Chapter 1

Background

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1 Background

The Duluth Airport Authority (DAA) is conducting an update to its Part 150 Noise Compatibility Study (Part 150 Study) to document the noise levels from aircraft operations at the Duluth International Airport (Airport or DLH). The purpose of conducting a Part 150 Study is to identify potential measures to reduce the impacts of noise from existing aircraft operations on incompatible land uses, and to discourage the introduction of new incompatible land uses in the areas that are determined to be impacted by aircraft noise. This chapter provides the background information necessary for public and/or governmental reviewers to make an informed decision as to the adequacy of the Part 150 Study to meet the requirements set forth by Title 14 of the U.S. Code of Federal Regulations (CFR) Part 150 Airport Noise Compatibility Planning,[1], under which it was prepared.

1.1 Title 14, Code of Federal Regulations Part 150

Part 150 is a section of the CFR that sets forth rules and guidelines for airports desiring to undertake airport noise compatibility planning. The regulations were promulgated by the Federal Aviation Administration (FAA) pursuant to the Aviation Safety and Noise Abatement Act (ASNA) of 1979, Public Law 96-193. ASNA was enacted to "… provide and carry out noise compatibility programs, to improve assistance to assure continued safety in aviation and for other purposes." The FAA was vested with the authority to implement and administer this act. This legislation required the establishment of a single system for measuring aircraft noise, determining noise exposure, and identifying land uses, which are normally compatible with various noise exposure levels. Through 14 CFR Part 150, the FAA established regulations governing the technical aspects of aircraft noise analysis and the public participation process for airports choosing to prepare airport noise compatibility plans.

1.1.1 Purpose of Conducting a Part 150 Noise Compatibility Study

The purpose for conducting a Part 150 Study at an airport is to develop a balanced and cost-effective plan for reducing current noise impacts from an airport's operations, where practical, and to limit additional impacts in the future. By following the process, the airport operator is assured of the FAA's cooperation through the involvement of air traffic control professionals in the study and the FAA's review of the recommended Noise Compatibility Program (NCP). An airport with an FAA-approved NCP also becomes eligible for funding assistance for the implementation of measures in the NCP.

Among the general goals and objectives addressed by a Part 150 Study are the following:

- To reduce, where feasible, existing and forecasted noise levels over existing noise-sensitive land uses;
- To reduce new noise-sensitive developments near the airport;
- To mitigate, where feasible, adverse impacts in accordance with Federal guidelines;
- To provide mitigation measures that are sensitive to the needs of the community;
- To minimize the impact of mitigation measures on local tax bases; and
- To be consistent, where feasible, with local land use planning and development policies.

In order to continue to receive financial assistance from the FAA to implement measures outlined in the approved NCP, FAA requires airport sponsors to update their NEMs if, in the operation of the airport, a substantial new

[1] Title 14 Code of Federal Regulations, U.S. Department of Transportation, Part 150, Airport Noise Compatibility Planning, Federal Aviation Administration, May 19, 2021.

noncompatible use occurs or a significant reduction of noise over existing noncompatible uses occurs. The previous Part 150 Study for DLH was completed more than 22 years ago in 1997 and approved by the FAA in February 1997.

The Part 150 Study planning process involves the methods and procedures an airport operator must follow when developing an NCP. The decision to undertake noise compatibility planning is entirely voluntary on the part of the airport operator. If the airport operator chooses to prepare an NCP, the FAA will provide funding assistance if the operator follows the regulations of 14 CFR Part 150. As a further encouragement to undertake noise compatibility planning, an airport operator becomes eligible for Federal funding assistance for the implementation of measures in an FAA-approved NCP. See **Exhibit 1-1, *Noise Compatibility Planning Process***, for a flowchart of the planning process.

A Part 150 Study involves six major steps:

- Study initiation, including identification of airport noise and land use issues and data collection;
- Definition of current and future noise exposure patterns;
- Evaluation of alternative measures for abating noise (e.g., changing aircraft flight paths), mitigating the impact of noise (e.g., sound insulation), and managing local land uses (e.g., airport-compatible zoning);
- Development of an NCP;
- Development of an implementation and monitoring plan; and
- FAA review and approval of the recommended NCP, including the analysis of alternatives, the compatibility plan, and the implementation and monitoring plan.

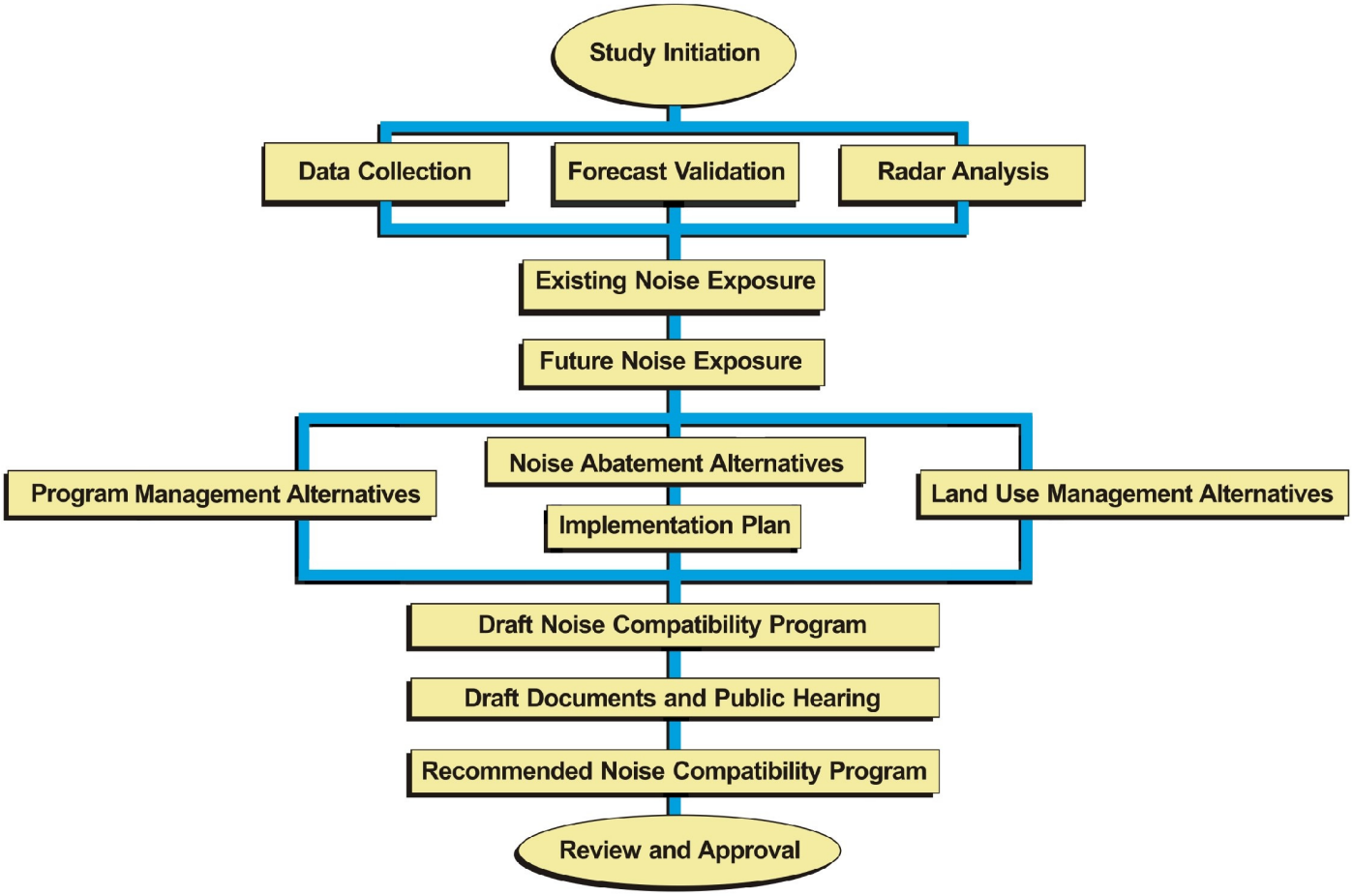
The Part 150 Study process is designed to identify noise incompatibilities surrounding an airport, and to recommend measures to both correct existing incompatibilities and to prevent future incompatibilities. For Part 150 Study purposes, noise incompatibilities are generally defined as residences or public use noise-sensitive facilities (libraries, churches, schools, nursing homes, and hospitals) within the 65 Day-Night Average Sound Level (DNL) noise contour. See **Appendix A** for more information on land use and noise compatibility guidelines contained in 14 CFR Part 150.

The planning process has both technical and procedural components. The first component involves the preparation of Noise Exposure Maps (NEMs), which requires the use of specific technical criteria and methods to complete analyses of aircraft noise exposure, potential noise abatement, and land use mitigation measures. NEMs show the official noise contours for the airport. For this Part 150 Study, NEMs were prepared for existing conditions (2020) and for five years in the future. The future year NEM for this Part 150 Study is labeled 2026. The NEMs must be prepared according to 14 CFR Part 150 guidelines with regard to methodology, noise metrics, identification of incompatible land uses, and public participation. More detailed information regarding the NEM process is included in **Section 1.1.3** of this chapter.

The second component of the planning process involves the development of an NCP. The NCP sets forth measures intended to mitigate the impacts of significant noise exposure on residential or other noise-sensitive areas near an airport, and to limit, to the extent possible, the introduction of new incompatible land uses at locations exposed to significant noise levels. Levels of significant noise are identified in 14 CFR Part 150 (see **Appendix A**).

The regulations also require that potentially affected airport users, local governments, and the public be consulted during the study, with the process culminating in the opportunity for a public hearing on the recommended NCP. More detailed information regarding the NCP process is included in **Section 1.1.4** of this chapter.

Exhibit 1-1 Noise Compatibility Planning Process



1.1.2 Noise Exposure Maps (NEMs)

The NEM component of a Part 150 Study presents airport noise exposure contours for the existing condition and a forecast condition five years from the date of submission of the documentation for FAA review. The current year NEM is labeled 2020. The data collection and analysis for this Part 150 Study began in 2018 and continued through 2020. The data used to prepare the Existing (2020) NEM was captured prior to the COVID-19 public health emergency. The Existing (2020) Baseline Noise Exposure Contour is based on data from September 2018 through August 2019. Therefore, operating levels used to prepare the Existing (2020) NEM do not necessarily reflect conditions at the time of submittal. The total aircraft operations during this period was 60,341[2], which converts to 165 average-annual day operations.

The Future (2026) Noise Exposure Contour is based on an Aviation Activity Demand Forecast that was prepared for the DLH Master Plan Update. This forecast projects annual operations to be 63,860 for the year 2026 or 190 average-annual day operations. The year 2026 is used as the future year because it is five years from the date of submission of this Part 150 Study for FAA review. The forecasted data used to prepare the Future (2026) NEM was developed prior to the COVID-19 public health emergency. It is expected that aviation activity will return to previously forecast levels; although, there may be some delay in reaching operating levels forecast for the Future (2026) NEM condition.

The NEM noise contours are superimposed on a land use map to show areas of incompatible land use, as defined in 14 CFR Part 150 and presented in **Appendix A*, FAA Policies, Guidance and Regulations***, of this document. **Appendix C, *Noise Modeling Methodology***, contains detailed information on the inputs and methodology for preparing the noise exposure contours, including guidelines on the use of the DNL noise metric. 14 CFR Part 150 requires the use of standard methodologies and metrics for analyzing and describing noise. It also establishes the guidelines for the identification of land uses that are incompatible with noise of different levels. The official NEMs are located at the front of this document with the NEM and NCP checklist, large scale 1 inch equals 2000 feet NEMs are located at the back of this document with supplemental flight track maps.

The airport proprietor can gain limited protection through preparation, submission, and publication of NEMs. ASNA provides in Section 107(a), as codified in 49 U.S.C. § 47506, that:

> "No person who acquires property or an interest therein after the date of enactment of the Act in an area surrounding an airport with respect to which a noise exposure map has been submitted under section 47503 of the Act shall be entitled to recover damages with respect to the noise attributable to such airport if such person had actual or constructive knowledge of the existence of such noise exposure map unless, in addition to any other elements for recovery of damages, such person can show that:
>
> i. A significant change in the type or frequency of aircraft operations at the airport; or
>
> ii. A significant change in the airport layout; or
>
> iii. A significant change in the flight patterns; or
>
> iv. A significant increase in nighttime operations; occurred after the date of acquisition of such property or interest therein and that the damages for which recovery is sought have resulted from any such change or increase."

[2] Federal Aviation Administration, *Operations Network (OPSNET)*. Accessed October 17, 2019 at: https://aspm.faa.gov/opsnet/sys/Main.asp.

ASNA provides that "constructive knowledge" shall be imputed to any person if a copy of the NEM was provided to them at the time of property acquisition or if notice of the existence of the NEM was published three times in a newspaper of general circulation in the area.

In addition, 14 CFR Part 150 defines "significant increase" as an increase of 1.5 decibel (dB) of DNL. For purposes of this provision, FAA officials consider the term "area surrounding an airport" to mean an area within the 65 DNL contour (See 14 CFR Part 150, Section 150.21(d), (e), (f)(1), and (f)(2)). An acceptance of the NEMs by the FAA is required before the FAA will approve an NCP for the airport.

1.1.3 Noise Compatibility Program (NCP)

An NCP includes provisions for the abatement of aircraft noise through aircraft operating procedures, air traffic control procedures, or airport facility modifications. It also includes provisions for land use compatibility planning and may include actions to mitigate the impact of noise on incompatible land uses. **Chapter Four, *Noise Compatibility Program***, includes detailed information for the DLH NCP recommendations. The NCP must also contain provisions for updating and periodic revision.

14 CFR Part 150 establishes procedures and criteria for FAA evaluation of the NCP. Two criteria are of particular importance: the airport proprietor may not take any action that imposes an undue burden on interstate or foreign commerce; nor may the proprietor unjustly discriminate between different categories of airport users.

The FAA also reviews changes in flight procedures proposed for noise abatement for potential effects on flight safety, safe and efficient use of the navigable airspace, management and control of the national airspace and traffic control systems, security and national defense, and compliance with applicable laws and regulations. Because the FAA has the ultimate authority for air traffic control and flight procedures related to air traffic control requirements, any measures relating to these subjects that are recommended in an NCP must be explicitly approved by the FAA and may not be implemented unilaterally by the airport proprietor.

With an approved NCP, an airport proprietor becomes eligible for Federal funding to implement eligible items of the program. Approval by the FAA does not, however, commit the agency to either a specific schedule of implementation or guarantee the allocation of Federal funds for implementation of any NCP measure. Additionally, prior to provision of Federal funding the FAA must complete an environmental review and issue an agency decision in accordance with the National Environmental Policy Act (NEPA) and other relevant special purpose laws.

1.2 Public Involvement

As discussed previously, a key element in the Part 150 Study process is public involvement, which is designed to inform and gather input from the public regarding the data and findings of the Part 150 Study. A Planning Advisory Committee (PAC) was convened and met to review study progress and provide input as necessary. In-person and virtual public information meetings were held at key points throughout the Part 150 Study. Additional information on the public involvement process is included in **Appendix G, *Public Involvement***.

1.2.1 Planning Advisory Committee (PAC)

A PAC was organized early in the planning process to provide feedback and advice to the planning team on the contents and preparation of the Part 150 Study. The PAC provided residents, airport users, agencies, and local officials an opportunity to be involved in developing DLH's Part 150 Study. In refining the Part 150 Study, staff from the DAA, as well as the consultant team wanted to benefit from the PAC members' special viewpoints and

the people and resources they represented. A process was therefore designed to encourage the open exchange of creative ideas to achieve results. The members of the PAC assisted the process in several ways;

- **As a Sound Board** – The PAC provided a forum in which the consultant team and other PAC members could present information, findings, ideas, and recommendations. All benefited from listening to the diverse viewpoints and concerns of the wide range of interests represented on the committee.
- **As a Link to the Community** – Each member represented a key constituent interest – local neighborhoods, local governments, public agencies, or airport users. Committee members provided a link between the study team and the people they represented. They were asked to inform their constituents about the study as it progressed, and to convey the views of others at committee meetings.
- **As a Critical Reviewer** – The consultant team wanted to have its work scrutinized closely for completeness of detail and clarity of thought. The committee membership was urged to review the consultant's work and provide any input to help improve it.
- **As an Aid to Implementation** – Each member has a unique role to play in implementing the plan, ranging from making changes in flight procedures to changes in local land use plans and regulations.

The PAC operated informally, with no compulsory attendance, no voting, and no officers. The final decision on which measures to include in the Part 150 Study NCP rests with the DAA. The meetings were conducted by the consultant team and were held at key points in the study when committee input was especially needed. Members were urged to attend the general public information meetings held during the study to listen firsthand to the concerns that were raised and to speak with members of the consultant team and representatives of the DAA one-on-one. Many organizations were contacted and invited to designate a representative to serve on the PAC. The resulting membership represents a broad range of interests that includes pilots, military, commerce, community, environmental, air traffic controllers, government and planning, as well as interested and affected citizens. A roster of the membership of the PAC is provided in **Appendix G, *Public Involvement***.

1.2.2 Public Information Workshops

During the course of the Part 150 Study, one (1) in-person Kick-off workshop and three (3) virtual workshops were held. The fourth workshop was held in conjunction with the release of a Draft Part 150 Study. Meeting dates and times are noted below. The public information meetings were attended by interested citizens, elected officials, and local media representatives. **Appendix G, *Public Involvement***, includes copies of meeting notices, sign-in sheets, comments received, and meeting handouts and presentations.

Public Information Workshop Kick-off Meeting #1 – October 2, 2019 – In person

Due to the COVID-19 virus and recommended precautions to prevent the spread of the virus and to protect public health, the public meetings were conducted virtually online. In lieu of an in-person workshop, an online meeting was held for the remainder of the public workshops, which included a study update presentation and a question and answer sessions. All meeting materials and recordings of the meetings were posted on the project website and methods for submitting public questions and comments were advertised online.

Public Information Workshop Meeting #2 – August 26, 2020 – Online

Public Information Workshop Meeting #3 – February 17, 2021 – Online

Public Information Workshop Meeting #4 – November 2, 2021 – In person & online

1.2.3 Public Hearing and Comment Period

14 CFR Part 150 requires that Draft Part 150 NCP documents be made available to the public prior to conducting a Public Hearing. The Draft Part 150 NCP document was made available to the public at the Hermantown City Hall, the Airport, and online at www.duluthairport.com/noise-study/ as of October 25th, 2021. A Public Hearing was held in conjunction with the last public workshop on November 2nd, 2021 at the Airport from 6:00 p.m. to 8:00 p.m. A list of document locations, a summary of the hearing, meeting materials, comments received, and response to those comments are included in **Appendix G, *Public Involvement***, of the final document.

1.2.4 Additional Public Coordination

Additional efforts to provide information and opportunity for public involvement in this Part 150 Study included a project website. Information about the Part 150 Study; including general information, upcoming and past meetings, and a method to contact the Part 150 Study Team; is available online at the following address: https://duluthairport.com/noise-study/

The Part150 Study team also attended the DLH Master Plan Public Workshop held on September 17, 2019, where background information on the Part 150 Study process was presented to attendees.

1.3 Status of 1997 Noise Compatibility Plan

The following section provide a basic summary of the 1997 NCP and the implementation status of the measures contained in the NCP. The measures below are considered completed and not included as recommended measures in the current DLH NCP. Measures from the 1997 NCP considered for modification are included in **Chapter 4, *Noise Compatibility Program***.

Summary of 1997 Noise Compatibility Plan

5.1.1.1 An individual within Air Traffic Control Tower (ATC), Minnesota Air National Guard (MnANG) or airport management should continue to be designated with the responsibility for documenting and responding to all noise complaints. Quick response to public concerns may prevent future problems through simple application of open communications. The current procedure should be reviewed, modified if necessary, and be continued.
Status: Implemented

5.1.1.2 The airport should develop a contingency plan for the rapid creation of a Community Noise Abatement Committee. Representation should include, but not necessarily be limited to; Airport Management, ATC, MNANG, airlines (including cargo operators), Fixed Base Operator (FBO), officials of neighboring governmental entities, and representatives from impacted neighborhoods. Meeting Place, frequency of meetings and meeting format should be established pending possible modifications as meetings actually being.
Status: Not Implemented

5.1.2.1 The existing Letter of Agreement between ATC and MnANG should be amended to preclude overflights of Pike Lake, whenever feasible. Although this area is outside of the 65 DNL contour, it is a particularly noise sensitive area and source of noise complaints.
Status: Unknown

5.1.2.2. The existing policy of the local ATC personnel to disburse traffic to various areas should continue. The continuation of 5.1.1.1 will allow ATC to keep up to date on possible new areas of noise sensitivity.
Status: Implemented

5.1.2.2 An Environmental Assessment should be commissioned as soon as possible to explore the feasibility of extending Runway 3/21 to a length adequate to accommodate F-16 operations. The final Runway length is anticipated to be 8,000 feet, plus a possible paved or stabilized overrun.
Status: Not Implemented

Summary of 1997 Land Use Compatibility Measures

5.2.1.1 A voluntary land acquisition/relocation program should be implemented within the 75 DNL, 70 DNL, and 65 DNL with emphasis placed upon parcels which are currently undeveloped.
Status: Not Implemented

5.2.2 Develop a comprehensive compatible land use plan or Airport Noise Overlay Zone through the Airport Zoning Board.
Status: Implemented

1.4 Airport Facilities

DLH opened in 1929 after the City of Duluth purchased 640 acres of land from St. Louis County. The airport opened with two (2) 2,650-foot sod runways and in 1930, it was dedicated as a public airport and named the Williamson-Johnson Municipal Airport. It retained the name until 1963.[3]

By 1942, DLH had three paved runways, Runways 3/21, 9/27, and 13/31, each 4,000 feet in length and 150 feet in width.[4] The United States Army Corps of Engineers extended Runway 9/27 and Runway 3/21 to 5,699 feet in 1945. MnANG built permanent facilities on the east end of the airfield in 1948. The United States Air Force, which operated at DLH during and after World War II, extended Runway 9/27 to 9,000 feet with a 1,000 foot overrun in 1951. Runway 9/27 was rebuilt in 1956 and further extended in 1966 to 10,152 feet in length.

The original terminal building was built in 1954 on the west side of Runway 3/21 and served the airport for nearly 20 years. The terminal floor area was 14,200 square feet with 280 parking spaces.

In 1974, a new Terminal Building and U.S. Customs International Arrivals Building, were completed east of Runway 3/21 and open for operation. Runway 13/31 was shortened to 2,578 feet to accommodate construction of the addition to the International Arrivals Building. This resulted in Runway 13/31 being closed as a runway due to obstruction. Runway 13/31 was subsequently re-striped in 1980, decreasing the width to 75 feet, for use as a taxiway. In 1989, the new Terminal building and adjacent structures were connected to form one enclosure. The original terminal building was then converted for use as offices for general aviation, the FAA, as well as the United States Weather Bureau.

In 2013, DLH opened a new $78 million, state-of-the-art passenger terminal. The new terminal replaces the 30-year old terminal building that had become congested and difficult to use post-9/11. Additional screening procedures put in place after 9/11 made the security screening and hold rooms in the old terminal congested and

[3] 148th Fighter Wing, *Aircraft Noise Environmental Management Resource Book,* November 2005. Available online at: https://www.148fw.ang.af.mil/Portals/44/documents/environmental/AFD-160613-016.pdf.
[4] *Id.*

eliminated all restrooms and concessions beyond the TSA checkpoints.[5] Additionally, there was no method to expand the old terminal, which was located too close to the runway based on current FAA design standards. The new terminal is approximately the same size as the old terminal but was designed to make optimal use of the available space. The design put concessions and restrooms behind the TSA checkpoints, while also bringing the building into compliance with FAA design standards.[6]

1.4.1 Airport Location

DLH is a public-use joint civil-military airport, and home to the 148th Fighter Wing of the MnANG. The Airport is located on the northwestern edge of the City of Duluth, to the north and east of the City of Hermantown, south of Canosia Township, and southwest of the City of Rice Lake. The area surrounding DLH includes a mixture of land uses, including single-family residential housing, industrial, commercial, military uses and open-space/undeveloped property. The most densely populated areas are to the south and east of the airport. The generalized location of DLH is illustrated on **Exhibit 1-2, *Airport Location Map***.

1.4.2 Airport Runways

DLH has one east/west runway (09/27) and one north/south crosswind runway (03/21). Runway 09/27 is the longest runway on the airfield at 10,591 feet in length and is 150 feet wide. Runway 03/21 is 5,719 feet long and 150 feet wide. There is also an area on the airfield where helicopter traffic is arriving to and departing from, located near the FAA Airport Traffic Control Tower (ATCT), and is named H1 in this analysis.

1.4.3 Airport Operators and Facilities

As of September 2019, DLH was served by the following commercial airline operators:

- American Airlines / American Eagle (suspended spring of 2020)
- Delta Air Lines / Delta Connection
- United Airlines / United Express
- Sun Country (Seasonal)

1.4.3.1 Terminal Facilities

The Passenger Terminal at DLH includes 4 total gates within a single terminal facility. The terminal is located to the southwest of the runway intersection.

1.4.3.2 Airside Facilities

DLH can be divided into four distinct quadrants: southeast, southwest, northwest, and northeast. The southwest quadrant consists of general aviation hangars, Monaco Air FBO, airfield maintenance, DAA offices, and Cirrus Aircraft. The southeast quadrant houses the terminal area, which consists of the passenger terminal and parking. The northeast quadrant consists of the MnANG 148th Fighter Wing and support facilities. The northwest quadrant consists general aviation ramp, Aircraft Rescue Fire Fighting (ARFF) station, and AAR Corporation maintenance repair overhaul (MRO) facility. AAR Corporation recently ceased operations at DLH, the facility is currently unoccupied. All of the airport facilities at DLH are shown on **Exhibit 1-3, *Existing Airport Layout***.

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[5] Renalls, C., Duluth's new airport terminal ready for takeoff, *Duluth New Tribune,* January 11, 2013. Available online at: https://www.duluthnewstribune.com/business/2443416-duluths-new-airport-terminal-ready-takeoff.

[6] RS&H, *Duluth International Airport.* Accessed July 13, 2020 online at: https://www.rsandh.com/projects/duluth-international-airport/.

1.4.4 Fixed-Base Operators (FBOs)

There is one FBO that operates at DLH, Monaco Air, that provide aircraft services such as fueling services, ramp parking, hangar parking/storage, parts, and maintenance for general aviation (GA) aircraft at DLH.

1.4.5 Based Aircraft

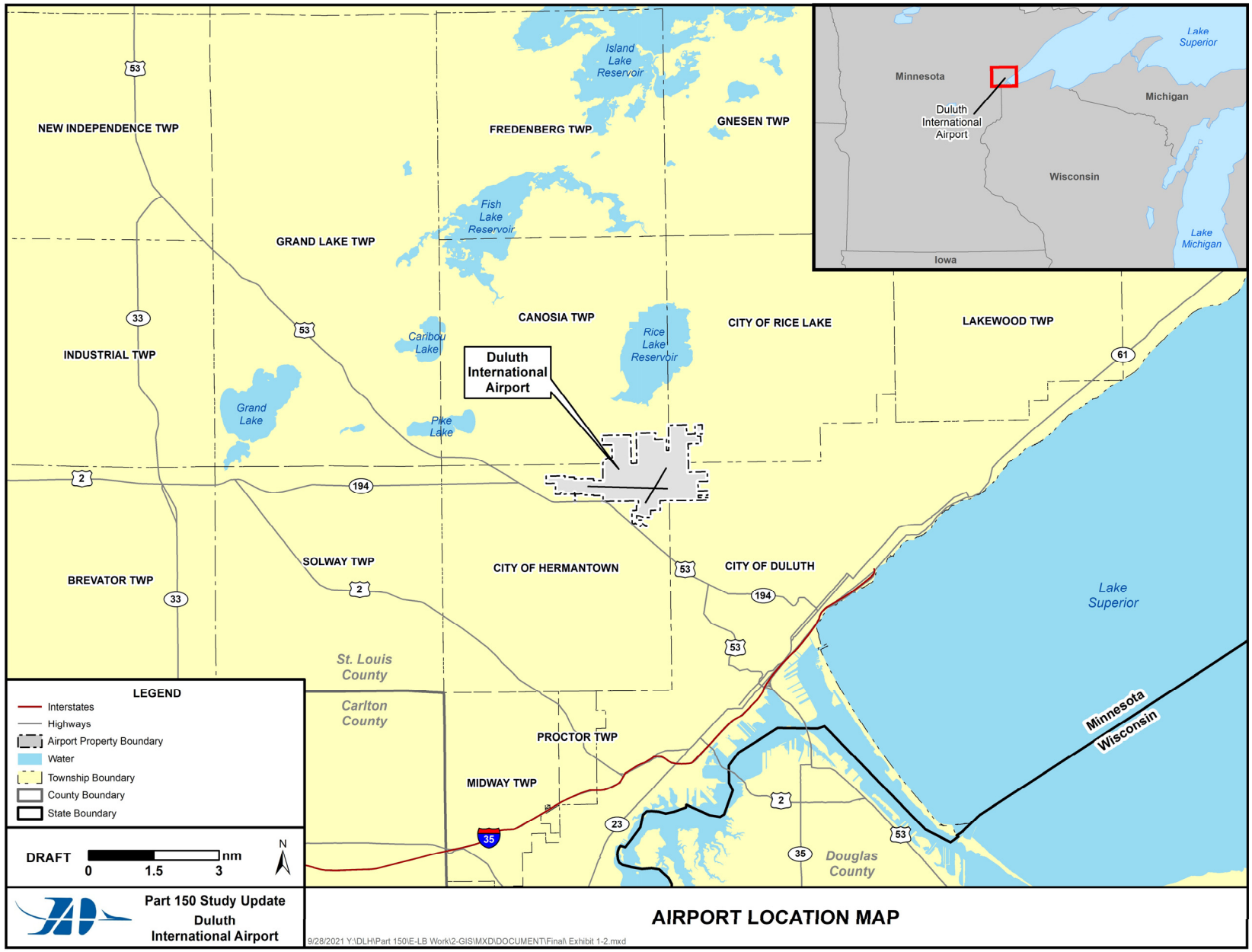
Table 1-1, *DLH Based Aircraft*, provides the number of aircraft based at DLH by aircraft type. A total of 88 aircraft are based at the airport.

Table 1-1 DLH Based Aircraft

Aircraft Type	Number
Single engine airplanes	49
Multi engine airplanes	10
Jet airplanes	4
Helicopters	4
Military	21
Total aircraft based on the field	**88**

Source: Federal Aviation Administration (FAA) 5010 Form.
Form accessed September 19, 2019 from www.gcr1.com/5010web/.

Exhibit 1-2 Airport Location Map



Source: Landrum & Brown, 2021.

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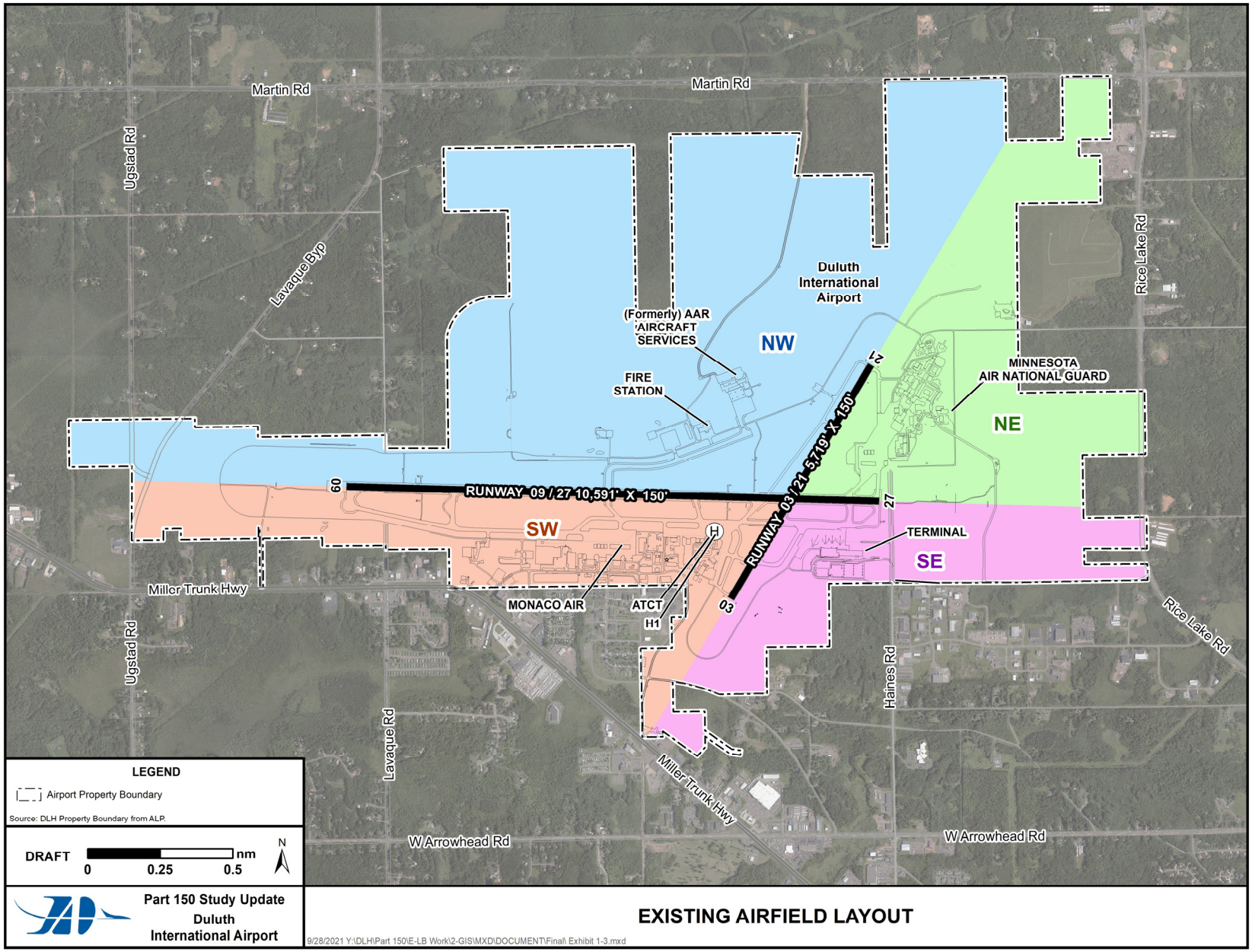
Exhibit 1-3 Existing Airport Layout



Source: Landrum & Brown, 2021.

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1.4.6 Annual Operations

The number of annual operations at DLH for the Existing (2020) Baseline condition was approximately 60,341, which results in 165.3 average-annual day operations. The number of annual operations at DLH was based on FAA sources, ATCT records, and discussions with operators. **Table 1-2, *Summary of Average-Annual Day Operations***, shows a summary of the Existing (2020) Baseline condition average daily operations by primary user group. For a detailed breakdown of the annual operations, refer to **Appendix C, *Noise Modeling Methodology***.

Table 1-2 Summary of Average-Annual Day Operations

Aircraft Type	Arrivals		Departures		Touch and Go		Total	Percent of Total
	Day	Night	Day	Night	Day	Night		
Large Jets	0.3	2.1	2.2	0.2	--	--	4.9	2.9%
Regional / Air Taxi Jets	5.5	2.4	6.1	1.8	--	--	15.8	9.6%
Commuter / Air Taxi Props	2.4	0.3	0.7	2.0	--	--	5.5	3.3%
General Aviation Jets	17.1	4.5	18.8	2.8	1.4	--	44.6	27.0%
General Aviation Props	28.5	10.5	31.7	7.3	1.2	--	79.3	48.0%
General Aviation Helicopter	0.3	0.4	0.4	0.3	--	--	1.3	0.8%
Civil Aircraft Subtotal	***54.1***	***20.2***	***59.9***	***14.4***	***2.6***	--	***151.4***	--
Military Aircraft	6.6	0.2	6.8	--	0.3	--	13.9	8.4%
Grand Total	***60.7***	***20.4***	***66.8***	***14.4***	***3.0***	--	***165.3***	***100%***

Notes: Totals may not equal sum total due to rounding.
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

Source: Federal Aviation Administration (FAA) Operations Network (OpsNet) data, Traffic Flow Management System (TFMS) data, National Offload Program (NOP) data, Minnesota Air National Guard 148th Fighter Wing data, Landrum & Brown analysis, 2021.

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