

3. AVIATION FORECASTS

3.1. INTRODUCTION

Evaluation of current and forecasted aviation activity is vital in preparing an Airport Master Plan. Aviation forecasts are necessary to evaluate current and potential future airport facility safety and capacity requirements.

Aviation forecasts are based on numerous factors, including socio-economic data, local, regional, and national aviation trends, and FAA aviation forecasting methodology. Guidance used to help develop aviation activity forecasts includes the following resources:

- *Forecasting Aviation Activity by Airport* (July 2001), GRA, Inc., prepared for FAA.
- *Model for Estimating General Aviation Operations at Non-Towered Airports Using Towered and Non-Towered Airport Data* (July 2001), GRA, Inc., prepared for FAA.

Forecasts for general aviation airports commonly include based aircraft, annual operations, and critical aircraft projections over a 20-year planning period. The time period for the forecasts at SGS are from the base year, 2012, through 2032. Based aircraft counts are split by the following aircraft types: single-engine piston, multi-engine piston, turboprop, turbojet, rotorcraft, and experimental aircraft. Annual operations are classified as local or itinerant. *Forecasting Aviation Activity by Airport* defines local operations as “aircraft operating in the traffic pattern or aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches at the airport.” Itinerant operations are defined as operations “other than local operations.” Critical aircraft projections are used to determine the airport design standards.

Forecasts developed are unconstrained; they identify the actual aviation demand for the facility regardless of limiting factors such as hangar availability or runway length, etc. If the aviation forecast differs by more than 10 percent from what is published in the FAA Terminal Area Forecast (TAF), additional FAA coordination is required.

3.2. USER SURVEY SUMMARY

To assist in determining the number of local aviation operations at Fleming Field, and to help determine local aviation needs and trends, airport user surveys were conducted. Two surveys were sent to either existing or potential recreational users or business users of the airport.

One survey, the Airport User Survey was intended for pilots who are based at the airport, or use the airport for recreational flights, as well as some small business operators. A second user survey sent out was the Business User Airport Survey. This survey was intended to gather information about the businesses that use or benefit from the airport. Copies of the Airport User Survey and the Business User Airport Survey in addition to detailed results are located in **Appendix A**.

The service area for Fleming Field covers the area half way between the airport and the surrounding airports with similar facilities. Since one advantage to flying is reduced travel time, it is assumed that pilots will use the airport closest to their residence that has the facilities to meet their needs. The service area for Fleming Field includes the northwest quadrant of Dakota County. User Surveys were sent to registered pilots within the service area in addition to registered pilots within the 30 minute drive time of the airport (see **Figure 3-1** at the end of this chapter).



3.2.1. AIRPORT USER SURVEY

The Airport User Survey at Fleming Field was completed in February 2013. Out of the 300 surveys distributed, 75 were completed and returned (25 percent) with usable data indicating an existing or future use of the airport. One survey question asked pilots to list their average annual operations from the past (2007-2011), existing (2012), and future (2013-2017) years. **Table 3-1** represents the surveys with responses to this question.

**Table 3-1
Local User Survey (2013)**

| Year | Aircraft | Annual Operations |
|-----------|----------|-------------------|
| 2007-2011 | 84 | 8,476 |
| 2012 | 84 | 7,900 |
| 2013-2017 | 84 | 10,140 |

Source: Fleming Field Airport User Survey (2013)

Of the 75 surveys that were returned, 84 aircraft were reported, of which 47 are based at Fleming Field. This represents 18 percent of the based aircraft at Fleming Field. The remaining 37 aircraft discussed in the user survey were based at airports within 20 nautical miles of Fleming Field.

Users indicated their total annual operations at Fleming Field declined from 2007 to 2012, however, were predicting an increase over the next five years. The sample size of the user survey was determined to be too low to make definitive conclusions on growth trends, however, this information was used to supplement known information about existing and potential users at Fleming Field.

Another goal of the survey was to determine what areas of development are limiting pilots from using Fleming Field. Two out of 74 respondents stated that the lack of a fuel truck was limiting their operations. Approximately 11 percent of respondents reported the lack of a precision approach and the difficulty in obtaining clearance for approach or departure operations limits their use of Fleming Field. In addition eight out of 75 respondents indicated the lack of an instrument approach to Runway 16 was a limiting factor for their operations.

Survey recipients were asked to estimate the total annual level of spending associated with their aircraft at their based airport. The average spending per aircraft was \$8,734 (see **Table 3-2**).

**Table 3-2
Annual Spending per Aircraft (Based on User Survey results)**

| Spending Category | Aircraft Operators Based at Fleming Field | Aircraft Operators Not Based at Fleming Field | All Respondents |
|--------------------------|---|---|------------------|
| Fuel | \$186,582 | \$99,600 | \$286,182 |
| Maintenance | \$200,822 | \$62,400 | \$263,222 |
| Storage | \$87,890 | \$82,414 | \$170,304 |
| Taxes (Aviation Related) | \$32,317 | \$18,970 | \$51,287 |
| Other | \$16,205 | \$17,525 | \$33,730 |
| Total | \$523,816 | \$280,909 | \$804,725 |

Source: Fleming Field Airport User Survey (2013)

3.2.2. BUSINESS USER SURVEY

A separate business user survey was distributed to businesses that utilize Fleming Field. Seven businesses responded to the survey. These businesses employ 133 people, perform 1,260 flights annually, generate nearly \$27 million in gross sales revenue, and spend more than \$8 million at Fleming Field.

Below is a summary of some of the businesses that utilize Fleming Field and responded to the Business User Survey:

- Advanced Aviation, Inc. repairs and maintains customer owned aircraft. They perform aircraft annual maintenance inspections, 100 hour engine checks, engine and structural repair, as well as welding repair. They employ one full-time employee and 2 part-time employees at Fleming Field with an annual gross sales volume of \$100,000 in 2012.
- Alpha Zulu, LLC. is a flight school and provider of rental aircraft. They provide flight training in a Beech Skipper, Piper Warrior, and Beech Bonanza. Currently they employ one full-time employee and two part-time employees at Fleming Field. Fleming Field is used as their base, and they had a gross sales volume of \$150,000 in 2012.
- Philson Aviation provides aircraft maintenance at Fleming Field. It is a part-time operation with one employee that had a gross sales volume of \$28,000 in 2012.
- Sierra Hotel Aero, Inc. is based in a 7,200 square foot hangar at Fleming Field that manufactures and repairs sheet metal parts used on both military and civilian aircraft. Sierra Hotel Aero also provides modification and repairs to most general aviation aircraft, such as instrument panels, and specializes in the support and preservation of the North American Navion Aircraft.
- Wipaire, Inc. is a manufacturer of aircraft floats to allow aircraft to land on water. They also provide complete aircraft servicing, maintenance, avionics, painting, upholstery and aircraft sales. They employ 112 full-time employees and 7 part-time employees at Fleming Field with an annual sales volume of \$26 million in 2012.

The following businesses operate at Fleming Field, but did not respond to the Business User Survey:

- Abtec Helicopters focuses on television, aerial photography, executive transportation, and more.
- Ballistics Recovery Systems, Inc. is a manufacturer of parachute deployment systems for general aviation aircraft, military aircraft, and unmanned aerial vehicles. The company has 75 employees

with an annual sales of approximately \$9.2 million dollars and has saved approximately 312 lives to date.

- Cadotte Aero provides flight training and aircraft maintenance. They have two instructors who operate three aircraft based at Fleming Field.
- Lake and Air Pilot Shop is housed in the Wipaire Inc. hangar and provides seaplane products and accessories, as well as standard aviation supplies.
- Lysdale Flying Service owns a hangar at Fleming field that houses a replica of the Wright Brothers Flyer. The hangar is also available for transient aircraft to park overnight.

3.3. AVIATION TRENDS

3.3.1. NATIONAL, REGIONAL & STATE TRENDS

During the time period between 2001 and 2005, general aviation aircraft registered with the FAA declined nearly 3.1 percent. From 2005 through 2011, the total number of general aviation aircraft remained relatively flat. The economic decline since 2008 has resulted in a reduction in the number of general aviation aircraft with the FAA estimating the overall general aviation fleet being reduced by 2.7 percent from 2008 to 2011. Piston-powered fixed-wing aircraft, which make up the majority of general aviation aircraft, are projected to decrease in numbers through 2032 at a -0.1 percent average annual growth rate. The number of hours flown is projected to decrease by the same rate.

Shipments of new general aviation aircraft, according to the 2012 General Aviation Manufacturers Association (GAMA) year-end shipment report, have increased 0.6 percent from 2011 to 2012. This represents a slight upturn in manufacturing after years of decline since 2008. Total shipments in 2012 are down 50 percent, however, from 2007. Manufacturing of turboprop aircraft are up 10.6 percent in the same time period.

The outlook in the general aviation industry is favorable, especially in the areas of turbine aircraft, rotorcraft, and experimental aircraft. Overall activity levels are expected to grow.

According to the FAA Aerospace Forecast (2013-2033):

“The forecast calls for robust growth in the long term outlook, driven by higher corporate profits and the growth of worldwide GDP [Gross Domestic Product]. Additionally, continued concerns about safety, security, and flight delays keep business aviation attractive relative to commercial air travel. As the industry experts report a significant portion of piston aircraft hours are also used for business purposes, we predict business usage of general aviation aircraft will expand at a faster pace than that for personal and recreational use.”

Turbine powered general aviation aircraft (turboprop and turbojet) trends from 2000-2012 indicated a steady 4.5 percent annual growth. In the future, the FAA projects the number of turbine general aviation aircraft will increase 2.8 percent annually from 2012 to 2033.

Experimental aircraft provide pilots with the ability to construct an aircraft at a low cost. An increase in experimental aircraft is projected into the future with a 1.1 percent annual growth rate through 2033.

Overall, according to the FAA 2013 – 2033 aviation forecasts, the active general aviation fleet is projected to increase at an average of 0.39 percent per year for the forecast period.

National and Minnesota aviation trends can be measured by activity levels published in the FAA TAF. Statewide trends provide a closer look into how the national aviation trends translate on a regional level. Based aircraft from the 2013 TAF are listed in **Table 3-3**.

Table 3-3
2013 FAA TAF – National, Regional, & State Based Aircraft

| Year | United States | Great Lakes Region | State of Minnesota |
|---------------------|---------------|--------------------|--------------------|
| 1990 | 162,219 | 26,576 | 3,317 |
| 1995 | 157,805 | 26,668 | 3,601 |
| 2000 | 179,929 | 30,507 | 4,520 |
| 2005 | 197,407 | 32,951 | 4,875 |
| 2010 | 165,807 | 27,586 | 4,105 |
| 2015 | 166,491 | 27,685 | 4,365 |
| 2020 | 173,937 | 28,717 | 4,519 |
| 2025 | 181,917 | 29,772 | 4,681 |
| 2030 | 189,917 | 30,816 | 4,862 |
| 2035 | 198,440 | 31,889 | 5,050 |
| Future Trend | 0.88% | 0.71% | 0.73% |

Source: FAA Terminal Area Forecast (2013)

Notes: Trend indicates annual growth rate. Great Lakes Region includes North Dakota, South Dakota, Minnesota, Wisconsin, Illinois, Indiana, Michigan, and Ohio.

Overall aviation trends have been slowly increasing and decreasing over the last 20 years with future annual operations increasing in the United States, Great Lakes Region, and the State of Minnesota. The United States has historically had a higher rate of based aircraft growth than both the Great Lakes Region and Minnesota. Annual aircraft operations from the 2013 FAA TAF are listed in **Table 3-4**.

Table 3-4
2013 FAA TAF – National, Regional & State Annual Operations

| Year | United States | Great Lakes Region | State of Minnesota |
|---------------------|---------------|--------------------|--------------------|
| 1990 | 105,390,026 | 17,393,585 | 2,195,004 |
| 1995 | 109,078,669 | 18,414,499 | 2,335,247 |
| 2000 | 121,942,002 | 20,347,943 | 2,624,609 |
| 2005 | 115,458,386 | 19,068,855 | 2,442,400 |
| 2010 | 101,410,177 | 16,335,713 | 2,133,332 |
| 2015 | 101,427,000 | 15,978,000 | 2,062,000 |
| 2020 | 104,685,000 | 16,404,000 | 2,121,000 |
| 2025 | 108,211,000 | 16,870,000 | 2,192,000 |
| 2030 | 112,134,000 | 17,388,000 | 2,270,000 |
| 2035 | 116,506,000 | 17,960,000 | 2,356,000 |
| Future Trend | 0.70% | 0.59% | 0.67% |

Source: FAA Terminal Area Forecast (2013)

Notes: Trend indicates annual growth rate. Great Lakes Region includes North Dakota, South Dakota, Minnesota, Wisconsin, Illinois, Indiana, Michigan, and Ohio.

Overall aviation trends show an average annual decrease in operations since 1990, and an increase in future, annual operations for the United States, Great Lakes Region, and the State of Minnesota.

3.4. EXISTING BASED AIRCRAFT & ANNUAL OPERATIONS

The FAA TAF also publishes based aircraft and annual operations data for every federal National Plan of Integrated Airport Systems (NPIAS) airport in the United States. In addition, the 2012 Minnesota State Aviation System Plan (SASP) provides based aircraft and operations forecasts for individual airports. These forecasts provide baseline data to aid in forecasting based aircraft and operations at a local level.

Table 3-5 shows the based aircraft forecasts for Fleming Field from the FAA TAF and the 2012 Minnesota SASP.

**Table 3-5
Existing Based Aircraft Forecasts**

| Year | FAA TAF Based Aircraft for Fleming Field | 2012 Minnesota SASP Based Aircraft for Fleming Field |
|---------------|--|--|
| 2010 | 223 | 248 |
| 2015 | 225 | 275 |
| 2020 | 226 | 303 |
| 2025 | 229 | 331 |
| 2030 | 234 | 365 |
| Trend: | 0.24% | 1.95% |

Source: FAA Terminal Area Forecast (2013); Minnesota State Aviation System Plan (2012)

According to the Airport Manager, there are currently 261 based aircraft at Fleming Field (2012). There is currently a waiting list of 10 aircraft owners that would like to be based at the airport when hangars become available.

In addition to based aircraft, both the TAF and SASP forecast annual operations at Fleming Field for the next 20 years. **Table 3-6** shows the FAA TAF operations forecast data through 2035, and **Table 3-7** depicts the SASP operations data through 2030.

**Table 3-6
Existing FAA TAF Annual Operations Forecast (2013)**

| Year | TAF Itinerant Operations | TAF Local Operations | Total Operations | Based Aircraft | OPBA |
|------|--------------------------|----------------------|------------------|----------------|------|
| 2011 | 11,000 | 51,000 | 62,000 | 223 | 278 |
| 2015 | 11,000 | 51,000 | 62,000 | 225 | 276 |
| 2020 | 11,000 | 51,000 | 62,000 | 226 | 274 |
| 2025 | 11,000 | 51,000 | 62,000 | 229 | 271 |
| 2030 | 11,000 | 51,000 | 62,000 | 234 | 265 |
| 2035 | 11,000 | 51,000 | 62,000 | 239 | 259 |

Source: FAA Terminal Area Forecast (2013)

Notes: OPBA = Operations Per Based Aircraft

The FAA TAF provides a general overview of airport activity. The TAF does not forecast any growth at Fleming Field over the next 30 years.

**Table 3-7
State Aviation System Plan Forecast (2012)**

| Year | Local Operations | Itinerant Operations | Total Operations | Based Aircraft | OPBA |
|------|------------------|----------------------|------------------|----------------|------|
| 2010 | 40,300 | 21,699 | 61,999 | 248 | 250 |
| 2015 | 43,943 | 23,660 | 67,603 | 275 | 246 |
| 2020 | 48,266 | 25,991 | 74,257 | 303 | 245 |
| 2025 | 56,726 | 30,545 | 87,271 | 331 | 264 |
| 2030 | 63,573 | 34,233 | 97,806 | 365 | 268 |

Source: Minnesota State Aviation System Plan (2012) for South St. Paul

Notes: OPBA = Operations Per Based Aircraft

The SASP forecasts based aircraft at Fleming Field will grow from 248 based aircraft to 365 by 2030. This is a growth rate of 1.95 percent annually. The annual operations are forecasted to grow from 61,999 to 97,806 by 2030. This is a growth rate of 2.31 percent annually.

3.5. BASED AIRCRAFT FORECAST

Current based aircraft data was derived from the 2012 hangar inspections at Fleming Field. There were 261 based aircraft recorded by the Airport Manager. The current based aircraft fleet mix at Fleming Field includes 238 single engine aircraft, 14 multi-engine aircraft, 3 turboprop engine aircraft, 2 turbojet aircraft, and 4 other aircraft. The other aircraft category may include ultralight vehicles, experimental aircraft, or light sport aircraft.

Forecasts of based aircraft were developed using historical trends of based aircraft from airport management records (2002-2012). The average growth rate from the past ten years is 1.66 percent annually, while the State Aviation System Plan reports an average growth rate of 1.95 percent. It is reasonable to assume the growth rate of 1.66 percent will continue over the next 20 years. By the year 2032, 363 aircraft are forecasted to be based at Fleming Field. The lack of available hangar site development areas at nearby Metropolitan Airport Commission (MAC) reliever airports (e.g. Lake Elmo, Airlake, Flying Cloud), as well as the difference in rental rates, charges, and minimum building standards may increase the growth rate of based aircraft at Fleming Field, a non-MAC airport, in the future. **Table 3-8** shows the breakdown of the based aircraft forecast at Fleming Field.

**Table 3-8
Based Aircraft Forecast**

| Year | Single Piston | Multi Piston | Turboprop | Turbojet | Helicopter | Other | Total |
|------|---------------|--------------|-----------|----------|------------|-------|-------|
| 2012 | 238 | 14 | 3 | 2 | 0 | 4 | 261 |
| 2013 | 241 | 14 | 3 | 3 | 0 | 4 | 265 |
| 2014 | 246 | 14 | 3 | 3 | 0 | 4 | 270 |
| 2015 | 250 | 14 | 3 | 3 | 0 | 4 | 274 |
| 2016 | 255 | 14 | 3 | 3 | 0 | 4 | 279 |
| 2017 | 257 | 15 | 4 | 3 | 0 | 4 | 283 |
| 2018 | 262 | 15 | 4 | 3 | 0 | 4 | 288 |
| 2019 | 267 | 15 | 4 | 3 | 0 | 4 | 293 |
| 2020 | 272 | 15 | 4 | 3 | 0 | 4 | 298 |
| 2021 | 277 | 15 | 4 | 3 | 0 | 4 | 303 |
| 2022 | 281 | 15 | 4 | 3 | 1 | 4 | 308 |
| 2023 | 285 | 16 | 4 | 3 | 1 | 4 | 313 |
| 2024 | 289 | 16 | 5 | 3 | 1 | 4 | 318 |
| 2025 | 294 | 16 | 5 | 3 | 1 | 4 | 323 |
| 2026 | 300 | 16 | 5 | 3 | 1 | 4 | 329 |
| 2027 | 305 | 16 | 5 | 3 | 1 | 4 | 334 |
| 2028 | 311 | 16 | 5 | 3 | 1 | 4 | 340 |
| 2029 | 316 | 16 | 5 | 3 | 1 | 4 | 345 |
| 2030 | 320 | 16 | 6 | 4 | 1 | 4 | 351 |
| 2031 | 326 | 16 | 6 | 4 | 1 | 4 | 357 |
| 2032 | 331 | 16 | 6 | 4 | 2 | 4 | 363 |

Source: Bolton & Menk Analysis

3.6. ANNUAL OPERATIONS FORECAST

3.6.1. CONFIRMED OPERATIONS

The lack of an FAA Air Traffic Control Tower does not allow for exact aircraft operation counts at a general aviation airport like Fleming Field. Therefore, FAA Instrument Flight Rules (IFR) flight data for 2010 – 2012 was obtained to get an understanding of the larger corporate users at Fleming Field. IFR flight data is recorded for the airport when pilots file a flight plan with the FAA that includes Fleming Field as a destination airport. Flight plans allow FAA flight service stations to track the flight and monitor additional air traffic around the flight to the final destination. The IFR recorded flight data does not take into account fair weather flights when pilots do not file a flight plan, touch and go operations, or flights with flight plans cancelled before landing at the airport.

The IFR flight data for Fleming Field indicated there were 1,597 instrument operations to and from Fleming Field from November 2011 to October 2012. This local historical data provides actual figures to reference when developing the operations forecasts and the type of aircraft using the airport.

Table 3-9 and **Table 3-10** show the confirmed operations data from both the user survey results (2012) and 12 months of IFR data. There were 82 types of aircraft that visited Fleming Field over a one year time

span. The operations were primarily from small piston aircraft, ten percent of the operations were from turbojet aircraft, and four percent were from turboprop aircraft. The Airport Reference Code (ARC) listed in the table helps determine the critical aircraft and design standards to be used for future development at the airport.

**Table 3-9
Piston Aircraft Operations data from IFR Flight Plan and User Survey Responses**

| Piston Aircraft | | | | | |
|--------------------------|------------|------------|-----------------------------------|------------|--------------|
| Aircraft | ARC | Ops | Aircraft | ARC | Ops |
| Beechcraft Baron | B-I/s | 25 | Grumman AA5* | A-I/s | 314 |
| Beechcraft Bonanza* | A-I/s | 404 | LA-4-200 Buccaneer | A-I/s | 1 |
| Beechcraft Duke | A-I/s | 1 | Lancair* | A-I/s | 20 |
| Beechcraft Sierra* | A-I/s | 60 | Maule M-7* | A-I/s | 23 |
| Beechcraft Travel Air* | A-I/s | 46 | Mooney M20* | A-I/s | 410 |
| Bellanca Viking | A-I/s | 8 | North American Navion | A-I/s | 5 |
| Cessna 140* | A-I/s | 4 | Piper Aerostar | A-I/s | 3 |
| Cessna 150* | A-I/s | 131 | Piper PA 16 Clipper | A-I/s | 21 |
| Cessna 170 | A-I/s | 2 | Piper PA 18 Super Cub* | A-I/s | 320 |
| Cessna 172 Skyhawk* | A-I/s | 796 | Piper PA 23 Apache* | A-I/s | 163 |
| Cessna 177 Cardinal | A-I/s | 15 | Piper PA 23/27 Aztec | A-I/s | 2 |
| Cessna 180* | A-I/s | 83 | Piper PA 24 Comanche | A-I/s | 8 |
| Cessna 182 Skylane* | A-I/s | 358 | Piper PA 28 Cherokee* | A-I/s | 235 |
| Cessna 185 Skywagon | A-I/s | 3 | Piper PA 28 Cherokee Arrow* | A-I/s | 3892 |
| Cessna 206 Stationair | A-I/s | 46 | Piper PA 28 Turbo Arrow | A-I/s | 2 |
| Cessna 210 Centurion | A-I/s | 103 | Piper PA 30 Twin Comanche* | A-I/s | 62 |
| Cessna 310 | A-I/s | 2 | Piper PA 31 Navajo* | A-I/s | 73 |
| Cessna 340 | B-I/s | 6 | Piper PA 32 Cherokee Six* | A-I/s | 20 |
| Cessna 402 Businessliner | B-I/s | 2 | Piper PA 34 Seneca* | A-I/s | 298 |
| Cessna 414 Chancellor* | B-I/s | 252 | Piper PA 38 Tomahawk* | A-I/s | 59 |
| Cessna 421 Golden Eagle | B-I/s | 6 | Piper PA 46 Malibu* | A-I/s | 80 |
| Cessna R182 | A-I/s | 3 | Rockwell Commander 710 | A-I/s | 280 |
| Cirrus SR20 | A-I/s | 66 | Stinson Reliant* | A-I/s | 60 |
| Cirrus SR22 | A-I/s | 47 | Team Rocket F1 Rocket | A-I/s | 6 |
| Columbia 400/Cesna 400 | A-I/s | 50 | Van's Aircraft RV10 | A-I/s | 2 |
| Enstrom F-28* | HELI | 40 | Van's Aircraft RV7* | A-I/s | 212 |
| Experimental (Other)* | OTH | 8 | Van's Aircraft RV9* | A-I/s | 36 |
| Glassair III | A-I/s | 2 | Velocity Aircraft | A-I/s | 1 |
| Globe/Temco Swift* | A-I/s | 1 | Vulcanair P68 Observer | A-I/s | 13 |
| Grumman AA1 | A-I/s | 3 | Total Operations (Piston): | | 9,194 |

*Includes data from the user survey results; Notes: Ops = Number of operations; HELI = Helicopter; /s = small aircraft (maximum takeoff weight 12,500 pounds or less); /L – large aircraft (maximum takeoff weight greater than 12,500 pounds); Source: 2013 User Survey, FAA IFR Flight Data Nov. 2011 – Oct. 2012

Table 3-10
Jet and Turboprop Operations data from IFR Flight Plan and User Survey Responses

| <u>Turboprop</u> | | | | | | |
|-------------------------------|--------|-----|--|---|------------|--------------|
| Aircraft | ARC | Ops | Aircraft | ARC | Ops | |
| Beechcraft Bonanza Turbine | A-I/s | 2 | Daher-Socata TBM700 | A-I/s | 14 | |
| Beechcraft King Air | B-II/s | 25 | Daher-Socata TBM850 | A-I/s | 10 | |
| Beechcraft King Air 200 | B-II/s | 8 | Piaggio P.180 Avanti | C-I/s | 2 | |
| Beechcraft Super King Air 300 | B-II/L | 33 | Pilatus PC 12 | A-II/s | 45 | |
| Cessna 208 Caravan | A-II/s | 68 | Piper Cheyenne 400 | B-I/s | 2 | |
| Cessna 425 Conquest I | B-I/s | 2 | Piper PA 46 Meridian | A-I/s | 22 | |
| Cessna 441 Conquest II | B-II/s | 9 | Quest Kodiak | A-II/s | 11 | |
| <u>Jet Engine</u> | | | | | | |
| Aircraft | ARC | Ops | Aircraft | ARC | Ops | |
| Beechjet 400* | A-I/s | 28 | Cessna Citation Excel | B-II/L | 3 | |
| Cessna Citation CJ | B-I/s | 2 | Cessna Citation I | B-I/s | 7 | |
| Cessna Citation CJ2 | B-II/s | 2 | Cessna Citation Mustang | A-I/s | 3 | |
| Cessna Citation CJ3 | B-II/L | 1 | Learjet 31 | B-I/L | 2 | |
| Cessna Citation CJ4 | B-II/L | 2 | Total Operations (Jet/Turboprop): | | 303 | |
| | | | | Total Operations (All Aircraft): | | 9,497 |

*Includes data from the user survey results; Notes: Ops = Number of operations; HELI = Helicopter; /s = small aircraft (maximum takeoff weight 12,500 pounds or less); /L – large aircraft (maximum takeoff weight greater than 12,500 pounds); Source: 2013 User Survey, FAA IFR Flight Data Nov. 2011 – Oct. 2012

3.6.2. ANNUAL OPERATIONS FORECAST

Annual operations are the count of both takeoffs and landings at an airport. Baseline (2012) airport operations were estimated using FAA approved Operations Per Based Aircraft (OPBA) numbers. The OPBA figure is an average that includes both based aircraft and transient aircraft traffic. FAA Order 5090.3C *Field Formulation of the National Plan of Integrated Airport Systems* recommends 250 OPBA for rural general aviation airports, 350 OPBA for busier general aviation airports, and upwards of 450 operations per based aircraft for busy reliever airports. The current FAA TAF estimates 62,000 operations for Fleming Field in 2011. Dividing the number of annual operations by the 2011 FAA TAF based aircraft number, 22, yields 278 OPBA. The SASP estimates 61,999 operations and 248 based aircraft for an OPBA at Fleming Field of 250 in 2010.

Fleming Field is one of the busier general aviation airports in the state of Minnesota due to the proximity to the Twin Cities metropolitan area. However, applying an OPBA of 350 did not seem reasonable to the pilots and staff using Fleming Field on a regular basis. An OPBA of 250 was determined to be more realistic by the Airport Manager. The Airport Manager also noted 42 (16 percent) of the aircraft at Fleming Field base their aircraft at other airports during the winter months of December, January, and February. Approximately one out of four operations for those aircraft occurred while based at another airport during those winter months. This resulted in a 4 percent reduction in OPBA or an OPBA of 240 in 2012.

Using an OPBA of 240 and based aircraft growing from 261 to 363 over the 20-year planning period, operations will grow from a baseline of 62,640 total operations to 87,120 operations in 2032. This is an annual average growth rate of 1.66 percent. The SASP forecasts 97,806 operations at the end of the 20-

year planning period. This is a difference of 11 percent from the Master Plan operations forecast. The TAF reports operations remaining at 62,000 throughout the 20-year planning period. This is a 41 percent difference in operations from the Master Plan forecast. Fleming Field has seen growth in airport operations over the last 20 years and does not anticipate the operations to remain at a constant level. Therefore, the growth in operations of 1.66 percent is realistic over the next 20 years.

The annual forecasts were divided between local and itinerant operations. At Fleming Field, the split is approximately 65 percent local and 35 percent itinerant annual operations. In addition, the 20-year forecasts were divided by aircraft type. This information is useful when determining the facility needs of the existing and future users of the airport. The FAA national forecast rates by aircraft type were used to estimate rates for different design groups.

The annual operations forecast for Fleming Field over the 20-year planning period is shown in **Table 3-11**.

Table 3-11
Annual Operations Forecast by Aircraft Type

| Year | Itinerant | | | | | | | | Local | | | | | | | | Total |
|------|----------------|-------|-------|-------|------|----------------|-------|-----|----------------|-------|-------|------|------|----------------|------|-----|--------|
| | Small Aircraft | | | | | Large Aircraft | | | Small Aircraft | | | | | Large Aircraft | | | |
| | A-I | A-II | B-I | B-II | HELI | B-I | B-II | C-I | A-I | A-II | B-I | B-II | HELI | B-I | B-II | C-I | |
| 2012 | 16,548 | 2,631 | 2,871 | 1,044 | 80 | 522 | 1,044 | 261 | 30,733 | 1,221 | 5,293 | 312 | 80 | 0 | 0 | 0 | 62,640 |
| 2013 | 16,811 | 2,674 | 2,885 | 1,073 | 82 | 540 | 1,081 | 270 | 31,220 | 1,241 | 5,319 | 321 | 82 | 0 | 0 | 0 | 63,600 |
| 2014 | 17,155 | 2,719 | 2,900 | 1,103 | 84 | 559 | 1,118 | 280 | 31,860 | 1,262 | 5,346 | 330 | 84 | 0 | 0 | 0 | 64,800 |
| 2015 | 17,414 | 2,763 | 2,914 | 1,134 | 87 | 579 | 1,158 | 289 | 32,341 | 1,282 | 5,373 | 339 | 87 | 0 | 0 | 0 | 65,760 |
| 2016 | 17,756 | 2,809 | 2,929 | 1,166 | 89 | 599 | 1,198 | 300 | 32,975 | 1,304 | 5,400 | 348 | 89 | 0 | 0 | 0 | 66,960 |
| 2017 | 18,011 | 2,855 | 2,943 | 1,199 | 91 | 620 | 1,240 | 310 | 33,449 | 1,325 | 5,427 | 358 | 91 | 0 | 0 | 0 | 67,920 |
| 2018 | 18,349 | 2,902 | 2,958 | 1,232 | 94 | 642 | 1,283 | 321 | 34,076 | 1,347 | 5,454 | 368 | 94 | 0 | 0 | 0 | 69,120 |
| 2019 | 18,684 | 2,950 | 2,973 | 1,267 | 96 | 664 | 1,328 | 332 | 34,700 | 1,369 | 5,481 | 379 | 96 | 0 | 0 | 0 | 70,320 |
| 2020 | 19,018 | 2,999 | 2,988 | 1,302 | 99 | 687 | 1,375 | 344 | 35,320 | 1,392 | 5,508 | 389 | 99 | 0 | 0 | 0 | 71,520 |
| 2021 | 19,350 | 3,049 | 3,003 | 1,339 | 102 | 711 | 1,423 | 356 | 35,936 | 1,415 | 5,536 | 400 | 102 | 0 | 0 | 0 | 72,720 |
| 2022 | 19,680 | 3,099 | 3,018 | 1,376 | 104 | 736 | 1,473 | 368 | 36,548 | 1,438 | 5,564 | 411 | 104 | 0 | 0 | 0 | 73,920 |
| 2023 | 20,008 | 3,150 | 3,033 | 1,415 | 107 | 762 | 1,524 | 381 | 37,157 | 1,462 | 5,592 | 423 | 107 | 0 | 0 | 0 | 75,120 |
| 2024 | 20,333 | 3,202 | 3,048 | 1,454 | 110 | 789 | 1,578 | 394 | 37,762 | 1,486 | 5,619 | 435 | 110 | 0 | 0 | 0 | 76,320 |
| 2025 | 20,657 | 3,255 | 3,063 | 1,495 | 113 | 816 | 1,633 | 408 | 38,362 | 1,510 | 5,648 | 447 | 113 | 0 | 0 | 0 | 77,520 |
| 2026 | 21,062 | 3,308 | 3,079 | 1,537 | 116 | 845 | 1,690 | 422 | 39,114 | 1,535 | 5,676 | 459 | 116 | 0 | 0 | 0 | 78,960 |
| 2027 | 21,380 | 3,363 | 3,094 | 1,580 | 119 | 875 | 1,749 | 437 | 39,706 | 1,561 | 5,704 | 472 | 119 | 0 | 0 | 0 | 80,160 |
| 2028 | 21,781 | 3,419 | 3,109 | 1,624 | 123 | 905 | 1,810 | 453 | 40,450 | 1,586 | 5,733 | 485 | 123 | 0 | 0 | 0 | 81,600 |
| 2029 | 22,094 | 3,475 | 3,125 | 1,669 | 126 | 937 | 1,874 | 468 | 41,033 | 1,613 | 5,761 | 499 | 126 | 0 | 0 | 0 | 82,800 |
| 2030 | 22,490 | 3,532 | 3,141 | 1,716 | 129 | 970 | 1,939 | 485 | 41,767 | 1,639 | 5,790 | 513 | 129 | 0 | 0 | 0 | 84,240 |
| 2031 | 22,882 | 3,591 | 3,156 | 1,764 | 133 | 1,004 | 2,007 | 502 | 42,496 | 1,666 | 5,819 | 527 | 133 | 0 | 0 | 0 | 85,680 |
| 2032 | 23,272 | 3,650 | 3,172 | 1,814 | 136 | 1,039 | 2,077 | 519 | 43,220 | 1,694 | 5,848 | 542 | 136 | 0 | 0 | 0 | 87,120 |

Source: Bolton & Menk estimates

Notes: All local operations at Fleming Field are conducted by small aircraft, therefore large aircraft forecasts for local operations are zero and not shown. Small indicates aircraft with a maximum takeoff weight 12,500 pounds or less.

3.7. FUTURE CRITICAL DESIGN AIRCRAFT

3.7.1. RUNWAY DESIGN CODE (RDC) & AIRPORT REFERENCE CODE (ARC)

The majority of the existing airport operations at Fleming Field are in small aircraft 12,500 pounds or less. This would include aircraft such as the Piper PA-28 (RDC A-I) and the Cessna 172 (RDC A-I) that responded to the user survey. However, according to airport records, many businesses and corporations use the airport on a regular basis with larger multi-engine aircraft. This includes a Cessna Citation (RDC B-II/small) and a Cessna Citation Excel (RDC B-II/large). Large aircraft (aircraft with a maximum takeoff weight greater than 12,500 pounds) accounted for 1,827 operations in 2012, as seen in **Table 3-11**.

The critical design aircraft represents the aircraft design group that utilizes an airport on a regular basis of 500 or more annual operations. The existing critical design aircraft category is B-II. Aircraft Approach Category B aircraft currently has over 500 operations per year in 2012. These operations are typically those that support local businesses and a growing community. The existing airport configuration on the Airport Layout Plan shows that the safety areas are designed to B-II standards.

Based on documented data, estimates, and statewide criteria, the future critical design aircraft for Fleming Field should be a C-I/large aircraft, however this would result in an increase in the design standards of safety areas at the airport. The Runway Protection Zone would be 700 feet longer and 310 feet wider at the outer width; and the Runway Safety Area and Runway Object Free Area would extend an additional 700 feet from the end of the runway. The increase in design standards would require the relocation of County State Aid Highway 26 (70th Street) and South Street, as well as the removal and relocation of multiple residences, structures, and roads within the new Runway Projection Zone. The physical footprint of the airport has been maximized and meets B-II design standards. Larger aircraft will continue to use the airport but may need to place constraints on the use of the airplane when flying to Fleming Field.

Based on this analysis, the RDC for the future primary runway is to remain B-II-5000. Approach Category C aircraft currently operate at Fleming Field, however the decision to use Fleming Field remains at the discretion of the pilot. The existing Approach Category C approaches should remain to accommodate the existing and future Approach Category C aircraft throughout the 20 year planning period.

The City of South St. Paul should continue to monitor airport operations and evaluate the needs of current and future airport users.

3.8. SUMMARY

The following points summarize key findings with regard to based aircraft and operations forecasts at Fleming Field:

- Fleming Field airport operations are a mix of recreational and business flights. The user survey indicated that 32 percent of general aviation flights are for business purposes. These flights provide local travel needs for the furtherance of business activities.
- Based aircraft are expected to increase from 261 to 363 by the end of the planning period in 2032. This is a 1.66 percent annual growth rate. This growth rate is less than the existing SASP based aircraft growth rate of 1.95 percent.
- Aircraft operations are estimated at 62,640 in 2012, and are expected to increase to 87,120 at the 20-year planning period. This is a 1.66 percent annual growth rate. This growth rate is less than the SASP growth rate of 2.31 percent.
- The critical design aircraft is a Runway Design Code B-II/large aircraft (greater than 12,500 pounds). This aircraft type includes the Cessna Citation business jet and the Beechcraft Super King Air B-300 turboprop. These aircraft utilize the airport on a semi-regular basis and perform more than 500 operations annually.

