CHAPTER 1: AIRPORT, COMMUNITY & AVIATION ACTIVITY

Purpose and Scope

The information presented in this report represents the study findings for the 2024 Airport Master Plan study prepared for the City of Mobridge, the airport owner. Airport Master Plans are prepared in accordance with Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*. This project was funded in part by the FAA under grant number AIP 3-46-0038-022-2024.

This study for the Mobridge Municipal Airport will serve as an updated guide identifying future development necessary to accommodate existing and future aviation demands. The airport's current and forecasted safety, capacity and compatibility needs are addressed in this study. Many projects have been completed and new planning considerations have surfaced since the last Airport Layout Plan (ALP) study was completed in 2005.

The airport sponsor and Kadrmas, Lee & Jackson (KLJ) developed the scope for the project in cooperation with FAA Airports District Office and South Dakota Department of Transportation Air, Rail and Transit officials to identify the specific needs and objectives of the airport owner. The scope includes work tasks with the purpose of documenting existing conditions, forecasting future aviation activity levels, identifying future facility requirements, formulating, and evaluating development alternatives, preparing implementation plans and engaging the public and other government agencies. Recommendations will be made for improvements that are triggered by safety requirements or demand thresholds. The project received notice to proceed in August of 2024 from the airport sponsor. The baseline project data is from inventory efforts completed in September 2024. Data from calendar year 2023 was used to establish a baseline of existing airport information.

Planning Objectives

Planning considerations for an airport master plan are features, elements or events that should be evaluated because they have the potential to affect the airport facility over the long term.

Previous Planning Studies

The last Airport Layout Plan (ALP) was approved by the City of Mobridge in 2007. An airport master plan update is needed now for MBG to update the wind analysis to evaluate the runways, implement current design standards, and accommodate aircraft parking and hangaring. Based on the background and planning considerations, the planning objectives for this study identify the methods used to meet the airport development goals outlined by the airport owner. The key project objectives are as follows:

- Restore night-time instrument approaches for Runway 12
- Accommodate increasing size of aircraft and increased operations
- Review and select an alternative for hangar area development (hangar and apron needs)

FAA Aeronautical Survey

The FAA has implemented Aeronautical Survey requirements per FAA AC 150/5300-18B: *General Guidance and Specifications for Submission of Aeronautical Data to NGS: Field Data Collection and Geographic Information System (GIS) Standards*. FAA airport survey requirements require obstruction data to be collected using assembled aerial imagery for the airport. This data is used in aeronautical publications and to develop instrument approach procedures.

An aeronautical survey is being completed with this planning effort as required by FAA. Imagery was acquired in July 2024. When safety-critical data is needed to update runway end data or enhance an instrument approach then a new aeronautical survey is required.

Master Plan Process

Guidelines for completing a Master Plan are set forth in FAA AC 150/5070-6B. Each master plan study scope and level of effort is customized to fit each individual airport's needs and address critical issues.

The required and recommended contents of Airport Master Plans are detailed per FAA standards. Effective airport master plans are based on the analysis of significant amounts of data, and many airport master plans typically present not only the planning conclusions, but all data and accompanying analysis in considerable detail.

This Master Plan study presents data in a sequential manner following the typical FAA planning process. Appendices are included to provide more detailed information on a subject. In addition, internet hyperlinks are included to reference documents that are current as of the time of this report.

The Airport Master Planning process involves several coordinated steps. The master plan study for MBG consists of the following elements:

- **Pre-Planning** – Airport development concerns are identified and planning objectives prepared to address these issues. An overall vision for the study is formulated that will guide the process.
- **Facility & Environmental Inventory** – Overview of airport setting and environment; infrastructure and assets which includes airside, landside, and support facilities; airspace, navigational aids, and airport access utilizing data from an FAA Aeronautical Survey. Provide an overview of anticipated environmental impacts as part of the development of alternatives.

Alternatives Analysis

The alternatives evaluation process is the most collaborative portion of the master plan study. The alternatives are reviewed and refined through meetings with federal/state agency representatives and the study's advisory group. Evaluation criteria is used to compare the alternatives. The alternative evaluation criteria for this study includes the following:

Operational Performance - How does each alternative allow the airport, and specifically the runway/taxiway system, to operate as a functional system, meet design standards, and meet the needs of the community.

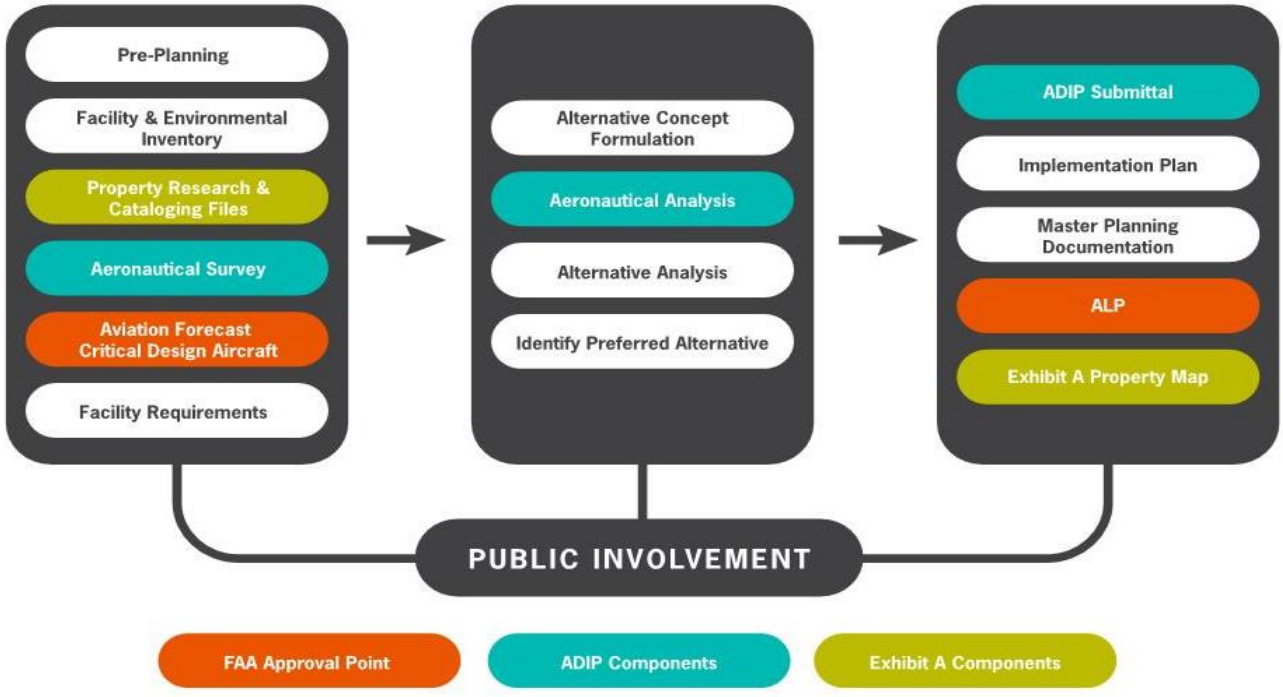
Best Planning Tenets – What are the strengths and weaknesses of the alternatives as it relates to 1) flexibility to meet demand and react to unforeseen changes; 2) highest and best on- and off-airport land use; 3) feasibility to implement politically and within practical phases; and 4) ability to satisfy airport user needs.

Environmental Factors – What are the potential effects of the alternatives upon the natural and built environment.

Fiscal Factors – How much will the options cost as compared to each other, while making the most use of federal, state and local resources.

- **Forecast of Aviation Demand** – Using established forecasting methods, estimate current and project future airport activity for general aviation, air cargo, and passenger enplanements.
- **Demand Analysis and Facility Requirements** – Compare the existing capacity with the future demand and identify the facility requirements to satisfy the aviation safety, capacity, and compatibility needs.
- **Alternatives Development and Evaluation** – Identify and evaluate options considering both on-airport and off-airport impacts consistent with the study goals and objectives. A preferred alternative is selected.
- **Implementation Plan** – Provide a comprehensive plan for implementation of the preferred alternative including project triggers, sequencing, and cost estimates.
- **Land Use Compatibility** – Complete a comprehensive review of land surrounding the airport for potential uses that are incompatible with safe airport operations and provide mitigation recommendations.
- **Airport Layout Plan (ALP)** – Document the existing and planned airport facilities through a set of drawings approved by the airport sponsor, state, and FAA.
- **Stakeholder and Public Involvement** – Prepare and execute a plan to engage important airport stakeholder and the public throughout the study to gather their input and address their concerns.

Figure 1-1 – Airport Master Planning Process



Source: KLJ

Study Documentation & Approvals

The Master Plan Update was divided into chapters of information to document airport planning data, analysis, findings, and recommendation of the study. The sections included are as follows:

- Chapter 1 – Airport, Community & Airport Activity
- Chapter 2 – Runways & Taxiways
- Chapter 3 – Terminal Area & Support Facilities
- Chapter 4 – Implementation & Compatibility
- Chapter 5 – Airport Layout Plan

- Appendix A – Glossary of Terms
- Appendix B – General Aviation Airports 101
- Appendix C – Meetings and Public Involvement
- Appendix D – Runway Length Analysis
- Appendix E – Recycling and Solid Waste Plan

Each chapter was prepared separately and distributed to the airport owner for review and key airport stakeholders including the State and FAA for input prior to a final review and approval by the airport owner. Each approved final draft chapter was then published on the airport's website (https://inputcentral.com/mobridge-airport-plan) for public viewing. The Master Plan Update was adopted by the City of Mobridge on [FUTURE DATE]. The ALP was submitted to the State and FAA for review and approval on [FUTURE DATE].

Public Involvement

Public involvement is a key component to the successful development of an Airport Master Plan study. The purpose is to encourage information sharing and feedback from airport stakeholders including the airport owner, airport users/tenants, local government officials, resource agencies, elected and appointed officials and the public. Public involvement provides valuable input to assist the airport owner in decision making and develop consensus on study conclusions.

A Planning Advisory Committee (PAC) was established to provide input throughout the study. The purpose of the PAC was to facilitate group discussion and feedback from different stakeholder groups, providing recommendations to the airport owner. Members represented the following stakeholders:

- City of Mobridge
- Airport Users/Tenants
- Community/Area Businesses
- South Dakota Department of Transportation: Air, Rail and Transit
- Federal Aviation Administration: Dakota-Minnesota Airports District Office

A Public Open House was held on [FUTURE DATE], to solicit input on the project's findings. See **Appendix C: Meetings & Public Involvement** for other information including copies of public involvement meeting agendas, attendees, presentations, and summaries.

Airport & Community Overview

General

The Mobridge Regional Airport is a general aviation airport serving the City of Mobridge and the surrounding areas of Walworth, Dewey, Corson and Campbell Counties in north central South Dakota. The airport is part of the FAA's National Plan of Integrated Airports System (NPIAS) and is classified as a non-primary Local General Aviation (GA) airport. See **Appendix B: General Aviation Airports 101** for additional details about airport classifications.

Mobridge Regional Airport has one lighted, 75-foot by 4,410-foot-long asphalt runway and one 250-foot by 2,399-foot-long turf runway. Airport facilities consist of a variety of hangars, four concrete tie-down spots and three asphalt tiedown spots, self-service fueling and a terminal building. The apron can be accessed by an asphalt road and provides vehicle parking at the terminal building.

Location and Area Setting

Walworth County is located in north central South Dakota. The largest city within the county is Mobridge, which is located approximately 1.5 miles southwest of the Mobridge Municipal Airport and accessible via US Highway 12 by Airport Road.

The airport elevation is 1,716 feet above mean sea level (AMSL). The terrain around the airport is generally hilly and the primary land use around the airport is agricultural. The city also sits on the east side of the Missouri River and is therefore known as "Bridge City".

Airport Ownership & Management

The airport is owned, operated, and governed by the City of Mobridge. The City of Mobridge has an employee who serves as airport manager in addition to other public works duties in the city. He oversees airport operations in addition to public works duties.

Airport History

The airport has been in its current location serving the City of Mobridge and surrounding area since 1959 according to FAA records. Prior to 1959, the airport was located on the northwestern corner of the city, just outside of the city limits with three turf runways. This previous airport was just south of the current 20th Street West and just west of the current 10th Avenue West. A complete list of recent major airport development projects that received funding from FAA and the State can be found in **Table 1-1 – Past Airport Projects.**

Table 1-1 – Past Airport Projects

Year	Projects	Total Cost
1999	Reconstruct Runway, Taxiway and Apron	$747,000
2001	State Project of Runway, Taxiway and Apron Rehabilitation	$770,000
2003	Apron Expansion	$180,000
2005	Install Windcone, Access Gates and Master Plan Study	$64,000
2006	Construct Fuel Farm	$31,000

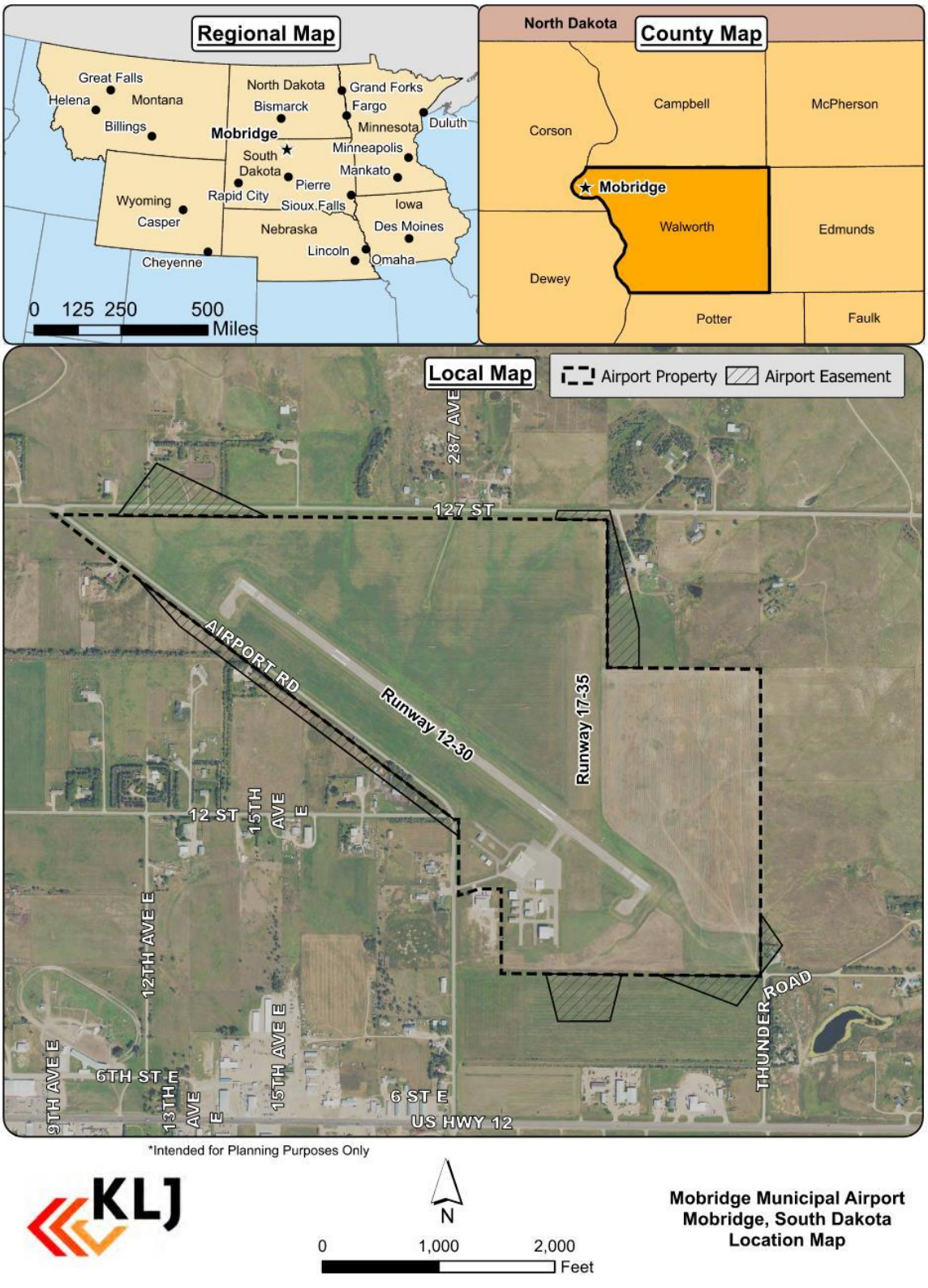
2008	Acquire Land for Approaches and Environmental Assessment	$81,000
2011	Construct Taxiway	$506,000
2013	Construct 80'x 100' Hangar	$572,000
2017	Acquire Land for Approaches and Snow Removal Equipment	$215,000
2018	Reconstruct Runway 12-30	$4,000,000
	Construct Connector Taxiway and Turnarounds	$253,000
	Replace Runway 12-30 Lighting with MIRLs	$285,000
2019	Install Runway Vertical/Visual Guidance System	$78,000
2020	Reconstruct Taxilane	$70,000
	Rehabilitate Apron	$35,000
	Reconstruct Airport Beacon	$80,000
2021	General American Rescue Plan Act Grant	$32,000
	Coronavirus Response and Relief Supplemental Appropriation Act Grant	$13,000
	Reconstruct Taxilane and Rehabilitate Apron	$85,000
2022	Fuel System Improvements and Upgrades	$685,000

Source: KLJ Analysis

Land Area

The airport was established in July of 1959 and expanded over the years in conjunction with airport development projects. The Airport currently owns 292.9 acres of land in fee simple, and 30.5 acres in easement. The airport's Exhibit A Property Map will be updated as a part of this study to the FAA's SOP 3.00 requirements.

Figure 1-2 – Airport Location Map



Airport Role & Design

MBG is a general aviation (GA) airport, meaning it accommodates aeronautical activity other than commercial air service. GA airports provide vital services for the public including emergency response, community access, personal and business aviation. Additionally, general aviation airports serve a key role in the facilitation of pilot training. The City of Mobridge operates the FBO at the airport. Public use airports in the United States with instrument procedures within 50 nautical miles are listed in **Table 1-2** to provide background into the other area airports.

Table 1-2 – Surrounding Public Airports

Airport Name / City	FAA ID	Location from Airport	Based Aircraft	Instrument Approach	Longest Runway
Mobridge Municipal/ Mobridge	MBG	-	16	300’ 1mi	4,410’
Hoven Municipal/ Hoven	9F8	31 SE	13	Visual	3,700’
Standing Rock/ Fort Yates	Y27	33 N	-	Visual	3,699’
Eureka Municipal/ Eureka	3W8	35 NE	10	Visual	3,100’
Gettysburg Municipal/ Gettysburg	0D8	39 SE	11	400’ 1mi	4,400’
Linton Municipal/ Linton	7L2	41 N	20	300’ 1mi	3,700’
Cheyenne Eagle Butte/ Eagle Butte	84D	49 SW	2	600’ 1mi	4,200’

Source: AirNav.com, KLJ Analysis

As noted before, the FAA classifies NPIAS airports and also has a classification system for general aviation airports called the ASSET classification. The South Dakota Department of Transportation developed a State Aviation System Plan (SASP) in 2020 and airports were placed into five different roles: Commercial Service, Large General Aviation, Medium General Aviation, Small General Aviation and Basic Service. MBG is classified as Medium General Aviation in the SASP. This means that the airport supports most twin and single engine aircraft with the ability to accommodate the occasional business jet. The airport supports regional transportation needs.

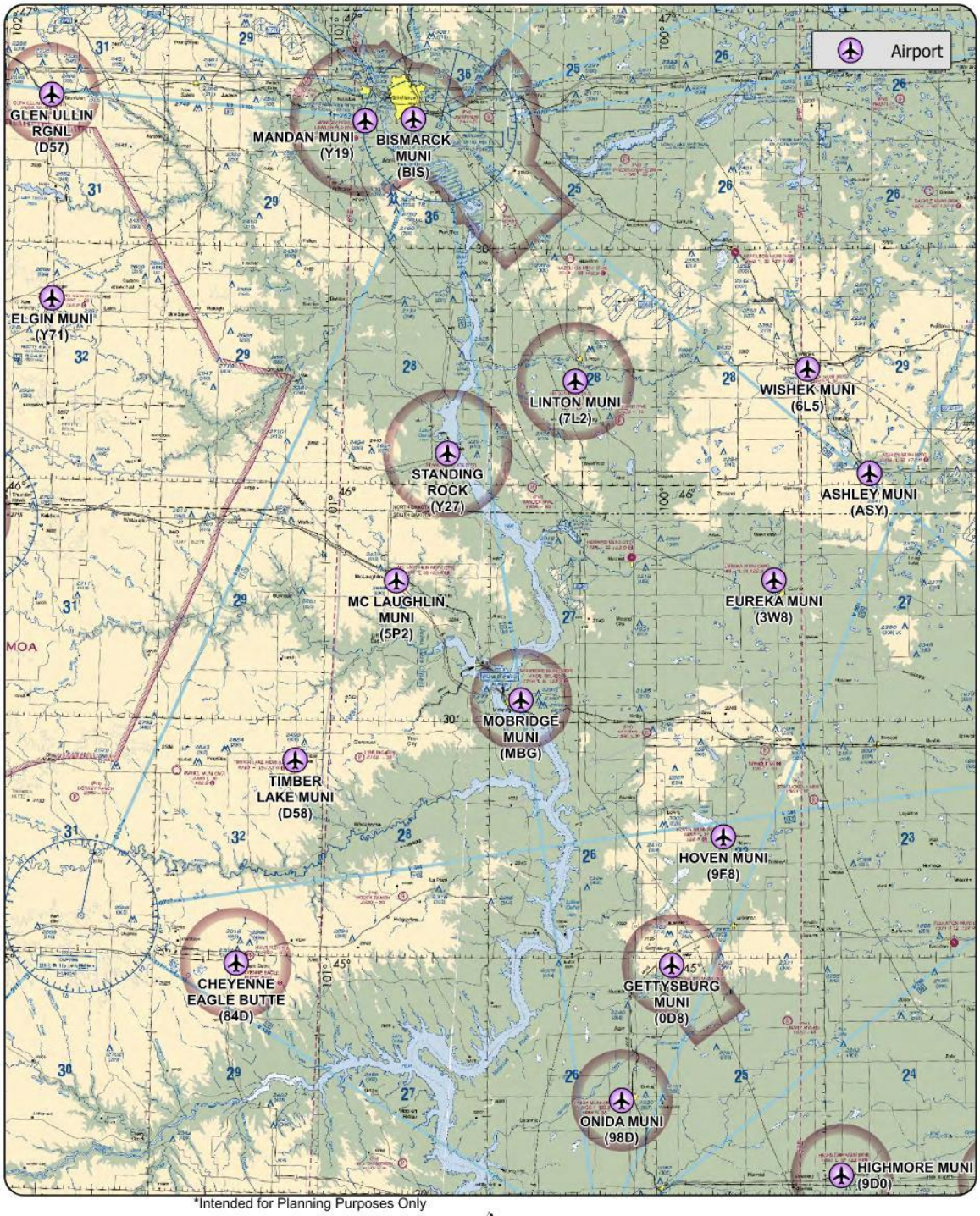
The FAA’s Airport Reference Code (ARC) identifies a design category based on aircraft wingspan, tail height and approach speed for aircraft types that regularly use the airport. For MBG, the existing ARC is B-II. This means the airport is designed for aircraft approach speeds of up to 121 knots and wingspans of up to 79 feet. **Table 1-3** summarizes the surrounding airport’s roles and design. See **Appendix B: General Aviation Airports 101** for more details on FAA design classifications and State classifications.

Table 1-3 – Airport Role & Design

Airport ID	State Classification	FAA Classification	FAA ASSET Group	ARC
MBG	Medium GA	Non-Primary GA	Local	A/B-II
9F8	Small GA	Non-Primary GA	Basic	A/B-I (Small)
Y27	Basic	Non-Primary GA	Basic	A/B-I (Small)
3W8	Small GA	Non-Primary GA	Basic	A/B-I (Small)
0D8	Medium GA	Non-Primary GA	Basic	A/B-II (Small)
7L2	Local	Non-Primary GA	Local	A/B-I (Small)
84D	Small GA	Non-Primary GA	Basic	A/B-I (Small)

Source: ADIP, SD SASP, FAA NPIAS, ND SASP, ARC = Airport Reference Code

Figure 1-3 – Surrounding Airports



Climate

Mobridge Municipal Airport is located in a cold semi-arid climate zone. Winters are cold and relatively dry while summers are hot and dry. The average annual high temperature is 87.4°F with an annual precipitation of 49 inches. **Table 1-4 Average Weather** provides the normal conditions that are experienced throughout the year at Mobridge.

The airport has an Automated Surface Observation Station (ASOS) located on the airfield. The ASOS provides detailed weather information, including pressure and altimeter settings. Data from the station shows prevailing winds are from the northwest and are generally aligned with the airport's primary runway, Runway 12-30.

Mobridge Airport Wind

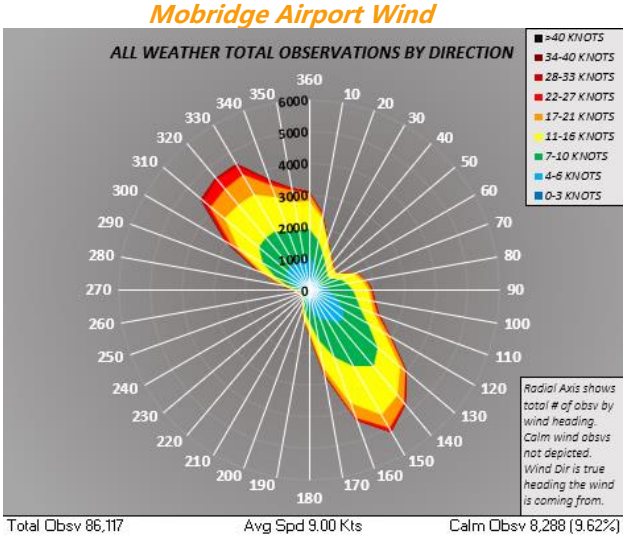


Table 1-4 – Average Weather

Month	Precipitation/Snow (in.)	Average Low Temperature (°F)	Average High Temperature (°F)
January	6.68	6.4	27.1
February	7.05	10.7	31.6
March	4.81	22.2	44.6
April	4.78	33.0	58.6
May	2.94	45.0	70.2
June	3.08	55.7	80.1
July	2.33	61.6	87.4
August	2.05	59.6	86.0
September	1.52	49.9	76.5
October	3.51	36.5	60.4
November	4.03	22.8	44.2
December	6.21	12.0	31.6

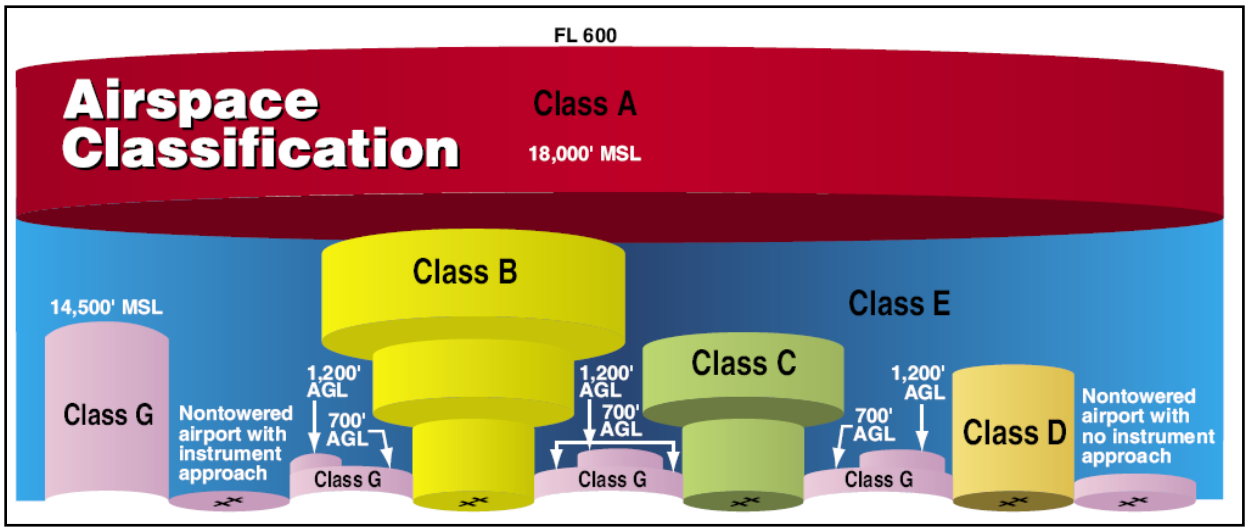
Source: National Weather Service Climate 1991-2020 – Mobridge Municipal Airport, SD

Airspace & Area Navigation Systems

The National Airspace System (NAS) consists of various classifications of airspace regulated by the FAA. Airspace classification ensures the safe separation of VFR and IFR aircraft. Airspace is separated into controlled, uncontrolled, special use, or other airspace. Controlled airspace is classified as A, B, C, D, or E. Uncontrolled airspace is classified as G. These classes specify appropriate minimum cloud clearances, visibility requirements, and other operating requirements for aircraft. The major difference between controlled and uncontrolled airspace is that the FAA does not exercise air traffic control over aircraft operating within uncontrolled airspace. Airspace is segregated into controlled, uncontrolled, special use or other airspace. Each airspace class has different operating rules.

MBG is in uncontrolled Class E airspace. Flights departing the Airport under instrument flight rules (IFR) must receive an IFR clearance from Minneapolis Center before reaching an altitude of 2,416 feet above mean sea level.

Figure 1-4 – FAA Airspace Classifications



Source: Federal Aviation Administration (FAA) Pilot's Handbook of Aeronautical Knowledge (2023)

Automatic Dependent Surveillance-Broadcast (ADS-B)

ADS-B is a satellite-based surveillance technology in which aircraft transmit GPS position information to other aircraft and to ATC facilities. ADS-B will supplement primary ground-based radar. FAA has required all aircraft operating within airspace requiring a transponder to have ADS-B transmitting equipment installed by the year 2020 as part of the Next Generation Air Transportation System (NextGen) initiative. Various ground stations have been located nationwide to provide ADS-B coverage. For MBG ADS-B coverage is available at least 500 feet above ground level.

Communications & ATC

The ability for pilots to communicate with other pilots and air traffic control (ATC) is critical for the safety and efficiency of the overall air transportation system. MBG will continue to be an uncontrolled airport. The airport has a Common Traffic Advisory Frequency (CTAF) at 122.8 that can be used for pilots to communicate with one another while operating on or around the airfield. In addition, an FAA Remote Communications Air to Ground (RCAG) is available from Dupree at 132.25 to Minneapolis ARTCC (ZMP). ZMP is also available with a Ground Communications Outlet (GCO) on 121.725.

Airspace Protection

Airspace is an important resource around airports that is essential for safe flight operations. The airspace is protected through several layers of protection which include property ownership, avigation easements and land use/height restriction zoning.

LAND ACQUISITION

Land acquisition allows the airport to protect airspace and land use areas from possible intrusions. FAA encourages the airport sponsor to own the following land for existing and planned airport facility:

- Airport Infrastructure
- Runway and Taxiway Object Free Areas
- Runway Protection Zones
- Building Restriction Line
- Navigational Aid Critical Areas
- Airspace Protection

AVIGATION EASEMENTS

Avigation easements can control height and/or land use. They have often been used to control the area inside the Runway Protection Zone however the FAA has more recently recommended full acquisition of these properties. The easements can still be a very useful tool to protect the airport depending on the circumstances of particular properties and the type of protection that is needed.

LAND USE AND HEIGHT RESTRICTION ZONING

FAA recommends airport sponsors protect airport land use and airspace through local zoning. Owners of public airports are encouraged to enact airport overlay zoning to protect airspace and surrounding land use for public safety. The intent of zoning is to:

- Protect the airport from incompatible land uses that could interfere with the safety operation of the airport,
- Protect public safety by reducing the potential for fatalities, property damage or noise complaints within the vicinity of the airport, and
- Protect the public investment made by taxpayers in the airport and the economic benefits it provides to the region restrict land uses

Federal - Part 77 Civil Airport Imaginary Surfaces

Title 14 CFR (Code of Federal Regulations) Part 77 *Safe, Efficient Use, and Preservation of the Navigable Airspace* is used to determine whether man-made or natural objects penetrate "imaginary" three-dimensional airspace surfaces and are obstructions. See **Appendix B – General Aviation Airports 101** for a detailed explanation of Part 77 surfaces. **Table 1-5** depicts the existing approach airspace surfaces for MBG. Any existing, future, or ultimate Part 77 obstructions located around MBG will be identified on the ALP for further action.

Table 1-5 – Part 77 Approach Airspace Requirements

Runway End	Approach Standards	Part 77 Code	Inner Width*	Outer Width	Length	Slope
Existing						
12-30	Non-Precision Other-Than-Utility As low as 1 mile	C	500'	3,500'	10,000'	34:1
17-35	Visual Utility	A(V)	250'	1,250'	5,000	20:1

*Source: Title 14 CFR Part 77, KLJ Analysis *Inner width is also the Primary Surface width driven by the most demanding approach to a runway.*

State Airspace Protections

The State relies upon the surfaces defined by the FAA in the Part 77 and RPZ areas. South Dakota Statutes require Airport Sponsors to establish zoning for height and land use around airports, but the Airport Sponsor may not have the jurisdiction for the area surrounding the airport if it is outside the airport sponsors zoning jurisdiction.

Local Airspace Protections

Local zoning regulations are implemented under the 2020 Revised Zoning Ordinances of the City of Mobridge, South Dakota Zoning Regulations Subdivision Regulations Title 18.07 Airport Standards.

> *"The purpose is to reduce special regulations, airport hazards. As airport hazards endangers the lives and property of users of the Mobridge Airport and property or occupants of land in its vicinity, and also if of the obstructive type, in effect reduces the size of the area available for the landing, takeoff, and maneuvering of aircraft, thus tending to destroy or impair the utility of the airport and the public investment therein."*

The ordinance defines airport zones as primary, horizontal, conical, non-instrumental approach, and transitional zones. Height limitations are also defined within safety zone boundaries as Safety Zone A and Safety Zone B. Safety Zone A restricts buildings that will create or create an assembly of people. Safety Zone B is restricted to only agricultural and residential that do not exceed that required in the Agricultural District. More details can be found on the City of Mobridge Zoning Ordinance.

Any recommended airspace protection measures including land acquisition, easements or zoning will be addressed in Chapter 4 – Implementation & Compatibility based on the Preferred Alternatives selected in Chapters 2 and 3.

Environmental Inventory

Introduction

This section provides an overview of environmental conditions and issues at the airport and the immediate vicinity. This environmental review section is not intended to fulfill the requirement of an environmental review required by National Environmental Policy Act (NEPA), or provide a definitive class of action determination for the proposed improvements. The purpose of this environmental review is to provide community, airport sponsor, and regulatory awareness of the importance of minimizing the environmental impacts this airport improvement area, and to provide a general indication of the likely need for further investigation. Appropriate environmental documentation in accordance with FAA Order 5050.4B, *NEPA Instructions for Airport Actions* and FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* is required to be completed prior to commencing with project actions.

Key environmental resources are described for the existing airport area. **Figure 1-5: Environmental Overview Map** provides a graphical depiction of the existing environmental conditions described in this section.

Relevant Environmental Features

BIOLOGICAL RESOURCES

Biological resources include flora and fauna that are present in an area. MBG is located in the Northwestern Glaciated Plains Ecoregion, according to the U.S. Geological Survey. Vegetation in this area consists of a mixed grass prairie that contains several species of grasses and sedges including prairie bulrush, fescue sedge, threadleaf sedge, Indian ricegrass, crested wheatgrass, red three-awn, blue grama, smooth brome, buffalo grass, prairie sandreed, needle-and-thread, green needlegrass, switchgrass, and western wheatgrass. Common forbs and shrubs found in the area include yucca, skunkbrush sumac, wild parsley, Indian hemp dogbane, common yarrow, western ragweed, prairie sagewort, purple coneflower, and many others. Two species of trees can also be found, they are box elder and green ash.

The following is not a comprehensive list of fauna that may be present in the area but represents species most likely to be encountered. Historically, bison roamed through this region. Wildlife species commonly found in the area surrounding the airport include white-tailed deer, mule deer, pronghorn antelope, jackrabbits, cottontail rabbits, coyotes, badgers, raccoons, skunks, prairie dogs, Canadian geese, pheasants, and grouse.

According to the U.S. Fish and Wildlife Services website Information for Planning and Consultation (IPaC), federally listed endangered, threatened, proposed or candidate species in Walworth County, near the airport, include the Piping plover, Whooping crane, Northern long-eared bat, Red Knot Rufa Monarch butterfly, Monarch Butterfly, Western Regal Fritillary, and Suckley' cuckoo bumble bee. There are no Federal designated critical habits near the Airport. In accordance with Section 7 of the Endangered Species Act, consultation with USFWS to determine the potential for occurrences of federally-listed threatened and endangered species in the project area would be necessary. Additionally, according to IPaC, there are likely Bald and Golden Eagles present in the area surrounding the Airport. There are no documented nesting sites, however they may be foraging near the area. Prior to project implementation, further analysis is required to identify the potential for fish, wildlife and plant impacts because of any proposed projects.

HISTORICAL, ARCHITECTUAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

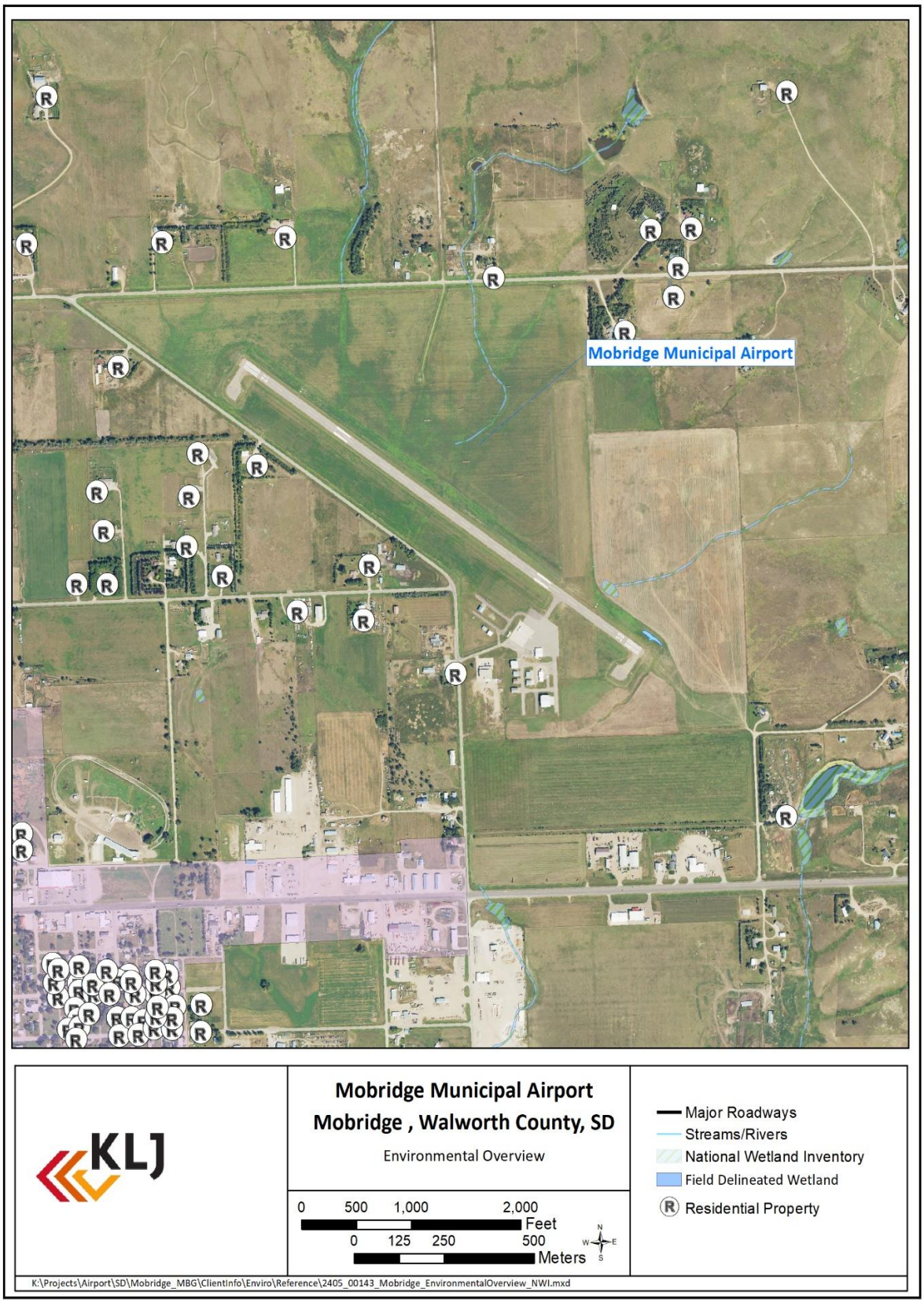
In 2017, approximately 137 acres of the airport property were inventoried to Level III Cultural Resource Survey Standards. This included a literature review of South Dakota State Historical Preservation Office (SHPO) records that identified six previously recorded cultural resources, which includes three eligible cultural resources, two unevaluated cultural resources and one not eligible cultural resource within a one-mile radius of the surveyed area. None of these resources were located on airport property. The review also indicated that six previous archaeological surveys were conducted within a one-mile radius of the airport property area between 1977 and 2008. During the 2017 survey, no newly or previously documented cultural resources were identified within the investigation area.

Coordination with the SHPO is necessary for projects involving land disturbance. Additionally, any project affecting buildings that have the potential to be listed in the National Register of Historic places

would require coordination with SHPO. Structures that are more than 50 years old may be eligible for inclusion on the NRHP.

Projects that involve ground surface disturbance in areas not previously disturbed by the construction of the Airport or included in the 2017 inventory will also need to be surveyed by a qualified Archeologist and a determination of affect to historic properties would need to be obtained from the SHPO. Further review regarding potential cultural sites historic properties may be required at the environmental documentation phase.

Figure 1-5 - Environmental Overview Wetland Inventory



DEPARTMENT OF TRANSPORTATION SECTION 4(F) AND SECTION 6(F)

Section 4(f) is applicable to projects which require the use of publicly-owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance. **Figure 1-5: Environmental Overview Map** provides a graphical depiction of the areas surrounding the Airport property.

There are no known publicly owned lands from parks, recreation areas, or refuge areas within the immediate vicinity of the Airport. Further review of the potential to impact Section 4(f) resources specifically regarding potential cultural sites or historic properties would be required at the environmental documentation phase of any projects that would require ground disturbance.

Section 6(f) from the Land & Water Conservation Fund Act provides that the Secretary shall not approve any program or project which requires the use of state and local parks, lakes, trails, beaches, and conservation lands, unless: (1) if the request complies with Section 4(f), (2) information is provided that is needed to make findings required under Section 6(f), and (3) coordination is carried out with the NPS and the state agency responsible for the Section 6(f) property. A review of Land Water Conservation Fund grants for Walworth County indicates that twenty-five grants have been issues for properties within the county. These properties are not located near the Airport. Proposed improvements are not anticipated to impact existing Section 6(f) properties; therefore, no further analysis is required.

HAZARDOUS MATERIALS

A review of the SD Department of Agricultural & Natural Resources (SDANR) and Environmental Protection Agency (EPA) databases regarding underground storage tanks, abandoned mines, listings for superfund sites, and sites covered under the Resource Conservation and Recovery Act found one reported spill on the Airport, two underground tank sites (one is still listed as active) and one above ground storage tank site. The spill report was closed in 2013 following remediation. There are no other reported spills or hazardous material leaks in or around MBG. Prior to acquisition of new land to be owned in fee title by an airport sponsor, FAA recommends that an Environmental Due Diligence Audit (EDDA) be performed. An EDDA includes a more detailed review of an area, relative to NEPA-level review, for the possible presence of environmental contamination.

SOLID WASTE

The airport has not produced significant amounts of solid waste including garbage, refuse or sludge as compared to the broader community. FAA requires a Solid Waste Management Plan to be developed as part of this Airport Master Plan study. A Solid Waste study is in **Appendix E: Recycling & Solid Waste Plan**.

FARMLAND

Impacts to farmlands considered to be prime, unique or statewide or locally important need to be considered under NEPA. The Farmland Protection Policy Act (FPPA) of 1981 provides protection to prime and unique farmlands. The Act defines prime farmland as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. Unique farmland is farmland that is used for production of specific high value food, feed, and fiber crops. Statewide farmland is of statewide importance to produce food, feed, fiber,

forage, and oil seed crops, and is determined by state agencies. Locally important farmland is where the production of food, feed, fiber, forage, and oilseed crops, are not identified as having national or statewide importance but identified by local agencies as important.

A search of the USDA Natural Resources Conservation Service (NRCS) web soil survey identified land located on and around the Airport contains Prime Farmland and Farmland of Statewide Importance. There is also a small segment of land classified as Prime farmland if irrigated. If land outside the existing airport property were to be acquired and converted to airport property, further consultation with NRCS would be required during a project environmental review stage to calculate the Farmland Conversion Impact Rating. No further review is needed for projects occurring on existing airport property.

LAND USE

Compatible land uses are those that typically are not influenced by normal airport operations. The compatibility of existing land uses in the vicinity of an airport is usually associated with the extent of noise impacts occurring from airport property and safety concerns. Incompatible land uses are typically items such as fuel storage facilities, areas of public assembly, tree rows, high density residential areas, and areas that have the potential to attract hazardous wildlife. Other land use considerations including surrounding physical land uses, airport zoning regulations and FAA airport design land use compatibility standards have been previously identified in this Chapter.

MBG is located approximately a half mile to the east of Mobridge, SD. There are rural homesteads located on all sides of the airport, however this area also contains pastureland and open spaces. There are residential homes located off airport property and approximately 1,400 feet of each of the primary runway ends. Additionally, much of the areas to the south and immediately west of airport property contain industrial properties.

Wildlife Hazards

FAA has implemented procedures and guidelines to mitigate wildlife damages to aircraft and aviation operations. Wildlife collisions have increased over the past two decades and reporting has increased awareness of hazards to human health, safety and financial losses.

Property surrounding MBG mixed rural homesteads with pasture and cropland. There are ponds located of both ends of Runway 12-30, approximately 1,900 feet to the southeast and approximately 4,000 feet to the northwest. The Missouri River is located approximately 2 miles to the west of the Airport. Each year thousands of snow geese migrate north along the Missouri River in the spring from mid-February to mid-March and start to return south around September. The Airport should monitor this seasonal migration and issue NOTAMs to alert pilots when snow geese and other waterfowl are within the area.

MBG is surrounded by a 4-foot perimeter fence to exclude cattle from enter Airport property. This type of fence does not provide protection from large mammals such as deer, antelope and coyotes from crossing over the Airport property including operations areas such as the runway. The Airport should monitor wildlife concerns and if an issue is identified a site visit from a qualified wildlife biologist could help to provide recommendations to reduce wildlife concerns at the airport.

WATER RESOURCES

Wetlands

Wetlands are defined in Executive Order 11990, Protection of Wetlands, as those areas that are inundated by surface or groundwater with a frequency to support, and under normal circumstances does or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Three parameters that define a wetland as outlined in the US Army Corps of Engineers Wetland Delineation Manual are hydric soils, hydrophytic vegetation, and hydrology. Wetlands help to maintain water quality in rivers and recharge groundwater. Wetlands also can provide habitat for many species of plants and wildlife. However there potential to attract wildlife can be hazardous to aircraft using the Airport.

Wetlands identified in the National Wetland Inventory (NWI) are located on and near the airport property, primarily as ephemeral drainages on the east side of the primary runway. A 2017 field delineation of approximately 135 acres for a runway reconstruction project identified one wetland along a ditch near the southeast end of Runway 12-30. The remainder of the airport property consists mostly of upland areas. Any projects impacting these drainages will require a delineation and coordination with the U.S. Army Corps of Engineers (USACE) during the early project development phase. Please refer to **Figure 1-5**.

Surface and Ground Waters

The Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, provides the authority to establish water quality standards, control discharges into surface and subsurface waters, develop waste treatment management plans and practices, issue permits for discharges (Section 402) and for dredged or fill material (Section 404).

Airport activities have the potential to impact water quality, primarily due to stormwater runoff from paved surfaces. Implementing best management practices, such as grass-lined swales and ditches, helps treat runoff from runways, taxiways, and apron areas, minimizing potential water quality impacts.

At MBG, drainage primarily sheet-flows across vegetated areas before entering off-airport drainages, which are also vegetated. Surface water from the airport flows into ephemeral drainages, eventually making its way toward the Missouri River, approximately 2.0 miles west of the airport.

Environmental Features Not Relevant

AIR QUALITY CLASSIFICATION

The FAA Orders 1050.1F and 5050.4B outline procedures for determining when airport-related projects require an air quality analysis, and if so, what level of analysis may be necessary. The Airport is located within an area of attainment for all National Ambient Air Quality Standards (NAAQS); due to the small size of the airport and limited number of operations that would occur at the airport detailed analysis is very unlikely to be required.

CLIMATE

Although there are no federal standards for aviation-related Green House Gas (GHG) emissions, it is well-established that GHG emissions can affect climate. The Council on Environmental Quality (CEQ) has

indicated that climate should be considered in NEPA analyses. As noted by CEQ, however, “it is not currently useful for the NEPA analysis to attempt to link specific climatological changes, or the environmental impacts thereof, to the particular project or emissions; as such direct linkage is difficult to isolate and to understand”.

With respect to GHG emissions, aviation activity at Mobridge Municipal Airport represents a small percentage of U.S. and global emissions; therefore, no further review is required.

COASTAL RESOURCES

Coastal Resources include Coastal Barriers and Coastal Zone Management. Coastal Barriers include islands that protect the mainland from storm or hurricane-driven winds or waves by providing a buffer to the shoreline. Coastal Barriers protect fish, wildlife, human life, and property along coasts and shorelines. Facilities are not recommended to be built within the Coastal Barrier Resource System (CBRS). Coastal Zone Management includes development provisions actions to protect major shorelines and associated recreational, historical, cultural, and aesthetic values. The area is not located near a coastal zone as defined in the Coastal Zone Management Act of 1972. No further analysis is required.

NATURAL RESOURCES AND ENERGY

Impacts on energy supplies and natural resources are related to changes of stationary facilities, such as airfield lighting or terminal building heating and expansion, as well as any increase of fuel consumption by aircraft or ground vehicles. Proposed improvements at MBG would require additional energy but is not anticipated to cause significant impacts to energy supplies or natural resources. No further analysis is required.

NOISE AND NOISE COMPATIBLE LAND USE

Noise emitted from aircraft can significantly affect the well-being of people living or working near an airport. The FAA requires noise studies for certain projects. If a project involves Airplane Design Groups I and II and has forecasted operations of less than 90,000 annual propeller operations or 700 annual adjusted jet operations such as the case at MBG then no further noise analysis is required.

SOCIOECONOMIC IMPACTS AND CHILDREN’ S ENVIRONMENTAL HEALTH AND SAFETY RISKS

Social impacts from a project depend on how that project affects the character, habits, and economic conditions of the people living within the affected area of the project. The project’s effects on business, employment, transportation, utilities, etc. are factors that affect the social climate of a community. Any action that would either adversely or beneficially affect the factors stated above would be considered as having some type of social impact on the residents of a particular community. The airport's location and runway orientation minimize health and safety risks to children, as there are no schools, hospitals, or places of worship along the airport's approach and departure paths.

VISUAL IMPACTS

Minor development projects at Mobridge Municipal Airport are not expected to significantly impact the visual aesthetics of the area. The landscape and surrounding views, along with viewers' responses to scenic resources or man-made features, are unlikely to be noticeably affected. From the perspective of

those viewing the airport from outside, any potential visual contrast or compatibility issues with nearby landforms and land uses are expected to be minimal.

WATER RESORCES

Floodplains

Floodplains constitute lands situated along rivers and their tributaries that are subject to periodic flooding on the average interval of 100 years or less. MBG is not located within a 100-year floodplain; therefore, no further analysis is required.

Wild and Scenic Rivers

There are no river segments near MBG that are listed in the National Rivers Inventory or designated Wild and Scenic Rivers in the National System. No direct or indirect impacts to wild scenic rivers would occur due to improvements at the airport. No further analysis is required.

Aviation Activity

The Aviation Activity Forecasts section of the Airport Master Plan analyzes current and future airport activity at the Mobridge Municipal Airport (MBG). Forecasting provides an airport with a general idea of the magnitude of growth, as well as fluctuations in activity anticipated over the forecast period. They assist the Airport in determining existing and planned future facility needs based on airport activity level estimates and projections. Forecasts attempt to develop a realistic estimate of future changes.

Prior to 2024, the FAA required forecasting of annual airport operations and based aircraft as well as the critical design aircraft. This was a key approval point for the FAA where they would approve the forecast operations, based aircraft, critical design aircraft and airport layout plan. Recently this has changed for airports like MBG where only the critical design aircraft and airport layout plan require FAA approval. On August 12, 2024, the FAA provided guidance regarding the requirement for forecasts developed for airport master plans. According to the guidance GA airports with less than 90,000 annual operations and not expected to exceed 90,000 operations in the foreseeable future, a detailed forecast is not warranted. MBG will remain below the 90,000 annual operations level. The forecasting for this Airport Master Plan will therefore be focused on practical elements that are still needed and listed as follows:

- Critical Design Aircraft (requires FAA approval)
- Annual Airport Operations (needed when pavement designs are completed in the future)
- Itinerant Aircraft Operations (to determine the amount of apron space and hangar space needed for itinerant aircraft)
- Based Aircraft (to determine the amount and type of hangar space needed)

The forecasting will use simple socioeconomic/demographic projections, quantifiable airport activity, and industry metrics used to determine activity. The forecasts developed for MBG will be important to adequately plan, size, and sequence development of future facilities to meet future projected growth. Development at airports, however, is demand-based from actual activity rather than forecasts.

Forecast Rationale

Forecasting the demand for airport use is a critical step in airport development. It allows an airport to examine its ability to satisfy the needs of the aircraft and people it serves, and to determine the approximate timing of necessary improvements by projecting airport user activity levels. FAA provides general guidance in evaluating factors that affect aviation activity. FAA AC 150-5070-6B states:

> *"Planners preparing forecasts of demand or updating existing forecasts should consider socioeconomic data, demographics, disposable income, geographic attributes, and external factors such as fuel costs and local attitudes towards aviation."*

For purposes of this forecast, the following defining factors have been used to develop the forecast:

1. Based on availability of data when the project began (June 2024), Federal fiscal year 2023 has been used as the baseline year.
2. FAA data from 2023 (where available) has been used to validate forecast assumptions and update the forecast baseline.
3. The forecast period is 20 years encompassing years 2024 through 2044.
4. The most recent 2023 estimates and future projections of socioeconomic and demographic trends have been utilized for the airport service area.
5. The core airport service area is considered the City of Mobridge, Walworth County, Campbell County, Corson County, and Dewey County.

The forecasts prepared for the airport assume an unconstrained scenario where facilities are available for use to meet demand. Time periods will be in 5-year increments including short-term (5-year), mid-term (10-year) and long-term (20-year) resulting in forecasts for year 2029, 2034, 2039, and 2044.

Forecasting Methods

Various methodologies are used to develop aviation forecasts. Forecasts should not be considered predictions of the future but rather an educated projection of future activity. Some of the following forecasting methods were applied for this analysis, including trend extensions, socioeconomic methodologies, and professional judgment.

Trend Extensions - A trend extension forecast identifies historical growth patterns and projects those patterns into the future. Often, a trend line can be drawn through a graph of the historical data to reveal an overall trend, which can then be extended into the immediate future to develop a forecast.

Socioeconomic Methodologies - Socioeconomic information within the airport service area can provide insight into factors that affect aviation activity at an airport. Commonly evaluated metrics include population, employment, income, gross regional product, and retail sales. Historic trends, current data and forecast estimates are evaluated in this section to identify socioeconomic trends that may affect aviation activity forecasts at MBG. Growth rates are used as a method to compare the airport service area to other regional, statewide, and national trends.

Professional Judgement - Judgmental methods are educated estimations of future events based on the industry knowledge, experience, and intuition of the forecaster. This method permits the inclusion of a

broad range of relevant information into the forecasting process and is usually used to refine the results of the other methods.

Socioeconomic Data

For purposes of this study analysis, all four counties of Walworth, Corson, Dewey, and Cambell were determined to represent the core local airport service area. All four counties were chosen because the airport sits relatively close to all four counties, reference **Figure 1-2**. No published forecasts of socioeconomic data are available for the City of Mobridge but when available, current and historical data will be provided.

Population

Population is a basic indicator of the number of people who may utilize the airport. The City of Mobridge had a population of 3,574 according to the 2020 Census and has stayed historically steady with 3,465 total population reported on the 2010 Census. The City of Mobridge is the most populated city in Walworth County.

Table 1-6 – Population

Year	Service Area	South Dakota	United States
1990	4,428	697,101	249,622,814
2000	4,463	755,844	282,162,411
2010	4,075	816,193	309,330,219
2020	3,945	887,099	331,501,080
Historical Annual Growth Rate	*-0.38%*	*0.81%*	*0.95%*
2024 (Baseline)	*3,932*	*907,198*	*336,451, 657*
2029	*3,911*	*941,653*	*349,876, 672*
2034	*3,882*	*968,940*	*360,685,310*
2044	*3,791*	*1,018,665*	*380,965,763*
Forecast Annual Growth Rate	*-0.18%*	*0.58%*	*0.62%*

Source: Woods & Poole Economics, U.S. Census Bureau

Income

Per Capital Personal Income (PCPI) is considered a factor affecting aviation activity. People with more disposable income have a higher propensity to use the time savings of aviation and more disposable income for leisure.

Table 1-7 – Per Capita Personal Income

Year	Service Area	South Dakota	United States
1990	$12,170	$16,475	$19,621
2000	$22,033	$26,825	$30,672
2010	$33,383	$41,417	$40,690
2020	$52,465	$59,656	$59,147
Historical Annual Growth Rate	*4.99%*	*4.38%*	*3.75%*
2024 (Baseline)	*$59,746*	*$71,221*	*$73,096*
2029	*$73,829*	*$89,179*	*$92,015*

2034	*$91,820*	*$112,256*	*$116,635*
2044	*$142,039*	*$177,512*	*$185,374*
Forecast Annual Growth Rate	*4.42%*	*4.67%*	*4.76%*

Source: Woods & Poole Economics, U.S. Census Bureau

Employment

Total employment is the measure of the active workforce. Of the four counties that make up the service area, Walworth County makes up the most total employment. The largest five industries of the service area are state/local government, farming, retail, health care, and federal civilian government.

Table 1-8 – Airport Service Area Employment (2023)

Industry	Employment	Earnings (in millions)
State and Local Government	2,152	$ 95,285
Farming	1,140	$ 52,778
Retail	732	$ 19,204
Health Care and Social Assistance	538	$ 19,649
Federal Civilian Government	512	$ 44,069
Accommodation & Food Services	459	$ 7,049
Wholesale Trade	393	$ 18,507
Other Services (Except Public Administration)	393	$ 10,637
Finance & Insurance	374	$ 14,392
Construction	247	$ 11,547
Real Estate & Rental Leasing	239	$ 5,980
Transportation & Warehousing	227	$ 9,748
Professional & Technical Services	227	$ 9,263
Administrative & Waste Services	186	$ 5,836
Manufacturing	177	$ 6,435
Forestry, Fishing, Related Activities	161	$ 5,593
Utilities	135	$ 12,103
Information	102	$ 4,727
Federal Military	93	$ 3,271
Arts, Entertainment, & Recreation	59	$ 515
Mining	58	$ 1,616
Educational Services	32	$ 386
All Industries	**100% (8,636)**	**100% ($358,590)**

Source: Woods & Poole Economics (2005 dollars)

Table 1-9 – Total Employment (in thousands)

Year	Service Area	South Dakota	United States
1990	2,077	409,381	138,330,765
2000	2,254	512,346	165,370,755
2010	2,231	558,129	172,901,669
2020	2,168	594,564	190,776,766
Historical Annual Growth Rate	*0.14%*	*1.25%*	*1.08%*
2023 (Baseline)	*2,166*	*644,525*	*215,251,577*
2029	*2,199*	*679,593*	*229,231,082*

2034	*2,223*	*713,116*	*242,816,472*
2044	*2,257*	*777,548*	*269,430,819*
Forecast Annual Growth Rate	*0.20%*	*0.94%*	*1.12%*

Source: Woods & Poole Economics, U.S. Census Bureau

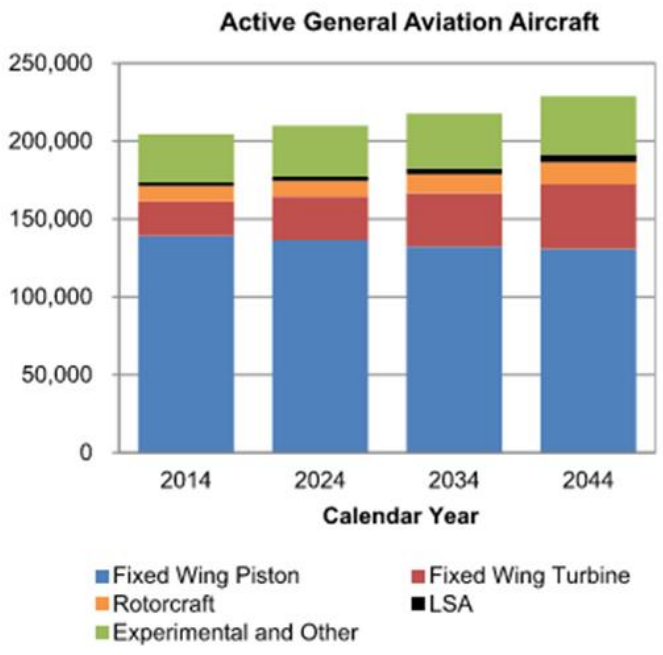
National Aviation Activity

At a national level, the FAA annually reviews a range of historic aviation activity and generates a 20-year forecast. The latest forecast has been issued for the period of 2024-2044 based on federal fiscal year. Relevant elements of this forecast for the airport have been summarized in the following tables and graphs.

Table 1-10 – Active General Aviation Aircraft

Year	Single Piston	Exprmt	Light Sport	Multi Piston	Turbo Prop	Turbo Jet	Rotor
2013	124,398	24,918	2,056	13,257	9,619	11,637	9,765
2018	130,179	27,531	2,554	12,861	9,925	14,596	9,989
2023	125,490	28,160	2,730	11,580	10,785	16,570	9,925
CAGR	*0.05%*	*0.82%*	*1.91%*	*-0.89%*	*0.76%*	*2.38%*	*0.11%*
	0.21%						
2024	*124,965*	*28,265*	*2,835*	*11,520*	*10,860*	*17,045*	*10,090*
2029	*122,920*	*29,325*	*3,335*	*11,265*	*11,190*	*19,680*	*11,020*
2034	*121,350*	*30,440*	*3,900*	*11,065*	*11,680*	*22,525*	*12,030*
2044	*119,930*	*32,705*	*5,105*	*10,860*	*13,255*	*28,325*	*14,025*
CAGR	*-0.21%*	*0.73%*	*2.98%*	*-0.29%*	*1.00%*	*2.57%*	*1.66%*
	0.05%						

Source: FAA Forecast 2024-2044 Table 28



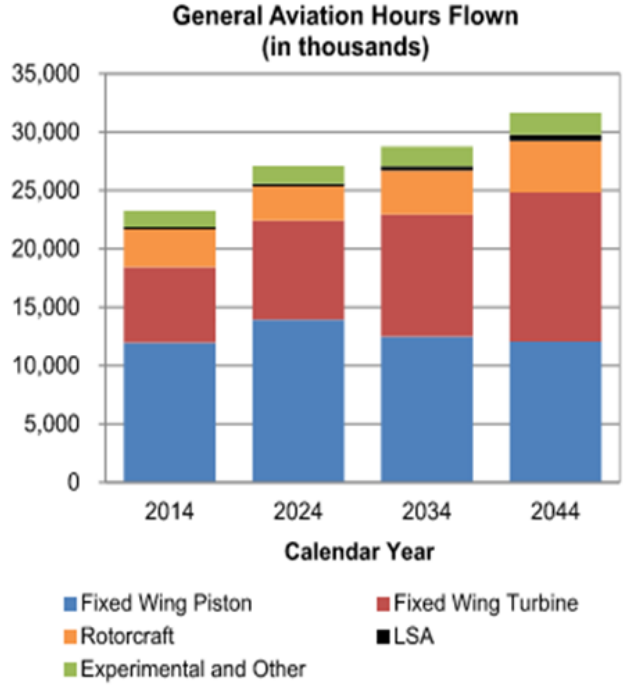


Table 1-11 – General Aviation Hours Flown (Thousands)

Year	Single Piston	Exprmt	Light Sport	Multi Piston	Turbo Prop	Turbo Jet	Rotor
2013	10,706	1,191	173	1,646	2,587	3,488	2,949
2018	12,092	1,153	187	1,694	2,736	4,592	2,922
2023	12,702	1,311	240	1,458	2,932	5,355	2,857
CAGR	*1.15%*	*0.64%*	*2.21%*	*-0.81%*	*0.84%*	*2.90%*	*-0.21%*
	1.11%						
2024	*12,449*	*1,339*	*251*	*1,478*	*2,994*	*5,479*	*2,940*
2029	*11,413*	*1,458*	*306*	*1,491*	*3,141*	*6,280*	*3,336*
2034	*11,013*	*1,545*	*368*	*1,491*	*3,279*	*7,188*	*3,715*
2044	*10,517*	*1,698*	*500*	*1,528*	*3,718*	*9,061*	*4,445*
CAGR	*-0.84%*	*1.20%*	*3.50%*	*0.17%*	*1.09%*	*2.55%*	*2.09%*
	-0.49%						

Source: FAA Forecast 2024-2044 Table 29

Table 1-12 – Gallons of Fuel for General Aviation (Thousands)

Year	Single Piston	Exprmt	Light Sport	Multi Piston	Turbo Prop	Turbo Jet	Rotor*
2013	117,197	16,484	883	53,853	188,607	945,010	134,667
2018	152,396	20,340	1,028	49,611	233,663	1,454,658	140,231
2023	154,429	21,446	1,321	45,735	248,285	1,702,270	133,127
CAGR	*1.85%*	*1.77%*	*2.72%*	*-1.08%*	*1.85%*	*4.00%*	*-0.07%*
	1.85%						
2024	*151,057*	*21,914*	*1,382*	*46,142*	*252,520*	*1,725,076*	*136,939*
2029	*137,105*	*23,686*	*1,635*	*45,484*	*259,786*	*1,879,920*	*152,860*
2034	*130,986*	*24,907*	*1,903*	*44,485*	*265,865*	*2,085,869*	*166,184*
2044	*121,628*	*27,047*	*2,509*	*43,537*	*288,882*	*2,471,085*	*183,684*
CAGR	*-1.08%*	*1.06%*	*3.03%*	*-0.29%*	*0.67%*	*1.81%*	*1.48%*
	-0.71%						

*Source: FAA Forecast 2024-2044 Table 31; * Jet and Aviation Gasoline combined*

Air Cargo

Air cargo is a specific element of aviation activity that is measured with both operations and volume of activity. Most small airports do not keep track of air cargo activity so only the known information, mostly from larger airports is provided. This information is provided in **Table 1-13** from the FAA Forecast, **Table 1-14** and **1-16** from FAA TFMS data, and **Table 1-15** from FAA Cargo Data.

Table 1-13 Air Cargo Activity (Revenue Ton Miles)

Year	Air Cargo Revenue Ton Miles (Millions)
2013	10,969
2018	14,182
2023	16,358
CAGR	4.08%
2024	16,900
2029	18,952

2034	21,030
2044	25,323
CAGR	2.04%

Source: FAA Forecast 2024-2044 Table 19

The information in **Table 1-14** includes the Northern Plains Mountain region that is made up of Colorado, Iowa, Idaho, Kansas, Minnesota, Montana, North Dakota, South Dakota, and Wyoming and all airports within those states.

Table 1-14 – Air Cargo Operations by Aircraft Type

Design	2018	2019	2020	2021	2022	2023
Turboprop ADG I-II	27,169	28,785	29,205	29,795	29,111	29,568
Turboprop ADG- III	3,513	3,735	3,231	3,966	4,556	4,012
Jet	34,945	37,782	38,163	41,736	39,400	34,397
Total	**65,627**	**70,302**	**70,599**	**75,497**	**73,067**	**67,977**

Source: FAA TFMS Operations Data

Table 1-15 – Air Cargo Total Landed Weight (Tons)

ID	City	2018	2019	2020	2021	2022	2023
COS	Colorado Springs, CO	43,496	52,902	51,845	51,250	50,791	49,970
DEN	Denver, CO	745,814	822,490	913,736	920,124	903,225	797,572
CID	Cedar Rapids, IA	174,612	188,750	203,218	194,348	163,826	157,722
DSM	Des Moines, IA	133,430	132,876	129,763	131,208	15,520	133,391
BOI	Boise, ID	171,805	181,750	180,391	245,741	234,923	229,976
GCK	Garden City, KS	3,984	4,008	4,054	4,049	3,726	3,298
ICT	Wichita, KS	118,382	124,807	118,068	130,428	123,245	105,924
MSP	Minneapolis, MN	540,441	558,019	551,436	574,965	569,564	362,594
RST	Rochester, MN	-	-	34,506	40,578	51,984	32,634
TVF	Thief River Falls, MN	20,668	19,834	17,966	18,918	18,236	17,883
BIL	Billings, MT	220,511	244,161	258,670	285,031	271,635	263,829
GTF	Great Falls, MT	93,903	92,877	94,017	104,380	109,735	104,320
FAR	Fargo, ND	137,683	195,510	210,135	210,186	204,975	203,045
GFK	Grand Forks, ND	3,472	263	8	-	-	-
OMA	Omaha, NE	218,855	235,328	238,189	272,651	274,457	226,937
RAP	Rapid City, SD	-	-	-	-	-	
FSD	Sioux Falls, SD	182,792	187,610	188,994	201,893	185,795	186,967

Source: FAA Air Cargo Data

Table 1-16 – Air Cargo Operations in the Region

Airport	City	2018	2019	2020	2021	2022	2023
Colorado							
ALS	Alamosa	319	357	311	401	348	431
COS	Colorado Springs	906	1,144	1,158	1,123	1,104	1,106
DEN	Denver	10,408	11,087	11,537	12,661	11,848	9,770
DRO	Durango	1,543	1,601	1,545	1,750	1,517	605
GJT	Grand Junction	659	590	659	577	521	524
GUC	Gunnison	500	462	448	467	441	453
HDN	Hayden	1,012	1,013	966	913	946	934
ANK	Salida	243	218	182	161	250	354

Iowa							
CID	Cedar Rapids	2,613	2,879	3,145	3,026	2,748	2,385
DSM	Des Moines	1,892	2,076	1,878	1,973	1,895	1,921
Idaho							
BOI	Boise	3,370	3,479	3,439	4,352	4,257	4,079
GIC	Grangeville	-	-	276	412	364	391
SUN	Hailey	567	605	601	558	217	-
IDA	Idaho Falls	992	1,059	1,145	1,125	1,158	1,146
LWS	Lewiston	1,250	1,016	916	989	905	922
PIH	Pocatello	555	551	569	518	468	505
RXE	Rexburg	526	581	570	513	451	473
TWF	Twin Falls	769	784	725	683	323	8
Kansas							
DDC	Dodge City	1	-	-	-	2	275
GCK	Garden City	1	4	6	6	4	262
ICT	Wichita	2,400	2,532	2,308	2,543	2,587	2,387
Minnesota							
DLH	Duluth	517	518	516	518	492	507
MSP	Minneapolis	7,114	7,549	7,206	7,883	6,984	5,673
RST	Rochester	740	1,067	966	1,076	1,712	973
TVF	Thief River Falls	505	502	318	511	510	486
Montana							
BIL	Billings	10,575	11,923	12,914	13,017	13,016	12,839
BZN	Bozeman	1,149	869	1,033	1,234	1,200	1,195
BTM	Butte	1,389	1,470	1,729	1,767	1,935	1,761
CTB	Cut Bank	493	493	510	515	495	510
GDV	Glendive	199	452	520	613	347	416
GTF	Great Falls	4,601	4,418	4,333	4,609	4,418	4,225
HLN	Helena	699	750	897	956	884	776
GPI	Kalispell	1,916	1,934	1,861	1,866	1,806	1,833
LWT	Lewistown	27	113	174	186	161	140
MLS	Miles City	561	676	721	697	556	593
MSO	Missoula	2,535	2,598	2,970	2,793	2,863	2,852
SDY	Sidney	132	274	241	195	55	14
OLF	Wolf Point	678	718	695	738	783	707
North Dakota							
BIS	Bismarck	1,038	847	377	431	420	1,067
DIK	Dickinson	23	11	15	10	26	573
FAR	Fargo	3,390	3,665	3,686	3,798	3,665	4,802
MOT	Minot	234	343	499	522	545	811
XWA	Williston	-	129	148	70	66	521
ISN	Williston	172	163	-	-	-	-
Nebraska							
BIE	Beatrice	8	-	-	114	484	482
BBW	Broken Bow	558	457	498	505	481	418
GRI	Grand Island	651	632	689	655	772	623
HSI	Hastings	677	718	834	689	936	863
EAR	Kearney	29	71	99	209	669	631
OFK	Norfolk	838	843	891	877	840	834
OMA	Omaha	4,305	4,517	4,658	5,292	5,960	5,401
ONL	O'Neill	555	565	585	595	581	567

VTN	Valentine	-	1	-	-	24	464
South Dakota							
ABR	Aberdeen	10	27	120	599	516	528
0D8	Gettysburg	-	238	-	13	2	-
MBG	Mobridge	84	280	515	578	502	499
RAP	Rapid City	1,271	1,970	2,027	2,016	1,935	1,905
FSD	Sioux Falls	5,760	5,362	5,373	5,933	5,705	5,581
SPF	Spearfish	-	29	9	5	22	244
ATY	Watertown	76	477	502	517	507	588
Wyoming							
CPR	Casper	1,291	1,424	1,481	1,405	1,344	1,362
CYS	Cheyenne	592	496	508	482	446	529
GCC	Gillette	541	626	664	622	626	620
JAC	Jackson	1,273	1,350	1,330	1,258	668	606
RWL	Rawlins	497	520	360	341	562	582
RKS	Rock Springs	612	623	154	140	157	575

Source: FAA TFMS Operations Data

Table 1-17 – Compound Annual Growth Trends Summary for Air Cargo

Category	Area	Historic (6-year)
Aircraft Type	Turboprop ADG I-II	-0.263%
	Turboprop ADG-III	2.238%
	Jet	-0.263%
Total Operations	Northern Plains/Mountain Region	1.319%
Total Weight (lbs.)	Northerns Plain/Mountain Region	0.447%
	Sioux Falls, SD (FSD)	0.377%

Source: FAA TFMS Operations Data, FAA Air Cargo Data

Table 1-18 – Compound Annual Growth Trends Summary

Category	Area	Historic (10 year)	Forecast (20 year)
Population	South Dakota	0.81%	0.58%
	Service Area	-0.38%	-0.18%
Per Capita Personal Income	South Dakota	4.38%	4.67%
	Service Area	4.99%	4.42%
Employment	South Dakota	1.25%	0.94%
	Service Area	0.14%	0.20%
Active Aircraft	Single/Exp/Sport	0.21%	0.05%
	Multi Piston	-0.89%	-0.29%
	Turbo Prop	0.76%	1.00%
	Turbo Jet	2.38%	2.57%
	Rotor	0.11%	1.66%
Hours Flown	Single/Exp/Sport	1.11%	-0.49%
	Multi Piston	-0.81%	0.17%
	Turbo Prop	0.84%	1.09%
	Turbo Jet	2.90%	2.55%
	Rotor	-0.21%	2.09%
	Single/Exp/Sport	1.85%	-0.71%

Gallons of Fuel	Multi Piston	-1.08%	-0.29%
	Turbo Prop	1.85%	0.67%
	Turbo Jet	4.00%	1.81%
	Rotor	-0.07%	1.48%
Air Cargo	Revenue in Ton Miles	4.08%	2.08%
Shading Notes	*1.50% or greater*		
	-0.01% or less		

Source: Woods & Poole Economics, U.S. Census Bureau, FAA Forecast 2024-2044

Verified Aircraft Operations

The key element to examine existing and forecast activity at the airport is to look at all operations at the airport that can be verified. Verified operations consist of those measured through the FAA Traffic Flow Management System (TFMS) which is a measurement of the operations conducted with instrument flight plans. The historic TFMS operations and other measured operations are portrayed in **Table 1-20 Total Verified Annual Operations**. The most notable operation is the Beech 1900 used for daily cargo.

Outside of instrument operations, the visual flight plan operations are measured by some operators such as aerial applicators or flight training. No additional verified operations under visual flight plans were found for Mobridge. The remainder of the visual operations, which are most general aviation operations, are derived from estimates which will be covered later.

Table 1-19 – Verified Aircraft Operations by Year (TFMS)

Category	2019	2020	2021	2022	2023
A/B-I	368	456	218	180	174
A/B-II	101	418	824	964	786
C/D-I	0	0	0	2	2
C/D-II	5	22	12	14	28
ADG-III	4	0	0	0	0
Total	478	896	1,054	1,160	990

Source: KLJ Analysis

Table 1-20 – Total Verified Annual Operations (TFMS)

ID	Make	Model	Type	AAC	ADG	TDG	MTOW (lbs.)	10-Year Ops	2023 Ops
BE9L	Beech	King Air C90	Turbojet	B	II	1-A	10,100	200	18
BE9T	Beech	King Air F90	Turboprop	B	I	1-A	10,950	72	22
BE99	Beech	Airliner 99	Turboprop	B	I	1-A	10,900	684	0
BE20	Beech	King Air 200	Turboprop	B	II	2-A	12,500	668	82
B350	Beech	King Air 350	Turboprop	B	II	2-A	15,000	52	10
B190	Beech	1900	Turboprop	B	II	2-A	17,120	1,700	500
CL30	Bombardier	Challenger	Turbojet	C	II	1-B	38,850	30	6
C206	Cessna	206	SE Piston	B	I	1-A	3,600	50	0
C414	Cessna	414	ME Piston	B	I	2-A	6,750	126	30
C402	Cessna	402	ME Piston	B	I	2-A	6,850	152	0
C404	Cessna	404	ME Piston	B	I	1-A	8,400	132	0
C425	Cessna	Conquest I	Turboprop	B	I	2-A	8,600	44	18

C441	Cessna	Conquest II	Turboprop	B	I	2-A	9,850	90	8
C560	Cessna	Citation Ultra	Turbojet	D	II	2-A	16,630	58	14
C56X	Cessna	Citation Excel	Turbojet	D	II	2-A	20,200	40	10
PC12	Pilatus	PC12	Turboprop	A	II	2-A	10,450	830	158
PA31	Piper	Navajo	ME Piston	B	I	1-A	7,000	2,370	0
		Various		A	I			708	82
							Other IFR Operations	460	32
							Total Verified Annual Operations		**990**

Source: FAA Traffic Flow Management System (TFMS), KLJ Analysis

Considering the range of existing and forecast data examined in the previous pages, the next step in the forecasting process is to determine what this means for the airport for:

Critical Design Aircraft
Annual Airport Operations
Based Aircraft Forecast
Peak Airport Activity

Critical Design Aircraft

The critical design aircraft is identified as the most demanding aircraft or family of aircraft to regularly use the airport. According to FAA AC 150/5000-17, *Critical Aircraft and Regular Use Determination* a critical design aircraft type or family must operate at least 500 annual operations at the airport to be considered 'regular use' by FAA for improvements to be justified for FAA funding.

Existing

In **Table 1-17** there is a summary of the existing annual operations by the various aircraft design characteristics. The shaded/outlined areas show where there are 500 annual operations to meet the 'regular use' threshold. The table includes all verified operations from **Table 1-20** covered earlier in the chapter. The data shows operations of B-II and TDG-2A aircraft consistently exceed the regular use threshold of 500 annual operations. Alpine Air carries cargo on contract with UPS and regularly operates the Beechcraft 1900 which is an AAC-B, ADG-II, and TDG-2A and over 12,500 lbs. The existing Critical Design Aircraft for MBG is a B-II (>12,500 lbs.) and TDG-2A Aircraft.

Table 1-21- Existing Verified Annual Operations by Aircraft Characteristics

AAC		ADG		TDG		MTOW	
A/B	960	I	175	1-A/1-B	146	< 12,500 lbs	438
C/D	30	II	814	2-A/2-B	822	≥ 12,500 lbs	552

Source: KLJ Analysis

Future

Alpine Air has no near-term plans of changing the using the Beechcraft 1900C. The future design critical aircraft will continue to be ARC B-II TDG-2A.

Figure 1-6 Existing and Future Critical Design Aircraft Family

ARC A-I/Small Aircraft		ARC A-II/Small Aircraft	
Cessna 402		Pilatus PC-12	
ARC B-I/Small Aircraft		**ARC B-II/Small Aircraft**	
Cessna Conquest		Beech King Air 90	
Citation CJ1		Beech King Air 200	
ARC B-II		**ARC D-II**	
Beechcraft 1900C		Cessna Citation Excel	

Photography Source: Airliners.net. Green indicates current and future design critical aircraft.

Based Aircraft

A based aircraft is an operational and airworthy aircraft claiming an airport as its home for most of the year. Knowing the number and types of based aircraft helps the airport assess the existing aircraft storage needs and the forecast of based aircraft helps determine future storage needs.

Historical Data

The National Based Aircraft Inventory states that as of May 2023, there are 15 based aircraft at the airport, however only 13 are validated. This includes 12 single engine piston aircraft and one multi engine turboprop aircraft. For this planning study, the validated number of 13 based aircraft will serve as the baseline for forecasting at MBG.

Table 1-22 – Based Aircraft Fleet Mix

Aircraft Type	Based Aircraft	Percent of Total
Piston (Single)	12	92%
Piston (Multi)	0	0%
Turboprop	1	8%
Jet	0	0%
Helicopter	0	0%
Ultralight/Other	0	0%
Total Based Aircraft	13	100%

Source: National Based Aircraft Inventory Program, KLJ Analysis

Forecast

Local economic trends were evaluated when preparing this forecast of based aircraft at MBG. It is estimated that based aircraft will grow conservatively at MBG for several reasons:

- From a socio-economic perspective, the population is indicating a slight decrease in the future but the total employment and per capita income is expected to grow. A higher disposable income will have more of a propensity to use aviation services.
- Hangars at MBG are at max capacity.
- Local businesses continue to use the airport.

Table 1-23 – Based Aircraft Forecast

Metric	2024	2029	2034	2039	2044	*CAGR*
Piston (Single)	12	13	15	16	18	*2.00%*
Piston (Multi)	-	-	-	-	-	-
Turboprop	1	1	1	1	1	-
Jet	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Other	-	-	-	-	-	-
Total Based Aircraft	**13**	**14**	**16**	**17**	**19**	***1.92%***

Source: KLJ Analysis. CAGR = Compounded Annual Growth Rate

Considering the conservative growth rate of based aircraft at MBG, it is important for the airport to preserve space for additional aircraft through the planning period.

Annual Operations Forecast

An Air Traffic Operation is an aircraft landing or takeoff. Aircraft operations are split into two categories: Local and Itinerant. Local operations are performed by aircraft that remain in the local traffic pattern and stay within a 20−mile radius. These operations typically include practice landings, touch-and-go operations, practice approaches and maneuvering within the local area. Itinerant operations are performed by a landing aircraft arriving from outside the airport area or a departing aircraft that leaves the airport area.

Baseline Data

In the past, the activity reported by the airport staff in Airport Master Record established the historical record of operations. This is no longer the case and therefore a new means of determining a baseline of operations was needed. With the Verified Annual Operations in **Table 1-20** all TFMS operations are classified as itinerant. The total verified operations were used as a starting point to create the baseline of operations. Professional judgement was then used to determine the percentage of aircraft types were using IFR flight plans and thus how many would be using VFR flight plans and outside the TFMS.

The faster and larger aircraft are typically flown with IFR flight plans, and the smaller aircraft are typically flown within VFR flight plans. **Table 1-24** provides this information and the determined annual aircraft operations. Using this information, 5,270 operations is used as a baseline. This consists of 1,100 local and 4,150 itinerant operations. This results in an average of 25 daily operations with 10 local and 15 itinerant.

Table 1-24 – Total Annual Operations Determination

Category	Verified Operations	Local/ Itinerant	% IFR	Total Annual
A/B-I	174	Itinerant	8%	2,174
A/B-I	-	Local	-	800
A/B-II	786	Itinerant	40%	1,964
A/B-II	-	Local	-	300
C/D-I	2	Itinerant	90%	2
C/D-II	28	Itinerant	90%	30
ADG-III	0	Itinerant	90%	0
Total	990	-		5,270

Source: KLJ Analysis

Forecast

Projecting the future aircraft activity at MBG requires a correlation of growth with local and regional trends. The total annual operations forecast for MBG is summarized in the following table, including a breakdown between operation types.

Table 1-25 – Total Operations Forecast Summary

Metric	2024	2029	2034	2039	2044	CAGR
Itinerant Operations	4,150	4,300	4,452	4,604	4,764	*0.70%*
Local Operations	1,100	1,140	1,180	1,222	1,266	*0.70%*
Military Operations	20	20	20	20	20	*0.0%*
Total Operations	**5,270**	**5,460**	**5,652**	**5,846**	**6,050**	***0.70%***

Source: KLJ Analysis, CAGR = Compounded Annual Growth Rate. Note: Some numbers may not add up due to rounding

Fleet Mix Forecast

When determining a fleet mix of aircraft at a non-towered general aviation airport, information is typically limited to what the sponsor sees or who is based on the airfield.

Using the Verified Operations from **Table 1-19** there were 990 operations in 2023 broken down as follows:

- Piston (Single) – 70 (7%)
- Piston (Multi) – 35 (4%)
- Turboprop – 837 (85%)
- Jet – 48 (5%)

This data is only a sample of overall operations as a majority of piston engine and turboprop aircraft flights are conducted under VFR.

The verified operations were expanded to total annual operations in **Table 1-25** based on the similar distribution used in **Table 1-19**.

Table 1-26 – Fleet Mix Annual Operations Determination

Category	Verified Operations	% IFR	Total Annual
Piston (Single)	70	2%	3,100
Piston (Multi)	35	3%	300
Turboprop	837	84%	1,800
Jet	48	69%	70
Helicopter	-	-	-
Ultralight/Other	-	-	-
Total	990		5,270

Source: KLJ Analysis; Totals vary depending on rounding

Table 1-27 – Total Operations Fleet Mix Forecast

Metric	2024	2029	2034	2039	2044	CAGR
Single-Engine Piston	3,100	3,170	3,242	3,314	3,380	*0.43%*
Multi-Engine Piston	300	303	304	306	310	*0.16%*
Turboprop	1,800	1,911	2,026	2,140	2,268	*1.16%*
Turbojet	70	76	80	86	92	*1.38%*
Helicopter	-	-	-	-	-	*0.0%*
Ultralight/Other	-	-	-	-	-	*0.0%*
Total Operations	**5,270**	**5,460**	**5,652**	**5,846**	**6,050**	***0.70%***

Source: KLJ Analysis

Throughout the planning period, the fleet mix reflects the decline in use of piston engine aircraft and the increase in turboprop and turbojet aircraft. This shift is in line with national trends.

Peak Activity Forecast

Peak demand periods help quantify aviation activity during busy periods. Time periods evaluated include the peak month, design day and design hour characteristics for airport operations.

Peak activity is important when planning the size of facilities with fixed capacities including the terminal, apron area and itinerant hangar space.

- **Peak Month:** The calendar month when peak operations occur

- **Design Day**: The average day in a peak month (peak month / 31)
- **Busy Day**: The busy day of a typical week in a peak month (Design Day + 15 percent)
- **Design Hour**: The peak hour within the design day (20 percent of Busy Day)

PEAK MONTH

The peak month of general aviation operations was determined by reviewing the prior five years of TFMS flight operations data. The peak month was estimated to have 11 percent of the annual general aviation operations.

Table 1-28 – Peak Month Operations Forecast

Metric	2024	2029	2034	2039	2044	CAGR
Annual Operations	5,270	5,460	5,652	5,846	6,050	0.70%
Peak Month (11%)	558	601	622	643	665	*0.70%*

Source: KLJ Analysis, CAGR = Compounded Annual Growth Rate

DESIGN/BUSY DAY AND DESIGN HOUR

The design day represents the average day in the peak month. The busy day accounts for a peaking activity during a time of concentrated activity such as weekends for airports with recreational traffic.

The busy day is calculated as an average day plus 15 percent.

The design hour is based on the average hourly operations during a design day with an additional factor for concentrated activity.

To determine the design hour figure, the design day operations are averaged over a 14-hour period, then increased by 20 percent.

Table 1-29 – Design Day Operations Forecast

Metric	2024	2029	2034	2039	2044	CAGR
Peak Month	558	601	622	643	665	0.70%
Design Day	18	19	20	21	21	0.77%
Busy Day (Design Day + 15%)	21	22	23	24	24	0.77%
Design Hour Total	4	4	5	5	5	0.77%
Itinerant						
Busy Day	17	17	18	19	19	0.77%
Design Hour	3	3	4	4	4	0.77%

Source: KLJ Analysis, CAGR = Compounded Annual Growth Rate

Forecast Summary

A complete summary of the proposed airport activity forecasts is in **Table 1-30**.

Table 1-30 – Aviation Activity Forecast Summary

Metric	2024	2029	2034	2039	2044	CAGR
Operations						
Itinerant						
General Aviation	4,150	4,300	4,452	4,604	4,764	0.77%
Military	20	20	20	20	20	-
Total Itinerant Operations	5,400	5,620	5,850	6.080	6,330	0.70%
Local						
Civil	1,100	1,140	1,180	1,222	1,266	0.70%
Military	-	-	-	-	-	-
Total Local Operations	1,100	1,140	1,180	1,222	1,266	0.70%
Total Operations	5,270	5,460	5,652	5,846	6,050	0.70%
Based Aircraft						
Piston (Single)	12	13	15	16	18	2.00%
Piston (Multi)	-	-	-	-	-	-
Turboprop	1	1	1	1	1	-
Turbojet	-	-	-	-	-	-
Helicopter	-	-	-	-	-	-
Other	-	-	-	-	-	-
Total Based Aircraft	13	14	16	17	19	1.92%
Operational Factors						
GA Ops per Based Aircraft	405	390	353	344	336	
Average Operations per Day	14	15	15	16	17	
Peak Day Operations	21	22	23	24	24	
Peak Hour Operations	4	4	5	5	5	

Source: KLJ & Consultant Analysis. Note: Some figures are rounded

FAA Approval

The FAA approved the critical design aircraft prepared in this chapter on _____ for use in this master planning effort.