CHICAGO ROCKFORD INTERNATIONAL AIRPORT

CHAPTER 1

BACKGOUND

1 Background

The Greater Rockford Airport Authority (GRAA) is conducting an update to its Part 150 Noise Compatibility Study (Part 150 Study) to document the noise levels from aircraft operations at the Chicago Rockford International Airport (Airport or RFD). 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 (14 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 which 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, 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.

The FAA recommends updating an airport Part 150 Study periodically to reflect current operating conditions. These updates would include modifications to the NCP or the Noise Exposure Maps (NEMs). Updates are recommended when there is a notable change in operating levels or a change to the airfield that affects how aircraft operate. The previous Part 150 Study Update for RFD was completed 18 years ago in 2003 and

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

approved by the FAA in November 2003, this update included modifications to the NCP and the NEMs. The NEMs were again updated and accepted by the FAA in January 2014.

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.

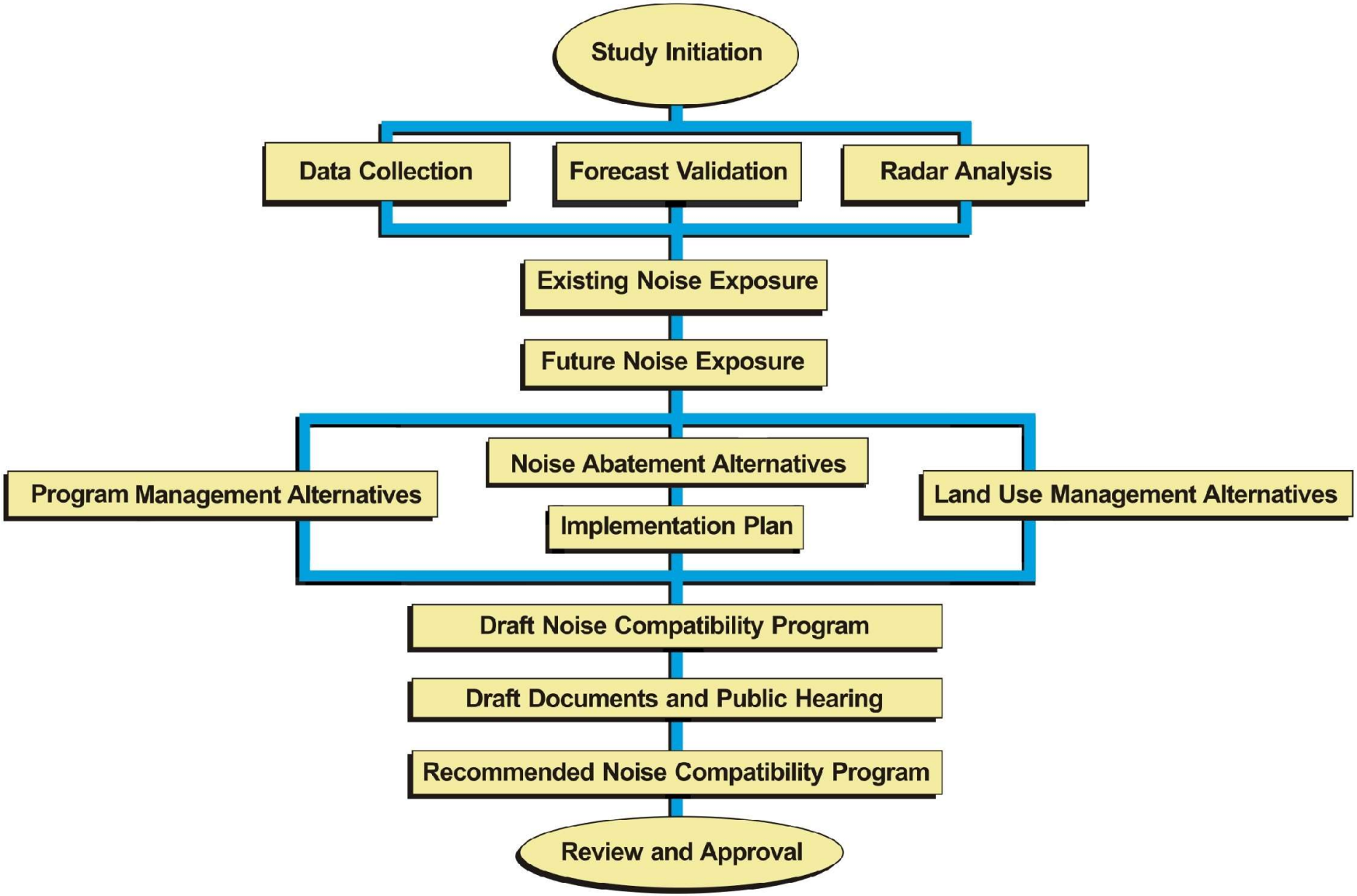
The Part 150 Study process is designed to identify noise incompatibilities surrounding an airport, and to recommend measures to both correct existing incompatibilities and to prevent future incompatibilities. For Part 150 Study purposes, noise incompatibilities are generally defined as residences or 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, *FAA Policies, Regulations and Guidance***, 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 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 (2023) and for five years in the future. The future year NEM for this Part 150 Study is labeled 2028. 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 1.1.2** 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 1.1.3** of this chapter.

EXHIBIT 1-1 | NOISE COMPATIBILITY PLANNING PROCESS



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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 2023. The data collection and analysis for this Part 150 Study began in 2020 and continued through 2023. The Existing (2023) Baseline condition Noise Exposure Contour is based on data from December 2021 through November 2022. The total aircraft operations during this period was 46,509[2], which converts to 127.4 average-annual day operations.

The Future (2028) Baseline condition Noise Exposure Contour is based upon the Forecast Working Paper (FWP)[3] and subsequent update to account for impacts due to the COVID-19 health emergency.[4] This forecast projects annual operations to be 63,899 for the year 2028 or 175.1 average-annual day operations. The year 2028 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 updated FWP operations summary is presented in **Appendix B, *Forecasts***.

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**. **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 guidelines for the identification of land uses that are incompatible with noise of different levels. Small scale NEMs are located at the front of this document with the NEM and NCP checklist, official 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."

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

[2] Federal Aviation Administration, *Operations Network (OPSNET)*. Accessed December, 2023 at: https://aspm.faa.gov/opsnet/sys/Main.asp.
[3] Development of Northwest Cargo Apron & Midfield Development Program, Forecast Summary, September 2018, Crawford Murphy & Tilly.
[4] Chicago Rockford International (RFD) – 2018 Forecast Working Paper (FWP) Sensitivity Analysis, July 2021, Crawford Murphy & Tilly.

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 RFD 2023 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.

FAA approval of NCP measures, through a Record of Approval (ROA) that is supported by an environmental assessment and a finding of no significant impact, environmentally clears the agency to participate in actions over which it has primary implementation responsibility (e.g., air traffic modifications). With an approved NCP, an airport proprietor becomes eligible for Federal funding to implement the 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.

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. An Advisory Committee (AC) was convened and met to review study progress and provide input as necessary. Virtual public information meetings were held at key points throughout the Part 150 Study Update. Additional information on the public involvement process is included in **Appendix D, *Public Involvement***.

1.2.1 Advisory Committee (AC)

An AC was organized to provide feedback and advice to the study team on the contents and preparation of the Part 150 Study. The AC provided airport users, agencies, and local officials an opportunity to be involved in developing RFD's Part 150 Study. In refining the Part 150 Study, staff from the GRAA, as well as the consultant team wanted to benefit from the AC 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 AC assisted the process in several ways;

- **As a Sounding Board** – The AC provided a forum in which the consultant team and other AC 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 AC 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 GRAA. 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 GRAA one-on-one. Many organizations were contacted and invited to designate a representative to serve on the AC. The resulting membership represents a broad range of interests that includes pilots, commerce, community, environmental, air traffic controllers, government and planning, as well as interested and affected citizens. A list of local representatives and organizations that participated in the committee is provided in **Appendix D**.

1.2.2 Public Information Workshops

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

Public Information Workshop Meeting #1 – December 15th, 2021 (6:00 p.m. – 8:00 p.m.)

Public Information Workshop Meeting #2 – December 8th, 2022 (6:00 p.m. – 8:00 p.m.)

Public Information Workshop Meeting #3 – November 15th, 2023 (6:00 p.m. – 7:00 p.m.)

Public Hearing – November 15th, 2023 (7:00 p.m. – 8:00 p.m.)

1.2.3 Public Information 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 Study Update document was made available to the public at the Rockford City Hall, Hart Interim Library and the GRAA office, and online at https://www.airportprojects.net/rfd-part150/home/documents-reports/ as of October, 2023. A online virtual Public Hearing will be held in conjunction with the last public workshop on November 15th, 2023, 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 D**, of the draft 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://www.airportprojects.net/rfd-part150/

1.2.5 Noise Complaints

Noise complaint history was obtained for the period of 2016 through April of 2021 from the greater Rockford Airport Authority (GRAA). The GRAA does not have a current formal noise complaint logging and response process. However as complaints are received information is informally tracked by GRAA staff. Since 2016 approximately 20 local residents have called the GRAA to report a noise complaint.

For complaints that included an address of the local resident, Part 150 Study announcement were mailed to those address', as well as information on how to reach the study team and get information about the study. All new noise complaints since 2021 have been forwarded to the study team. Those community members were also notified of the Part 150 Study and the opportunities to participate if contact information was made available.

1.3 Status of 2003 Noise Compatibility Plan

The 2003 NCP for RFD was published April of 2003 with a final FAA Record of Acceptance (ROA) on November 3, 2003. The 2003 NCP included 34 recommended measures, including 13 noise abatement measures, 14 land use management measures, and 6 implementation and other measures. Each measure is listed below, followed by its status in italics. The NEMs were updated in 2013, and received FAA acceptance in January 2014. The NEMs were labeled 2013 and 2018.

2003 NCP Noise Abatement Measures

Note that NA-2, NA-5, and NA-6 were previously withdrawn from the program in favor of more effective measures and therefore are not included in this list:

NA-1: Maintain existing noise abatement procedures per Tower Order of June 15, 1984. *This measure is currently implemented on a voluntary basis, as conditions allow.*

NA-3: All aircraft departing on Runway 7 should be fanned along three departure tracks: left, right, and center. *This measure is currently implemented on a voluntary basis, as conditions allow.*

NA-4: Direct pilots of C-130s to turn as tightly as practicable when training on Runway 19. *This measure is currently implemented on a voluntary basis, as conditions allow; however RFD no longer has pilot training from C-130 aircraft.*

NA-7: Establish departure turn from Runway 25 to a heading of 310 degrees (or 60 degrees to the right) for all aircraft having departure courses from 280 degrees clockwise through 99 degrees, inclusive. Maintain heading until reaching 3,000 feet mean sea level (MSL). *This measure was initially approved in the 1994 NCP to recommend departures from Runway 25 be assigned a 310-degree heading. This measure was modified in the 2003 NCP to replace the 310-degree heading with the Dubuque (DBQ) or the Nodine (ODI) navigational fixes and is currently implemented on an voluntary basis by the ATCT. Aircraft having departure courses of 250 degrees clockwise through 069 degrees typically file, and are assigned, the ODI fix. This measure is currently implemented on a voluntary basis, as conditions allow.*

NA-8: Retain 20-degree left turn from Runway 25 for all aircraft weighing more than 12,500 pounds and having departure courses 100 degrees clockwise through 279 degrees inclusive. Maintain heading until reaching 3,000 feet MSL. *This measure is currently implemented on a voluntary basis, as conditions allow.*

NA-9: For Runway 19 departures climb on runway heading to 1,200 feet MSL then turn to 170 degrees until 3,000-foot MSL – all aircraft. *This measure is currently implemented on a voluntary basis, as conditions allow.*

NA-10: Establish informal Preferential Runway Use Plan, weather and operational necessity permitting, as follows for aircraft weighing more than 12,500 pounds, using five-knot tailwind and 15-knot crosswind components for runway assignments.

The recommended runway use program, as modified, is outlined below:

- All Departures
  - Runway 19 preferred for all departures.
  - Runway 25 would be used for departures when use of Runway 19 could not be used due to wind, weather, or operational necessity.
  - Runway 1 would be used for departures when both Runway 19 and Runway 25 could not be used due to wind, weather, or operational necessity.
- Daytime Arrivals
  - The runway that would maximize traffic flow would be used for arrivals.
- Nighttime Arrivals
  - Runway 1 preferred for all arrivals.
  - Runway 7 would be used for arrivals when use of Runway 1 could not be used due to wind, weather, or operational necessity.

This measure was modified in the 2003 NCP to change the secondary nighttime arrival runway for nighttime hours from Runway 25 to Runway 7 because Runway 7 is equipped with an Instrument Landing System (ILS), which allows for precision approaches, and Runway 25. This measure is currently implemented on a voluntary basis, as conditions allow.

NA-11: For all aircraft requiring more than 8,000 feet certified takeoff length, use Runway 25 preferred. *This measure is currently implemented on a voluntary basis, as conditions allow.*

NA-12: Establish departure turn from Runway 25 to a heading of 310-degrees as soon as practicable for daytime (7:00 a.m. to 10:00 p.m.) departures by aircraft weighing more than 12,500 pounds. Maintain heading until reaching 3,000 feet MSL. *This measure was initially approved in the 1994 NCP to recommend departures from Runway 25 be assigned a 310-degree heading. This measure was modified in the 2003 NCP to replace the 310- degree heading with the Dubuque (DBQ) or the Nodine (ODI) navigational fixes. This measure is currently implemented on a voluntary basis, as conditions allow.*

NA-13: Establish departure turn from Runway 25 to a heading of 200 degrees as soon as practicable for nighttime (10:00 p.m. to 7:00 a.m.) departures by aircraft weighing more than 12,500 pounds. Maintain heading until reaching 3,000 feet MSL. *This measure is currently implemented on a voluntary basis, as conditions allow.*

NA-14: Aircraft weighing more than 12,500 pounds conduct touch and go and low approach training activity on the south side of the airport when using Runways 7 or 25. *This measure is currently implemented on a voluntary basis, as conditions allow; however substantial pilot training is no longer occurring at RFD as it has historically.*

NA-15: During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 1, maintain runway heading until reaching 3,000 feet MSL before turning on course. *This measure is currently implemented on a voluntary basis, as conditions allow.*

NA-16: Encourage the use of noise attenuating construction standards for all new on-airport structures/facilities and use those structures as noise barriers/buffers to adjacent off-airport land uses. *This measure is currently implemented. The GRAA continues to use best management practices when locating new structures/facilities on the airport.*

2003 NCP Land Use Management Measures

Note that LU-1, LU-3, LU-6, LU-7, and LU-10 were previously withdrawn from the program and therefore are not included in this list:

LU-2: Adopt noise overlay zoning prohibiting development of selected noise-sensitive land uses within the 60 DNL contour, high occupancy uses in the "Double-Clear Zone Area," and residential uses in the 65 DNL contour of the 2000 NCP within the "Double-Clear Zone Area" by the city of Rockford and Winnebago County. *With the publication and FAA ROA of the 2003 NCP, this information was conveyed to the City of Rockford and Winnebago County for implementation at their discretion. This measure was implemented.*

LU-4: Amend local comprehensive plans by adopting Updated Part 150 NCP as their Noise Compatibility Elements for the city of Rockford and Ogle and Winnebago counties. *This measure was implemented by Ogle County in the 1996 comprehensive plan. With the publication and FAA ROA of the 2003 NCP, this information was conveyed to the City of Rockford, Winnebago County, and Ogle County for implementation at their discretion. This measure was implemented.*

LU-5: Adopt guidelines for discretionary review of development projects for the city of Rockford and Ogle and Winnebago counties. *With the publication and FAA ROA of the 2003 NCP, this information was conveyed to the City of Rockford, Winnebago County, Ogle County, and the GRAA for implementation at their discretion. This measure was implemented.*

LU-8: Acquire homes and land on Blackhawk Island, relocate residents, redevelop as a park. (Partial FAA approval included only area in 65 DNL noise contour). *This measure was implemented.*

LU-9: Redevelop airport-owned land parcels located along Kishwaukee Street, south of Research Parkway. *The implementation of this measure is ongoing; dependent upon interest of potential developers and availability of funding.*

LU-11: Acquire development and overflight rights via purchase of land use and avigation easement over undeveloped parcel in Runway 7L approach area on south side of Kishwaukee River. *This measure was implemented.*

LU-12: Offer options of voluntary sale to GRAA or sound insulation to owner of one residence south of the airport in the 65 DNL contour of the 1993 NCP. *This measure was implemented.*

LU-13: Encourage the city of Rockford and Winnebago County to require plat notes on new subdivision plats and to record the notes on deeds for new subdivisions within the Airport Noise Overlay Zones AC-1 and AC-2. *With the publication of the 2003 NCP, this information was conveyed to the City of Rockford and Winnebago County for implementation at their discretion. To date, the airport noise contours are not referenced in any local subdivision ordinance.*

LU-14: Encourage Winnebago County, the city of Rockford, the Village of New Milford, and the Village of Davis Junction not to allow an increase in the residential density in the Agricultural Priority (AG) or Rural Residential (RR) zoning districts (Winnebago County) in the 2008 NEM/NCP 60+ DNL noise contour. *With the publication of the 2003 NCP, this information was conveyed to The City of Rockford, Winnebago County, the Villages of New Milford and Davis Junction for implementation at their discretion. To date, the airport noise contours are not referenced in any local zoning document.*

2003 NCP Other Implementation Measures

OM–1: Noise monitoring, contour updating, and land use implementation assistance. *This measure is ongoing, noise contour and land use planning updates will occur for this NCP Update.*

OM–2: Noise complaint response. *This measure was implemented.*

OM–3: Plan review and evaluation. *This measure is ongoing, the NCP will be reviewed and updated as necessary as part of this Part 150 Study Update.*

OM–4: Establish a Pilot/Community Awareness Program. *Measure has not been implemented.*

OM–5: Publication of Instrument Departure Procedures for Runways 1, 19, and 25. *Measure has not been implemented.*

OM–6: Update airport information in the *Airport Facilities Directory*. *This measure is implemented as necessary.*

1.4 Airport Location and History

Development of RFD began on April 9, 1946, when the citizens of Rockford, Harlem, Owen, and Cherry Valley townships approved the formation of GRAA. On May 6, 1946, the Illinois Secretary of State issued the charter to GRAA. In 1948, the U.S. deeded approximately 1,500 acres of Camp Grant, a military installation, to GRAA to construct RFD. By 1954 construction of the airport was complete and dedication ceremonies were held to commemorate the opening of RFD. Over its almost 50-year history, the airport has undergone significant airfield development including the construction of additional runways, taxiways, and FAA facilities.

Until the late 1980s, commercial air service at RFD was sporadic and difficult to maintain. Ozark Airlines operated at RFD from the early 1950s. Trans World Airlines (TWA), which merged with Ozark in 1976, initiated service at the airport in 1980. TWA service was suspended in 1982 due in part to the air traffic controller strike and slot allocation restrictions at O'Hare International Airport in Chicago. By 1986, commercial air service at RFD had all but disappeared.

The GRAA began to market RFD in the mid-1980s and in 1987 initiated a major terminal construction project as a means to attract new airlines. In September 1987, a new 56,000 square foot terminal building was completed. RFD has had passenger service by major passenger airlines in the past including Brannif, TWA, American, and Midwest Express. Until 1996, RFD had scheduled commuter airline service by American Eagle (with service to the American Airlines hub at Chicago O'Hare International Airport). Midwest Express Connection also provided commuter service until 1997 (with service to Milwaukee and Detroit). Northwest Airlink continued to serve RFD until 2001 (with service to Detroit and the Northwest Airlines hub at Minneapolis). Scheduled commuter airline service was discontinued because of passenger load factors or lack of passenger feed to parent airline. Currently the only passenger service is offered by Allegiant Airlines which provides year-round scheduled direct service to seven destinations, as well as seasonal destinations.

Air cargo operations and airfreight services were introduced at RFD by Emery Worldwide and Airborne Express in 1989; however, Emery Worldwide discontinued flight operations in 1995, but continues to operate ground freight services at RFD. In 1994 United Parcel Service (UPS) began cargo service into RFD and by 1998 was the second largest hub after Louisville. In addition to UPS, current air cargo operators include Amazon Air, Air Transport International, ABX Air, Atlas Air and other air cargo carriers. In recent years RFD has experienced growth in air cargo operations by UPS and other air cargo operators. E-commerce has been a major influencer to the increase in air cargo operations at RFD, current social and world-wide health concerns have further contributed to the exponential growth in e-commerce.

It is anticipated that air cargo operations will continue to increase at the Airport. In support of this increase in air cargo operations the GRAA has addressed shortfalls in available aircraft parking positions and building space. In

2018 the GRAA prepared an Environmental Assessment (EA) proposing improvements to the northwest cargo area and the development of a midfield cargo facility. Many of the proposed improvements to the northwest cargo area have been completed while development of the midfield cargo area was recently initiated.

1.4.1 Airport Location

The Airport is located in southwest Rockford. It is a publicly-owned air carrier airport operated by the GRAA. RFD serves the Greater Rockford Metropolitan area, which consists of Winnebago County as well as portions of Boone, Ogle, and DeKalb counties in north-central Illinois. The city of Rockford, the fifth largest city in Illinois and is located along the Rock River in north-central Illinois. Rockford is approximately 75 miles northwest of Chicago, 14 miles south of the Wisconsin state line, and 70 miles east of the Iowa border.

The airport facility encompasses approximately 3,000 acres of land in Winnebago County approximately five miles south of the Rockford Central Business District (see **Exhibit 1-2, *Airport Location***). The airport is generally bounded by Illinois State Route 251 to the east, the Kishwaukee River to the south, the Rock River to the west, and the US 20 Bypass to the north. Primary access to the airport is via IL 2. Local access to the airport includes Blackhawk and Beltline Roads via 11th Street. **Exhibit 1-3, *Airport Layout Plan (ALP)***, presents the existing ALP and the area in the vicinity of the airport, including roadway access.

1.5 Airport Facilities and Activity

The inventory of existing conditions at RFD included a general description of the facility, its role in the aviation system of northern Illinois, and its relationship to the surrounding area. This information provided the foundation upon which subsequent aircraft operation evaluations were based.

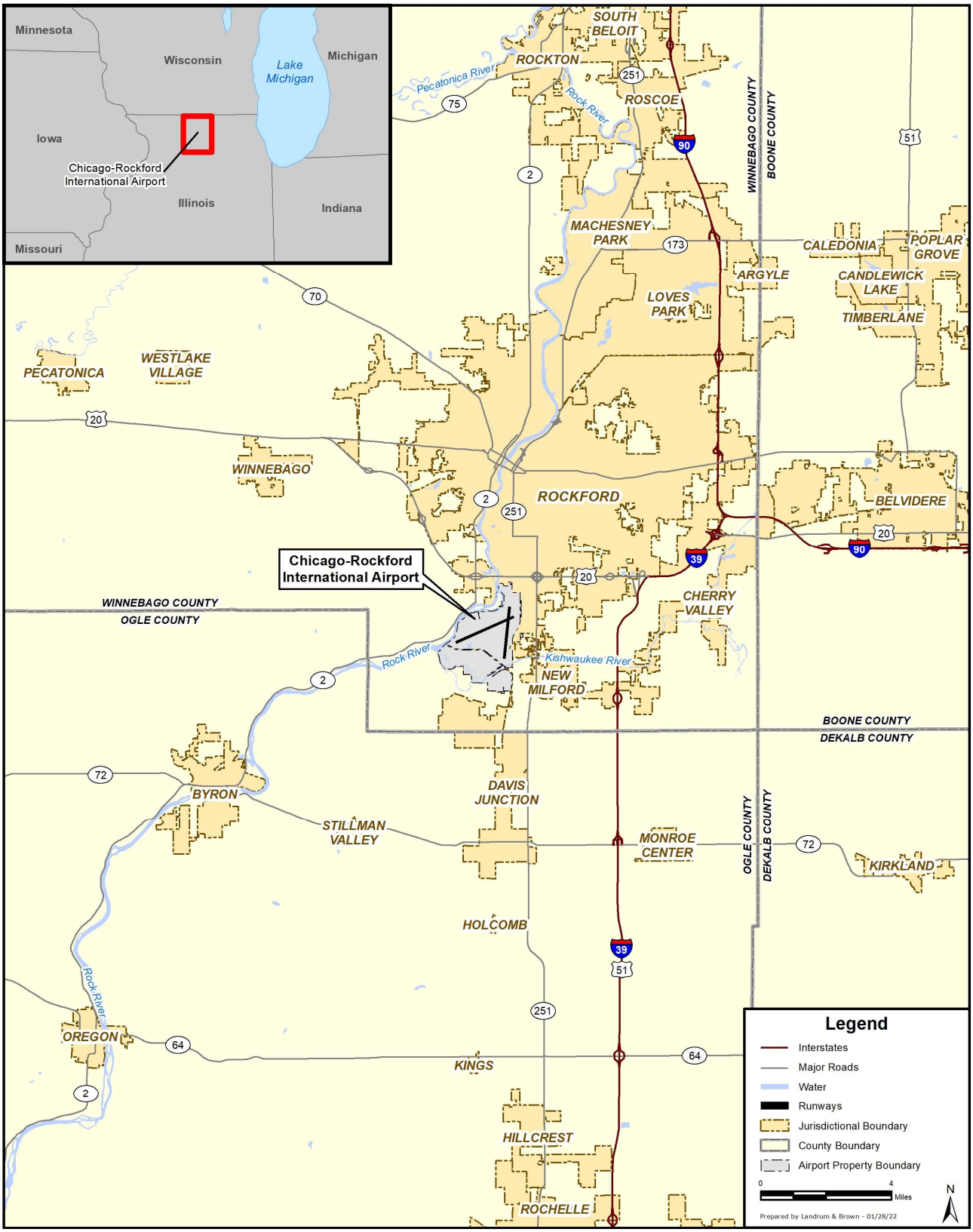
Aircraft activity and airport facilities (i.e. runways, taxiways, navigational aids, etc.) were considered in determining aircraft noise exposure and the range of potential noise abatement measures that were available at the airport. Activity information that was considered included the number of operations, the fleet mix of aircraft, runway use, and the time of day at which operations occur.

1.5.1 Airport Runways

The existing layout of RFD currently consists of two general-purpose runways, Runway 1/19 and Runway 7/25. Runway 1/19 is 8,199 feet long and 150 feet wide and is oriented to the north/south. Runway 7/25 is 10,000 feet long and 150 feet wide and is oriented to the northeast/southwest. **Exhibit 1-3**, presents the existing ALP for RFD.

Runway 7/25, the primary runway on the airfield, is principally used for departures in west flow and arrivals in east flow during the nighttime hours, winds permitting. This is done in an effort to keep traffic away from a majority of the City of Rockford population located north of the airport. Runway 1/19 is principally used by light general aviation and commuter aircraft during calm wind patterns. The flight patterns for aircraft touch-and-go training occurs either to the south of the airport (on Runway 7/25) or to the west of the airport (on Runway 1/19).

EXHIBIT 1-2 | AIRPORT LOCATION



Source: Winnebago & Ogle County GIS data, 2021, Landrum & Brown analysis, 2023.

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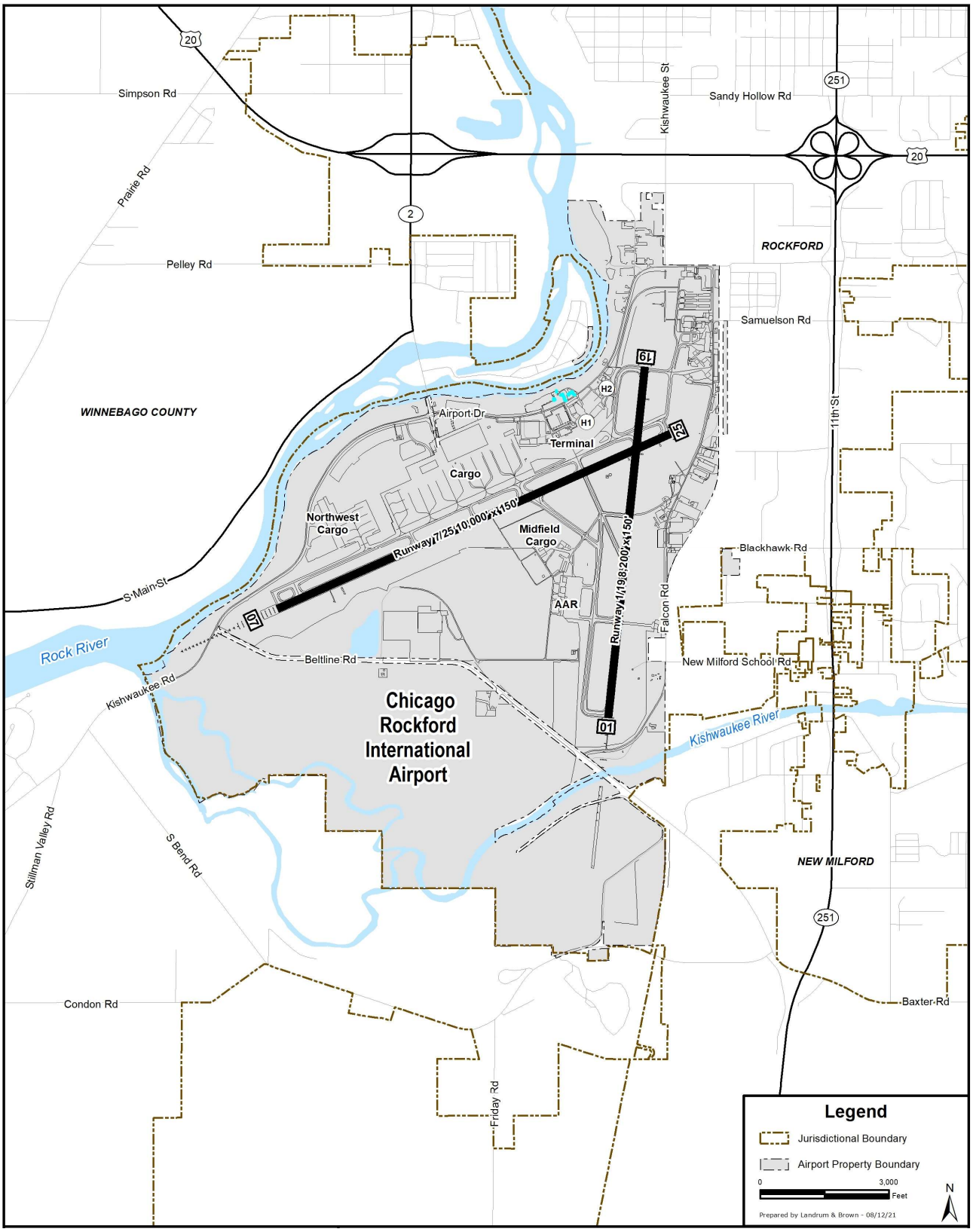
EXHIBIT 1-3 | AIRPORT LAYOUT PLAN (ALP)



Source: Winnebago & Ogle County GIS data, 2021, Landrum & Brown analysis, 2023.

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1.5.2 Navigational Aids

Aircraft making an instrument approach to an airport use both radio navigational aids and lighting systems to provide guidance to pilots in landing aircraft during periods of reduced visibility. Precision instrument approaches, including Instrument Landing Systems (ILS), provide both runway alignment and a glideslope for descent guidance. Nonprecision approaches provide only runway alignment.

Navigational aids (NAVAIDS) include visual or electronic devices, either airborne or on the ground, which provide point-to-point guidance information or position data to an aircraft in flight. Various types of NAVAIDS are in use at RFD and are functionally classified according to the type of navigational support each provides.

1.5.2.1 Enroute Navigational Aids

Enroute NAVAIDS are locational aids operated for the purpose of providing accurate enroute navigation information to the pilot using ground-based transmitting and on-board receiving instruments.

A Very High Frequency Omnidirectional Range (VOR) is a ground-based facility that provides course guidance to aircraft by means of a very high frequency (VHF) radio frequency. Another NAVAID known as a Tactical Air Navigation (TACAN) is frequently collocated with a VOR. The joint NAVAID is then known as a VORTAC. The TACAN, primarily a military oriented facility, provides both course guidance and distance measurement from and ultra-high frequency (UHF), line-of-sight facility. Under this configuration, civil pilots receive course guidance through the on-board distance measuring equipment (DME) from the VOR facility and distance information from the TACAN. A purely civilian facility is labeled a VOR/DME station.

Two VORTACs and one VOR/DME are used to guide air traffic into and out of the RFD area. Only one of these, the RFD VORTAC, is located in the airspace controlled by the RFD TRACON service area. These areas are shown in **Exhibit 1-4, *Rockford TRACON Airspace***. The RFD VORTAC, referred to by the three-letter identifier RFD, is located approximately five miles west of the airport. The VOR operates on a frequency of 110.8 MHz, and the TACAN operates on Channel 45. The RFD VOR is used to establish ten Low-Altitude Victor Airways. The others include the Janesville VORTAC (JVL, 114.3 MHz, Channel 90) approximately 20 miles to the north, and the Polo VOR/DME (PLL, 111.2 MHz, Channel 49) approximately 20 miles southwest. All of these NAVAIDs are used for either initial approach fixes or missed approach fixes into RFD.

1.5.2.2 Terminal Area Navigational Aids and Landing Aids

There are a number of different NAVAIDs located at or near the airport for the purpose of providing aircraft guidance information while arriving, departing, or overflying the area under any weather condition. An example is terminal area NAVAIDS, which provide directions to the pilot for maneuvering the aircraft near the terminal. Another example is landing aids, which provide either precision or non-precision approaches to the airport. Both precision and non-precision approaches provide runway alignment course guidance to the aircraft, while precision approaches also provide glide slope information for descent purposes.

ILSs provide an approach path for exact alignment and descent of an aircraft on final approach to a runway. The system provides three functions: guidance provided vertically by a glide slope antenna, and horizontally by a localizer; range, furnished by marker beacons or DME; and visual alignment, supplied by the approach light systems and runway edge lights.

RFD has established a Category (CAT) I ILS on Runway 1. The straight-in ILS approach to the runway uses a 2.75-degree glide slope with a runway threshold crossing height of 62 feet. It can be flown whenever the ceiling is 200 feet or greater above the touch down zone elevation of Runway 1 and visibility is between one-fourth and three-eighth statute mile. The localizer antenna is located 1,500 feet off the north end of Runway 1/19, on the extended centerline of the runway. Transmitting on a frequency of 109.3 MHz, the localizer tells the pilot whether

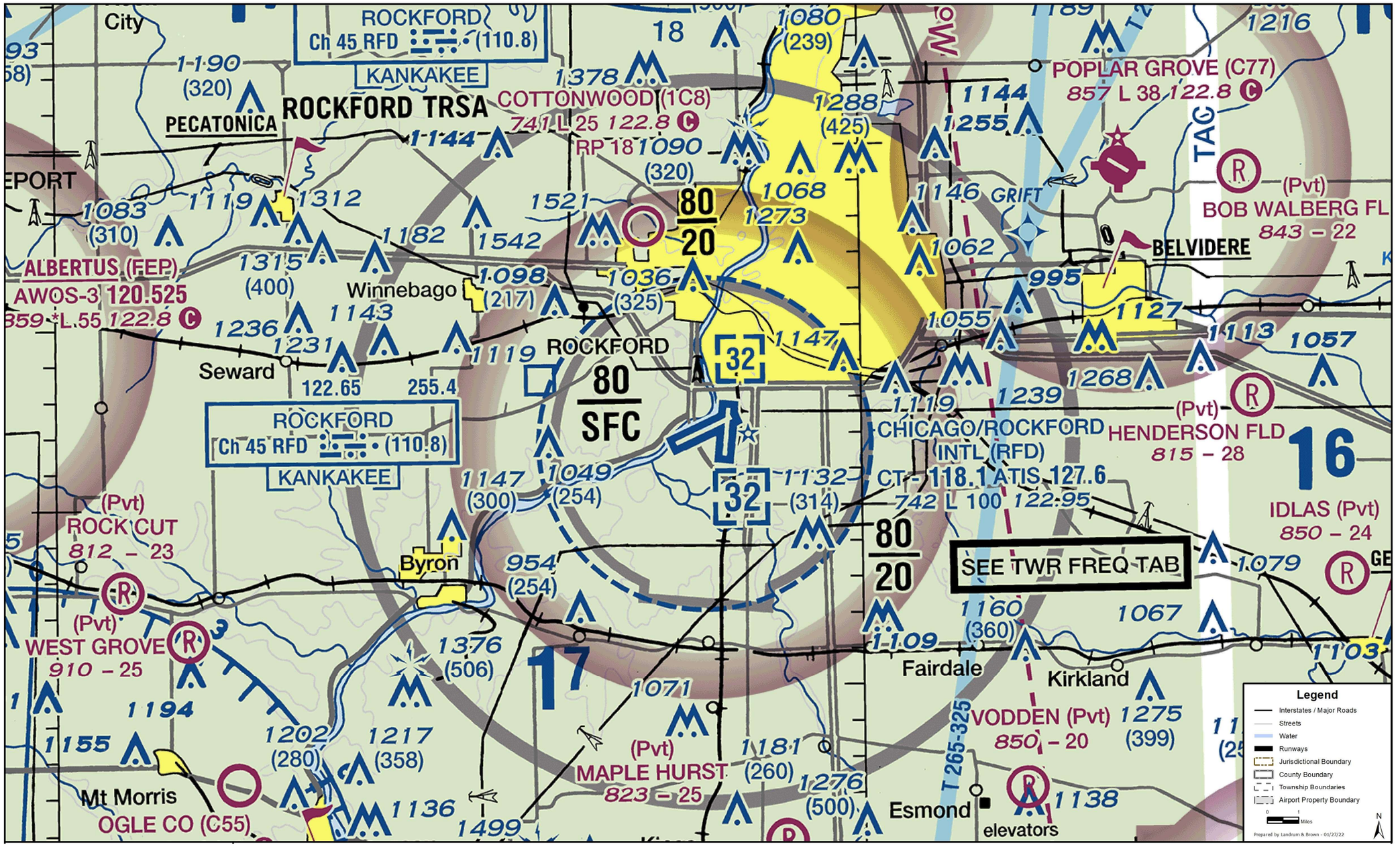
the aircraft is left or right of the runway centerline, while the glide slope antenna, located 1,100 feet north of the approach end of Runway 1 and 400 feet east of the centerline, provides the signal to indicate if the aircraft is above or below the desired glide path.

RFD also has a CAT I, II, and III ILS on Runway 7. To utilize the CAT II and III ILS, both the aircrew and the aircraft must be specially certified to fly these approaches. The straight-in ILS approach to the runway uses a 3.00-degree glide slope with a runway threshold crossing height of 60 feet. CAT I can be flown whenever the ceiling is 700 feet or greater and visibility is at least two statute miles; whereas, a CAT II can be flown whenever the ceiling is 200 feet or greater and visibility is at least one-half statute mile. However, the CAT III for Runway 7 can only be flown with a Runway Visual Range (RVR) of at least 600 feet. The RVR identifies the minimum lateral visibility for an approach. The localizer antenna is located 700 feet off the west end of Runway 7/25. Transmitting on a frequency of 109.55 MHz, the localizer tells the pilot whether the aircraft is left or right of the runway centerline, while the glide slope antenna, located 1,200 feet west of the approach end of Runway 7 and 400 feet south of the centerline, provides the signal to indicate if the aircraft is above or below the desired glide path.

Five other nonprecision, instrument-aided approaches are also available at RFD. These include a Nondirectional beacon (NDB) and Area Navigation (RNAV)/Global Positioning System (GPS) approach to Runway 1; a RNAV/GPS to Runway 7; a localizer backcourse, RNAV/GPS Y, and RNAV/GPS Z approach to Runway 19; and a RNAV/GPS Y and RNAV/GPS Z approach to Runway 25.

To utilize the RNAV/GPS approaches, aircraft must be equipped with the technology. RNAV is a method of navigation that permits aircraft operations on any desired course within the coverage of station-referenced navigation signals. GPS is a satellite-based navigation system that provides highly accurate position, time, and velocity information. GPS consists of 24 satellites that orbit the earth. It uses ranging and triangulation from a group of satellites that act as precise reference points. The GPS receiver requires at least three satellites to triangulate the lateral position of the receiver. The arrival time of a signal is used to compute the distance traveled by a signal and determines a precise position. Receivers typically use names of fixes, waypoints (a predetermined geographical position), and station identifiers on GPS display. Once a receiver calculates its own position, it can then determine and display the distance, bearing or direction, and estimated time enroute to the next waypoint.

EXHIBIT 1-4 | ROCKFORD TRACON AIRSPACE



Source: Landrum & Brown analysis, 2023.

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1.5.2.3 Visual Approach Aids

Various kinds of visual approach aids provide guidance to pilots in sighting the runway ends and in establishing the aircraft on a glide slope to land. The following subsections describe the visual aids available at RFD.

Approach Lighting

Approach lighting systems (ALS) are used in the vicinity of runway thresholds in conjunction with electronic navigational aids for the final portion of ILS approaches under Instrument Flight Rule (IFR) conditions and as visual guides for nighttime approaches under Visual Flight Rule (VFR) conditions. The approach lighting system supplies the pilot with visual clues concerning aircraft alignment, roll, height, and position relative to the threshold.

A Medium Intensity Approach Lighting System (MALSR) with Runway Alignment Indicator Lights (RAIL) is available on Runway 1. This system assists pilots transitioning from the cockpit instrument landing segment to the runway environment. The system provides a lighted approach path 2,400 feet in length along the extended runway centerline. Roll indication is emphasized by a single row of white lights located on either side of and symmetrically along the column of centerline lights. The entire system appears as a cross. Additionally, Runway 7 is equipped with an ALS, with centerline sequenced flashing lights in ILS Cat II configuration (ALSF-2).

A Visual Approach Slope Indicator (VASI) is an airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused-light beams which indicate to the pilot that he is “on path” if he sees red/white, “above path” if white/white, and “below path” if red/red. The VASI systems at RFD include a "4 box" unit on Runways 07,19 and 25.

Runway End/Threshold Lighting

The runway end, or threshold, is given special lighting consideration to assist approaching aircraft. Threshold identification lights make use of a two-color, red and green lens. The green half of the lens faces the approaching aircraft and indicates the beginning of the usable runway. The red half of the lens faces the airplane on the rollout or takeoff, indicating the end of the usable runway.

Runway End Identifier Lights (REIL) are installed at the ends of Runways 19 and 25. These lighting systems consist of a pair of synchronized flashing lights located laterally on either side of the runway threshold.

Runway Edge Lighting

Runway edge lighting is used to outline the edges of a runway during periods of darkness and restricted visibility. These systems are classified in accordance with intensity or brightness: High Intensity Runway Lights (HIRL), Medium Intensity Runway Lights (MIRL), and Low Intensity Runway Lights (LIRL). Runway 1/19 and 7/25 are equipped with a HIRL system.

Runway edge lights are white except for the final 2,000 feet of an instrument runway (yellow replaces white for the final 2,000 feet or half the runway length, whichever is less) to designate a caution zone for landing aircraft. Runway edge lighting is visible through 360 degrees of azimuth and can be seen several miles from the airport when visibility is good.

Taxiway Lighting

Taxiway lighting, which delineates the taxiway edges or centerline, provides guidance to pilots during darkness and periods of low visibility. The system most commonly used consists of a series of blue light fixtures located at not more than 200-foot intervals along the taxiway edges. These lights provide taxiway alignment up to the aircraft apron. Taxiway edge lighting is available along all taxiways and ramps at the airport.

1.5.3 Airspace and Air Traffic Control

Effective noise abatement procedures depend on efficient airspace management. Therefore, an analysis of air traffic control and airspace surrounding RFD was necessary for this 2021 Part 150 Study Update. Because the FAA retains the ultimate responsibility for airspace management and air traffic control, the implementation of any recommended changes in these procedures requires FAA review and approval. This authority was granted to the FAA through the FAA Act of 1958. Administrative responsibilities for airspace and air traffic control in Illinois are assigned to the FAA – Great Lakes Region, with offices in Des Plaines, Illinois.

Air Route Traffic Control Centers (ARTCC) have been established across the country to control aircraft flying under IFR within controlled airspace. Using radar and nonradar procedures, an ARTCC provides enroute air traffic services and terminal arrival and departure services to many areas outside major population centers. RFD is located within the Chicago ARTCC, which is based in Aurora, Illinois.

The air traffic flow in the area consists of a mixture of cargo, air-taxi, corporate, military, and general aviation flights. Most traffic operates under IFR, even in visual weather operating conditions, while the remaining traffic may vary depending on weather conditions. On IFR flights, pilots operate primarily in reference to aircraft instrumentation and air traffic control instructions under any weather conditions, while VFR pilots operate under visual reference to the ground.

The RFD TRACON is responsible for handling IFR traffic departing from and arriving to airports within the TRACON boundary. Arriving IFR aircraft are transferred to RFD TRACON control just prior to entering the TRACON airspace. The originating TRACON or ARTCC establishes the initial separation for all IFR traffic. After RFD TRACON controllers establish communication with the aircraft, they direct it to the airport by instructing the pilot to fly specific headings, called radar vectors. This process is used for all arriving IFR aircraft, regardless of the destination airport; therefore, proper sequencing is necessary to separate aircraft arrivals to RFD, as well as aircraft arriving at other airfields within the TRACON boundary. Because RFD TRACON controls all IFR arrivals and departures, aircraft interaction is closely coordinated.

At RFD, the ATCT controller normally issues a departure heading or fix as requested by the pilot as soon as possible after takeoff. In general, the only exceptions would be in the case of potentially conflicting traffic in the area. Actual flight tracks vary depending upon aircraft weight, type, velocity, wind speed and direction, and pilot performance. Control of departing aircraft is transferred to the Chicago ARTCC or coordinated with adjacent TRACONs before an aircraft climbs through a previously established handoff altitude, unless previously coordinated between the ARTCC and TRACON personnel.

The FAA uses Departure Procedures (DP) at some nearby airports, such as Chicago O'Hare and Milwaukee General Mitchell Field, to expedite the handling of IFR departures. Depending on the DP assigned, and the runway used, specific instructions are developed for aircraft to follow. No DPs are in place at RFD.

Most IFR aircraft transit the RFD airspace via one of the numerous Federal airways in the area. **Exhibit 1-5**, shows the IFR VOR Low Altitude Airways. The VOR Airway System is commonly referred to as the Victor Airway System and is established for flight operations below 18,000 feet MSL. The High Altitude Jet Route System is used for operations above 18,000 feet. Both Victor Airways and Jet Routes use VOR facilities on the ground to provide pilots with course guidance.

All aircraft, whether IFR or VFR, which operate within the Terminal Radar Service Area (TRSA), namely within five miles of the airport and below 8,000 feet MSL or within ten miles of the airport and between 2,000 and 8,000 feet MSL, must contact the ATCT for radar vectoring.

The ATCT operates 24 hours a day. The ATCT is responsible for control of aircraft landing and departing from the airport. An Automatic Terminal Information System is also available. This system is a recording of the most current weather and airfield conditions, automatically transmitted to all aircraft. RFD is in Class D airspace and

extends to a radius of five miles from the airport. Class D airspace originates at ground level and extends to 2,500 feet MSL.

1.5.4 Air Traffic Activity

Air traffic activities are recorded by the ATCT for air carrier, air taxi (including commuter), general aviation, and military categories. The ATCT also differentiates between itinerant and local activity in the general aviation and military categories. Operations data for the past several years are summarized in **Table 1-1, *RFD Historical Operations***.

TABLE 1-1 | RFD HISTORICAL OPERATIONS

Year	Air Carrier	Air Taxi	General Aviation	Military	Total
2015	7,982	1,784	24,799	1,886	36,451
2016	8,898	1,388	22,115	1,955	34,356
2017	12,204	1,363	24,202	1,693	39,462
2018	17,810	1,289	19,863	1,496	40,458
2019	19,541	1,223	19,277	1,357	41,398
2020	22,380	723	18,627	1,031	42,761
2021	24,224	1,935	20,780	1,045	47,261

Source: FAA Air Traffic Activity System (ATADS) accessed January 14, 2022.

1.5.5 Airlines

RFD is served primarily by four air cargo airlines, UPS, Air Transport International (chartered by Amazon Air), Global Trans Iris (GTI), and ABX Air (formerly Airborne Express). Several other air cargo airlines operate at RFD, the primary air cargo airlines account for approximately 98% of all air cargo operations at RFD Airline schedules are subject to change and, during the course of this Part 150 Study Update, changes in the schedules and the type of aircraft used may occur. Scheduled service by all air cargo airlines at RFD includes daily operations by ATN, GTI, ABX Air, and UPS.

Allegiant Air is the only commercial passenger airline currently servicing RFD. Allegiant offers year-round scheduled service to five destinations as well as seasonal destinations. The commercial passenger aircraft fleet at RFD represented in the TFMS data primarily consists of Airbus A319-100 Series, Airbus A320-200 Series, and Boeing 737-800 Series aircraft.

1.5.5.1 General Aviation

Although classified as an air carrier airport, RFD also functions as an important general aviation (GA) facility for the RFD area. GA services such as mobile refueling services, and repair services are provided by Raytheon Aircraft Services and Emery Air Charter. In addition, Emery manages the use and maintenance of corporate-owned aircraft and helicopters on a contract basis. Raytheon Aircraft Services also provides limited maintenance service. RFD is also home to the Order of St. Francis (OSF) Health Care Life Flight Services base, which provides critical-care transportation for the region.

Based aircraft is the number of locally-owned aircraft that are kept in hangars at the airport or based at an airport. As of 2023, there were 114 aircraft based at the airport. These included 78 single-engine; 18 multi-engine, propeller-driven aircraft; 15 jets; and 3 helicopters. **Table 1-2, *RFD Based Aircraft***, provides the number of based aircraft at RFD by aircraft type.

TABLE 1-2 | RFD BASED AIRCRAFT

Aircraft Type	Number
Single engine airplanes	78
Multi engine airplanes	18
Jet airplanes	15
Helicopters	3
Total aircraft based on the field	**114**

Source: Federal Aviation Administration (FAA) 5010 Form.
Form accessed December 13, 2022 from www.gcr1.com/5010web/.

1.5.5.2 Fixed Base operators (FBOs)

A FBO is a retail firm that sells general aviation products or services at an airport. Emery Air Charter provides such services as aviation fuel, oxygen service, aircraft parking (ramp or tiedown), hangars, aircraft charters, and aircraft maintenance. Emery also manages the use and maintenance of corporate-owned aircraft on a contract basis. Raytheon Aircraft Services provides such services as aircraft maintenance and avionics service.

1.6 Annual Operations

The number of annual operations at RFD for the Existing (2023) Baseline condition was approximately 46,509, which results in 127.4 average-annual day operations. The number of annual operations at RFD was based on FAA sources, ATCT records, and discussions with operators. **Table 1-3, *Summary of Average-Annual Day Operations***, presents a summary of the Existing (2023) Baseline condition average-annual day operations by primary user group. For a detailed breakdown of the annual operations, refer to **Appendix C, *Noise Modeling Methodology***.

TABLE 1-3 | SUMMARY OF AVERAGE-ANNUAL DAY OPERATIONS

Aircraft Type	Arrivals		Departures		Touch and Go		Total	Percent of Total
	Day	Night	Day	Night	Day	Night		
Cargo Jets	11.16	18.51	11.62	18.05	--	--	59.33	46.6%
Commercial Jets	2.00	0.58	1.88	0.70	--	--	5.16	4.0%
General Aviation Jets	2.89	0.17	2.89	0.18	--	--	6.13	4.8%
General Aviation Props	26.86	0.63	26.73	0.77	--	--	54.98	43.1%
General Aviation Helicopter	0.05	0.04	0.06	0.03	--	--	0.18	0.1%
Military Aircraft	0.8	--	0.8	--	0.04	--	1.64	1.3%
Grand Total	***43.79***	***19.92***	***44.00***	***19.71***	***0.04***	***--***	***127.42***	***100.0%***

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, Landrum & Brown analysis, 2023.