in the year 2020 in Section V.A.1.2, Impacts from Off-Airport Sources.

Information on local roadways is presented in Tables A.1.1 and A.1.2 in Appendix A.1.

No mention was made in the DEIS regarding the air quality impact on sensitive receptors such as nearby hospital/medical facilities or schools. An air quality analysis should also be considered for those sensitive receptors in Richfield located near TH 77. **DD.**

DD. The location of medical facilities and schools in Richfield is shown in Figure A-3 and discussed in Section V.A.1.1. Affected Environment - MSP Alternative. Air quality impacts at the two sites closest to MSP are addressed in A.1.2 Air Quality Impacts - MSP Alternative and A.3.2. Air Quality Impacts - No Action Alternative.

No information was provided regarding input parameters or receptor locations. The transportation analysis (discussed in Transportation Access) was not specific enough to conduct an intersection level of service analysis, which is required as an input to the air quality analysis. The input parameters and receptor locations are needed to ensure that the analysis was conducted thoroughly and appropriately. Additionally, air quality analyses are generally conducted for the design year, time of completion year, and time of completion plus 10 years. Emission rates, vehicle fleet mix, and traffic volumes are impacted by which year has been analyzed. **EE.**

Since the analysis included in the DEIS did not show any locations exceeding state and federal standards, no mitigation was proposed. Should additional analysis result in exceedences, mitigation measures will be required. Mitigation measures for construction impacts, however, do not include adequate detailed information on design or cost. Although construction mitigation details are not generally required, an expansion of MSP will take place over a number of years. Therefore, this information is warranted. **FF.**

The DEIS should also address the cumulative impacts on the proposed improvements and other current, planned, or reasonably foreseeable projects at or near MSP. **GG.**

The DEIS should address the extent to which the alternative is consistent with the State's Implementation Plan for air quality. The DEIS only lists steps needed to address conformity and states the analyses are only preliminary elements. A conformity determination should be included in the DEIS. **HH.**

Background concentrations were taken at only one location, a temporary receptor located 2.8 miles west of the Cedar boundary of MSP. Even lower concentrations were used as the background concentrations for 2020. Given the dispersion of carbon monoxide, this receptor was located too far from the airport. Additionally, there is no rationale given for reducing the concentrations by approximately 20 percent from observed conditions to future conditions. **II.**

**Economic Impacts**

The DEIS only addressed the financial issue of losing revenue produced by the Rich Acres Golf Course, currently leased to Richfield by the MAC. The DEIS does not address the larger issue of the adverse financial consequences on land values due to the elimination of the buffer zone created by the golf course. This will negatively impact the redevelopment potential and timing of redevelopment opportunities of the west side of TH 77. **JJ.**

EE. A detailed traffic flow analysis will be conducted during the preliminary engineering phase of the roadway improvements associated with MSP. At that time, a more detailed analysis of the local roadway network will be possible that will permit an evaluation of level of service, air quality analyses and other environmental impacts as appropriate. This is needed because the proposed interchanges shown in the FEIS are schematic only and may not represent the final design.

The Memorandum of Understanding between the Metropolitan Airports Commission and the Twin Cities Metropolitan Council which was the basis for the Dual Track environmental process established the projection year of 2020 as a realistic year for comparing airport alternatives. Emissions were also estimated for the year 2005 in accordance with the meeting/teleconference with the US EPA on August 30, 1995 (see letter in the DEIS Appendix A from the Airports District Office dated September 27, 1995 summarizing this meeting). The year 2005 was selected as a 15 year horizon from the MPCA 1990 emission inventory for the Twin Cities Metropolitan Area. The year 2020 was selected as the project planning horizon. No projections of aircraft operations or ground access traffic were made beyond this horizon.

FF. Although this project is de minimus, the air quality effects from construction of the proposed action are presented in Appendix A.13.

GG.The no action consists of the existing airport facilities and access at MSP, and those committed projects with funding approved by MAC in its 1995-1997 C.I.P. and those committed projects in the 1998 C.I.P. that are not associated with the implementation of the new north-south runway. The FEIS addresses the cumulative impacts of planned activities reasonably foreseeable, including implementation such as the extension of Runway 4-22 to the northeast and roadway improvements, as discussed on page V-1, and in Sections V.A., V.Q, V.Q.1, V.BB and V.W.

HH. Consistency with the State Implementation Plan (SIP) and Conformity with the SIP are discussed in Section V.A.

II. A discussion of new background monitoring is included under Section V.A.1.1.- Affected Environment - MSP Alternative: Existing Pollutant Concentrations. The adjustment of background to the year 2020 is also described in that section. The air quality analysis has been revised to account for the new background.

JJ. The potential for adverse financial consequences on land values due to aircraft noise has a long history at MSP. In 1970 residents brought a lawsuit against MAC alleging that MAC has essentially performed a "taking" due to the reduced land values. The residents felt that they were entitled to compensation. MAC argued that there was no evidence that the value of the plaintiffs property had been reduced by a substantial or measurable amount attributed to aircraft noise. This case went through the Minnesota Supreme Court twice, and the Court found in favor of the defendants in both instances.

The DEIS does not address the difficulty in redeveloping the area west of Cedar, including existing and future market conditions and business climate, length of time necessary for redevelopment to take place, financial impacts, employment impacts, and cumulative impacts. A supplemental study is currently underway by ERA which may or may not address these issues. The body of this study, or at least substantive highlights of the findings, must be included in the DEIS to allow for thorough analysis of projected impacts. Likewise, the significant findings of the Financial Analysis currenlty being conducted must be included in the DEIS. All communities must be able to analyze the potential exposure to their constituencies of financing airport improvements, since MAC bonds are backed by the good faith and credit of the entire seven-county metropolitan area. It would be premature to comment on the impacts without first reviewing these supplemental studies. It is unacceptable that the DEIS comment period will be allowed to close without final versions of the aforementioned documents being made available to the general public. KK. LL.

Construction of the north-south runway will require acquisition and destruction of three hotels and other commercial properties. The DEIS does not include these costs. MM.

No mitigation is proposed for these impacts. Additionally, no cost information was provided regarding the impacts of redevelopment opportunities as a mitigation measure.

**Induced Socioeconomic Impact**

The MSP alternative can be anticipated to induce approximately 60,000 s.f. industrial and 40,000 s.f. office development annually from 2005 to 2020. However, the DEIS states this development will most likely occur in south Minneapolis, Bloomington, Mendota Heights, and Eagan. There is no mention of redevelopment potential in Richfield west of Cedar. Without the west terminal, this redevelopment potential in Richfield may not exist. The DEIS also fails to address the time delay between when airport improvements are made and when redevelopment may actually take place. NN.

Richfield will lose $302,040 annual tax revenues, of which no mitigation, such as payment in lieu of taxes, is proposed. Additionally, there is no discussion of the impact to property values, both commercial and residential. OO.

The DEIS should include a quantitative and qualitative analysis of the growth-inducing impacts that would be experienced. This is particularly important with the proposed (but debated by Northwest Airlines) west side terminal. PP.

KK. The projected future land use for properties immediately west of TH 77 is commercial which is compatible with the proposed industrial use by the Airport. While the golf course provides a barrier between the airport and the remaining residential uses along TH77, these residential uses will ultimately be replaced with commercial uses and therefore land values would not be adversely affected when compared to commercial land use values.

LL. The financial analysis of the Dual Track Airport Planning Process alternatives, dated February 13, 1996, contains a discussion (pp. 19-20) regarding the bonding capacity of the Metropolitan Airports Commission and the financing mechanisms that would be required for development of the MSP Alternative. The report indicates that additional authority from the legislature to issue general airport revenue bonds and general obligation revenue bonds could be used to finance airport development. This information was contained in the Report to the Legislature, dated March 1996, on pp. 6-36 and 6-37; the Report to the Legislature was available to lawmakers and, presumably, their constituencies, prior to the legislative actions regarding the Dual Track Airport Planning Process.

MM. Table I-26 in the DEIS includes acquisition of properties required as runway protection zones associated with the new north-south runway. See the three lines dedicated to property acquisition on Table I-26 for the MSP Alternative. These costs include the associated demolition required to clear the runway safety area.

NN. The definition of "induced" development requires an analysis of impacts in Richfield which are solely or primarily due to the expansion of MSP. As such, the area west of Cedar Avenue in Richfield has not been considered "induced" development in this analysis. The timing of redevelopment along Cedar Avenue has not been analyzed. Redevelopment of this corridor will respond directly to the character of the adjacent roadway and the traffic on it. The airport in its existing configuration would continue to serve as an environment for redevelopment of this corridor. It is explicitly recognized that the new west terminal and associated additional traffic on Cedar Avenue would improve the market for redevelopment west of Cedar in Richfield.

OO. Proposed mitigation is included in the Noise Mitigation Plan, Appendix B. See Section V.O Land Use and Section V.T Social.

PP. See Section V.N., Induced Socioeconomic Impacts.

**Land Use Impacts**

The DEIS states that the acquisition of New Ford Town and Rich Acres Golf Course (both located east of TH 77) has begun and is not considered an impact of MSP expansion. Rich Acres Golf Course is identified as an economic impact related to the MSP alternative.

It is stated that compatible land uses will be achieved when communities amend their comprehensive plans, implying that developing off-airport compatible land uses is not a responsibility of the MAC. The impetus for the comprehensive plan amendments is the airfield improvements being proposed by the MAC. These proposed improvements adversely affect the surrounding communities and are, therefore, a collateral responsibility of the MAC. It is the MAC's responsibility that the surrounding communities remain commercially and residentially viable, as well as equivalently valuable until the forces of secondary redevelopment impacts are realized.

**QQ.** QQ. Comment noted. See Response RR.

The Richfield Comprehensive Plan would have to be amended to address the compatibility issues generated by the development of the north-south runway and the western terminal access, bringing airport operations closer to Richfield than ever before. However, no mitigation measures or costs have been identified in the DEIS.

**RR.** RR. The incompatibility is the result of airport noise. The forum for determining measures to mitigate noise impacts was the MSP Noise Mitigation Committee, of which Richfield was a member. See Appendix B. See also General Response 3 and Section III.D regarding the west terminal.

Given that no mitigation plan was included in the DEIS, the City of Richfield has taken the initiative and prepared a mitigation proposal for land use changes along the west side of TH 77 to mitigate the airports impacts. This mitigation plan is being developed and fully funded by the City. Additionally, a comprehensive plan amendment would also have to initiated and funded by the City. Since this is the responsibility of the MAC to include or commit to in the DEIS, it is incumbent upon the MAC to assist and fund these efforts. There is no commitment expressed in the DEIS to conduct the follow-up work. The mitigation section should include a discussion of the costs to the City and identify possible funding sources to offset the cost to the City.

**SS.** SS. See Response RR. The noise mitigation plan in Appendix B contains the total mitigation of noise by MAC. See also the Executive Summary, Unresolved Issues.

Richfield's mitigation proposal calls for the following changes:

| Land Use Category | Cedar Avenue North | Cedar Avenue South | Change |
|---|---|---|---|
| Single-Family Detached | -116 units | -74 units | -190 units |
| Single-Family High Density | 60 units | 43 units | 103 units |
| Multi-Family Medium Density | -153 units | 221 units | 68 units |
| Multi-Family High Density | 0 units | 0 units | 0 units |
| Community/Neighborhood Commercial | -0.56 acre | 0.00 acre | -0.56 acre |
| Regional Commercial/Office Mixed Use | 34.08 acre | 9.22 acre | 43.30 acre |
| Park | 0.23 acre | 0.00 acre | 0.23 acre |
| Street | -6.75 acre | -0.44 acre | -7.19 acre |

Richfield will need additional time to fully prepare the redevelopment plan and associated costs. More analysis is needed in the DEIS regarding the costs to the City to accommodate MSP expansion plans before the City can make decision in support or opposition to the proposed action.

The DEIS should also address the cumulative impacts on the proposed improvements and other current, planned, or reasonably foreseeable projects at or near MSP.

TT. TT. The impacts of all known projects were included.

**Light Emissions**

Residential areas in east Richfield near TH 77 and 66th Street will be impacted by new roadway lights, increased traffic lights, airport building lights, and induced development lights. The DEIS does not specifically address the impact from the new cargo area on the west side of the airport. The cargo areas will be require lighting plus will generate increased truck traffic during the evening hours. No mitigation measures or related costs are included in the DEIS.

UU. UU. Lights used to illuminate such landside buildings as cargo facilities, planned for the west side of the airport property, typically are directed lighting, or lighting that is cut off so that there is little spillover effect. Most lights of this variety are designed as security lights, of approximately 1-2 foot-candles. It is noted that lights illuminating airport buildings cannot be excessively bright or they would interfere with the safe operation of aircraft approaching and departing an airport, or taxiing between the gates and the runways. Trucks loading cargo from, and into, facilities on the west side of airport property would use an airport roadway that would lie east, and parallel to, TH 77, south of 66th Street East. Trucks traveling north and south along the airport roadway would move in the same directions as those traveling on TH77. There is a potential that truck headlights, while turning onto the airport roadway to exit the property, could shine onto improved properties on the west side of TH77, a distance of more than 500 feet from the airport roadway.

**Noise Impacts**

1. Aircraft Noise

The most serious criticism involves the progression of the planning process. The assumption behind the DEIS is that the key question which must be resolved is the path toward future airport development. The position of the City of Richfield is that if the MSP alternative is carried out, complete analysis and disclosure of the impacts are necessary. Commitments toward appropriate mitigation must be secured and all viable mitigation strategies must move forward together with airport development. These mitigation measures are integral to the development plans, not items to be studied later on, or analyzed in the sense of future options. The City of Richfield must insist that addressing the full range of community concerns have an equal or higher priority in decision making.

VV. VV. The FEIS discloses the known effects of the proposed action and the commitment of MAC to mitigate significant adverse effects. See General Responses 1 and 2.

This points to another example of the lack of appropriate comparisons between expansion of MSP and constructing a new airport. The new airport has been designed to provide a high level of noise mitigation. Yet, a comparison of cost to provide noise mitigation to even the properties newly impacted by airport expansion is not available within the document.

The DEIS analysis of Time Above 85 dBA (TA 85) threshold and peak sound exposure levels (SEL) analysis was only conducted for seven selected noise sensitive locations in Richfield. Both of these indicators are important to consider. Although 85 dBA is normally used as the acoustic criterion for off-airport land planning, it is an extremely high threshold in evaluating night period noise. If 65 or 70 dBA were also examined, exceedences would reach out further from the airport, particularly with night period noise. Even at 65 or 70 dBA, this is 25 to 30 dBA higher than the night period standard of 45 dBA. Compared to normal night period noise of 20 dBA, this is 45 to 50 dBA higher. Therefore, a lower threshold would be appropriate.

WW. WW. The INM penalizes nighttime operations; for every nighttime operation the INM assigns the equivalent of 10 daytime operations.

The north-south runway appears to facilitate major increases in cargo activity which normally occurs during the night period. Cargo operations also tend to be more heavily loaded which effects performance. Additional analyses should be included to directly address potential night period noise. The DEIS fails to disclose what is anticipated during the night period. This is a significant omission.

XX. XX. Since the forecast of cargo (and other aviation) activity is an unconstrained forecast, the north south runway does not, per se, increase traffic. Tables A.3-3 and A.3-4, in Appendix A.3 list the number of daytime and nighttime operations used for noise impact analysis. Appendix A.3 also discusses the DNL metric, used in assessing noise impacts, which penalizes nighttime operations by 10 dBA. (See page A.3-5.) Aircraft weight is incorporated into the development of INM contours.

If additional capacity were not provided, nighttime activity could, in fact, be higher as flights delayed in the late evening leave later in the night and carriers shift flights to less busy hours (i.e., after 10 p.m. and before 6 a.m.). In any event, there is adequate capacity for significant increases in cargo activity under the No Action Alternative.

The runway 17/35 proposal is shown to expose new areas in Bloomington to aircraft noise. Should adverse reactions occur there, the runway use assumptions may be inaccurate, i.e., some noise might be shifted back to southeast Richfield. This possibility would not occur under the north parallel runway option.

YY.

YY. The runway use percentages and flight tracks used in the DEIS represent a balance of operational efficiency and sensitivity to environmental impacts. If future noise complaints initiated changes in runway use, appropriate environmental analysis and documentation would be required.

No backup materials, such as INM input files, are included in the document or in its appendices. These must be provided, as there is otherwise no way to detect omissions, mistakes, or to verify that the analyses can be duplicated.

No field data appears to have been included in the noise analysis in the DEIS. This omission should be corrected, particularly day and night ambient noise date within the City of Richfield.

ZZ.

ZZ. INM input files have been made available to the City of Richfield. ANOMS data was used in the development of departure profiles and flight tracks for future noise analysis. The INM does not use actual field data on noise levels.

The scenarios depicted in the DEIS have as an implicit assumption, the improvements which inevitably occur as a result of federal requirements for the phase out of noisier (Stage II) aircraft and the continuing improvement of technology in terms of noise reduction. It is this factor which directly accounts for the decline in cumulative noise depicted in the noise contours. This effect in turn depends on the assumption that cumulative noise reductions, in fact, directly reduce annoyance. The weakness of cumulative noise impact is that it fails to examine the effects in human terms.

AAA.

AAA. The DNL metric was specifically designed to model human response to cumulative noise impacts. Appendix A.3 discusses this in more detail. The DNL was developed by the U.S. EPA and has been approved by all federal agencies for assessment of aircraft noise impacts on humans. Appendix A.3 also notes that there are no other descriptors of cumulative noise impacts which correlate better to human response. The DNL was recently confirmed as the most appropriate metric by the Federal Interagency Committee on Noise. The DEIS recognizes that supplemental metrics are useful in assessing noise impacts. Accordingly, the DEIS provides single event data (Peak SEL), and duration of noise above specified levels--time above (TA).

There will be a need to perform additional sound insulation in residential homes. The DEIS indicated that consideration of this will occur in forthcoming Part 150 updates. This is not acceptable. The costs of this program are triggered by the MSP expansion alternative and, thus, should be included in the tally of costs for the MSP alternative. If the north-south runway is funded, the MAC is obligated to fund the mitigation program as the need for the program is specifically triggered by the project. This is a major omission rendering the DEIS incomplete.

BBB.

BBB. See General Response 2.

The north-south runway will bring on the ground aircraft activity much closer to the residential areas of eastern Richfield. The discussion of mitigation includes only one sentence on noise barriers/berms. This is wholly inadequate for a series of reasons. Specific mitigation information included in the *LTCP Airport Development Concepts* was not brought forward to the DEIS. The commitment to install a noise barrier seems to have vanished between the earlier document and the DEIS, and is replaced by an evaluation. The noise barrier should logically be an essential part of the development plan, fully costed out as part of the MSP alternative, shown on the development plans, and its effectiveness documented. Single event noise contours, Lmax calculations, and descriptive information including duration, number of repetitions, and time of day, as well as other detail is essential in the DEIS.

CCC.

CCC. Noise barriers will be considered if they are needed and are feasible. See General Response 2. See also Response GGG and General Response 1.

The analysis of ground noise seems to imply that such impacts are minimal and points out that other noise sources occur such as ground traffic. This seems to overlook the fact that a true comparison needs to be made between the No-Build alternative, the new airport alternative, and the MSP alternative. Ground noise that would occur under the MSP alternative would simply not be there with the north parallel concept or if the airport is moved.

The section on ground operations should be expanded to include peak levels from all types of operations on and around Runway 17/35. The current discussion does not fully address single event noise from the beginning of takeoff roll nor from the use of thrust reversers. It included only estimates of taxiing noise. No actual measurements were made. This could easily be done at any time since comparable conditions exist at other locations at MSP. The current text indicates that the INM-generated contours include these operations. Since many operations are likely during the night period when sleep interference is an issue, more detailing is needed to fully understand the potential impacts on citizens of eastern Richfield. The DEIS discussion of this issue is being explained away and minimized instead of measured and quantified.

DDD.

DDD. Response to Comment DDD is presented as an addendum at the end of this letter.

The DEIS does not clearly address or disclose the impact of ground level noise on residential property parallel to the north-south runway. This is especially important since it can be reasonably expected that noise from aircraft taxiing and taking off may not be effectively buffered, but will also be losing an existing buffer (Rich Acres Golf Course).

The City needs more information to accurately assess the impact of ground level noise on the densely populated areas to the west of the proposed north-south runway to respond to these issues. The north end of the runway will be less than one-half mile from the adjacent border of Richfield. Ground noise may have significant impacts on those areas immediately west of Cedar Avenue and must be addressed in the DEIS.

EEE. EEE. See Response DDD for ground noise considerations and Response JJ for land use values.

2. Surface Transportation Noise

The MSP alternative would increase the number of residences exposed to surface transportation noise level $L_{10}70$ from 462 to 513 – an increase of 11 percent – and $L_{10}65$ from 1,272 to 1,497 – an increase of 18 percent (along both TH 77 and TH 62). This section does not address the cumulative impact of roadway noise and noise from airport ground operations. Roadway and ground operation noise should also be analyzed during an off-peak, nighttime hour, such as 10 P.M. or 6 A.M., as the noise standards are more sensitive for nighttime hours.

FFF. FFF. See Response DDD for aircraft ground operations. See FEIS Section V.Q2.2, Surface Noise Impacts, for discussion of nighttime noise impact.

The mitigation proposed is noise barriers. The DEIS does not address any specifics, such as length, height, material, performance capabilities, etc., regarding noise barriers. The DEIS additionally does not address other mitigation measures such as berms. The noise barriers proposed are also not located either close to the receiver or source of the noise, but in between. This means that the noise barrier, if a wall, must be extremely high, or if a berm, must be very large. Should an extremely high noise wall be erected, this will have significant adverse aesthetic effects on the community.

GGG. GGG. Detailed noise mitigation plans will be developed during the environmental review process of the roadway improvement projects that are proposed for the MSP (West Terminal) expansion. The noise mitigation plans will identify locations where noise barriers are warranted based on state and federal guidelines, feasible and cost effective. A final decision on the location of noise barriers, as well as their height, material and appearance will be made after the affected cities and residents have been given the opportunity to provide input.

The "DEIS" does not specify the type of "barrier" that would be used to mitigate noise impacts because at this stage in the project development process a preferred highway noise mitigation technique has not been determined. The two most common noise barrier designs are walls and berms. Noise walls are used most frequently for highway projects because they require less right-of-way than berms.

It is anticipated that noise barriers constructed to mitigate the adverse effects of highway traffic will be located as close to the noise source (traffic lanes) as possible to enhance the effectiveness of the barrier. Typically, noise barriers are located along the edge of highway rights-of-way.

**Social Impacts**

This section of the DEIS is very weak, only focusing on relocations. Construction of highway improvements to serve the west terminal would require removal of residences and businesses. Although not specified in the text, Figure T-1 shows that displacements along TH 62, between Portland Avenue and TH 77, includes 31 homes (both north and south of TH 62), and displacements along TH 77 in Richfield include 17 businesses, 3 homes, and 2 apartment buildings (28 units). This relates back to the economic impacts of lost tax revenue if the residents are not relocated in Richfield. The loss of businesses eliminates a buffer between residential areas, TH 77, and the airport.

There is no discussion of other short- and long-term social impacts, such as impacts to community characteristics, cohesion, and value; impacts to special groups such as various population groups, incomes, or sensitive populations; or cumulative impacts. This should address changes to the population, neighborhoods, separation, quality of life, and possible effects to income distribution.

No mitigation measures or related cost impacts are included in the DEIS.

HHH. HHH. FAA Order 5050.4A requires an analysis of specified social impacts, as outlined in the Second Phase Scoping Report of the Dual Track Airport Planning Process and the Scoping Decision for the Draft Environmental Impact Statement. It is noted that Section V.T, Social Impacts, includes a description of impacts to specified demographic groups, including children 18 and younger, adults 65 and older, as well as those who are disabled. In addition, those in minority and low income households, as required under an Executive Order for the Environmental Justice analysis, are delineated in Section V.S, Environmental Justice. Mitigation measures are included in the FEIS.

**Transportation Access**

Proposed roadway improvements to handle changes induced by a western access and other related changes included in the DEIS are:

- Ramps, SB I-35W to EB TH 62 and WB TH 62 to NB I-35W: Add lane in each direction.
- TH 62, from TH 77 to I-35W: Add lane in each direction.
- TH 77, from TH 62 to I-494: Add lane in each direction.

III.

The DEIS states that acquisition of additional land for right-of-way to improve TH 77 would be required. No specifics, such as how much land, difficulty in acquiring additional ROW, or cost impacts are discussed.

The following roadway volume changes are forecast:

| Roadway | Segment | 1992 AADT | 2020 AADT No Action | 2020 AADT MSP Alt | Change |
|---|---|---|---|---|---|
| TH 62 | I-35 W Common | 152,000 | 203,000 | 210,000 | +7,000 |
| TH 62 | Portland - TH 77 | 81,000 | 98,000 | 116,000 | +18,000 |
| TH 77 | 66th St. - I-494 | 54,000 | 73,000 | 71,000 | -2,000 |

JJJ.

Currently, TH 62 is a 4-lane urban freeway, which, according to the DEIS, can carry 72,700 at LOS D. The proposal is to add one lane per direction to a six-lane urban freeway, which can carry 109,100. TH 62 will be at capacity when opened as a six-lane facility, since the forecast volume is 116,000 AADT.

The TH 77 segment from TH 62 to 66th Street was not included in the DEIS regional analysis, but yet is recommended for an add lane improvement. This segment should be included in the analysis to document the need for the improvement.

KKK.

Truck traffic volumes are currently 5 to 6 percent of the total traffic. With additional runway and airport capacity, and the proposal for new cargo buildings on the west side, truck traffic could increase. The DEIS does not address future truck volumes.

LLL.

III. Figure T-1 depicts those residential and commercial areas affected by highway improvements for the MSP Alternative. As noted in Section T.1.2 and depicted on Figure T-1, the businesses are on Cedar Avenue South and adjacent streets. The cost impacts are included under the line item for acquisitions and relocations for the MSP Alternative in Table I-23. Additionally, the social impacts of the displacement of these businesses and residences are discussed in Section T.1. Impacts will be further evaluated in another EIS if the west terminal is implemented.

JJJ. TH 62 between Portland Avenue and TH 77 is currently a 4-lane freeway with a 1992 AADT of 81,000. As noted in Table W-1 of the DEIS this represents LOS F conditions. The Year 2020 MSP Alternative condition would result in 116,000 AADT on this segment of TH 62; however, this option includes a proposal to expand this portion of TH 62 to 6 lanes. Given these roadway improvements, TH 62 would operate under LOS E conditions which represents an improvement over existing conditions. See General Response 3 and Section III.D.

KKK. No additional lanes are proposed on TH 77 between the west terminal ramps and TH 62. Table W-5 in the DEIS refers to a segment of TH 77 between 66th Street and I-494. 66th Street was identified as the northern limit of this segment because it approximates the location of the west terminal access ramp from northbound TH 77 and the west terminal exit ramp to southbound TH 77.

LLL. An additional lane is proposed for both northbound and southbound TH 77 between the west terminal ramps (approximately 66th Street) and the I-494/TH77 inter-change north ramps to accommodate traffic between I-494 and the west terminal.

LLL. The regional travel demand model uses 5 to 6 percent of total traffic as trucks.

A regional modeling process was conducted to generate year 2020 volumes, as presented in MnDOT's report on impacts on the State Highway System. However, this analysis did not include non-state roadways, which will also be impacted. This is a significant omission. To determine the specific impacts to Richfield, more detailed information from a subarea traffic analysis is needed, which should include:

- Analysis of other major streets, such as 66th Street
- Geometrics
- Capacity analysis
- Delay
- Intersection LOS
- Need for new or improved traffic signals

This information is needed, as it should also be used in the carbon monoxide air quality analysis for each roadway improvement.

The DEIS should also address the cumulative impacts on the proposed improvements and other current, planned, or reasonably foreseeable projects at or near MSP.

**MMM.** MMM. In comparing the effects of the MSP and No Action Alternative, little difference was found on the north-south arterials in Richfield. 66th Street exhibits a greater variation with increases of 3,000 to 5,000 vehicles per day for the MSP Alternative. However, given the standards used in the calibration of the regional model and the relatively low ground counts on 66th Street, differences of this magnitude are not statistically significant in terms of level of service conditions.

See Response CC for air quality assessment of Richfield streets.

## Conclusion

The DEIS fails the test of reasonableness and fairness by comparing a partially developed alternative with a full developed new airport alternative. Further, it summarizes and minimizes specific community impacts which are of significant concern to Richfield. It has not fully detailed and, therefore, has not disclosed all that will happen with the MSP alternative. Substantial information and backup has been omitted. The full costs, both social and dollars, have not been tallied. It excludes information on major decisions required for the MSP alternative. Mitigation sections are missing or significantly incomplete. Neither the soundness of the planning process, nor the full ramifications of the plan can be determined. The lack of compliance with NEPA requirements for format and content precludes an analysis of the full range of MSP and new airport alternatives.

Therefore, the DEIS fails in its essential function of permitting decision-makers and the public to make an informed decision regarding the absolute and relative environmental impacts of all reasonable alternatives. The DEIS should be revised to address the deficiencies identified in these comments and recirculated for public review.

Sincerely,

James D. Prosser
City Manager

JDV:ttf
Attachments
Copy: Richfield Mayor and Council Members
Steven F. Pflaum, Special Counsel

**RESPONSE DDD.**

The following noise analyses were performed in response to comments regarding the impact of ground noise on nearby portions of Richfield resulting from the development of the proposed North-South Runway (Runway 17-35) at Minneapolis-St. Paul International Airport (MSP). The Draft EIS identified projected noise levels in Richfield using the FAA's Integrated Noise Model (INM). The noise analysis presented in the Draft Environmental Impact Statement (DEIS) accounted for the major components of ground noise associated with aircraft operations. Both start of takeoff roll and use of reverse thrust on landing are included in the INM analysis of aircraft operations and are reflected in the Day Night Noise Level (DNL) contours used to assess noise impacts in the DEIS.

DNL is the basis for assessing the significance of noise impacts. Accordingly, the following discussion of maximum ($L_{max}$) or "peak" noise levels from individual ground operations supplements the analysis presented in the EIS by explaining the nature of individual events contributing to the projected DNL values. This analysis does not replace or alter the findings and conclusions of the noise analysis presented in the DEIS. The analysis is based on actual data collected at MSP in the Fall of 1996. Appendix A.3 of the EIS describes the noise metrics used in this analysis.

Section A is a summary of this analysis. Section B describes aircraft ground noise levels which would be expected in the eastern portions of Richfield resulting from operations associated with the proposed Runway 17-35. Section C describes the procedures used to monitor noise and calculate ground noise propagation.

**A. Summary**

Aircraft noise from ground operations associated with use of the proposed Runway 17-35 would be audible in the eastern portions of Richfield (see Figure 1 for representative sites). The noise levels calculated for these locations are based on actual monitored data at MSP. Three types of aircraft operations were analyzed; start of takeoff roll, reverse thrust, and taxiing. The following discussion summarizes the results of the ground noise analysis for each type of operation. The effects of wind conditions are also described.

**Aircraft Used in Analysis.** The monitored data collected in advance of the analysis included both older, noisier Stage 2 as well as newer, quieter Stage 3 aircraft. Since Stage 2 aircraft will not be operating by the time that Runway 17-35 opens, ground noise levels in Richfield will not be affected by the loudest aircraft currently operating at MSP. The loudest Stage 2 events, produced by the B-727-200, were therefore not included in the projections of future ground noise. However, since it was not possible during the actual monitoring to distinguish between hush-kitted Stage 3 DC-9-30 aircraft and non-hush-kitted Stage 2 aircraft, all DC-9-30 events were included in the future analysis. This results in a slight overstatement of ground noise levels, since the louder Stage 2 DC-9-30 aircraft will not be operating.

**Start of Takeoff Roll.** The loudest ground noise events will be associated with start of takeoff roll for areas in the northern portion of Richfield. At Location A, peak ($L_{max}$) aircraft noise levels associated with start of takeoff roll on the proposed Runway 17 could reach 90 dBA, approximately 7 dBA louder than similar operations on Runway 11R. Peak takeoff noise levels would be on the order of 80 dBA at location B and 71 dBA at location C (see Table 1). In comparison, typical automobile and light truck traffic on neighborhood streets would generate peak levels of approximately 60 to 70 dBA at residences. Light and heavy truck traffic on Cedar Avenue would generate peak noise levels of approximately 54 to 74 dBA at residences. Start of takeoff noise is reflected in the INM analyses of DNL presented in the DEIS. These aircraft ground noise levels are consistent with the DEIS finding that significant noise impacts would occur in portions of Richfield. The INM analysis provided in the DEIS does not account for any excess attenuation associated with barriers or shielding, and may therefore overstate the impact on ground noise.

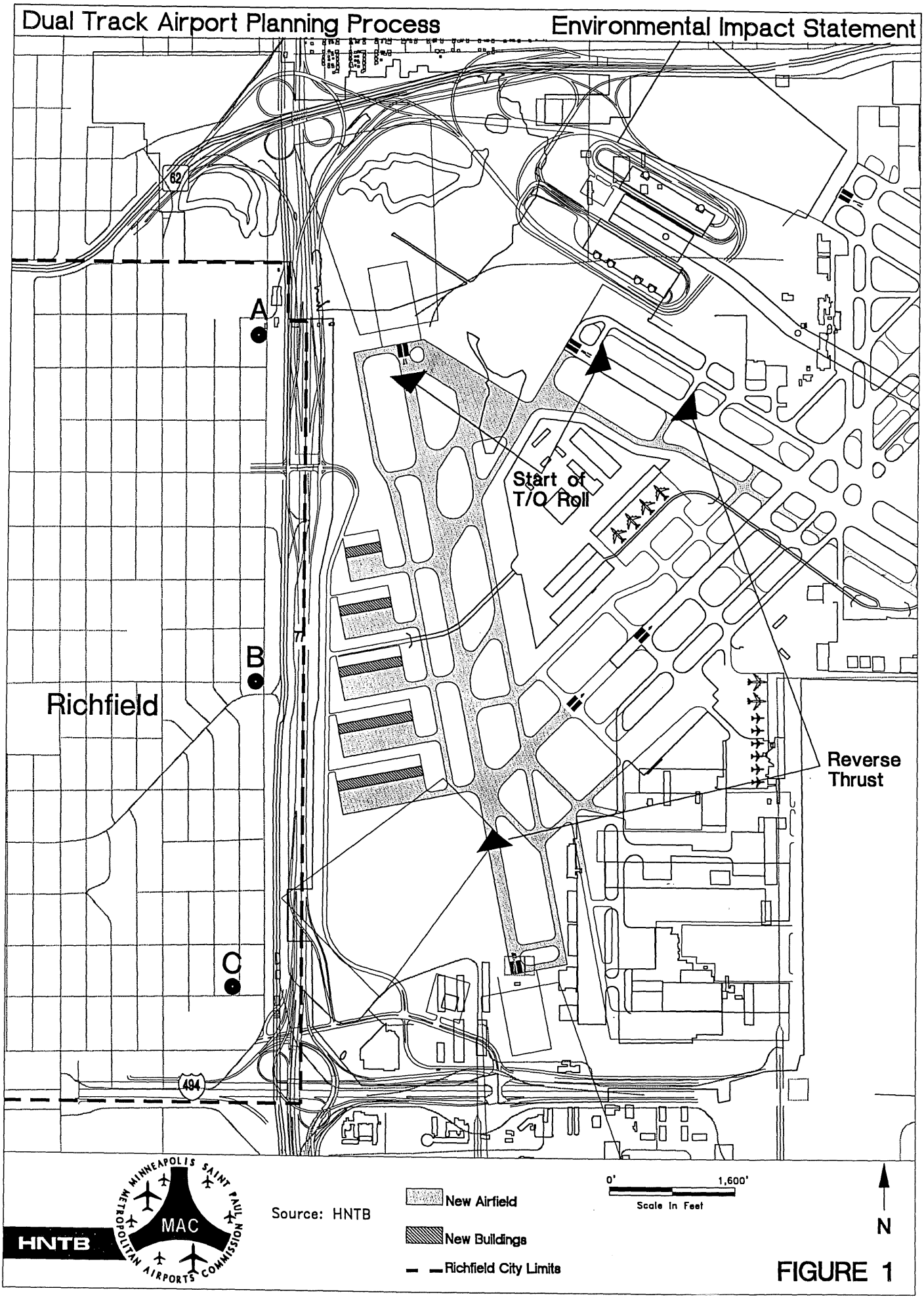
Dual Track Airport Planning Process
Environmental Impact Statement
62
A
B
C
Richfield
Start of
T/O Roll
Reverse
Thrust
494
HNTB
MAC
MINNEAPOLIS SAINT PAUL METROPOLITAN AIRPORTS COMMISSION
Source: HNTB
New Airfield
New Buildings
Richfield City Limits
0'
1,600'
Scale In Feet
N

FIGURE 1

**Reverse Thrust.** Reverse thrust operations on the proposed Runway 17 would generate peak noise levels of 54 to 75 dBA on the eastern perimeter of Richfield (See Table 1). These noise levels would be similar to traffic noise events on Cedar Avenue or on local streets. These noise events are also similar to the noise from reverse thrust operations on Runway 11R, and are reflected in the DNL analyses presented in the DEIS. As noted above, the INM analysis provided in the DEIS may be somewhat conservative, and overstate the noise generation.

**Table 1**
**Projected Noise Levels at Selected Locations in the City of Richfield**
**MSP Alternative and No Action Alternative**

| | Maximum Sound Pressure Levels dBA ($L_{max}$) by Type of Operation | | | | | | |
|---|---|---|---|---|---|---|---|
| | Taxiing | | | | | | |
| | East[1] | West[2] | | Start of Takeoff | | Reverse Thrust | |
| Receptor | MSP | MSP | No Act. | MSP[3] | No Act. | MSP | No Act. |
| A [4] | 57-76 | 66-81 | 55-73 | 69-90 | 57-83 | 54-65 | 56-68 |
| B [5] | 60-77 | 66-81 | 46-65 | 54-80 | 49-75 | 63-75 | 54-66 |
| C [6] | 57-75 | 59-75 | 36-54 | 54-71 | 39-65 | 62-74 | 50-62 |

Notes:

1. Taxiing operations calculated for the proposed taxiways to the east of proposed Runway 17-35 (Figure 1).
2. Taxiing operations calculated for the parallel taxiway to the west of proposed Runway 17-35.
3. Start of takeoff roll noise levels estimated for the loudest segment of takeoff roll with respect to each receptor. For location A, this point occurs at the northern end of the runway. For locations B and C the loudest portion of the event occurs as the aircraft travels to the south.
4. Site A approximates the northern limits of residential development in Richfield.
5. Site B approximates a central location for residential development in Richfield.
6. Site C approximates the southern limits of residential development in Richfield.

Source: HNTB Analysis

**Taxiing.** Unlike both start of takeoff roll and reverse thrust operations, taxiing operations are not reflected in the DNL analyses presented in the DEIS. Taxiing operations associated with the proposed Runway 17-35 would generate peak noise levels of 57 to 80 dBA on the eastern perimeter of Richfield. Most taxiing would occur on the east side of the proposed runway and would generate from 57 to 77 dBA. Aircraft taxiing on the west side of Runway 17-35 would generate from 59 to 81 dBA. For brief periods, aircraft taxiing in and out of the proposed air cargo buildings could generate peak noise levels of 67 to 90 dBA on the eastern perimeter of Richfield. (See Table 1.) In the year 2010, approximately 25 aircraft per day might use the west taxiway. As noted above, vehicular traffic on Cedar Avenue and on neighborhood streets would generate peak levels of approximately 54 to 74 dBA at residences.

**Crosswind and Upwind Conditions.** The noise levels for taxiing aircraft were monitored under down wind conditions, when sound waves from the aircraft source are bent downward, thus reinforcing or increasing noise levels at the receptor. In Richfield, such conditions would occur with winds from the east. The predominant winds at MSP are actually from the south and west, which would lessen the noise levels experienced in Richfield. When winds are out of the south (crosswind conditions), noise levels will be approximately 5 dBA lower than those indicated. When winds are out of the west (upwind conditions), noise levels would be approximately 10 dBA lower. Noise levels from start of takeoff roll and reverse thrust operations were monitored under crosswind conditions, consistent with the prevailing wind conditions at MSP. When winds are from the east, start of takeoff and reverse thrust noise levels might be 5 dBA higher than estimated, while they could be 5 dBA lower when winds are from the west.

**B. Projected Aircraft Ground Noise Levels**

Calculations were made separately for each of the locations and aircraft/operation types based on maximum measured noise levels ($L_{max}$). The projected ranges of $L_{max}$ are presented in Table 1. These ranges were based on the range of noise levels measured for two and three engine jet aircraft ranging in size from a Fokker 100 (F100) to a Douglas DC-10.

The noise monitoring results includes monitoring of older, noisier aircraft such as the Boeing 727-200. Prior to completion of the proposed Runway 17-35, these aircraft and other "Stage 2" aircraft will be replaced by new or modified aircraft meeting lower "Stage 3" noise limits as required by federal regulations. Accordingly, noise levels associated with the B727-200 are not reflected in Table 1. Another Stage 2 aircraft, the DC-9, was also monitored. Since some DC-9s have been modified to meet Stage 3 requirements, it was not possible to differentiate between Stage 2 and Stage 3 versions of this aircraft. Accordingly, it is likely that the higher noise levels associated with the DC-9 aircraft are due to unmodified Stage 2 aircraft. As shown in Table 2, the DC-9 is the loudest aircraft type monitored for taxiing and reverse thrust operations, and is the second loudest aircraft after the B727 for start of takeoff roll.

Table 3 indicates that the modified Stage 3 DC-9 is approximately 7 dBA quieter than the unmodified Stage 2 aircraft at a distance of 2,000 feet (the approximate distance to the closest receptor). Consequently, the upper end of the ranges presented in Table 1 may be overstated by as much as 7 dBA.

Short duration maximum noise levels could also be higher for all three locations from cargo jet aircraft taxiing away from the proposed new cargo buildings. These maximum levels could be 10 dBA greater than the taxiing noise levels presented in Table 1 and would only occur when the aircraft jet engines are almost perpendicular to Receptors B and C and at Receptor A when cargo aircraft turns from the north end of the proposed west parallel taxiway to the proposed Runway 17-35 prior to start of takeoff.

**TABLE 2**
**MSP Noise Monitoring Statistics**

| Aircraft | Taxi @ 1460 ft. | Takeoff @ 2200 ft. | Reverse Thrust @ 2200 ft. | Statistics |
|---|---|---|---|---|
| DC-9-30[1] | 6 | 9 | 11 | Number of Samples |
| | 83.20 | 88.80 | 74.60 | MAX. dBA |
| | 72.55 | 80.70 | 70.00 | MEDIAN dBA |
| | 65.60 | 67.90 | 64.20 | MIN dBA |
| B-727-200[2] | 11 | 5 | 3 | Number of Samples |
| | 76.80 | 94.10 | 71.40 | MAX. dBA |
| | 70.10 | 86.20 | 66.20 | MEDIAN dBA |
| | 64.60 | 82.60 | 59.80 | MIN dBA |
| B-757[3] | 11 | 10 | 6 | Number of Samples |
| | 75.70 | 72.50 | 74.40 | MAX. dBA |
| | 68.80 | 67.90 | 62.60 | MEDIAN dBA |
| | 60.20 | 62.00 | 57.50 | MIN dBA |
| DC-10[4] | 0 | 8 | 6 | Number of Samples |
| | 0 | 77.40 | 75.40 | MAX. dBA |
| | 0 | 70.70 | 68.85 | MEDIAN dBA |
| | 0 | 67.20 | 62.10 | MIN dBA |
| A320[3] | 2 | 5 | 5 | Number of Samples |
| | 70.90 | 73.40 | 72.70 | MAX. dBA |
| | 67.55 | 69.70 | 62.10 | MEDIAN dBA |
| | 64.20 | 65.40 | 61.40 | MIN dBA |
| F100[3] | 1 | 3 | 0 | Number of Samples |
| | 66.20 | 80.60 | 0 | MAX. dBA |
| | 66.20 | 72.70 | 0 | MEDIAN dBA |
| | 66.20 | 68.50 | 0 | MIN dBA |
| MD80[3] | 0 | 2 | 0 | Number of Samples |
| | 0 | 74.30 | 0 | MAX. dBA |
| | 0 | 73.10 | 0 | MEDIAN dBA |
| | 0 | 71.90 | 0 | MIN dBA |
| DC8[3] | 0 | 1 | 1 | Number of Samples |
| | 0 | 71.40 | 73.10 | MAX. dBA |
| | 0 | 71.40 | 73.10 | MEDIAN dBA |
| | 0 | 71.40 | 73.10 | MIN dBA |

**Notes:** MAX = Maximum peak noise level monitored (Lmax).
MIN = Minimum peak noise level monitored (Lmax).
Median = Median peak noise level monitored (Lmax).

1. Most aircraft of this model are Stage 2.
2. All aircraft of this model are Stage 2.
3. All aircraft of this model are Stage 3.
4. Most aircraft of this model are Stage 3.

Source: MAC AVSAT Office

| TABLE 3<br>DC-9-30 Noise Curve Comparison at Takeoff (14,000 lb.) Thrust | | | | |
|---|---|---|---|---|
| | Stage 2 DC-9-30 | | Hush-kitted Stage 3 DC-9-30 | |
| Distance | SEL | Lmax | SEL | Est. Lmax |
| 200 | 119.1 | 120.1 | 114.6 | 115.6 |
| 400 | 115.4 | 113.4 | 110.2 | 108.2 |
| 630 | 112.8 | 108.8 | 107 | 103 |
| 1000 | 110 | 104 | 103.6 | 97.6 |
| 2000 | 105.1 | 96.1 | 98 | 89 |
| 4000 | 99.4 | 87.9 | 91.7 | 80.2 |
| 6300 | 95 | 82.1 | 86.8 | 73.9 |
| 10000 | 90.1 | 75.6 | 81.4 | 66.9 |
| 16000 | 84.4 | 68.4 | 75.2 | 59.2 |
| 25000 | 78.4 | 60.9 | 67.9 | 50.4 |
| Source: HNTB analysis of INM database. | | | | |

Since the projected noise levels for taxiing operations are based upon downwind measured values, the ranges represent downwind conditions. Under calm wind conditions or crosswind conditions, ground noise levels would be approximately 5 dBA lower than the values shown in Table 1. Should Receptors A, B, or C be upwind of the proposed new runway ground operations, noise levels could be 10 dBA lower than the values shown in Table 1. For example, in the taxiing aircraft analysis, noise experienced in Richfield would be approximately 5 dBA lower in a crosswind than the downwind taxiing levels indicated. Noise levels from aircraft taxiing on the east side of the proposed runway would range from 52 to 72 dBA (compared to 57-77 dBA for downwind). Similarly, peak noise levels associated with aircraft taxiing in and out of the proposed air cargo facilities would range from 62 to 85 dBA.

In upwind conditions for taxiing aircraft (winds from the west), noise experienced in Richfield would be approximately 10 dBA lower than the downwind analysis. Noise levels from aircraft taxiing on the east side of the proposed runway would range from 47 to 67 dBA (compared to 57-77 dBA for downwind). Similarly, peak noise levels associated with aircraft taxiing in and out of the proposed air cargo facilities would range from 57 to 80 dBA.

### C. Low Frequency Noise and Vibration

Subsequent to submitting comments on the DEIS, Richfield asked MAC to address potential impacts of low frequency noise and vibration associated with Runway 17-35. The maximum noise levels associated with aircraft operations, whether low or high frequency, are addressed in Sections A and B of this response. Potential impacts of low frequency noise and vibration are health effects, structural damage and annoyance. There are standards or thresholds for determining potential effects on health and structural damage, but not for annoyance. Annoyance from low frequency noise and vibration is therefore recognized by MAC and FAA as an unresolved issue, and is identified as such in the Executive Summary, Unresolved Issues. The remainder of this section addresses the potential impacts on health and structural damage.

The most extensive study of low frequency aircraft noise and vibration was conducted by the FAA to assess the potential impact of the Concorde supersonic transport (SST) at Dulles International Airport (IAD)[1]. This monitoring effort also assessed the potential effects of subsonic commercial jet aircraft. The study determined that the frequency distribution of subsonic aircraft were similar to the SST. Accordingly, the study concluded that vibration due to the SST and subsonic transport aircraft would be similar for a given overall sound pressure level.

Monitoring occurred at Sully Plantation, an historic site located approximately 3 miles from the start of takeoff roll (brake release) and 1600 feet to the side of the extended runway centerline. Takeoff noise levels in the vicinity of Sully Plantation ranged from 80.5 dBA to 112.3 dBA. In contrast, ground noise levels associated with aircraft operations on Runway 17-35 would range from 54 dBA to 90 dBA. At the maximum SST noise levels monitored at Sully Plantation, window, wall, and floor vibration levels were 20 to 30 times less than the damage criteria limit.

[1] Concorde Monitoring Summary Report, Dulles International Airport, May 1976 - May 1977, U.S. Department of Transportation, Federal Aviation Administration, September 1977.

A summary of relevant study findings follows.

1. The vibration response of building elements (windows, walls and floors) are directly proportional to the sound pressure level of aircraft noise and are virtually independent of aircraft type.

2. Concorde operations resulted in higher noise levels and, consequently, higher vibration levels than subsonic jets.

3. Certain household events involving direct impulsive loading such as closing doors and windows produced vibration levels equal to or greater than those associated with the Concorde.

4. Vibration levels associated with the Concorde (and subsonic aircraft) were less than those expected to cause damage such as cracked plaster or broken windows.

5. All measurements (or vibration) were below the International Standards Organization (ISO)

Extremely high levels of infrasound (low frequency sound) can cause mild stress reactions and non-auditory effects such as pulsating or fluttering. The Environmental Protection Agency (EPA) has estimated the threshold for these symptoms at about 120 dB for sounds in the 1 - 16 Hertz (Hz) range. The EPA identified no serious health hazard for sound pressure levels less than 130 dB. The Concorde monitoring study demonstrated that low frequency (below 30 Hz) sound associated with the Concorde would be well below EPA sensation and damage risk levels. Since all other commercial transport aircraft would fall below the levels generated by the Concorde, there are no apparent health risks from low frequency sound associated with commercial aircraft operations[2]. Since ground noise levels associated with operations on the proposed Runway 17-35 at MSP would be lower than the monitored Concorde noise levels, no health risks are indicated.

**D. Ground Noise Analysis Procedures**

The analyses were based on noise monitoring conducted by the Metropolitan Airports Commission (MAC) on September 25 and October 1, 1996. Ground noise levels monitored for operations on the existing runway and taxiway system were used to calculate noise levels in nearby areas of Richfield due to operations on the proposed Runway 17-35 and its associated taxiways. A total of 72 ground noise events were monitored for taxiing, start of takeoff, and reverse thrust operations. A summary of these results is attached. As noted earlier, start of takeoff roll and reverse thrust are reflected in the DNL contours used to assess noise impacts. While taxiing noise is not included in the INM analysis of noise levels, taxiing aircraft generate lower peak noise levels than the same types of aircraft during takeoff or reverse thrust.

**Noise Propagation Factors.** Noise levels at three locations in Richfield, A, B, and C, (see Figure 1) were estimated based on the noise monitoring data provided by the MAC. Aircraft orientation as well as attenuation from geometric spreading and environmental conditions were considered.

**Aircraft Orientation.** Aircraft orientation during measurements was analyzed and appropriate adjustments were made to the monitored events to calculate the noise impact on the selected locations in Richfield. These adjustments were based on the contours of overall sound pressure level (OASPL) around a turbofan aircraft operating on the ground, as published in Handbook of Noise Control, Second Edition, Edited by Cyril M. Harris, 1979 (Fig. 34.3, page 34-3).

**Attenuation.** The sound pressure levels (SPLs) generated by the aircraft at the three selected locations were calculated based on the point source sound propagation formulae adapted from Noise and Vibration Control, Edited by Leo L. Beranek, 1988, Equation 7.2, page 166).

**Excess Attenuation.** Excess attenuation accounts for absorption of sound energy by the air and ground in addition to the decrease in sound pressure caused by the spreading of sound waves over distance. The most significant terms of the excess attenuation considered for this project were: (1) attenuation by absorption in the air, (2) attenuation by barriers, (3) attenuation and fluctuation owing to wind and temperature gradients and characteristics of the ground.

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[2] Aviation Noise Effects, U.S. Department of Transportation, Federal Aviation Administration, March, 1985 (Report No. FAA-EE-85-2).

- **Air absorption.** Excess attenuation due to air absorption was calculated for all suggested source-receiver configurations. These calculations were made for 70% relative humidity and 20°C (68°F) air temperature conditions.

- **Barriers.** Excess attenuation by barriers would not be a significant factor for the vast majority of the source-receiver configurations. At Location B, a row of proposed cargo buildings west of the runway would theoretically provide 5-6 dBA of attenuation for reverse thrust noise. However, these values would be gradually reduced for all the residences north of Location B, including Location A. Furthermore, this attenuation could be even less for certain meteorological conditions. When sound propagates downwind from the source or during temperature inversions, the downward-curving sound ray paths can penetrate significantly into the shadow zone behind the barrier and significantly reduce the attenuation. For Location B, some shielding could also be provided for certain aircraft during taxiing on the taxiway parallel to the proposed runway or from reverse thrust landing. At the same time, there would be some taxiing aircraft positions (by the cargo building immediately adjacent to Location B, for example) when no shielding could be applied. Likewise, reverse thrust noise could be heard between the cargo buildings, virtually eliminating any appreciable noise reduction otherwise provided by the cargo buildings. A similar situation exists for "start of takeoff roll" with respect to Location C. Based on the above considerations, no excess attenuation due to barriers was projected to ensure a conservative estimate of the future noise levels.

- **Wind and temperature.** The field measurements at the MSP were performed at three locations within 2,200 feet of the north end of Runway 11R and its parallel taxiway. Measurements of taxiing aircraft were performed under favorable sound propagation conditions, downwind from the source. Under these conditions, sound waves refract downward producing minimal excess attenuation. On the other hand, when the propagation is upwind or during conditions of a temperature lapse, sound refraction upwards produces a shadow zone near the ground resulting in an excess attenuation that can exceed 10 dBA. Measurements of start of takeoff roll and reverse thrust were conducted under crosswind conditions which would have less effect on sound propagation. These effects of wind and temperature gradients are highly variable from moment to moment because of atmospheric turbulence. Because of this variability, reliance upon long term sound reduction from upward refraction is risky, and some official prediction methods require the assumption of downwind propagation under all circumstances, as a conservative approximation [ Noise and Vibration Control Engineering, Principals and Applications, Edited by Leo L. Beranek and Istvan L. Ver, 1992, page 138]. Based on the above considerations, no additional wind/temperature related excess attenuation was taken into account to ensure a conservative estimate of the future noise levels.

- **Ground attenuation.** The same variability is associated with ground conditions between a noise source and receiver. A combination of acoustically hard and soft sites, and intervening natural barriers between source and receiver make it impractical to predict any additional excess attenuation due to ground absorption for the distances beyond those equivalent to measurement distances. Accordingly, no additional ground related excess attenuation was taken into account to ensure a conservative estimate of the future noise levels.

**Highway Noise**

The FHWA highway traffic noise prediction computer program, STAMINA 2.0/OPTIMA was used to model the noise level of the Cedar Avenue traffic. The following key input parameters were used in this model to calculate an hourly equivalent sound pressure level, Leq, at a specific receiver location:

- Distance between roadway centerline and receiver: 324 ft

- Hourly traffic volume in light-duty (two axles, four tires) - 4860 cars, medium-duty (two axles, six tires) - 270 trucks, and heavy-duty (three or more axles) vehicles - 270 trucks;

- Vehicle speed - 50 mph;

The projected Leq noise level would range from 65 to 70 dBA depending on the ground conditions between the roadway and receiver. This prediction does not account for any meteorological conditions which could significantly affect these levels. They may be at least 5 dBA higher, for downwind, or 5 dBA lower, for upwind sound propagation considering the distances involved and winds up to 12 mph. Lmax noise levels from automobiles and trucks would range from 70 to 75 dBA.

CITY OF ROSEMOUNT

*Everything's Coming Up Rosemount!!*

CITY HALL
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Rosemount, MN
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January 18, 1996

Ms. Jenn Unruh
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, Minnesota 55450

RE: Airport Dual Track Planning Process

Dear Chair Unruh:

On behalf of the residents of the City of Rosemount, please accept this letter and the attached resolution as the community's position statement concerning the Airport Dual Track Process. This position is one of support for bringing about an end to the airport planning process during the 1996 Legislative Session. The City recognizes the state-wide importance of providing high quality air transportation services for the region. We believe, however, that these future needs can continue to be met at the present Minneapolis/St. Paul International Airport location without the tremendous costs and variety of impacts that would result from a new airport alternative.

Accordingly, the attached resolution by the Rosemount City Council calls for the 1996 Minnesota Legislature to bring about an end to the Dual Track Process along with the removal of land use controls and other site preservation methods being considered for the new airport alternative.

Thank you for your review and consideration of this information.

Sincerely,

Cathy Busho

Cathy Busho
Mayor, City of Rosemount

Printed on recycled paper containing 10% post-consumer materials

CITY OF ROSEMOUNT
DAKOTA COUNTY, MINNESOTA

RESOLUTION 1996- 6

A RESOLUTION REQUESTING A LEGISLATIVE DECISION
IN 1996 TO END THE DUAL TRACK AIRPORT PLANNING PROCESS

**WHEREAS,** the necessary research and analysis required for and by the Dual Track Airport Planning Process was essentially completed by the recent publication of the Metropolitan Airport Commission's Environmental Impact Statement, which clearly indicated that our current world class international airport can continue to adequately serve the State of Minnesota until at least the year 2020; and

**WHEREAS,** the estimated $5 billion cost of a new airport facility, plus the estimated $10 billion cost of additional required infrastructure, would therefore represent unnecessary expenses for the people of the State of Minnesota and for the resident airlines that serve our State; and

**WHEREAS,** the costs of unnecessary airport expenditures would adversely affect thousands of permanent jobs in the airline industry, and thousands of other jobs in the many service industries that are dependent upon a viable, healthy air transportation hub and related aircraft maintenance operations;

**NOW, THEREFORE, BE IT RESOLVED,** that the City of Rosemount hereby calls upon the 1996 Minnesota Legislature to act decisively to:

1. immediately end the costly Dual Track Airport Planning Process,
2. release any current and/or future airport-related site protection controls affecting the people and local governmental units of Dakota County,
3. endorse comprehensive noise mitigation efforts to alleviate airport-related noise problems in affected neighborhoods, and
4. support the ongoing efforts of the Metropolitan Airports Commission and our resident airlines to effectively cooperate with one another in operating and improving our current airport facility.

**ADOPTED** this 16th day of January, 1996.

Cathy Busho, Mayor

**ATTEST:**

Susan M. Walsh, City Clerk

Motion by: Carroll Seconded by: Wippermann

Voted in favor: Carroll, Anderson, Wippermann, Busho

Voted against: None. * one council seat is vacant at this time

PLANNING COMMISSION
*David McDonell, Chair*

CITY OF SAINT PAUL
*Norm Coleman, Mayor*

*1100 City Hall Annex*
*25 West Fourth Street*
*Saint Paul, MN 55102*

*Telephone: 612-266-6565*
*Facsimile: 612-228-3314*

Mr. Nigel Finney
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, MN 55450

Mr. Glen Orcutt
Federal Aviation Administration
6020 28th Avenue South
Minneapolis, MN 55450

RE: DRAFT ENVIRONMENTAL IMPACT STATEMENT - DUAL TRACK AIRPORT PLANNING PROCESS

Attached are the comments of the City of Saint Paul Planning Commission on the Draft Environmental Impact Statement - Dual Track Airport Planning Process. The Commission is concerned not only about insufficiency of the Draft EIS, but of the prospects that the EIS process may be accelerated or truncated. The City has been consistent for the last six years in support of the Dual Track Planning Process. The Planning Commission sees no legitimate reason for curtailing the public process at this point, and sees advantages of completion of the process regardless of the preferred alternative.

In addition, the Planning Commission is very concerned about the amount of analysis done but not reflected in the Draft EIS. The lack of information, as well as information released since the issuance of the Draft EIS, raises serious questions concerning the validity of legally-mandated public review and hearing processes.

The Planning Commission continues to support the full completion of the Dual Track Airport Planning Process; including provision of complete information as well as allotting sufficient time for public review/Final EIS preparation.

Sincerely,

David G. McDonell, Chair
Saint Paul Planning Commission

# City of Saint Paul Review of

# The Draft Environmental Impact Statement for

# THE DUAL TRACK AIRPORT PLANNING

# January, 1996

## I. INTRODUCTION

Since the beginning of the Dual Track Planning Process, the City of Saint Paul has been involved and supportive of the planning process. However, the City is very concerned about the Draft EIS and what appears to be missing analysis necessary for making an alternative recommendation. In addition, the City is concerned about an apparent lack of commitment to the final stages of the Dual Track Planning Process; namely an extremely short public review process of the Draft EIS and limited preparation time for the Final EIS. This last point is particularly critical for development, of what the City believes to be, necessary remedial actions under all alternatives.

Recommendations noted.

## II. RECOMMENDATIONS

A. **Hold to the original timetable for the Dual Track Airport EIS process, allowing sufficient time for public review and development of comprehensive remediation measures.**

B. **Include and/or expand analysis necessary for adequate understanding of impacts and for evaluating the differentiation of alternatives including:**

1. **Clarification of air travel forecasts, and resolution among conflicting forecasts.**

2. **Detailed potential economic impacts on Saint Paul, Minneapolis, Bloomington and Richfield under all alternatives.**

3. **Detailed potential economic impacts on the region under all alternatives.**

4. **A risk analysis evaluating the impacts of deferring a new airport without some sort of land reservation/site preservation program.**

5. **Detailed potential economic impacts on Holman Field under all alternatives.**

6. **Detailed potential economic impacts of the reuse of the MSP site under the New Airport alternative.**

7. **Potential economic impacts on likely sprawl associated with a new airport.**

8. **Documenting the likely impacts on the region's "non-attainment" air quality status.**

9. **Analysis of the need for site preservation in light of further analysis provided in points 1 - 4 and 8 above.**

10. **Complete the Dual Track Planning Process including full public review of the Draft EIS and sufficient time for preparing adequate mitigation measures for the Final EIS.**

Recommendations noted.

C. **Complete the Dual Track Planning/EIS Process as originally envisioned.**

## III. ANALYSIS

### A. Differentiating Issues Highlighted in the EIS

The matrix found in the "Executive Summary" highlights the differences among the three alternatives (see Attachment pp 6-8). Based on the matrix and the ensuing text, the following emerge as significant differentiating issues:

1. CO Emissions Primarily pollution from vehicles, all three alternatives generate approximately the same tonnage, but for the No Build and MSP alternatives, the background pollution combined with the added pollution create violations of air quality standards.

A. A. This combination of predicted on-airport and off-airport concentrations with background is addressed in Section V. A.1.1. Existing Pollutant Concentrations. No violations of air quality standards are projected.

2. Costs The MSP alternative costs approximately $2.8 billion for a new north-south runway, a new and relocated terminal complex, and improved highway access to the terminal. The New Airport costs approximately $4.7 billion for a new facility, property acquisition/relocation, and a new highway to access the site.

3. Energy Supply and Natural Resources Surprisingly, the fuel consumption among the three alternatives is comparable. The New Airport saves on airplane fuel but requires greater vehicle fuel use. MSP and No Build use more airplane fuel and less vehicle fuel use.

4. Number of Residents Impacted by Airport Noise Impacts on households for No Build and MSP are substantial, with over 100,000 people affected. The New Airport impacts slightly over 2,000 people. (Remember that these numbers represent those affected based on FAA guidelines, and do not fully represent all those affected - e.g. No Build and MSP include no persons in Saint Paul.)

5. Accessibility The average vehicle travel time for access to MSP in 2020 is 22 to 26 minutes. The average travel time to the New Airport would be 41 to 46 minutes.

**B. Potentially Differentiating Issues Not Highlighted in the EIS**

There are at least six issues which one might expect to be within the focus of the Draft EIS but are not highlighted:

1. Air Travel Forecasts Forecasting has been the largest ongoing controversy with regard to the Dual Track Planning Process. The critical issue revolves around whether air travel can be projected 30 years into the future with any validity. Higher projections came out of studies done in 1990 under the auspices of the Metropolitan Council and are supported by long-term trends of air travel and the relative health of the Minnesota economy. The lower, 1993 projections done under the direction of the Metropolitan Airports Commission are supported by mid-term economic and air travel trends, and the continuing shakeout of the airline industry.

   In addition to the series of complex forecasts done for the Draft EIS, the FAA does national forecasts based in large part on trend analyses. The FAA forecasted air traffic for MSP out to 2010. The differences between the FAA and MAC forecasts are substantial: the FAA forecasts are 15% higher for 2000 and 30% higher for 2010 (see Attachment p 19, Table 5).

   The Draft EIS dedicates nearly three pages on forecast methodology (see Attachment pp 17-19). The Draft EIS supports the 1993 forecasts as the most reasonable. It downplays the FAA forecasts as being overly aggressive and using crude indicators of economic growth. And it explains the last three-year upturn in flights as the result of three "one time" events (according to Northwest Airlines).

   However, since there has been so much disagreement among experts and decision-makers on forecasts, it is difficult to draw any reasonable conclusion. This presents tremendous problems in analyzing the advisability of the New Airport.

**B.** B. See General Response 4.

2. Economic Impacts Nowhere has more creative energy gone into airport analyses than trying to determine the economic impact differences among alternatives. Yet, the indicators chosen to differentiate the alternatives in the Draft EIS are only marginally helpful (see Attachment p 6). There is scant discussion of the critical impacts of the New Airport alternative on the economies of Bloomington, Richfield, Minneapolis and Saint Paul. The conclusions are limited to direct impacts within the airport property.

   They do not include any discussion of potential disinvestment of the "Bloomington Strip" or downtown Minneapolis or Saint Paul. Granted such analyses are difficult, complex and not necessarily conclusive. However, it is still difficult to understand why more analysis was not included. Without better economic impact guidance, selecting a preferred alternative is extremely problematic.

**C.** C. See General Response 1.

   Aside from the impacts on municipalities, the Draft EIS is sketchy at best with regard to potential impacts on the regional and state economies. For example, what is the magnitude of economic risk if no new airport is built, and the region finds in 15 years that MSP lacks capacity? In addition, what are the cost-competitiveness impacts of Northwest Airlines' continued dominance at MSP? These are both significant impacts which could differentiate among alternatives.

**D.** D. The legislature's decision to implement the MSP Alternative in stages diminishes the economic risk. The north south runway is economically justified now, and the construction of a new west terminal requires legislative action. The legislature also mandated a more comprehensive economic impact study by the University of Minnesota.

   Finally, and perhaps most significantly for Saint Paul, there is no discussion of the alternatives' impacts on the economic viability/enhancement of Holman Field. Use of Holman from both economic and environmental perspectives has historically been important to the City. None of the studies of the Dual Track Planning Process addresses the economic issues in any meaningful detail.

**E.** E. The MSP Alternative is expected to have a minimal impact on Holman Field, since very few business jets are forecast to move from MSP to Holman in the next twenty years.

3. Land Reuse of MSP Should the New Airport Alternative be Selected
Although there has been substantial discussion and study concerning the reuse of the current airport site should a new one be built, there is no analysis included in the Draft EIS. There are at least two different areas that would be affected by reuse of the current site. First and foremost, use of such a large site within the urbanized area could have profound impacts on the economy of the surrounding area. Although it may not be appropriate to specify reuse of the site at this time, a discussion of potential scenarios and their economic impacts is extremely important in comparing the economic impact of airport alternatives. (See #4 below for the land impacts of the New Airport alternative.)

**F.** F. See General Response 1.

Second, under differing development scenarios what would be the likely impacts on air quality and traffic? The current airport is a major current generator of local and regional traffic. In addition, the highways surrounding MSP have current congestion problems, some of them severe. Would air quality requirements and congestion be limiting factors in the reuse of the site? Conversely, to what extent would differing development scenarios affect area air quality and congestion? These questions can be, and likely are, important differentiating impacts among airport alternatives.

**G.** G. See General Response 1.

4. Land Development Patterns of a New Airport on Dakota County and the Region Other airports in the world have experienced major development in surrounding areas. The size and economic force of a new airport would clearly attract substantial pressure for development in central Dakota County. Yet neither the Economic analysis nor the Land Use analysis adequately deal with this issue. The Land Use section totally bases the development of land in Dakota County on comprehensive plans of local jurisdictions and growth projections. The resulting conclusions of the Draft EIS are dangerous in their simplicity and naivety (illustrated on Figure O-5 in the Draft EIS appendix). The track record of the region and local jurisdictions to restrict growth in the face of strong and persistent development pressures is not good. There is nothing proposed in the Draft EIS that shows the likely development that would occur around the new airport, even with land restrictions in place.

**H.** H. See General Response 1.

Why is this important to the region and not just a matter for Dakota County? First, ignoring the likely localized impacts could lead to a poor location decision on the airport. Second, the size of the impacts as suggested by the draft Economic Impact Study (not included in the Draft EIS) are sufficiently sizeable to effect the patterns of regional economic growth. Third, likely development associated with a new airport may well be fiscally, socially and environmentally harmful to the immediate area and to the region.

Much of new suburban costs are borne by the region at-large. This type of expected sprawl development is neither fiscally beneficial for the fully developed area nor the area in which the development will occur. Such development patterns also cause social stress by extending commuting distances for workers (particularly true for lower income workers). And degradation on the eco-systems of such development is usually substantial.

**I.** I. See General Response 1.

5. Congestion of Highways and Air Quality Although discussed as two separate items in the Draft EIS, there is little analysis of the synergy between automobile congestion and air pollution (see Attachment pp 30-35). (Air quality modeling assumptions have not been included in the Draft EIS.) Table W-21 on page 30 of the Attachment lists roadway segments and their levels of projected congestion. Levels of Service E and F are generally seen as unacceptable levels within this region. The MSP alternative results in three "E" segments and four "F" segments in the region. Similarly, the New Airport, without roadway improvements, results in two "E" segments and 10 "F" segments. (Note that a New Airport with potential roadway improvements results in one "E" and five F" segments.)

In and of itself, this data is not fully revealing. Important questions are left unanswered such as: How will air quality non-attainment CO levels created by the MSP and No Build alternatives affect the region's current "non-compliance" status from EPA? Can the poor levels of traffic service created by MSP and the No Build be alleviated, thereby eliminating a "non-attainment" problem? if so, at what cost?

**J.**

J. Air quality modeling assumptions for on-airport and off-airport sources are discussed in Appendix A.1.

The effect of levels of service is discussed in Section V.A.3 Summary of Air Quality Impacts - Off-Airport Peak Hour Concentrations from Off-Airport Sources.

The potential impact of non-attainment levels is discussed in Section V.A. Designated Non-Attainment and Maintenance Areas.

Preliminary cost estimates of roadway improvements were included in Table I-26 of the DEIS.

6. Site Preservation There is a lengthy and informative discussion concerning the preservation of the Dakota County site should the decision be to select the No Build or MSP alternative at this time. In the analysis two alternative techniques are suggested for preserving the site (see Attachment p 24):

a. Purchase now, lease back until construction begins

b. Limit development now through land use regulations, acquire when construction begins

The Draft EIS pursues the first alternative as the only reasonable one, calculating costs under various scenarios. Total cost (for acquisition plus relocation plus ownership minus lease-back proceeds) would be approximately $126 million; or 2.5% of the development costs of a new airport. The $126 million represents an increase of only 4.3% to the MSP alternative.

C. Issues with Truncation of the Dual Track Process

Granting that the process for the Dual Track analysis has been long and expensive, there are some downside risks in abandoning the process at this juncture.

First, the Northwest Airlines proposal, although considered in the Dual Track Process earlier, should be revisited for its practicality. It's practicality is not fully known at this time and needs further analysis, particularly if decision-makers are drawn to supporting the proposal.

Second, to abandon the process now would seriously jeopardize the validity of the analysis done to-date on expanding MSP. The $600 million proposal for MSP notwithstanding, the region must have a modern airport into the 21st Century, regardless of its location.

Third, the current MSP expansion alternative has gone through an arduous public process with the communities most affected by a new airport alternative. A decision which selects one of the MSP alternatives should not be merely a rejection of the New Airport alternative, but be the foundation for more detailing of MSP plans.

**K.**

K. The integrity of the Dual Track process was not compromised by the compression of the schedule. Nearly all of the technical and environmental analyses were completed. See General Response 3 on the NWA proposal. The approved comprehensive plan for MSP reflects the culmination of many years of technical and environmental analysis and is the most feasible and prudent plan for expanding the airport in the future.

## IV. CONCLUSIONS

- There is substantial uncertainty about the validity of the air travel forecasts included in the Draft EIS. Therefore, the New Airport alternative should not be eliminated based in whole or in part on those forecasts.
- There is insufficient economic analysis in the Draft EIS to evaluate the affects on various municipal economies nor the region and state economies.
- There is insufficient economic analysis in the Draft EIS to evaluate the risk factor of deferring a new airport without some sort of land reservation/site preservation.
- There is insufficient economic analysis in the Draft EIS to evaluate the impacts of the three alternatives on Holman Field.
- There is virtually no analysis in the Draft EIS which shows the impacts of reuse of the MSP site under the New Airport alternative. This is particularly true regarding the economic, air quality and traffic impacts of reuse of MSP.
- There is virtually no analysis in the Draft EIS which describes the likely impacts of sprawl associated with a new airport. The analysis that is included is naive at best, and potentially extremely detrimental to the fiscal, social and natural environments of the region.
- There is insufficient air quality/roadway analysis in the Draft EIS to determine impacts on the region's status of non-compliance with Federal EPA CO level requirements.
- The site preservation analysis indicates an extremely low cost for protecting future needs under the No Build and MSP alternatives.
- There is sufficient rationale for completing the Dual Track EIS Process as originally envisioned.

CITY OF SAINT PAUL
Norm Coleman, Mayor

Division of Planning
25 West Fourth Street
Saint Paul, MN 55102

Telephone: 612-266-6565
Facsimile: 612-228-3314

February 20, 1996

Penny Simison
HNTB
FAX 920-0173

RE: Saint Paul's Response to the Dual Track EIS

Dear Ms. Simison;

The attachments to the Saint Paul review of the Dual Track EIS are taken from the EIS directly.

| Attachment Pages | EIS Pages |
|---|---|
| 1. | i |
| 2. | ii |
| 3. | iii |
| 4. | iv |
| 5. | v |
| 6. | vi |
| 7. | vii |
| 8. | viii |
| 9. | Figure ES-1 |
| 10. | Figure ES-2 |
| 11. | Figure ES-3 |
| 12. | Figure ES-4 |
| 13. | I-6 |
| 14. | I-7 |
| 15. | I-8 |
| 16. | I-9 |
| 17. | II-6 |
| 18. | II-7 |
| 19. | II-8 |
| 20. | II-9 |
| 21. | Figure 5 |
| 22a. | V-56 |
| 22b. | V-147 |
| 23. | V-155 |
| 24. | V-167 |
| 25. | V-168 |
| 26. | V-169 |
| 27. | V-170 |
| 28. | V-171 |
| 29a. | V-172 |
| 29b. | V-173 |
| 30. | V-233 |
| 31. | Figure W-2 |
| 32. | Figure W-12 |
| 33. | Figure W-16 |
| 34. | Figure W-17 |
| 35. | Figure W-18 |

Please call if you have questions. 266-6576

Sincerely,

Allen Lovejoy
Planning Division

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February 9, 1996

Mr. Nigel Finney
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, MN 55450

Dear Nigel,
Enclosed are the written comments of the Southern Dakota County Townships and Cities Airport Planning Group for the Dual Track Airport Planning Process draft EIS. These comments supplement the oral comments provided at the Public Hearing on January 17.

Thank you for the opportunity to respond and present the concerns of the townships and cities.

Sincerely,

Jeffrey J. Connell
Partner

JJC/sh

enclosure

cc: Ron Mamer, Co-chair
Roger Fox, Co-chair

# WRITTEN COMMENTS OF THE SOUTHERN DAKOTA COUNTY TOWNSHIPS AND CITIES AIRPORT PLANNING GROUP

## DRAFT ENVIRONMENTAL IMPACT STATEMENT
**Dual Track Airport Planning Process**
**February 9, 1996**

The Southern Dakota County Townships and Cities Airport Planning Group consists of representatives appointed to serve by each of the thirteen townships and six rural cities located in southern Dakota County. The group was formed in April, 1994 to establish a formal and credible means to monitor and provide input to the many studies being conducted, and decisions being made, related to the regional dual track airport planning process. The comments provided here are on behalf of the Airport Planning Group, and expand upon those presented at the Public Hearing on January 17. Each of the townships and cities may also be prepared to make additional comments.

After reviewing the draft EIS, it becomes apparent that there is no justification to relocate the airport to Dakota County. There are no economic, environmental or social advantages of the Dakota County site over expansion at the current site. In fact, there are significant disadvantages of the Dakota County site, including cost, accessibility and premature expansion of urban growth which would result in unnecessary costs for public services and facilities, as well as loss of agricultural productivity. We want to highlight several points and conclusions in the EIS that support expansion at the current site over relocating the airport to Dakota County.

The most compelling support for expanding at the existing site is that of economics. Relocating the airport to Dakota County is overwhelmingly more expensive than expanding at the existing location, as shown by Table I-26. With a cost difference of more than $2 billion, there is clearly no justification to relocate.

In addition to the costs shown in the EIS, there are other cost issues that need to be addressed. It does not appear that the costs for road improvements needed in Wisconsin are shown in Table I-26. The list of required road projects on page V-232 identifies two projects in Wisconsin that would be needed, but these are not identified on Table I-26. Also, the costs in Table I-26 are about $70 million less than the figure documented in the text on page V-231.

**A.** A. See General Response 1.

A list of road projects needed even if the airport is not relocated is identified on page V-222. A cost estimate for these projects is not available. This is very important information as part of the decision process. Are there assurances that these projects will be completed as part of an existing capital funding program, and what will be the cost burden to the state? Relocating the airport to Dakota County will require completion of these projects. How will they be funded? What will be the increased traffic volumes on these roads if a new airport is built, compared to no airport in Dakota County? Also, what road projects in Greater Minnesota will be delayed in order to accommodate funding for these needed projects, including the airport? We feel that a detailed analysis of these costs that have not yet been identified will confirm our conclusions that relocating the airport to Dakota County is not an economically viable option.

**B.** B. See General Response 1.

We have expressed our position in the past regarding the needed capacity for the wastewater treatment plant. It is our position, from a reasonable long range planning perspective, that the plant should accommodate future induced development growth, as well as serving a proposed airport. The EIS addresses the airport capacity only. Identifying the capacity needed for future growth resulting from the airport relocation will significantly increase the estimated $20 million cost identified in the EIS. The additional cost for a larger plant to serve development resulting from the new airport needs to be identified for the same reason the road project incremental costs need to be identified - they are the true costs of the airport.

**C.** C. See General Response 1.

In regards to induced development, the EIS acknowledges on page V-91 that the airport "would set the dynamics of development in motion in Dakota County". It also states that the agricultural character of the County would be "severely challenged" due to land speculation and sell off of land by farmers. We have expressed this concern on many occasions, and agree with the conclusions on page V-90 of the EIS that "significant commercial, industrial, office and hotel development, accompanied by planned residential communities in the 13 townships" will occur. This conclusion was apparently reached after reviewing case studies of five other U.S. airports and their development patterns. We are pleased to see it acknowledged that growth will be a much more significant matter to address than has previously been stated by Metropolitan Council projections. We also agree with the conclusions on page V-92, which states that "The MUSA line will be moved and new Free Standing Growth Centers will be created." This, again, had not been previously acknowledged as a consequence of relocating the airport to Dakota County.

**D.**

D. Comment noted.

There is also an inconsistency between the conclusions in the EIS as relates to induced development and Figure O-5, which shows future land uses in the County with a new airport. The map implies that no growth will occur in the rural area as a result of the new airport, which is inconsistent with statements made in the EIS. We feel this is misleading and needs to accurately reflect the conclusions found in the EIS.

**E.**

E. See General Response 1.

Other inconsistencies are found throughout the EIS regarding induced development assumptions. On page V-74, it is stated that induced development will "result in the development of new businesses and residences, generating tax revenues for the townships". This statement is apparently made to offer justification for the loss of a significant part of the tax base in Marshan and Vermillion Townships resulting from the relocation of the airport, and is reinforced on the following page under "Mitigation Measures-New Airport Alternative". First of all, no existing regional policies support such statements; to the contrary, the Metropolitan Council induced development projections suggest the opposite - that their will be only limited induced development in the townships, not to mention no significant commercial development. This appears to be an unsubstantiated statement, unsupported by current regional policy, and assumes a significant change in policy in the future.

**F.**

F. The Regional Blueprint does provide opportunities for considering the placement of regional infrastructure to promote the best overall infrastructure strategy for the region. Weighing the alternatives in light of the provision of an adequate aviation system versus the preservation of agricultural land is the purview of policy makers. See General Response 1.

On page V-93, it is stated that, "the New Airport Alternative would place Dakota County beyond the transition point to a non-agricultural community." Again, we strongly agree with this conclusion. Dakota County has some of the most productive agricultural lands in Minnesota, and one of the most productive agricultural economies in the State. By EIS estimates, 14,100 acres will be lost to the airport and at least 6,000-10,000 additional acres lost to induced development. This is a dramatic and disturbing fact that severely impacts Dakota County's future, and also the State's agricultural economy and farmland production efforts.

This is further emphasized again in the EIS, which acknowledges in the discussion on pages V-84 and V-85 that the Land Evaluation Site Assessment (LESA) score for the New Airport Site is 209 for non-irrigated land and 237 for irrigated out of a maximum possible score of 260. The EIS states that these scores reflect "very high quality" land. We completely agree with the conclusion on page V-85 that "Any total over 160 requires the federal agency to consider other sites or attempt to reduce the land removed from agricultural use." This is reinforced by stating that "This recommendation increases in strength the higher the total." We believe MAC has very convincingly provided evidence that relocating the airport would have a dramatic negative impact on Dakota County's economy, the livelihood of many residents of the County, and the State's agricultural economy.

**G.**

G. Comment noted.

We must at this point reiterate one of the most significant ironies, and inconsistencies, with regional land use policies that exists related to relocating the airport to Dakota County. While the townships and cities in southern Dakota County have collectively implemented the most successful agricultural preservation policy in the state, those efforts have been ignored. The only long term result has been to allow the opportunity for a regional agency to consider locating a major urban-oriented regional facility outside the MUSA boundary, with no planned urban services to support development that will occur as a result of the facility relocation. The decision to even consider the site ignores over 20 years of local and regional planning efforts, as well as established, adopted regional policies related to preservation of agricultural land in the metropolitan region. The Metropolitan Council Development Framework and, more recently, the Regional Blueprint, specifically acknowledge that agricultural land is a legitimate land use and should not be considered "holding land" for future development. We feel the Metropolitan Council cannot recommend the site in Dakota County to the State Legislature, without being inconsistent with its own regional development policies.

**H.** H. See General Response 1.

On page V-89, it is stated that "3,000 to 5,000 acres (of farmland) removed due to induced development around site." On page V-90 it is stated that "... between 6,000 and 10,000 acres of agricultural land would occur in the Inner Four Townships due to lot size alone." Which figure is accurate? Are both to be used? What is the total amount of agricultural land to be lost? It appears it will be much greater than the EIS seems to portray.

**I.** I. See General Response 1.

The EIS states that "There will be no significant light emissions impacts for the New Airport Alternative." (p. V-130). We feel that "significant" is a relative term and that no measurable means have been identified to support the statement. The lights emitted from the facility may not be significant in an urban area, but we feel are extremely significant to a rural area when compared to no lights from urban uses at the present time.

**J.** J. See General Response 1.

In the past, we have mentioned on numerous occasions the need to include the areas designated in the DNL 65 noise zone and Safety Zone A in the plan for acquisition. This request continues to be ignored. We again request that theses areas, consisting of approximately 4,000 acres, be included in the acquisition plan and the cost estimates for the New Airport Alternative.

**K.** K. See General Response 1.

The townships and cities remain opposed to any land banking efforts related to relocating the airport, since it results in social and economic uncertainty and would severely hamper future infrastructure and development planning for both Dakota County and the current airport. It is an extremely costly effort, and we feel is no longer viable to consider, given the overwhelming findings of the draft EIS that relocation of the airport to Dakota County would not be a responsible action. At the January 10 Airport Planning Group meeting, a formal resolution was passed which supports this position. A copy of the resolution is attached to a copy of our comments.

**L.** L. Landbanking was eliminated as an alternative by the Minnesota legislature in April 1996.

## RESOLUTION

**Southern Dakota County Townships and Cities Airport Planning Group**

Whereas, the Southern Dakota County Townships and Cities Airport Planning Group was formed in April, 1994 to monitor and provide input to the Dual Track Airport Planning Process on behalf of the 13 townships and 6 rural cities in southern Dakota County; and

Whereas, the Airport Planning Group has actively participated in the dual track planning process through review and comment of numerous studies and background reports, and

Whereas, the Airport Planning Group has reviewed the draft Environmental Impact Statement for the Dual Track Planning Process and, based upon environmental, social and economic information presented in that document, has determined that relocation of the regional airport to Dakota County is not needed and would be economically imprudent for the State of Minnesota, and

Whereas, landbanking as an option for site preservation has been discussed and studied by the Metropolitan Airports Commission, and

Whereas, the issue of landbanking for site preservation results in social and economic uncertainty for Dakota County, and would severely hamper future infrastructure and development planning for both Dakota County and the current airport.

Now Therefore Be It Resolved, the Southern Dakota County Townships and Cities Airport Planning Group opposes relocating the airport to Dakota County.

Be It Further Resolved, the Southern Dakota County Townships and Cities Airport Planning Group strongly opposes landbanking for a future relocated airport site.

* Unanimously approved on January 10, 1996.

Mr. Nigel Finney
Metropolitan Airports Commission
5040 - 28th Avenue South
Minneapolis, Minnesota 55450

February 12, 1996

Dear Mr. Finney:

On behalf of the Board of Supervisors of Denmark Township in south Washington County and on behalf of all of our constituents I would like to thank you for the opportunity to comment of the Dual Track Airport Planning Process Draft Environmental Impact Statement (DEIS). Denmark Township would most certainly be impacted by the Dakota County Site choice. It is because of this impact that we have chosen to review the DEIS and make comments to you.

As a layman, I found the Executive Summary a poor summary of the items included in the body of the text of the DEIS. This is particularly disturbing because it is this part of the document that many of the legislators will focus on during their scrutiny.

I can not help but question the statement on page III-6 about the goal of a new Dakota County Airport helping "promote the orderly growth and economic development of the region." Farming regulations passed in the last thirty years and the Metropolitan Council's own Regional Blueprint maintain farming as the regions number one priority seem to be at odds with this statement. If growth and economic development of this region is the goal, is it at the cost of the economic security of Northwest Airlines and the business community of Bloomington and Richfield? It appears to me after reading the DEIS the choice of Dakota would be like cutting off one's nose to spite one's face, it just does not make sense. **A.**

A. See General Response 1.

Somewhere in the discussion of the loss of farmland there is a dysfunction in the number crunching. From fewer than 6000 acres to as many as 24,000 acres of land lost, there needs to be a concise definition. I would suggest the number used include that amount to be lost by the entire proposal along with induced developments and protection zones. **B.**

B. See General Response 1.

The section of induced development is extremely confusing and there is a direct contradiction on pages V-89 and V-90. **C.**

C. See General Response 1.

Lastly the traffic numbers and their potential impact on southern Washington County are also confusing. I have trouble correlating all the numbers and coming up with your figures. You also fail to mention required improvements on many of the County Roads in Washington County to help divert traffic from Highway 61 or 494. **D.**

D. See General Response 1.

From our perspective, besides some errors, the DEIS does the job it was intended to do. It compares two major choices. It is rather obvious to those of us who read it that the choice is clear. Drop the Dakota County Site as a bad choice. Spend the effort and money developing further the facility that currently exists.

Regarding the issue of land banking I think that is also clear. It was a bad idea to suggest an airport in Dakota County 40 years ago. It was a bad idea twenty years ago. It is a bad idea today. One must to believe it will still be a bad idea twenty years hence. The concepts will not change. Put the money into airport renovations on the current site and leave Dakota county alone. Land Banking is a bad idea. It is throwing good money after bad and should be ruled unconstitutional.

Protect the business community of Bloomington. Protect Northwest Airlines employees (we could loose up to 20,000 of them). Protect Dakota County Farmland. Protect the landowners in Dakota County from the nonsense of Land Banking. Protect the taxpayers of this region from the enormous burden of unneeded cost. Protect the Airline passengers from massive taxes and enormous delays in getting to and from the airport.

The Denmark Township Board requests all MAC and Met Council Commissioners to tell the State Legislature to drop consideration of Dakota County forever. Spend our money on making what we have better, not pie in the sky.

Sincerely,

Jim Fitzpatrick
Denmark Township Board of Supervisors

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Reply to: *Minneapolis*


February 12, 1996

VIA HAND DELIVERY

Ms. Jenn Unruh
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, Minnesota 55450

Re: Comments of Northwest Airlines, Inc. on the Dual Track Airport Planning Process Draft Environmental Impact Statement

Dear Ms. Unruh:

## I. INTRODUCTION

This letter contains the written comments of Northwest Airlines, Inc. ("NWA") on the Dual Track Airport Planning Process Draft Environmental Impact Statement (the "DEIS"). As you know, NWA is the major tenant and user of the Minneapolis-St. Paul International Airport ("MSP"). NWA has reviewed the DEIS, has studied the various airport development alternatives addressed in the DEIS, and is knowledgeable on issues of feasibility, costs, air emissions, noise and other matters related to the alternatives addressed in the DEIS. NWA offers these comments pursuant to Minnesota Environmental Policy Act, Minn. Stat. § 116D and MPCA's policy of providing decision makers with full and accurate information concerning the environmental and economic effects of a project and of feasible and prudent alternatives. The DEIS is a good draft and effectively addresses many complex aspects of the various airport development alternatives considered in the DEIS. However, to properly inform the decision makers who will use the document and to otherwise comply with applicable federal and state law, we believe the final EIS should be revised in accordance with the issues contained in this letter. NWA may submit additional comments on the EIS's adequacy under federal law and regulations to the responsible federal agency at the appropriate time for doing so.

## II. SUMMARY OF COMMENTS

NWA's comments are summarized as follows:

- **The final EIS should consider and address NWA Proposal 6A which, in comparison to the alternatives addressed in the DEIS, will save millions of dollars in cost, will have fewer adverse environmental impacts, including lower air and noise emissions, and fewer adverse land use impacts.**

- **The final EIS should be revised to comply with all state and federal environmental review requirements including those identified in our comments.**

- **Because of certain procedural problems pointed out in our comments, it is recommended that the Federal Aviation Administration (the "FAA") and the MAC make it clear that the DEIS is being processed in accordance with 40 C.F.R. 1508.28(b) for the purposes of the Dual Track Airport Planning Process (Program), and that project level approvals be given after the DEIS has been revised and recirculated as required by 40 C.F.R. 1502.9(a).**

III. NWA PROPOSAL 6A

Reference is made to Exhibit 1 which contains a detailed summary of NWA Proposal 6A. NWA Proposal 6A is a preferable alternative to the MSP Alternative, the New Airport Alternative, and the No Action Alternative considered in the DEIS. The No Action Alternative will not meet the region's aviation needs for the reasonably foreseeable future. As discussed in Exhibit 1, the NWA Proposal 6A will meet those needs and would have significantly less environmental impact than would the construction of either a new airport or an entirely new terminal complex at MSP. The new airport would have a severe impact on the environment at and near any proposed site, and the expansion of MSP as proposed in the MSP Alternative will disturb the existing environment in the northwest corner of the airport.

Failure to consider NWA Proposal 6A, if not corrected in the final EIS, would put the prospects of a determination of adequacy in grave jeopardy due to state and federal requirements that the EIS consider prudent and feasible alternatives with lesser adverse environmental effects. Examples of state requirements include Section G of Minn. Rules 4410.2300 which requires consideration of all reasonable alternatives, and Section I of that same administrative rule which requires the EIS to identify with particularity "those measures that could reasonably eliminate or minimize any adverse environmental, economic, employment or sociological effects of the proposed project." At the federal level, 40 C.F.R. 1506.1(a)(2) prohibits agencies from limiting the choice of reasonable alternatives during the National Environmental Policy Act ("NEPA") process.

**A.** A. See General Response 3.

The DEIS also fails adequately to address the impact of certain aspects of the MSP Alternative that will not occur under the NWA Proposal 6A. For instance, the DEIS proposes no significant mitigation measures for the loss of more than 34 acres directly affected by the MSP Alternative despite the requirement in Minn. Rules 4410.2300 I. that the EIS "identify those measures that could reasonably [do so]." Again, NWA Proposal 6A might afford some opportunity for such mitigation by not using the space proposed for new access roads to a new terminal, and for the terminal itself. We also note that the DEIS does not appear to show the impact of the proposed new airport entrance road on Mother Lake. Finally, the DEIS avoids the analysis of cumulative impacts associated with off-airport highways, pipeline and powerline projects required to implement either the MSP Alternative or the New Airport Alternative, despite the fact that these improvements are integral to the implementation of either development alternative and yet would clearly be subject to mitigation through the NWA Proposal 6A which would largely preserve existing infrastructure surrounding the airport.

**B.** B. See Appendix D of the FEIS for the Wetland Mitigation Plan. The DEIS and FEIS identify the off-airport impacts from highways, pipelines, etc. required to implement the alternatives.

An additional advantage of including a thorough evaluation of NWA Proposal 6A is that the underlying purpose of the EIS "to provide information for governmental units, the proposer of the project, and other persons to evaluate proposed projects" (Minn. Rules 4410.2000, Subp. 1) will be best served if an evaluation of NWA Proposal 6A is included. The absence of any specific timing for implementing the proposed alternatives discussed in the DEIS stands in contrast with the NWA Proposal 6A, which specifically identifies what improvements would occur during each five (5) year span between 1995 and 2020. In fact, the DEIS is silent as to what will happen between 1995 and 2020 when the alternatives are evaluated, with the exception of the statement on page ii that "projects that increase capacity (terminal, airfield, other) would not be permitted beyond 1997." This might create a particular problem down the line in terms of paragraphs 47(b) and 82 of FAA Order 5050.4A, which at least the FAA Southwest Region interprets to require a description of the time frame for the project. (FAA, Tips of Airport Sponsors and Their Consultants in Documenting the Need for and Preparing Environmental Assessments, October 1992).

**C.** C. See Section III.D of the FEIS for the staging of the MSP Alternative.

Finally, 40 C.F.R. 1502.14(a) requires agencies to rigorously explore and objectively evaluate all reasonable alternatives, and 40 C.F.R. 1502.14(e) requires federal agencies to identify the agency's preferred alternative or alternatives, if one or more exist, but the DEIS does not address the federal agency's position with respect to alternatives. The failure to consider the NWA Proposal 6A, and the environmentally mitigating effects it might have, is likely to create significant problems related to EIS adequacy at the federal level, even if the EIS were to survive state scrutiny. As previously discussed, however, the prospects for the DEIS to meet Minnesota's stringent adequacy standards are also significantly reduced by failure to consider the environmental effects of the NWA Proposal 6A. Minn. Rules 4410.2800, Subp. 4.C. allows determination of the final EIS to be adequate only if it was prepared in compliance with all procedures of the Act and regulations, including sections 4410.2300 G. and I., previously discussed. Furthermore, Minn. Rules 4410.2700, Subp. 2, strongly suggests that the major changes involved with incorporating a thorough review of the effects of the NWA Proposal 6A requires that the draft text "be rewritten so that necessary changes in the text are incorporated in the appropriate places." Minn. Rules 4410.2300 G. illustrates some of the information which should be included in preparing revisions to the DEIS. Paragraph G requires the alternatives section of the EIS to "compare the environmental impacts of the proposal with other reasonable alternatives to the proposed project." It cites as examples of reasonable alternatives "locational considerations, design modifications including site layout, magnitude of the

**D.** D. See General Response 3. The Draft EIS has been deemed adequate at the state and federal level.

project, and consideration of alternative means by which the purpose of the project could be met." It further directs the responsible government unit (the MAC) to discuss briefly alternatives that were considered but eliminated, and state the reasons for their elimination, as well as to address the alternative of no action.

**In conclusion, the final EIS should consider and address the NWA Proposal 6A in order to satisfy applicable state and federal requirements, assure adequacy of the EIS, and inform the project decision makers of the environmentally mitigating effects of this alternative.**

D. (Cont'd)

IV. COMPLIANCE WITH OTHER STATE AND FEDERAL REQUIREMENTS

The following comments are not intended to comprise a comprehensive critique of the DEIS for compliance with state and federal environmental review requirements, but should be addressed in the final EIS for state and federal compliance purposes:

We note initially that the timing for the proposed project or projects is not entirely clear. The Purpose and Need section of the DEIS states that the proposed airport facilities are "to meet future aviation needs" and "the inability of the existing MSP to accommodate the 2020 forecast demand . . . ." This is further complicated by the fact that different horizon years are used in the Environmental Consequences section for the analysis of environmental impacts (e.g., Noise Air Quality). Moreover, we believe that an analysis for the year 2020 is beyond the reasonably foreseeable future and may only be useful on a comparative basis to make long-term program decisions (such that being decided by the Minnesota Legislature). Under state law, this approach to defer issues not ripe for consideration is consistent with phasing defined in Minn. Rules 4410.2000, Subp. 4, as well as with tiering defined in 40 C.F.R. 1508.28(b) under NEPA, but requires additional findings in the form of a supplemental EIS to address the impacts associated with particular project components or stages that were not addressed in the initial EIS.

E. The FEIS uses a design year of 2020, with few exceptions. Different horizon years are used for some impact categories only where it is appropriate. For example, the noise impacts are analyzed in 2005 because the greatest noise impacts are expected to occur in that year. After 2005, the use of more new technology and fewer hush-kitted stage 3 aircraft is expected to reduce noise impacts. Air quality impacts are assessed for 2020, and also for 2005, the estimated first year of operation on the north-south runway.

Analysis of impacts in 2020 is appropriate because most of the improvements being evaluated are part of the MSP 2020 Long Term Comprehensive Plan. Moreover, a 20-year planning horizon is typical in NEPA documents. The selection of the MSP Alternative over the New Airport Alternative was a long-term program decision.

The proposed action is the MSP 2010 Long Term Comprehensive Plan. The new north-south runway will likely be completed by 2005. The proposed west terminal would be constructed only after legislative approval of the MSP 2020 Long term Comprehensive Plan. Supplemental studies will be required to implement the 2020 Long Term Comprehensive Plan.

We believe that both the state and federal environmental processing requirements are compromised by not disclosing to the decision-makers the extent of the proposed actions or their environmental consequences. The DEIS avoids the analysis of cumulative impacts associated with off-airport highways, pipeline and powerline projects required to implement either development alternative. Based on a limited application of a corridor analysis contained in the DEIS, impacts associated with off-airport highway improvements are thought to be significant, but are not disclosed as such. Because these improvements are integral to the implementation of either development alternative, the omission of project level analysis may amount to improper segmentation under Minn. Rules 4410.2000, Subp. 4.

F. The Final EIS contains additional analysis of off-airport impacts of the 2010 Long Term Comprehensive Plan. As noted above (Response E), implementation of the MSP 2010 Long Term Comprehensive Plan will not require supplemental or project-level EISs because off-airport improvements under the 2010 Long Term Comprehensive Plan are not extensive. However, implementation of the MSP 2020 Long Term Comprehensive Plan may require additional studies, possibly to include project-level EISs. See also General Response 1.

We believe that the apparent lack of federal involvement in the preparation of the DEIS will need to be rectified in the preparation of the final EIS, at least for federal purposes. Review of the DEIS indicates that it appears to have been written for the MAC with little or no supervision by the responsible federal agency. The Table of Contents does not cross-reference to FAA Order 5050.4A, nor are the contents consistent with that specified in the Order. There is no evidence of federal involvement in the preparation of the DEIS. This is contrary to the federal responsibility to prepare NEPA documents, as required by 40 C.F.R. §§ 1500-1508. It is also contrary to the terms and conditions specified in the 1995 Memorandum of Understanding between the FAA and the MAC.

G. The FAA Airports District Office was heavily involved in the preparation and review of the DEIS and FEIS. FAA's Regional Office and Washington, D.C. Headquarters staff also reviewed the DEIS and FEIS and approved their publication.

As discussed more fully in the previous section of this letter, the DEIS does not rigorously or objectively explore alternatives as required by both state law and NEPA. Rather, both identified alternatives are dismissed on selection criteria that was directed by state mandate to focus on only two alternatives – the "MSP Alternative" and the "New Airport Alternative." Other alternatives eliminated from further analysis received little more attention than that contained in the Executive Summary. Although page (i) of the Executive Summary promises a discussion of "other development alternatives that were considered," only the MSP Alternative received serious consideration for the development of MSP.

The Table of Contents for the Draft EIS does, in fact, cross-reference FAA Order 5050.4A. FAA also monitored development of the Draft EIS to ensure that it's contents are consistent with Order 5050.4A. The FAA's involvement in the Draft EIS is consistent with 40 CFR §§ 1500-1508, and MAC and FAA (the parties to the 1995 MOA) concur that the spirit and content of the MOA was adhered to.

H. See U.S.E.P.A. Response A.

NWA Proposal 6A, which involves identical runway expansion and reasonably comparable taxiway connections without the necessity of construction of a new terminal, is not considered and evaluated for environmental impact at all. Failure to address this option in connection with the MAC's response to comments under Minn. Rules 4410.2700 could prove fatal to an adequacy determination, since NWA Proposal 6A constitutes a site-layout design modification and diminution in project magnitude constituting an alternative means of satisfying the project's purpose within the meaning of Minn. Rules 4410.2300 G. It thus combines environmental advantages with economic efficiency in a way necessitating review and analysis under state and federal law.

**I.**

I. See General Response 3.

A related federal requirement also is ignored by failure to fully analyze the NWA Proposal 6A. 40 C.F.R. 1502.23 states "If a cost-benefit analysis relevant to the choice among environmentally different alternatives is being considered for the proposed action, it shall be incorporated by reference or appended to the statement as an aid in evaluating the environmental consequences." A cost-benefit analysis relevant to the choice among alternatives is missing from the DEIS. Failure to include such a cost-benefit analysis might have other adverse consequences for the feasibility of the overall project. The Federal Aviation Administration Authorization Act of 1994 (HR 2739) provides that to approve a Passenger Facility Charge, the Secretary of Transportation must find that the application includes adequate justification for each of the projects proposed. This justification should be included in the DEIS.

**J.**

J. See General Response 3.

V. CONCLUSION

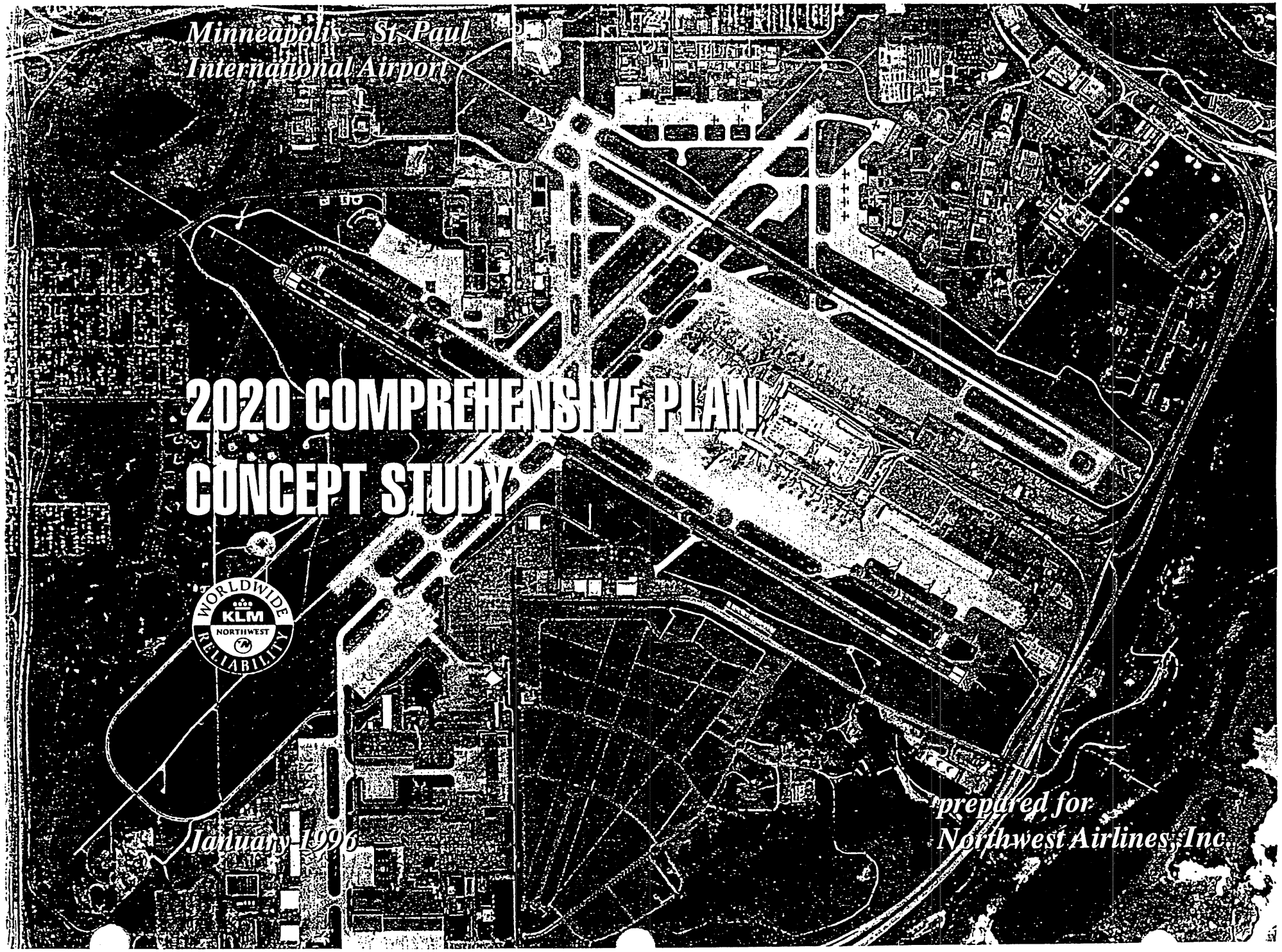
The final EIS should be revised to include and evaluate in detail the NWA Proposal 6A contained in Exhibit 1 to this letter, to address the deficiencies of the DEIS under state and federal law identified in these comments, and to make it clear that the EIS is for program purposes with project level approval to be given only after the EIS has been revised to be project specific.

Very truly yours,

LEONARD, O'BRIEN
WILFORD, SPENCER & GALE

By
Grover C. Sayre, III

GCS/ljd
Attachment
21491_2


Minneapolis – St. Paul
International Airport
2020 COMPREHENSIVE PLAN
CONCEPT STUDY
WORLDWIDE
KLM
NORTHWEST
RELIABILITY
January 1996
prepared for
Northwest Airlines, Inc.

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I-167

# BACKGROUND

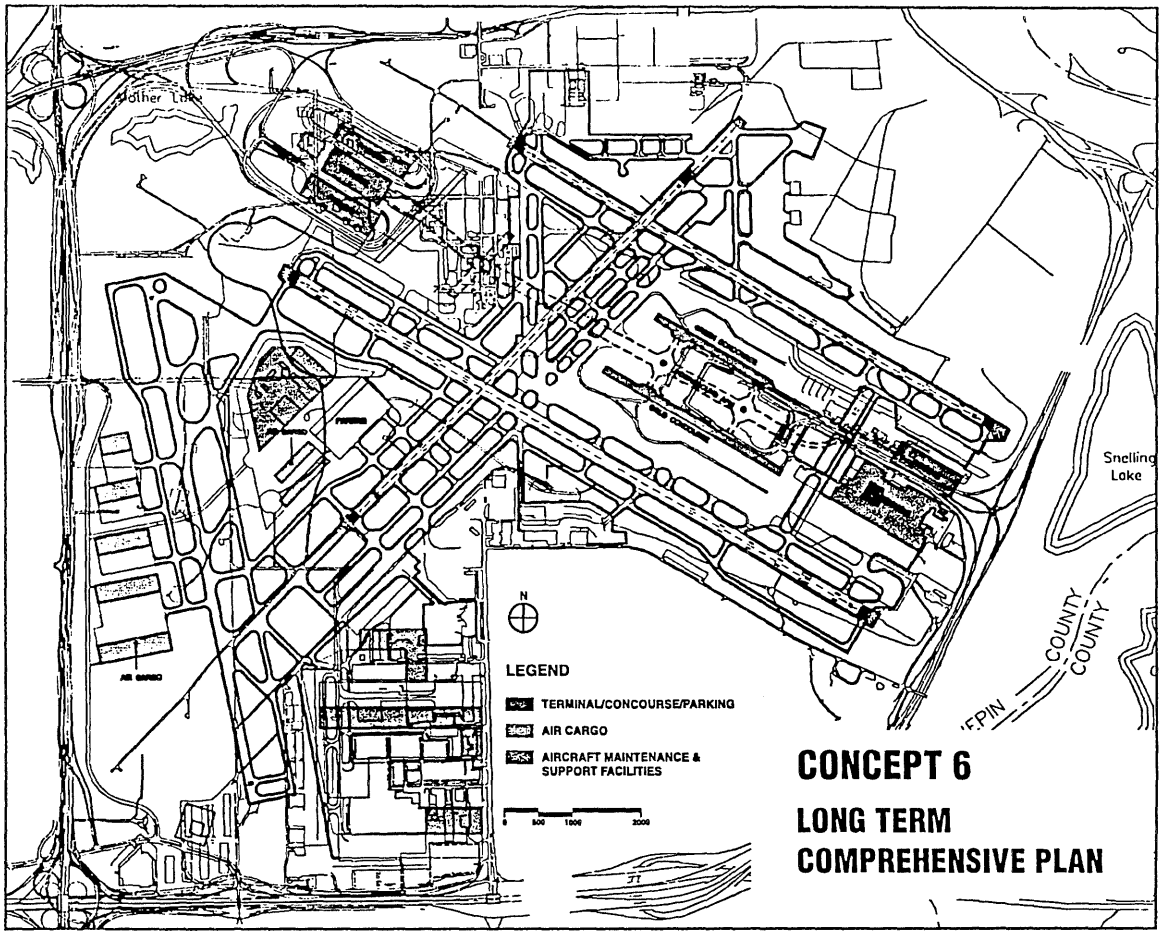
On February 21, 1995, the Metropolitan Airport Commission (MAC) approved the Minneapolis/St. Paul Airport (MSP) Long Term Comprehensive Plan (LTCP), Alternative 6 (construction of new roadways and a west side terminal at a cost of $2.8 billion) as recommended by the MAC staff. At that meeting, the MAC further mandated that the MAC staff commence development of a second alternative for developing the MSP whereby the existing terminal facilities would be renovated and expanded to meet projected airport demand through the year 2020.

As part of the Dual Track Airport Planning Process designed to study the Minneapolis region's long-term aviation needs, the MAC has been working since the early 1990's on a LTCP for the existing Minneapolis-St. Paul International Airport. In February, 1995, the MAC selected Concept 6 from a combination

# BACKGROUND (continued)

of three airfield alternatives and two terminal alternatives. Concept 6 proposes construction of a new 8,000-foot north-south runway on the west side of the Airport, demolition of the existing terminal, concourses, parking structure, major portions of the Northwest maintenance base, and construction of a replacement passenger terminal in the northwest quadrant of the airport including extensive roadway improvements. The 1993 FAA Capacity Enhancement Plan indicated a new north-south runway would provide capacity necessary to meet requirements through 2020.

Consistent with the mandate of the MAC on February 21, 1995, (Exhibit A), this report outlines an alternative proposal for expansion of the existing terminal using the same capacity projection utilized in Concept 6. This plan is referred to as Concept 6A, and proposes a phased expansion of MSP over the next twenty-five years such that the

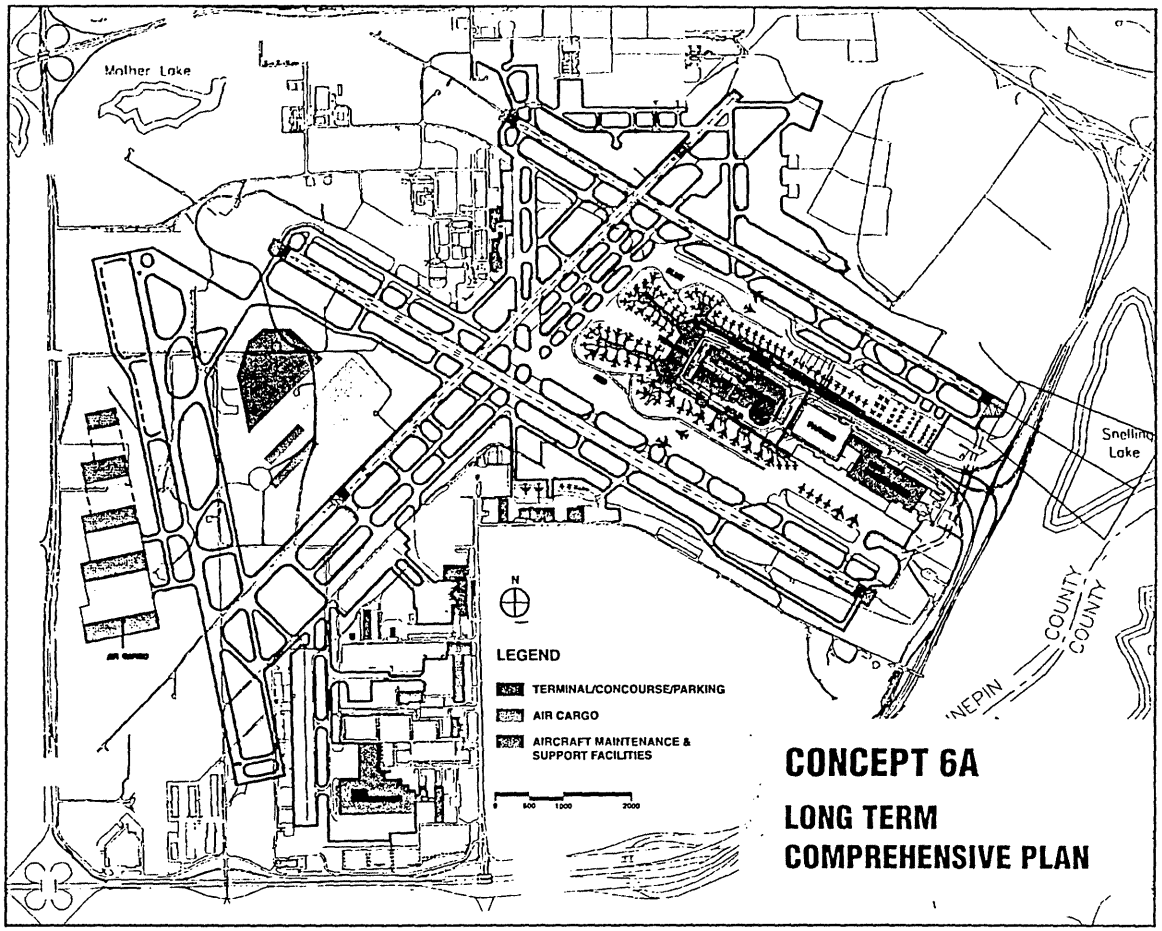


# BACKGROUND (continued)

*"COMMISSIONER JOHNSON MOVED AND COMMISSIONER MERICKEL SECONDED TO AMEND THE MOTION AS FOLLOWS: TO ACCEPT ALTERNATIVE 6 AS RECOMMENDED BY STAFF WITH THE FURTHER CAVEAT THAT STAFF WILL ENDEAVOR TO LOOK AT TWO COST OPTIONS WITHIN THAT ALTERNATIVE, ONE BEING INCLUSION OF THE WEST TERMINAL AND ONE BEING EXPANSION OF THE EXISTING TERMINAL. The motion to amend carried by majority vote."*

**Exhibit A**

timing of the development of facilities is consistent with the aviation demand for those facilities. This study further presents a comparison of each of the critical components of the airport development shown in Concept 6A (Existing Terminal Expansion) to Concept 6 (New West Terminal). The results of this analysis indicate that Concept 6A is an attractive airport expansion plan because:



# BACKGROUND (continued)

- Concept 6A provides high quality world class facilities to meet the demand required.
- Concept 6A has the same number of gates and capacity as are required to meet the MAC demand forecasts.
- Concept 6A maximizes utilization of existing infrastructure.
- Concept 6A is convenient for passengers to use throughout all phases.
- Expansion under Concept 6A can be easily financed, constructed in phased increments, and accomplished without major disruption to day to day activities.
- The Budget for Concept 6A is $ 2.3 billion less than Concept 6.
- Concept 6A provides a workable taxi and airfield configuration with potential to include dual widebody connecting taxiways so as to be equivilant to Concept 6 if required.
- Consideration of Concept 6A is consistent with the environmental process requirement to consider all viable alternatives.
- Concept 6A provides for ultimate flexibility over the 25 year planning period to respond to market changes.

| PROJECTIONS | 1992 | 2000 | 2010 | 2020 |
|---|---|---|---|---|
| Annual Passenger Enplanements | 10,681,000 | 12,704,000 | 15,030,000 | 16,681,000 |
| Annual Operations | 418,474 | 473,800 | 499,900 | 520,400 |
| Peak Hour Domestic Passengers | | | | |
| Enplanements | 4,555 | 5,229 | 6,069 | 6,600 |
| Originating | 2,184 | 2,685 | 3,186 | 3,687 |
| % Originating | 48.0% | 51.3% | 52.5% | 56.1% |
| Deplanements | 5,120 | 5,877 | 6,821 | 7,419 |
| Terminating | 5,427 | 3,022 | 3,587 | 4,154 |
| % Terminating | 48.0% | 51.4% | 52.6% | 56.0% |
| Average Daily Departure Operations | 573 | 649 | 685 | 713 |
| Narrowbody | 329 | 367 | 394 | 402 |
| Widebody | 24 | 31 | 41 | 65 |
| Commuters | 132 | 166 | 169 | 167 |
| General Aviation | 84 | 81 | 77 | 75 |
| Military | 4 | 4 | 4 | 4 |
| Jet Gate Requirements | 69 | 77 | 81 | 84 |
| Narrowbody | 65 | 65 | 70 | 68 |
| Widebody | 4 | 4 | 11 | 16 |

Exhibit B

# AVIATION FORECASTS

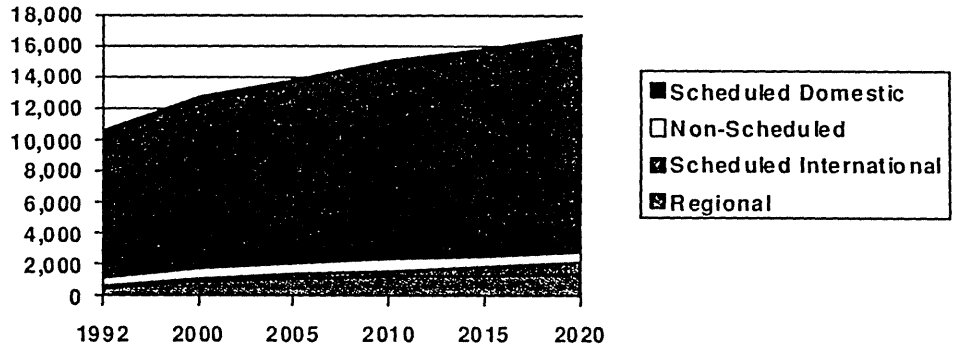
Exhibits B and C identify the historical and projected total aviation activity that the MAC has developed for planning the phased expansion of MSP. The Concept 6A projections are based upon the MAC's forecast of 16.7 million annual enplanements and 520,000 annual aircraft operations at MSP by the year 2020.

For facility planning purposes, it is significant to observe two important characteristics of the MSP operation over the next 25 years.

- The percent of Origin and Destination (O&D) Passengers as a portion of total passengers will grow to 56% of peak hour passengers by 2020.
- Narrowbody aircraft operations will represent a significant portion of all aircraft movements.

The increase in the proportion of O&D passengers will influence the capacity

## PASSENGER ACTIVITY (THOUSANDS)




## AIRCRAFT OPERATIONS

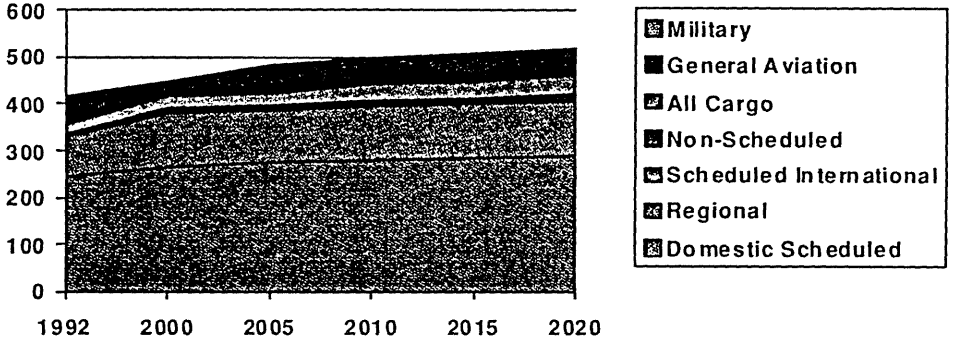


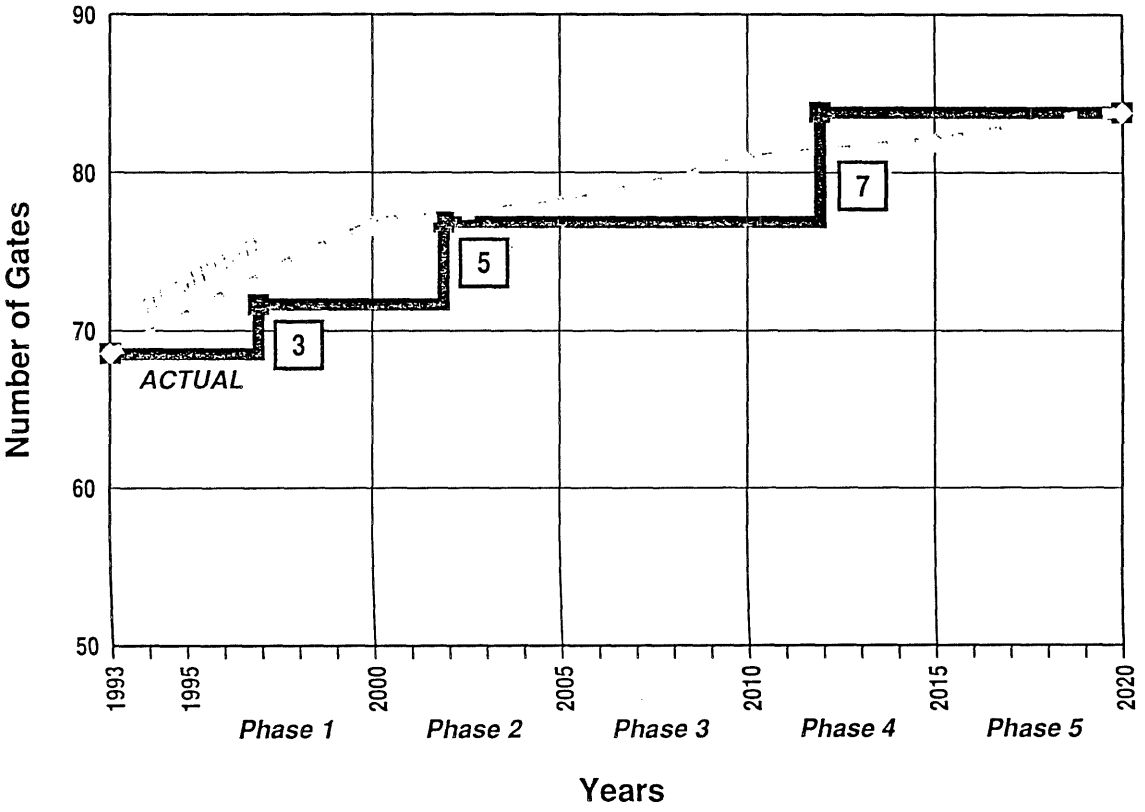

Exhibit C

requirements for the landside transportation system, vehicle parking and Main Terminal facilities (ticket check-in and bag claim). The existing infrastructure at MSP can readily be expanded to accommodate these demands.

By the year 2020, MAC has projected a need for 15 additional gates at MSP. Exhibit D shows the Concept 6A Phasing Plan for Future Jet Gates. The proposed growth sequence is consistent with the requirements in the draft of the MSP LTCP Volume 7, Revised Facility Requirements and Updated Development Concept. These gate requirements assume the HHH Terminal will continue to be used for charter and non-scheduled operations. In developing Concept 6A, the key operational assumptions of Concept 6 were carefully reviewed. The description of Concept 6A that follows compares the characteristics of each of the major components of the proposed alternative to Concept 6.



**JET GATE PROJECTIONS** ***Phasing Plan for Future Gates***




**CONCEPT 6A**
**Exhibit D**

# AIRFIELD FACILITIES

The proposed airfield improvements for both concepts are virtually equivalent and are summarized in Exhibit E. The Concept 6 Plan calls for crossover taxiways connecting 29L and 29R on the easterly portion of the airfield. Concept 6A makes provisions for crossover taxiways east of what is proposed in Concept 6. To determine the size and timing of construction of the crossover taxiways, a detailed simulation would need to be prepared. The financial effect of this projected $41 to $100 million dollar capital project would be compared to the time delay savings resulting from its availability. The resulting economic feasibility study would determine timing and sizing of the taxiways.



## PROPOSED AIRFIELD FACILITIES

### CONCEPT 6 and 6A

- New N/S runway 17/35 8,000 feet long with parallel taxiway on east side and aircraft hold area
- Parallel Taxiway west of Runway 17/35 for new cargo area 4,800 feet long
- Extend Runway 4/22 2,750 feet to the southwest with a queuing taxiway
- Extend Taxiways C, D and M parallel to Runway 4/22
- Departure sequencing pads on Runways 29R/11L and 11R
- Additional Exits for existing runways

### CONCEPT 6 ONLY

- Dual crossover taxiways between runways 11/29R and 11/29L in program with firm date

# TERMINAL FACILITIES

Concept 6 showing development of a New West Terminal is based on an analysis by the MAC that assumes the capacity of the existing Terminal and Concourse facilities will be exceeded by the projected passenger and aircraft activity. As indicated in Exhibit F, Concept 6 requires 2 million square feet of main terminal and remote concourse construction; a new parking deck, and new passenger/luggage/utility/transportation systems to support the proposed development. Because all of the existing concourses are to be demolished and reconstructed, multiple relocation of all airline and retail tenants will be required over an extended period of time.

Exhibit G shows the Terminal Area Plan for Concept 6A. Terminal area planning standards were used in developing facility requirements. It is important to note that the proposal to renovate the existing check-in and luggage claim facilities is based on the following major factors:



## PROPOSED TERMINAL FACILITIES

### CONCEPT 6

- Total Number of Gates Provided–84
- Requires Multiple Tenant Relocations
- New 2 Million Sq. Ft. Main Terminal & Remote Concourses
- 9600 Lineal Ft. Underground APM
- New Luggage System
- New Central Plant
- New Parking Decks/18,000 Spaces
- Projected Costs: $1,366,000,000

### CONCEPT 6A

- Total Number of Gates Provided– 84
- Expansion and Renovation of Existing Terminal
- 3 Gate Extension to Gold Concourse
- 12 Gate Extension to Green Concourse
- New 50,000 Sq. Ft. Commuter/ Regional Concourse
- 2650 Lineal Ft. APM on Green Concourse
- Skybridge to Link Gold and Green Concourses
- Expansion of Central Plant Not Required
- Add 2000 Spaces to Existing Parking Deck of 10,480 Spaces for a total of 12,480 Spaces
- Projected Costs: $145,000,000

Exhibit F

# TERMINAL FACILITIES (continued)

- Best available technology will be used by passengers to avoid using check-in processing.
- Check-in procedure and ticketless travel improvements will reduce passenger check-in time.
- If all existing check-in counter positions were upgraded to a standard of 4.5 ft./position there would be a potential for 175 total positions in the same area that currently accommodates 124.
- The east side of the departure level curb will be used for processing originating passengers who arrive at the airport on commercial vehicles (regional buses; courtesy shuttles, etc.).
- Since the majority of operations are narrowbody aircraft, the existing luggage claim frontage will be turned-over frequently enough in the peak period so that the arrival facility can accommodate up to 78% of terminating passengers claiming luggage. This is well within current planning parameters.

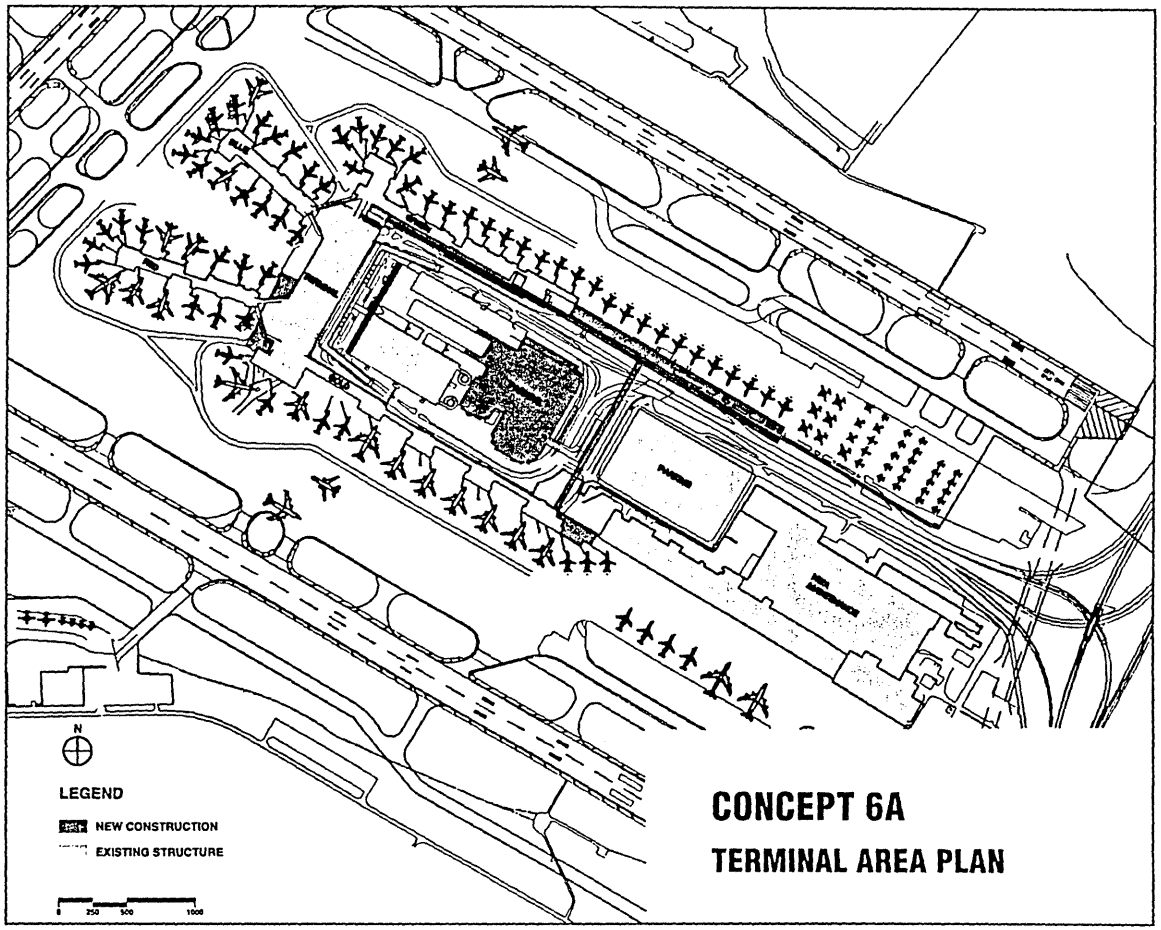



Exhibit G

# TERMINAL FACILITIES (continued)

The proposed sequence of developing new facilities and expanding existing ones is summarized in Exhibit H. This expansion is consistent with the total airline projected gate requirements presented previously. In addition to the 1,348,000 square feet in the existing terminal, Concept 6A will add 135,000 square feet by 2020. A total of approximately 50,000 square feet would be required for the combined Commuter/ Regional Concourse.

Exhibit I shows the conceptual layout for the ultimate development of the Green Concourse which includes plans for an Automated People Mover (APM) system with three stations as well as moving sidewalks. The APM would be a single-track cable propelled system with two trains. There would be an offset by-pass to the guideway at the center station to allow the trains to pass each other as well as allow passengers to unload and load on the same side of the

## Concept 6A

## PROPOSED SEQUENCING OF TERMINAL FACILITIES DEVELOPMENT

| | |
|---|---|
| **PHASE 1**<br>**1995-1999** | Combine Commuter Operation on Gold Concourse with Commuters on Green Concourse<br>3-Gate Extension of Gold Concourse |
| **PHASE 2**<br>**2000-2004** | Renovate Ticket and Luggage Claim Lobbies<br>Upgrade unutilized Check-in Counters to Current Industry Standards<br>Expand Outbound Luggage Room<br>5-Gate Extension to Green Concourse and Expansion for Moving Walks<br>Combine Commuter & Regional Operations with New Apron at End of Green Concourse<br>Skybridge with Moving Walks to Link Gold and Green Concourses<br>Relocate Postal Facility<br>New Air Traffic Control Tower (ATCT) |
| **PHASE 3**<br>**2005-2009** | Miscellaneous Improvements |
| **PHASE 4**<br>**2010-2014** | 7-Gate Extension of Green Concourse<br>New Commuter / Regional Facility<br>Renovate Existing Concourses<br>APM For Green Concourses<br>Relocate Remote Rental Car Facilities |
| **PHASE 5**<br>**2015-2020** | No Major Planned Improvements |

Exhibit II

# TERMINAL FACILITIES (continued)

concourse as the gate lounges. The APM would take 2.5 minutes including a center stop, to travel the full length of the Green Concourse .

A key to passenger facilitation in Concept 6A is that the APM is on the same level as the gate lounges, thus, passengers are not required to make vertical transitions between the APM and the concourse facilities. Even though the maximum travel distance for connecting passengers from the end of the commuter concourse to the end of the Red Concourse is 5,475 feet, the APM combined with a system of moving sidewalks on the Green Concourse provides a better level of service to passengers for less money than the moving walks alone provided under Concept 6.

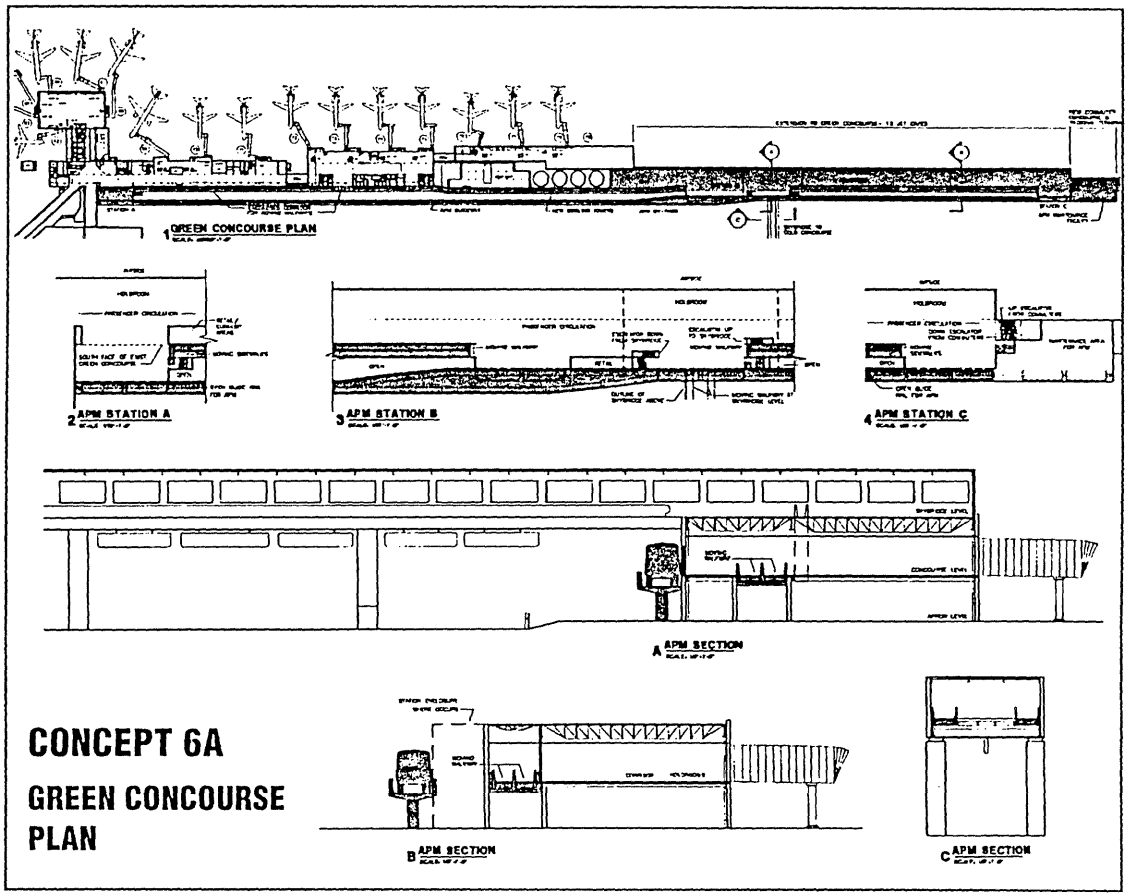



Exhibit I

# TERMINAL FACILITIES (continued)

Exhibit J identifies the maximum and average passenger trip time today and in all future phases under Concept 6A. The analysis calculated the trip time for 10 trips among 5 specific points on the gate complex for both Concept 6 and Concept 6A. The result of this analysis indicates the average trip time under Concept 6A for both O&D and connecting passengers in future phases is always better than those corresponding trip times for Concept 6. Concept 6A is also better in every case in comparison to Concept 6 when considering maximum trip times.

The projection for expansion of vehicle parking in the central terminal area is based on the projected increase in peak day passengers over the next 25 years. The existing parking structure consisting of 10,480 spaces can be expanded by adding 2,000 spaces vertically on the east end. The construction of the vertical addition could be accomplished with minimum disruption to daily activities.

## PASSENGER TRIP TIME ANALYSIS

| | TERMINATING | | CONNECTING | |
|---|---|---|---|---|
| **CONCEPT 6A** | MAXIMUM | AVERAGE | MAXIMUM | AVERAGE |
| **Current Condition / 1995** | | | | |
| **• 69 Aircraft Gates** | **15.13** | **12.09** | **26.42** | **18.40** |
| **PHASE 1 / 1999** | | | | |
| **• 72 Aircraft Gates** | **15.93** | **12.22** | **27.22** | **18.46** |
| **PHASE 2 / 2000-2004** | | | | |
| **• 77 Aircraft Gates** | **15.93** | **12.60** | **23.30** | **18.52** |
| **PHASE 4 / 2010-2014** | | | | |
| **• 84 Aircraft Gates** | **15.93** | **12.53** | **21.85** | **18.24** |
| **CONCEPT 6A** | MAXIMUM | AVERAGE | MAXIMUM | AVERAGE |
| **PHASE 5 - 2020** | **22.60** | **20.96** | **27.80** | **18.56** |

**NOTES:** 1. Trip time analysis assumes typical passenger walks on moving walk when available.
2. Trip time includes unloading and loading narrowbody aircraft.

**Exhibit J**

# ROADWAY FACILITIES

Concept 6 requires a new terminal area entrance/exit road from Highway 62, as well as major highway improvements and supporting access roads along Highway 77 and 62. The amount of roadway reconstruction required will have significant social, environmental, and cost impacts. This would come at a time when increasing demands are being placed on limited, and in some cases reduced, available funds. The source and timing of funding the projected $101,000,000 for the off airport improvements would have to be identified.

As Exhibit K indicates, Concept 6A proposes to utilize the existing terminal area roadway systems "as is", so that major improvements to the surrounding roadway system needed to support additional traffic demand are not required.

## IMPACTS ON LANDSIDE CIRCULATION SYSTEM

| Topic | Concept 6 | Concept 6A |
|---|---|---|
| Entrance Road Interchange | • New | • Adequate "As-Is"<br>• Preferred by MNDOT |
| Terminal Area Road System | • New | • Minor Modifications |
| Regional/Feeder Road System | • Traffic Redistributed to West Side of Airport | • Terminal Access Adequate |
| | • New Cargo Area Access Required | • New Cargo Area Access Required |
| Environmental | Impacts of Both Concepts Must Be Analyzed | |
| Projected Costs | $ 101,000,000 | $12,000,000 |

Exhibit K

# MAINTENANCE, CARGO, FAA AND OTHER SUPPORT FACILITIES

The Final Alternative Environmental document (AED) clearly identified that the existing airport highway system meets the current and projected future requirements through 2020. The Minnesota Department of Transportation (MNDOT) has consistently supported utilizing the existing infrastructure and has not agreed to the proposed Concept 6.

The only major new road proposed under Concept 6A is for a new cargo access road on the west side of the airfield and the construction of an interchange at 66th Street which is also included in Concept 6.

## Other Facilities

As Exhibit L indicates, the MAC is proposing extensive redevelopment and additions of maintenance, airport administration, and flight kitchen facilities. These are not required Under concept 6A.

**MAINTENANCE, CARGO, FAA AND OTHER SUPPORT FACILITIES**

| | Concept 6 | Concept 6A |
|---|---|---|
| Airline Maintenance | • 74 New Acres | • No Expansion |
| Airline Cargo | • Relocate Existing Facilities<br>• Construct 74 Acres of Additional Facilities | • Same Plan with 60 acres of Additional Facilities |
| Airport Administration & Maint. | • New Facility | • Expand & Renovate Existing |
| Fuel Facilities | • 3 New Tanks | • Connections for 15 New Jet Gates and Corresponding Storage |
| U.S. Postal Facility | • Relocate to 12.5 Acre Site | • Same Plan |
| Flight Kitchen | • New Facility | • No New Facilities |
| Rental Car Storage | • Construct New Area Adjacent to West Terminal | • Relocate to 29 Acres of Remote Lots |
| FAA | • New Control Tower | • New Control Tower |
| Projected Costs | $ 702,000,000 | $ 211,000,000 |

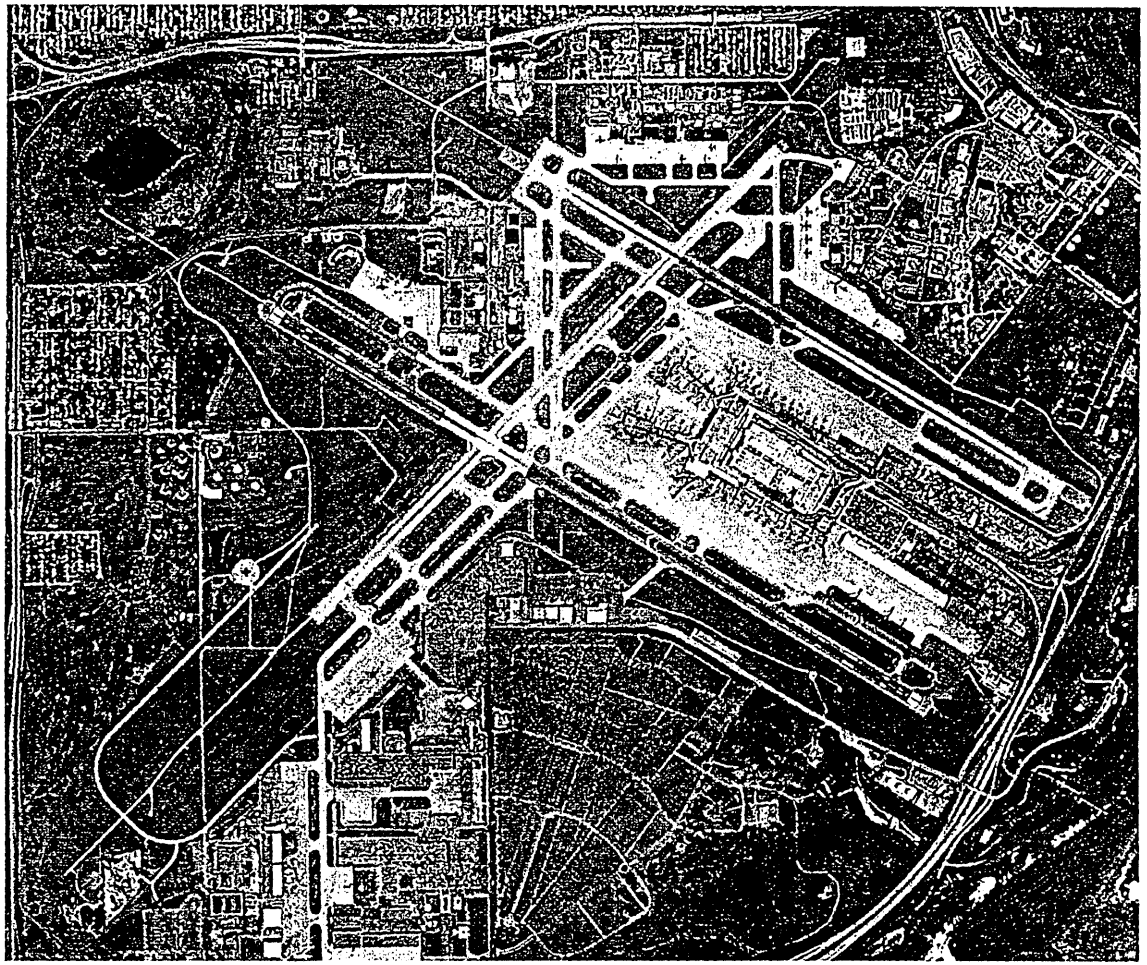
Exhibit L

I-180

# ENVIRONMENTAL PROCESS REQUIREMENTS

In March, 1992, the Minnesota Environmental Quality Board approved an Alternative Environmental Review Process for the Dual Track Airport activities. This process was intended to be identical to the preparation of an Environmental Impact Statement (EIS) in terms of addressing issues and potential environmental impacts. The Alterative Environmental Document (AED) was used as a substitute for a State EIS in the site selection process for the new airport and the MSP Long Term Comprehensive Plan. Although the AED is similar to an EIS, other reasonable project alternatives and the no-build alternative are left to be covered in the EIS. The AEDs for both tracks were determined to be adequate by the MAC in 1995, signaling the beginning of the federal environmental process.

In 1995, the FAA entered into a Memorandum of Understanding with the MAC to prepare an EIS for the



# ENVIRONMENTAL PROCESS REQUIREMENTS (continued)

Dual Track recommendations. Because of similar Federal and State requirements it was determined that duplication of effort would be eliminated and a joint document would be produced. The document would serve as a State Draft EIS for submission to the Legislature by July, 1996, as specified in the Metropolitan Airport Planning Act; and, as the Federal Draft EIS required by NEPA. Separate processing is planned for the preparation of the Final State and Federal EISs.

A Scope of Work dated June 7, 1995 was jointly developed to select a contractor to assist the FAA in their role to prepare the EIS. The FAA/MAC Scope of Work specifies that the contractor will use the AEDs, the scoping report, and the LTCP for the new site and the existing site as the base of information to be summarized in the Purpose and Need section of the joint DEIS. It appears that the purpose and need statement in the Dual Track EIS will focus on the aviation needs of the region at the year 2020, rather than on an existing problem. This approach avoids addressing the shorter term (i.e., 0 to 20-year) needs of the region.

Even though FAA Orders specify that EISs will rigorously explore and objectively evaluate all reasonable alternatives, the FAA/MAC Scope of Work has no such requirement. In this context, the Concept 6A Alternative would not be evaluated in the joint Draft EIS. However, it is possible that the final Federal EIS could be found legally insufficient if the treatment of alternatives is found inadequate. If the EIS considers a full range of alternatives, consistent with CEQ regulations, it is expected that expansion of the existing terminal area would be analyzed.

TheConcept 6A Alternative is a phased development program intended to address the existing to 20 year needs forecast for MSP in a cost-effective manner. It focuses on the predicted growth forecast for the Airport in the reasonably foreseeable future, and not on independent regional needs contained in the Comprehensive Plans for the longer term.

The Concept 6A Alternative will not foreclose the implementation of the LTCP for either the existing airport site or a new site. It gives the Minnesota Legislature
a reasonable alternative to address the shorter term needs of the Airport, while important independent decisions are made regarding the region's needs for beyond 2020.

# BUDGET/DISTRIBUTION OF COSTS

The budget for Concept 6A compared to the budget for Concept 6 is shown in Exhibit M. All budget estimates use 1995 construction dollars. The budget for Concept 6 is based on a line-item breakdown dated September, 1995. The Concept 6 budget by the MAC has been used as the basis to estimate the cost of Concept 6A.

The intent of the budget comparison is to convey as clearly as possible that Concept 6A budget will be $2.3 billion less than that proposed for Concept 6. Neither budget incorporates the committed projects currently planned under the Airport Capital Improvement Program (CIP).

The differential in the total cost between the two concepts translates into a similar gap for each phase of the proposed airport development program. Not included is a cost for the displacement of tenants and interim

**BUDGET**

| Component | Concept 6 | Concept 6A |
|---|---|---|
| Property Acquisition | $ 46,000,000 | $ 45,000,000 |
| Airfield Costs | 54,000,000 | 46,000,000 |
| Terminal Costs | 1,366,000,000 | 145,000,000 |
| Roadway Costs | 101,000,000 | 12,000,000 |
| Other Facilities Costs | 702,000,000 | 211,000,000 |
| Major Utilities | 16,000,000 | 16,000,000 |
| Tenant Relocation Costs | 0 | 0 |
| A/E & Management Fees | 342,000,000 | 70,000,000 |
| Construction Contingency | 263,000,000 | 55,000,000 |
| Total Estimated Cost | $ 2,890,000,000 | $ 600,000,000 |

NOTE: Concept 6A provides the ability for millions of dollars to be added annually in continuous improvements and major repairs as needed to maintain world class levels of service and still have lower operating and maintenance (O&M) costs than Concept 6.

Exhibit M

# BUDGET/DISTRIBUTION OF COSTS (continued)

steps that would need to be accomplished to keep operations running. Exhibit N shows the proposed phasing for Concept 6A along with the proposed capital requirements for each phase. Under Concept 6A, the major capital requirements occur in Phase 2 between 2000 - 2004. This is the period when the MAC has identified the construction of the new N/S Runway 17/35.

The MAC has provided distribution of costs for Concept 6 by phase. Exhibit P shows the comparison of the phased funding requirements for Concept 6 compared to Concept 6A. The phasing for Concept 6A provides "breathing space" to allow for adjustment and evaluation of which projects should be implemented in respect to actual aviation demands.

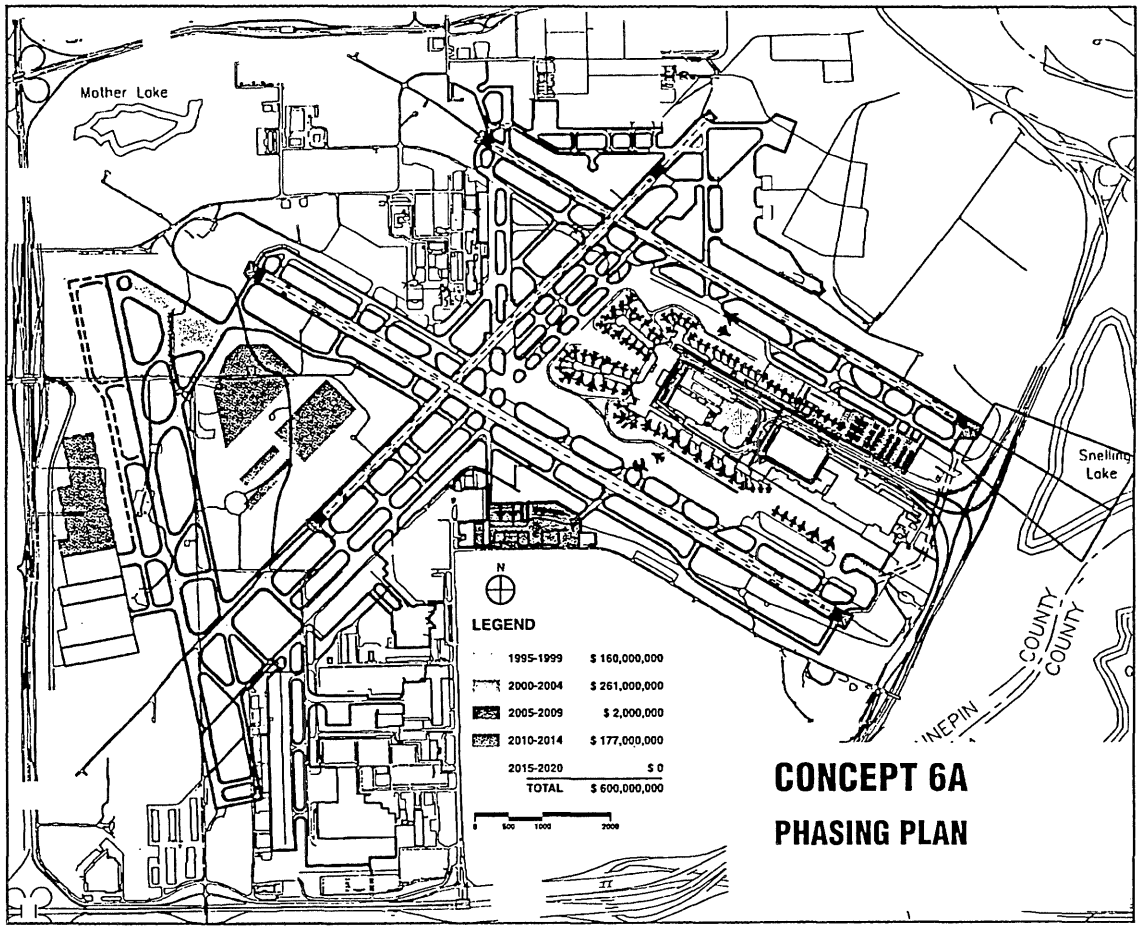



Exhibit N

# ACCOMMODATION OF REQUIREMENTS BEYOND 2020

Exhibit Q shows the potential Ultimate Development for MSP consisting of a maximum acreage of 5,100 acres. Steps should be taken to ensure that the total acreage potentially available for accomplishing the ultimate development of the existing airport complex be maintained

## DISTRIBUTION OF COSTS

| PHASE | YEARS | CONCEPT 6 | CONCEPT 6A |
|---|---|---|---|
| 1 | 1995-1999 | $ 262,000,000 | $ 160,000,000 |
| 2 | 2000-2004 | 585,000,000 | 261,000,000 |
| 3 | 2005-2009 | 442,000,000 | 2,000,000 |
| 4 | 2010-2014 | 1,152,000,000 | 177,000,000 |
| 5 | 2015-2020 | 449,000,000 | 0 |
| | TOTAL | $ 2,890,000,000 | $ 600,000,000 |

Exhibit P

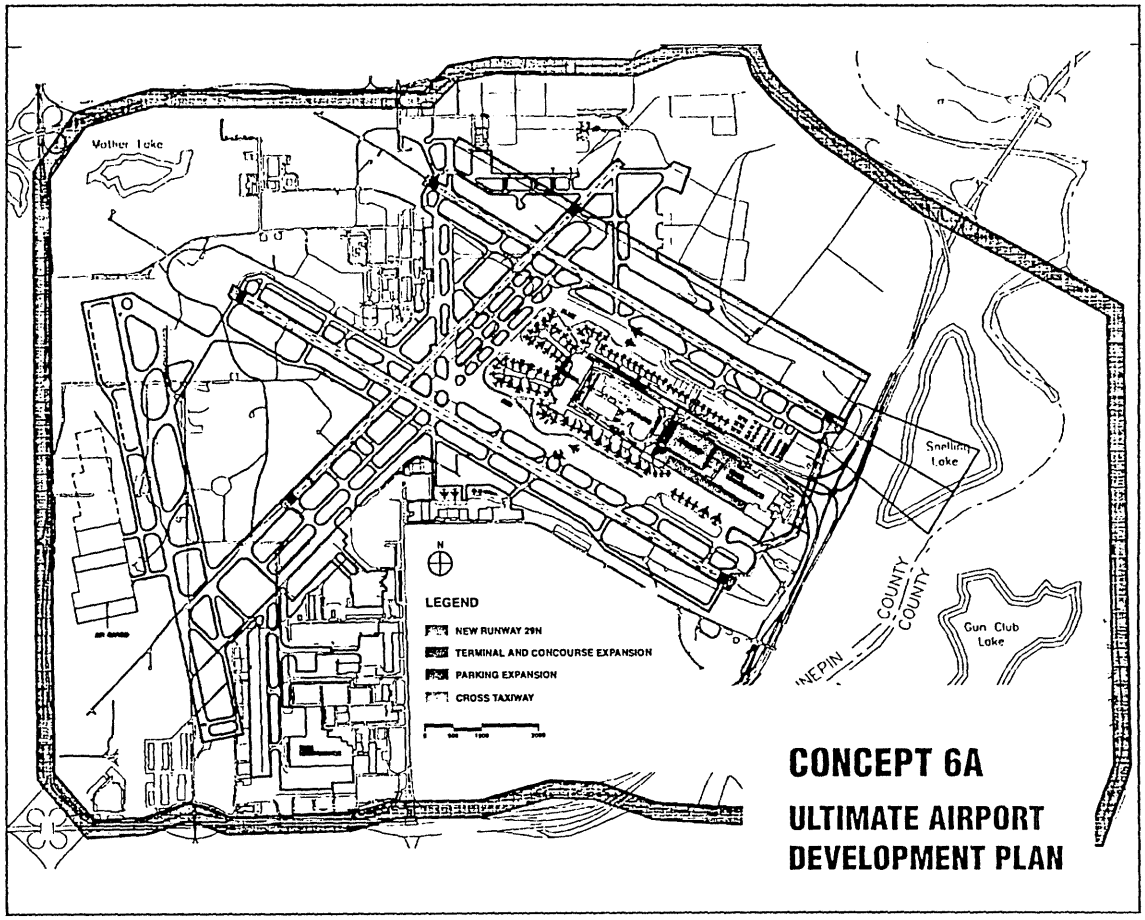



Exhibit Q

# SUMMARY

To accommodate 20% projected growth for the next 25 years, Concept 6A uses the existing highly functional facilities and adds what is necessary to them. The expanded – versus recreated – terminal complex results in not only a cost effective, but also a flexible world class facility. A $2.3 billion cost is avoided and all future expansion capability remains.



# Glossary of Terms

| | |
|---|---|
| **MAC** | Metropolitan Airport Commission |
| **FAA** | Federal Aviation Administration |
| **MSP** | Minneapolis/St. Paul Airport |
| **O & D** | Originating and Departing |
| **NWA** | Northwest Airlines |
| **CIP** | Capital Improvement Program |
| **N/S** | North/South |
| **ALP** | Airport Layout Plan |
| **APM** | Automated People Mover |
| **MNDOT** | Minnesota Department of Transportation |
| **AED** | Alternative Environmental Document |
| **DEIS** | Draft Environmental Impact Statement |
| **CEQ** | Council on Environmental Quality |
| **EIS** | Environmental Impact Statement |
| **NEPA** | National Environmental Protection Agency |
| **LTCP** | Long Term Comprehensive Plan |
| **CIP** | Capital Improvement Program |

Comments on Environmental Impact Statement

These comments were generated from my attendance at the January 18, 1996 meeting held at Washburn High School. After reviewing the EIS and attending the Public Hearing on the same topic several questions have not been sufficiently answered by the EIS.

1. The EIS does not specify the cost of recovery and build down of the current site. Without this information assessing the environmental impact and the cost benefit relationships of the proposed new site are impossible. The EIS vaguely references this subject by stating, any added land value for current property owners at Metropolitan Airport will be offset by the cost of environmental clean-up.

Queries: Clean up of what? At what sites at MSP does the pollution exist? How long will the toxins persist? Does the alleged pollution negate any or all forms of redevelopment?

The information provided in the EIS does not adequately explain these relationships and therefore does not meet State and Federal law for the development of EIS.

**A.** A. See General Response 1.

2. The EIS has inadequately outlined an issue identified at the January 18, 1996 Public Hearing of the third parallel runway at MSP. Commissioner Himle demurred a third parallel runway would be needed around the year 2020. It does not appear in the EIS under the assumption it might be built in 2021 or 2025. Because of the long time lines for completing any airport related construction project it is necessary to place this probable construction project within the current EIS because it directly impacts current decision-making about relocating or re-building MSP. Additionally, because this would be a time critical project for MSP planning would necessarily begin before the end of the time horizon of 2020. Just as the EIS has looked at future relocation at the current site of terminal building, from the east side to the west side of the airport, so too is it necessary to address a third parallel runway.

**B.** B. See General Response 5.

Queries: What are the environmental resources disturbed by the building of a third parallel runway? Where would it be located? How many, institutions, homes and families would be relocated by the construction? What would be the cost of a third runway? Would the current MSP planning allow for expansion within the current footprint? What safety zones would have to be established to comply with FAA regulations?

**C.** C. See General Response 5 and Final AED, MSP Long-Term Comprehensive Plan.

3. The additional report generated concerning a remote runway site, leaves the tantalizing idea that the idea is feasible, but more costly. The EIS does not specify the location of the remote runway site and hence does not indicate the cost of the impacts on the site. The failure to address this issue leaves a gap in the EIS planning. Comparison of sites and attendant costs is a primary concern to making an informed decision. The EIS does not inform the public or decision makers of the comparative values and impacts of the various sites.

Queries: What is the cost of social, environmental and construction at a specific remote runway site? How does the remote runway site differ from the Hastings site or MSP? Why are there significant differences in the cost estimates, in the supplemental report from April, 1995, between the hypothetical remote site and the Hastings site and the re-build at MSP? [The estimates differ by more than $500,000,000. The supplemental report contains lower numbers than the EIS.]

D. D. A specific site and related impacts were not addressed because the concept was determined infeasible. See Section III.C.3.

4. In light of recent expansion of flight activity at MSP are EIS estimates accurate enough for predictive value when the document assumes only 100,000 more take-offs and landings between 2000 and 2020 when 100,000 more take-offs and landings occurred between 1989 and 1995.

Queries: How would overcrowding at MSP affect passenger and surrounding community safety? Do FAA regulations impact surrounding communities and clients of MSP in the event of overcrowding? Would this necessitate the construction of a third parallel runway within the 2020 time horizon?

E. E. See General Responses 4 and 5.

All these questions have either not been answered or inadequately addressed in the draft EIS. Adoption of this EIS would foolishly waste an opportunity to reasonably and prudently plan for expansion of MSP, relocation of the airport to Hastings or the development of remote runways. The legislature in 1989 wanted thorough planning process to be established without pre-determining an outcome. By failing to reasonably and prudently study the costs and impacts of the proposals on the table, only the status quo offers a legally viable alternative. Challenges from other stakeholders will affix the imprimatur of rightness onto the current site without serious consideration of alternatives. The flaws within the draft EIS make necessary further study and revisions to reasonably compare and contrast the options available to us. These same options will not be there in five or ten years, certainly not in twenty-five years. In those future time frames only destruction of existing communities will provide space for a new or expanded airport.

Submitted by: Greg Bastien, 2709 East Minnehaha Parkway, 722-7582, Chair of the Nokomis East Steering Committee.

# SIERRA CLUB

North Star Chapter

January 15, 1996

Ms. Jenn Unruh
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, MN 55450

Dear Ms. Unruh,

Thank you for the opportunity to comment on the Draft Environmental Impact Statement (EIS) for the Dual Track Airport Planning Process. The Metropolitan Airports Commission (MAC) has certainly produced an impressive document to conclude this multi-year, $10 million dollar study of two alternatives: expansion of Minneapolis-Saint Paul (MSP) airport and construction of a new airport.

The Minnesota Legislature recognized the need to examine alternatives to meet the long-term air transportation needs of the Twin Cities metropolitan area, and established the Dual Track Airport Planning Process in the Metropolitan Airport Planning Act of 1989. The alternatives to be examined included both the airport improvements and enhancements of capacity necessary at the existent airport (MSP), and the location and development of a new replacement airport, in addition to the No Action alternative and other reasonable alternatives.

**Reasonable Alternatives**

I do not see that "other reasonable alternatives" were seriously considered. Perhaps this is a result of a flawed process. Certainly the goals adopted by the Metropolitan Council (Page II-1) to direct the development and evaluation of alternatives focused strictly on aviation systems and solutions.

The problem is that transportation problems can only be solved by integrating modes of transportation. Cars, buses, trains, and airplanes carry people and cargo across America. The successful and efficient solution to future transportation needs exploits the strengths while minimizing the weaknesses of each mode.

For example, the High-Speed Intercity Rail alternative was eliminated after Mn/DOT performed a study in 1991 on the implications of high-speed rail on air traffic in the Minneapolis-Saint Paul, Madison, Milwaukee and Chicago corridor. Results of the study were that the rail services would not divert enough passengers and operations by the year 2020 to preclude a new runway and terminal at MSP. The conclusion flies in the face of reality when Europe and Japan are pouring billions of dollars into high-speed rail. Certainly one high-speed rail line from Minneapolis-Saint Paul to Chicago would not impact passengers and operations at MSP but a system of high-speed rail across the upper Midwest (especially when integrated with a system of high-speed rail covering the entire United States) would seriously divert passenger traffic from MSP. Both Europe and Japan are rushing to develop such a nationwide system of high-speed rail which always begins with one main line and additional cities being added one at a time. These high-speed rail systems are not only popular but use energy more efficiently than air travel. In the future we can expect our two main economic competitors to have significantly lower internal transportation costs than the United States. Obviously, high-speed rail is a "reasonable alternative" in Japan and Europe.

A.

A. Evaluation of a system of high speed rail across the upper midwest or throughout the United States is beyond the scope of this project. The initiative to study and implement such a system must occur at a multi-state or national level, and there is no indication that this will occur in the foreseeable future. A high speed rail system is therefore not a feasible alternative to the expansion of MSP.

*(over)*

1313 Fifth Street SE, Suite #323 • Minneapolis, MN 55414 • (612) 379-3853

I could also comment on the elimination of the Supplemental Airport alternative, but such an exercise would be fruitless. The Dual Track Airport Planning Process is much too far along and too much money has been spent to modify the process. However, if you check your files, you will see that a request to consider an intermodal solution (integrating the supplemental airport concept with a high-speed rail system to minimize passenger and cargo traffic at MSP) to solve the transportation needs of the Twin Cities through 2020 was raised by the Sierra Club through oral and written testimony on a number of occasions. The refusal to consider an intermodal solution puts into question the value of this Draft EIS.

**Comments**

But, this Draft EIS is what we have and the Governor has requested a recommendation from MAC by March 15th. So let me comment on data included in this Draft EIS.

• The EIS underestimates the urban sprawl that will be generated by the construction of a new airport in Dakota County. Construction of highways has generated urban sprawl in every city in the United States making any claim of restricted development not credible. Land use plans and zoning practices change over time, usually as a result of powerful lobbying by development interests. Note that 13 municipalities will have to change their existing or planned land use should a new airport be constructed in Dakota County. Plans put forth by the Metropolitan Council claiming to control development around a new airport will also change over time, resulting in more and more urban sprawl. A study of the construction of Houston Intercontinental Airport in Texas and the resultant explosion of urban sprawl northward from downtown Houston all the way to the new airport and then beyond to Humble illustrates what will happen here in Dakota County. Travel times to a new airport in Dakota County listed in the Draft EIS are very optimistic. The commuting time to Houston Intercontinental Airport (where I used to live) was about 25 minutes from downtown just after construction of the airport, but with the expansion of existing suburbs, construction of businesses, and new housing developments along the highway leading to Houston Intercontinental, the travel time, during rush hour, from downtown Houston rose to 60 minutes. That eight-lane freeway connecting a Dakota County airport to the Twin cities will be a parking lot for cars, during rush hour, within ten years.

**B.** B. See General Response 1.

• The total bill for a <u>new</u> airport presented in this EIS needs to modified to include:

- cost of auxiliary infrastructure developments associated with this urban sprawl
- long term loss of income to the State whenever farmland is removed from production (income produced not only by the 17,000 acres in Dakota County that will be lost but also the farmland lost to associated urban sprawl)
- long term loss associated with the destruction of 6,865 acres of wildlife habitat (loss of hunting opportunities, decline of wildlife populations, quality of life issues associated with the loss of open space, etc.)
- long term costs associated with the extra 4,021 tons of CO emissions produced by a new airport (human health problems caused by environmental pollution, earth heating effects caused by CO emissions, etc.)

**C.** C. See General Response 1.

**Conclusion**

The Sierra Club prefers transportation facilities which encourage desirable land-use patterns. We want to encourage those modes of transportation which are most economical of energy, land, and resources, and least polluting; under these criteria, urban mass-transit and railroads are desirable modes.

This Draft EIS for the Dual Track Airport Planning Process studies a very narrow segment of transportation issues - build a new airport or expand the current airport. The amount of time and money spent on this Draft EIS necessitates dealing with the results.

The Sierra Club cannot support the construction of a new airport in Dakota County. The Sierra Club can support the institution of transportation planning process which takes a unified, comprehensive view of all transportation modes, allowing selection of the mode most suitable for a given task. The Sierra Club sees the revitalization of the nation's railroads as a possible alternative to expansion of the current Minneapolis-Saint Paul airport.

Sincerely,

Mark Warhol

Mark Warhol, Conservation Chair
Saint Paul Group

To: Metropolitan Airports Commission (MAC)
Federal Aviation Administration (FAA)

From: South Metropolitan Airport Action Council (SMAAC)

Subject: Draft Environmental Impact Statement (DEIS)

The South Metropolitan Airport Action Council is submitting the following comments in response to the "Draft Environmental Impact Statement" prepared by the MAC and the FAA.

**Economics**

1. SMAAC challenges the assumptions regarding increases in future takeoffs and landings at MSP. While takeoffs and landings (operations) have grown by approximately 100,000 in the past six years and have more than doubled over the past 23 years, the DEIS assumes that operations will grow by only 45,000 over the next 25 years. This means that, while operations have been increasing 10% every three years over the past 10 years, the MAC predicts only 9.6% growth over the next 25 years.

a. Instead of basing all the economic studies on these growth projections, which may be dangerously low, we would like to see a range of projections. At the very least, we urge a comparison of the "low growth" figures in the DEIS with projections based on the historical growth figures from the past 20-25 years.

b. If historical growth projections are used, MSP will need much more capacity than is required by the DEIS predictions. How do you intend to solve this dilemma of either slow growth or lack of capacity in the future if you decide against a new airport?

2. SMAAC is concerned that the DEIS does not adequately address the problems of congestion and time delays at the expanded MSP site.

a. If all proposed MSP improvements are made, when would gridlock occur? (Under the assumption that historical 20 year 5% yearly average growth continues at MSP and national demand for airport capacity continues at is historic pace.) (ref. future needs, p. i)

b. The present highway network already experiences overcrowded conditions at peak periods. Distances may be short to MSP, but how much time will it take to drive in and out of an expanded MSP versus a new airport?

c. Airplanes are presently delayed in their takeoffs and landings. What are the differences between an expanded MSP and a new airport regarding these delays? What are the economic effects of delay?

d. Are the costs of delay factored into the total cost calculations of airport options (existing airfield cost $66 million/year, MSP alternative saving $28 million/year, new airport saving $58 million/year)?

e. Compare the parking access at each of the alternative sites.

3. An airport limited in size and dominated by one carrier denies consumers a competitive market in which to purchase transportation services. In your study there is no mention of the premium price paid by travelers at MSP. There have been GAO and DOT comparisons of pricing at monopoly and duopoly hubs. We believe such figures should be included in the economic data comparing an expanded MSP (still a monopoly hub) with a new airport, which would allow competitive pricing.

**A.** A. See General Response 4.

B. See U.S. EPA Response B and General Response 4.

**B.** C. The travel time analysis presented in Section V.W.1 of the DEIS took into account congestion on the roads leading to and from the airport terminal areas for the No Action, MSP and New Airport Alternatives. This information can be found in Tables W-4, W-8 and W-13 in the DEIS. Travel times on airport property are essentially the same for each project alternative.

**C.** D. Figure 4 of the DEIS compared delays and costs savings.

**D.** E. Costs of delay are included in Section II, Purpose and Need, but not in the cost of construction.

**E.** F. Internal site circulation is similar under both the MSP and New Airport alternatives.

**F.**

**G.** G. Analysis of airline industry trends indicated that monopoly pricing is an undefined issue. Since NWA competes with other airlines on a route-by-route basis, there will be considerable variability in the cost of air fares from MSP for any given route over time. The fares that NWA charges are a function of its competitive position with other airlines along specific routes. For example, if NWA reduces fares to compete with another airline on a given route, fares for other NWA routes may need to be increased to recover lost revenue. Also, potential differences in fares from Minneapolis are partially offset by improved convenience, as hub airports provide direct service to many national and world destin- ations with far fewer connections. For comparison with the New Airport Alternative, see General Response 1.

4. The MSP site includes approximately 3,100 acres for operations. The buffer zone includes rivers, a VA Hospital, a national cemetary, the 494 commercial strip, many Minneapolis parks and lakes, schools, churches, thousands of homes and a quarter of a million residents.

The DEIS does not acknowledge or take into consideration the additional land in Minneapolis that would have to be acquired to accomodate the expansion of the airport. To increase the operational site at MSP necessitates a buyout. Most of this property belongs to the City of Minneapolis.

a. Please calculate the real cost (tax loss, social costs, relocation cost, soundproofing, a new noise print, etc.) of such a buyout. What is the real price tag difference between a new airport and an expanded MSP?

b. Will the City of Minneapolis and the MAC implement a buyout guarantee for homes, churches, and apartment buildings if they endorse the expanded MSP option?

5. The 1991 MAC study "Preliminary Selection of an Airport Development Concept for the Long Term Comprehensive Plan" included a $3 billion noise mitigation figure. We do not see this figure in the DEIS. Why not? Please let us know the updated figures for noise mitigation.

6. The new airport alternative includes 17,000 acres of farmland. The operational site consumes approximately 5,000 acres of this total. Why are the remaining 12,000 acres (serving as a buffer) lost to farm production?

7. Re. cost calculations, why wasn't the income from selling off the present airport land taken into account, as was done in Denver? Why wasn't the airport trust fund offset cost included in the calculation of the cost of the Rosemount option?

8. The general public is told that a new airport is too expensive. Please explain the funding of a new airport compared to an expanded MSP. Who pays the cost for either of these alternatives? What are the financial commitments required by the general public?

9. Wisconsin will receive economic benefits having a major airport near their border if an airport is built near Hastings. Will they share the costs of building the airport? Has discussion of a joint Wisconsin/Minnesota new airport alternative been considered? If not, why not?

10. What is the long-term cost of the no-action alternative? If the number of operations grows much more quickly than MAC predicts and it is found after 10 or 15 years that a new airport is needed, what would the cost of land and facilities be then?

**Social**

1. If MSP is expanded (chart 0-2, page v 114 and v 122), the city of Minneapolis suggests 24 blocks south of Lake Nokomis be re-zoned commercial. Why isn't the resulting displacement of those 580 homes included in the executive summary under the expand MSP displaced homes tally?

2. What is the total acreage and number of homes currently zoned residential to be re-zoned commercial or industrial under the expand MSP plan? Is there a demand for that commercial property? Why is the area southeast of MSP so heavily commercial and the area northwest so heavily residential?

**H.** H. All land to be acquired for the expansion of MSP is identified in the FEIS. An estimate of land that the city of Minneapolis may decide to redevelop for commercial uses is also identified in Section V.O.1.2.

**I.** I. Capital costs were developed to identify the approximate level of costs associated with implementation of the 2020 plan. As design of individual facilities move forward, more refined costs will be

**J.** developed. Estimates of acquisition and relocation costs are included in the cost estimates.

**K.** J. See General Response 2.

K. The $3 billion cost was developed through the MAC's Interactive Planning Group (IPG). It reflects projects identified by participating jurisdictions to ameliorate possible noise impacts. These projects were

**L.** not necessarily based on federal or state criteria, and were not endorsed by MAC. See General Response 2 for the committed noise mitigation measures.

**M.** L. For conservative analysis purposes, the DEIS assumed all land within the airport boundary would be removed from production.

**N.** M. See General Response 1.

N. See the report, "Financial Analysis of Dual Track Alternatives", John F. Brown Company, Inc., February 13, 1996, which is available at MAC and FAA offices.

**O.** O. See General Response 1.

**P.** P. See Section II.B.1.4 and General Response 4.

Q. They are included under Induced Socioeconomic Impacts.

**Q.** R. The total displacement of homes based on commercial redevelopment near the new west terminal is anticipated to be 196 units. These units are all currently heavily impacted by noise, lying inside the DNL 65 noise contour. The estimated size of this area is 3.9 acres.

There is expected to be a demand for commercial uses when a new west terminal is built. The area northwest

**R.** of MSP has historically been residential and consistent with the city's comprehensive plan, whereas the area south of MSP relates to the I-494 commercial strip, in accordance with the Bloomington comprehensive plan.

**Safety**

Safety is a concern for residents living close to an airport, as this is where most accidents occur.

1. The proposed North/South runway could be a disaster waiting to happen. The commercial area to the south is densely populated. Per FAA testimony, taxiing problems exist at the north end of such a runway; there is not enough room for large planes to taxi without creating a safety hazard to the parallel runways. Please provide us with the FAA's position on the building and use of such a runway.

2. An expanded MSP with increased operations will add to the daily threat for many citizens surrounding the airport. A fatal crash occurred a few weeks ago (1/29/96) in Nashville, two miles from the end of a runway. There have already been airplane crashes in Minneapolis. The most dangerous points of a trip are take-offs and landings. MSP has very dense residential neighborhoods at the end of runways, making the risk of killing people on the ground greater in any plane crash.

MnDOT requires safety zones off ends of runways, but that requirement has been "waived" in already-built-up urban areas. As a result, there is no buffer zone at the ends of runways at MSP. Schools, hotels -- the Mall of America -- are all situated dangerously close to the present airport.

a. Have you calculated the possibility of an air crash near the present site?

b. Have you calculated the damage and loss of life which would occur if various types of planes crashed on take-off or landing at MSP as compared to a new airport?

3. The DEIS notes (p.v 41) the potential for aircraft striking birds and that this is a safety concern, especially when the aircraft is below 500 feet. An expanded MSP would route thousands of flights over Mother's Lake, with almost half below 500 feet. Just beyond Mother's Lake are densely populated residential neighborhoods. How do you intend to mitigate this safety hazard?

**Noise Pollution**

An expanded MSP guarantees that serious noise problems will continue to exist. Although Stage II planes are scheduled for a phase out, more operations will produce extended periods of constant noise. This scenario will never be compatible with quality living. And it subjects each person in the noise zone to a health hazard.

1. What guarantee does MAC give that we will actually have an all stage III airport by the year 2,000? We believe such a guarantee is necessary, since the MAC is currently lobbying the Minnesota Legislature to be released from the provisions of Sen. Mondale's bill (i.e. prohibiting construction of the north/south runway until all aircraft are stage III) (ref. noise, p.iv)

2. The DEIS cites studies re. the impact of noise on birds (page v-31) but does not include any reports of noise effects on humans. There are well-known studies on sleep disturbance, blood pressure increases, physiological and psycological effects on humans caused by noise pollution. We request medical data on the health damage sustained by persons exposed to loud and frequent noise over many years.

**S.**

**T.**

**U.**

**V.**

**W.**

S. Final FAA approval of the MSP Airport Layout Plan (ALP) and Airspace have progressed along with the environmental process. To date, FAA's evaluations have found that the recommended north-south Runway is a safe and feasible concept.

The proposed runway will be designed and constructed in a manner consistent with all FAA specifications and regulations. This includes adequate taxiing allowance to avoid any possible interference with the functioning of other runways and taxiways.

The north-south runway will also be designed with runway protection zones (RPZs) in accordance with state and FAA standards and regulations. The RPZs prohibit construction of buildings, structures or other appurtenances within their boundaries and are time proven to provide protection for applicable areas. In this case, several of the existing commercial buildings located south of the new runway must be removed in order to provide for the RPZ.

T. The MAC has not specifically calculated the probability of an aircraft accident at MSP nor estimated damage that could occur from an accident off-airport. The probability of an air crash at MSP is extremely low and difficult to quantify. The Current national commercial carrier rate for serious accidents is approximately 0.08 per 100,000 departures. Most of these accidents occur on airport property. Although there is no way to eliminate the risk of air accidents around airports, both the MAC and the FAA are con- tinually working to ensure that the airport is designed and operated to be as safe as possible.

To enhance the protection of people and property on the ground, the FAA requires Runway Protection Zones (RPZs) at the end of each runway. For air carrier runways with instrument approaches, these RPZs extend approximately one-half mile from the end of the runway. There are no residential properties within any RPZ at MSP.

State safety zones extend past the RPZs to further control development on the ground. The alignment of the north-south runway was shifted slightly during the planning phase in order to ensure that the Mall of America site would be located outside the state safety zones. Existing development in state safety zones is grandfathered by state law.

U. ANOMS data for 1994 indicated that approximately 25% of arrival traffic utilized Runway 11R and 25% of departure traffic using Runway 29R (these flights are directly over Mother Lake). The proposed north-south runway will maximize departures to the south and arrivals from the south. Therefore, overall runway use for 2005 is projected to decrease the traffic directly over Mother Lake as a result of the proposed north-south runway. In 2005 the modeled runway use allowed for 16% arrivals and departures over Mother Lake. The DEIS indicates that monitoring and control efforts are being maintained to ensure that goose flights into MSP continue to be minimal.

V. No airport has a guarantee that carriers will have an all-Stage 3 fleet by 2000. The north-south runway will not be completed until 2002-2003. The FAA has expressed an unwillingness to grant waivers to carriers beyond 2000. The FAA has denied all waiver requests for meeting interim Stage 3 requirements to date. The airlines are ahead of schedule to date and NWA has publicly stated it does not plan to seek a waiver.

W. See Jeff Schneider Response F b).

3. Would the expanded MSP or no action options necessitate increased operations throughout the 24 hour period? What guarantees do we have that the current "quiet hours" (midnight to 5 a.m.) will continue to be observed?

**X.**

X. The number of nighttime operations will increase over time (as will the number of daytime operations). MAC will continue to encourage airlines to keep flights during late-night hours to a minimum. See General Response 2.

4. Will the city of Minneapolis implement a program of notifying potential buyers of the noise environment and consequences of moving into the Ldn 65 zone? (Re. Table A.3-9 footnote #1)

**Y.**

Y. See General Response 2.

5. When church services are interrupted by overflying aircraft hundreds of people are affected. The interruption of a worship service, wedding, funeral, etc. is a far more serious disruption than the annoyance of an individual watching T.V. or talking on the phone at home. We suggest that the MAC needs to reexamine its policy on church noise insulation and urge that churches be insulated at the same time as adjacent homes.

**Z.**

Z. The guidelines established through the Part 150 process are primarily based on FAA guidelines. These guidelines recommend that churches located within the 65 to 70 DNL should be insulated to achieve noise level reductions (outdoor to indoor) (NLR) of 25 dB and those churches located within the 70 to 75 DNL should achieve NLR of 30 dB. See General Response 2.

**Site Selection**

Sandy Greive commented that the issues deciding the airport decision will be economics and convenience. The site selected for a new airport is the most inconvenient allowable in the Dakota Search Area (Figure W-12).

1. The distance to the Hastings site was never seriously mentioned when the site was studied but is now being brought into question. Why was this crucial matter never discussed when the site was chosen?

**AA.**

AA. It was one of the factors/criteria considered. See Final AED, New Airport Site Selection Study.

2. Why was the more convenient western section of the search area not selected?

**BB.**

BB. See Final AED, New Airport Site Selection Study.

**Conclusion**

A new airport would:

1. Assure that we have operational capacity to meet the transportation and economic challenges well into the next century.

2. Assure we have sufficient acreage to minimize traffic congestion and delays both in the air and on the ground.

3. Assure that additional gates, runways and maintenance bases can be constructed for competing airlines.

4. Assure that we can resolve the serious noise, safety and health threats created by an airport.

It is impossible for an expanded MSP to ever provide these assurances. Expansion:

1. Threatens us with economic disaster if a $3 billion investment proves inadequate.

2. Threatens the safety of people living and working at the south end of a new North/South runway.

3. Threatens south Minneapolis with catastrophic social and environmental damage if a third parallel runway is built.

4. Does not meet two stated Planning Goals:
   * Number 1 "Develop airport facilities to meet future aviation needs, to provide enhanced levels of air service and to further the economic development of the State of Minnesota.
   * Number 6 "Develop the airport and airport vicinity to minimuize and reduce adverse aircraft noise and other environmental effects.

January 15, 1996

Dear Metropolitan Airport Commission,

The membership of the Pierce County, Wisconsin Farm Bureau, Farmers Union, and National Farmers Organization very strongly oppose a new metropolitan airport in the Hastings, Minnesota area.

Destruction of thousands of acres of prime farm land, and environmental and economic reasons are the main reasons for our opposition.

We strongly recommend improving and doing some expansion of the existing Twin Cities Metropolitan Airport.

Yours truly,
Joyce Herbison, Chairperson
Pierce County Farm Bureau

Corlis Hendrickson
Pierce County Farmers Union

Jerome Maier
Pierce County
National Farmers Organization

Jean Wagenius
State Representative

District 63A
Hennepin County

Minnesota
House of
Representatives

COMMITTEES: ENVIRONMENT AND NATURAL RESOURCES, VICE-CHAIR; TAXES, SALES AND INCOME TAX DIVISION; TRANSPORTATION AND TRANSIT; INTERNATIONAL TRADE AND ECONOMIC DEVELOPMENT; LEGISLATIVE COMMISSION ON WASTE MANAGEMENT, CO-CHAIR

January 29, 1996

Jeffrey W. Hamiel
608 Spring Street
Mendota Heights, MN 55118

Dear Mr. Hamiel:

The principal reason that the legislature enacted the airport planning process was to ensure that Minnesota had sufficient air infrastructure to allow us to participate in the national and international economy. The former management of Northwest Airlines had told legislative leaders and others that the state needed to set aside land for a replacement airport. The unanswered question at the time was when it would be necessary and wise to invest in a new site.

Specifically, MAC's "economic" study and the environmental impact statement both assume 520,000 operations for the year 2020. Even though this projection is only a little more than two years old, it is woefully off base. The actual number of operations for 1995 is more than the operations MAC projected for the year 2000.

In 1989 when the planning process started our airport had 374,744 operations. In 1995 it is estimated that there were 475,000 operations, a 100,000 operations increase in six years. Since MAC projects 520,000 operations for the year 2020, its projections only provide for 45,000 additional operations for the next 25 years!

The addition of a short north-south runway buys another 80,000 operations thus allowing 600,000 operations a year. With the north-south runway we will have the ability to add 125,000 operations over the next 25 years. Thus over the next 25 years we will be able to grow only a bit more than we did in just the last six years. Since there is no room at the current site for a second new runway MAC is in effect placing a cap on Minnesota's economic growth.

We have heard the argument that we can't make straight line projections based on the last six years. Of course we can't. The point is that we won't even have the infrastructure available that will allow us to grow significantly more over the next 25 years than we have in the past six.

We have also heard the argument that these last six years have been "special" and the same circumstances won't occur again. Just two years ago when MAC redid it's projections it was not able to see the "special" circumstances. How MAC can now categorically state that nothing "special" will happen in the next 25 years is a mystery.

A. A. See General Response 4.

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Some have speculated that while we can only add a north-south runway to the current airport site, the MAC could acquire additional lands. In fact NWA proposes that, in the future, the MAC acquire an additional 2000 acres and another runway. If there is the unspoken assumption that we can add an additional runway, then you must be up front with Minnesotans. Could it be done? Would it be safe? What is the additional cost? Does the City of Minneapolis know what Mr. Glumack's buyout of South Minneapolis will cost? Our constituents will be well compensated, but what about those left behind? Only when we have these facts in hand can we honestly compare alternatives.

Another extremely troubling aspect of MAC's planning process is the "economic" study. It has two fundamental problems. One, it was supposed to be the most important document in the planning process. Yet it didn't even attempt to address such questions as:

1) Which Minnesota businesses are expanding? Which are not? What impact does this expansion and receding have on our need for infrastructure?

2) What is the cost to the Minnesota business community of the monopoly prices that NWA can charge because there is no room here for real competition? What is the impact on our business climate? What is the potential economic loss from holding capacity below demand?

3) Will businesses choose to locate or expand here if they must pay monopoly prices? Will business choose to locate here if there is no room to grow?

4) Can this airport act as a "growth pole?"

5) A constrained airport produces substantial delays. What is the cost of delay to Minnesota businesses? What is the cost for passengers and airlines?

Secondly, the researchers that produced "economic impact" study never, in the course of their work, discovered that real airplane traffic was running substantially ahead of projections.

How can that be? They didn't make the discovery because they used the projections given to them by the MAC and never did any real economic analysis, they just projected where growth would be given the MAC's projections.

The questions about the role that expanded or constrained airport infrastructure plays in our <u>overall</u> economy have yet to be asked, much less answered. We suggest that you begin your discussion by looking at the 1987 Minnesota Laws (Chapter 223, section 4) direction to the Metropolitan Council to assess the long-term adequacy of MSP to meet the aviation needs of the Twin Cities area through the year 2020 and the 35 member MSP Adequacy Study Advisory Task Force major recommendations that led to the 1989 dual-track legislation.

Sincerely,

JEAN WAGENIUS
State Representative

CAROL FLYNN
State Senator

B. The DEIS compared the environmental impacts of the recommended MSP option with the recommended new airport option. The plans were designed to meet 2020 requirements as stipulated in the legislation. A fifth runway at MSP is not required to meet 2020 demand and was therefore not incorporated into the recommended development concept. Should a fifth runway be desired beyond 2020, a separate technical and environmental study would have to be undertaken to determine its feasibility. See General Response 5.

C. See General Response 6.

D. Analysis of airline industry trends indicated that monopoly pricing is an undefined issue. Since NWA competes with other airlines on a route-by-route basis, there will be considerable variability in the cost of air fares from MSP for any given route over time. The fares that NWA charges are a function of its competitive position with other airlines along specific routes. For example, if NWA reduces fares to compete with another airline on a given route, fares for other NWA routes may need to be increased to recover lost revenue. Also, potential differences in fares from Minneapolis are partially offset by improved convenience, as hub airports provide direct service to many national and world destinations with far fewer connections.

E. See General Response 1.

F. The MSP Alternative is considered adequate to the year 2020. See Section II.B.1.4 for a discussion of delays and costs. These costs are based on average actual airline operating costs. The costs of airline delays (and delays due to highway congestion) to businesses and passengers were not quantified because they are very subjective.

G. See General Response 4.

State Senator

# Alice Clausing

January 16, 1996

Nigel Finney
Deputy Executive Director
Metropolitan Airports Commission
6040 28th Ave. South
Minneapolis MN 55450-2799

Re: Minneapolis/St. Paul Airport Draft Environmental Impact Statement

I appreciate the opportunity to provide comments on the Metropolitan Airport Commission's Draft Environmental Impact Statement (DEIS).

I believe the DEIS does not accurately reflect impacts to the environment, to socioeconomic conditions and to long-range considerations to redevelopment of the present airport site.

In the Executive Impact Summary, the conclusion that environmental impacts of all alternatives are relatively minor is not believable. To place a major airport of 14,000 to 20,000 acres on existing farmland certainly will have a significant impact on both the land and wildlife in the area. If the airport is relocated, cleanup at the present site will also have a significant environmental impact. In this regard, the DEIS fails in its purpose to give serious consideration to environmental impacts.

The impacts of induced development in Wisconsin are not adequately addressed in the DEIS. There is no doubt that relocation of a hub airport will bring significant development surrounding the area of the new airport. This will include businesses locating around the airport and employees relocating to be near their place of employment. Population and business expansion and their impact to public service needs of adjacent communities is inadequate. I believe the impacts to the area near Hastings, Minnesota and Prescott, Wisconsin are grossly understated in the DEIS. **A.**

A. See General Response 1.

The environmental and financial impacts of upgrading existing highways and building new roads to provide access from the Twin City area and from Wisconsin are not realistically addressed in the DEIS. Identified capacity improvements to existing highways and to the Hastings' bridge were included in the "no action" option. Funding for these projects is not included in the projected cost of airport relocation; therefore, funding will have to be provided by the Minnesota Department of Transportation.

To assume that people living in western Wisconsin will travel I-94 to Highway 95 to reach the airport does not realistically or adequately present the future transportation needs of the area. **B.**

B. See General Response 1.

The DEIS should provide more information about the redevelopment of the present site if the airport is relocated. The cost of the environmental cleanup may not be covered by the resale of the property for development purposes. The DEIS should contain some explanation of the assumption that the cost of cleanup will be covered by the money received from the sale or lease of the property. **C.**

C. See General Response 1.

In view of the recent MSP alternative plan by Northwest Airlines, evaluation of the viability of their proposal should be considered in the final EIS. **D.**

D. See General Response 3.

Thank you for consideration of these comments. If you have any questions, please contact me at 1-608-266-7745.

Sincerely,

Alice Clausing

Alice Clausing
State Senator
10th District

AC/sf

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Marion Hall
5025 Harriet Ave. So.
February 6, 1996

Nigel Finney
Metropolitan Airports Commission
6040 28th Ave. so.
Richfield, MN 55450

Mr. Finney and members of the Airports Commission,

As a long-time supporter of the city of Minneapolis, I wish to comment on the draft environmental impact statement presented at Washburn High School on January 24.

The study is faulty in a number of important ways. The distance to the site measures driving time for the metro area population; it neglects any consideration of mass transit, which should be available, and it takes no measure of the non-metro residents for whom the distance would be shortened -- Red Wing, Hastings, for examples.

A. See General Response 1. The travel times are provided as indicators of relative changes of accessibility between the alternatives. The travel times for the three alternatives are based on average speeds on the roadway system. As such, transit would also be affected in a like manner. Hastings was included in the DEIS, as were two county seats in Wisconsin. As it would be infeasible to list travel time estimates for every possible origin to each of the three alternatives, the seven county seats of the region, plus the two in Wisconsin, were selected to provide points from which people could evaluate the accessibility of the alternatives.

Also, the study measures inaccurately the number of people affected by noise -- using its own footprint definition. The footprint described is only a small portion of the number of people severely affected by noise.

B. See John Richter Response C.

The most important flaw in the study, though, is its failure to look at the long-range picture. When we talk of significant expenditures, we need to look further than the year 2020. Yes, by squeezing in an expansion of the present airport, we just might be able to get by for another 25 years, but then what? We know (from the study) that a world-class airport should have at least 14,000 acres at its disposal -- and that's only a 25-year projection. How then will we be able to handle the airport needs of the area on the present 3,000 acres? Will we need a third parallel runway? Did the study deliberately terminate the projections at the year 2020 knowing full well that a third runway would scare too many people and jeopardize Northwest Airlines' desires.

I repeat, we need to look further than 2020 -- to a time when airport use will be substantially increased, to a time when airlines other than Northwest have a fair proportion of access to the airport, to a time when residential safety around the airport is not threatened by over crowding.

C. See U.S. EPA Response B and General Response 4.

I urge you to look to the future. Begin by buying the land in Dakota County now! Even if you decide not to build a new airport now, one will surely be needed later. Then plan carefully to build an airport

that is world class
that is safe
that has adequate space to grow and an adequate number of runways
that will fill the area's needs past the year 2020
that will impact substantially fewer people with its noise.

D. See General Response 1.

Sincerely,

Marion Hall

Marion Hall

Wilbur Maki
4520 Oxford Avenue
Edina, MN 55436-1401

February 12, 1996

Ms. Jenn Unruh
Metropolitan Airport Commission
6040 28th Avenue South
Minneapolis, MN 55450

Dear Ms. Unruh:

Enclosed are my written comments on MACs MSP airport alternatives reports I have reviewed. Included are related comments on the conusltant report for the City of Minneapolis that I wish to share with you.

I want very much to thank the Metropolitan Airport Commission and its staff for their tremendous effort in letting us all know about the MSP airport alternatives and to solicit our concerns about the airport's future. I appreciate very much the importance of your work, having served on the Metropolitan Council Airport Adequacy and Airport Recycling committees, and more recently, the City of Minneapolis MSP Airport Task Force.

Sincerely,

Wilbur Maki

Attachments

## Economic Impacts of Minneapolis-St. Paul Airport Alternatives[1]

I wish first to thank the Metropolitan Airport Commission and its staff for their tremendous effort in letting us all know about the MSP airport alternatives and to solicit our concerns about the airport's future. I appreciate very much the importance of your work, having served on the Metropolitan Council Airport Adequacy and Airport Recycling committees, and more recently, the City of Minneapolis MSP Airport Task Force (reports cited in Appendix 1). I welcome the opportunity to comment on your most recent efforts. My comments pertain mostly to the economic impacts.

I find the issues relating to the air transport dependency of a technology-intensive economy that the Twin Cities are becoming, especially important. In keeping with these concerns, I start with a summary of these issues still confronting the Minnesota Legislature in its dual track decision-making process.

### *Summary*

The air transport dependency of the Minneapolis-St. Paul metropolitan area is misrepresented when based on past trends. We no longer are simply a regional services center catering to a largely agricultural hinterland. It is widely recognized that we are now a manufacturing region and state in terms of export-producing activity. Our markets are both domestic and international and they are highly differentiated by product. They also are high valued and truly global in their linkages. Our successes in these markets depends upon world-class access to them. This issue casts the discussion of MSP airport alternatives into a futuristic mold in terms of 1) the air transportation requirements of the emerging MSP regional economy and 2) the relative merits of the MSP airport alternatives in fulfilling these requirements.

The MSP airport impact studies are grossly deficient for the tasks ahead. They are static, at best showing only "snapshots," based on highly aggregated past trends, of an emerging Twin Cities economy. They fail to adequately identify and measure the air transportation linkages of the most promising sectors of the Twin Cities economy.

The underlying studies start with highly aggregate data. The numbers fail to differentiate the composition of the manufacturing and services sectors. This results immediately in viewing the Twin Cities, not as an average of U.S. statistics, but in its diverse industry specializations that each account for a healthy share of the U.S. activity in that industry.

The underlying studies fail to show important linkages between the metro area businesses and those in Greater Minnesota and beyond. These linkages make the assessment of MSP airport alternatives of great importance to the entire MSP economic region.

Finally, the underlying studies fail to represent future airport alternatives in a dynamic setting. The use of the Delphi panel (cited in Appendix 2), for example, simply gives the illusion of rigor in estimating the future demand for air transportation. The references to various scenarios are, again, exercises in economic statics. On the other hand, the engineering and environmental aspects of the studies depend on highly detailed analysis. Yet, a correspondingly comprehensive set of regional economic analyses is lacking.

[1] Prepared by Wilbur Maki, 4520 Oxford Avenue, Edina, MN 55436, February 12, 1996.

**A.** A. See General Response 6.

## *Economic Impact on Metropolitan Area and State of Minnesota*

There is an initial problem with the idea that we can ask people what they think about the MSP Airport as it is now, compared with what they think relocating to a new airport would mean to them, without mentioning time and its associated risks and uncertainties for each alternative. Each airline tenant of the MSP Airport must have a good sense of the company's futures, if it is to improve the long-term profitability of its operations. NWA certainly does. On the other hand, users of each airline's facilities have a shorter decision horizon as each user considers primarily access time and its influence on traveler productivity. Finally, the decisions of both the provider airlines and the airline users certainly must concern the local governments affected by these decisions. Not entirely clear, however, is the significance of these decisions for the future vitality and viability of the affected local governments. In this sort of decision environment, the accounting of risks and the building of scenarios of alternate futures become important means of unraveling the complexity of the various decision-making concerns, issues, and processes.

**Measures of Future Alternatives**

Future scenarios of MSP airport alternatives represent different sets of future economic conditions affecting airport activity. For example, another airport alternative could emerge from the projected facility investment schedules of the dominant airline. NWA has already presented its expansion own plan. It has a $600 million, rather than a $2.8 billion or a $4.7 billion, price tag associated with it. More important, however, is what it proposes and does not propose. It would add 15 gates to the current terminal over the next 25 years and a new N-S runway. This proposal, ascending to NWA officials, would allow the airport to make "affordable improvements as demand rises." What is demand and how it rises depends, in part, on what the airport facilities provide in total number of gates, parking, and ease of access--variables that would be largely in the control of NWA under this alternative.

The MSP expansion proposal calls for an entirely new terminal, with expanded facilities for handling ticketing and baggage for all airlines, international flights, and concessions, near the west end of the parallel runways. New parking would be directly above the new terminal. The proposal calls for a N-S runway, also, and an underground people-mover system connecting the new terminal to a new remote parking area. It would continue using existing concourses and gateways, but adding 23 new gates. This alternative would meet the FAA expectations for continuing service as one of the existing 29 U.S. air transportation system nodes.

The new airport alternative, with six runways, 14,100 acres, and 26 miles from the downtown business district, would have the same number of runways as the existing Dallas-Ft. Worth airport, somewhat fewer total acres, and half again as many miles from its downtown businesses district. This is the Dakota County site near Hastings and the St. Croix River. An earlier alternate site in Rosemount Township, eliminated prior to completion of any regional economic impact assessments, compares closely with the Dallas-Ft. Worth airport in distance from downtown Minneapolis. The recycling of the existing airport is an integral part of the new airport alternative. Future expansion possibilities at the new site would be comparable to those of Dallas- Ft. Worth and, to a lesser extent, Denver.

When the three airport alternatives are viewed as two decision approaches--one short-term, the other long-term, and the short-term is viewed as coming from two different decision perspectives--one being NWA, the other Minneapolis downtown businesses, the positions taken on the alternatives by the several parties involved in the decision making are readily predictable. NWA, operating in behalf of its own corporate goals and responsibilities, would seek the most favorable conditions for achieving an acceptable level of corporate profits. A larger airport with more gates and runways than the one proposed would reduce profit prospects by increasing competition from the additional gates and also increase the fixed payments imposed by the airport construction. Downtown businesses would bear these added costs only incrementally, with the possibility that the total costs of access to their business destinations could decline relative to their competition. Hence, either short-term alternative could be acceptable, with perhaps a slight edge for the MSP expansion. Both NWA and the downtown businesses have the alternative of expanding at other sites rather than MSP, if profit-making opportunities were to become more favorable elsewhere.

Local and state governments, with territorially-fixed economic bases, invariably become associated with long-term approaches to public infrastructure decisions. This occurs for two obvious reasons, namely, the longevity of infrastructure investments, coupled with the precariousness of the competitive advantages attained by locally prominent technology-intensive export-producing businesses. In today's business environment, the commonly-shared regional infrastructure, like an internationally-linked airport, is an important asset to most businesses, not only those concentrated in the metropolitan area, but, also, their input suppliers outside the metropolitan area.

Local and state governments thus become the most critically dependent of all organizations and institutions on objective and thorough studies of the long-term regional economic impacts of each airport alternative. When such studies are lacking, the decision process becomes flawed by the dominance of only the short-term approaches.

**Regional Economic Linkages**

Measures of future alternatives, whether public or private sector, should include thorough and competently performed assessments of regional economic linkages, direct and indirect. Among these linkages are the supply-side arrangements of metropolitan area businesses, especially those that have become increasingly dependent on critical input supply sources in rural areas of their extended economic region. The Minneapolis-St. Paul Economic Region that is served by MSP includes a large part of the Minneapolis Federal Reserve District as well as roughly the northern to central one-half or so of Iowa and of Wisconsin. The economic life and viability of many rural communities in the extended economic region depends on their critical economic linkages with the core metropolitan area institutions, particularly the export-producing businesses and various producer services, like banking, finance, business and consulting services, and transportation.

**B.** B. See General Response 6.

Key economic linkages are those that form clusters of interdependent businesses and industries. These regional clusters emerge over several product cycles among the export-producing industry segments. In the Minneapolis-St. Paul Economic Region, for example, the early industry clusters were based on the extraction, exploitation, and management of its natural resources. The primary industries soon spawned related processing and services industries that created new job opportunities for a growing population. A host of residentiary industries, those catering to the resident human population, soon emerged, thus adding to the diversity of jobs in local labor markets

Gradually the natural resources-based industries that formed the region's economic base were overshadowed by new human resources-based industries. These now concentrate in the region's core metropolitan area. Also concentrating here is an active and diverse labor pool with many skilled and talented new entrants into the local labor force. The most talented and highly mobile are attracted to, or remain in, the area because of its educational resources, opportunities for personal advancement, and quality of life. High among quality of life considerations is access to choice residential areas--stable, crime free, and with outstanding school, medical services, recreational facilities, and cultural attractions nearby. For many residents, having the place of work nearby is an added location advantage. Distance to the metropolitan area airport is a lesser consideration than residing in a choice residential area.

# Appendix 1: Draft Environmental and Economic Impact Statement Reviews

**Part A. Draft Environmental Impact Statement, by MAC and FAA, December 1995**

The draft statement's executive summary begins with an overview of the dual track legislative directive, the purpose of the document, a summary of recent MAC and FAA studies of future needs, and alternatives considered to meet future needs. This is followed by an environmental evaluation, namely, the estimated environmental, economic, social, and related impacts of each airport alternative. This report concludes with a quantitative summary of impacts.

*Overview*

1. Dual track legislative directive: How to best meet region's aviation needs 30 years into future. Seven-year decision process.

2. Purpose of document: Use final draft in recommendations to legislature, July 1996. Submit final report to EQB, March 1996.

3. Future needs: Peak hour demand will strip capacity of runway/taxi system without major improvements. Annual cost of delays will increase from $26 million at current levels of demand to about $66 million annually by 2020. This threatens MSP's role as a major connecting hub.

4. Alternatives considered to meet future needs: (a) MSP development, with 8,000 foot N-S runway added to existing three runways. (b) New airport of 14,100 acres in Dakota County would have six runways. (c) No action includes only committed projects in current 1995-97 CIP. (d) High speed intercity rail alternative, connecting Minneapolis to Chicago, omitted from DEIS. (e) Remoter runway in Dakota County, with rail transit linkage, omitted from DEIS. (f) Supplemental airport concept, transferring military, GA, etc., using SP Downtown Airport or Chicago, omitted from DEIS.

*Environmental Evaluation*

The environmental evaluation, according to the draft statement, has no "critical finding that would preclude development of any of the alternatives." It did not revel differences between the principal development alternatives, although the differences are more substantive in the social/economic categories than in the natural environment categories. The study findings are highlighted as follows:

- The study used a tiered EIS process approved by EQB. This consists of the following steps: (a) selection of a new airport search area; (b) selection of a new airport site within the search area; (c) selection of a new airport development plan on the selected site; (d) selection of a development concept for expansion of Minneapolis-St. Paul International Airport.
- The study found only minor natural environment impacts.
- Major economic impacts are: (a) new airport cost at $4.7 billion; (b) expanding existing airport at $2.8 billion. Jobs: 154,000 versus 92,000.
- Farmland loss is estimated at 17,000 acres for new airport.
- Noise: DNL 65 or greater: 175 persons new airport alternative versus 7,620 persons for expansion alternative.
- Social: Displacement of households and persons: 229 and 787 versus 96 and 227. Businesses and employees: 147 and 712 versus 76 and 2920.
- Transportation access: Average travel time during non-peak hours: 41 minutes versus 22 minutes.
- Historic: Negligible.

Missing from this summary is adequate discussion of the regional economic impacts of each airport alternative. The economic impacts presented in this report are essentially those associated with airport construction and operation, plus some local business-related considerations. Missing entirely is the rationale for having a world-class airport, namely, to provide an economic environment for sustaining the essential domestic and global market linkages of existing and new exports-producing commercial enterprises. Existing and new businesses, as well as NWA, can adjust to the lack of air excess by expanding at another place that provides the superior air access. The City of Minneapolis lacks this flexibility, of course.

C. Although discussion of "the rationale for a world-class airport" is rather subjective, a survey of new business creation activity in the Denver area was conducted in order to assess the significance of new airport construction to firms who chose to expand or start up new businesses in that area. The analysis determined that airport access is one of several factors, including quality of life and cost of living, that businesses evaluate when considering to expand or start new operations.

Missing also from the summary are discussions of neighborhood and community concerns and resident perceptions of local airport impacts. What levels of risk and uncertainty must we associate with the implications of these concerns and perceptions for each airport alternative? The report apparently assumes a risk free world as if their projections, based on certain arguable assumptions, are error-free predictions. Obviously they are not. Therefore, what costs, if any, are included in the various governmental and private sector efforts to cope with these concerns and perceptions in the case of each airport alternative? The net result of not responding to these sorts of questions may be a report that technically meets its stated purpose but, yet, fails to provide a sound factual basis for a realistic City of Minneapolis perspective on each airport alternative.

D. The EIS and referenced documents address those issues and concerns raised by agencies and the public during the scoping and preparation of the related environmental documents.

*Summary of Impacts (listing of criteria)*

The summary of impacts provides a tabular, quantitative representation of the various kinds of impacts enumerated earlier. These are listed by their criterion for assessing the impact. The criteria, along with the review comments, are as follows:

- Air quality. Slightly higher airport and access traffic CO emissions in year 2020 for new airport based on existing and/or projected technologies and adoption rates.
- Archeological resources. Negligible impact of each, but only in terms of site count, not the relative value or importance to people.
- Biotic communities. Much higher wildlife displacement with new airport, but only on an acreage basis; no measures of relative value and importance .
- Bird-aircraft hazards. Much higher bird congregations affected by MSP, but only on a bird count basis; no measures of relative value and importance .
- Economic. Exactly the same number of total jobs on airport, and direct and indirect wages generated by airport jobs, in MSP and new airport alternatives, while construction jobs and wages, total cost, and percentage of tax capacity lost would be much higher with new airport, according to this study. Not only are the estimated numerical values suspect, however, but the most critical regional economic impacts are totally ignored.
- Endangered and threatened species. None.
- Energy supply and natural resources. Consumption of aircraft and vehicle fuel is about the same in the alternatives listed.
- Farmland. Impact of new airport given in total acres, with no indication of its relative importance and value in a regional economic context.
- Floodplains. None.
- Historic/architectural resources. Largest with MSP, by number of sites affected.
- Induced socioeconomic. Largest for MSP, presumably with reference to the direct economic effects cited earlier, but, again, totally lacking a regional economic impact assessment.
- Land use. Larger number of municipalities would require changes in existing or planned land use in new airport alternative, but no indication of its relative importance and value.
- Noise. Much greater noise impact with MSP and no action alternatives than new airport alternative.
- Park and recreation lands (section 4(f)). None for new airport and no action.
- Social. Largest for new airport in number of residents and households that could be displaced, but, largest for MSP in number of businesses and jobs affected; again, with no indication of relative importance and value.

E. The impact model used to project direct airport employment is based on a sound methodology, first developed by the Federal Aviation Administration. The model is based on the assumption that direct employment is tied to a given level of passenger enplanement activity. Since both scenarios are designed to accommodate the same level of forecast enplanement activity, the resulting calculations of direct employment would be identical. Indirect impacts of direct airport employment were aggregated at the state level. The majority of indirect impacts would occur within the seven-county area, since the majority of MSP employees live in this area. Induced real estate impacts were also generated. Estimates of construction impacts were derived from construction cost estimates, as well as detailed construction employment data from Denver's new airport.

- Surface water quality. Greatest for MSP alternative, but with no indication of relative importance and value.
- Groundwater. Largest impact for new airport, , but with no indication of relative importance and value.
- Transportation access. MSP scores highest in travel time measures, but with no indication of relative importance and value, in this case, with respect to likely future access from MSP to domestic and international destinations.
- Wetlands. Small, but greatest for MSP, measured in acres of wetland affected.
- Wildlife refuges. Measurable impact (number of monthly overflights less than 2,000 feet) only for MSP alternative.

Obviously, much effort was involved in measuring environmental impacts. These appear least important. Apparently no effort was involved in measuring regional economic impacts. Yet these effects may prove most important and relevant in a fair and full assessment of airport alternative impacts.

**Part B. Economic Impact Study, Status Report, by ERA, December 7, 1995**

The Status Report lists five discussion elements: regional land use context of the airport; case study summary; induced land use impacts; economic and fiscal analysis; and final work tasks. While three of the four elements are cited in the body of the report, most of the report pertains to a "case study overview."

#### Regional Land Use Context of the Airport

Approach to the land use phase of study was to (1) define the development context of the region with a historical perspective, (2) prepare case studies to understand context of airport growth in other regions, and (3) work closely with Metropolitan Council and local governments in regard to localized impacts.

#### Case Study Summary

Approach to the case study phase of study was to (1) contact data sources, (2) identify key characteristics of each airport, (3) establish high-medium-low end of findings for selected case study, (4) compare qualitative and quantitative similarities and differences, and (5) define other factors affecting case study economies and real estate.

Case study implications referred to five airports:

- Atlanta-Hartsfield. More than twice the operations and passengers of MSP, nearly five times the cargo, and four runways (one more than MSP, two less than new airport).
- Dallas-Fort Worth. Second only to Atland-Hartsfield in operations and passengers, same in cargo, but with two more runaway and more room for expansion.
- Washington-Dulles. Fewer operations and passengers than MSP, but twice the cargo, same runways.
- Kansas City International. One-half of the operations and passengers of MSP, but the same cargo and runways.
- Denver International. The largest land area and twice the operations, one-half again as many passengers, and two more runways than MSP.

The comparisons presented in this report focus on the current situation, rather than historical or anticipated future situations. This is in keeping with the overall approach to the MAC impact studies, namely, focusing on the current situation and emphasizing direct measures of airport activity.

#### *Induced Land Use Impacts*

This section of the report lists the anticipated new industrial development in Dakota, Washington, and Goodhue counties and Wisconsin, measured in square feet and employees, associated with the new airport alternative. It also lists the population and employment in each PM peak hour 15-minute travel time segment of the airport travelshed for the MSP and new airport alternatives.

**Part C. Impact of MSP Airport Alternatives on City of Minneapolis, by Hammer, Siler, George Associates, September 5, 1995**

These comments focus on the two concerns that are likely to accompany the release of any report of great complexity about a huge investment decision. These are (1) the risks associated with each alternative and (2) the scenarios showing the assumptions, activities, and conditions associated with each alternative over a given decision horizon, say to 2020. Finally, the scenarios of future airport impact outcomes call for some sort of shared vision of the future city and region.

***Accounting for Risks Associated with MSP Airport Alternatives***

Firstly, there is considerable difficulty in knowing what confidence to place on the impact outcomes postulated for the several airport alternatives. We can appreciate the fact that some outcomes are more or less certain than others, but which ones are they, and over what time periods?

In Section I, Graphic Summary of Consultant Findings, we learn that under the "no build" alternative the terminal would be where it is, exactly as it is, except for projects already approved. Of course, this sudden lack of activity is unlikely to occur. Are we to assume, therefore, that the purpose of this alternative is to establish some sort of baseline? But it would serve this purpose only in a static world.

The Deborah Dyson communication and the accompanying materials on NWA are helpful in visualizing an alternative scenario. Except for the memorandum, there is little, if anything, about NWA and how others, who watch NWA activities closely, see its role as a dominant hub airline, now and in the coming years. NWA certainly looks at alternative futures (including changes at its Detroit site) in its investment, acquisitions, and defensive strategy planning.

We learn further in Section I that the primary elements of the MSP expansion alternative is a new N-S runway, among other changes. If we queried several knowledgeable individuals about the certainty of all this happening, we probably would find that it is for some a "no problem," for others an "I don't know" or "it depends." And even if it were to happen, the question remains: When? Of what value are all the calculations of outcomes when the likelihood of the event is up for grabs? Yet, this uncertainty may be of a much lesser order than the uncertainty about some other alternative.

In Section II, Discussion of Consultant Findings, we find each of the 11 issues, starting with the downtown Minneapolis impact, placed entirely into a static decision environment. In such an environment, one could certainly opt for the closer airport, all other things being equal. But all other things are not equal, neither now or some time in the future. Among the many downtown businesses, for example, some are more airport dependent than others, although all may opt for the shortest possible airport access time.

We learn also in Section II that aircraft noise reduces housing values by one-half of one percent for each additional DNL above the 65 DNL level. Some research findings suggest that the percentage losses are less with low-income housing than with medium-income and high-income housing. The aggregate impacts thus appear small relative to the aggregate base values. However, this may be much less important in affecting airport expansion outcomes than the perceived values of airport impact, which can be much greater. At this point in the findings, the existence of large differences between calculated and perceived impacts is ignored.

***Building Future Scenarios of MSP Airport Alternatives***

By opting for a static decision framework, the consultants findings in effect offer only one scenario for each airport alternative. With only slight modifications, we could start with the one scenario already presented, building a couple of additional scenarios to account for the different sets of future assumptions, activities, and conditions associated with each of the several airport alternatives.

Future scenarios of MSP airport alternatives represent different sets of future economic conditions affecting airport activity. An alternate scenario, as suggested earlier, could emerge from the projected activity schedules of the dominant airline. One new alternative might encompass an aggressively promoted cluster of air transportation-related activities, consistent with correspondingly aggressive development of local and regional export-producing enterprise--the best we can do--and with a correspondingly rather favorable set of national and global economic scenarios. An additional one or two or three alternatives might fall somewhere between the baseline and the first alternative. A unique, but explicit, set of economic and political assumptions, activities and conditions would be associated with each of the scenarios.

**Minneapolis in a Regional Context**

Minneapolis and its downtown business district, like most other major air node cities, is the nerve center of its extended economic region. Most high-order producer services, like banking, finance, real estate, and business, legal, management, consulting, and other professional services, are concentrated in the air node region's core area, particularly its principal downtown business district. In 1990, the Minneapolis downtown district had more than 3,000 businesses, of which roughly 80 percent were engaged in two or more strategic management functions. Without easy and quick access to these functions of tested reliability, the many technology-intensive businesses that now characterize much of the economic base of the MSP economic region could not exist in an increasingly competitive economic environment.

While Minneapolis has well-established high-order business infrastructure, it is gradually losing its choice residential areas. This presents a long-term threat to the City's solvency, firstly, from the loss of its early advantage as a "good place to live" and, secondly, from the erosion of its tax base. It may no longer have the fiscal and community resources to contain the overspill of crime into its most livable neighborhoods and residential areas.

**MSP Airport Alternatives: A Minneapolis Perspective**

From a City of Minneapolis perspective, we count among important participants and interested parties in the Airport alternatives decision making neighborhood organizations and groups, downtown businesses, city-wide businesses, including some that also are region-wide, the City Council, and the Mayor. Neither the neighborhoods nor the businesses--downtown or city-wide--speak with one voice. All, however, express concerns that are short-term or limited to a particular neighborhood or business. The City Council and the Mayor may find increasingly clear that none address the long-term interests of the entire City. In fact, only the Mayor can most fully exercise the privilege of taking the long-view for the entire City.

Each airport alternative, as noted in the Consultant Report, elicits one or more of several different responses from individuals and groups representing particular neighborhood and business interests affected by airport changes. For some neighborhood residents, aircraft noise and safety are dominant concerns. For others, airport access is crucial. Many businesses also express a primary concern over airport access and its impact on individual employee productivity. Given the variety of concerns, there is great difficulty in reconciling them over the time horizons relevant to each of the neighborhood and business constituencies. Questions arise, therefore, as to the trade-offs among the alternatives and their impacts (taking into account the full range of City fiscal alternatives), and the opportunities foregone.

Eventually, the net result of one or more of the airport alternatives may be a relocation and redistribution of economic activity in the City. The character of the City's downtown district, for example, may change gradually as businesses with a higher priority on airport access for distant sales than local sales move closer to the point of aircraft departures and arrivals. After all said and done, we still face many questions. What is our vision of the future City, the character of its downtown district and neighborhoods, under each of the airport alternatives? What are the assumptions about the alternative futures facing the City, given the different levels of impact-ameliorating economic incentives? How is this vision documented and shared with decision makers generally?

## *Appendix 2: Risk Analysis in Application to MSP*

The report, *Regional Airline Activity Forecast, The Hickling Model Discussion Paper*, presents the Risk Analysis Process (RAP) in an application to MSP's regional airline activity as a "quantitative statement of the probability associated with various forecast levels of passenger traffic, capacity, delay, benefits in relation to costs (net present value) and other factors that are critical in airport planning."[2] It describes the process in four steps, namely, development of structure-and-logic models as a basis for forecasting, assignment of estimates and ranges (probability distributions) to each variable in the forecasting process, expert review of all estimates and ranges developed previously, and forecasting the regional air carrier demand.

The variables cited as affecting regional airline operations include MSP metropolitan population, MSP metropolitan area capita income, US destined segment enplanements (from the regional air activity), MSP destined segment enplanements, average aircraft size, load factor, peak month factor, peak day factor, business traffic base, business traffic US destined segment, and business traffic MSP destined segment. These are annual time series variables with errors of forecast estimated for each variable. They help forecast the two dependent variables--hourly arrivals and hourly departures. An expert review panel provides estimates of likely future outcomes in the Hickling application of risk analysis. There is no indication of panel member qualifications, the criteria for selecting such qualified panelists, and the specific information and knowledge bases for the regional economic prognostications.[3]

The Hickley model clearly is not a structural economic model, including among the time series variables the determinants of year-to-year changes in these variables. In short, the Hickley model is severely flawed for assessing airport and air transportation requirements of regional industry. Such assessments require an industry-specific and area-specific differentiation of a region's economy, the input supply sources and markets for these products, and the demand for air transportation originating from the related resident population and economic activity. Using only population as an explanatory variable means that the procedure is essentially a statistical exercise. It presents an illusion of rigorous analysis. We still lack an understanding of the role of air transportation and a world-class air transportation node in a technology-intensive metropolitan area economy. MSP population change, for example, depends on job opportunities, and the earnings they generate, as well as the quality of life within the metropolitan area. These, in turn, depend upon product-specific markets and industry-specific supply sources. The model ignores these sorts of linkages. Nonetheless, the model has a certain educational value in illustrating the current use of risk analysis in airport planning, thus indicating both its limitations and future opportunities for improving the risk analysis process.

F. The Hickley model was used in a previous regional airline forecast but not in the development of the most recent Dual Track activity forecast. The regional forecast relied heavily on the observations of representatives from NWA, Northwest Airlink and other members of an expert panel. See Volume Revised Activity Forecasts, Minneapolis-St. Paul International Airport, Long Term Comprehensive Plan and General Response 4 for the method used in developing the Dual Track forecast.

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2 Op. cit., page 10.

3 In reference to the oracle Apollo at Delphia of Greek mythology, this is sometines called a "Delphi" panel, given its "obscurely prophetic" approach to predicting future events.

# MAC Public Hearing

7PM January 18 Washburn High School

John Richter

Before I make a couple of statements I'd like to give you the opportunity to hear from two people.

- In Atsuga Japan, the judge awarded damages to surrounding residents and he was quoted as saying "it is not fair for to force a limited number of people, such as residents around the airbase to sacrifice themselves for the national cause of importance."

- Tad Piper, a leading businessman and head of Piper Jaffray said airport noise is a valid concern in the airport debate not just for those subjected to the plane landings and take-offs but for all Minnesotans who impose this burden of noise on a few--be they in south Minneapolis or Dakota County--for the sake of a modern airport.

We can assume from page 1 of your Dual Track Airport Planning Process without future growth in aviation activities we can expect a decreased level of service and user cost. Look at this graph that is based on the report that actual planes and projection to the year 2020 by one of the reports. This means we will have little growth. If our desire is to not have jobs for our children and grandchildren and have them go to communities that have adequate facilities, you will accomplish this.

**A.**

A. It is not clear what report and graph is referenced, but the average annual growth rate for passengers and operations is forecast at one percent — regardless of the build alternative. See General Response 4.

You mention that peak hour demand will outstrip capacity. At the present time between 4:30 and 7:30 PM there is not room for any more planes to land. If your desire is to keep it so that one company has all the business and profits you have accomplished this. On the other hand if you was to serve the State of Minnesota and its people we should move ahead with runways in an area where there is enough capacity and with few people affected by the noise.

**B.**

B. The addition of the north-south runway will permit additional operations during peak periods, consistent with the forecasts.

On page 14 of the summary you say there are 22,000 in the 65 contour. What you fail to realizes is there is an awful lot of people that are not in the 65 that are annoyed by the pollution. As an example, our former home was a long way from the 65 area and yet the noise was so bad we decided to move. Unfortunately, my wife wanted to stay in the city of Minneapolis so I built a home on Cedar Lake. At that time there was no noise. Now the noise is increasing to the point we can often not use our deck in front of our home. There isn't any major city in the United States where they have land nearby that they aren't willing to move the runways too. An example is Austin Texas. They were going to expand and found not only could they not inflict the pollution on the population but it was cheaper to start over. The plan from Northwest apparently includes another runway that will attack the few parts of Minneapolis that are not affected by the noise.

**C.**

C. The EIS acknowledges that noise can annoy some people outside the DNL 65. For this reason, the MAC addresses mitigation for people within the DNL 60 (see General Response 2). The city of Austin is converting a former Air Force Base for civil use. The base is only slightly farther from the city center than the existing airport. They acquired the facility at no cost.

The three committees that decided on the Hastings side do not live in Minneapolis. The numbers are:

| | |
|---|---|
| Dual Track | 0 Minneapolis |
| New Airport Tech Committee | 1 Minneapolis |
| MSP Tech Committee | 0 Minneapolis |

How can we expect them to relate to the problems the central city has if they don't live there. In checking with ten of the major airports in the United States the noise abatement staff must live somewhat near the airport. This gives them first hand experience with the noise. It is tragic that the city that provided the land for the airport are receiving all but a very small percentage of the pollution. In talking with the officials of Lambert Field, in St. Louis, where they bought a number of homes they were asked the question if the property taxes were twice of what they are, would you have taken them off the tax role. He said absolutely not. Those of us that own or have owned property in the state of Missouri know that taxes are 1/2 of what they are here. Incidentally, that so called expansion has been stalled by a number of lawsuits.

I am attaching from your own records the amount of mitigation that would be needed to expand the airport to be competitive. The cost would be some $3Billion. It doesn't seem logical when faced with those kind of costs when other land is available not that far away that we continue to say we must keep the runways where they are because in 1930 the City of Minneapolis allowed airlines to use some former park property.

If you are looking to stabilize the tax base in Hennepin County you should move those runways. This study over 7 years which shows the closer you are to the airport the less the values. This forces the other part of the cities where there is good housing to subsidize the City of Minneapolis and the airport. Is your plan to destroy the residential areas of the major city in our state? One of the major donors to create the Cedar Lake Bike Trail stated he would never move back to Minneapolis as long as the noise is there.

The FAA report states clearly that noise has an effect on values. We are attaching a current analysis of values of homes in the area of Minnepaolis presently affected by aircraft noise.

Your Draft Environmental Impact Statement goes into detail about farm land. You can also mention Amsterdam and Tokyo. I am sure most airport lease out the land they are not using. One of the big examples is the Mid Continet Airport in Wichita Kansas. They were building a new airport and they told the farmers we will buy the land so you get your money but you can lease it back and we will split the profits. Now because of the size of the airport a very high percentage of the land acquired could remain in farm use.

There is some information that every member of Mac should read. It is the "Handbook of Hearing and the Effects of Noise." If you read that book you will understand how detrimental the ever increasing pollution is for a good share of our population.

**We need to move the runways!**

**D.** D. The city of Minneapolis selected their representatives for these advisory committees.

**E.** E. Mitigation commitments were addressed by the Noise Mitigation Committee formed after the preferred alternative was chosen. See General Response 2 and City of Minneapolis Response K

**F.** F. Although lawsuits have been brought against the MAC alleging that noise has had an adverse effect on property values, no court ruling has validated this perception. See City of Richfield Response JJ.

**G.** G. We agree that a high percentage of the farmland could have remained in use. See General Response 1.

*Housing, from p. 89*

to minimize the effects of local conditions by using local expertise and a combination of quantitative and qualitative techniques that complement each other, and seeks to overcome the shortcomings of previous studies that exclusively used one technique or the other."

A series of studies was done around four major airports: Baltimore-Washington International, Los Angeles International, and New York LaGuardia and Kennedy International Airports – to determine whether the procedure was repeatable and verifiable, to see if any distinct trends could be observed, and to determine if any inferences could be made at the national level regarding the impact of airport noise on housing value.

Booz Allen researchers concluded that the results of the studies indicated that the neighborhood pair model is viable and helps establish the boundaries of the effect that airport noise has on housing values at a given airport. "The observed trends are consistent, showing that the noise impact is more pronounced in higher-priced areas and is hard to detect in relatively low-priced neighborhoods," the report concluded.

For instance, in the study around Los Angeles International Airport, they found that, in the moderately-priced areas, the adjusted appraised values of homes suggested an average $60,873 (18.6 percent) higher property value in the quiet neighborhoods, or $4,348 (1.33 percent) per dB of "additional quiet." On the other hand, the results in the low-priced areas were much more modest – a $1,268 (0.8 percent) higher property value in the quiet neighborhood.

A later study in the New York area confirmed this finding. As was observed in the LAX study, the results in the low-priced areas indicate virtually no ($733, or 0.5 percent) difference in property values between the quiet and noisy neighborhoods. In the moderately-priced areas, the adjusted appraised values suggested an average $10,700 (4.9 percent) higher property value in the quiet neighborhood, or $1,070 (0.5 percent) per dB of additional quiet. In high-priced areas, the adjusted appraised values suggested an average $22,367 (5.7 percent) higher property value in the quiet neighborhood, or $5,474 (1.4 percent) per dB of additional quiet.

However, the report concluded that the magnitude of the impact of noise on property values cannot be estimated at the national level at this time, since the results varied across a wide range for the airports studied, and only a small sample of airports was considered.

The primary goal of the study was to assess the feasibility of the neighborhood pair model to examine the effects of airport noise on property values, and the findings indicated that the methodology is viable and "reasonably economical," the report concluded.

The study establishes a framework on which a broader examination of this subject at the national level can be based, the researchers said. Such a study would determine the magnitude of the impact of airport noise on housing values on a nationwide basis rather than focusing on specific airports. But, prior to performing that study, two closely linked issues must be resolved: which airport-impacted communities must be considered, and how many such communities must be analyzed.

The results of a national study could help decision makers in formulating national policy and would enable local airport authorities to better deal with airport noise impact, the report noted. The FAA must perform extensive cost-benefit analyses before implementing proposed changes in national noise-related policies. One aspect of noise impact that needs to be better understood is its economic impact, the report said.

Copies of the report, "The Effect of Airport Noise on Housing Values: A Summary Report," NTIS No. PB 95212627, can be obtained from the National Technical Information Service at tel: (703) 487-4650.Δ

703-321 8547

*Helicopters*

## FAA DENIES PETITION TO SET 1,000 FT. MINIMUM ALTITUDE

On June 8, the Federal Aviation Administration denied a petition for rulemaking filed by Homeowners of Encino that would establish a 1,000 ft. minimum altitude for helicopters flying over congested urban areas.

Section 91.119 of the Federal Aviation Regulations establishes the minimum safe operating altitudes for aircraft operating in the National Airspace System. It set a minimum altitude of 1,000 ft. for fixed wing aircraft flying in congested areas, but permits helicopters to be operated at lower than 1,000 feet if the pilot can do so without hazard to persons or property on the ground.

"The existing rule has historically provided the public with the level of safety required of helicopter operations," Thomas C. Accardi, director of the FAA Flight Standards Service, explained in denying the rulemaking petition.

The FAA could not amend its rules to set a minimum altitude for helicopters, he said, without first providing "a safety justification or a showing of compelling need on behalf of the American public as a whole." Accardi said that "it appears that the petitioner's justifications for the proposed amendment are not safety-based, but rather are based on the desire to reduce noise caused by low-flying helicopters."

"While the FAA acknowledges that a specific community may have some valid complaints about particular helicopter operations and resultant noise, noise issues within a limited geographic region do not warrant the promulgation of a nationwide standard affecting all helicopter operations," the FAA official said.

Gerald Silver, president of Homeowners of Encino, CA, condemned the "slow and inadequate " response of the FAA to his petition, which was filed a year ago. "This is typical FAA double speak," said Silver. "The agency fails to

| | MARKET VALUE AND PROPERTY COUNT BY SELECTED LDN BOUNDARIES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 |
| LDN | | | | | | | | | | |
| 75 | Number of Properties | 7% | 253 | 253 | 253 | 254 | 254 | 255 | 255 | 254 |
| | Total Market Value | | 22,134,100 | 22,840,600 | 23,781,400 | 23,903,400 | 23,876,400 | 23,755,400 | 23,669,400 | 23,693,400 |
| 70 | Number of Properties | 12% | 2,638 | 2,638 | 2,640 | 2,640 | 2,640 | 2,644 | 2,647 | 2,645 |
| | Total Market Value | | 224,019,980 | 232,576,600 | 238,543,900 | 239,472,600 | 240,528,500 | 242,472,300 | 248,039,100 | 250,496,800 |
| 65 | Number of Properties | 19% | 6,266 | 6,266 | 6,270 | 6,272 | 6,280 | 6,285 | 6,288 | 6,289 |
| | Total Market Value | | 523,117,300 | 545,003,500 | 562,188,500 | 568,980,500 | 583,926,900 | 594,301,300 | 601,243,200 | 621,691,300 |
| 60 | Number of Properties | 21% | 15,879 | 15,897 | 15,913 | 15,949 | 15,976 | 15,985 | 15,988 | 15,985 |
| | Total Market Value | | 1,319,057,600 | 1,383,514,850 | 1,442,642,550 | 1,465,553,050 | 1,499,073,850 | 1,516,989,750 | 1,547,385,750 | 1,595,120,300 |

4.6% 5.4% 3.38% 2.98% 2.7% 2.3% 21.2%



*The actual verity or correctness of this data is in no manner guaranteed*

February 13, 1996

Ms. Jenn Unruh
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, MN 55450

Re: Comments on Dual Track DEIS

Dear Ms Unruh:

I would like to submit the following comments on the DEIS:

Sec. II B. Need

1. The forecast horizon of 2020 is too short and should be extended another 10-20 years. This is of particular concern regarding the statement on the top of p. III-4 under "Flexibility":

> "After [2020], continued growth in demand will result in the need for additional airport development not provided for under this alternative . . . "

This statement appears to imply that future demand will require additional runway capacity beyond the north/south runway that is part of the currently envisioned "MSP alternative." It is neither reasonable nor fair for this DEIS to omit a full discussion of the environmental and economic impacts of such additional runway capacity, especially given the much more significant impact of the probable solution, a third parallel runway.

2. The DEIS indicates in Sec. B. 1. 3. that "the MAC forecasts also reflect extensive input from the primary air service provider at MSP, Northwest Airlines" and that "NWA has developed a long-term strategic plan for Minneapolis." Public statements from NWA have made it clear that their business plan does not include a new MSP. The fact that NWA commands such a large market share in this location, a position that presumably they intend on maintaining, calls into question the integrity of basing the demand forecast on the business plan of a monopoly user of the facility. How can the public be assured that the MAC's forecasts represent the public's interests rather than the private interests of NWA?

3. The baseline forecast indicates 520,400 operations per year in the year 2020. This would represent a significant reduction in the rate of growth experienced in recent years. There is inadequate justification for this significant reduction in demand growth.

4. There seems to be an assumption in the DEIS that air traffic demand would be the same at either an expanded MSP or at a new airport, i.e. that demand does not vary at all with capacity. Given the acknowledged current presence of constrained gate capacity and monopoly pricing at MSP, it would seem that this assumption may be faulty. Increased gate capacity and decreased consumer prices may indeed stimulate both consumer and carrier demand at a new facility. Has this possibility been fully explored?

5. The discussion of "other pollutants" on p. V-6 says that a three month test of air quality in 1993 at a sight near the airport indicated pollution levels "below National Ambient Air Quality Standards." It also says that "no permanent monitors are located near the airport." Along with many of our neighbors, I regularly (2-3 times monthly) smell the odor of jet fuel in our neighborhood. Has there been sufficient monitoring of off-airport locations as part of the DEIS to fully document that this is not a problem?

6a. It is not clear that the cost estimate of the MSP alternative included the following:

a) reduced value of property under noise footprint, including such factors as usability of outside spaces

b) health costs of sustained exposure to aircraft noise

c) increased costs of air travel to consumers due to NWA's domination of MSP

d) potential legal cost of inverse condemnation claim by Mall of America

e) full costs of noise mitigation to affected residents; e.g. my property currently lies within the current Ldn 65 contour, but within the projected Ldn 60 contour. I understand the contraction of the noise contours is due to the projected increase in use of stage III aircraft. I further understand that the methodology of this measurement does not fully reflect the effects of increased frequency vs. quieter aircraft. "More but quieter" is not a solution and the DEIS should account for noise mitigation costs beyond the Ldn 65 level.

6b. It is not clear that the cost estimate of the new airport alternative fully explored the development potential of the vacated MSP site.

7. The MSP and New Airport alternatives have been presented and displayed in the DEIS as if they offer the same level of service to the same projected demand, i.e. as if this were an "apples to apples" comparison. In reality, the two alternatives are more iike comparing a Chevrolet to a Cadillac. The FEIS should include a scaled-down "New Airport" alternative that more closely approximates an "apples to apples" comparison, and it should more completely describe the differing capacities of the two alternatives that were included.

Thank you for your consideration of these concerns.

Sincerely,

Jeff Schneider
4936 Park Avenue
Minneapolis, MN 55417

**A.** A. See U.S. EPA Response B.

**B.** B. MAC used an expert panel and alternative scenarios to ensure that the MSP Alternative could accommodate higher forecasts. See Section II.B.1.3.

**C.** C. See General Response 4.

**D.** D. The forecasts developed and used for the dual track study were not constrained by gate capacity and fares and the number of runways/taxiways at MSP. Facility requirements (number of gates, runways, taxiways, etc.) were then determined from these forecasts.

**E.** E. Although there are no permanent off-airport air quality monitors near MSP, available data indicate that air pollution concentrations are below the national standards.

**F.** F. a) See City of Richfield Response JJ.

b) Hearing loss is the predominate health danger related to noise. In *Aviation Noise Effects* (Newman and Beattie, 1985) it was determined that under normal circumstances people living near an airport are at no risk of suffering hearing damage due to aircraft noise. There have been numerous studies on non-auditory health effects and

**G.** sleep disturbance effects of aviation noise. To date there have been no conclusive findings that link a quantifiable health hazard to aviation noise and therefore no health costs attributed to aviation noise were assessed.

**H.** c) Increased cost of air travel due to a carrier's dominance is not an environmental concern and therefore not addressed in

**I.** the DEIS. See also Representative Wagenius Response D.

d) The new runway and it's accompanying safety zones do not affect the Mall of the America. The MAC is working with the developers of the Mall of America on potential impacts to other properties owned by the aforementioned developers due to potential development at the Airport.

G. See General Response 2.

H. See General Response 1.

I. See General Response 1.

January 22, 1996

Dual Track Study
Metropolitan Airports Commission
6040 28th Ave S
Minneapolis, MN 55450

Sirs:

I am submitting this letter to be included in the public record of the Dual Track Study being conducted by the Metropolitan Airports Commission. I am expecting a reply to my letter but if you do not answer my questions I would like to have confirmation that you did receive my letter, and that it will go into the record.

Question 1:
I have seen a flyer distributed by Citizens for Minnesota's Economic Future that indicated the projected airport usage growth figures being used in your study. The figures in that flyer indicated a growth of 239,270 departures and arrivals over the last 23 years, which was a growth of 104%. The projected growth being used by MAC for the next 25 years (1995 to 2020) is 50,000 departures and arrivals for a growth rate of 11%.
**Are those figures correct?**
**If the departure and arrival estimates are too low, what is the fall back position?**
Some will argue that the current site is inadequate today, others say it will be good for another 25 years.
**How many years does the Metropolitan Airports Commission believe the current site can serve the needs of the area?**
**If there is a finite time in which the current site will be adequate, will any provisions be made to bank land for the eventual inevitable move?**
**Are we planning for a cold Omaha?**

A. A. See General Response 4. The MSP Alternative will meet the regional aviation needs for the foreseeable future. Land banking for a major new airport is prohibited by state law.

Question 2:
I understand that it may be possible that a fifth runway will be required sometime in the future. I also understand that the cost and environmental impact of this fifth runway was not included in the study because it was assumed that it would not be needed before 2020.
**What level of departures and arrivals would require that the fifth runway would be needed?**
Although the cost and environmental impact was not studied, does the commission have any idea if it is feasible to add that runway and where that runway would be located.
**If so, where is that?**

B. B. See U.S. EPA Response B, City of Minneapolis Response B and General Response 4.

Question 3
From the draft of the Dual Track Airport Planning Process printed in December 1995, it appears that there has been no discussion or study of the possible impact of increased business activity due to the building of a truly modern airport truly capable of expanding to meet the demands of such growth.
**Has the study considered the impact of the new airport becoming a multi airline hub?**

C. C. See General Response 1.

Question 4
The building of a new airport should have a positive effect on property values south of the river and also on areas in south Minneapolis, Richfield and Bloomington currently impacted by noise. It may have a negative effect on some businesses located along HW494 and should have a positive effect on business south of the river..
**Has the study considered the impact on property values and on businesses?**

D. D. See General Response 1.

Sincerely
Al Wellnitz

Appreciate a reply. Send to the following address.

4801 W114th St
Bloomington, MN 55437

John G. Turner, FSA
Chairman and Chief Executive Officer
Phone (612) 372-5305
Fax (612) 342-1966

RELIASTAR

ReliaStar Financial Corp.
20 Washington Avenue South
Minneapolis, Minnesota 55401

December 14, 1995

Mr. Pierson Grieve, Chair
Metropolitan Airports Commission
c/o Ecolab Center
370 Wabasha Avenue
St. Paul, MN 55102

Dear Sandy:

I know that you and other members of the Metropolitan Airports Commission are struggling with the issue of the long term location of the Twin Cities airport and I wanted to share my perspective with you.

As you know, ReliaStar is a Minnesota based financial services company competing in the national marketplace. With our corporate headquarters in downtown Minneapolis, our employees from around the country and our customers make frequent use of the Twin Cities airport. The current location makes for rapid and easy movement of our employees and customers from the airport to our corporate facilities and that is important to us in terms of employee productivity and customer satisfaction.

I know there are many considerations regarding airport location. I expect from a noise standpoint that the new generation of airplanes will be much quieter and that, coupled with current MAC programs, should ease the noise problem. In addition, as you know, the costs of new airport construction would be enormous and in today's economic environment should speak in favor of maintaining and improving the current location.

While I am by no means an expert on all of the issues that you face as you make your decision, I do want you to know how important a convenient locations is to us and to the greater business community.

Thanking you for your consideration of this matter, I am

Sincerely,

John Turner

Comments noted.

401 Sibley #842
St. Paul, Minnesota 55101
December 15, 1995

Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, Minnesota 55450
Attn: Jenn Unruh

Dear Ms. Unruh:

I'm writing concerning the airport move versus expansion. I have had experience with two major airports located vast distances from the primary cities of service - Dallas/Ft. Worth and Denver.

I lived in the Dallas/Ft. Worth area over ten years and used that airport frequently. Transportation to and from the airport was constantly a major problem because of the distance; shuttle buses and taxi cabs collected exorbitant fares with the mileage. The "noise problem" is laughable. Ninety-five percent of the homes built around the airport were planned after the airport had been built. If those homeowners didn't want to deal with airport noise, as they knew of the problem they could have located elsewhere.

Comments noted.

The new Denver airport should be a real lesson to the MAC. While it is a visual feast, the construction problems, distance from the city and even the rental car centers, and the fact that many Denverites now travel out of Colorado Springs to save parking and tax dollars (after driving not much further than to the new airport) should be a real red flag. Also, Stapleton Airport is sitting near the middle of the city absolutely empty, deteriorating, with no planned use for the future.

The Twin Cities airport should stay where it is. Homeowners and businesses have known for over forty years that the airport, and any noise, is where it is. A move would be a complete waste of taxpayers' money and would make the airport totally inconvenient for passengers and businesses, not to mention the desecration of valuable farmland. The MAC has been spending money upgrading the terminal, runways and parking ramp at the airport - keep it where it is.

Sincerely,

Amy Salo

Amy Salo

February 12, 1996

Ms. Jenn Unruh
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, MN 55450

RE: Comments on the Draft Environmental Impact Statement

We attended the January 18 public hearing on the draft environmental impact study. We wish our comments to be included in the record.

First, we are opposed to the premature ending of the dual-track study.

Second, we conclude that a decision to expand the existing airport favors Northwest, and not the region. Since the existing location would not allow for expanded service from additional carriers, Northwest would maintain its dominant position (80% of Twin Cities traffic); pricing would reflect this dominance. We agree with the Pioneer Press: Northwest is a "tailor-made local bully".

Third, we conclude that a decision to expand the existing airport will limit the region's economic growth; traffic projections which show the airport can accommodate growth do not match the projections in the region's economy.

Forth, we conclude that the existing airport is, at present, already inadequate; at 3,000 acres, the existing area is one-fifth the area deemed adequate for comparable facilities. A new airport site assumes a necessary area of 15,000 acres.

Comments noted.

Fifth, the economy of spending $2.8 billion on the existing airport to permit its use until 2020, vs. spending $4 billion on a new facility with an indefinite life, is absurd.

Sixth, regarding concerns that a new facility will require something like twice the travel time, we suggest a look to history. If the original airport planners had been as short-sighted as advocates of airport expansion, today's airport would be on Nicollet Island.

Finally, we comment on the Commissioners' deportment. Most Commissioners appeared to be disengaged and arrogant. Accordingly, we have no confidence in their judgment with respect to thoroughness and impartiality. We were stunned and insulted.

Sincerely,

Thomas Manion
5215 Irving Avenue South
Minneapolis, MN 55419

Genevieve Lubbers

1616 Wexford Way
Woodbury. MN 55125
December 14. 1995

Jean Unruh
Metropolitan Airports Commission
6040 28th Ave. S.
Minneapolis, MN 55450

Dear Ms. Unrah,

Comments as solicited in Pioneer Press. 12/13/95.

I believe it is wrong to plan any further expansion of this existing airport. It is a waste of money! This airport is a postage stamp, sorrounded by river valleys on two sides, a national cemetary, a VA hospial, a necessary highway system on other sides that effectively prevent any expansion. Aviation activity is constantly exceeding all predictions, unlimited expansion capability should be a priority for this booming industry. Aircraft delays because of noise abatement routing and runway availability right now are a costly factor. This will not go away, what will it be in the future?

The location for a new airport, somewhere, is certainly available. It should be level land for miles around to allow for expansion. As for convenience look at London, England using high speed trains to right downtown. With proper planning an up to date highway system may be all we would need, Community involvement and sacrifice is a real thing but sometimes for the sake of progress it has to happen. There is also a definite community economic benefit to be had.

Sincerely,

Robert J. Kelly

Comments noted.

1851 Quirnia Avenue
St. Paul, MN 55116

February 6, 1996

Steve Cramer
Metropolitan Airport Commission
6040 28th Ave. S.
Minneapolis, MN 55450

Dear Mr. Cramer:

I am writing to support building a new runway at a remote location in Dakota County. Noise pollution is clearly the determining factor in my opinion.

It is true that a great many of the people who live in homes under the flight paths do use the airport from time to time, and the airport was at its current location long before these people moved in. Undoubtedly, having a new landing strip (with train access to the existing terminal) will be both inconvenient and expensive.

But the noise is worse now more than ever, and I cannot think of a time or place in history where so many people's lives have been upset for the sake of corporate profits and municipal policy. People of Minneapolis and St. Paul are clearly against expanding the existing airport facilities due to excessive noise pollution. I have spoken to many of my friends and neighbors, and we are all astonished of MAC's claims to the contrary.

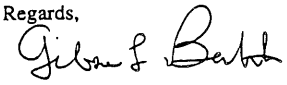
Comments noted.

Hence, I consider the actions of the MAC, the governor, and Northwest in fighting the move solely on the basis of cost to be unconscionable.

I suggest you put the issue up for vote to the citizens of Hennepin and Ramsay Counties, with a realistic bond issue to fund the new location. I for one would grudgingly be willing to pay for a portion of the new runway, and I think it can be done for much less than $2 billion.

Please stay by Lake Harriet or Lake Nokomis for an evening and count the planes which you find offensive. Then think how many people hear that every 30 seconds, and how much money is really worth.

Regards,



Gibson Batch

R.W. Russell
PO Box 24584, • Minneapolis, MN 55424

The skies over South Minneapolis have become not unlike a war zone. Hundreds of jet airplanes coming over every second – so loud, so intense that a person cannot carry on a phone conversation, watch TV or listen to music. Extremely noisy, loud, hideous vibrations that totally disrupt one's serenity.

For fifty four years I have lived in South Minneapolis. As a child I lived across the street from the Washburn water tower. I grew up listening to planes. These planes had propellers and at times were loud. Then came the jets with their sonic booms cracking the windows of our home. With the jets came a new sound, a frightening sound. All this was simply tolerable because of the novelty and infrequency of these jet planes.

Comments noted.

In the 50's, 60's and 70's it seems the skies were not as infested with huge jets roaring through the sky at all hours of the day and night. Now the planes come over on a constant basis - every three or five seconds apart.

Yesterday my young son asked me, "Why do they let those noisy planes fly over us. Why don't they do something about them?" I wondered the same thing. Why doesn't somebody do something? Make an immediate, mandatory noise emission resolution on all aircraft, start building a new airport and quit using loud, unsafe, out of date planes.

No one wants to live life in a war zone. Should a person have to move out of their life-long neighborhood because some huge corporate giants want to attain higher profit margins? What ever happened to respecting the rights of the individual?

I'm tired of living in a war zone.

To the Metropolitan Airports Commission DEIS 1-17/96
We have asked Jill Burke to enter the following resolution into the record on our behalf.
Phyllis Goldia and Wanda Brown

**RESOLUTION FOR 1996 MINNESOTA LEGISLATIVE DECISION TO END THE DUAL TRACK AIRPORT PLANNING PROCESS**

Whereas, the Dual Track Airport Process is concluded with the publication of the Metropolitan Airports Commission's Environmental Impact Statement which determines that the current MSP airport will serve our area until the year 2020; and

Whereas, the estimated $5 billion cost of a new airport terminal, plus infrastructure for a total of over $10 billion, is an unnecessary expense: and,

Whereas, the costs of unnecessary airport expenditures adversely affect thousands of permanent jobs in the airline industry, and in related service industries; and

Whereas, the peace and quality of life for residents in the Lower St. Croix River area of Western Wisconsin would be severely damaged by a new airport;

Therefore, be it resolved that the undersigned call upon the 1996 Minnesota State Legislature to act swiftly to end the costly Dual Track Airport Planning process, to act to release any further site protection controls related to the Dakota County site, and endorse noise mitigation efforts near MSP.

| NAME | ADDRESS |
|---|---|
| Wanda Brown | N6464 1323 St. Prescott |
| Kathleen Daly | N6351 1329th St Prescott, WI |
| [illegible] | N6315 1323rd St Prescott, WI |
| B Kusske | N6413 1323 St Prescott WI |
| [illegible] | N6358 1317th St Prescott WI |
| Randy O Rowan | N6386 1317th St Prescott WI |
| Mary Rowan | N6408 1323rd St Prescott WI |
| [illegible] | N6408 1323rd St Prescott WI |
| Barbara Glidden | N6460 1323 St Prescott WI |
| Carol Weissing | N6487 1323rd St. Prescott WI |
| [illegible] | N6287 1323RD St. Prescott WI |
| [illegible] | N6483 1323 St Prescott WI |
| John Johnsrud | N6460 1323 St Prescott WI 54021 |

Resolution noted.

| | | |
|---|---|---|
| R.C. Fuhs | N6483 | 1323rd St Prescott WI |
| A Behrendt | N6402 | 1323RD St. Prescott |
| Dave Augustine | N6396 | 1323rd ST. PRESCOTT |
| Mary Packard | N6477 | 1323rd St Prescott |
| Jean L Frank | N6413 | 1323 St. Prescott |
| Connie McCoy | N6362 | 1323rd St. Prescott, WI 54021 |
| Hattie Fuhs | N6487 | 1323rd St Prescott, WI 54021 |
| Jane R Packard | N6477 | 1323rd St Prescott WI 54021 |
| Bonna Gustavson | N6383 | 1323rd St Prescott WI 54021 |
| [illegible] | N6362 | 1323rd ST. Prescott 54021 |
| [illegible] | N6464 | 1323 St. Prescott, WI 54021 |
| [illegible] | N6533 | 1323rd St. Prescott, WI 54021 |
| Bonnie Raymond | 812 McCutcheon Rd. | Hudson, Wi. 54016 |
| [illegible] | N-127 N.3rd St | River Falls, wi 54022 |
| Dan R. Panton | 175 Young St. | Prescott, Wi 54021 |
| [illegible] | 177 Sycamore | Prescott Wi 54021 |
| [illegible] | 246 Carlson W | RF WI 54022 |

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| 6 | MSP 2020 Concept Plan |
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| 8 | MSP 2010 LTCP |
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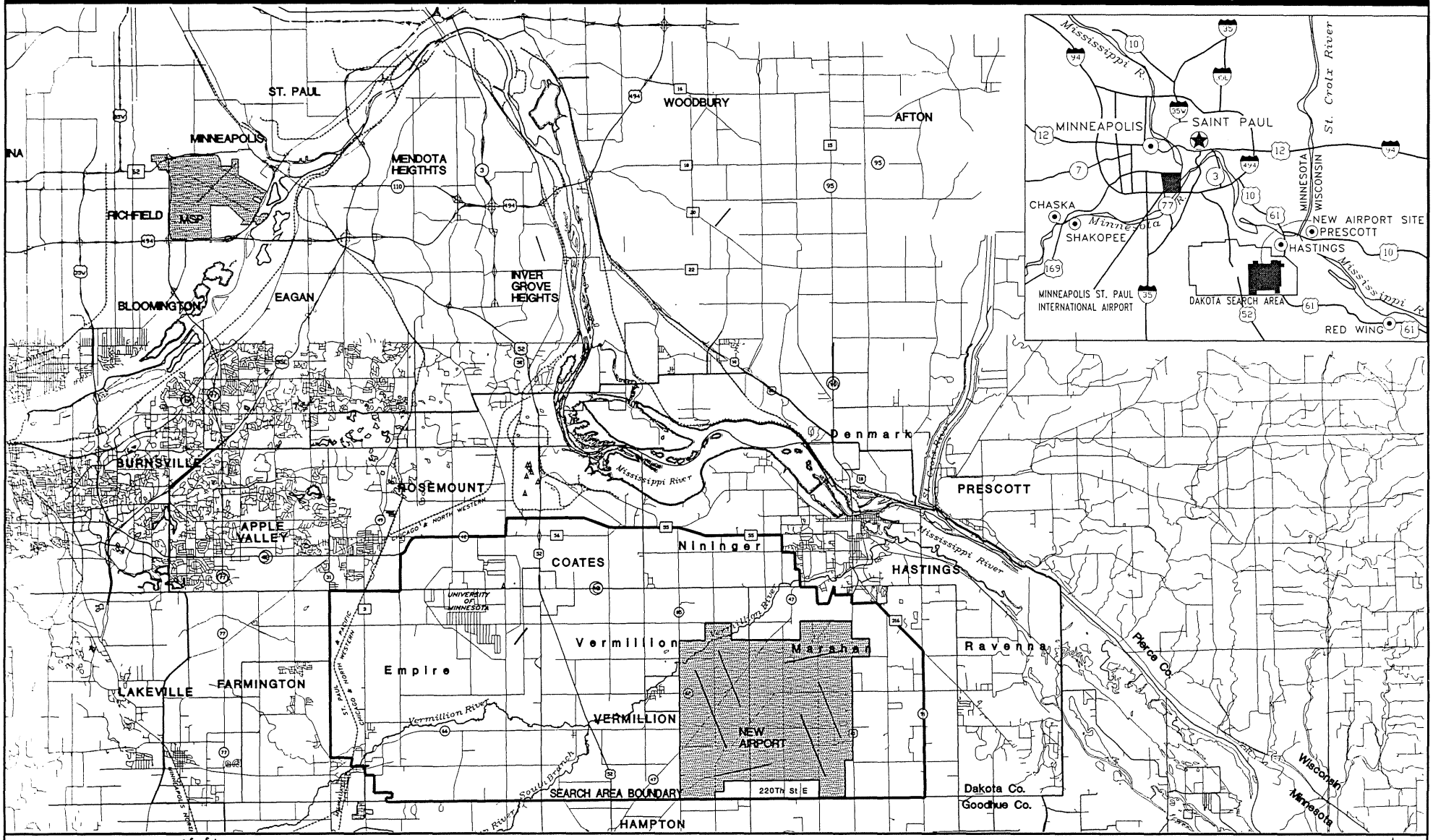
| | |

# Dual Track Airport Planning Process

## Environmental Impact Statement




MAC — Minneapolis Saint Paul Metropolitan Airports Commission

Source: HNTB

0 2 4

Scale in Miles

N

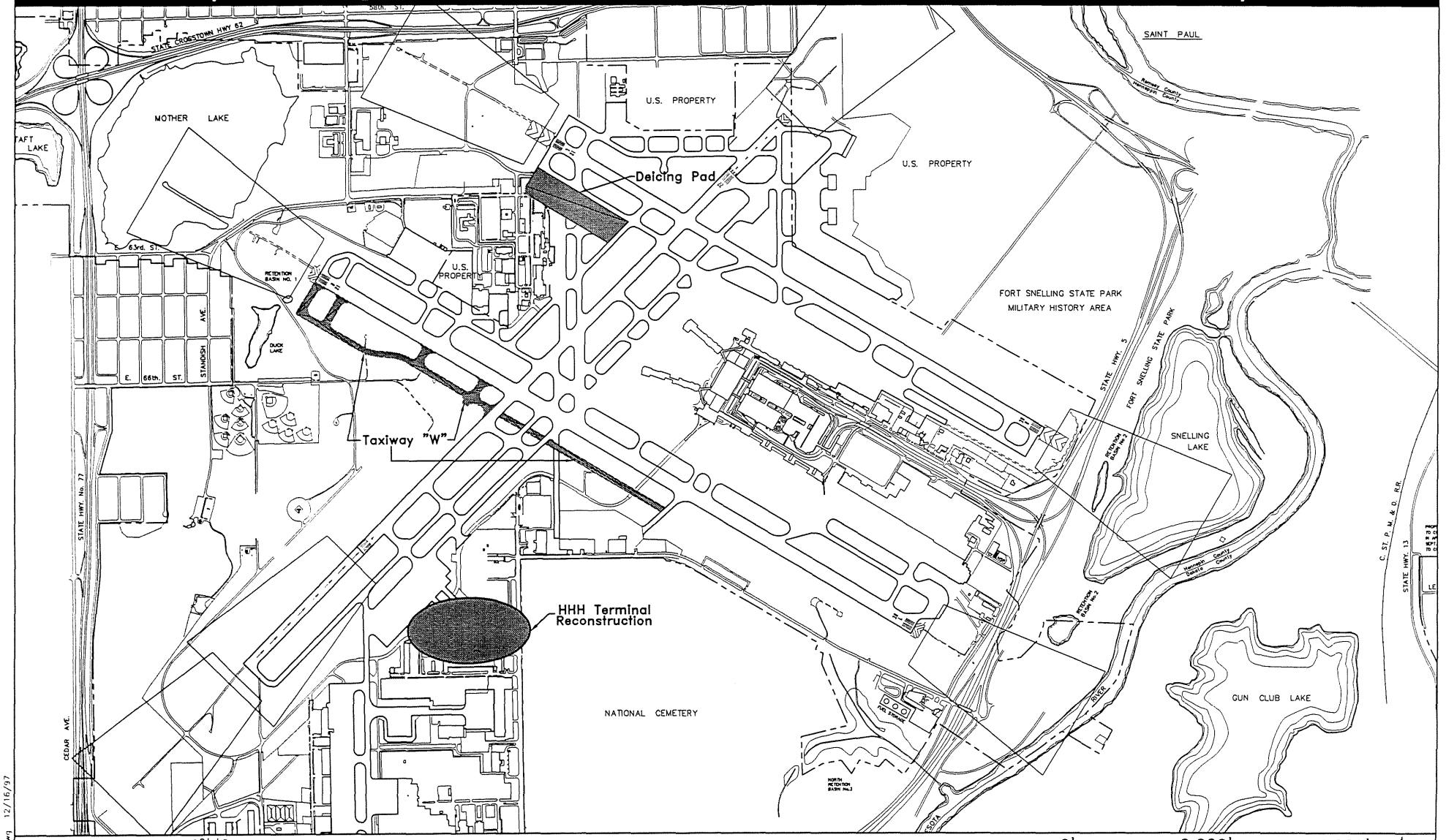
HNTB

Figure1

Location Map

# Dual Track Airport Planning Process

# Environmental Impact Statement




Source: HNTB

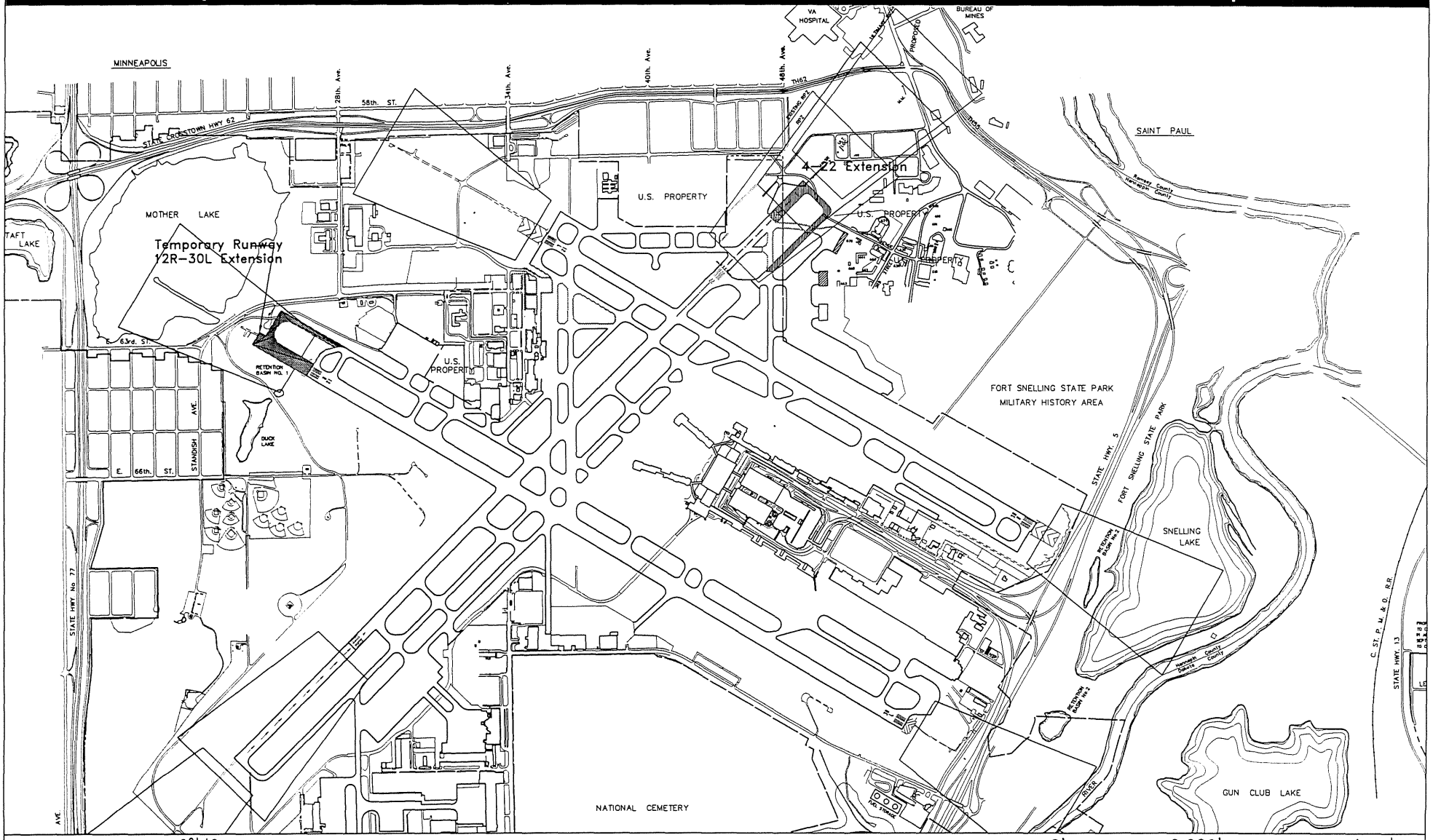
HNTB

MINNEAPOLIS SAINT PAUL METROPOLITAN AIRPORTS COMMISSION MAC

Figure 2

## No Action Alternative

Airacad\MSP_Jobs\EIS\Figure2.Dwg 12/16/97




0' 2,000' 4,000'

Scale in Feet

N

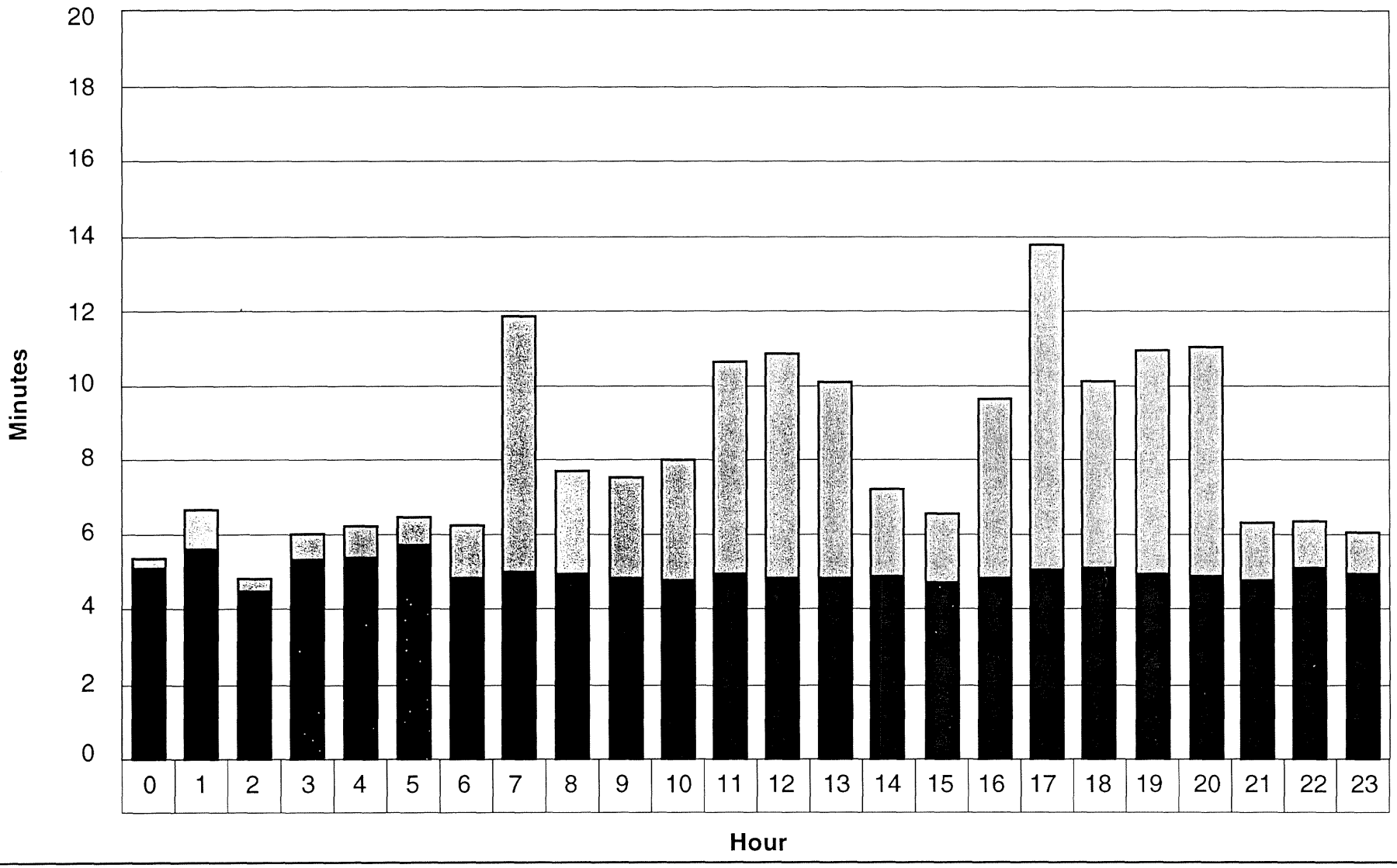
Source: SOURCE

HNTB

MAC Minneapolis Saint Paul Metropolitan Airports Commission

Figure 2A

**Extension of Runway 4-22 to 12,000 Feet**

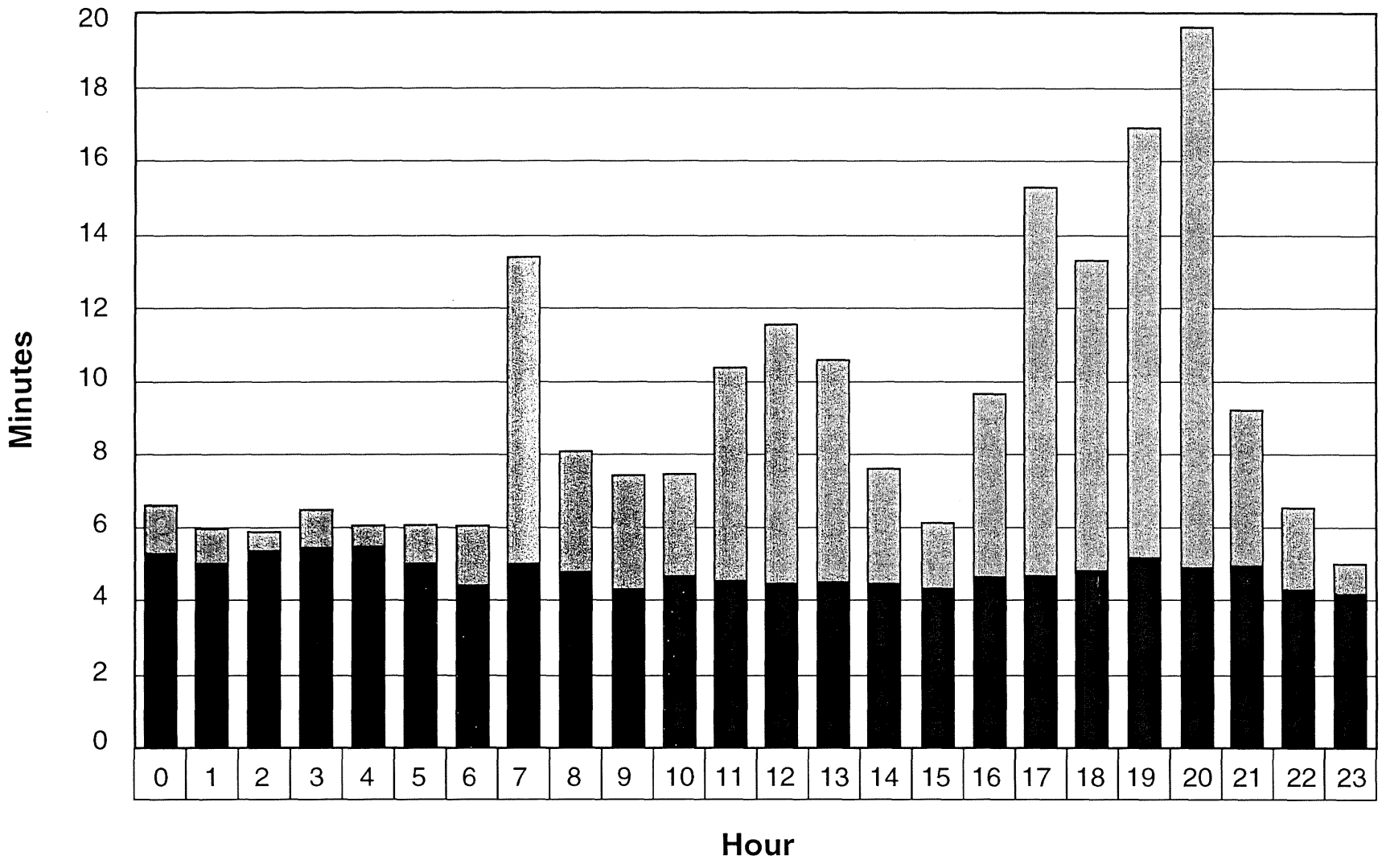



Source : HNTB Analysis

HNTB

Figure 3

1994 Average IFR Travel Time and Delay per Operation




Source: HNTB Analysis

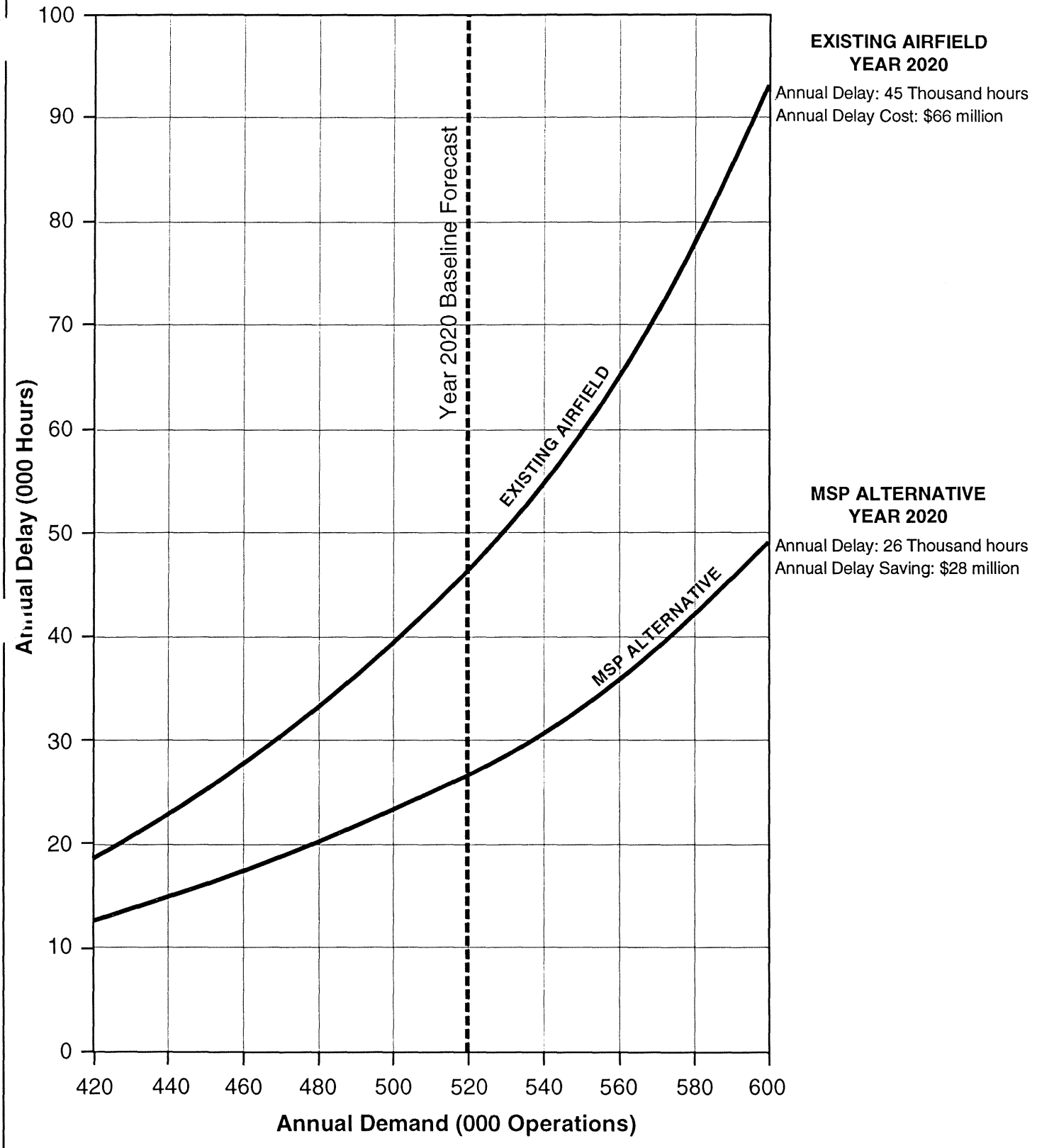
Delay

Travel Time

HNTB

Figure 4

Year 2020 Average IFR Travel Time and Delay per Operation - No Action Alternative




Source: FAA Minneapolis-Saint Paul International Airport, Capacity Enhancement Plan, Figure 16 and HNTB Analysis

HNTB

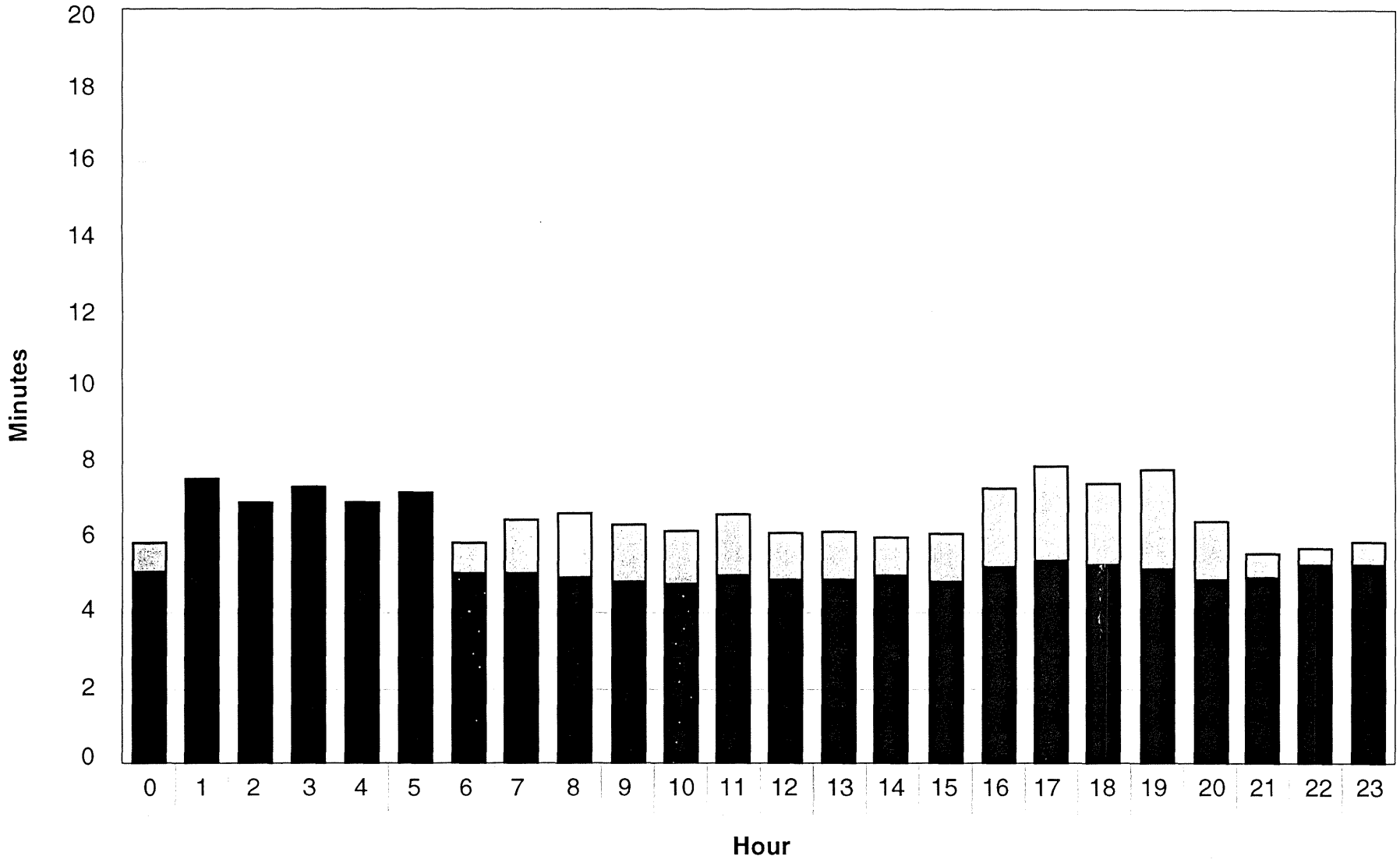
Figure 5

Average Annual Delays and Costs

HNTB

Figure 6

MSP 2020 Concept Plan




Source : HNTB Analysis

Delay

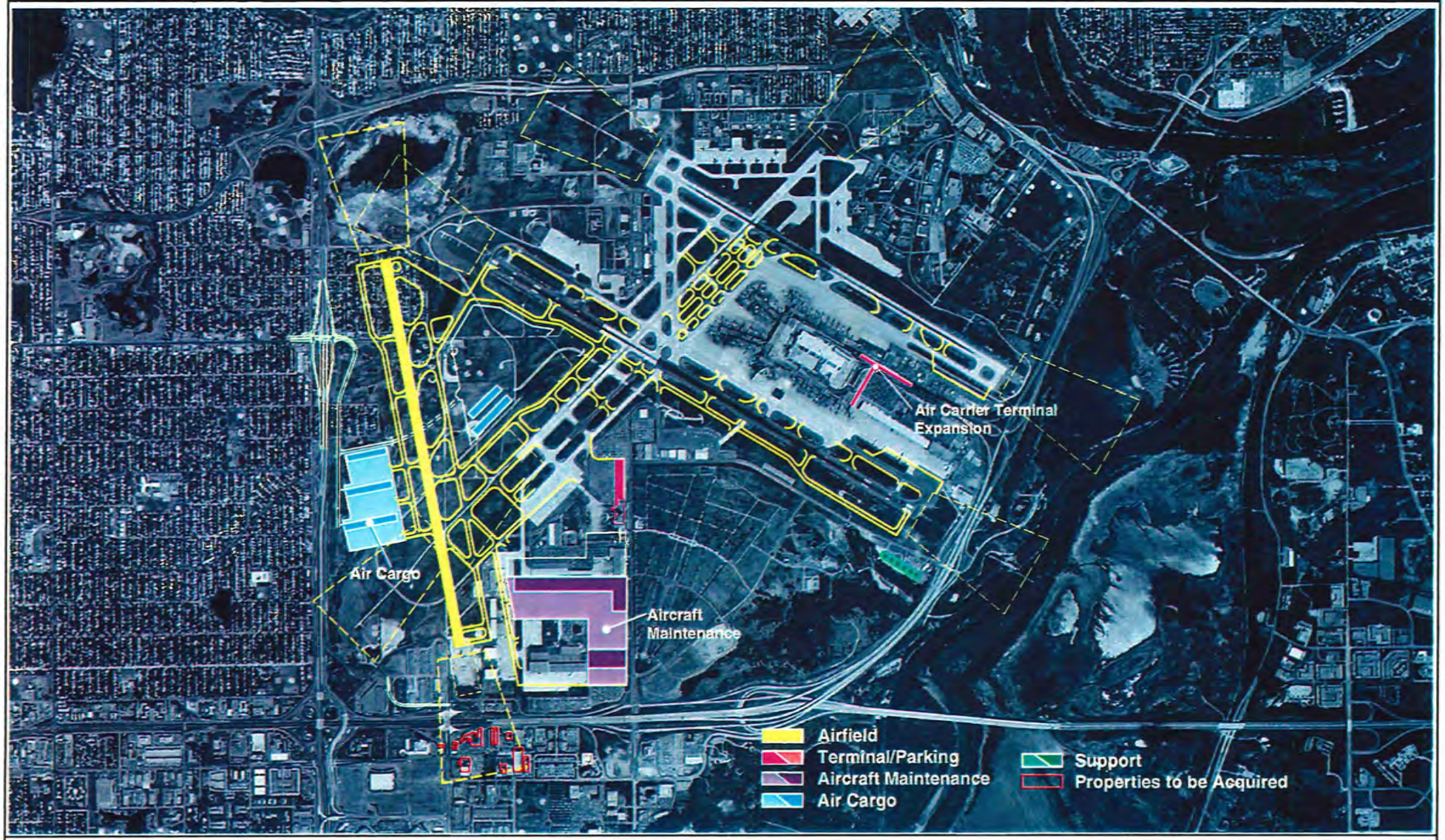
Travel Time

N

HNTB

Figure 7

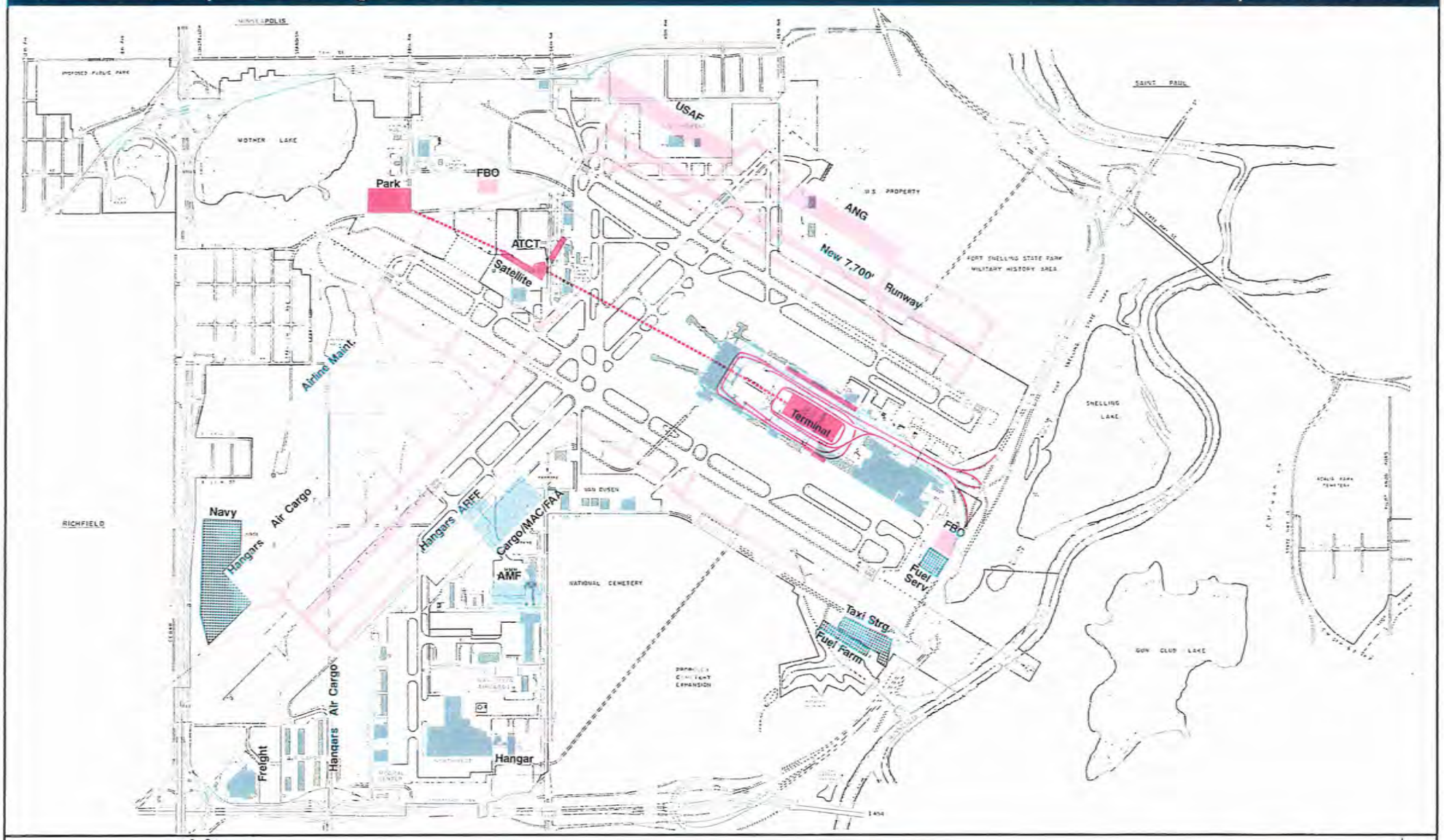
Year 2020 Average IFR Travel Time and Delay per Operation - MSP Alternative




HNTB

Figure 8

MSP 2010 LTCP




Source: HNTB

Airfield
Airline/Cargo
Gen. Aviation
Terminal Area
Administration
Other

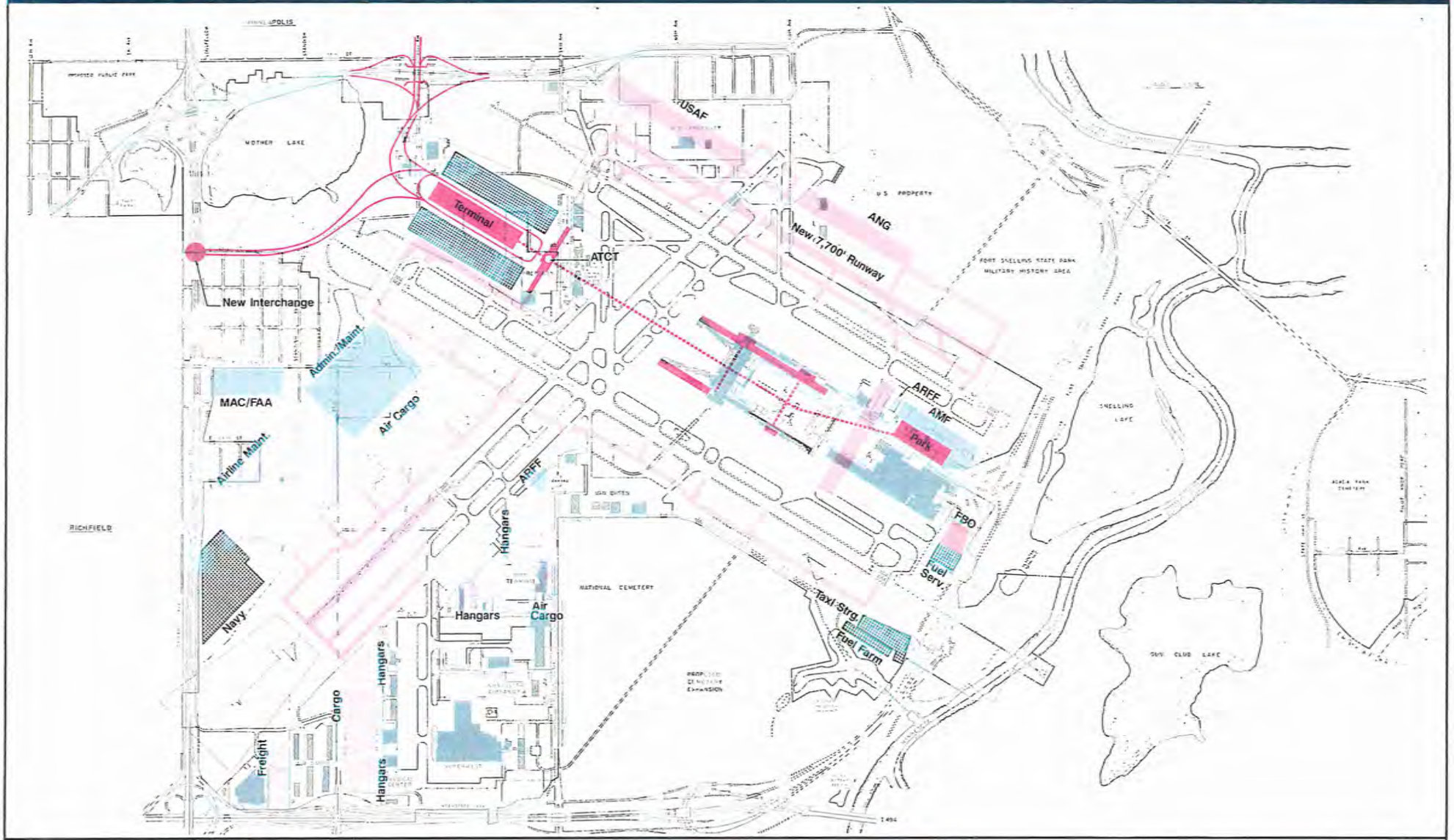
0 1,200 2,400
Scale in Feet

N

HNTB

Figure 9

MSP Concept 1 Eliminated

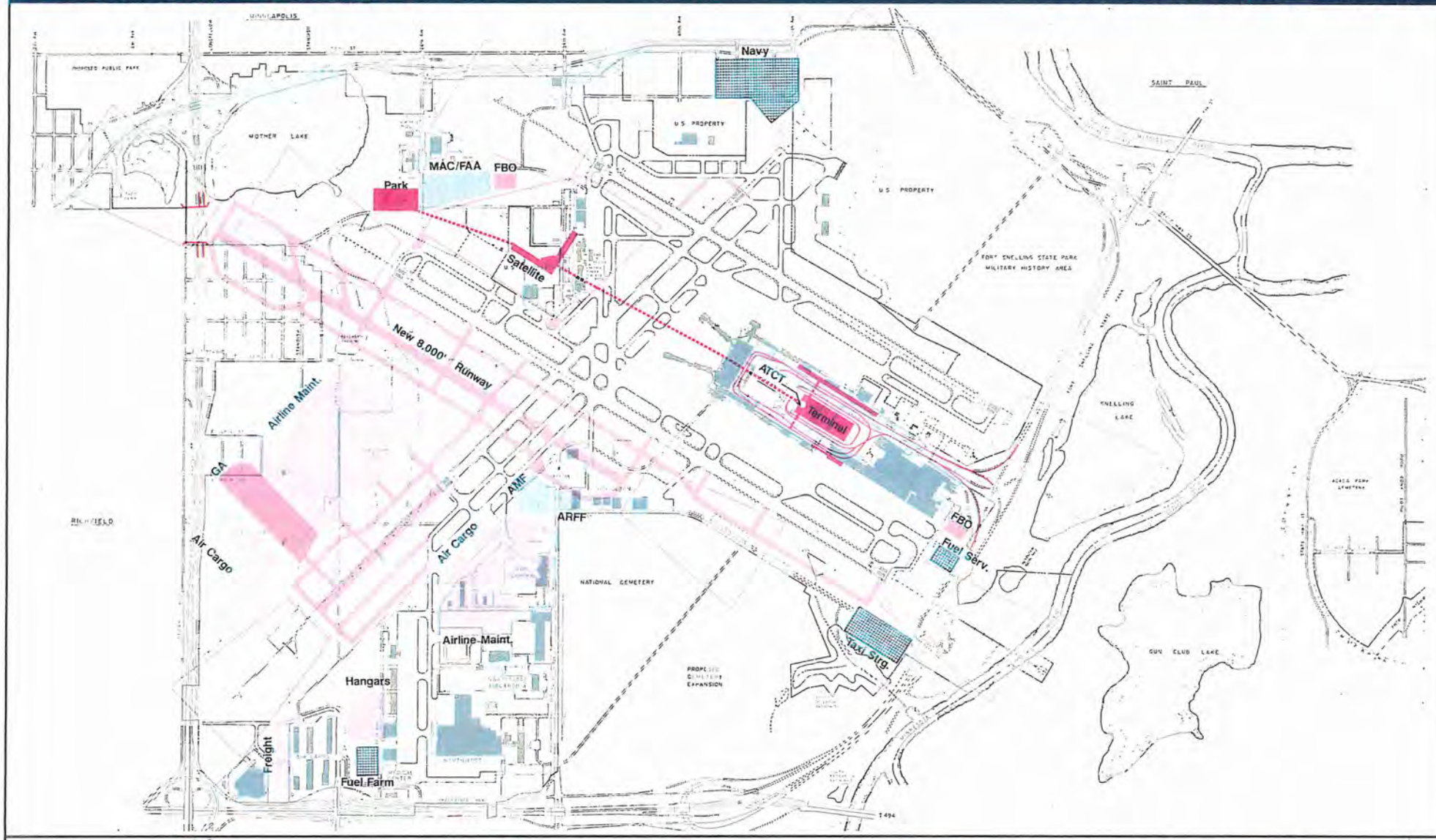



Source: HNTB

HNTB

Figure 10

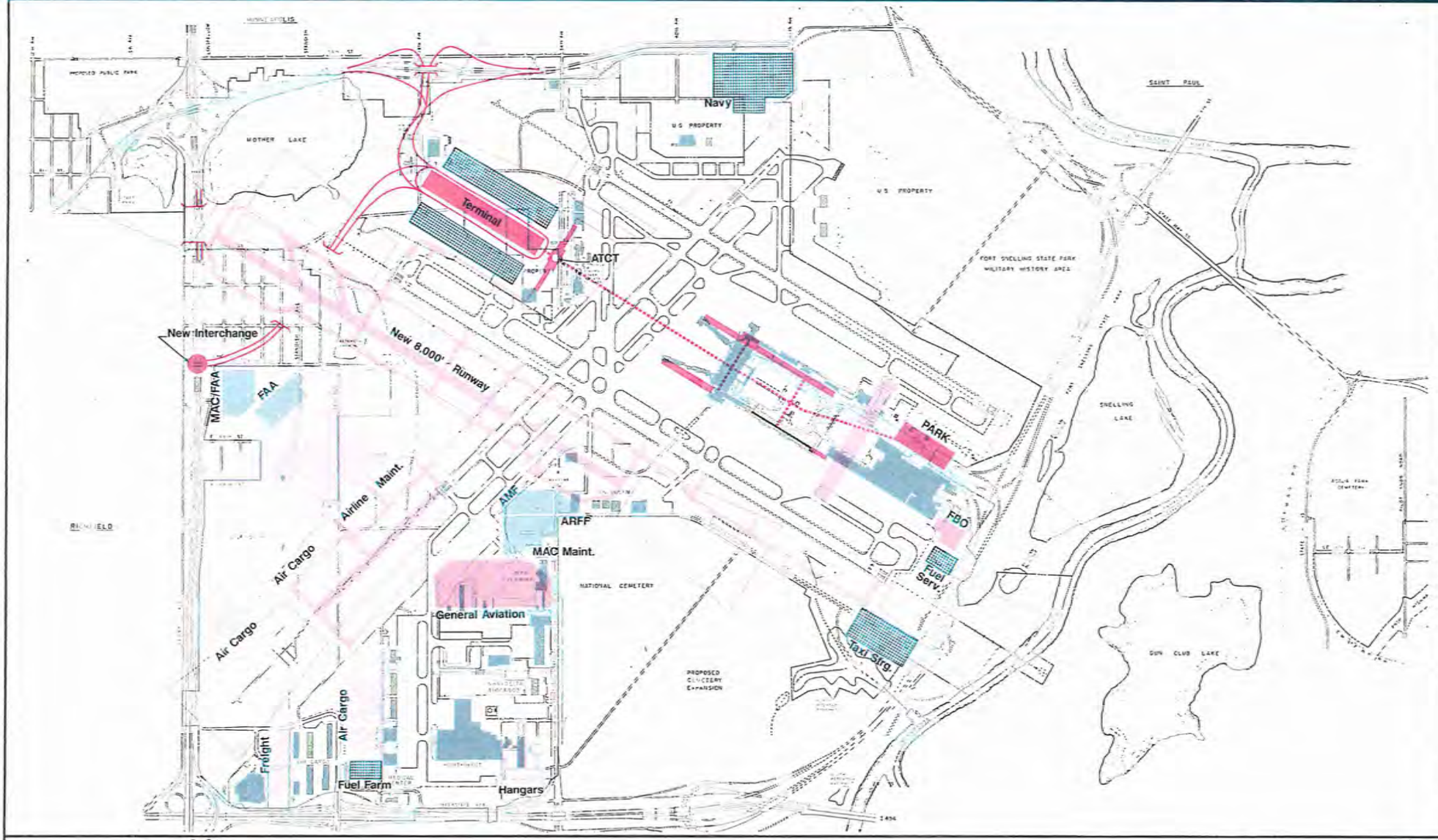
MSP Concept 2 Eliminated




HNTB

Figure 11

MSP Concept 3 Eliminated

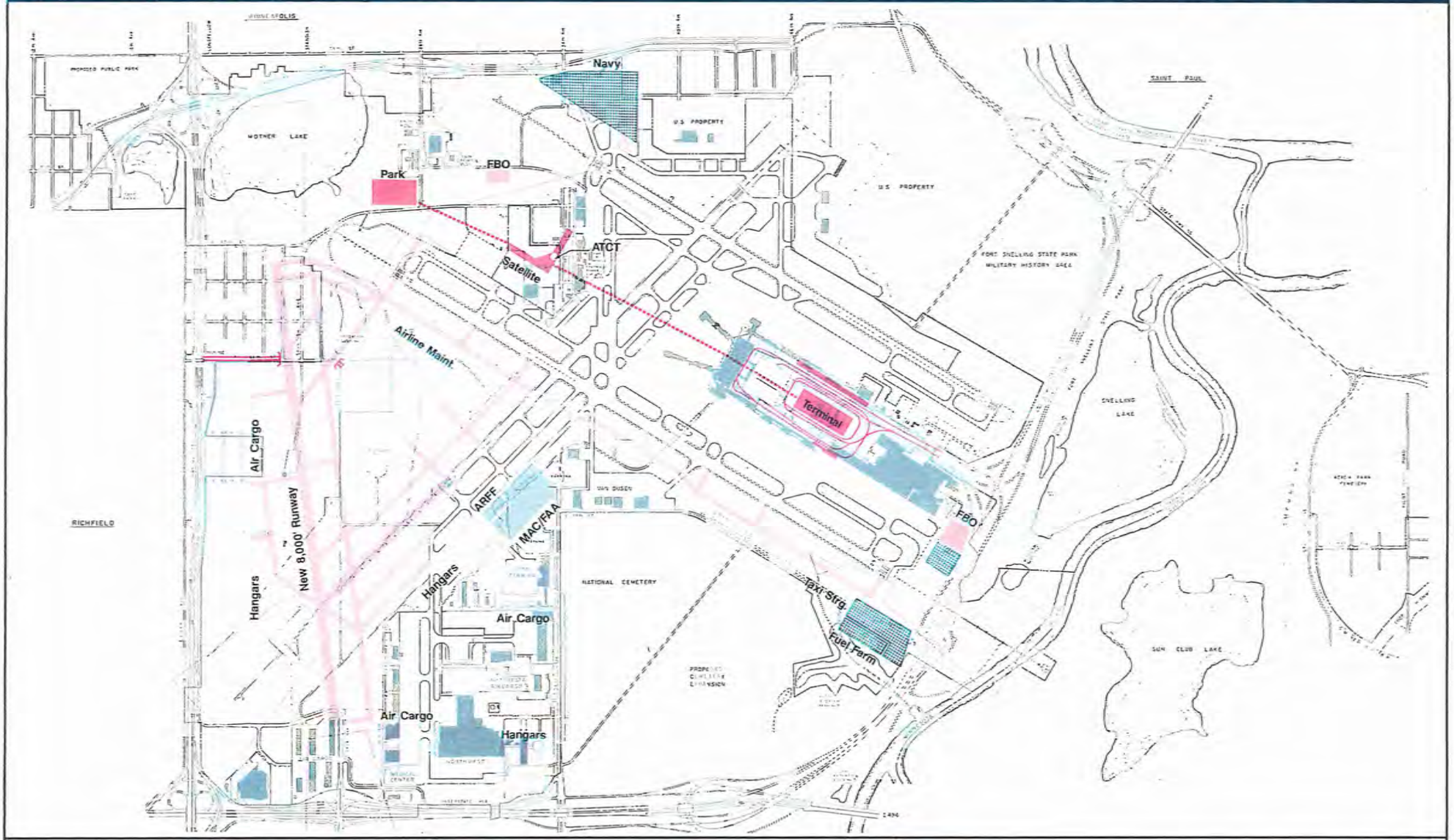



Source: HNTB

HNTB

Figure 12

MSP Concept 4 Eliminated

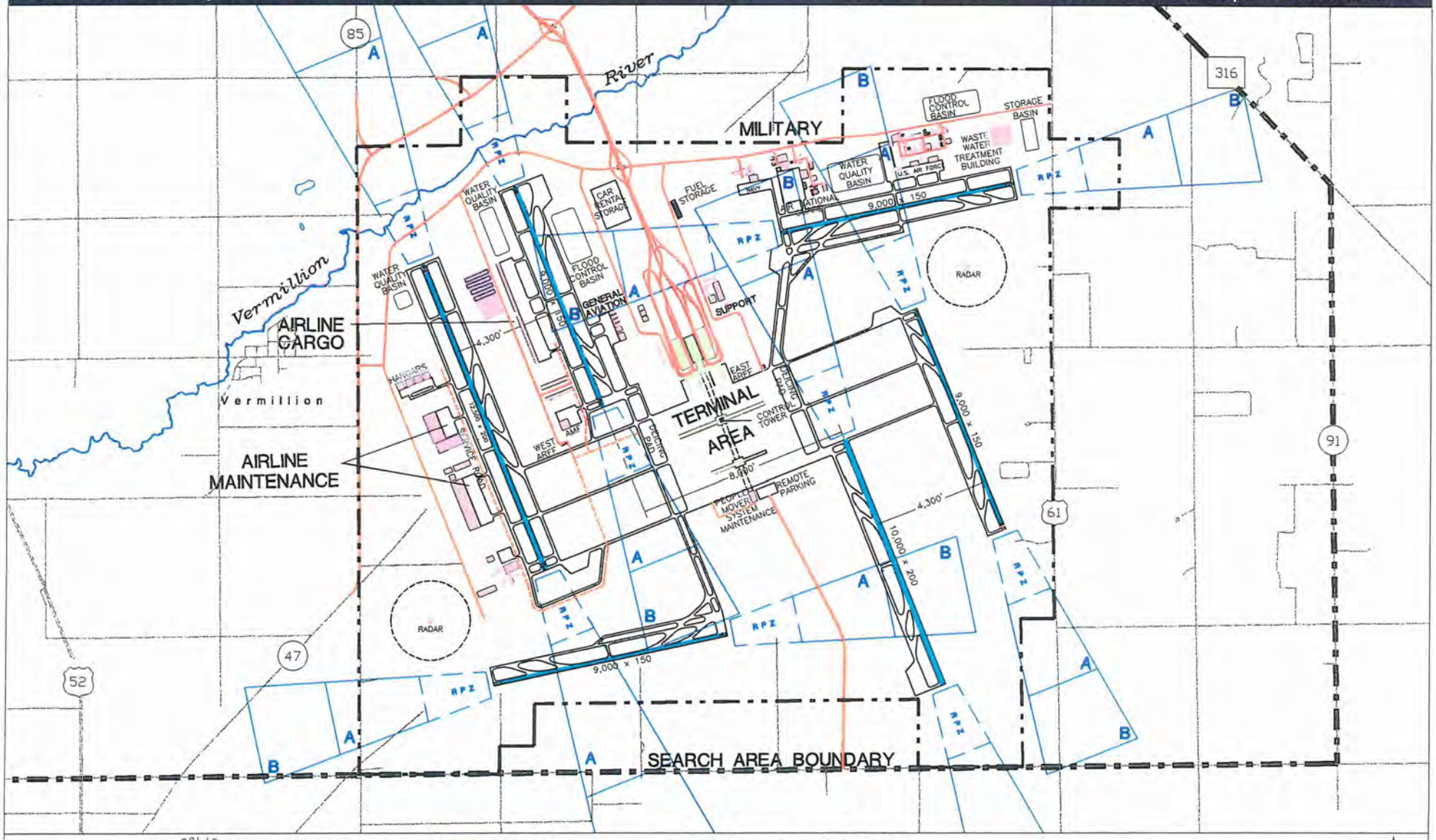



Source: HNTB

HNTB

Figure 13

MSP Concept 5 Eliminated




Runways
Terminal Facilities
Other Facilities
Search Area Boundary
Airport Boundary

Source: HNTB

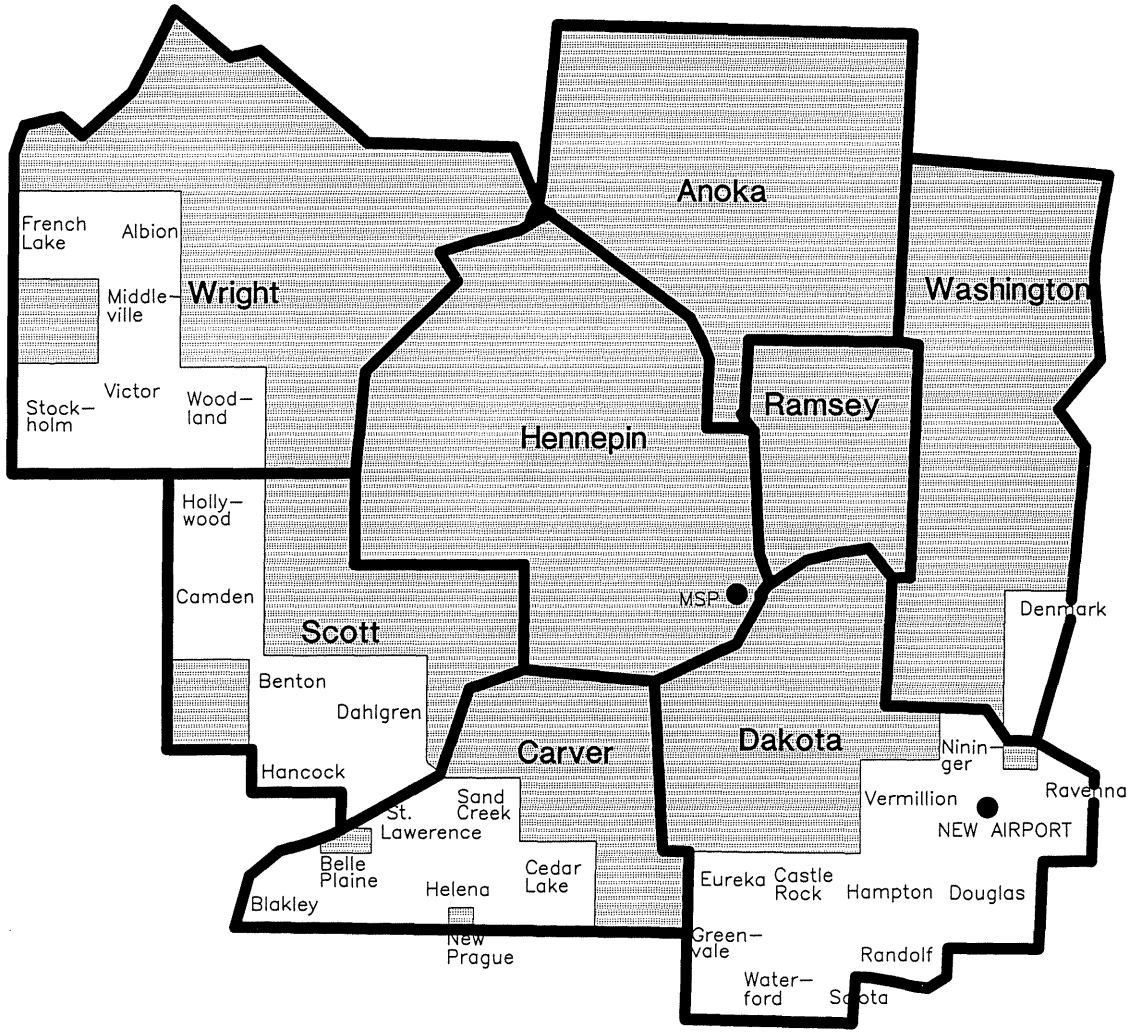
0 0.5 1
Scale in Miles

N

HNTB

MAC
Minneapolis Saint Paul Metropolitan Airports Commission

Figure 14
New Airport Alternative Eliminated




## Seven County Metropolitan Area and Wright County

Non Attainment Area

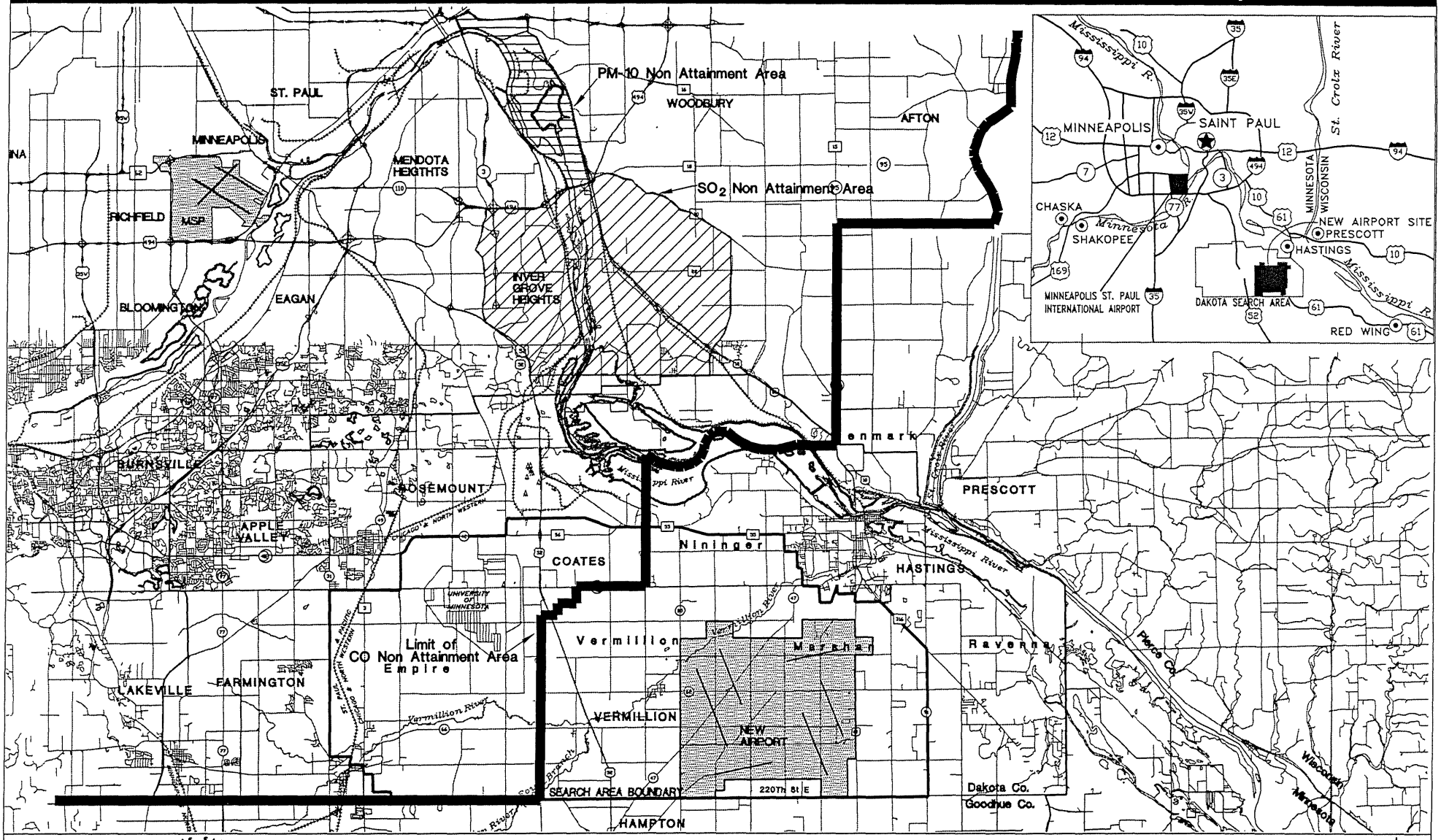
Source: David Braslau Associates

N

HNTB

Figure A-1

Carbon Monoxide Non Attainment Area




Source: David Braslau Associates

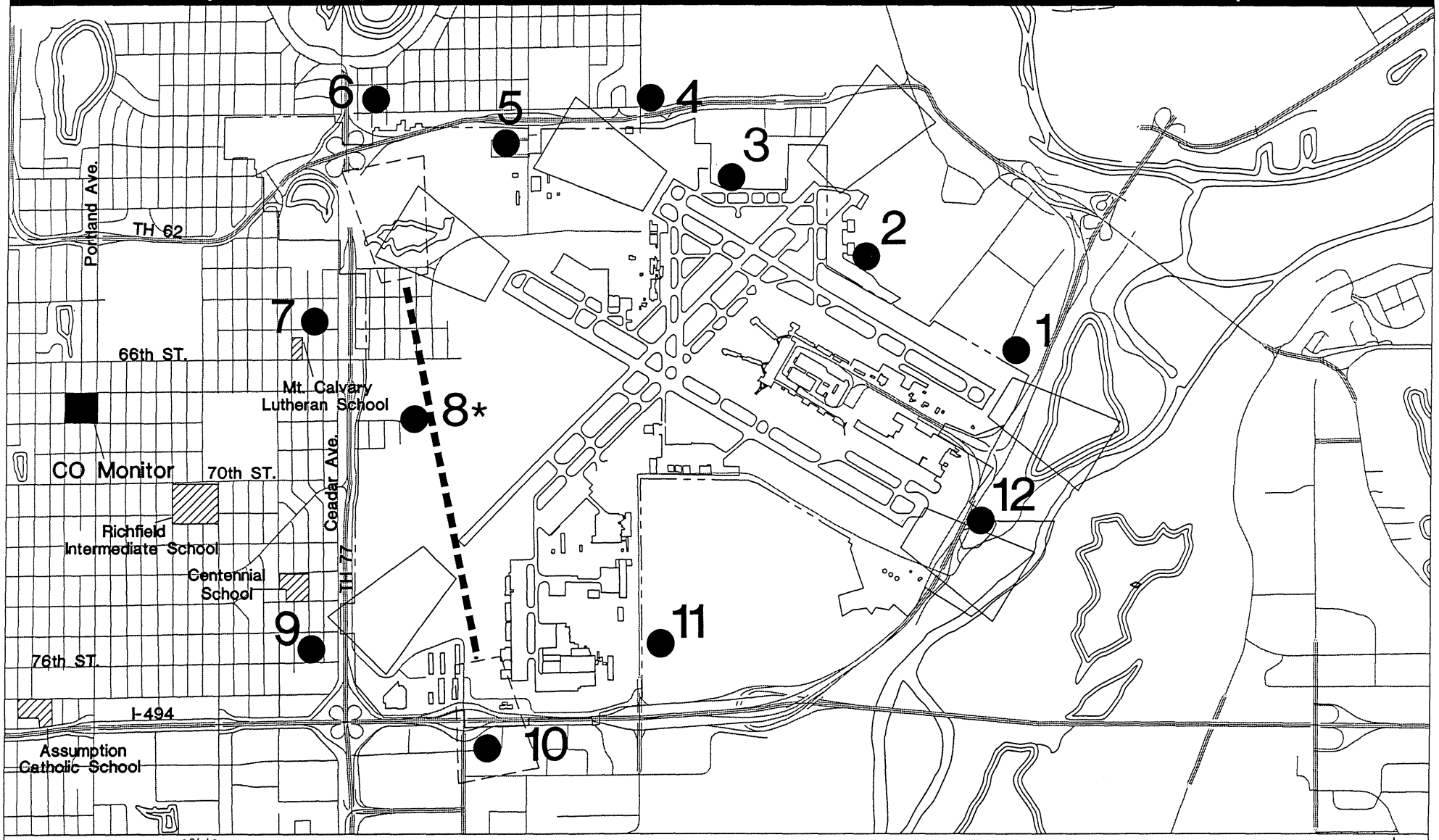
0 2 4
Scale in Miles

N

HNTB

Figure A-2

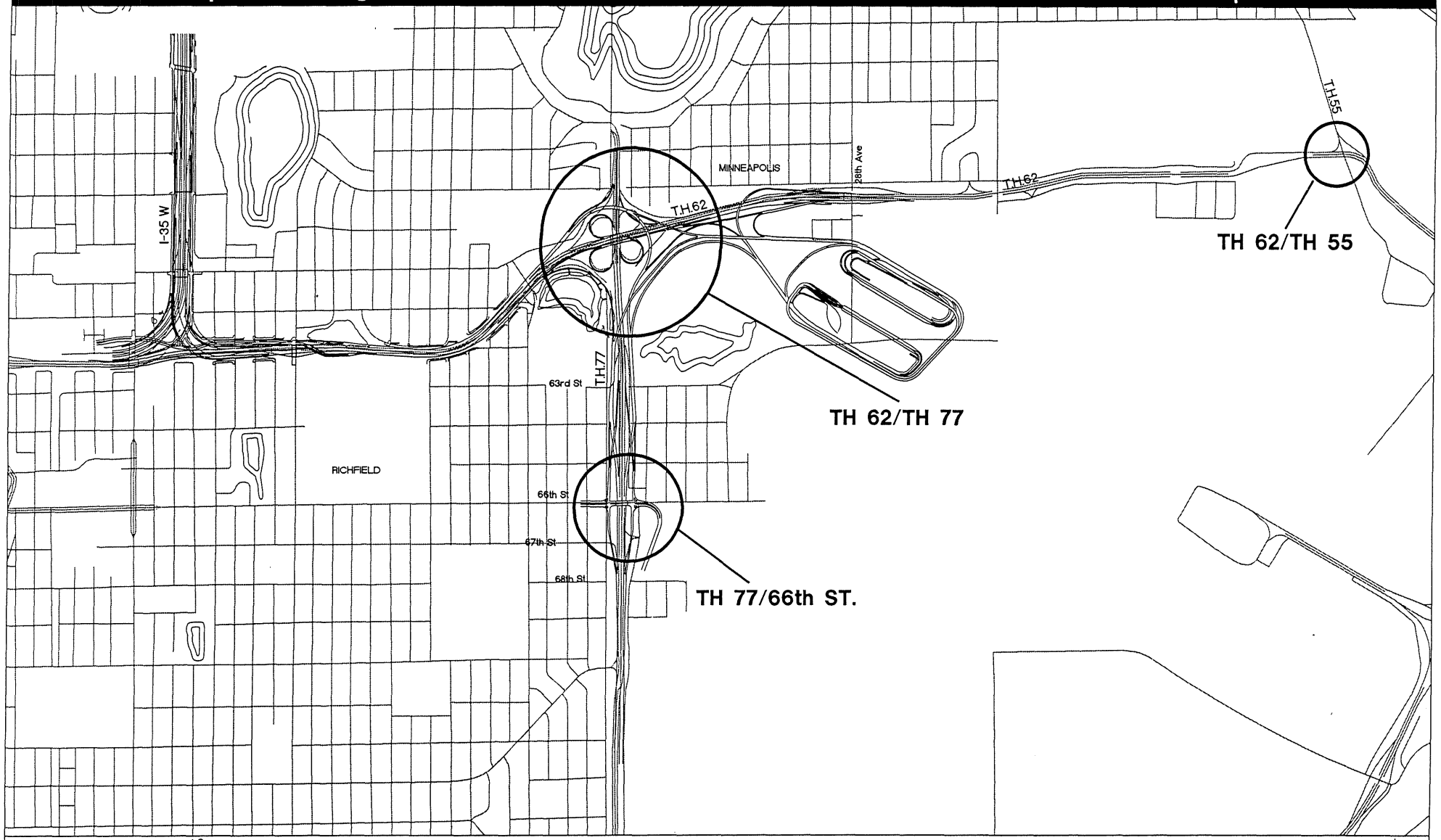
CO, SO2 AND PM-10 Non-Attainment Areas




HNTB

Figure A-3

CO Monitor and Air Quality Receptor Sites for On-Airport Sources - MSP and No Action Alternatives




Source: David Braslau Associates

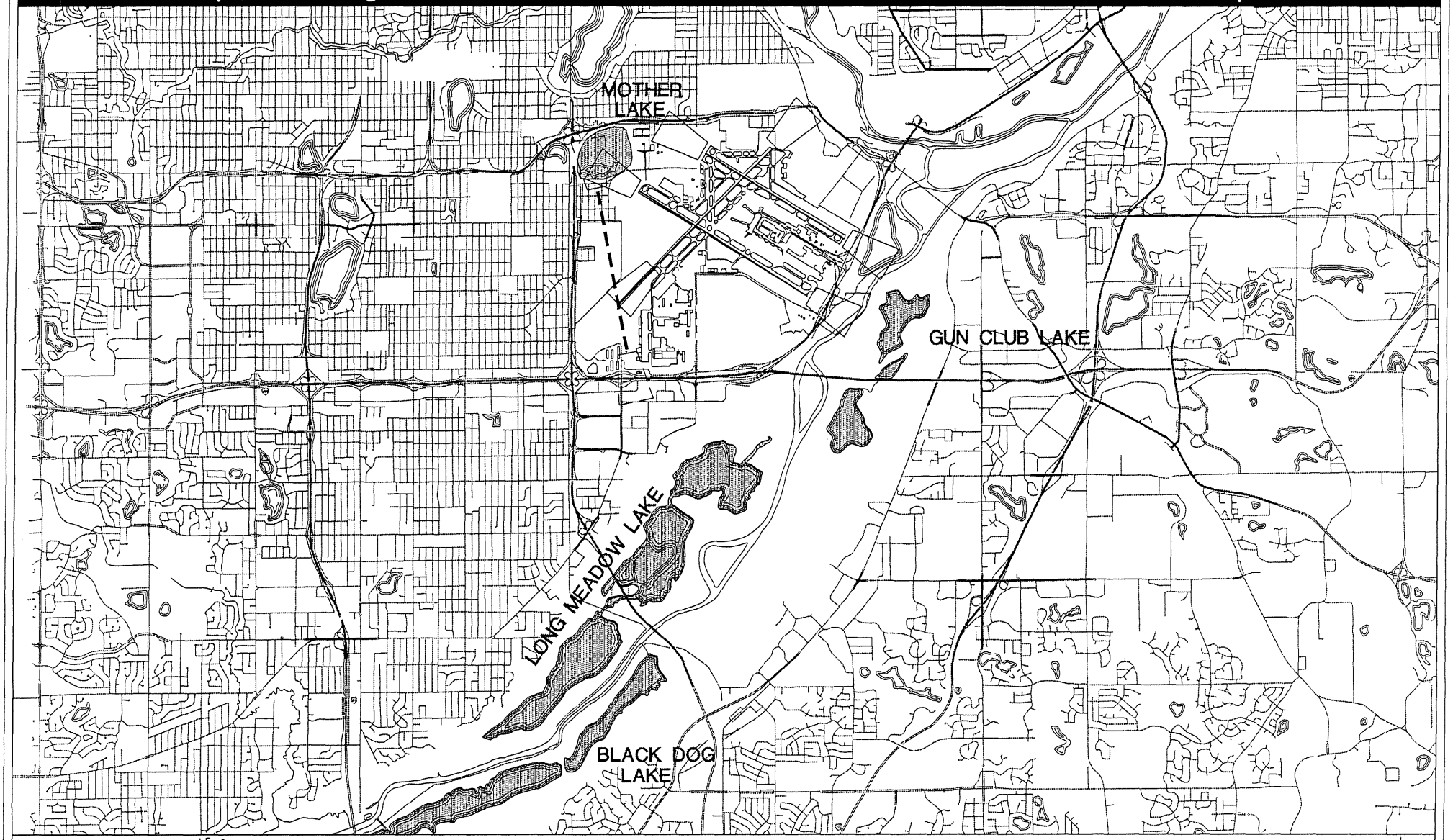
0 1,000 2,000
Scale in Feet

N

HNTB

Figure A-4

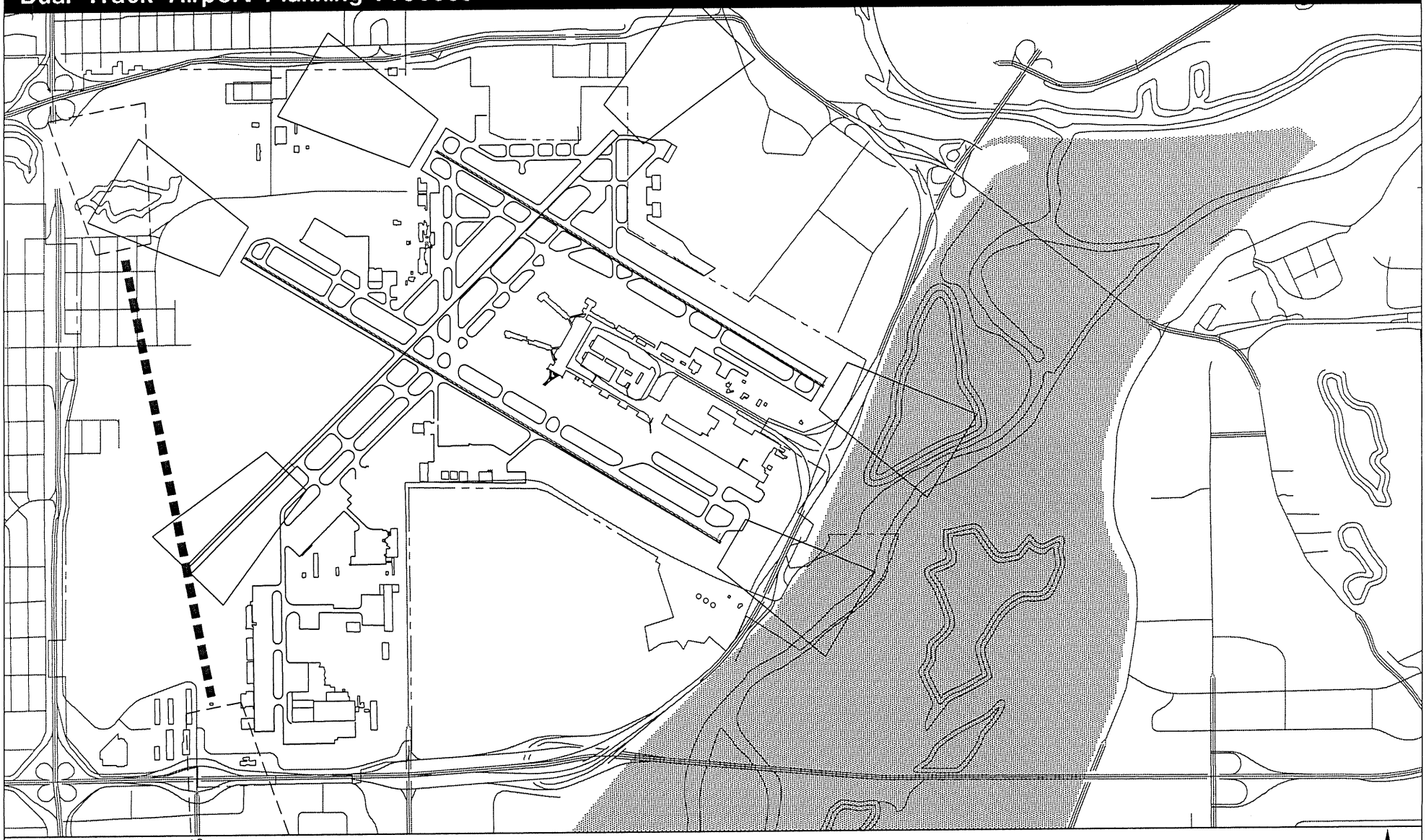
CO Analysis Locations (Intersections) for Off-Airport Sources - MSP 2020 Concept Plan




HNTB

Figure D-1

**Potential Bird-Aircraft Hazard Areas - MSP and No Action Alternatives**



New Runway, MSP Alternative

Floodplain

0 1,000 2,000

Scale in Feet

N

Source: Floodplain Areas of the Lower Minnesota River

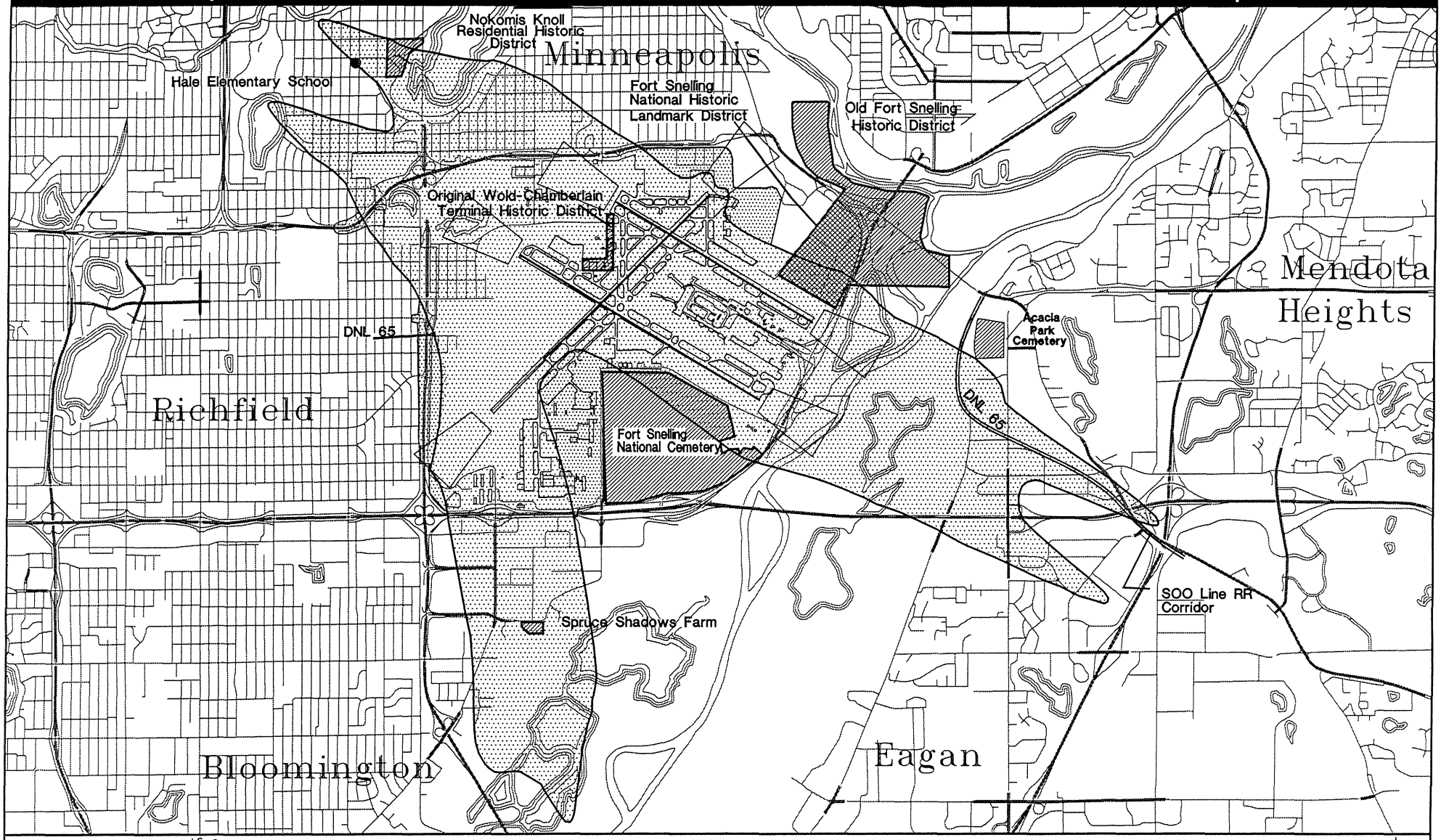
HNTB

MAC

MINNEAPOLIS SAINT PAUL METROPOLITAN AIRPORTS COMMISSION

Figure L-1

**Floodplains - MSP and No Action Alternatives**



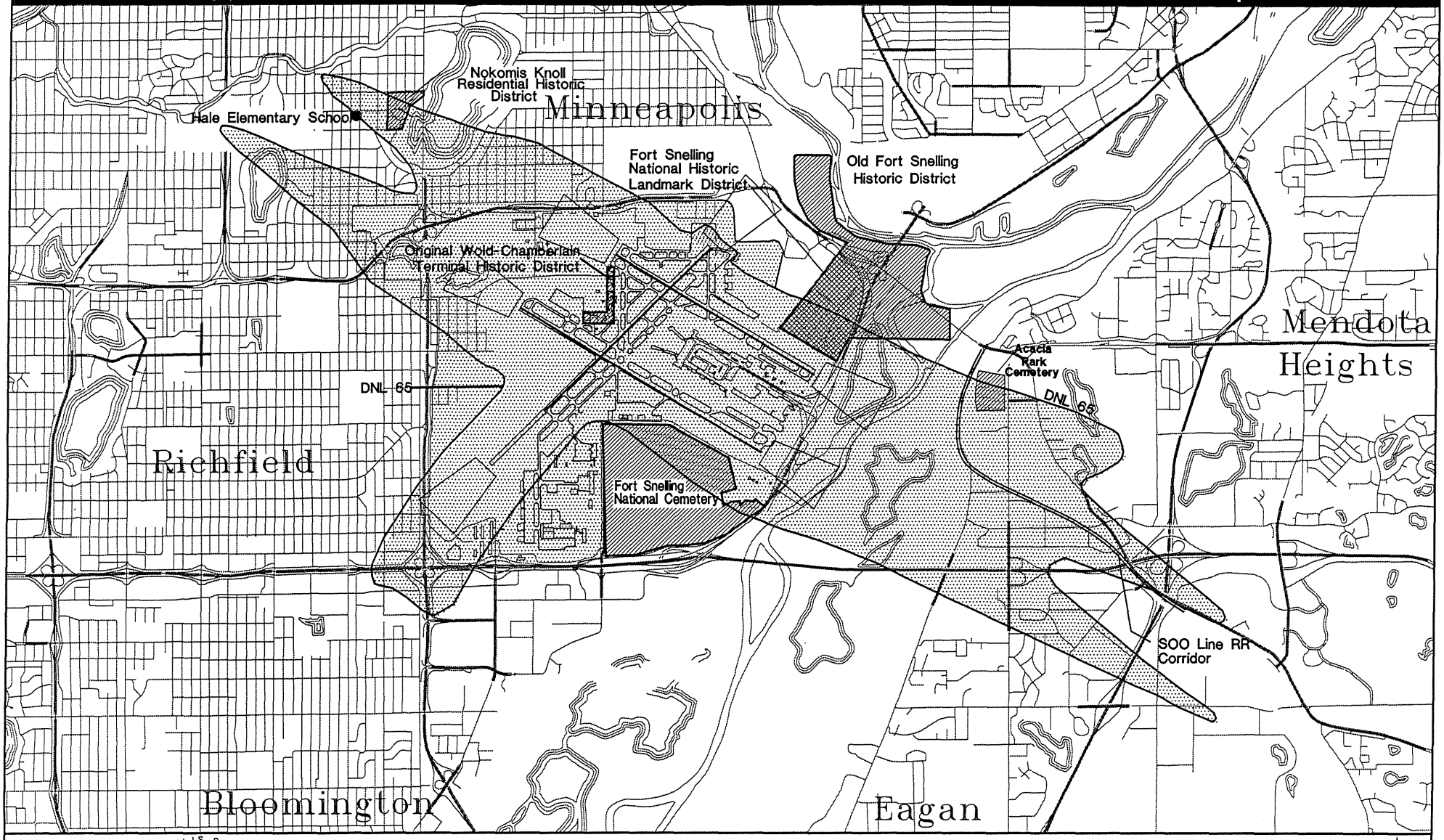

HNTB

MAC

Figure M-1

Source: Hess Roise

Historic/Architectural Resources - MSP Alternative



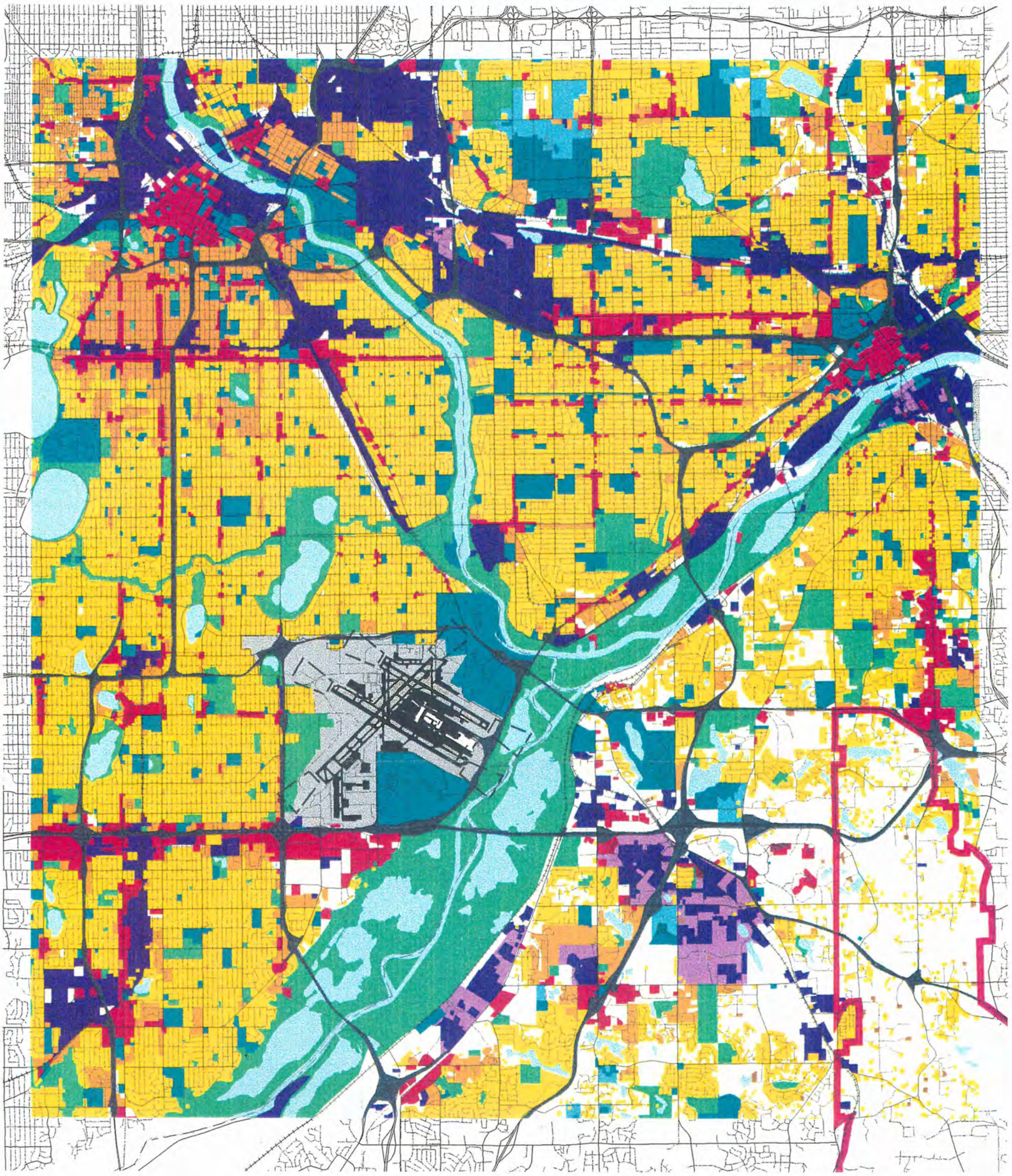

HNTB

MAC
MINNEAPOLIS SAINT PAUL METROPOLITAN AIRPORTS COMMISSION

Figure M-2

Source: Hess Roise

Historic/Architectural Resources - No Action Alternative



Single Family
Multi-Family
Commercial
Industrial
Public/Semi-Public
Airport
Park
Vacant
Road
Water
Farmstead
Vacant Industrial
Vacant Public/Semi-Public
1992 MUSA

Source: Metropolitan Council, 1990

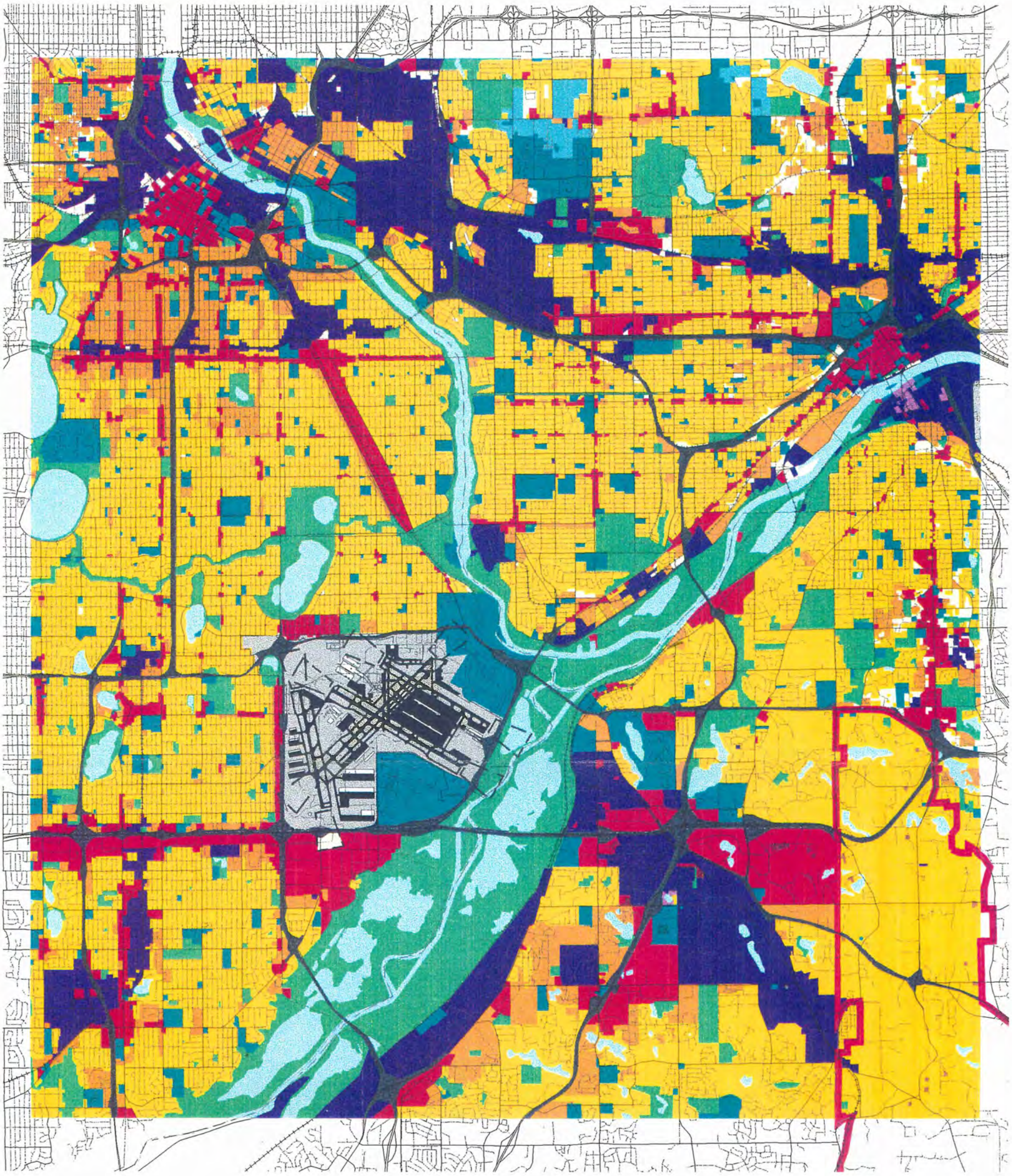
DAHLGREN SHARDLOW AND UBAN INCORPORATED

Scale In Feet
3500 1750 0 3500 10500
N

HNTB

MINNEAPOLIS SAINT PAUL METROPOLITAN AIRPORTS COMMISSION MAC

Figure O-1
Existing Land Use at MSP



Single Family
Multi-Family
Commercial
Industrial
Public/Semi-Public
Airport
Park
Vacant
Road
Water
Farmstead
Vacant Industrial
Vacant Public/Semi-Public
1992 MUSA

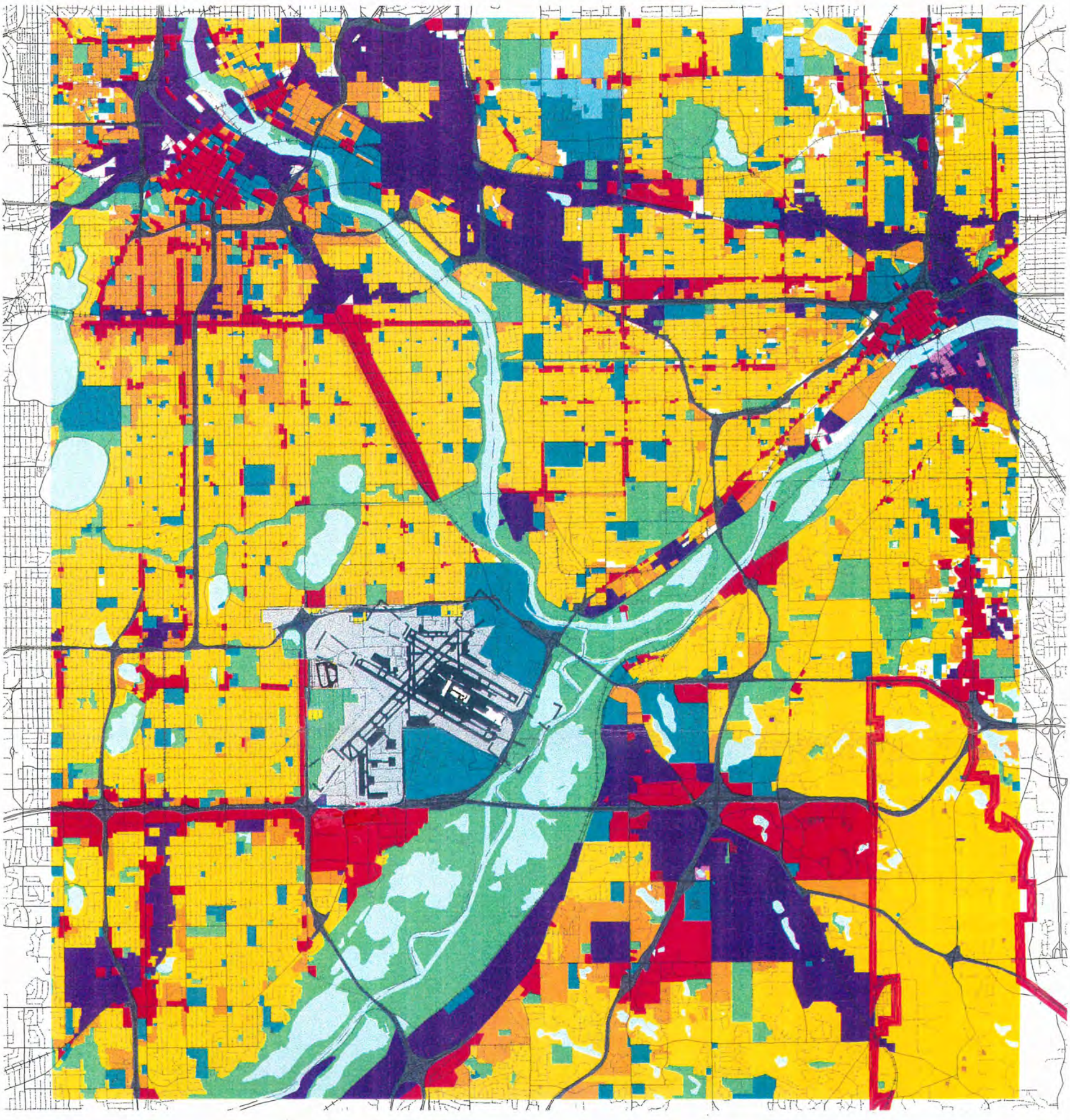
Source: DSU, Based on Metropolitan Council, 1990

Scale In Feet
3500 1750 0 3500 10500
N

HNTB

Figure O-2

Future Land Use - MSP Alternative



Single Family
Multi-Family
Commercial
Industrial
Public/Semi-Public
Airport
Park
Vacant
Road
Water
Farmstead
Vacant Industrial
Vacant Public/Semi-Public
1992 MUSA

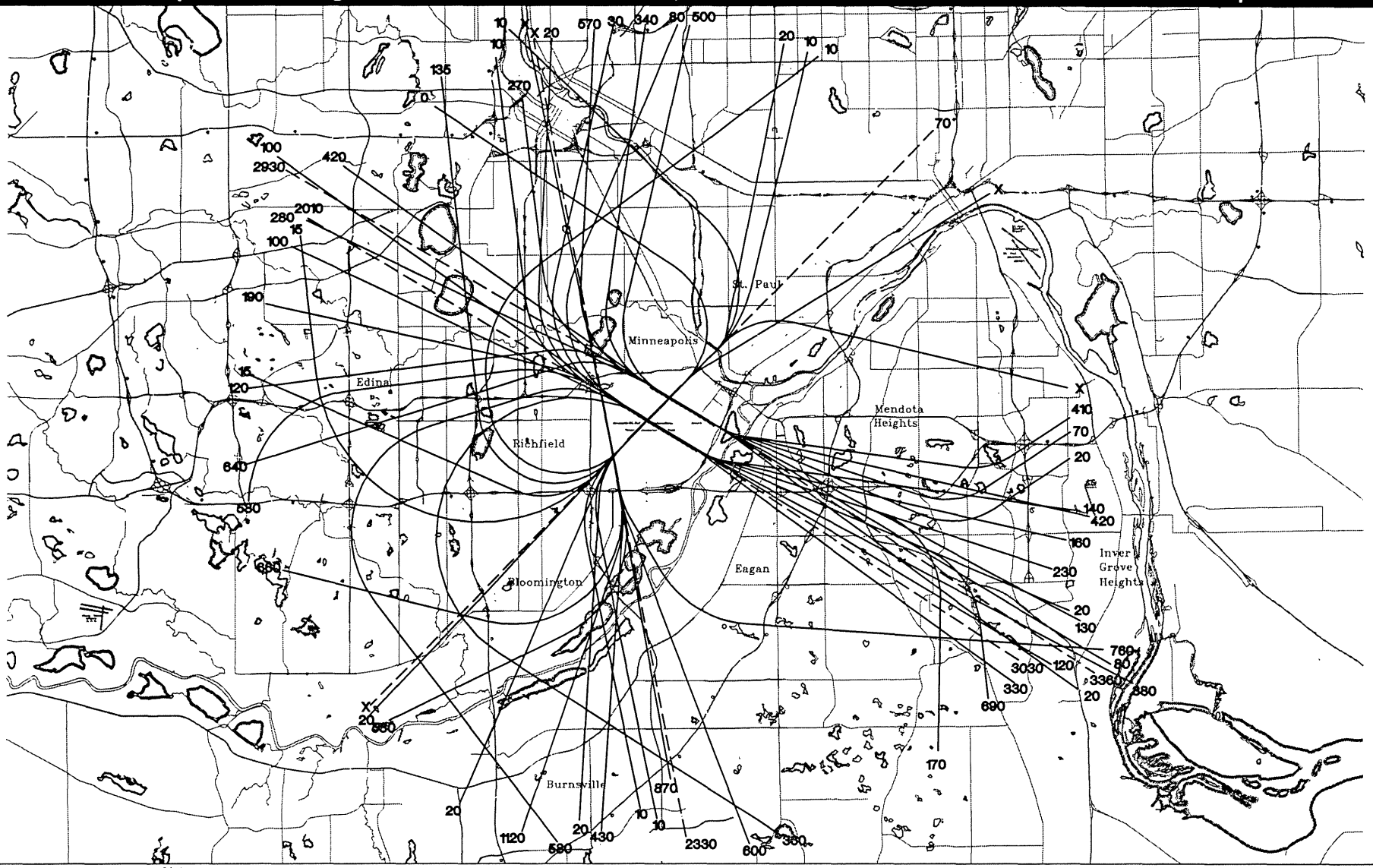
Source : DSU, Based on Metropolitan Council, 1990

Scale In Feet
3500 1750 0 3500 10500
N

HNTB

Figure O-3

Future Land Use - No Action Alternative




Source: HNTB

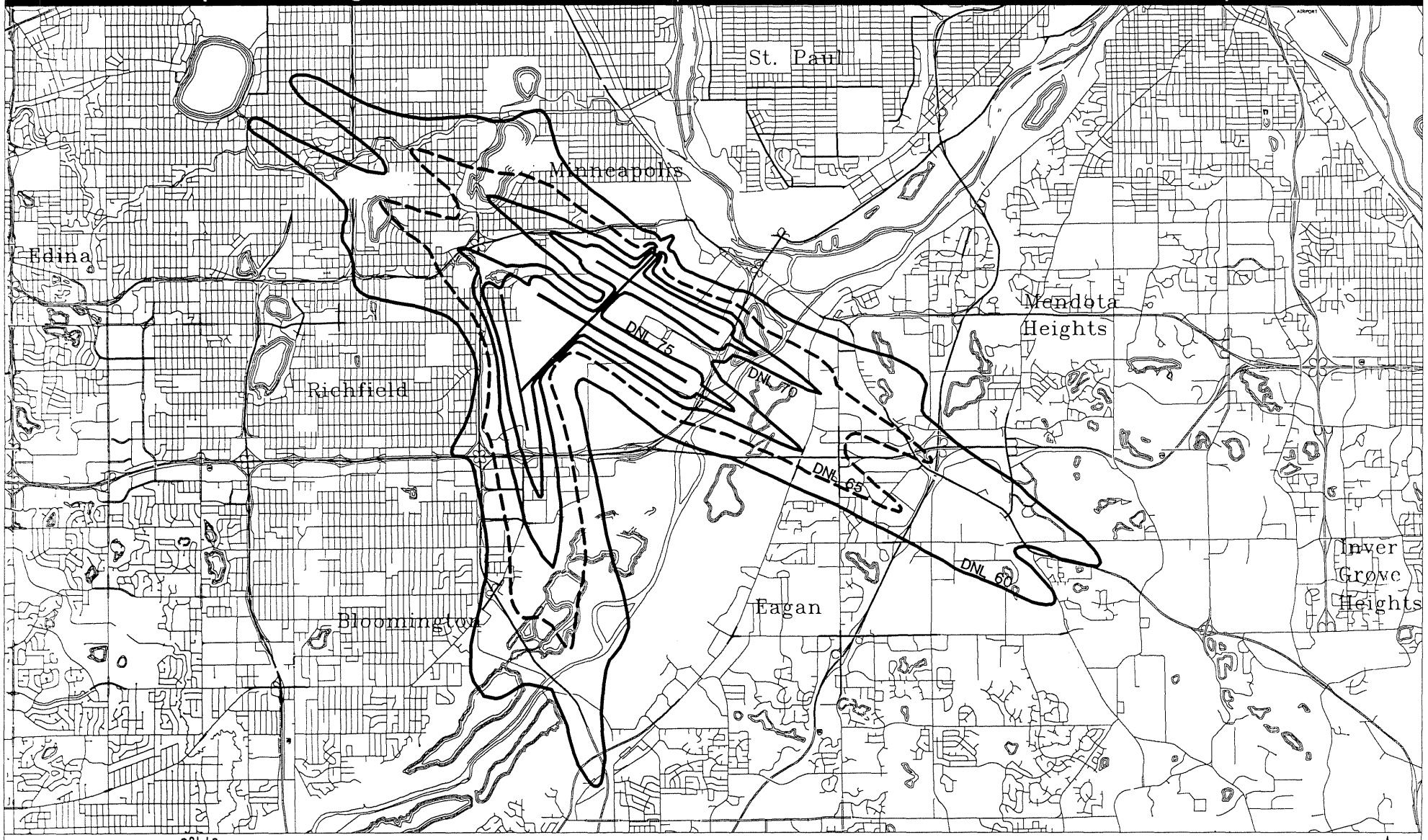
HNTB

Figure Q-2

2005 Flight Tracks - MSP Alternative

Dual Track Airport Planning Process

Environmental Impact Statement

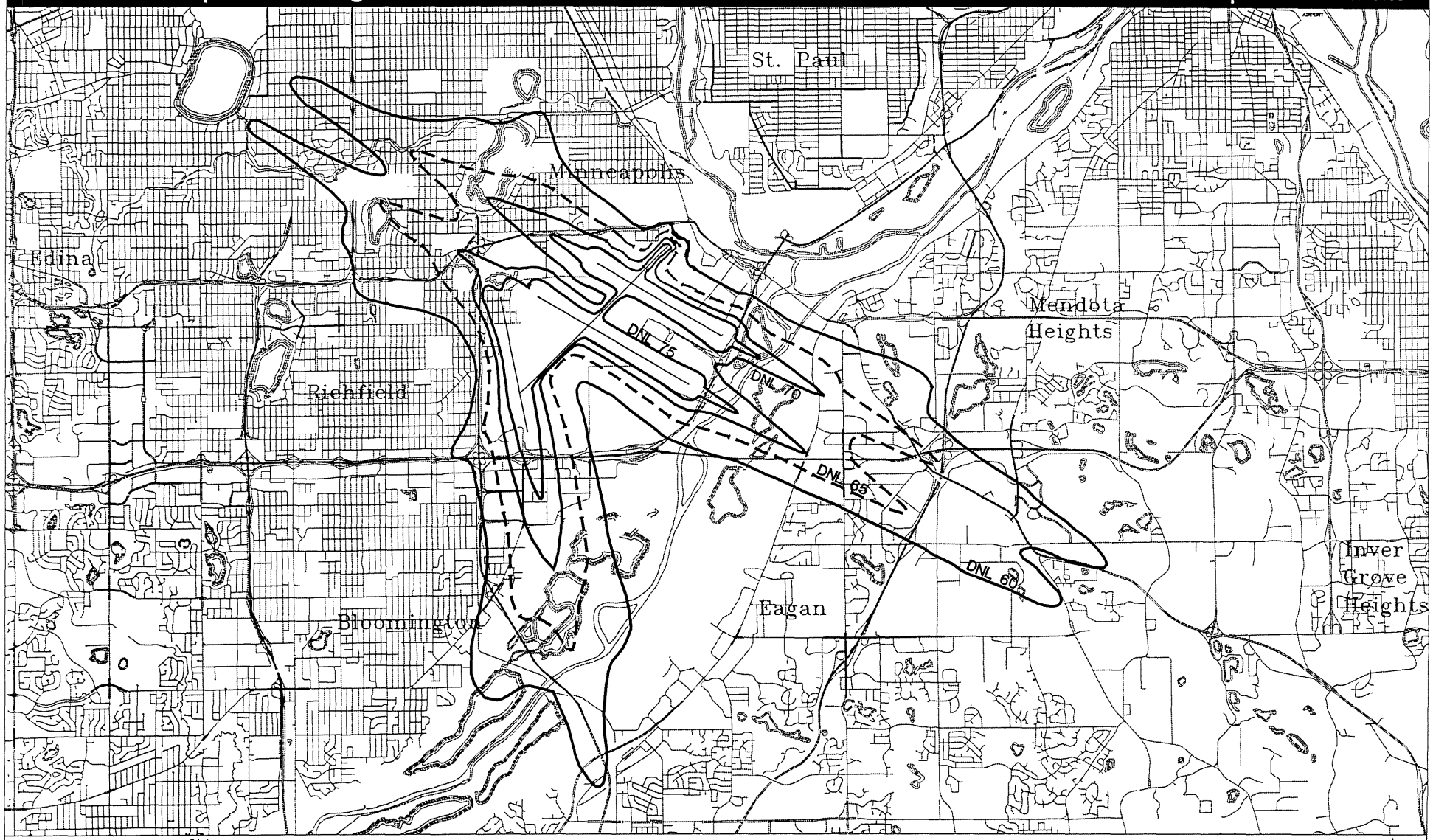



Source: HNTB

HNTB

Figure Q-3

2005 DNL Noise Contours - MSP Alternative

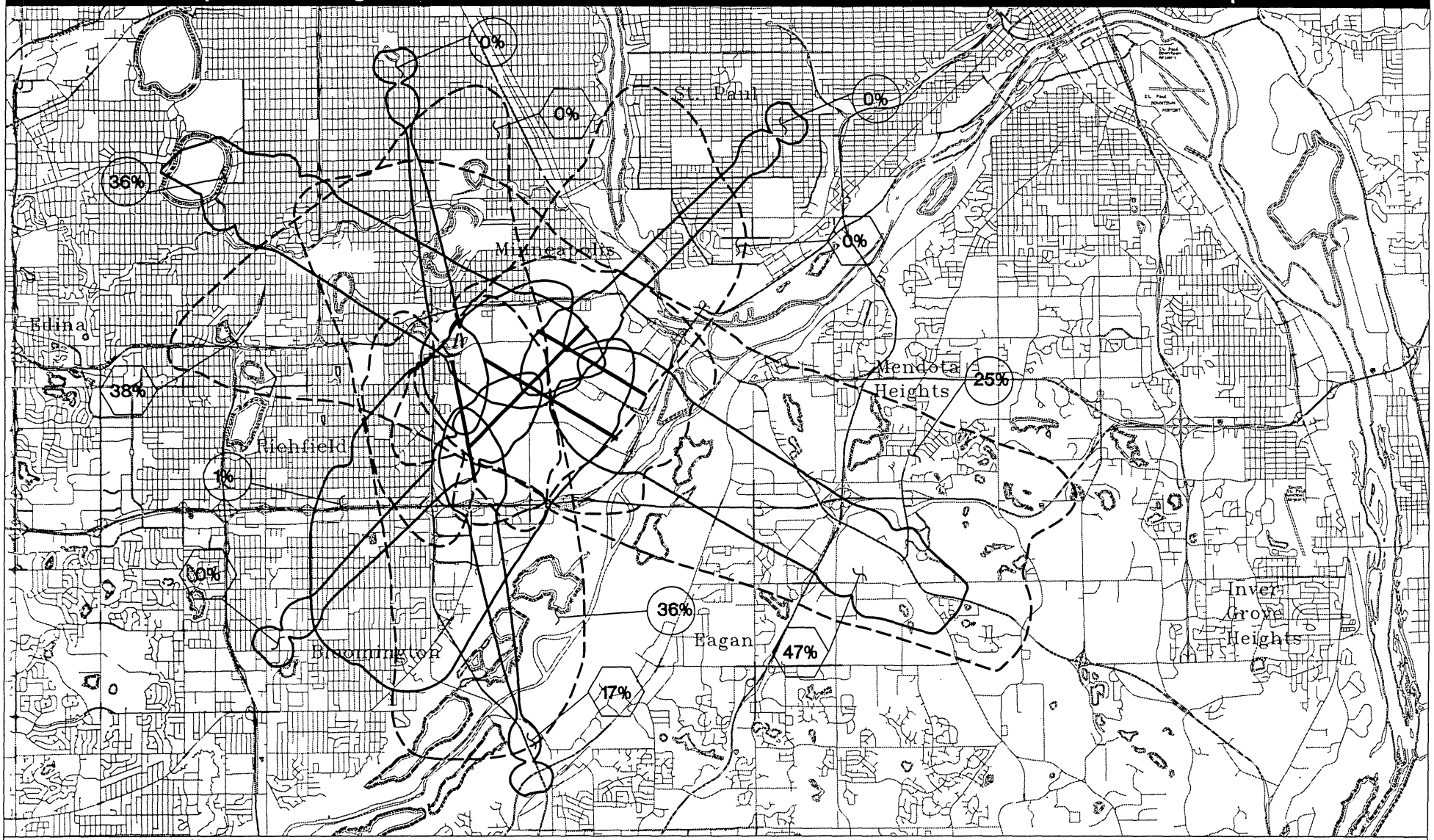



Source: SOURCE

HNTB

Figure Q-3A

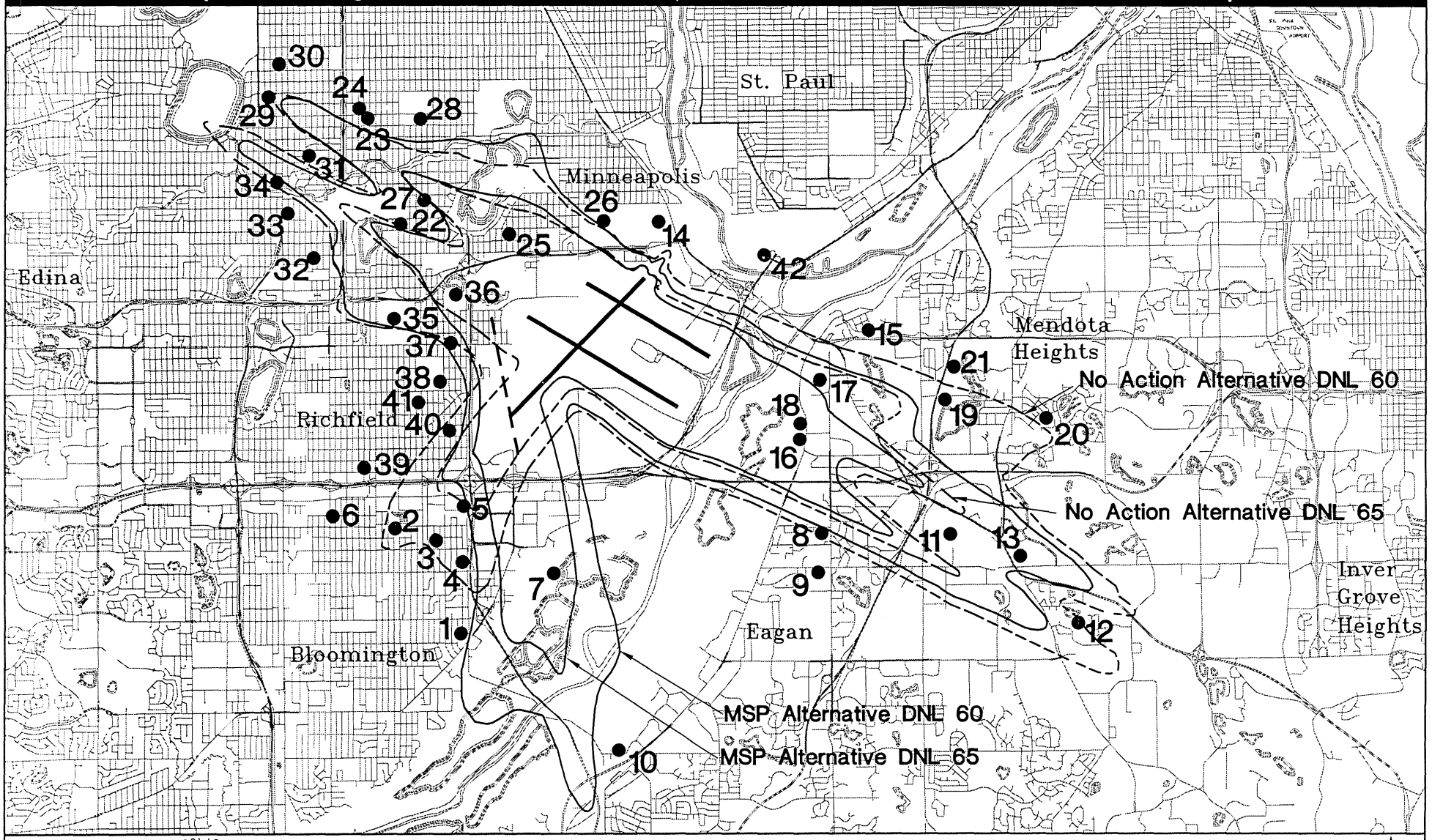
2005 DNL Noise Contours - MSP Alternative with Runway 4-22 Extension




HNTB

Figure Q-4

2005 $L_{10}$ 65 Noise Contours - MSP Alternative




Source: HNTB

— — — New Runway, MSP Alternative

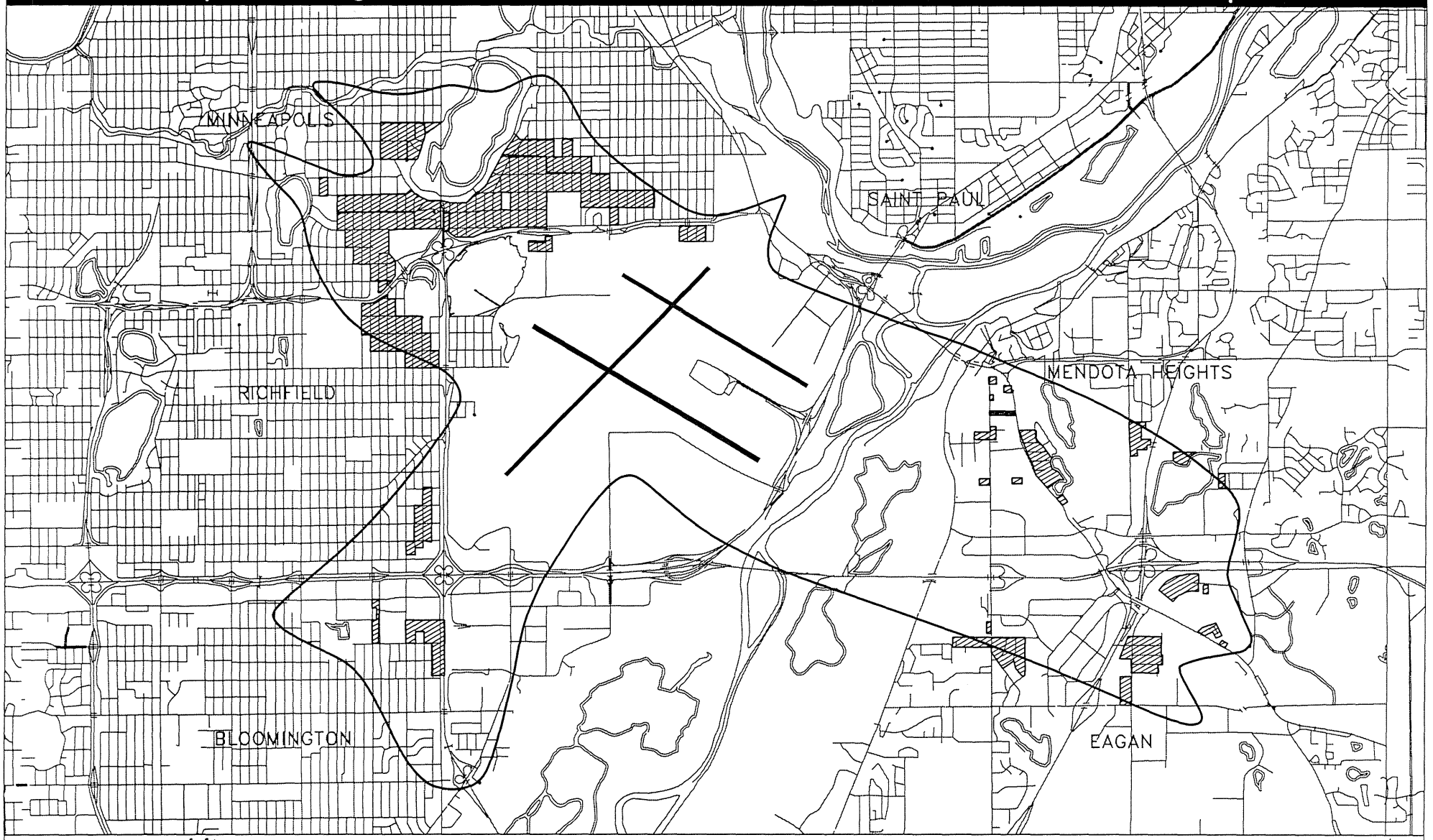
0 4,000 8,000
Scale in Feet

N

HNTB

Figure Q-5

Selected Noise Sensitive Receptor Locations - MSP and No Action Alternatives




Source: HNTB

Areas of Part 150 Mitigation Completed Through 1997 – 3,023 homes

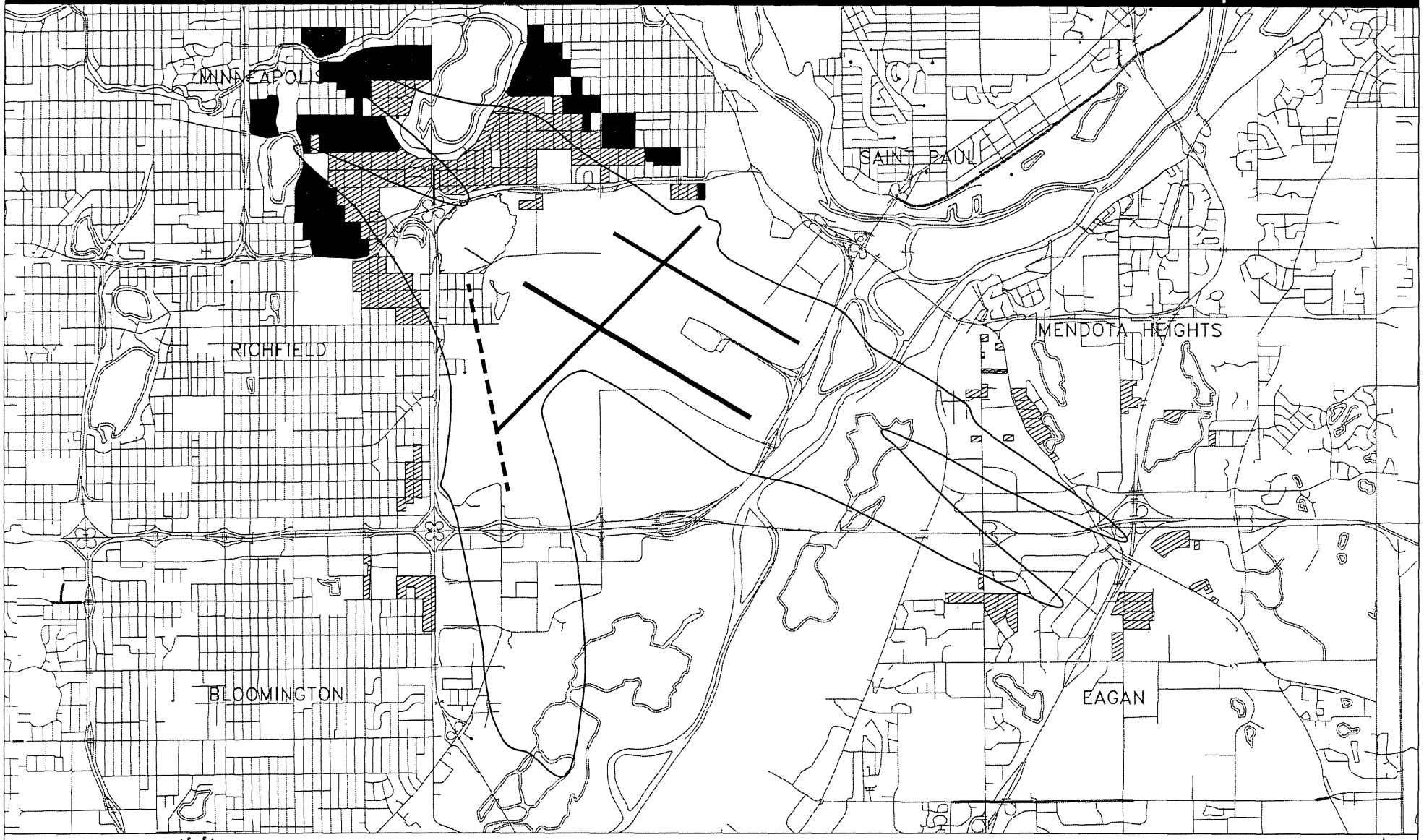
0 0.5 1
Scale in Miles

N

HNTB

Figure Q-6

## Mitigation to be Completed Through 1997

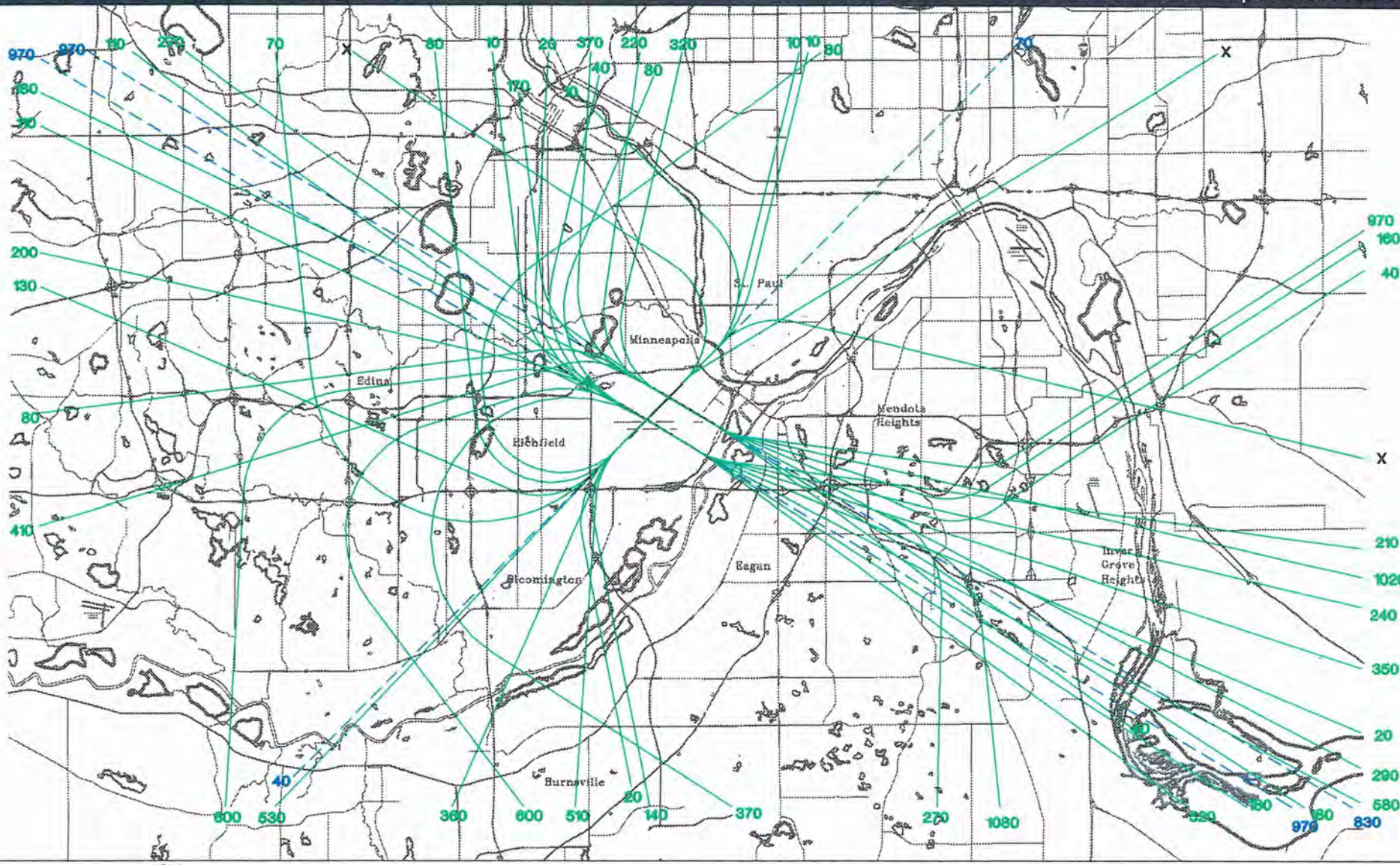



Source: HNTB

HNTB

Figure Q-7

Area of Mitigation in MSP Noise Mitigation Plan




Source: HNTB

Monthly Arrivals Below 2,000 Feet
Monthly Departures Below 5,000 Feet
X Less than 10 Monthly Operations

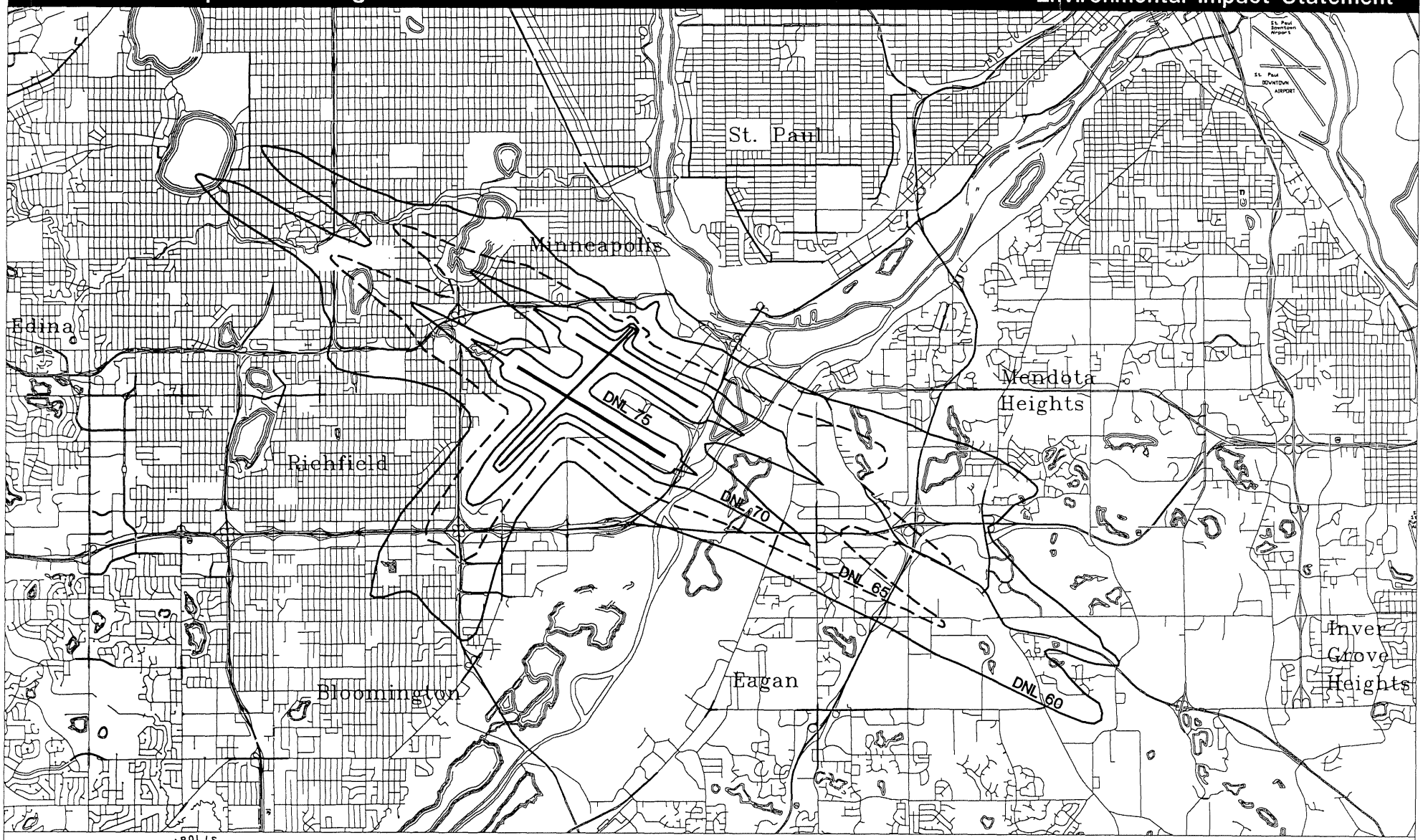
0 1 2 3
Scale in Miles

N

HNTB

Figure Q-8

**2005 Flight Tracks - No Action Alternative**




Source: HNTB

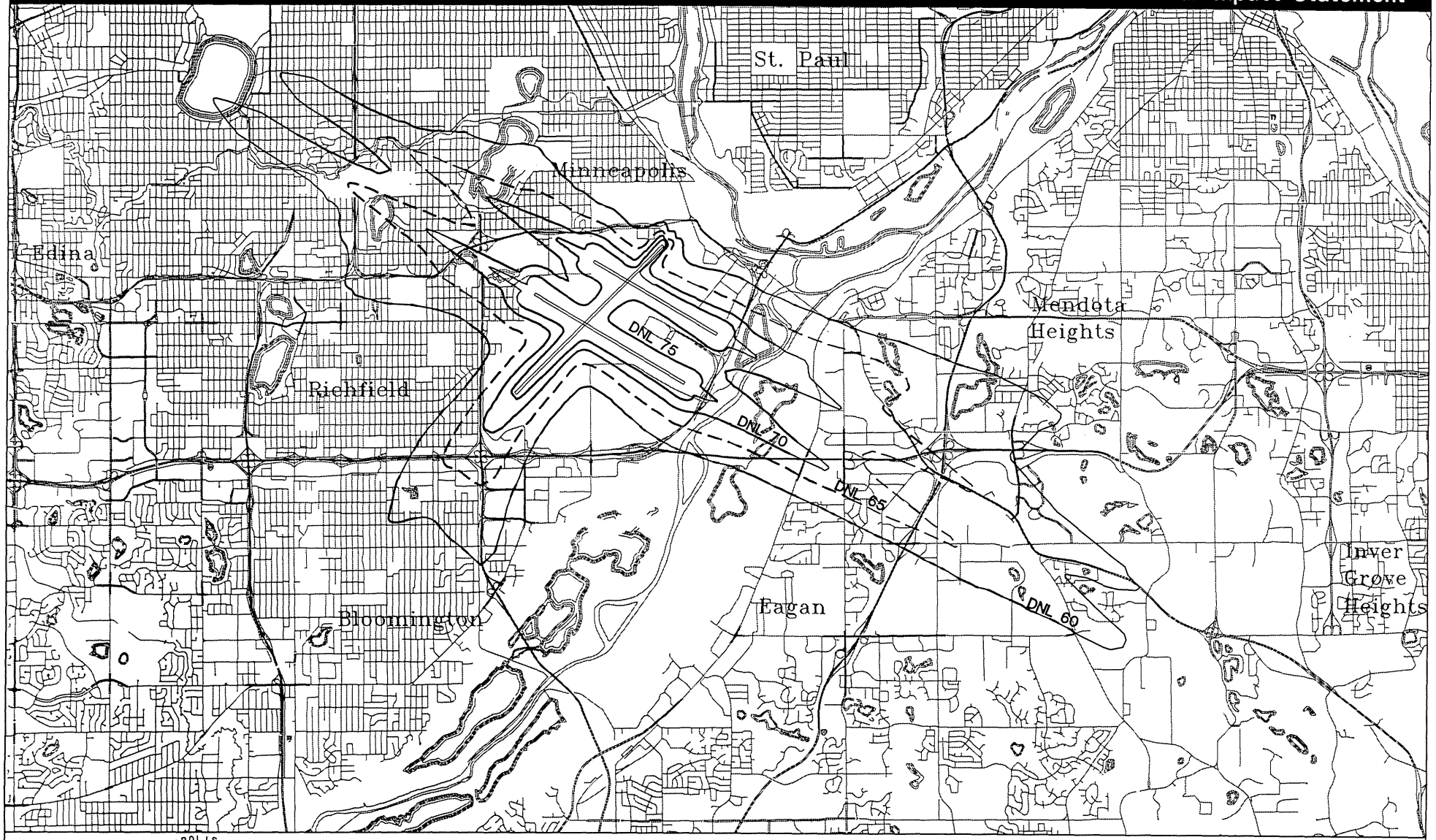
HNTB

Figure Q-9

**2005 DNL Noise Contours - No Action Alternative**

Dual Track Airport Planning Process

Environmental Impact Statement




Source: HNTB

0 4,000 8,000

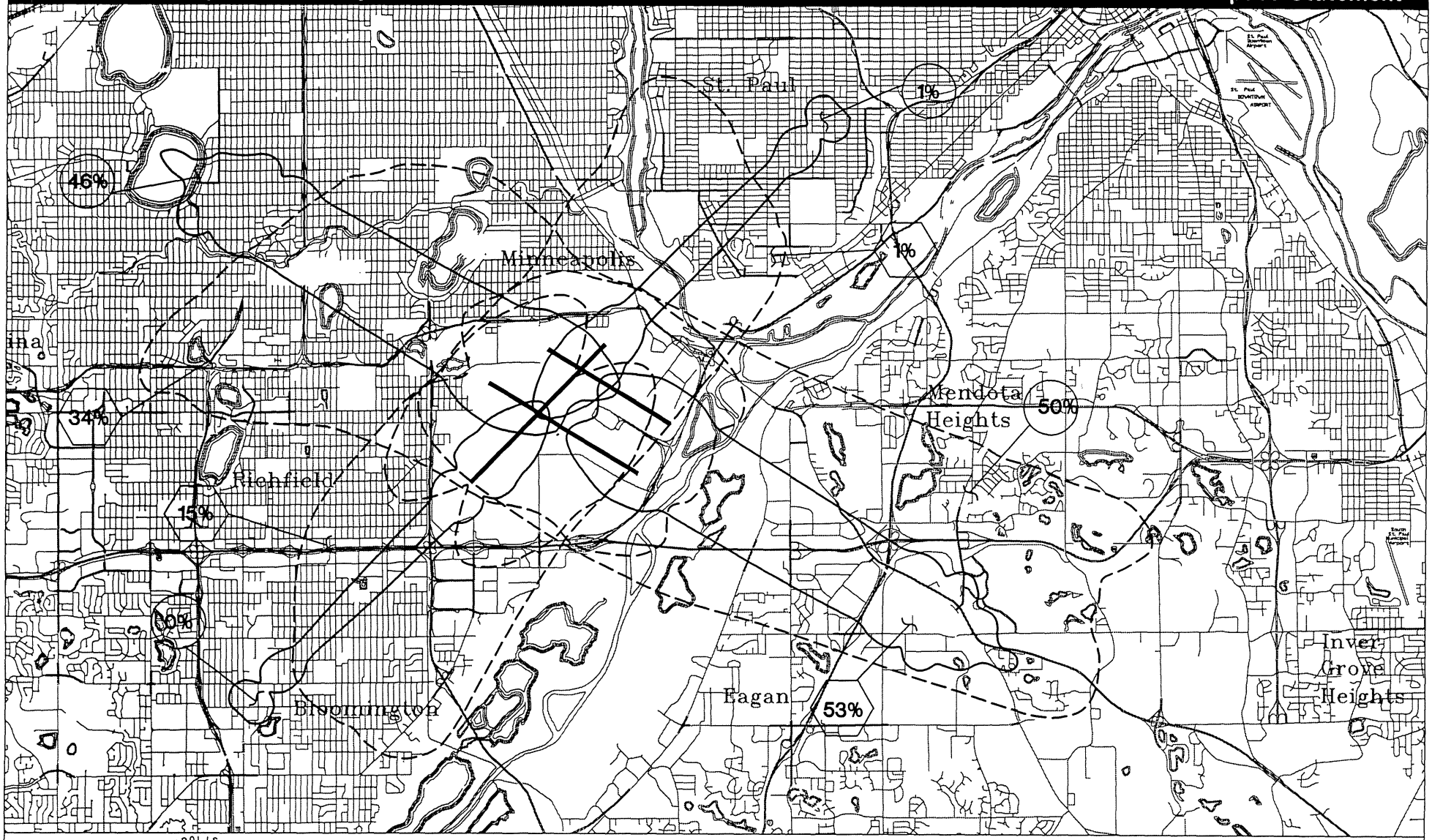
Scale in Feet

N

HNTB

Figure Q-9A

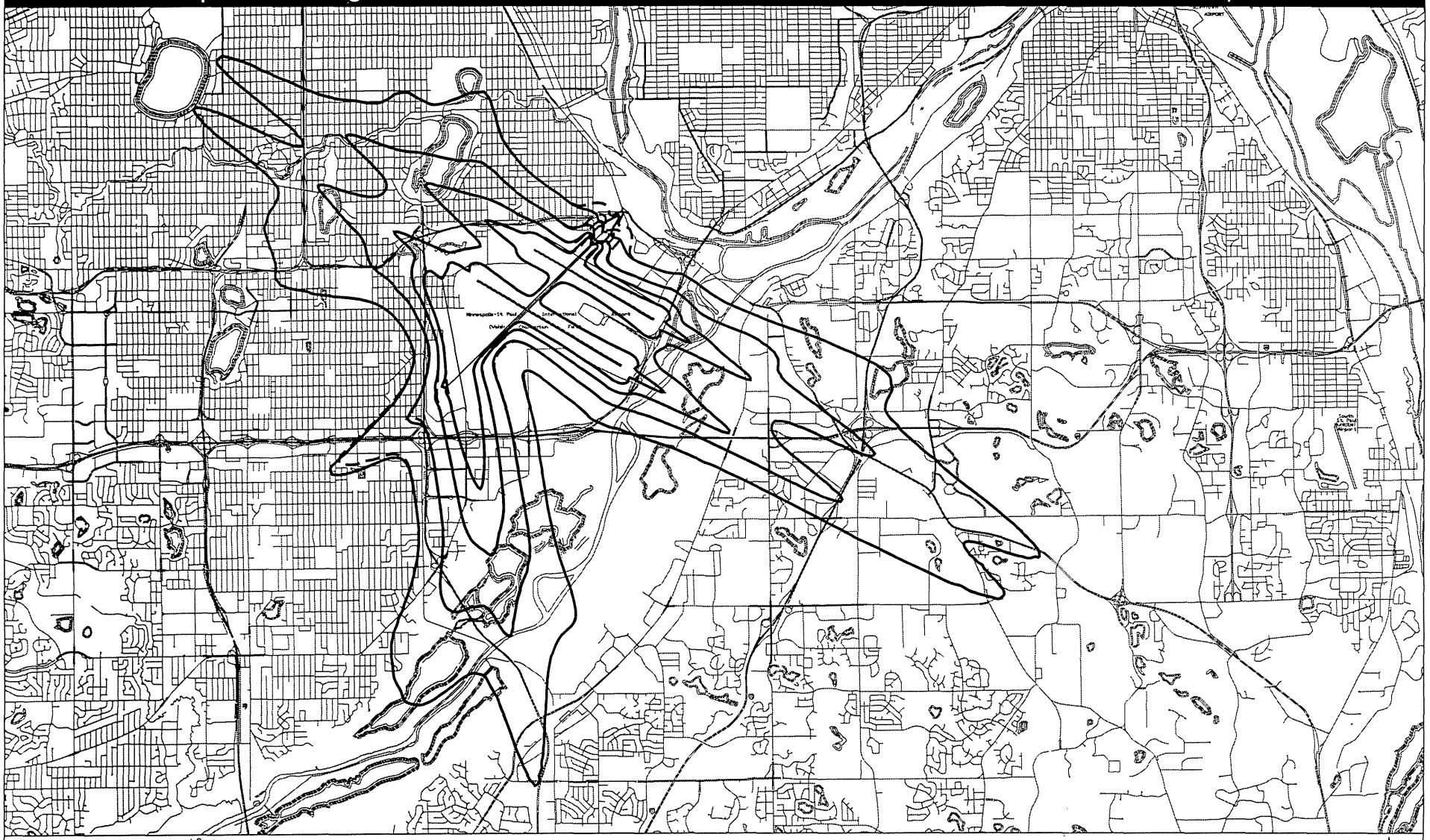
2005 DNL Noise Contours - No Action Alternative with Runway 4-22 Extension




HNTB

Figure Q-10

2005 $L_{10}$ 65 Noise Contours - No Action Alternative



2005 Extend Runway 4-22
2005 MSP Alternative

Source: HNTB

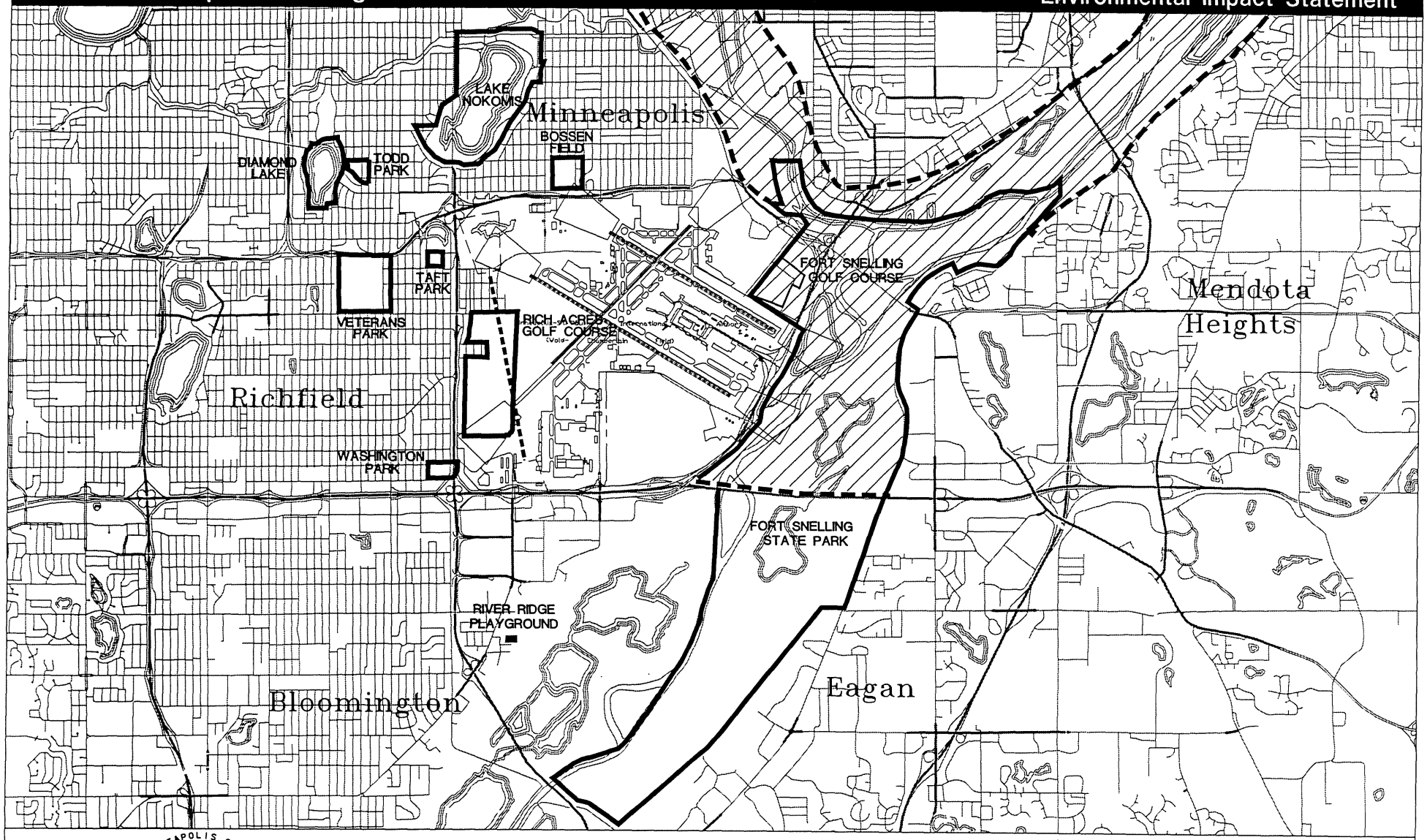
0' 5,000' 10,000'
Scale in Feet

N

HNTB

Figure Q-11

**Comparison of Runway 4-22 Extension and MSP Alternative 2005 DNL Contours**




Source: HNTB

Mississippi National River and Recreation Area

New Runway, MSP Alternative

0 3,000 6,000

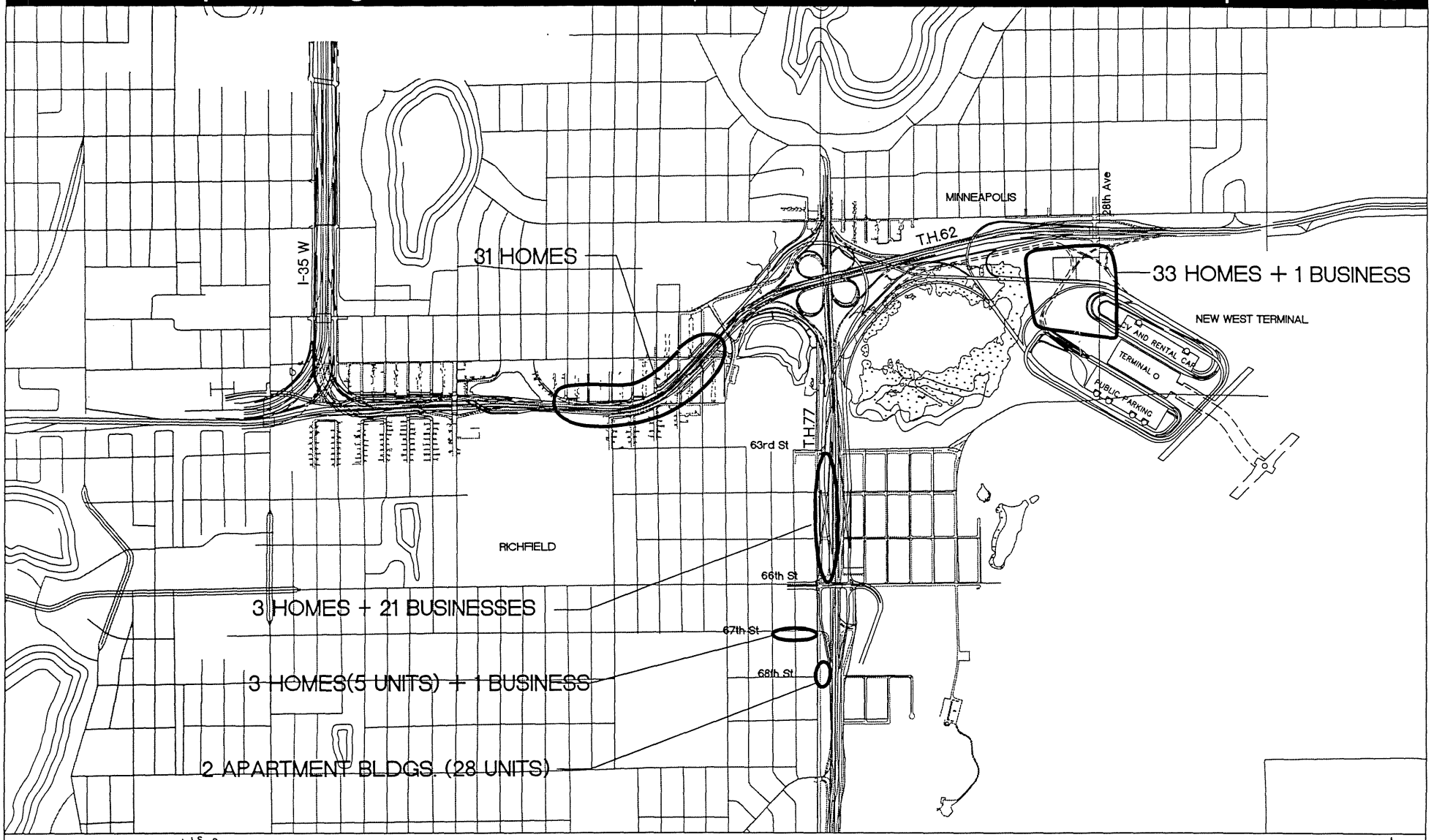
Scale in Feet

N

HNTB

Figure R-1

**Park and Recreation Land - MSP and No Action Alternatives**

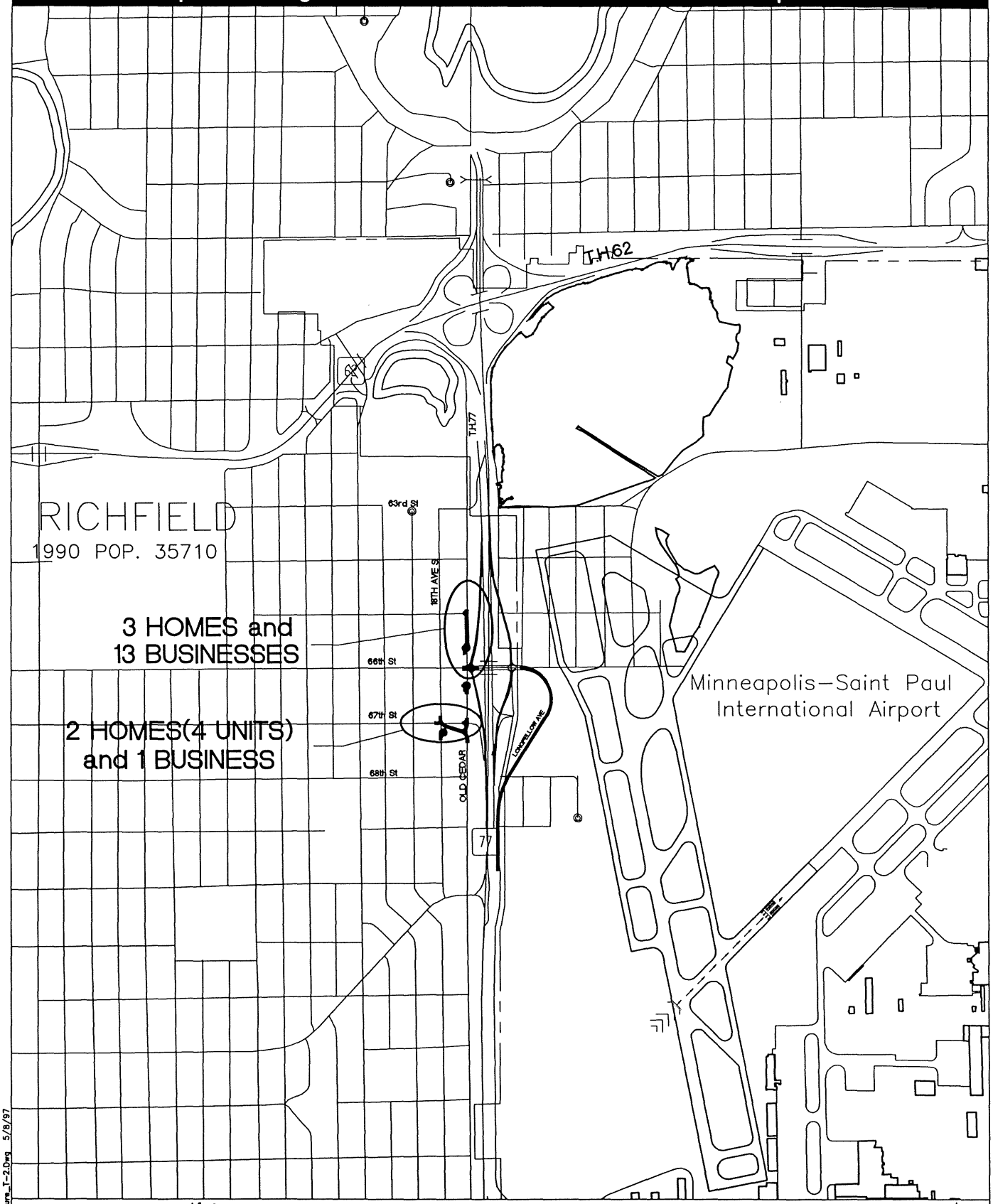



HNTB

MAC

Figure T-1

Residential/Commercial Areas Affected by 2020 Highway Improvements - MSP 2020 Concept Plan




Source: HNTB

0 1,000 2,000
Scale in Feet

N

HNTB

MAC Minneapolis Saint Paul Metropolitan Airports Commission

Figure T-2

Residential/Commercial Areas Affected by 2010 Highway Improvements - MSP 2010 LTCP

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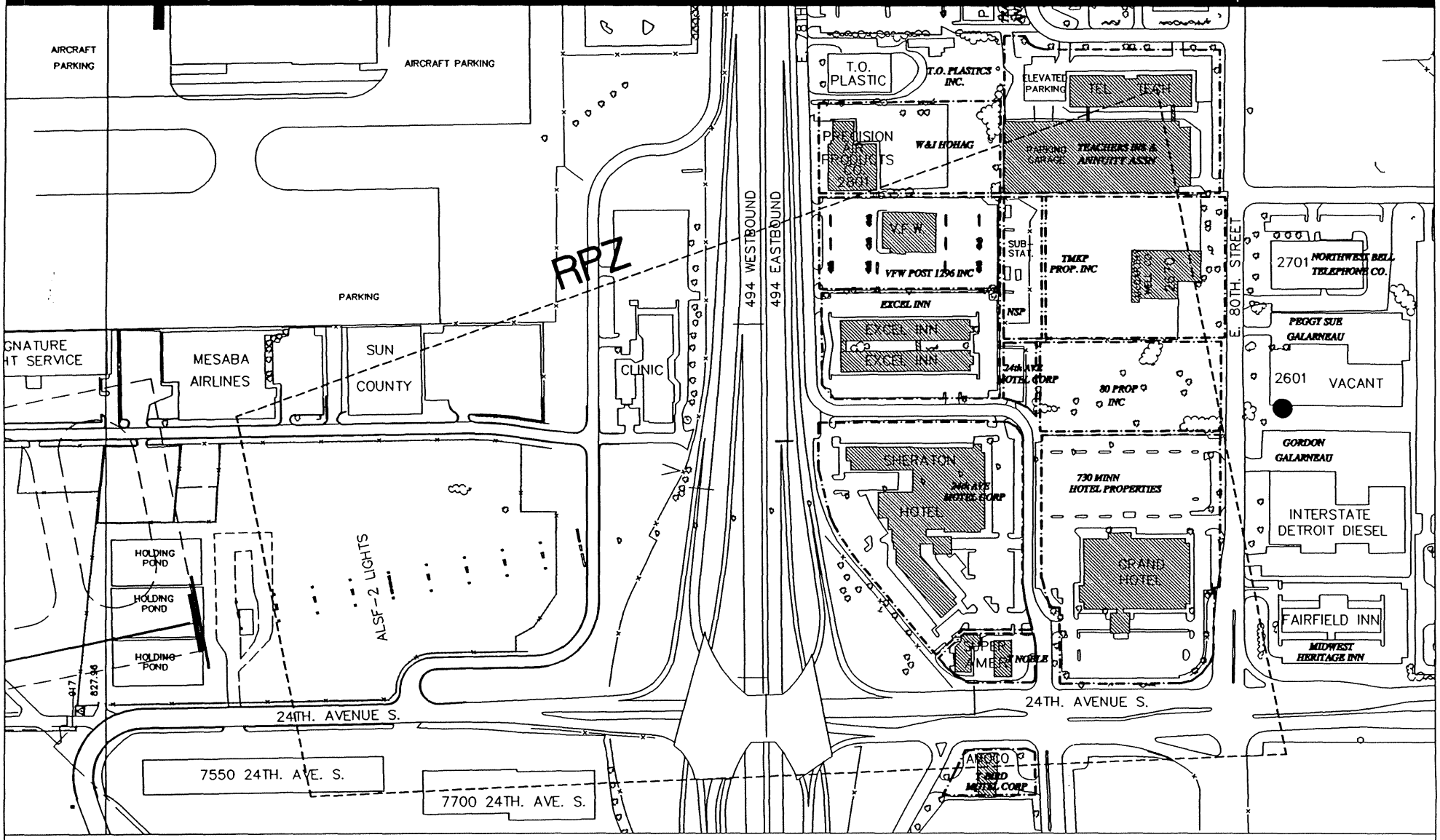



DISPLACED STRUCTURE

DISPLACED PARCEL

Source: HNTB

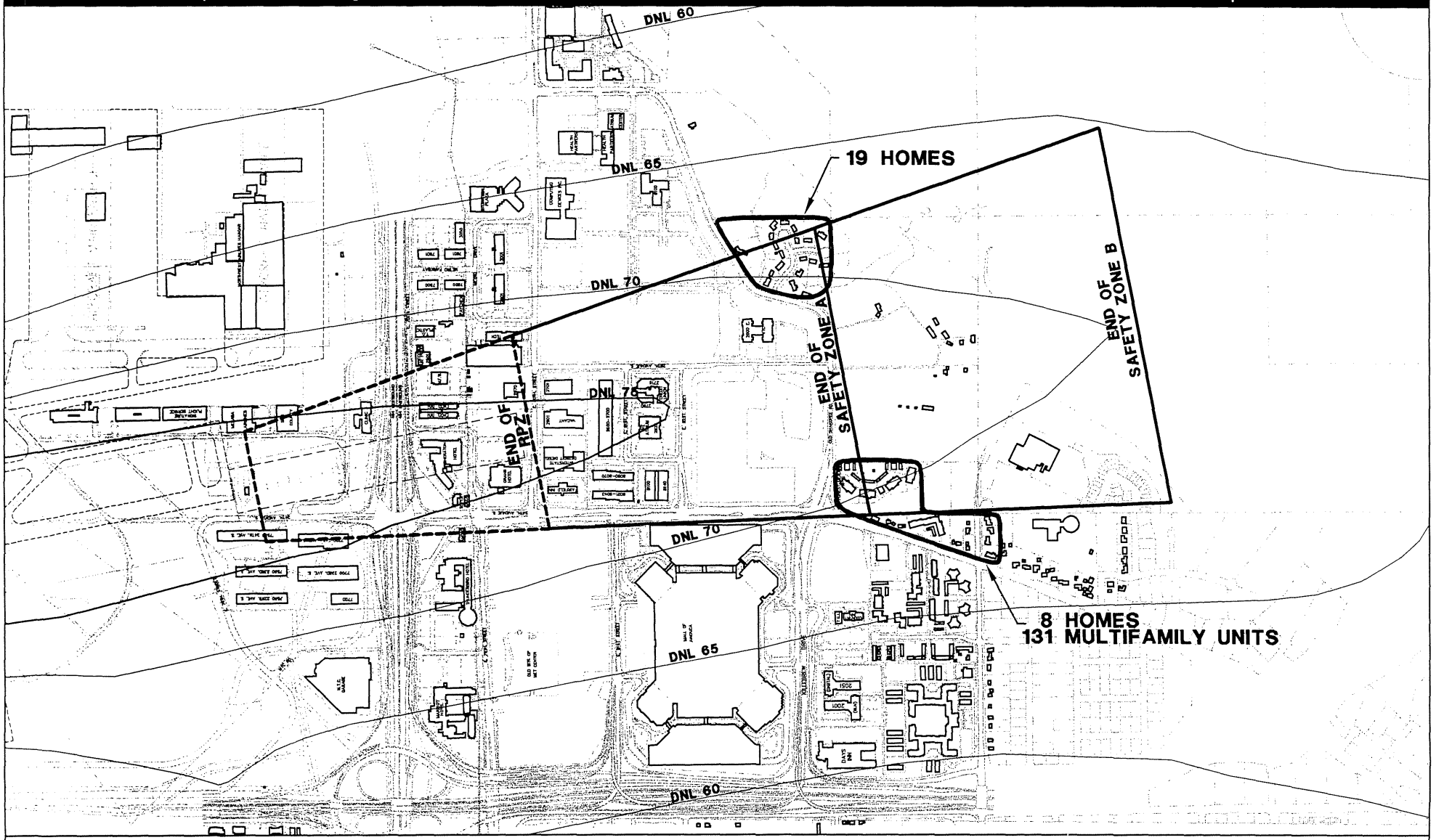
Z

Not To Scale

HNTB

Figure T-3

**Off-Airport Properties Displaced By North-South Runway RPZ - MSP Alternative**

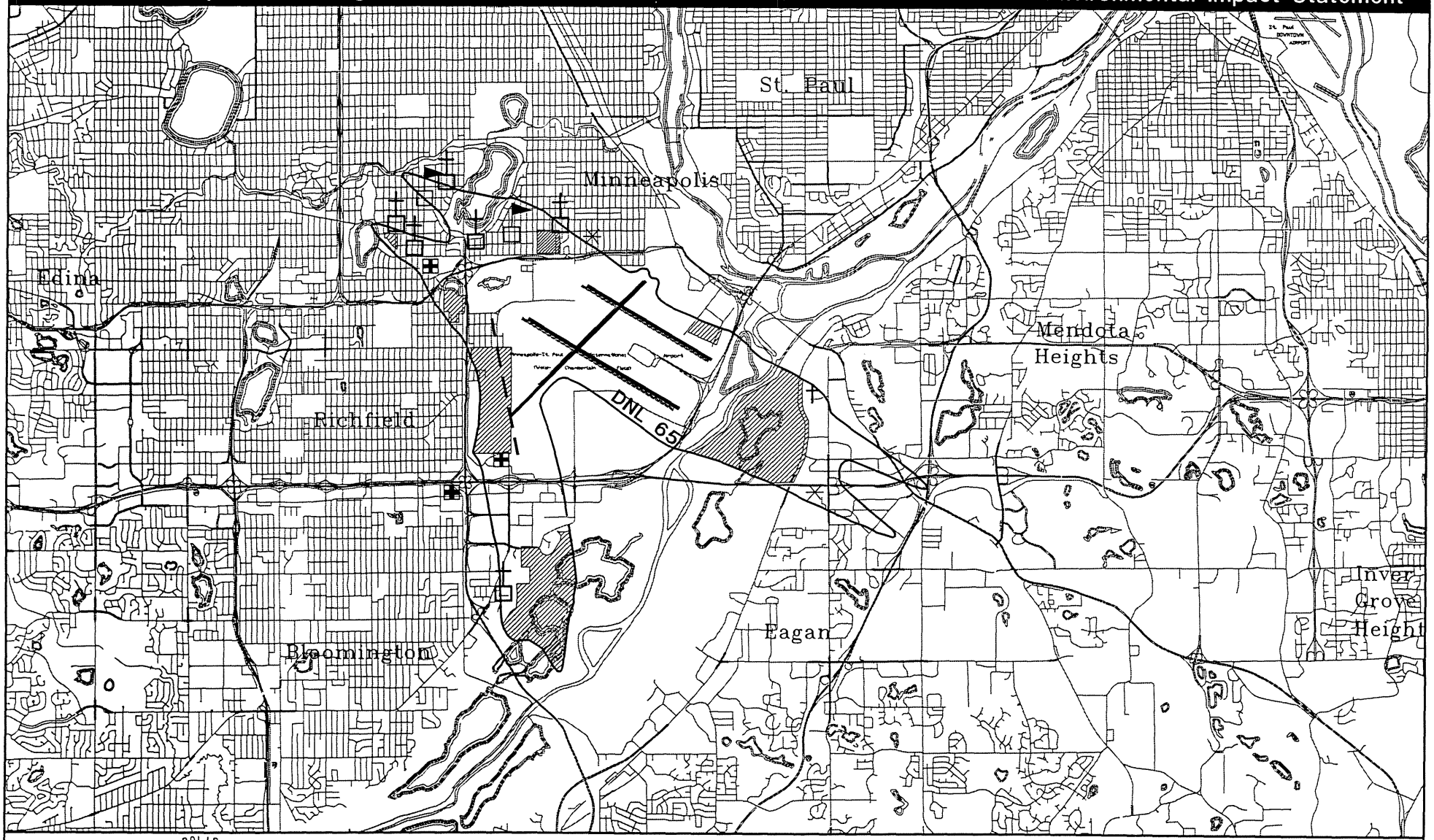



Source: HNTB

HNTB

Figure T-4

**Residential Properties To Be Acquired For Noise Mitigation - MSP Alternative**




— — New Runway, MSP Alternative
—— Runway Extension, No Action and MSP Alternative
Source: HNTB

Cemetery
Church
Parks
School
Medical Facilities
Fraternal Organizations

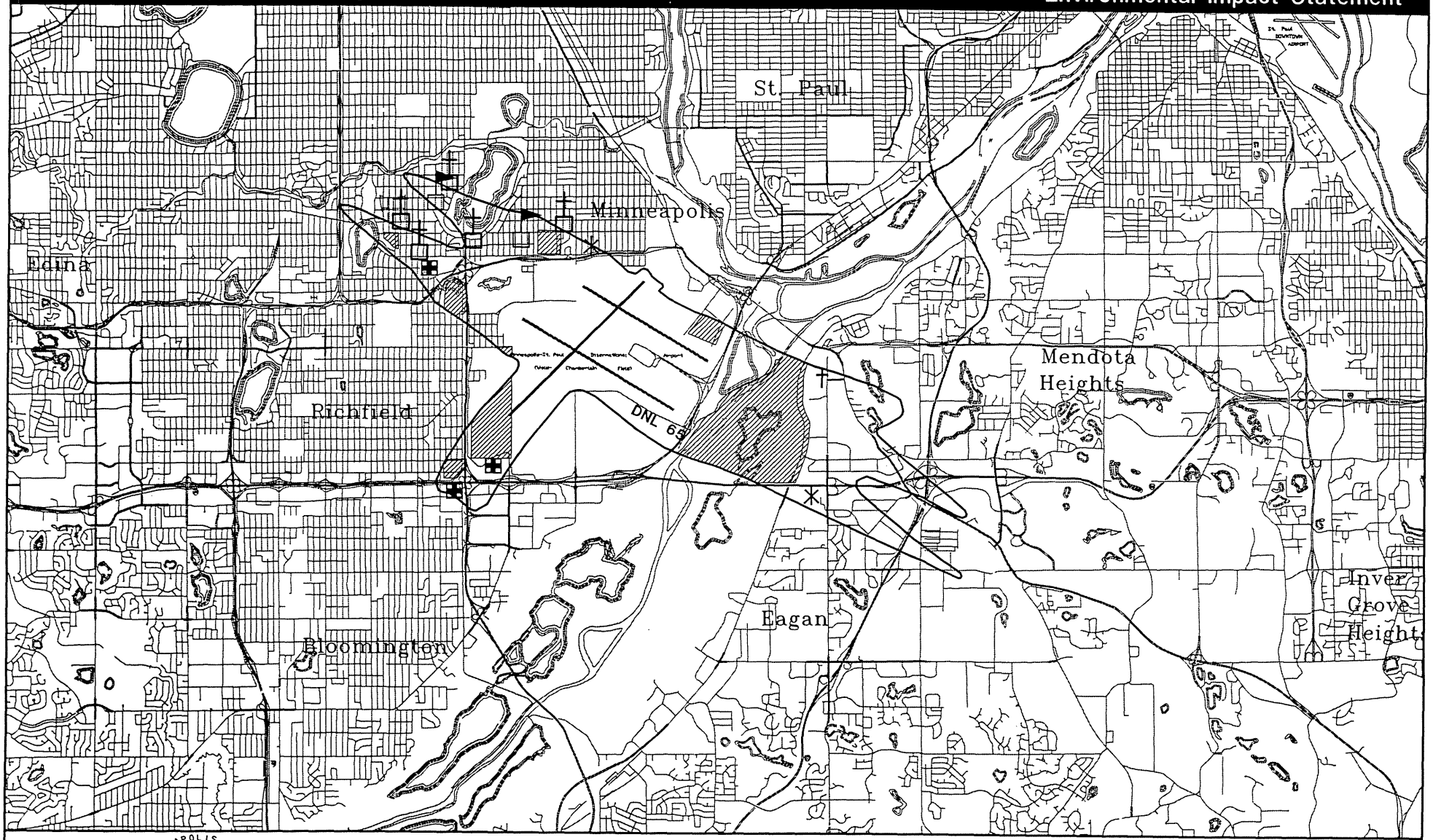
0 4,000 8,000
Scale in Feet

N

HNTB

Figure T-5

**Community Facilities - MSP Alternative**

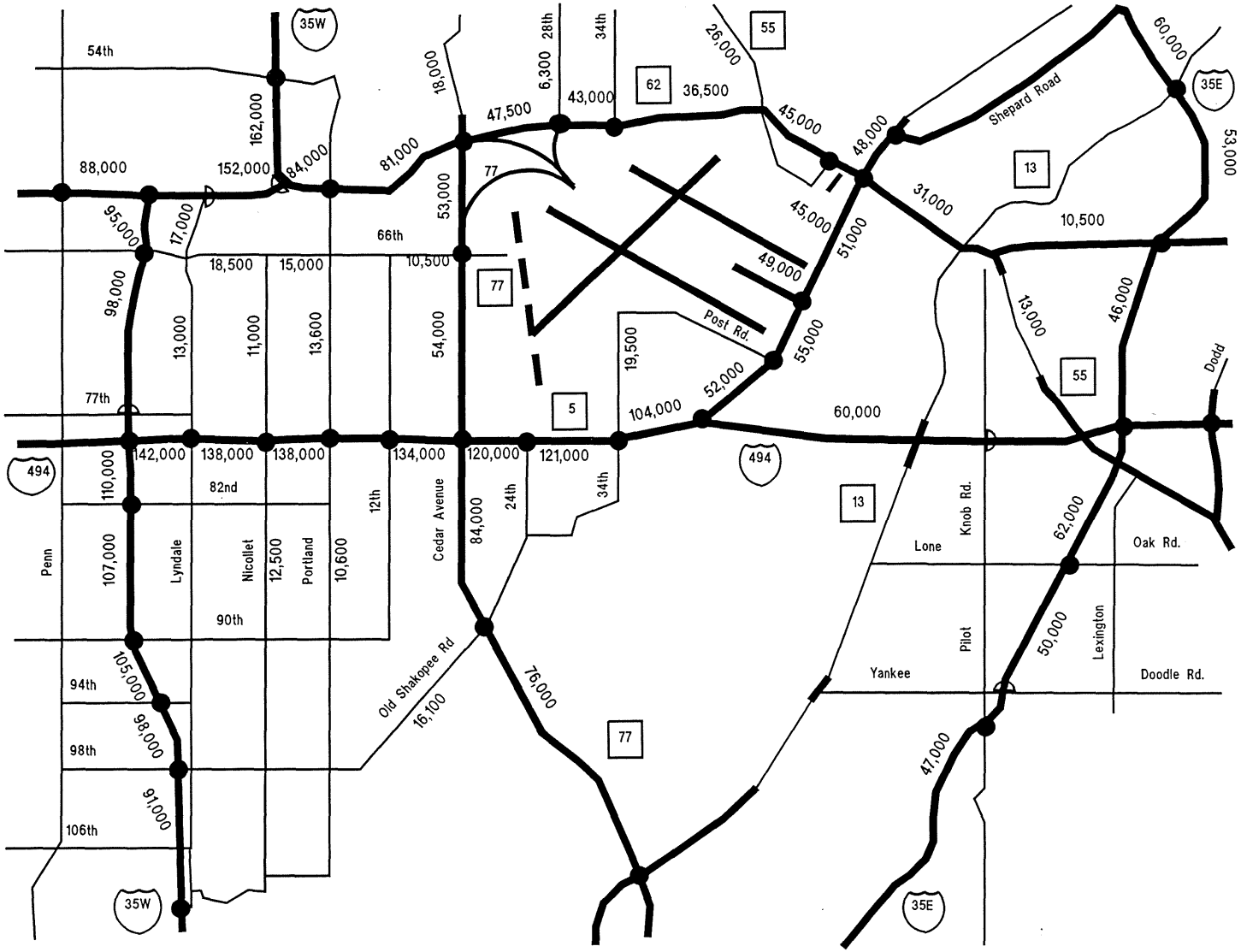



Source: HNTB

HNTB

Figure T-6

**Community Facilities - No Action Alternative**




Source: Metropolitan Council

Divided Roadway

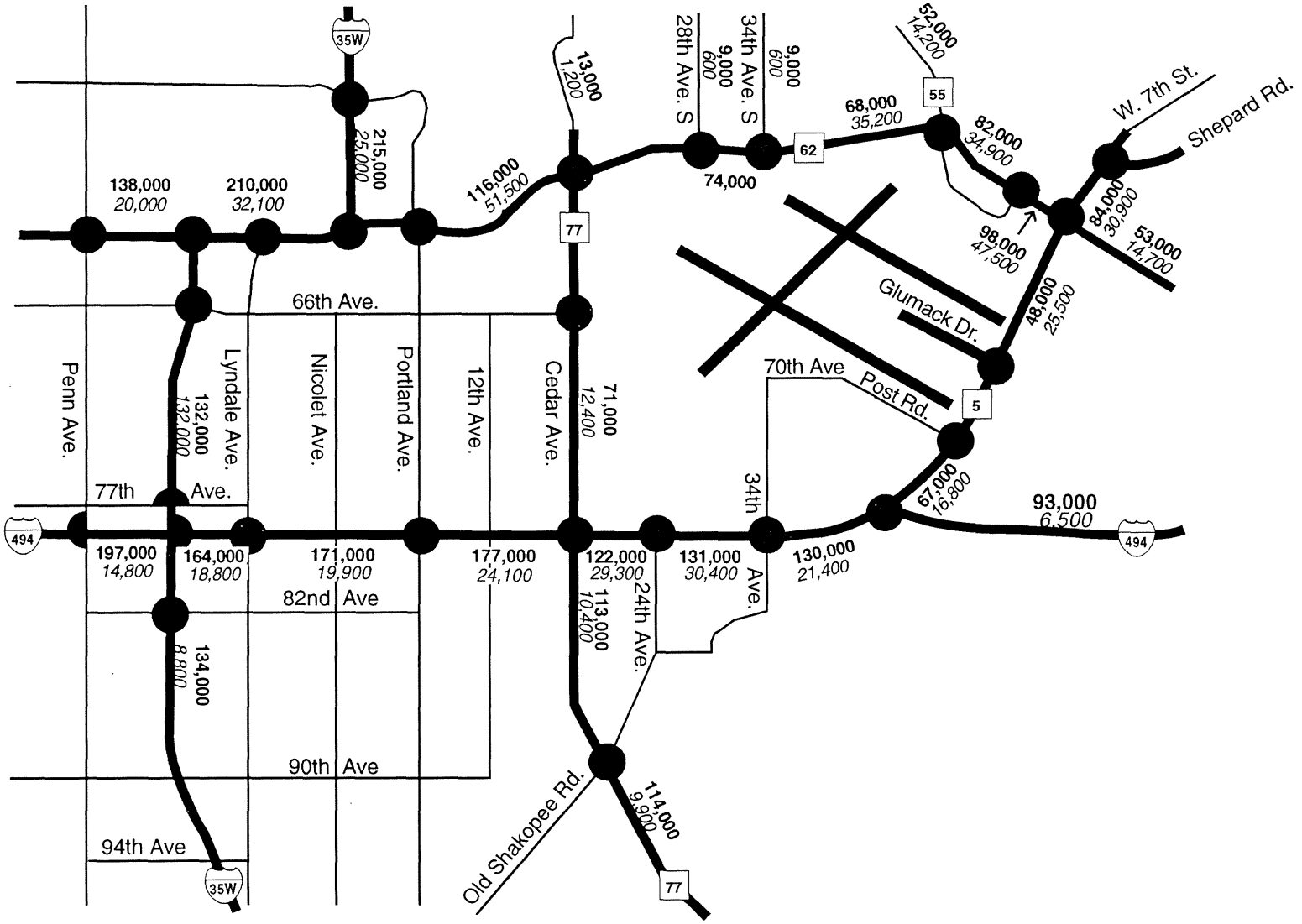
Undivided Roadway

N

HNTB

Figure W-1

**1992 Daily Vehicular Traffic - MSP and No Action Alternatives**




Divided Roadway — 122,000 Total Average Daily Traffic

Undivided Roadway — 29,300 Airport Average Daily Traffic

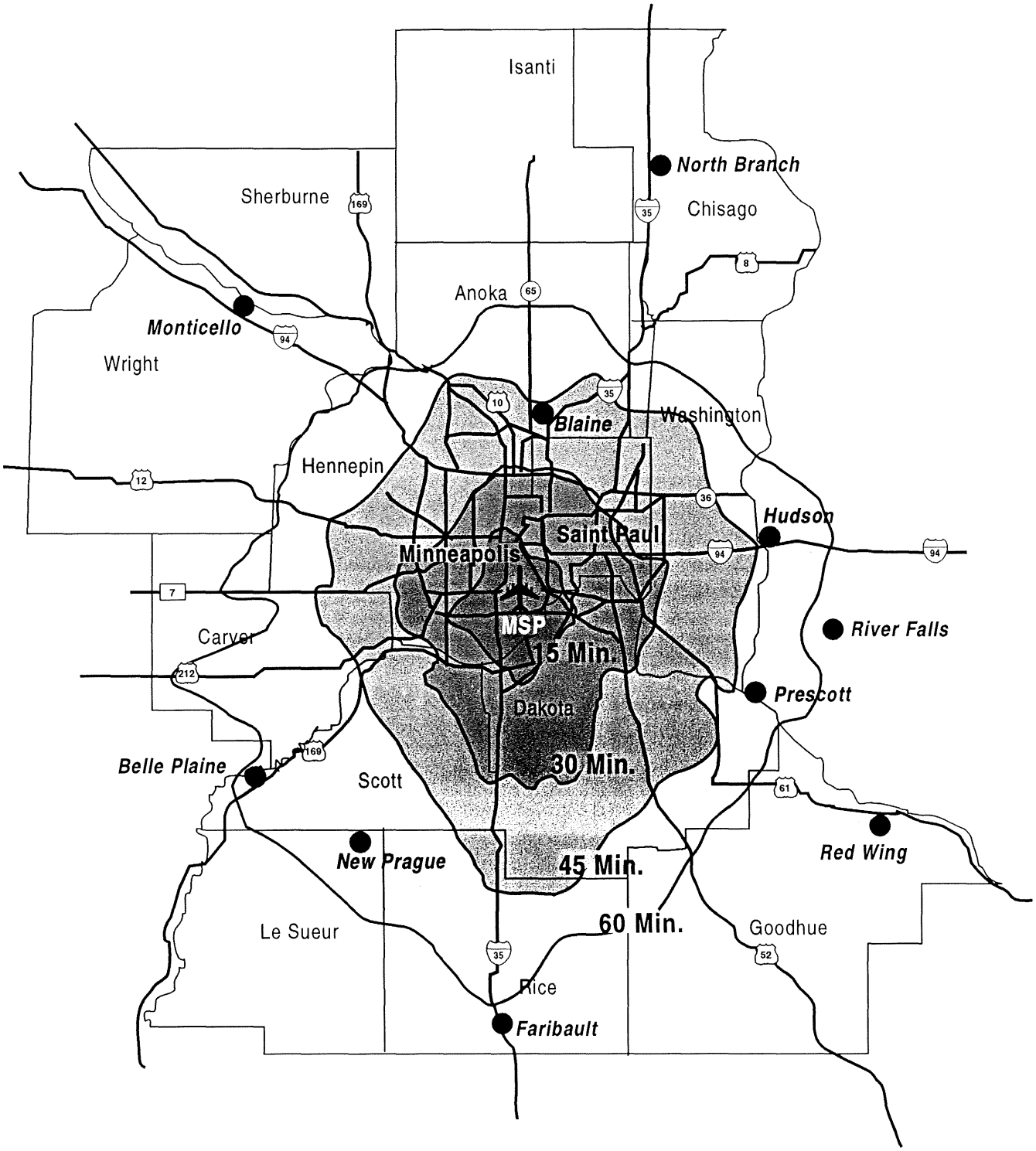
N

HNTB

MAC — Minneapolis Saint Paul Metropolitan Airports Commission

Figure W-2

2020 Daily Vehicular Traffic - MSP Alternative



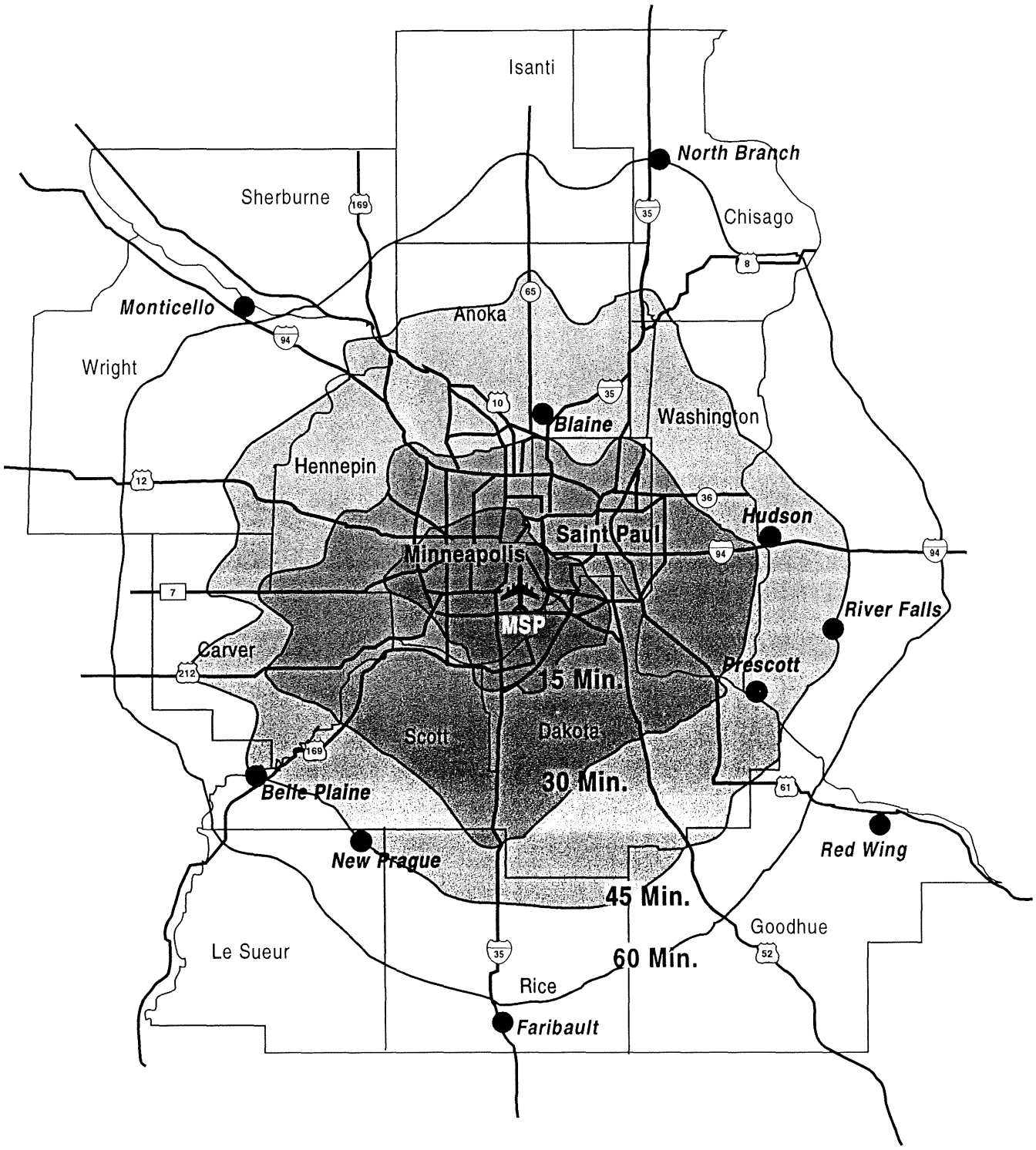

Source: Metropolitan council

HNTB

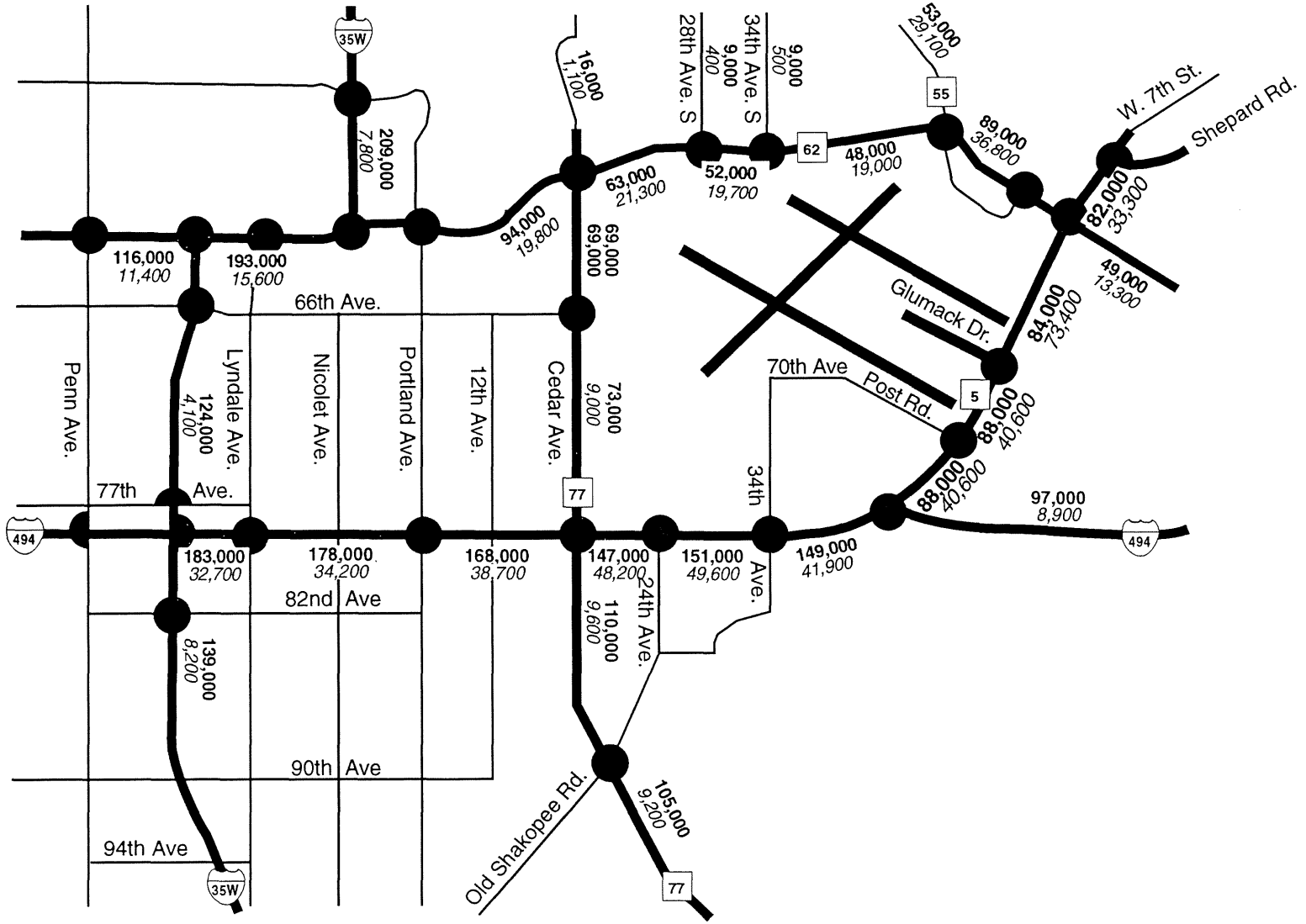
MAC Minneapolis Saint Paul Metropolitan Airports Commission

Figure W-3

2020 Travel Times (PM Peak) - MSP Alternative




Source: Metropolitan Council




Source: Mn/DOT

Divided Roadway — 122,000 Total Average Daily Traffic

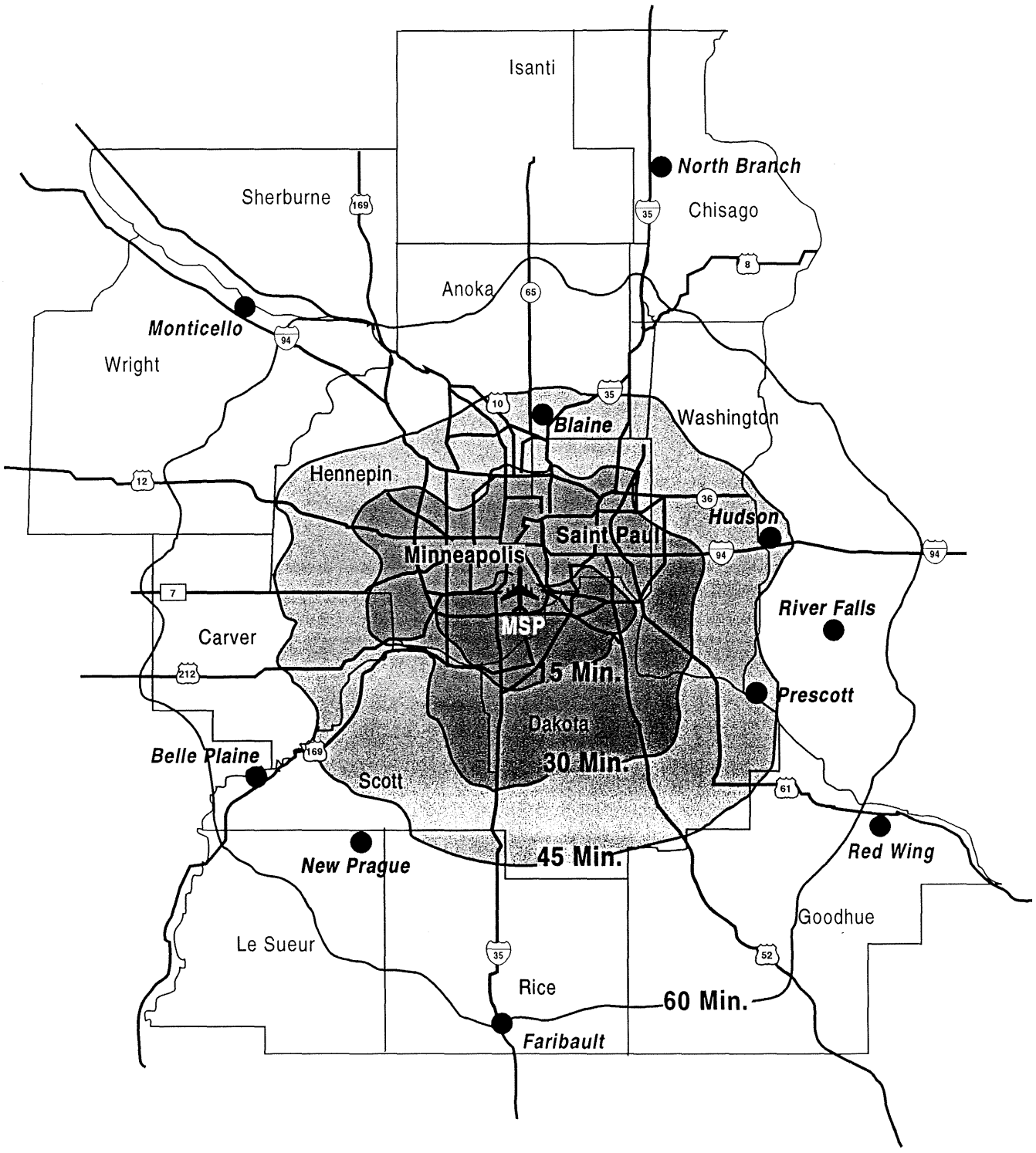
Undivided Roadway — 29,300 Airport Average Daily Traffic

N

HNTB

Figure W-5

2020 Daily Vehicular Traffic - No Action Alternative

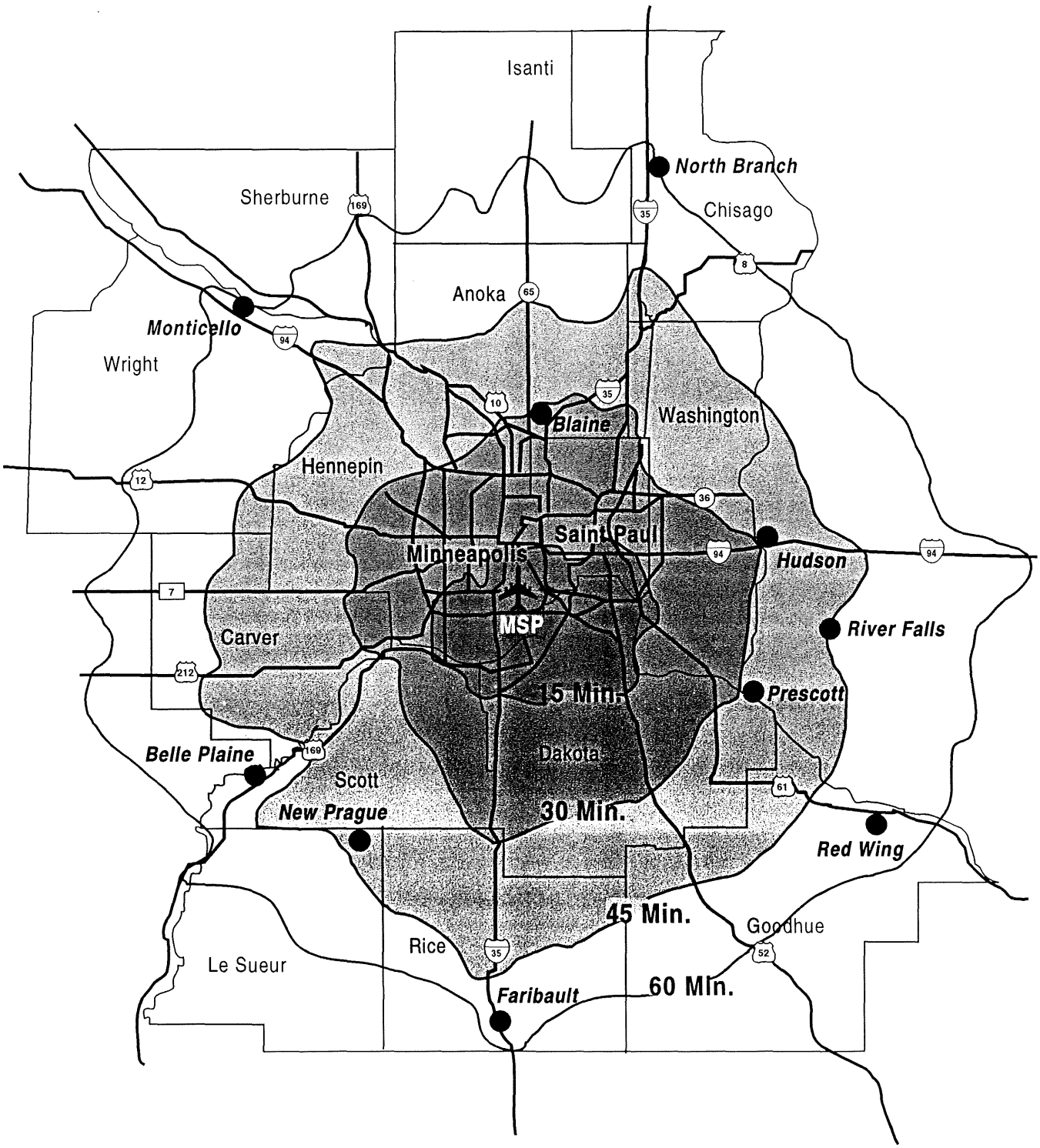



Source: Metropolitan Council

HNTB

Figure W-6

2020 Travel Times (PM Peak) - No Action Alternative




Source: Metropolitan Council

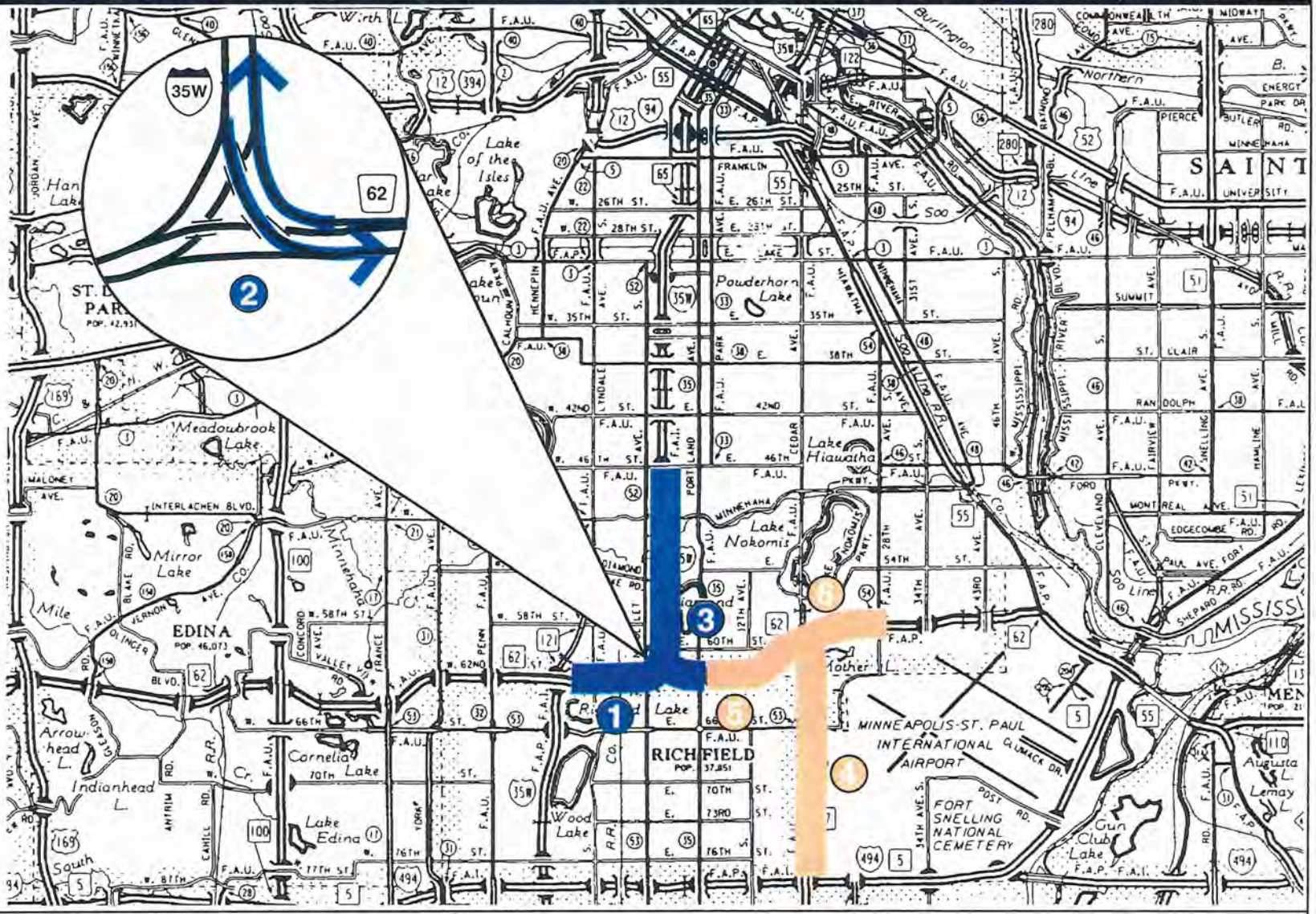
HNTB

Figure W-7

2020 Travel Times (Off Peak) - No Action Alternative

If Planned improvements are not made to I-35W and I-494, the following segments will require additional capacity:

1. TH 62 through the TH 62/ I-35W common section.
2. The ramps from southbound I-35W to eastbound TH 62 and from westbound TH 62 to northbound I-35W.
3. I-35W, north of TH 62.
4. TH 77, from TH 62 to I-494 (additional lane in each direction).
5. TH 62, from TH 77 to the I-35W common section (additional lane in each direction).
6. TH 62/TH 77 interchange to accomodate the new West Terminal.




2020 Improvements Required due to Airport Alternative

2020 Improvements Required under MSP alternative & No-Action Alternative

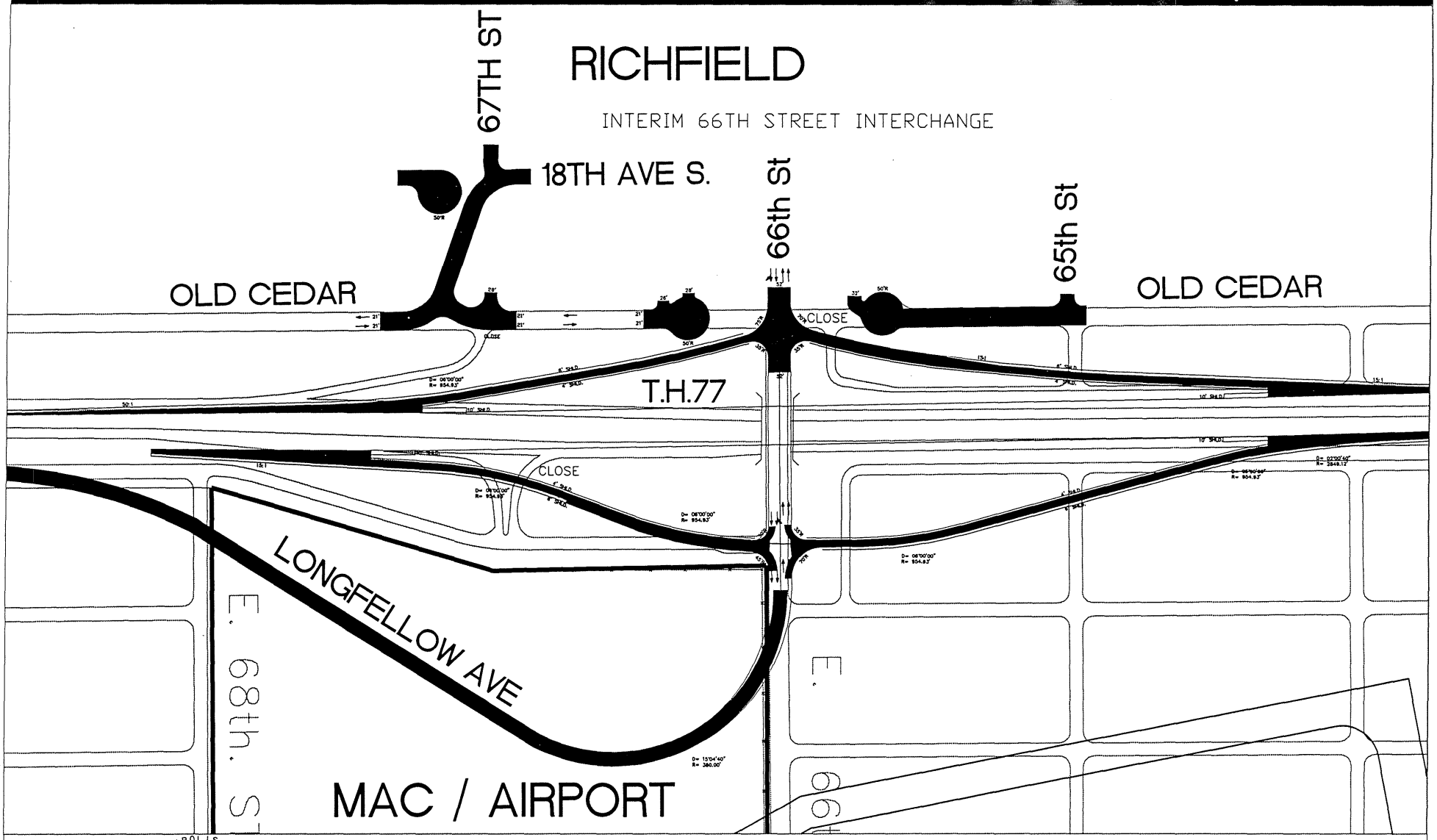
Source: Mn/DOT

HNTB

MAC Minneapolis Saint Paul Metropolitan Airports Commission

Figure W-8

## 2020 Highway Improvements - MSP & No Action Alternatives




Source: HNTB

HNTB

Figure W-9

2010 Highway Improvements - MSP 2010 LTCP

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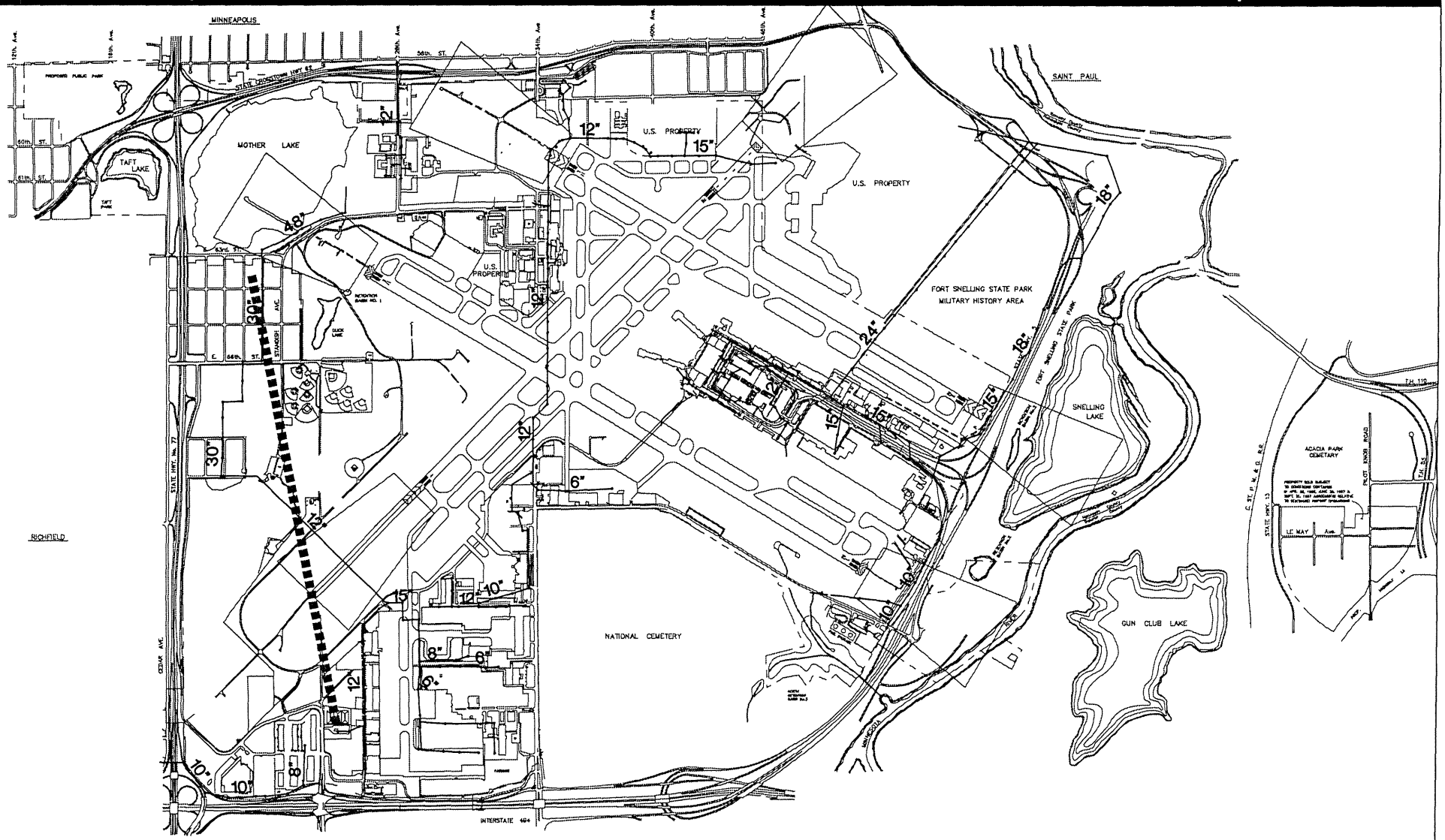


New Runway, MSP Alternative

Source: HNTB

0 1,250 2,500

Scale in Feet

N

HNTB

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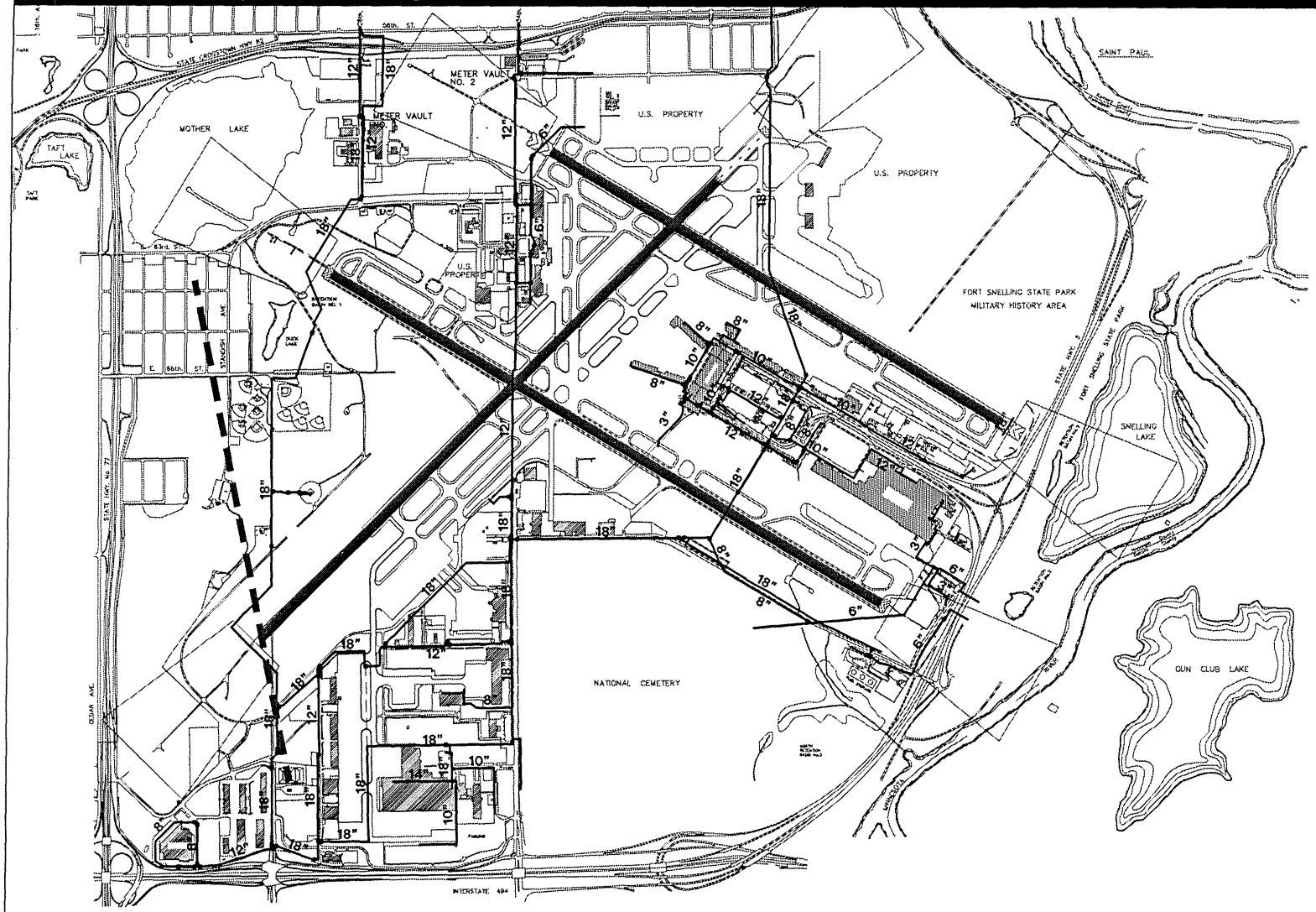
Figure Z-1

**Existing MSP Sanitary Sewer Layout**




Source: TKDA

**New Runway, MSP Alternative**

0 1,250 2,500

Scale in Feet

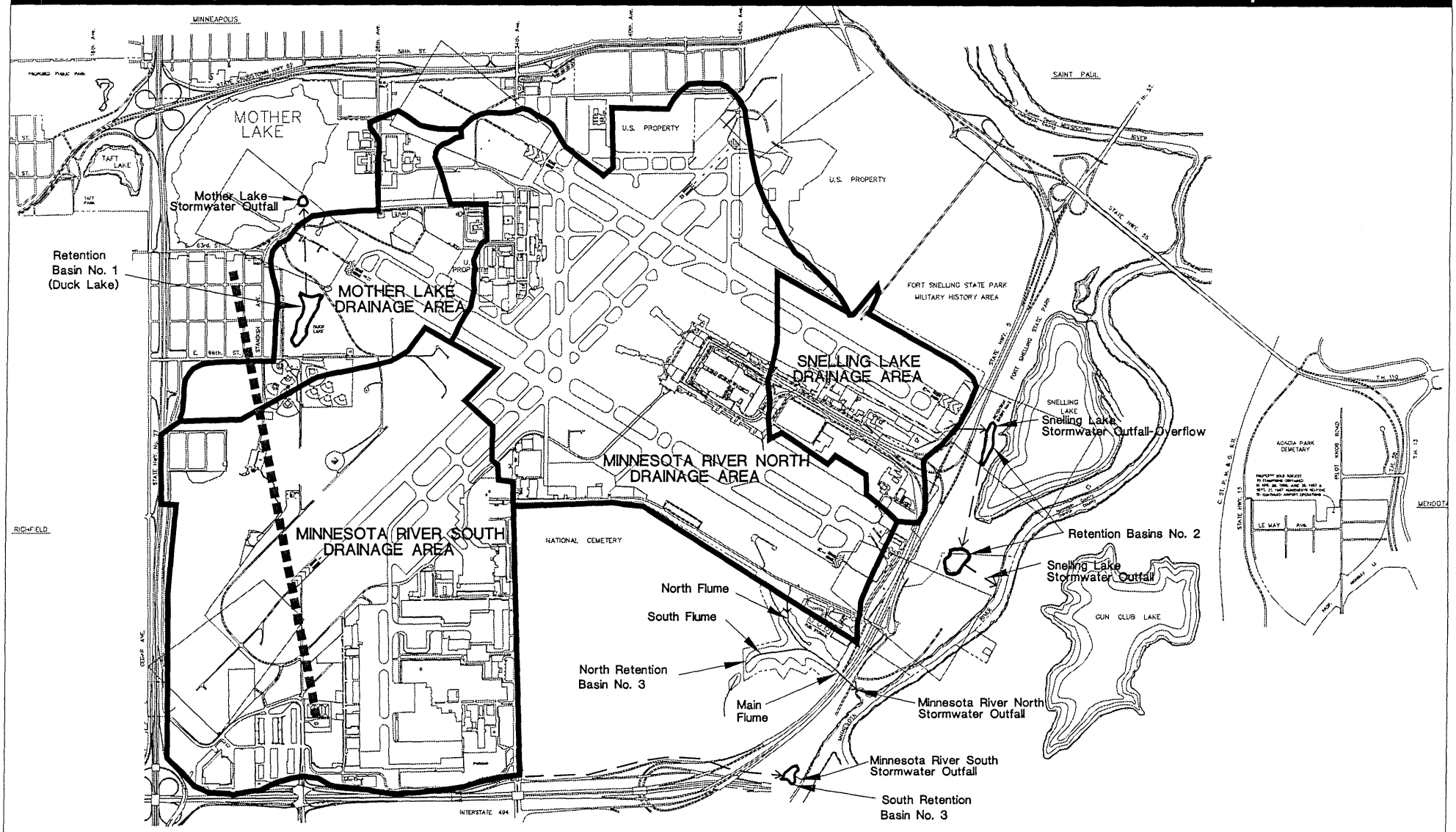
N

HNTB

MAC Minneapolis Saint Paul Metropolitan Airports Commission

Figure AA-1

**Existing MSP Watermain Layout**




■■■■■■ New Runway, MSP Alternative

Source: B.A. Liesch Associates, Inc.

0 1,500 3,000

Scale in Feet

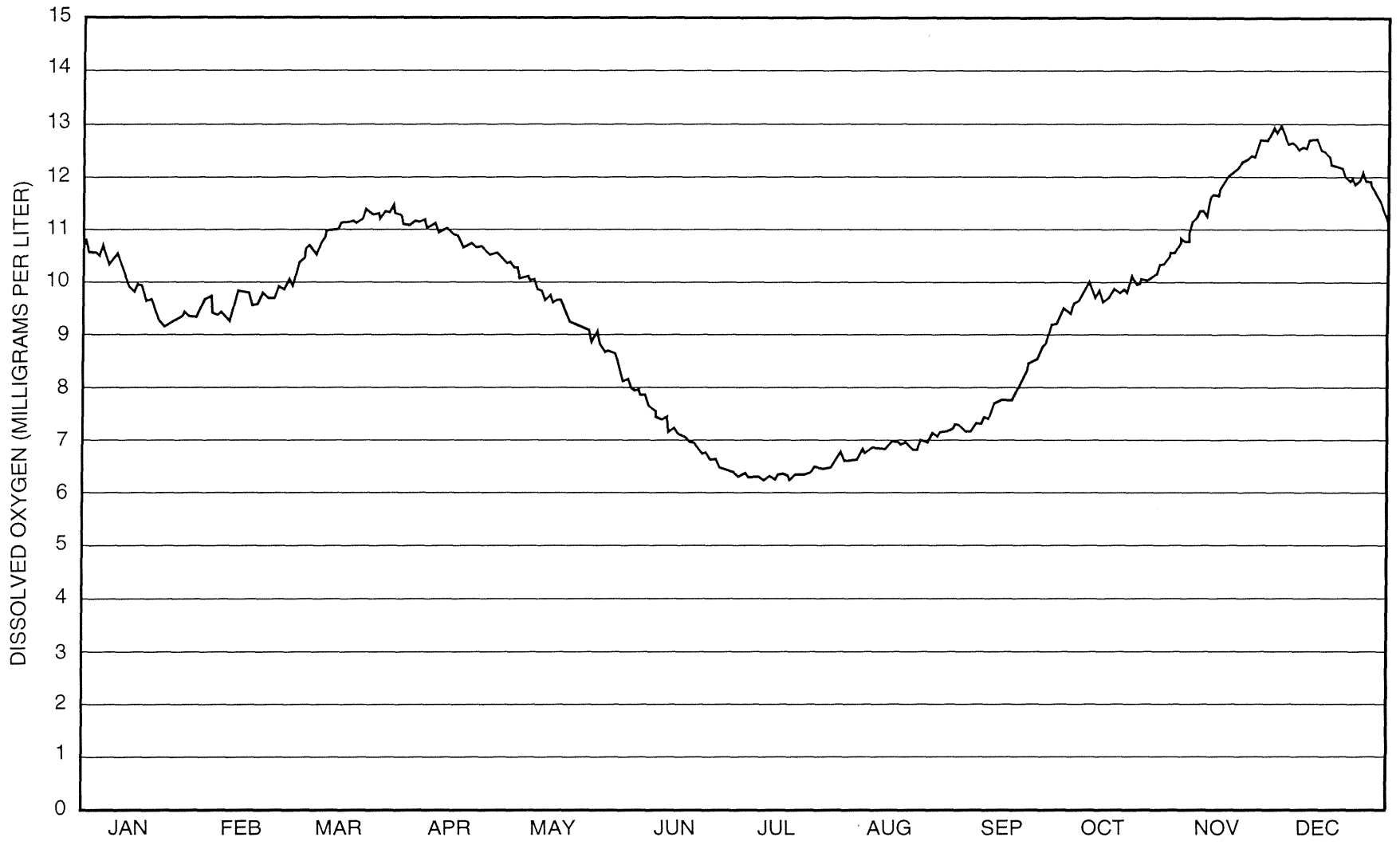
N

HNTB

MAC Minneapolis Saint Paul Metropolitan Airports Commission

Figure BB-1

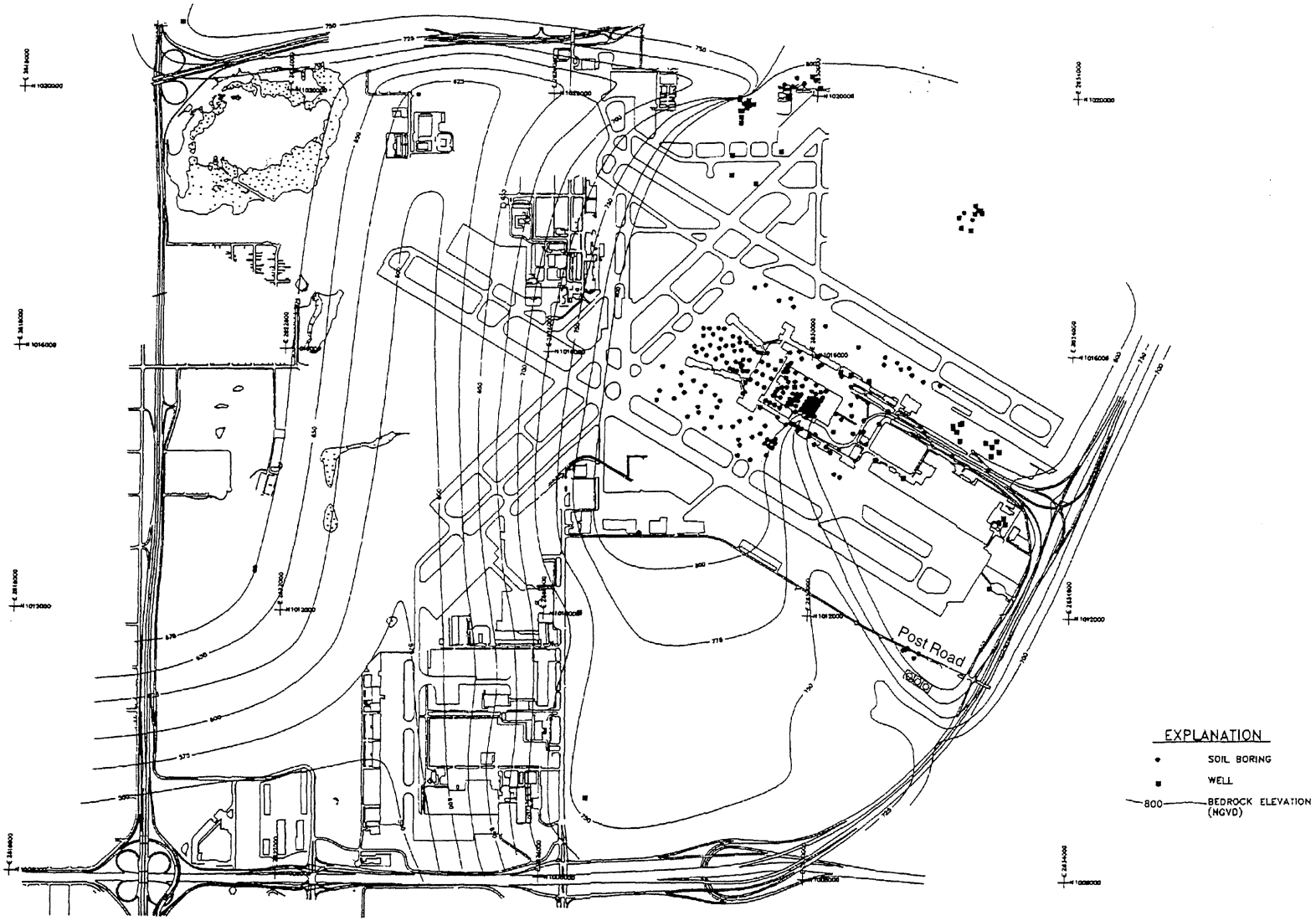
MSP Watershed Boundaries




Source : B. A. Liesch Associates, Inc.



Minnesota River Dissolved Oxygen Concentrations, Fort Snelling Station




Source : B. A. Liesch Associates, Inc.

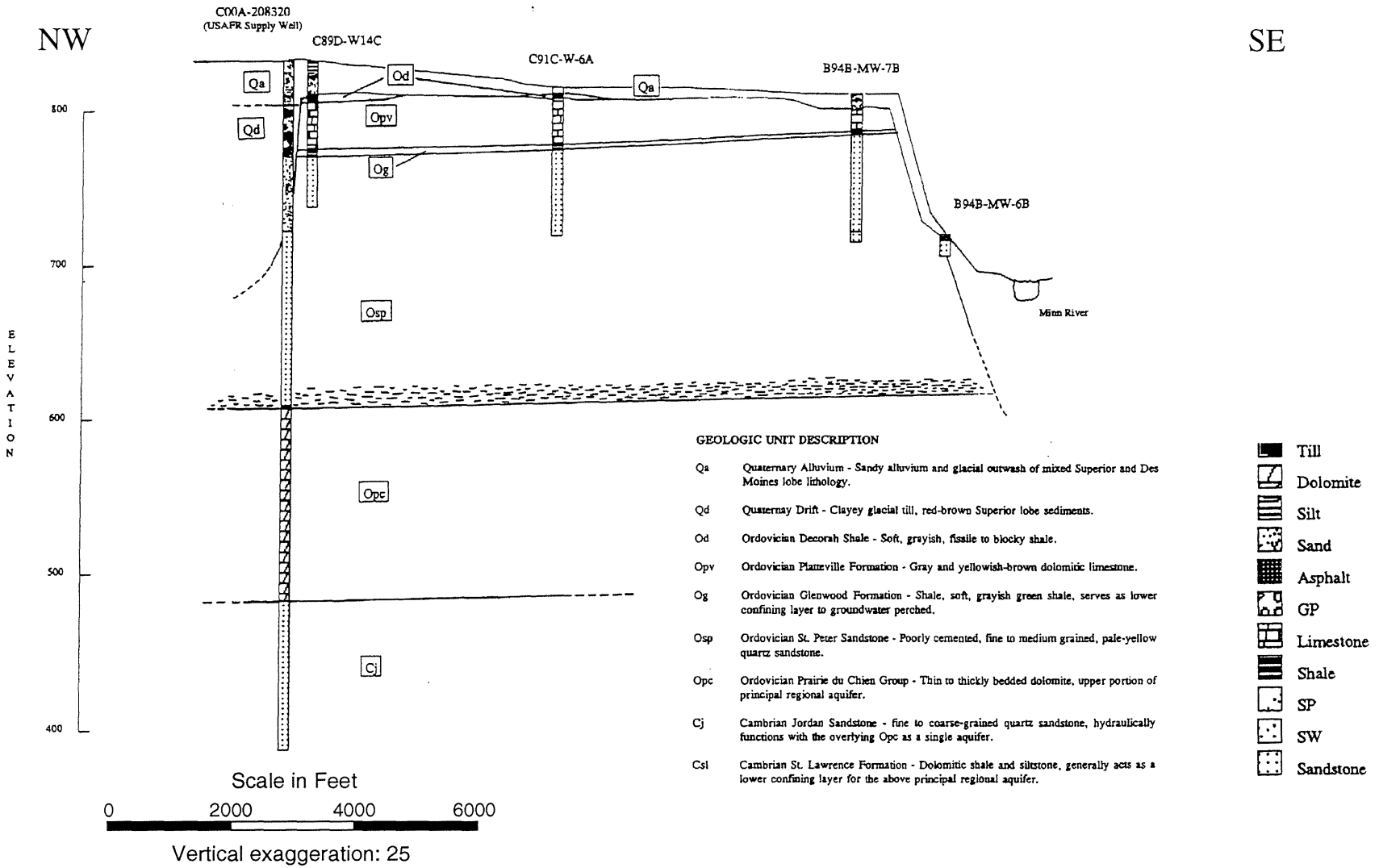
Scale in Feet 0 3000

N

HNTB

Figure CC-1

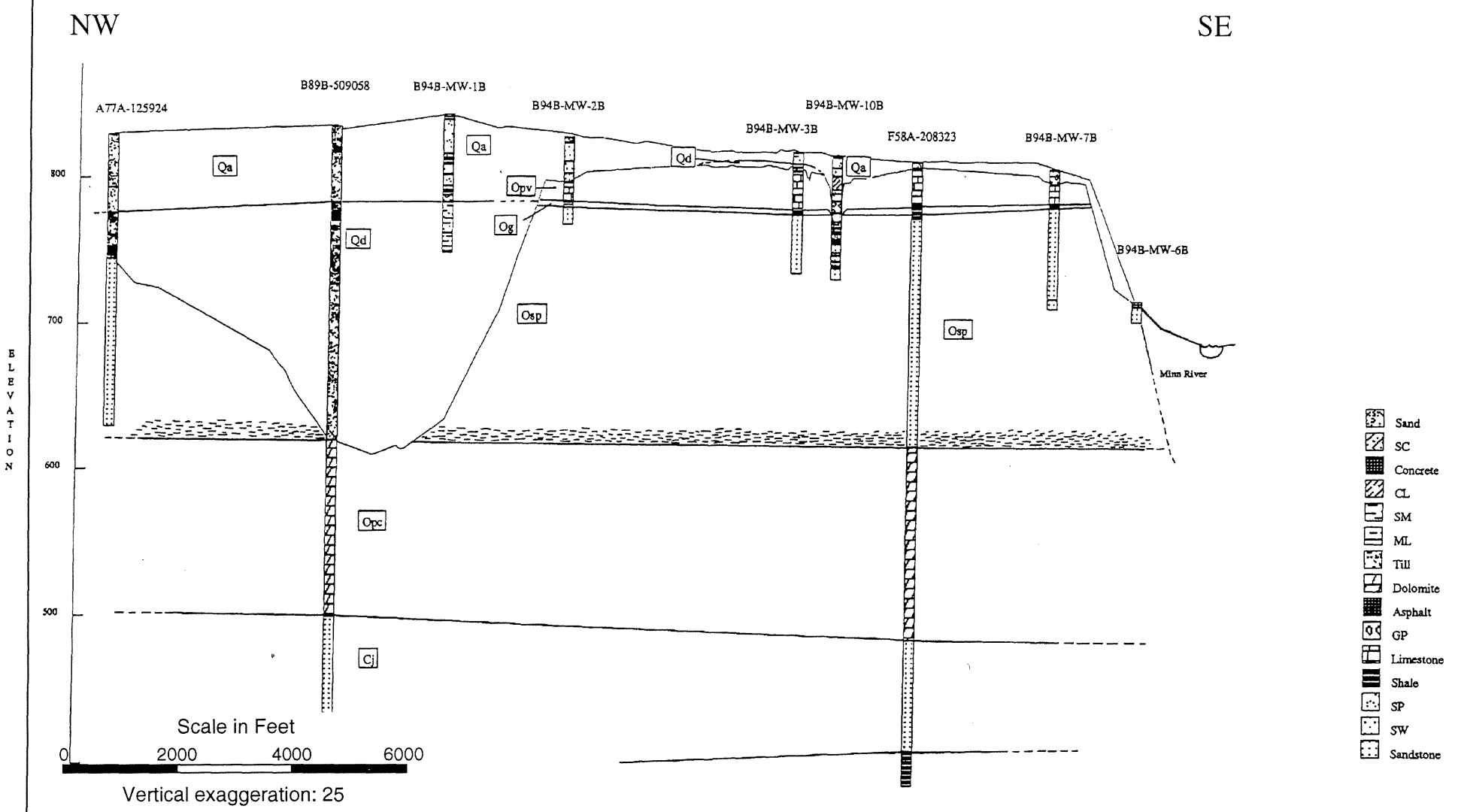
Bedrock Topography and Relevant Data Points - MSP and No Action Alternatives



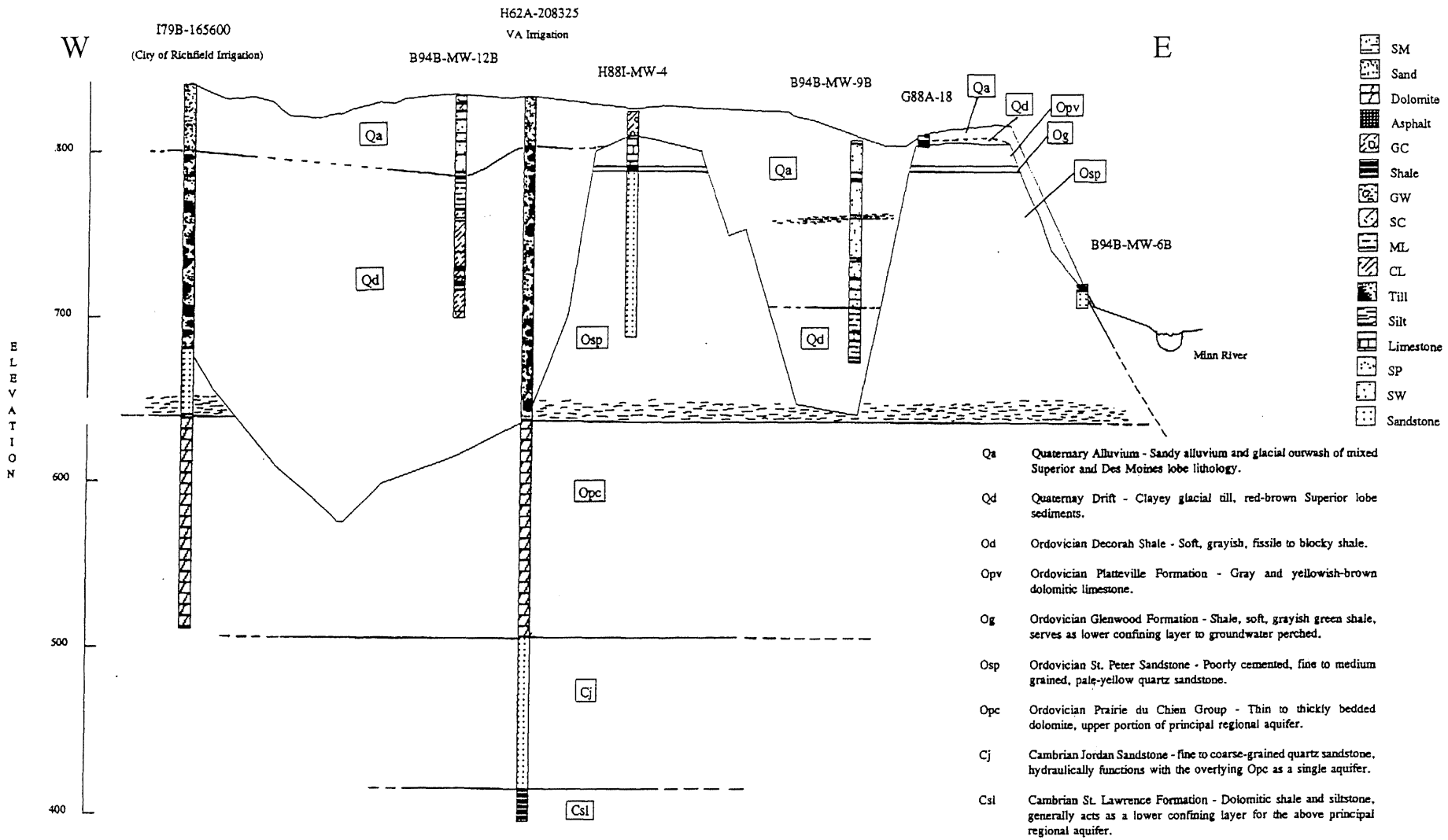

Source : B. A. Liesch Associates, Inc.



Geologic Cross Section A-A' (see Figure CC-5)




Source : B. A. Liesch Associates, Inc.




Qa Quaternary Alluvium - Sandy alluvium and glacial outwash of mixed Superior and Des Moines lobe lithology.

Qd Quaternay Drift - Clayey glacial till, red-brown Superior lobe sediments.

Od Ordovician Decorah Shale - Soft, grayish, fissile to blocky shale.

Opv Ordovician Platteville Formation - Gray and yellowish-brown dolomitic limestone.

Og Ordovician Glenwood Formation - Shale, soft, grayish green shale, serves as lower confining layer to groundwater perched.

Osp Ordovician St. Peter Sandstone - Poorly cemented, fine to medium grained, pale-yellow quartz sandstone.

Opc Ordovician Prairie du Chien Group - Thin to thickly bedded dolomite, upper portion of principal regional aquifer.

Cj Cambrian Jordan Sandstone - fine to coarse-grained quartz sandstone, hydraulically functions with the overlying Opc as a single aquifer.

Csl Cambrian St. Lawrence Formation - Dolomitic shale and siltstone, generally acts as a lower confining layer for the above principal regional aquifer.

Vertical exaggeration: 25

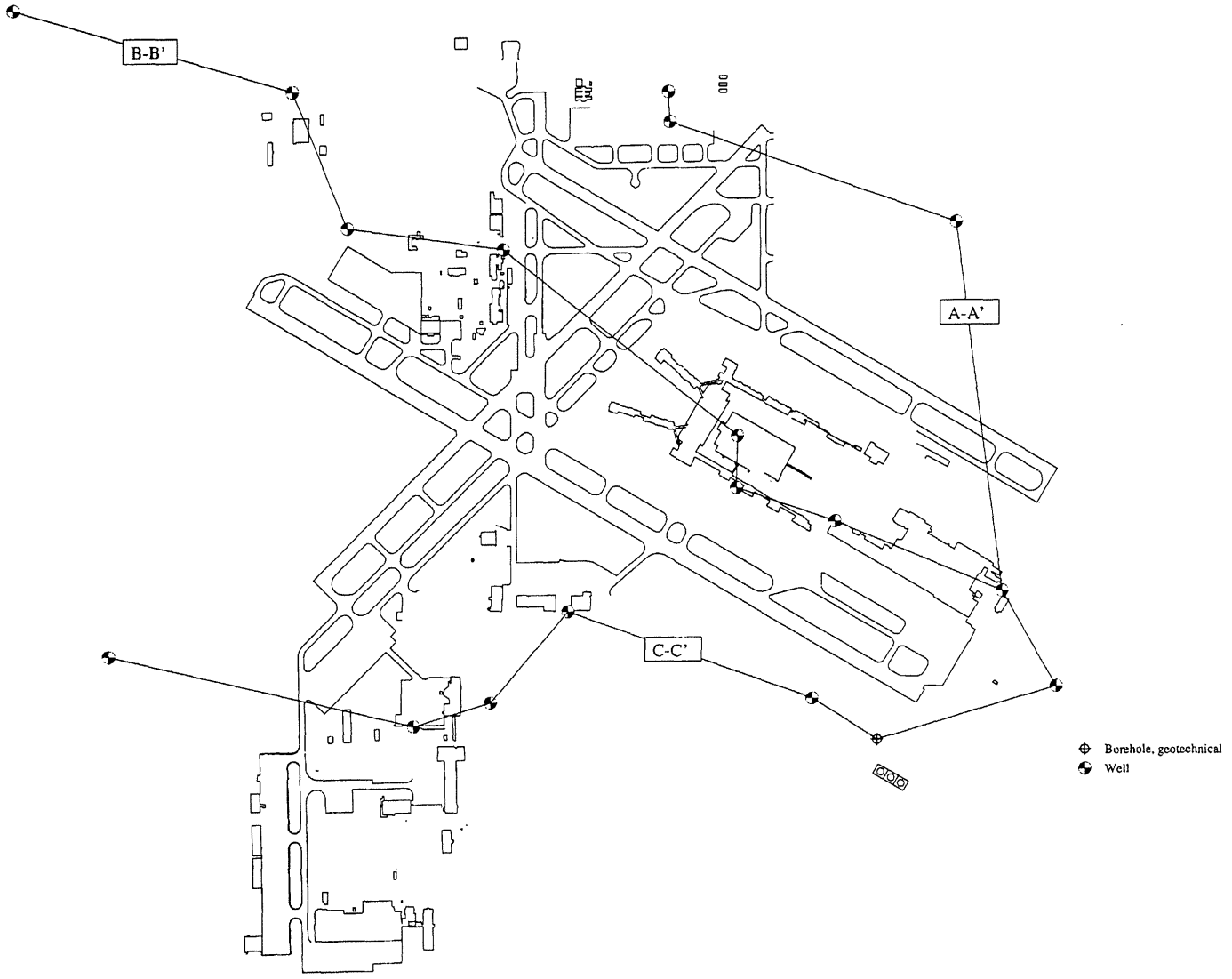
Source : B. A. Liesch Associates, Inc..

Scale in Feet
0 2000 4000 6000

HNTB

Figure CC-4

Geologic Cross Section C-C' (see Figure CC-5)




Source : B. A. Liesch Associates, Inc.

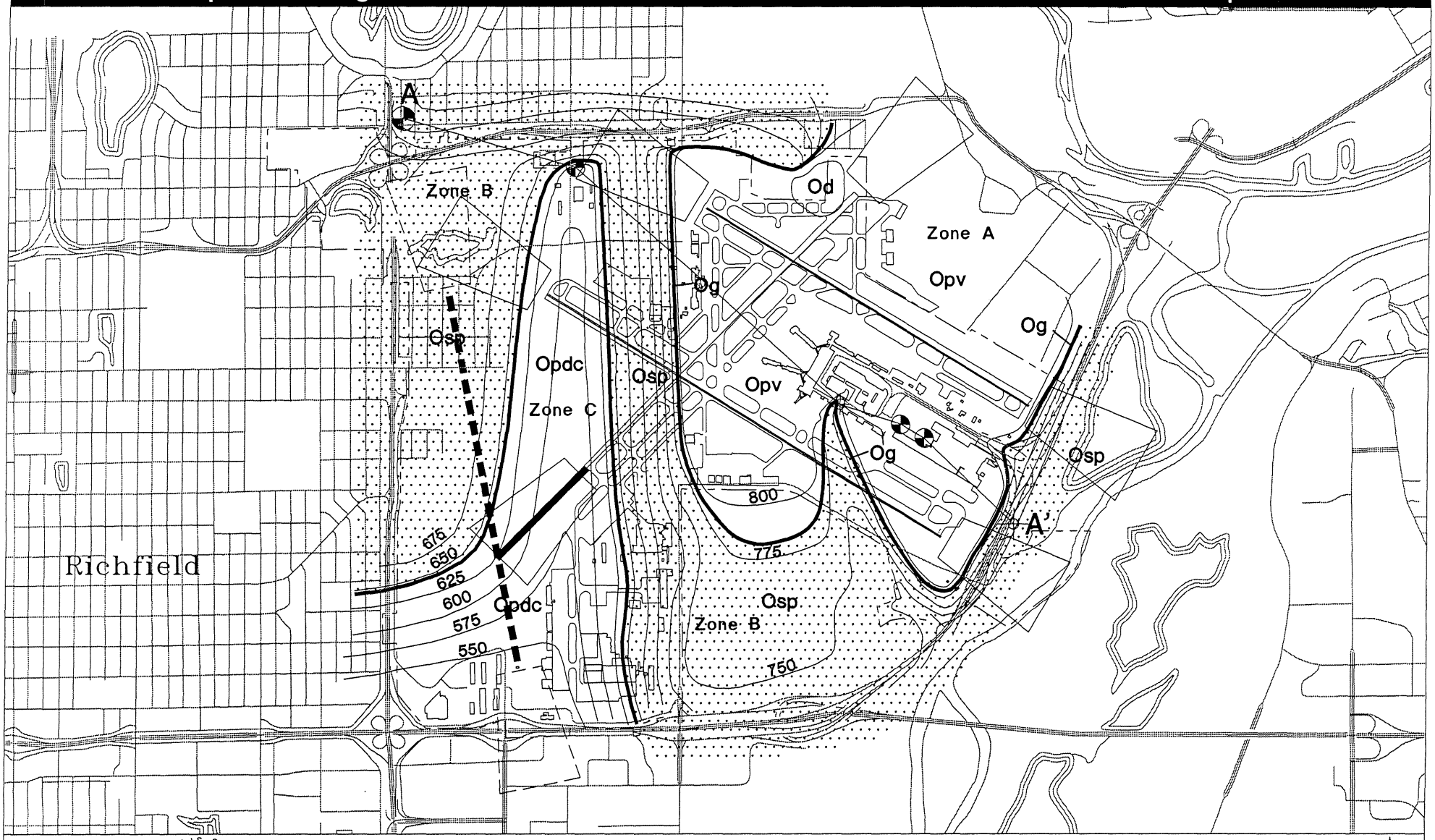
Scale in Feet
0 2000 4000 6000

N

HNTB

Figure CC-5

Geologic Cross Section Locations



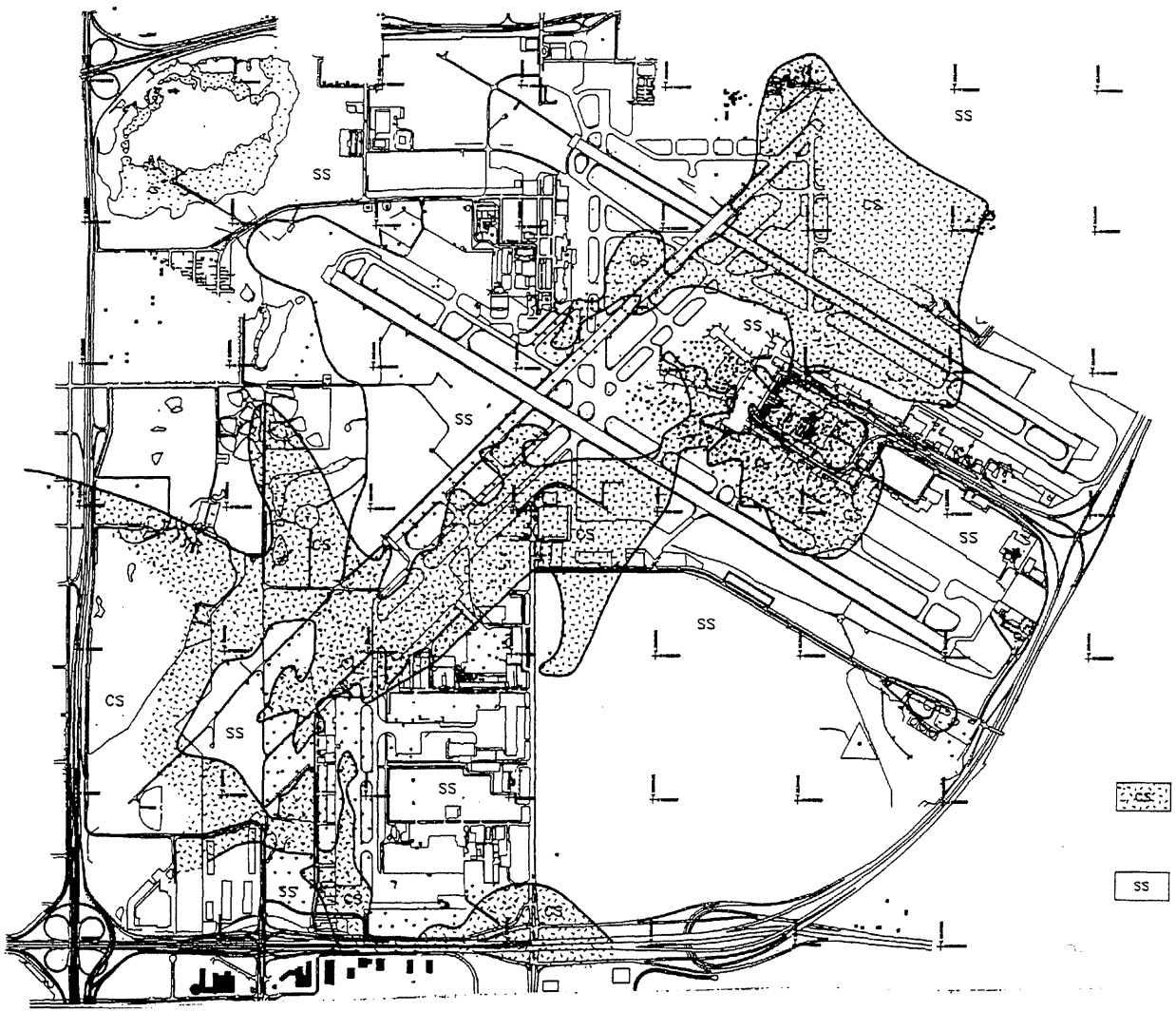

HNTB

MAC Minneapolis Saint Paul Metropolitan Airports Commission

Figure CC-6

Source: B.A. Liesch Associates, Inc.

**Bedrock Geology - MSP and No Action Alternatives**




Source : B. A. Liesch Associates, Inc.

Scale in Feet 0 3000

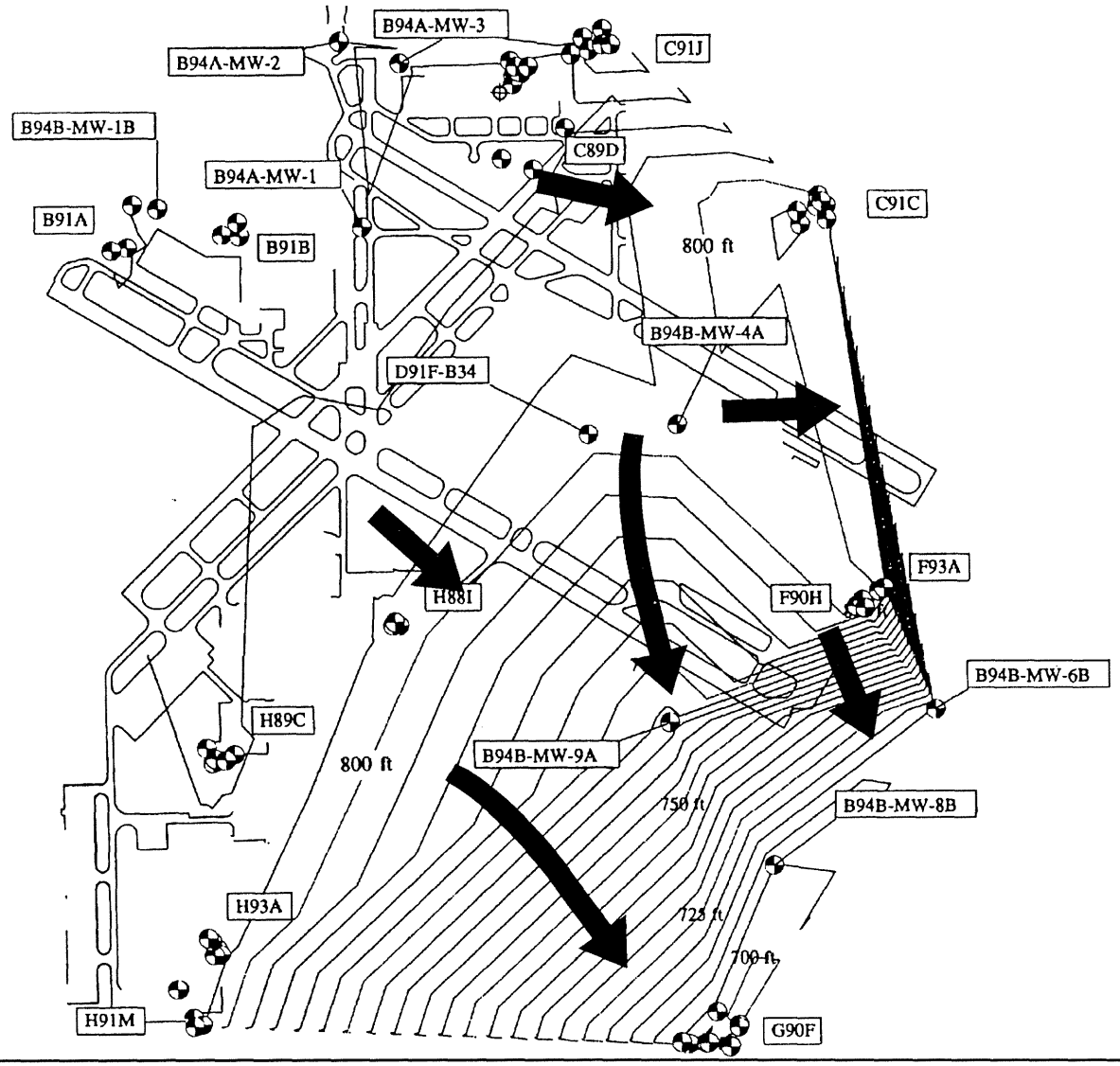
N

HNTB

MINNEAPOLIS SAINT PAUL METROPOLITAN AIRPORTS COMMISSION MAC

Figure CC-7

Surficial Unconsolidated Deposits



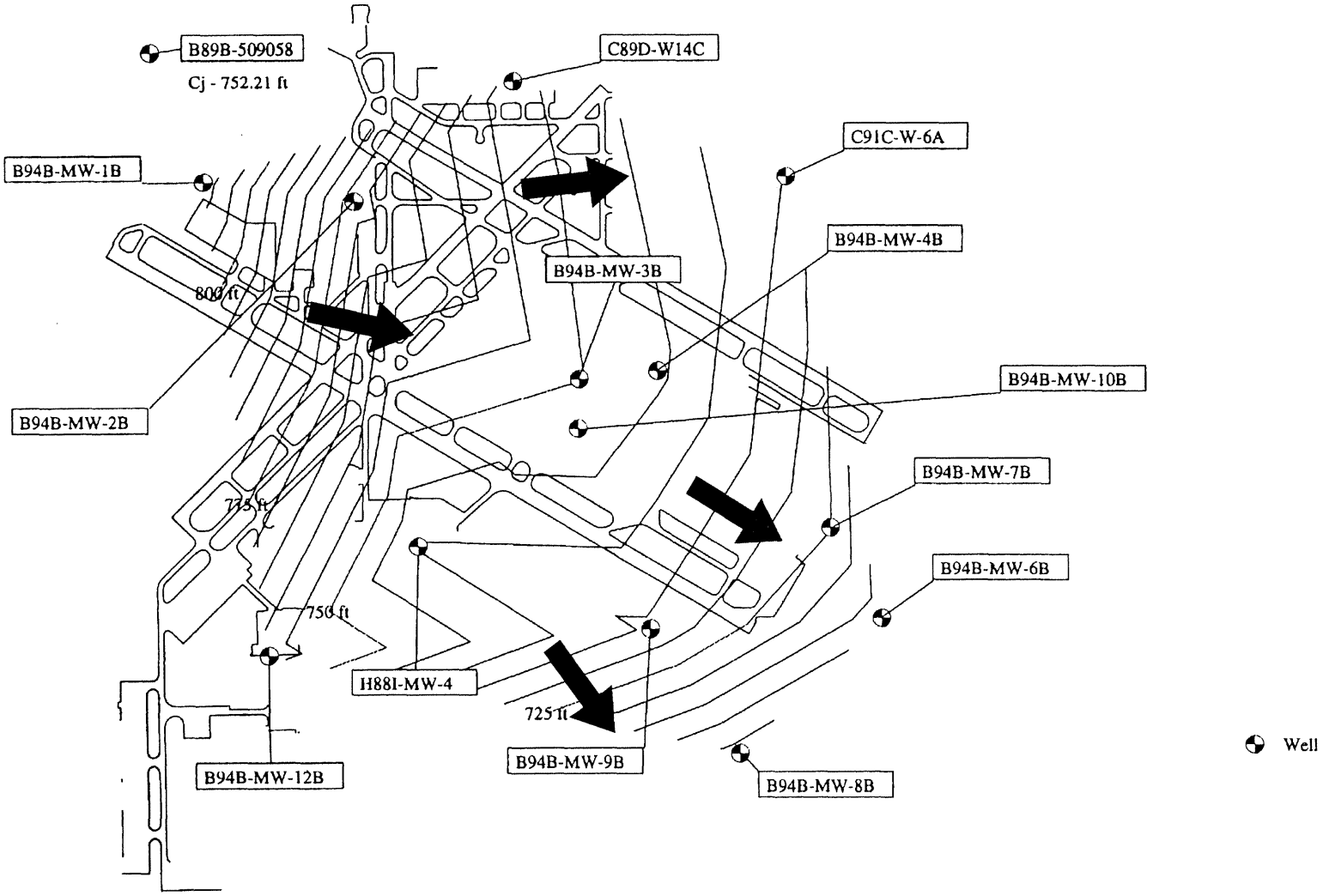

Source : B. A. Liesch Associates, Inc.

Scale in Feet
0 2000 4000 6000

N



Generalized Groundwater Flow Direction - Perched Water Table




Source : B. A. Liesch Associates, Inc.

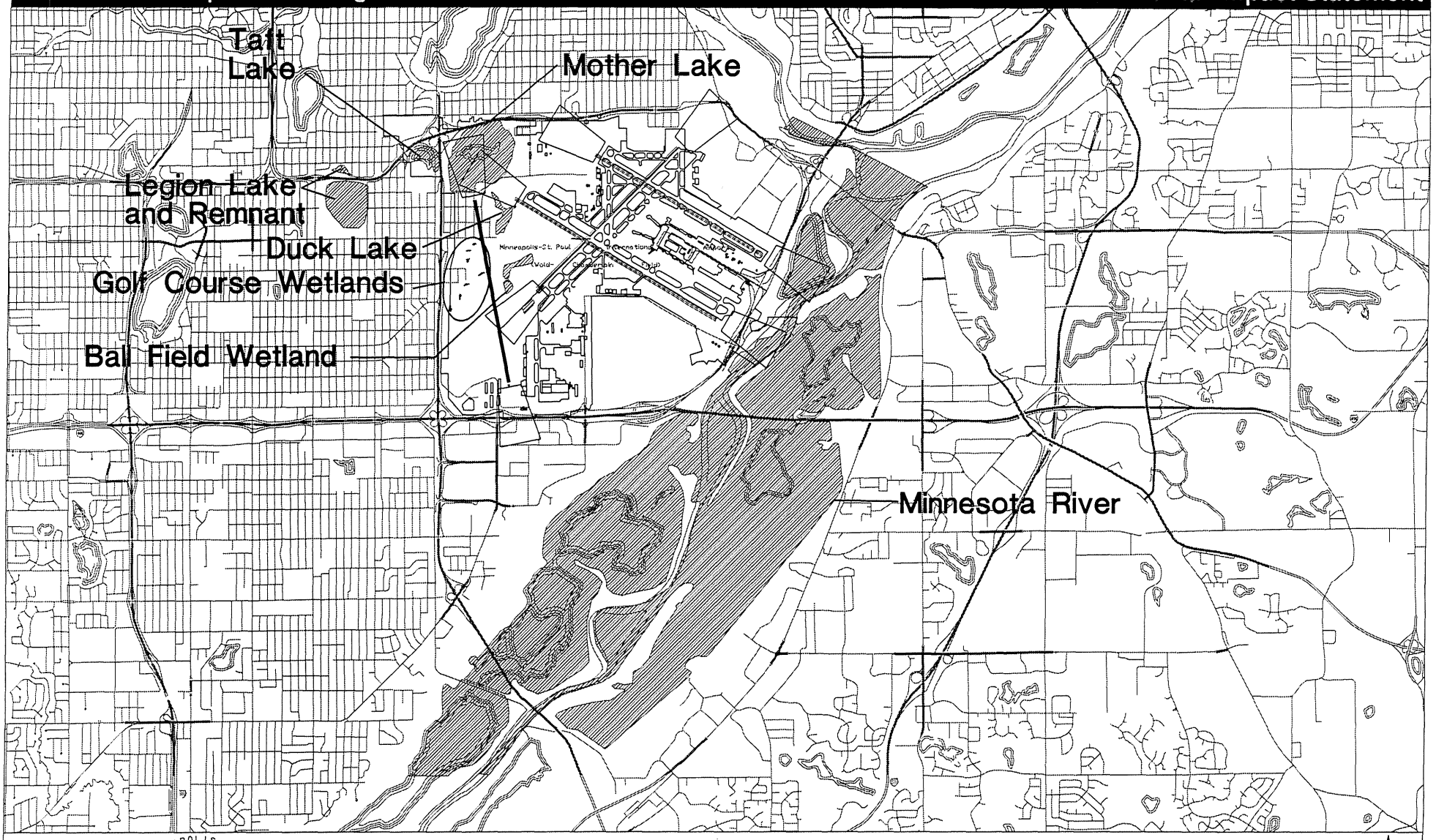
Scale in Feet
0 2000 4000 6000

N

HNTB

Figure CC-9

Generalized Groundwater Flow Direction - St. Peter Water Table Aquifer




MINNEAPOLIS SAINT PAUL METROPOLITAN AIRPORTS COMMISSION MAC

New Runway, MSP Alternative

Source: Peterson Environmental

Wetland Areas

0 3,000 6,000

Scale in Feet

N

HNTB

Figure DD-1

Wetland - MSP and No Action Alternatives

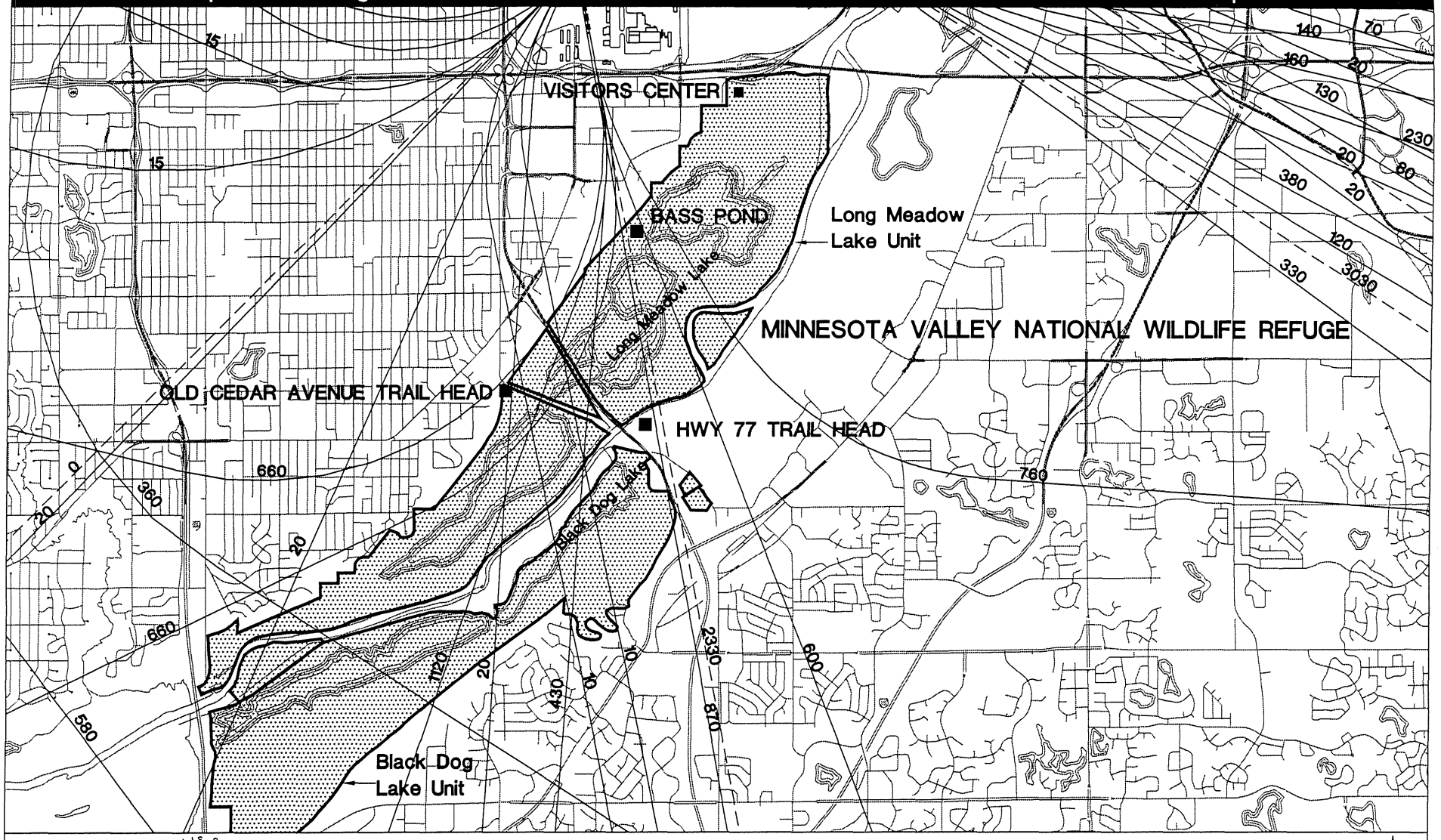
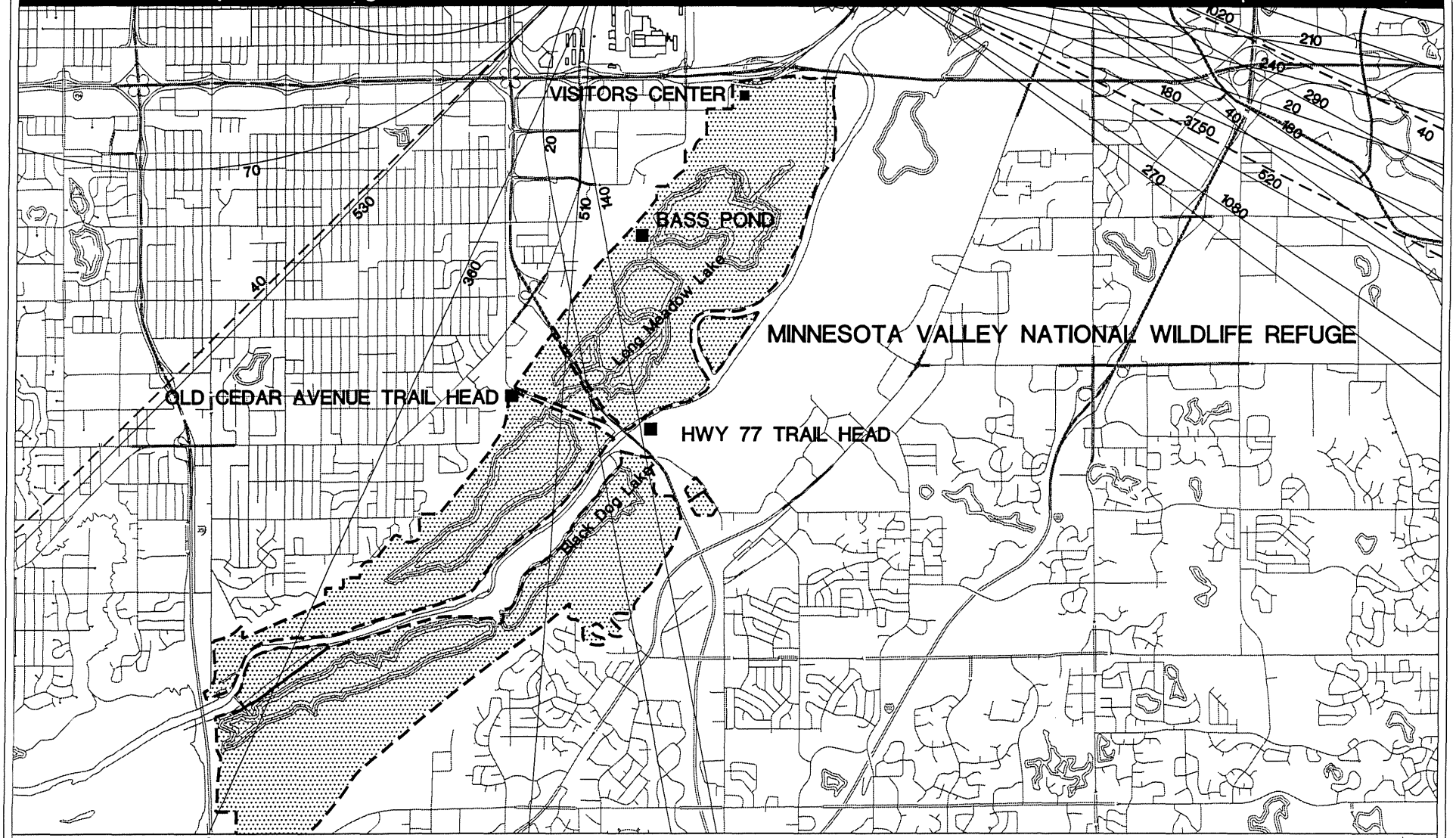



Figure FF-1

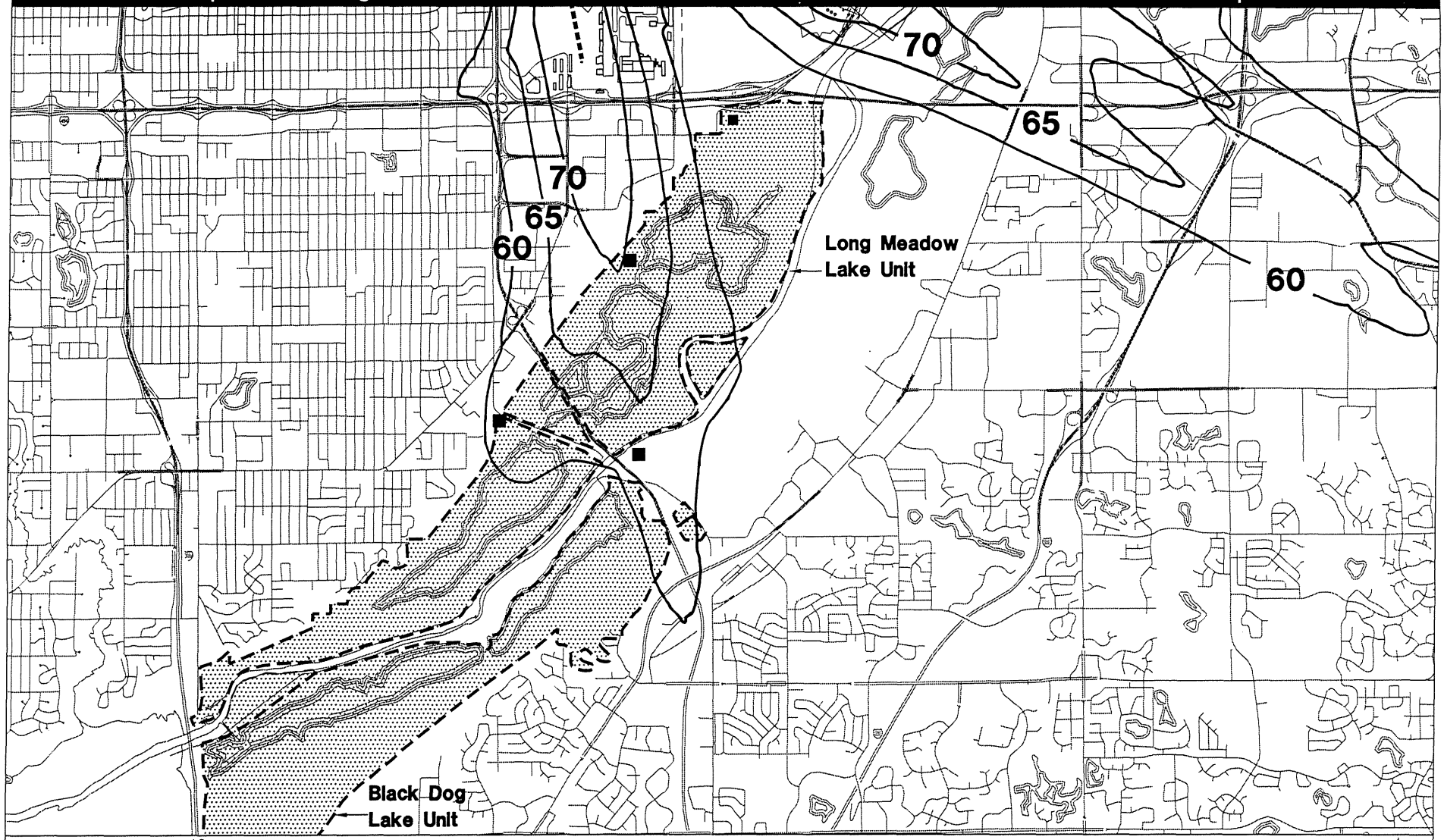
**2005 Overflights of Wildlife Refuge - MSP Alternative**




HNTB

Figure FF-2

**2005 Overflights of Wildlife Refuge - No Action**

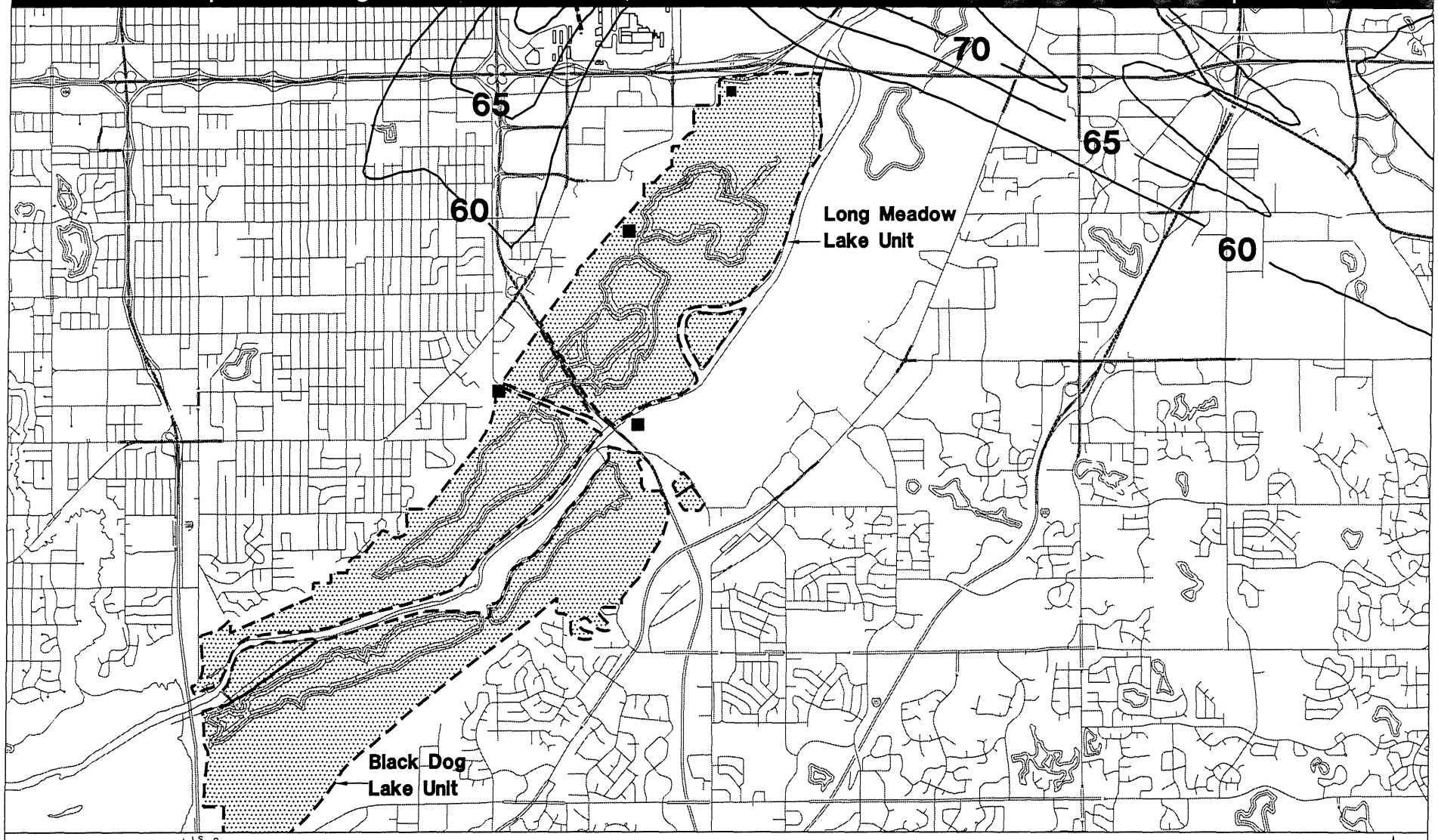



Source: HNTB, Peterson Environmental

HNTB

Figure FF-3

MSP Alternative 2005 DNL Contours - Wildlife Refuge




Source: HNTB, Peterson Environmental

HNTB

Figure FF-4

No Action Alternative 2005 DNL Contours - Wildlife Refuge

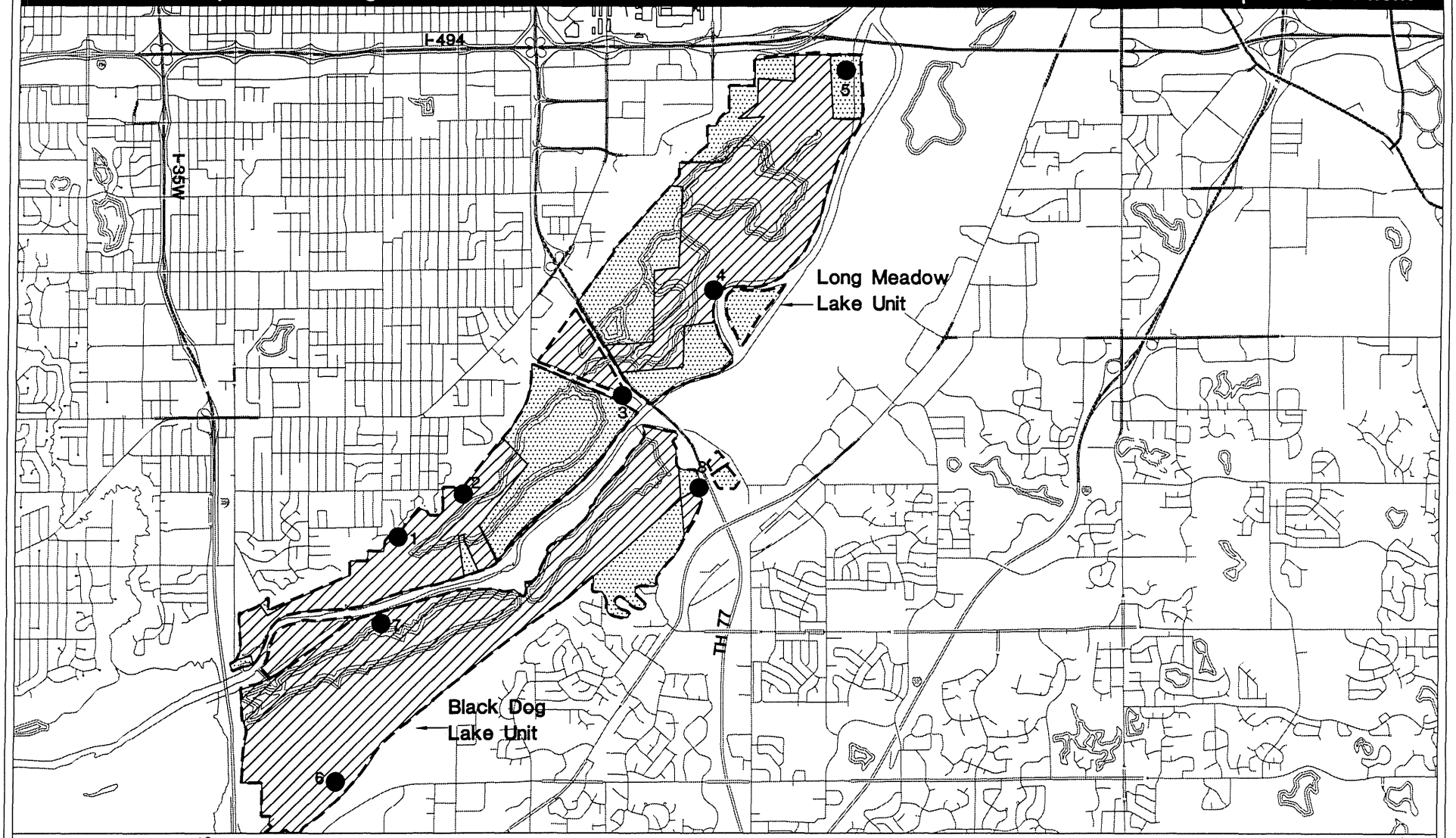



Figure FF-5

**Wildlife Refuge Ownership and Noise Monitoring Sites**

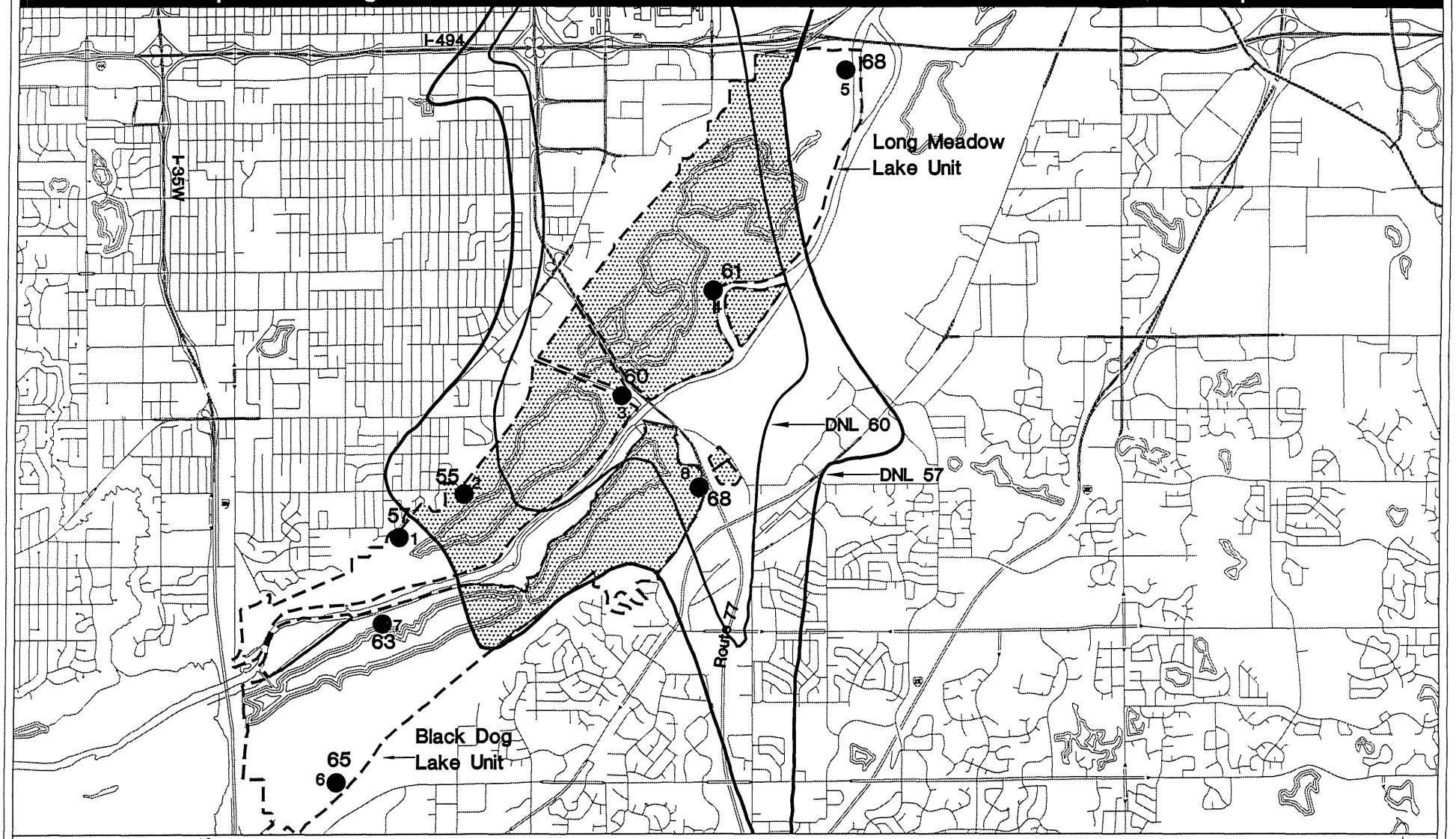



Figure FF-6

**Wildlife Recreation Areas Within 2005 MAC High Forecast DNL Contours**

STATE OF MINNESOTA
OFFICE OF THE GOVERNOR
130 STATE CAPITOL
SAINT PAUL 55155

ARNE H. CARLSON
GOVERNOR

April 24, 1997

The Honorable Rodney Slater
Secretary of Transportation
U. S. Department of Transportation
400 - 7th Street S. W.
Washington, D.C. 20590

Dear Secretary Slater:

This is to certify that the projects associated with the Dual Track Planning process for the Minneapolis-St. Paul International Airport (including the construction of a new runway : Runway 17/35) have been reviewed for compliance with Section 102(2)(c) of the National Environmental Policy Act and with Section 509(b) of the Airport and Airway Improvement Act of 1982.

I have been given reasonable assurances by the reviewing agencies that these projects will be located, designed, constructed and operated to comply with all applicable air and water quality standards.

Warmest regards.

Arne H. Carlson

ARNE H. CARLSON
Governor

TL 726.4 .T9 D868 1998

Dual track airport planning process, Twin Cities Metro

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