



Duluth Airport Authority

14 CFR Part 150 Noise Compatibility Study

Pre-meeting Informational Packet:
Noise Compatibility Program Recommendations

PRESENTED BY
Landrum & Brown, Incorporated



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1 Executive Summary

The culmination of the 14 Code of Federal Regulations (14 CFR) Part 150 Study planning process is the development of a set of measures designed to enhance the compatibility between an airport and its surrounding environs. This document presents new measures that are being recommended for inclusion in the Duluth International Airport (DLH) Noise Compatibility Program (NCP) and eventual implementation. Recommended measures for the DLH 2021 NCP may also include previous measures, from the DLH 1997 NCP, being continued with modification. Collectively, these measures are referred to as the DLH 2021 NCP. These measures include land use mitigation and program management measures designed to reduce or mitigate the impact of aircraft noise upon the surrounding community and enhance the administration of the overall NCP.

Each recommended measure was reviewed with the membership of the Planning Advisory Committee (PAC), the PAC membership is presented in **Section 3** of this document. Local planning professionals and elected officials from the surrounding communities were invited to meet with the project team to discuss the types of alternatives that were evaluated. Information regarding the screening of potential alternatives and the selection of recommended measures was presented to the public at the 3rd Public Workshop which occurred in February 2021.

Table 1-1, DLH 2021 NCP Measures provides a summary of all alternative measures that were recommended for inclusion in the DLH 2021 NCP. **Table 1-2, DLH 2021 NCP Cost** presents the final associated costs for each recommended measure and the program collectively. Detailed information on the alternative screening process and selection of recommended measures can be found in the remaining sections of this document. The Duluth Airport Authority (DAA) board members were presented this information at the June 2021 board meeting. To date the study team has not received any requests for modifications to the recommended measures included in the DLH 2021 NCP.

The study team requests the PAC members review the recommended DLH 2021 NCP measures and provide feedback on the NCP measures to be included in the DLH 2021 NCP. The next steps following the Public hearing to be held on November 2nd, will be to accept public comments on the draft document and adoption of the DLH 2021 NCP by the DAA board. Once adopted by the DAA board the Final DLH 2021 Part 150 documentation will be submitted to the Federal Aviation Administration (FAA) for approval.

Once the NCP is approved by the FAA, DAA can implement recommended measures as necessary. Having an approved NCP with the FAA will allow DAA to apply for federal assistance to aid in the implementation of the NCP measures.

Table 1-1 DLH 2021 NCP Measures

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
CORRECTIVE LAND USE MITIGATION MEASURES					
<p><i>(formerly 1997 NCP Measure M-1)</i></p> <p>Measure M-A: Offer Residential Sound Insulation Program to Single- and Multi-Family Homes (47 units) within the 65+ DNL Noise Contour.</p> <p>Offer Residential Sound Insulation Program to Single-Family Homes (17 units) within the Block Rounding Area Outside of the 65 DNL Noise Contour</p>	DAA	<p>It is estimated 47 homes are located within the 65+ DNL noise contour plus an additional 17 homes in the block rounding area outside the 65 DNL. If 100% of all homes were eligible and participated, based on additional interior noise level testing, the cost to insulate all homes is estimated at \$4,000,000 which includes all hard costs (construction) and soft costs (administrative).</p> <p>Federal Airport Improvement Program (AIP) funding likely available (80% FAA share/20% local airport share)</p>	None	None	<p>This is a measure that was never implemented from the 1997 NCP and should be continued with modification to include all properties identified within the 65+ DNL and the properties identified in the block rounding area outside the 65 DNL.</p> <p>Properties undergoing sound insulation would have an avigation easement placed on the property and attached to the deed.</p>
<p>Measure M-B: Offer Land Acquisition Program to Single-Family Homes (7 homes) within the 70+ DNL Noise Contour</p>	DAA	<p>It is estimated at \$2,450,000 if 100% of homes participated.</p> <p>Federal AIP funding likely available (80% FAA share/20% local airport share)</p>	Loss of tax base	None	<p>This is a new measure. Property owners that decline acquisition would still be offered sound insulation. If a property declines both land acquisition and sound insulation, an avigation easement would be offered on the property and attached to the deed.</p>

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
Measure M-C: Offer Land Acquisition Program to Mobile Homes within NMPA #1 (103 Mobile Homes)	DAA	<p>It is estimated at \$11,568,000 depending upon the level of participation. It includes the cost of the 102 mobile homes and loss of income for owner of the mobile home park (cost of just mobile home park), and 1 mobile home property located to the east of Lavaque Bypass Road within the 65 DNL contour (cost of single mobile home and property).</p> <p>Federal AIP funding likely available (80% FAA share/20% local airport share)</p>	Loss of tax base	None	This is a new measure. If the single mobile home property east of Lavaque Bypass Road declines land acquisition, an avigation easement would be offered on the property and attached to the deed.
Measure M-D: Offer avigation easement to owner occupied single-family homes within NMPA #1 and NMPA #2 if acquisition and/or sound insulation is declined.	DAA	<p>The estimated cost of each avigation easement is up to \$3,000 per home. Since the final cost of the measure is dependent on the number of property owners that decline acquisition and/or sound insulation, an estimated overall total was not calculated.</p> <p>Federal AIP funding likely available (80% FAA share/20% local airport share)</p>	None	None	This is a new measure.
Measure M-E: Offer avigation easement to 1 owner-occupied mobile home within NMPA #1 if acquisition is declined.	DAA	<p>The estimated cost of the avigation easement is up to \$3,000.</p> <p>Federal AIP funding likely available (80% FAA share/20% local airport share)</p>	None	None	This is a new measure.
Measure M-F: Offer avigation easement to 2 owner-occupied mobile homes within NMPA #2.	DAA	<p>The estimated cost of the avigation easements is up to \$6,000 (\$3,000 per each mobile home).</p> <p>Federal AIP funding likely available (80% FAA share/20% local airport share)</p>	None	None	This is a new measure.

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
PREVENTATIVE LAND USE MITIGATION MEASURES					
<i>(formerly 1997 NCP Measure M-1)</i> Measure M-G: Develop an ALUMD	DAA, Cities of Duluth, Hermantown, Rice Lake, Saint Louis County and JAZB	Minimal costs of up to \$50,000	None	None	This is a new measure
Measure M-H: Adopt Updated Subdivision Regulations	DAA, Cities of Duluth, Hermantown, Rice Lake, Saint Louis County and JAZB	Minimal costs of up to \$50,000	Loss of tax base	None	This is a new measure
Measure M-I: Adopt Improved Building Codes	DAA, Cities of Duluth, Hermantown, Rice Lake, Saint Louis County and JAZB	Minimal costs of up to \$50,000	Minimal administrative costs	None	This is a new measure
Measure M-J: Develop a Voluntary Fair Disclosure Program	Duluth Board of Realtors, Lake Superior Area Realtors, Cities of Duluth, Hermantown, Rice Lake, Saint Louis County and JAZB	Minimal costs of up to \$50,000	Minimal administrative costs	None	This is a new measure
PROGRAM MANAGEMENT MEASURES					
<i>(formerly 1997 NCP Measure A-1)</i> Measure P-A: Continue Logging of Noise Complaints	DAA and MnANG	Minimal administrative costs to answer telephones and to log noise complaints	None	None	This is a continuation of the existing process with a slight modification to be undertaken by the DAA and MnANG

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
<i>(formerly 1997 NCP Measure A-2)</i> Measure P-B: Initiate Community Roundtable or Noise Abatement Committee	DAA	Minimal administrative costs to participate on a regular basis	Minimal administrative costs to participate on a regular basis	None	This is considered a new measure since it was never implemented in the previous NCP.
Measure P-C: Perform regular Updates to NEMs and Review of NCP	DAA	\$350,000 – \$750,000	Minimal administrative costs	None	This is a new measure

Table 1-2 DLH 2021 NCP Cost

MEASURE ID	TYPE OF MEASURE	DIRECT COST (TOTAL)	DIRECT COST TO FAA (80% SHARE)	DIRECT COST TO AIRPORT (20% SHARE)	DIRECT COST TO LOCAL GOVERNMENT	DIRECT COST TO USERS
MITIGATION MEASURES (CORRECTIVE)						
M-A	Sound insulate 64 eligible single- & multi-family housing units	\$4,000,000	\$3,200,000	\$800,000	None	None
M-B	Acquire 7 eligible single-family housing units	\$2,450,000	\$1,960,000	\$490,000	Potential loss of tax base	None
M-C	Acquire 103 eligible mobile homes including 102 Birchwood Mobile Estates mobile homes	\$11,568,000 (mobile homes & mobile home property)	\$9,254,400 (mobile homes & mobile home property)	\$2,313,600 (mobile homes & mobile home property)	Potential loss of tax base	None
M-D	Acquire avigation easements to owner-occupied single- and multi- family homes within NMPA #1 and #2 if acquisition and/or sound insulation is declined	\$384,000	\$307,200	\$76,800	None	None
M-E	Acquire avigation easement to 1 mobile homes within NMPA #1 if acquisition is declined	\$6,000	\$4,800	\$1,200	None	None
M-F	Acquire avigation easement to 2 mobile homes within NMPA #2	\$12,000	\$9,600	\$2,400	None	None
SUBTOTAL ⁽¹⁾		\$18,420,000	\$14,736,000	\$3,684,000	Minimal administrative costs; plus loss of tax base	None

MEASURE ID	TYPE OF MEASURE	DIRECT COST (TOTAL)	DIRECT COST TO FAA (80% SHARE)	DIRECT COST TO AIRPORT (20% SHARE)	DIRECT COST TO LOCAL GOVERNMENT	DIRECT COST TO USERS
MITIGATION MEASURES (PREVENTATIVE)						
M-G	Develop an Airport Land Use Management District (ALUMD)	\$50,000	None	\$50,000	Minimal	None
M-H	Adopt Updated Subdivision Regulations	\$50,000	None	\$50,000	Minimal	None
M-I	Adopt Improved Building Codes	\$50,000	None	\$50,000	Minimal	None
M-J	Develop a Voluntary Fair Disclosure Program	\$50,000	None	\$50,000	Minimal	None
SUBTOTAL		\$200,000	\$0	\$200,000	Minimal administrative costs; plus loss of tax base	None
PROGRAM MANAGEMENT MEASURES						
P-A	Continue Logging of Noise Complaints	Minimal Administrative Costs	None	Minimal Administrative Costs	None	None
P-B	Initiate Community Roundtable or Noise Abatement Committee	Minimal Administrative Costs	None	Minimal Administrative Costs	None	None
P-C	Perform Regular Updates to the NEWs and Review of NCP					
	- Update NEM ONLY	\$350,000 to \$400,000	\$280,000 to \$320,000	\$70,000 to \$80,000	None	None
	- Update NEM & NCP	\$650,000 to \$750,000	\$520,000 to \$600,000	\$130,000 to \$150,000		

MEASURE ID	TYPE OF MEASURE	DIRECT COST (TOTAL)	DIRECT COST TO FAA (80% SHARE)	DIRECT COST TO AIRPORT (20% SHARE)	DIRECT COST TO LOCAL GOVERNMENT	DIRECT COST TO USERS
	SUBTOTAL	\$350,000 to \$750,000 plus administrative costs	\$280,000 to \$600,000 plus administrative costs	\$70,000 to \$150,000 plus administrative costs	None	None
	ALL NOISE COMPATIBILITY PROGRAM MEASURES					
	TOTAL	\$18,970,000 to \$19,370,000 plus other administrative, operational, and maintenance costs	\$15,016,000 to \$15,336,000 plus other administrative, operational, and maintenance costs	\$3,954,000 to \$4,034,000 plus other administrative, operational, and maintenance costs	Minimal administrative costs; loss of tax base	Minimal

Notes: (1) Total cost for land use mitigation measures is the maximum possible mitigation cost and assumes 100 percent participation in program by eligible property owners. Property owners participating would also have to ensure they meet both the eligibility requirements for interior noise levels and the year the property was built. In addition, some property owners may choose one measure over another which would reduce overall costs. All costs are in 2020 dollars

Source: Landrum & Brown, 2020 and based on comparable mitigation programs at other U.S. airports.

2 DLH 2021 Noise Compatibility Program (NCP)

There are 3 types of mitigation techniques that were examined for the DLH 2021 NCP:

1. Noise Abatement Alternatives

Purpose: To **abate** noise levels in surrounding communities

Types of Alternatives: Modification of air space, flight tracks, airport facilities, or aircraft operations, so as to reduce or shift the location of noise.

2. Land Use Mitigation Alternatives

Purpose: To **mitigate** noise levels in surrounding communities

Types of Alternatives: Two types corrective and preventative. Corrective alternatives mitigate noise levels through sound insulation and property acquisition programs. Preventative alternatives mitigate noise through land use, zoning and building code modifications, and requires the participation of controlling jurisdictions.

3. Program Management Alternatives

Purpose: To **provide** administrative and management actions to allow the airport to maintain land use compatibility in surrounding communities

Types of Alternatives: Program Management alternatives provide community outreach opportunities, and enables the airport to identify potential noise related concerns within the surrounding communities.

2.1 Previously Recommended Abatement Measures

This section provides a review of the abatement measures that were recommended in the 1997 DLH NCP. Provided for each measure is a description, the current status, and the recommendation for this NCP Update. Measures are either recommended to be continued, or recommended to be continued for further study.

Measure A-1

Description: An individual within Air Traffic Control (ATC), Minnesota Air National Guard (MnANG) or the 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 the simple application of open communications. The current procedure should be reviewed, modified if necessary, and be continued. If circumstances create a significant number of noise complaints, as identified by keeping appropriate logs of complaints and the areas from which they are received, the following recommendation (Measure A-2) should be implemented as soon as practicable.

Status: Implemented per 1997 NCP

Recommendation: Recommended to be continued under Program Management Measures

Note: Although this Measure A-1 is listed as an abatement measure, it is actually a program management measure and is discussed further in **Sections 2.6 and 2.7**. Although previously approved, it is recommended that it be addressed under the program management measures.

Measure A-2

Description: 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 Operators (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 begin.

Status: Not Implemented per 1997 NCP

Recommendation: Recommended for further study under Program Management Measures

Note: Although this Measure A-2 is listed as an abatement measure, it is actually a program management measure and is discussed further in **Sections 2.6 and 2.7**.

Measure A-3

Description: 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: Implemented per 1997 NCP

Recommendation: Recommended to be continued but previously approved. It would only benefit areas outside the 65 DNL, no further analysis is required.

Measure A-4

Description: The existing policy of the local ATC personnel to disburse traffic to various areas should continue. The continuation of Measure A-1 will allow ATC to keep up to date on possible new areas of noise sensitivity.

Status: Implemented per 1997 NCP

Recommendation: Recommended to be continued but previously approved. It would only benefit areas outside the 65 DNL, no further analysis is required.

Measure A-5

Description: An Environmental Assessment (EA) should be commissioned as soon as possible to explore the feasibility of extending Runway 03/21 to a length adequate to accommodate MnANG operations. The final runway length is anticipated to be 8,000 feet, plus a possible paved or stabilized overrun. The MnANG has indicated their support in pursuing this approach as it may be possible to accomplish significant noise reductions.

Status: Not Implemented

Recommendation: Recommended to be continued for further analysis.

2.2 Noise Abatement Screening Analysis

This section discusses the consideration and evaluation of potential noise abatement alternatives for possible inclusion in the DLH 2021 NCP. The concept of noise abatement generally focuses on alternatives that may be able to affect the source of the noise such that the receivers of noise (residential areas etc.) are exposed to less noise. Thus, abatement alternatives generally are concerned with actions that would alter the use or configuration of air space, flight tracks, airport facilities, or aircraft operations, so as to reduce or shift the location of noise. The evaluation of a number of these alternatives is required under 14 CFR Part 150, even though they may have little utility for local application at DLH. These alternatives tend to fall into one of the five general categories listed below.

- Runway Use Modifications
- Flight Routing Modifications
- Aircraft Operational Procedure Modifications
- Airport Facility Modifications
- Airport Regulations and Facility Restrictions

The consideration of the various potential noise abatement techniques must be undertaken in the context of the current NCP at DLH as well as the policies of the FAA under 14 CFR Part 150. There were several noise abatement measures recommended, and unofficially implemented, from the previous DLH NCP published in 1997. Changes in operational levels and fleet mix, that have occurred over the past twenty years, have resulted in reductions in noise exposure around the airport. As a result, noise abatement measures in the previous DLH NCP would only reduce noise impacts outside of the 65 DNL noise contour. These measures would not be recommended for inclusion in the DLH 2021 NCP as they don't mitigate impacts within the 65 DNL noise contour.

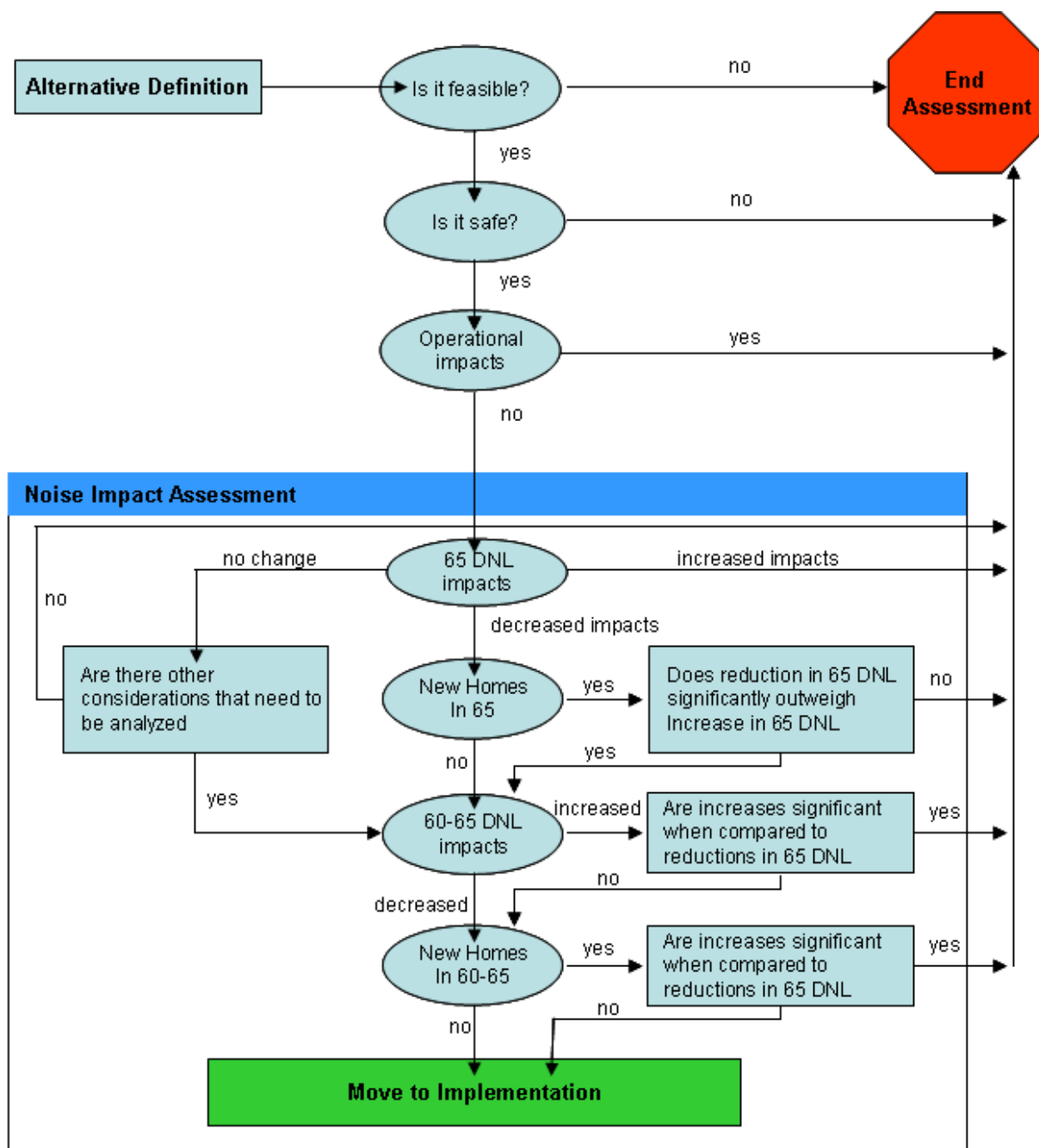
In order to evaluate each alternative, a set of evaluation criteria was established and used to identify the benefits and drawbacks of each alternative. The criteria include feasibility, safety, operational considerations, and noise reduction. After it was determined that an alternative was feasible, safe, and had no major operational drawbacks, an assessment of the benefits in terms of noise and land use compatibility was conducted. Because a decrease in one area may result in an increase in another area, priorities were developed to clarify the evaluation process. The noise impact priorities were as follows:

- Reductions in the 65+ Day-Night Average Noise Level (DNL) noise contours (most important)
- Sensitivity to shifting noise from one area to another (important)
- Ensuring that the tradeoffs of increased versus decreased noise are understood before making a decision
- Recognizing that an alternative may have a net reduction in noise impacts, but may be eliminated because those impacts are a result of decreases in one area with a similar level of increases in another

Exhibit 2-1, *Abatement Alternatives Evaluation Process*, graphically depicts the steps of the evaluation process for abatement alternatives.

Within the aforementioned context, a two-step evaluation method was conducted for potential new abatement alternatives. First, a qualitative screening analysis was conducted on the full range of potential new abatement alternatives for DLH to determine whether or not they were feasible, and safe, and whether or not they would cause operational impacts. Secondly, those alternatives that were determined to be feasible were then subjected to a quantitative analysis, including, where applicable, an analysis of the benefits or drawbacks and potential implementation costs.

Each noise abatement alternative and the qualitative screening was reviewed with the membership of the Planning Advisory Committee (PAC). The results of the noise abatement qualitative screening was presented at the 3rd public workshop which was conducted in February of 2021. A summary of this screening analysis is provided below in **Section 2.2.1**.

Exhibit 2-1 Abatement Alternatives Evaluation Process

2.2.1 Noise Abatement Screening Analysis Summary

The following section summarizes the qualitative screening analysis of modified or potential new noise abatement alternatives. **Table 2-1, Abatement Alternatives Screening Analysis Summary** presents a summary of the screening of the noise abatement alternatives. The "Evaluation and Recommendation" column provides a brief synopsis of the issues and findings associated with each alternative and notes whether the alternative was recommended for further analysis. Those alternatives that were determined to warrant further analysis are discussed in greater detail in **Section 2.2.2**.

The noise abatement alternatives that were evaluated for this NCP were as follows:

- Modification of arrival and departure flight routes
- Increase 03/21 runway utilization for commercial traffic
- Develop new approach and departure procedures
- Extension of Runway 03/21
- Construct sound barriers
- Implement airport operations restrictions

Table 2-1 Abatement Alternatives Screening Analysis Summary

DESCRIPTION	BENEFITS	DRAWBACKS	EVALUATION AND RECOMMENDATION
FLIGHT ROUTING MODIFICATIONS			
Modify arrival and departure flight tracks to reduce noise within the 65 DNL noise contour	Could reduce noise levels for the areas both inside and outside of the 65 DNL contour.	Due to the impacted homes location, modifying flight tracks would likely have little to no benefit for impacted homes within the 65 DNL.	This measure has the potential to provide benefits to the homes only outside the 65 DNL noise contour. These measures were previously approved in the 1997 NCP, but are NOT RECOMMENDED to be continued for further analysis. Measure A-3 and A-4 from the 1997 NCP outlines these previous recommendations.
RUNWAY USE MODIFICATIONS			
Increase usage of Runway 03/21 for commercial traffic	Could reduce noise levels for the areas outside of the 65 DNL noise contour.	Due to the impacted homes location, modifying the frequency Runway 03/21 is utilized for commercial traffic would likely have little to no benefit for impacted homes.	Due to the inability to provide benefits to the homes impacted within the 65 DNL noise contour this alternative is NOT RECOMMENDED for further analysis.
AIRCRAFT OPERATIONAL PROCEDURE MODIFICATIONS			
Develop and implement Optimized Profile Descent (OPD) Approach procedures	Implementing OPD procedures (previously known as continuous descent approach [CDA]) have been used at some airports to reduce approach noise at a distance from the airport. Generally, their most notable effect relates to reduced fuel burn and corresponding air emissions.	Potential noise reduction benefits would be limited to areas outside DNL 65 dBA. Due to the impacted homes location, implementing OPD's would likely have little to no benefit for impacted homes.	Due to the inability to provide benefits to the homes impacted within the 65 DNL noise contour this alternative is NOT RECOMMENDED for further analysis.
Develop and implement Distant Noise Abatement Departure Profiles (NADP)	Implementing Distant NADP's can potentially reduce noise for areas further away from the runway end (greater than three miles).	Distant NADP's can potentially increase noise for areas closer to the runway end. Due to the impacted homes location, implementing Distant NADP's would likely have little to no benefit for impacted homes and could potentially impact a greater number of homes.	Due to the inability to provide benefits to the homes impacted within the 65 DNL noise contour this alternative is NOT RECOMMENDED for further analysis.
Develop and implement Close-in Noise Abatement Departure Profiles (NADP)	Implementing Close-in NADP's can potentially reduce noise for areas in close proximity to the runway end (less than three miles).	Close-in NADPs can potentially increase noise for areas farther away from the runway end. Due to the impacted homes location, implementing Close-in NADP's would likely have little to no benefit for impacted homes.	Due to the inability to provide benefits to the homes impacted within the 65 DNL noise contour this alternative is NOT RECOMMENDED for further analysis.

Table 2-1 Abatement Alternatives Screening Analysis Summary (Continued)

DESCRIPTION	BENEFITS	DRAWBACKS	EVALUATION AND RECOMMENDATION
AIRPORT FACILITY MODIFICATIONS			
Extend Runway 03/21 length	Would reduce noise levels for impacted homes and mobile homes that are impacted from lateral noise originating from Runway 09/27 departure and arrival operations.	New residential areas to the South of Runway End 03 and North of Runway End 21 would experience increased noise exposure. There would be significant cost associated with the extension to Runway 03/21, however this cost could be offset by AIP funding if awarded.	This measure has the potential to provide benefits to the homes impacted in the 65 DNL noise contour. This measure was previously approved in the 1997 NCP, so this alternative is RECOMMENDED to be continued for further analysis. Measure A-5 from the 1997 NCP outlined the earlier recommendation.
Construct sound barrier along exterior of Airport property near impacted areas	Could attenuate some noise from operations on Runway 09/27 for homes directly adjacent to the sound barrier.	Depending on the parameters of the sound barrier (limited due to FAA height restrictions) there would be minimal reductions for impacted homes. There would be cost incurred to construct each sound barrier.	Due to the inability to provide benefits to the homes impacted within the 65 DNL noise contour this alternative is NOT RECOMMENDED for further analysis.
AIRPORT REGULATIONS AND FACILITY RESTRICTIONS			
Implement Airport Operational Restrictions (Part 161 Restrictions) such as: noise-/time-based landing fees, airport capacity restrictions based on relative "noisiness", aircraft type restrictions based on "noisiness"	Can resolve noise annoyance issues with certain loud aircraft events or aircraft types operating at DLH.	Such restrictions would be subject to the costly and time-consuming analytical requirements under 14 CFR Part 161. The FAA has never officially approved such measures.	Restrictions on access to an airport are measures of last resort for use in the most extreme cases of noise impact. This alternative is NOT RECOMMENDED for further analysis.

2.2.2 Analysis of Potential Noise Abatement Measures

The qualitative analysis presented in **Section 2.1.1** identified one (1) potential noise abatement alternative that is recommended for continued evaluation. The extension to Runway 03/21 was evaluated for benefits associated with impacted homes located within the 65+ DNL noise exposure contour and associated cost to implement. The resulting quantitative analysis of the Runway 03/21 alternative was reviewed with the membership of the PAC and presented at the 3rd public workshop which was conducted in February of 2021.

The following information is provided for the alternative:

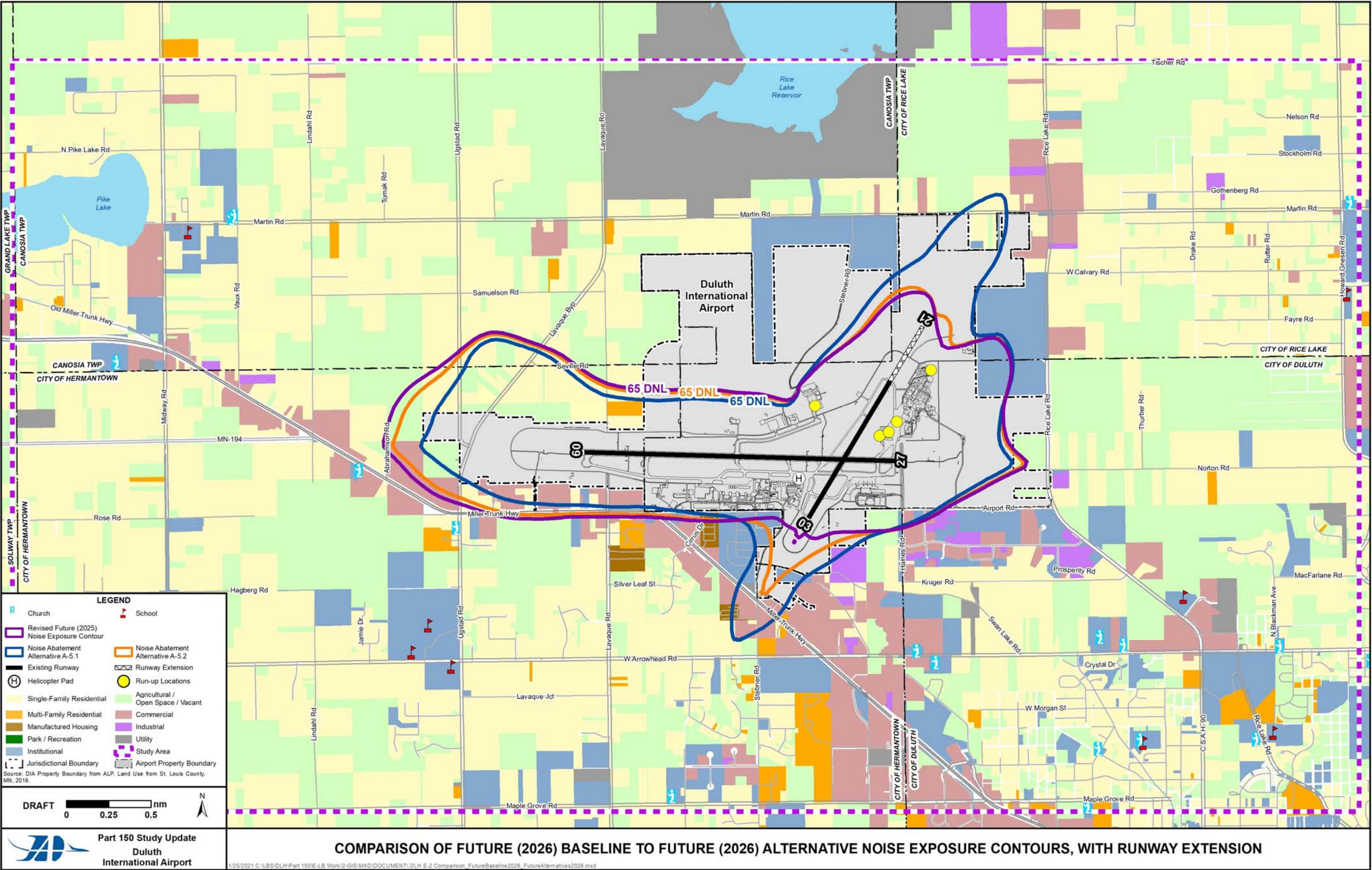
- **Title:** includes a brief descriptive title of the alternative.
- **Category:** provides the category of each abatement alternative (runway use modification, flight routing modification, airport regulations and facility restrictions, aircraft operational procedure modification, or airport facility modification).
- **Background and Intent:** includes the intent of the measure as a means to abate noise impacts, and the background and setting to which the alternative relates where applicable.
- **Benefits:** includes a statement of how the alternative would provide noise mitigation benefits.
- **Drawbacks:** identifies any potential negative consequences of implementing the alternative.
- **Cost to Implement:** identifies the potential cost to implement each alternative.
- **Evaluation Method:** provides the method by which the alternative was evaluated.
- **Findings and Recommendations:** provides a recommendation as to whether or not to carry forward the alternative for further analysis and consideration. In some cases, alternatives had drawbacks that made that alternative unfeasible or they did not provide measurable benefits and therefore no further consideration was warranted. Those alternatives that showed potential benefits were continued for further analysis, including further discussion with parties responsible for implementation (FAA, DAA, airport users) and presented to the public for input and comment.

NOISE COMPATIBILITY PROGRAM - ABATEMENT ALTERNATIVE A-5

TITLE:	Extension of Runway 03/21
CATEGORY:	Airport Facility Modifications
BACKGROUND AND INTENT:	Due to the current length of Runway 03/21 (5,719 ft.), the runway cannot accommodate arrivals or departures from some aircraft that routinely operate at DLH. The final runway length is anticipated to be 8,000 ft., at this length all aircraft that currently operate at DLH could utilize the runway for arrival and departure operations when weather and operating conditions allow.
BENEFITS:	Allowing additional operations to utilize Runway 03/21 would reduce noise levels for impacted homes and mobile homes that are impacted from lateral noise originating from Runway 09/27 departure and arrival operations. The alternative could provide additional abatement to homes located west of the Airport inside the 65 DNL noise exposure contour.
DRAWBACKS:	New residential areas to the south of Runway End 03 and north of Runway End 21 would experience increased noise exposure levels due to new arrival and departure traffic utilizing Runway 03/21. There would be significant cost associated with the extension to Runway 03/21, however this cost could be offset by AIP funding if awarded.
COST TO IMPLEMENT:	\$30,000,000

EVALUATION METHOD:	<p>Exhibit 2-2, <i>Comparison of Future (2026) Baseline to Future (2026) Alternative Noise Exposure Contours, with Runway Extension</i>, shows the Future (2026) Alternative noise contour based on anticipated runway utilization if Runway 03/21 were extended to its final anticipated length of 8,000 ft. Two (2) Future (2026) Alternative noise exposure contours were modeled. The Future (2026) Baseline condition assumes 80% of F-16 arrival and departure operations utilize Runway 27 while 20% utilize Runway 09.</p> <ul style="list-style-type: none"> ▪ Alternative A-5.1: assumes a 20% shift in arrival and departure operations from Runway 27 (65%) and Runway 09 (15%) to Runways 03 (10%) and 21 (10%). Alternative A-5.1 assumes that no F-16 departure operations (0%) would occur on Runway 03/21 during nighttime hours (10:00 p.m. – 6:59 a.m.). ▪ Alternative A-5.2: assumes the use of arresting gear on the north end of Runway 03/21 only, limiting F-16 operations the ability to only utilize Runway End 21 for arrival and departure operations. Alternative A-5.2 assumes 10% operations on Runway 21 (0% at night). <p>The runway use changes are summarized in Table 2-2, <i>Future (2026) Baseline and Alternative Runway Use with Runway Extension (F-16 Runway Use Only)</i> presents the assumed F-16 runway utilization for each of the previously described alternatives.</p> <p>Table 2-3, <i>Comparison of Future (2026) Baseline to Future (2026) Alternative Population and Housing Impacts, with Runway Extension</i>, shows the comparison in housing and population impacts between the Future (2026) Baseline and the Future (2026) Alternative noise contours.</p>
FINDINGS AND RECOMMENDATIONS:	<p>This alternative would only provide limited relief to between 11 and 14 single-family or mobile home properties at a cost of \$30,000,000. As a result, this alternative is NOT RECOMMENDED for the purposes of noise abatement and inclusion in the NCP.</p>

Exhibit 2-2 Comparison of Future (2026) Baseline to Future (2026) Alternative Noise Exposure Contours, with Runway Extension



Source: Landrum & Brown analysis, 2021.

Table 2-2 Future (2026) Baseline and Alternative F-16 Runway Use with Runway Extension

Runway End (Arrivals & Departures)	Baseline (%)	Alternative A-5.1 (%) ⁽¹⁾	Alternative A-5.2 (%) ⁽¹⁾
09	20	15	20
27	80	65	70
03	0	10	0
21	0	10	10

Notes: (1) Assumes 0% nighttime F-16 operations on Runway 03/21 (10:00 p.m. – 6:59 a.m.)

Sources: Landrum & Brown Analysis, 2021.

Table 2-3 Comparison of Future (2026) Baseline to Future (2026) Alternative Population and Housing Impacts, with Runway Extension

FUTURE (2026) DNL NOISE CONTOUR (65+)				
Housing Type	Units	Difference from Baseline	Population	Difference from Baseline
BASELINE (0% F-16 operations on Runway 03/21)				
Single-Family	45	--	93	--
Multi-Family	2	--	4	--
Mobile Homes	33	--	62	--
ALTERNATIVE A-5.1 (20% F-16 operations on Runway 03/21 & 0% night operations)				
Single-Family	30	-15	62	-31
Multi-Family	2	0	4	0
Mobile Homes	26	-7	49	-13
ALTERNATIVE A-5.2 (10% F-16 operations on Runway 21 only & 0% night operations)				
Single-Family	37	-8	77	-16
Multi-Family	2	0	4	0
Mobile Homes	31	-2	58	-4

Notes: Population numbers are estimated based on housing counts multiplied by the average household size from the 2000 Census.

Housing counts are based on field verification and Saint Louis County Assessors data:

<https://www.stlouiscountymn.gov/departments-a-z/assessor/property-information>

Sources: Landrum & Brown Analysis, 2021.

2.3 Recommended Noise Abatement Measures

There are no recommended noise abatement measures in the DLH 2021 NCP. Several measures were considered including an extension to northern end of Runway 03/21. Noise modeling was conducted on this measure, see **Exhibit 2-2**, and it was determined the

abatement measure would not significantly reduce the number of impacts, while impacting new properties that are not currently impacted, to the south and north of Runway 03/21. The resulting decision to not move forward with recommending noise abatement alternatives was discussed with the membership of the PAC and presented at the 3rd public workshop which was conducted in February of 2021.

2.4 Land Use Mitigation Screening Analysis

This section presents the range of the land use mitigation alternatives that were considered in this Part 150 Noise Compatibility Study to mitigate noise impacts of aircraft operations at DLH. The proposed alternatives were evaluated for the anticipated benefits and costs associated with its implementation. Each proposed land use mitigation alternative was reviewed with the membership of the PAC. Local planning professionals from the surrounding communities were invited to meet with the project team to discuss the types of alternatives that were evaluated. The land use mitigation screening analysis was discussed with the membership of the PAC and presented at the 3rd public workshop which was conducted in February of 2021.

Land use controls fall into two categories, corrective and preventative. Corrective or remedial alternatives are intended to convert existing, non-compatible uses to compatible uses. Preventive land use management techniques seek to prevent the introduction of additional noise-sensitive land uses within existing and future airport noise contours. These potential land use mitigation alternatives are summarized below:

Preventative

- Compatible Use Zoning
- Subdivision Regulations
- Building Codes
- Capital Improvement Programs
- Growth Risk Assessment
- Fair Disclosure Policies

Corrective

- Sound Insulation
- Land Acquisition
- Purchase Guarantee
- Avigation Easements

2.4.1 Land Use Mitigation Screening Analysis Summary

This section summarizes the qualitative screening analysis of modified or potential new land use mitigation alternatives. **Table 2-4, Land Use Mitigation Alternatives Screening Analysis Summary** presents a summary of the land use mitigation alternatives screening. The "Evaluation and Recommendation" column provides a brief synopsis of the issues and findings associated with each land use mitigation alternative and notes whether the land use mitigation

alternative was recommended for further analysis. The land use mitigation alternatives are presented as either corrective or preventative.

Each land use mitigation alternative and the qualitative screening was reviewed with the membership of the PAC and the results of the qualitative screening was presented at the 3rd public workshop which was conducted in February of 2021. Those mitigation alternatives that were determined to warrant further analysis are discussed in greater detail in **Section 2.4.2**.

Table 2-4 Mitigation Alternatives Screening Analysis Summary

DESCRIPTION	BENEFITS	DRAWBACKS	EVALUATION AND RECOMMENDATION
CORRECTIVE			
Offer Residential Sound Insulation Program for Single- and Multi-Family Homes within the 65+ DNL Noise Contour and in the Block Rounding Area Outside of the 65 DNL Noise Contour	Would reduce interior noise levels for the homes impacted within the 65 DNL contour and in the block rounding area outside of the 65 DNL noise contour.	Final eligibility for each property would have to be determined. Final cost would still have to be determined based on participation rates and local costs to implement.	This alternative has the ability to provide benefits to the homes impacted by the 65+ DNL noise contour and in the block rounding area outside the 65 DNL noise contour. Therefore, this alternative is RECOMMENDED for inclusion in the NCP.
Offer Land Acquisition Program for Single-Family Homes within 70+ DNL Noise Contour	Has the potential to convert owner-occupied residential housing units into compatible uses. Acquired properties could potentially be utilized in future airport development.	Total costs are uncertain pending completion of the feasibility study to determine who is interested in participating.	This alternative has the ability to convert impacted properties to compatible uses. Single-family homes could be offered either sound insulation or land acquisition. Therefore, this alternative is RECOMMENDED for inclusion in the NCP.
Offer Land Acquisition Program to Mobile Homes within NMPA #1	Has the potential to convert owner-occupied residential housing units into compatible uses. Acquired properties could potentially be utilized in future airport development.	The total costs are uncertain pending completion of the feasibility study to determine who is interested in participating. Major issues that complicate this would be interests of owners of mobile homes and the interests of the owner of the mobile home park who likely owns the rights to the land.	This alternative has the ability to convert impacted properties to compatible uses. Therefore, this alternative is RECOMMENDED for inclusion in the NCP.
Offer Avigation Easements to Owner-Occupied Single- and Multi-Family Homes within NMPA#1 and NMPA #2 if Acquisition and/or Sound Insulation is Declined	Has the potential to convert owner-occupied residential housing units into compatible uses. Properties would remain as taxable land.	The total costs are uncertain pending completion of the feasibility study to determine who is interested in participating. Major issues include that all properties would be offered sound insulation and would have to be eligible. Some properties would be offered acquisition. Only owners declining either alternative would be offered avigation easement.	This alternative has the ability to convert impacted properties to compatible uses. Therefore, this alternative is RECOMMENDED for inclusion in the NCP.
Offer Avigation Easement to owner-occupied Mobile Home within NMPA #1 if Acquisition is Declined	Has the potential to convert owner-occupied residential housing units into compatible uses. Properties would remain as taxable land.	The total costs are uncertain pending completion of the feasibility study to determine of the property owner is interested in participating. Major issue is that the property would be offered acquisition. Only if the owner declined acquisition would they be offered avigation easement.	This alternative has the ability to convert impacted properties to compatible uses. Therefore, this alternative is RECOMMENDED for inclusion in the NCP.
Offer Avigation Easements to Owner-Occupied Mobile Homes within NMPA #2.	Has the potential to convert owner-occupied residential housing units into compatible uses. Properties would remain as taxable land.	Total costs are uncertain pending completion of the feasibility study to determine who is interested in participating.	This alternative has the ability to convert impacted properties to compatible uses. Therefore, this alternative is RECOMMENDED for inclusion in the NCP.

DESCRIPTION	BENEFITS	DRAWBACKS	EVALUATION AND RECOMMENDATION
PREVENTATIVE			
Rezone Parcels within 65+ DNL.	This alternative would prevent future development and non-compatible land uses within the 65+ DNL.	Occupied properties would still be non-compatible if they are not sound insulated.	This alternative has the ability to prevent future non-compatible land uses within the 65 DNL noise contour. Few undeveloped properties exist within the 65 DNL noise contour. Therefore, this alternative, although not approved, it is NOT RECOMMENDED to be included in the NCP.
Develop an Airport Land Use Management District (ALUMD).	This alternative would develop a fixed boundary within which land use controls will be recommended. The boundary would be based on the 2026 NEM/NCP noise contour, and other geographical and jurisdictional boundaries. The ALUMD boundaries are outside of the current 60 DNL noise contours and are set to eliminate changing boundaries caused by changing noise contours.	Would be up to local jurisdictions within the ALUMD to apply different land use controls as appropriate.	This alternative has the ability to establish a fixed boundary within which consistent land use compatibility planning can be conducted. Therefore, this alternative is RECOMMENDED for inclusion in the NCP. Alternative A-2 from the 1997 NCP outlined this previous recommendation.
Adopt Updated Subdivision Regulations.	This alternative would set new standards for new subdivisions. During the review of the plats by public entities, the site plans would be reviewed to ensure the design minimizes noise impacts. This could include the use of more open public space or by decreasing the density of development within a subdivision.	Developers of new subdivisions within the ALUMD may find the property not as profitable due to the decreased density of residences or the increase of public space.	This alternative will require potential developers of new subdivisions within the ALUMD to reduce potential exposure to aircraft noise by decreasing density or increasing public space. Therefore, this alternative is RECOMMENDED for inclusion in the NCP.
Adopt Improved Building Codes.	This alternative would update existing building codes to ensure that new residential construction meets current FAA criteria for sound insulation.	This alternative would likely increase the overall cost of residential construction within the ALUMD.	This alternative will require potential builders of an increased level of construction to reduce noise within residential structures within the ALUMD. Therefore, this alternative is RECOMMENDED for inclusion in the NCP.
Develop a Voluntary Fair Disclosure Program.	Will disclose through regulations on the seller or their representatives at the time of sale that an existing property or plats of buildable lots in a new subdivision could be subjected to aircraft noise. Potential buyers will be made aware before they purchase the property that it is in an area that has the probability of receiving noise from aircraft.	Will need to seek cooperation from the local Lake Superior Area Realtors and the Duluth Board of Realtors to participate.	This alternative will notify potential buyers that they may be subjected to aircraft noise within the ALUMD. Therefore, this alternative is RECOMMENDED for inclusion in the NCP.

2.4.2 Analysis of Potential Land Use Mitigation Alternatives

The qualitative analysis described below identified six (6) corrective land use mitigation alternatives and four (4) preventative land use mitigation alternatives as recommended for continued evaluation. The alternatives are analyzed in greater detail in the following pages.

The following information is provided for each alternative:

- **Title:** includes a brief descriptive title of the alternative.
- **Background and Intent:** includes the intent of the alternative as a means to mitigate noise impacts, and the background and setting to which the alternative relates where applicable.
- **Benefits:** includes a statement of how the alternative would provide land use compatibility benefits.
- **Drawbacks:** identifies any potential negative consequences of implementing the alternative.
- **Cost to Implement:** identifies the potential cost to implement each alternative.
- **Findings and Recommendations:** provides a recommendation as to whether or not to carry forward the alternative for further analysis and consideration.

In some cases, alternatives had drawbacks that made that alternative unfeasible or they did not provide measurable benefits and therefore no further consideration was warranted. Those alternatives that showed potential benefits were continued for further analysis, including further discussion with parties responsible for implementation (FAA, DAA, airport users) and presented to the public for input and comment.

Each land use mitigation alternative and the quantitative screening was reviewed with the membership of the PAC and the results of the quantitative screening was presented at the 3rd public workshop which was conducted in February of 2021. Alternatives that are recommended for inclusion in this NCP are included in **Section 2.5**.

NOISE COMPATIBILITY PROGRAM - MITIGATION ALTERNATIVE M-A (FORMERLY M-1)

TITLE:	Offer Residential Sound Insulation Program for Single-Family Homes within the 65+ DNL Noise Contour
BACKGROUND AND INTENT:	Approximately 47 single- and multi-family residential units located inside the 65+ DNL of the Future (2026) Baseline condition would be eligible for sound insulation. In addition, 17 additional single-family units are located in a proposed block rounding area outside of the 65 DNL noise contour. If approved, a total of 64 residential units could potentially be eligible for sound insulation. All homes that participate in the sound insulation program would be required to confer an aviation easement to the DAA in exchange for the improvements.
BENEFITS:	<p>This measure has the potential to convert owner-occupied residential housing units into to compatible uses.</p> <p>AIP funding, if awarded, may be available to offset costs.</p>
DRAWBACKS:	The total costs are uncertain pending completion of the feasibility study to determine who is interested in participating and also pending testing to determine final eligibility.
COST TO IMPLEMENT:	<p>Noise attenuation costs for a particular unit may vary extensively depending upon the size, age, condition and construction of the overall building and each individual unit. No extensive work has been done at this point to assess these factors or to develop actual detailed costs. Total cost would depend upon all of these factors and the number of units that choose to participate. In addition, costs are also based on the level of effort provided by the airport staff. Costs to implement included hard costs which is the actual construction at the property and soft costs which can include program management, architectural and engineering support, acoustical testing, construction oversight, community outreach, development of legal documents, grant applications, etc.</p> <p>After a preliminary review of the housing types and size, a recommended budget of \$50,000 per home is proposed for construction which is similar to other programs in northern climates and similar housing stock. Soft costs can vary from 20% to 30% per property, depending on airport involvement. We recommend budgeting 25% or \$12,500 per property for a total of \$62,500 per property. If all 64 units in the Future (2026) Baseline condition within the 65+ DNL, and in the block rounding area outside the 65 DNL were included in the program, the estimated cost for implementation would be approximately \$4,000,000. This would be considered a maximum cost as it is likely that not all 64 units would participate. Out of the 64 units, seven (7) units are located within the 70+ DNL noise contour and may be eligible for</p>

	acquisition as a first choice. Some units may just choose not to participate. Other units would not meet the interior eligibility requirement, and others still are likely not to meet the build date criteria.
FINDINGS AND RECOMMENDATIONS:	This alternative is RECOMMENDED for inclusion in the NCP.

NOISE COMPATIBILITY PROGRAM - MITIGATION ALTERNATIVE M-B

TITLE:	Offer Land Acquisition Program for Single-Family Homes within 70+ DNL Noise Contour
BACKGROUND AND INTENT:	Approximately seven (7) single-family homes inside the 70+ DNL of the Future (2026) Baseline condition would be eligible for acquisition. These homes are also included in the 47 homes that may be eligible for sound insulation.
BENEFITS:	<p>This measure has the potential to convert owner-occupied residential housing units into to compatible uses. Acquired properties could potentially utilized in future airport development. Property owners could be offered a choice of sound insulation or land acquisition.</p> <p>AIP funding, if awarded, may be available to offset costs.</p>
DRAWBACKS:	The total costs are uncertain pending completion of the feasibility study to determine who is interested in participating.
COST TO IMPLEMENT:	<p>Total cost would depend on the number of units that choose to participate and the fair market value (FMV) for each property, among other expenses.</p> <p>For the 7 single-family homes, it is estimated that $\frac{2}{3}$ are owner-occupied and $\frac{1}{3}$ are tenant-occupied. Total costs for all 7 properties is estimated to be \$2,450,000 or around \$350,000 per property. Total costs would include the FMV for each property, relocation expenses, moving expense, remediation and/or demolition expenses, legal expenses, and program management expenses. Of the total acquisition costs, soft costs (administration and program management), are estimated to average around 30% of the total project costs.</p> <p>If the 7 single-family homes would decline to be acquired, they would still be able to participate in the sound insulation program (Measure M-A) at a cost of \$62,500 per property or \$437,500, subject to all eligibility requirements. Note that these costs are already included in Mitigation Alternative M-A above.</p>
FINDINGS AND RECOMMENDATIONS:	This alternative is RECOMMENDED for inclusion in the NCP.

NOISE COMPATIBILITY PROGRAM - MITIGATION ALTERNATIVE M-C

TITLE:	Offer Land Acquisition Program for Mobile Homes within the 65+ DNL Noise Contour
BACKGROUND AND INTENT:	Approximately 103 mobile homes inside the 65+ DNL of the Future (2026) Baseline condition would be eligible for acquisition. It should be noted that 102 mobile homes are in a mobile home park and one (1) additional property located within the 65 DNL.
BENEFITS:	<p>This measure has the potential to convert owner-occupied residential housing units into to compatible uses. Acquired properties could potentially utilized in future airport development.</p> <p>AIP funding, if awarded, may be available to offset costs.</p>
DRAWBACKS:	The total costs are uncertain pending completion of the feasibility study to determine who is interested in participating.
COST TO IMPLEMENT:	<p>Total cost would depend on the number of units that choose to participate and the fair market value (FMV) for each property, among other expenses.</p> <p>For the 103 mobile homes, the costs are slightly more complicated as the assumption is that the land is owned by the mobile home park and the mobile homes are mostly owner-occupied. For the 103 mobile homes the total costs are estimated at around \$11,568,000 and would include the FMV for each property, relocation expenses, moving expense, remediation and/or demolition expenses, legal expenses, and program management expenses. In addition, it includes the estimated buy-out of the mobile home park, include FMV for the property and lose of rental income over the years, legal expenses, and program management expenses. Of the total acquisition costs, soft costs (administration and program management), are estimated to average around 30% of the total project costs.</p> <p>Overall, land acquisition costs for mobile home park and one (1) additional mobile home would be \$11,568,000 depending upon the level of participation.</p>
FINDINGS AND RECOMMENDATIONS:	This alternative is RECOMMENDED for inclusion in the NCP.

NOISE COMPATIBILITY PROGRAM - MITIGATION ALTERNATIVE M-D

TITLE:	Offer Avigation Easements to owner-occupied single-family homes within NMPA #1 and NMPA #2 if acquisition (within 70 DNL noise contour only) and/or sound insulation is declined.
BACKGROUND AND INTENT:	This measure will offer a cash payment in exchange for the avigation easement in case owners decline acquisition and/or sound insulation. The avigation easement would be placed on the property and would be attached to the deed for all future owners. It ultimately deems the property compatible land use.
BENEFITS:	<p>This measure has the potential to convert owner-occupied residential housing units into to compatible uses.</p> <p>AIP funding, if awarded, may be available to offset costs.</p>
DRAWBACKS:	The total costs are uncertain pending completion of the feasibility study to determine who is interested in participating.
COST TO IMPLEMENT:	<p>Total costs would be dependent on the number of units that choose to participate and the Fair Market Value (FMV) for each unit, among other expenses.</p> <p>The cost of the avigation easement is set based on a percentage of the FMV for each unit. The easement almost always does not exceed \$3,000 per unit. The administration (soft costs) for an avigation easement program could easily run as much as double the actual cost of the easements.</p> <p>For the single- and multi-family homes the avigation easement cost is estimated at \$384,000 including both hard cost (cost of the easement) and the soft cost (administration). However, that cost is based on all 64 residential units participating as they would have to decline sound insulation or acquisition (within the 70+ DNL noise contour only.)</p>
FINDINGS AND RECOMMENDATIONS:	This alternative is RECOMMENDED for inclusion in the NCP.

NOISE COMPATIBILITY PROGRAM MEASURE: M-E

TITLE:	Offer Avigation Easements to mobile home within NMPA #1 if acquisition is declined.
BACKGROUND AND INTENT:	This measure will offer a cash payment in exchange for the avigation easement in case owners decline acquisition. The avigation easement would be placed on the property and would be attached to the deed for all future owners. It ultimately deems the property compatible land use.
BENEFITS:	This measure has the potential to convert one (1) single mobile home property into compatible use.
DRAWBACKS:	The total costs are uncertain pending completion of the feasibility study to determine who is interested in participating.
COST TO IMPLEMENT:	<p>Total costs would be dependent if the unit chose to participate and the Fair Market Value (FMV) for each unit, among other expenses.</p> <p>The cost of the avigation easement is set based on a percentage of the FMV for each unit. The easement almost always does not exceed \$3,000 per unit. The administration (soft costs) for an avigation easement program could easily run as much as double the actual cost of the easements.</p> <p>For the single mobile home, the avigation easement cost is estimated at no more than \$6,000 including both hard cost (cost of the easement) and the soft cost (administration). However, that cost is based on the mobile home declining acquisition.</p>
FINDINGS AND RECOMMENDATIONS:	This alternative is RECOMMENDED for inclusion in the NCP.

NOISE COMPATIBILITY PROGRAM MEASURE: M-F

TITLE:	Offer Avigation Easements to mobile homes within NMPA #2.
BACKGROUND AND INTENT:	This measure will offer a cash payment in exchange for an avigation easement. The avigation easement would be placed on the property and would be attached to the deed for all future owners. It ultimately deems the property compatible land use.
BENEFITS:	This measure has the potential to convert two (2) mobile home properties into compatible use.
DRAWBACKS:	The total costs are uncertain pending completion of the feasibility study to determine who is interested in participating.
COST TO IMPLEMENT:	<p>Total costs would be dependent if each unit chose to participate and the Fair Market Value (FMV) for each unit, among other expenses.</p> <p>The cost of the avigation easement is set based on a percentage of the FMV for each unit. The easement almost always does not exceed \$3,000 per unit. The administration (soft costs) for an avigation easement program could easily run as much as double the actual cost of the easements.</p> <p>For the two (2) mobile homes the avigation easement cost is estimated at no more than \$12,000 including both hard cost (cost of the easement) and the soft cost (administration). However, that cost is based on the participation of the mobile homes.</p>
FINDINGS AND RECOMMENDATIONS:	This alternative is RECOMMENDED for inclusion in the NCP.

NOISE COMPATIBILITY PROGRAM - MITIGATION ALTERNATIVE M-G

TITLE:	Develop an Airport Land Use Management District (ALUMD).
BACKGROUND AND INTENT:	<p>This measure sets a fixed boundary within which land use controls will be recommended. These controls will include the adoption of updated subdivision regulations, adoption of improved building codes, and the development of a fair disclosure program. These measures are discussed in M-H thru M-J below.</p> <p>The ALUMD boundary is fixed and outside of the 60 DNL noise contours so annual changes in the contours would not require a reestablishment of the ALUMD boundary. While this gives the airport some say in the development outside of its boundaries, it ultimately decreases the amount of future noise issues that might arise.</p> <p>All four of the jurisdictions within the ALUMD will have to be contacted such that the ALUMD can be incorporated into their planning documents.</p>
BENEFITS:	This alternative would develop a fixed boundary within which certain land use controls will be recommended. Since the proposed boundary is outside of the current 60 DNL noise contours, the measure is meant to develop a boundary within which future residences will be more aware of local noise issues.
DRAWBACKS:	Would be up to local jurisdictions within the ALUMD to apply different land use controls as appropriate.
COST TO IMPLEMENT:	It is expected that there will be minimal cost of up to \$50,000 associated with this measure. The Joint Airport Zoning Board (JAZB) could be utilized for the development of the final boundaries and then coordinate with the local jurisdictions for incorporation into local planning documents.
FINDINGS AND RECOMMENDATIONS:	This alternative is RECOMMENDED for inclusion in the NCP.

NOISE COMPATIBILITY PROGRAM - MITIGATION ALTERNATIVE M-H

TITLE:	Adopt Updated Subdivision Regulations.
BACKGROUND AND INTENT:	During the review of the plats for new subdivisions by public entities, the site plans would be reviewed to ensure the design minimizes noise impacts. This could include the use of more open public space or by decreasing the density of development within a subdivision. The intent is to minimize the density of residences that could be subjected to aircraft noise and to minimize noise complaints against the airport.
BENEFITS:	During the review of the plats for new subdivisions by public entities, the site plans would be reviewed to ensure the design minimizes noise impacts. This could include the use of more open public space or by decreasing the density of development within a subdivision
DRAWBACKS:	Developers of new subdivisions within the ALUMD may find the property not as profitable due to the decreased density of residences or the increase of public space.
COST TO IMPLEMENT:	It is expected that there will be minimal cost of up to \$50,000 associated with this measure. The JAZB could be utilized for development of the updated subdivision regulations and then coordinate with the local jurisdictions for incorporation into local planning documents.
FINDINGS AND RECOMMENDATIONS:	This alternative is RECOMMENDED for inclusion in the NCP.

NOISE COMPATIBILITY PROGRAM - MITIGATION ALTERNATIVE M-I

TITLE:	Adopt Improved Building Codes.
BACKGROUND AND INTENT:	This alternative would update existing building codes to ensure that new residential construction meets current FAA criteria for sound insulation.
BENEFITS:	This alternative would ensure that any new residential construction would meet current FAA criteria for sound insulation. Better windows, doors, insulation would be added to construction to minimize building interior noise levels from aircraft operations.
DRAWBACKS:	This measure would likely increase the overall cost of residential construction within the ALUMD.
COST TO IMPLEMENT:	It is expected that there will be minimal cost of up to \$50,000 associated with this measure. The JAZB could be utilized for the review and update the local building codes and then coordinate with the local jurisdictions for incorporation into local planning documents.
FINDINGS AND RECOMMENDATIONS:	This alternative is RECOMMENDED for inclusion in the NCP.

NOISE COMPATIBILITY PROGRAM - MITIGATION ALTERNATIVE M-J

TITLE:	Develop a Voluntary Fair Disclosure Program.
BACKGROUND AND INTENT:	Will disclose through voluntary regulations on the seller or their representatives at the time of sale that an existing property or plats of buildable lots in a new subdivision could be subjected to aircraft noise.
BENEFITS:	Potential buyers will be notified before they purchase that their property has the potential to be exposed to aircraft noise.
DRAWBACKS:	This measure will need to seek the cooperation from the local Lake Superior Area Realtors and the Duluth Board of Realtors to participate. Local realtors may not actively support as it could reduce potential property sales close to the airport.
COST TO IMPLEMENT:	It is expected that there will be minimal cost of up to \$50,000 associated with this measure. The Duluth Board of realtors and the Lake Superior Area Realtors would need to work together, likely in association with the JAZB to develop the final language for the disclosure program. All jurisdictions would then incorporate into local planning documents.
FINDINGS AND RECOMMENDATIONS:	This alternative is RECOMMENDED for inclusion in the NCP.

2.5 Recommended Land Use Mitigation Measures

The land use mitigation alternatives recommend as measures for implementation in the DLH 2021 NCP have resulted from the planning process, which involved input from the PAC, local jurisdictions and public meetings. Each recommended land use mitigation measure was reviewed with the membership of the PAC and presented at the 3rd public workshop which was conducted in February of 2021. **Section 3, Public Involvement** contains a summary of the coordination that occurred during the development of the DLH 2021 NCP.

A total of ten (10) land use mitigation measures are recommended in the DLH 2021 NCP. These measures consist of a sound insulation program for single-family and multi-family residential units, a land acquisition program, and avigation easement program. The following sections provide a summary of the corrective and preventative land use mitigation measures recommended for inclusion in the DLH 2021 NCP.

The AIP Handbook sets forth a 2-tier eligibility process for determining the final eligibility of the 64 properties within Measure M-A:

1. Properties must be located within approved 65 DNL noise contour boundary
2. Properties must have an average interior noise value of 45 DNL or greater

This guidance includes requirements for testing methodology, equipment, and the determination of an adequate sample size, which could impact program startup and final costs and funding availability. This process would be undertaken once the NCP is approved by the FAA and the DAA chooses to implement a sound insulation program (Measure M-A).

As discussed previously, the approval of the DLH 2021 NCP by the FAA does not commit the DAA to the costs or the implementation schedule listed in this document. This information is provided here as a planning tool to assist the implementation of the NCP. Implementation of land use mitigation measures is at the discretion of the DAA and subject to available funding from both the FAA and DAA. Implementation of the preventive land use measures is solely at the discretion of local governments and other local agencies.

Before any recommended measures can be implemented some level of National Environmental Policy Act (NEPA) review must be performed. The level of NEPA review is determined by the type of proposed action. Typically, the measures recommended in the DLH 2021 NCP Update would fall under the Categorical Exclusion (CATEX) level of environmental review. Once the CATEX information is completed it is submitted to the local Airports District Office (ADO) for approval by the FAA.

2.5.1 Corrective Land Use Mitigation Measures

Table 2-5, Corrective Land Use Mitigation Measures, provides a description of the recommended corrective land use mitigation measures, the responsible party for implementing the measure, costs to the airport, local governments and airport users and the current implementation status of the measure. It is important that each measure is fully understood and has the support of the DAA board members moving forward. **Table 2-6, Corrective Land Use Mitigation Measures Estimated Cost**, provides the estimated cost to implement each measure.

Table 2-5 Corrective Land Use Mitigation Measures

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
CORRECTIVE LAND USE MITIGATION MEASURES					
<p><i>(formerly 1997 NCP Measure M-1)</i></p> <p>Measure M-A: Offer Residential Sound Insulation Program to Single- and Multi-Family Homes (47 units) within the 65+ DNL Noise Contour.</p> <p>Offer Residential Sound Insulation Program to Single-Family Homes (17 units) within the Block Rounding Area Outside of the 65 DNL Noise Contour</p>	DAA	<p>It is estimated 47 homes are located within the 65+ DNL noise contour plus an additional 17 homes in the block rounding area outside the 65 DNL. If 100% of all homes were eligible and participated, based on additional interior noise level testing, the cost to insulate all homes is estimated at \$4,000,000 which includes all hard costs (construction) and soft costs (administrative).</p> <p>Federal Airport Improvement Program (AIP) funding likely available (80% FAA share/20% local airport share)</p>	None	None	<p>This is a measure that was never implemented from the 1997 NCP and should be continued with modification to include all properties identified within the 65+ DNL and the properties identified in the block rounding area outside the 65 DNL. Properties undergoing sound insulation would have an avigation easement placed on the property and attached to the deed.</p>
<p>Measure M-B: Offer Land Acquisition Program to Single-Family Homes (7 homes) within the 70+ DNL Noise Contour</p>	DAA	<p>It is estimated at \$2,450,000 if 100% of homes participated.</p> <p>Federal AIP funding likely available (80% FAA share/20% local airport share)</p>	Loss of tax base	None	<p>This is a new measure. Property owners that decline acquisition would still be offered sound insulation. If a property declines both land acquisition and sound insulation, an avigation easement would be offered on the property and attached to the deed.</p>

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
Measure M-C: Offer Land Acquisition Program to Mobile Homes within NMPA #1 (103 Mobile Homes)	DAA	It is estimated at \$11,568,000 depending upon the level of participation. It includes the cost of the 102 mobile homes and loss of income for owner of the mobile home park (cost of just mobile home park), and 1 mobile home property located to the east of Lavaque Bypass Road within the 65 DNL contour (cost of single mobile home and property). Federal AIP funding likely available (80% FAA share/20% local airport share)	Loss of tax base	None	This is a new measure. If the single mobile home property east of Lavaque Bypass Road declines land acquisition, an avigation easement would be offered on the property and attached to the deed.
Measure M-D: Offer avigation easement to owner occupied single-family homes within NMPA #1 and NMPA #2 if acquisition and/or sound insulation is declined.	DAA	The estimated cost of each avigation easement is up to \$3,000 per home. Since the final cost of the measure is dependent on the number of property owners that decline acquisition and/or sound insulation, an estimated overall total was not calculated. Federal AIP funding likely available (80% FAA share/20% local airport share)	None	None	This is a new measure.
Measure M-E: Offer avigation easement to 1 owner-occupied mobile home	DAA	The estimated cost of the avigation easement is up to \$3,000.	None	None	This is a new measure.

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
within NMPA #1 if acquisition is declined.		Federal AIP funding likely available (80% FAA share/20% local airport share)			
Measure M-F: Offer avigation easement to 2 owner-occupied mobile homes within NMPA #2.	DAA	The estimated cost of the avigation easements is up to \$6,000 (\$3,000 per each mobile home). Federal AIP funding likely available (80% FAA share/20% local airport share)	None	None	This is a new measure.

Table 2-6 Corrective Land Use Mitigation Measures Estimated Cost

TYPE OF MEASURE	DIRECT COST (TOTAL)	DIRECT COST TO FAA (80% SHARE)	DIRECT COST TO AIRPORT (20% SHARE)	DIRECT COST TO LOCAL GOVERNMENT	DIRECT COST TO USERS
Measure M-A: Sound insulate 64 eligible single- & multi-family housing units (cost assumes 100% of homes were eligible and participated)	\$4,000,000	\$3,200,000	\$800,000	None	None
Measure M-B: Acquire 7 eligible single-family housing units	\$2,450,000	\$1,960,000	\$490,000	Potential loss of tax base	None
Measure M-C: Acquire (102) mobile homes located in Birchwood Mobile Estates	\$11,568,000 (mobile homes & mobile home property)	\$9,254,400 (mobile homes & mobile home property)	\$2,313,600 (mobile homes & mobile home property)	Potential loss of tax base	None
Measure M-D: Acquire avigation easements to owner-occupied single- and multi-family homes within NMPA #1 and #2 if acquisition and/or sound insulation is declined	\$192,000	\$153,600	\$38,400	None	None
Measure M-E: Acquire avigation easement to 1 mobile homes within NMPA #1 if acquisition is declined	\$3,000	\$2,400	\$600	None	None
Measure M-F: Acquire avigation easement to 2 mobile homes within NMPA #2	\$6,000	\$4,800	\$1,200	None	None
SUBTOTAL	\$17,576,500	\$14,061,200	\$3,515,300	Minimal administrative costs; plus loss of tax base	None

The corrective land use mitigation measures are presented as a series of “plates” that summarize pertinent information required about each of the measures by 14 CFR Part 150 guidance. This information includes:

- A description and the background and intent of the measure;
- The relationship to the previous (1997) NCP;
- The anticipated effect on land use compatibility;
- The party (or parties) responsible for implementation;
- The steps necessary for implementation, its anticipated cost, and the projected timing for implementation; and
- The effects, if any, to other planning programs and other measures.

NOISE COMPATIBILITY PROGRAM MEASURE: M-A (formerly Measure M-1)

Description: Offer Residential Sound Insulation Program to Single- and Multi-Family Homes (47 units) within the 65+ DNL Noise Contours. Offer Residential Sound Insulation Program to Single-Family Homes (17 units) within the Block Rounding Area Outside the 65 DNL Noise Contour.

Background and Intent: This measure includes sound insulation for eligible single- and multi-family residences within the Noise Mitigation Program Area (NMPA) #1 and #2. The NMPA #1 and #2 were established as part of the DLH 2021 NCP. Completion of the single-family sound insulation program from the 1997 NCP was never implemented. Since that time, noise exposure has decreased at DLH due to ongoing noise abatement efforts, the phase-out of older, louder aircraft. As a result, the noise exposure contours developed for this Part 150 Study update are smaller than the noise exposure contours developed for the 1997 Part 150 Study NCP. The NMPA #1 will include 47 single- and multi-family units located within the 65+ DNL. NMPA #2 will include 17 single-family properties located with the block rounding area, as defined, outside of the 65 DNL. The NMPAs were designed based on the Future (2026) NEM/NCP noise exposure contour developed for this 2021 Part 150 Study update and local geographical features such as property boundaries, jurisdictional boundaries and roadways (see **Section 2.5.1.1** and **Exhibit 2-3**).

Relationship to 1997 NCP: This measure was included in the 1997 NCP but only for properties within the 75 DNL. This measure was never implemented and should be modified to include all properties within the 65+ DNL (NMPA #1) and within the block rounding area (NMPA #2).

Land Use Compatibility Improvement: This measure converts incompatible land uses to uses that are compatible with aircraft noise levels.

Responsible Implementing Parties: Duluth Airport Authority

Implementation Steps, Costs, and Phasing:

FAA Requested Action: FAA funding will be requested to implement this program.

Steps: This measure should continue for eligible housing units within the recommended NMPA #1 and #2 (see **Section 2.5.1.1** and **Exhibit 2-3**)

Costs: Estimated construction cost to sound insulate units is approximately \$50,000 per unit with an additional 25% (\$12,500 per unit) for administrative costs. These costs will vary significantly depending on construction, age, and condition of individual residences. Approximately 47 eligible units inside proposed NMPA #1 have not been insulated despite approval in the 1997 NCP. An additional 17 properties are located within the proposed NMPA #2. Total cost (assuming 100% participation) is approximately \$4,000,000, but will vary depending on the number of participating properties. It is likely some property owners will decline participation, some will not meet interior eligibility criteria, and others will not be eligible due to the age of the property. Specific review of each unit has not been undertaken.

Schedule: This measure can continue uninterrupted following NEPA review and based on the availability of FAA and local funding.

Effects on Other Programs/Measures: This measure is not expected to impact other measures or existing programs. However, some homeowners located within the 70+ DNL noise contour may have an option to select this measure or Measure M-B explained below. In addition, properties undergoing sound insulation would have an aviation easement placed on the property and attached to the deed.

NOISE COMPATIBILITY PROGRAM MEASURE: M-B

Description: Offer Land Acquisition Program to Single-Family Homes (7 units) within the 70+ DNL Noise Contour

Background and Intent: This measure has the potential to convert residential housing units into to compatible uses. Acquired properties could potentially be utilized in future airport development. Property owners would be offered sound insulation (Measure M-A) if they decline land acquisition (M-B).

Relationship to 1997 NCP: This is a new measure and was not included in the 1997 NCP.

Land Use Compatibility Improvement: This measure converts incompatible land uses to uses that are compatible with aircraft noise levels.

Responsible Implementing Parties: Duluth Airport Authority

Implementation Steps, Costs, and Phasing:

FAA Requested Action: FAA approval of new measure and funding will be requested to implement this program.

Steps: This measure should continue for eligible housing units within the 70 DNL (see **Section 2.5.1.1** and **Exhibit 2-3**).

Costs: Total cost would depend on the number of units that choose to participate and the overall fair Market Value (FMV) of each property and the additional expenses. For the 7 single-family homes, about $\frac{2}{3}$ seem to be owner-occupied and $\frac{1}{3}$ are tenant-occupied. Total costs for all 7 properties is estimated to be \$2,450,000 or around \$350,000 per property. Total costs would include the FMV for each property, relocation expenses, moving expense, remediation and/or demolition expenses, legal expenses, and program management expenses. Of the total acquisition costs, soft costs (administration and program management), are estimated to average around 30% of the total project costs.

Schedule: This measure can continue uninterrupted following NEPA review and based on the availability of FAA and local funding.

Effects on Other Programs/Measures: This measure is not expected to impact other measures or existing programs. However, homeowners may have an option to select this measure or Measure M-A explained above. If a property owner declines both land acquisition and sound insulation, they would be offered an avigation easement that would be placed on the property and attached to the deed.

NOISE COMPATIBILITY PROGRAM MEASURE: M-C

Description: Offer Land Acquisition Program to Birchwood Mobile Estates (102 Mobile Homes) within the NMPA #1 boundary and 1 additional mobile home property located to the northwest of the airport within the 65+ DNL noise contour.

Background and Intent: This measure will offer acquisition to the owner of the Birchwood Mobile Estates within the boundary of NMPA #1. It should be noted that 33 of the 102 mobile homes are properties located within the 65 DNL.

Relationship to 1997 NCP: This is a new measure and was not included in the 1997 NCP.

Land Use Compatibility Improvement: This measure has the potential to convert single-family mobile housing units into compatible uses.

Responsible Implementing Parties: Duluth Airport Authority

Implementation Steps, Costs, and Phasing:

FAA Requested Action: FAA approval of new measure and funding will be requested to implement this program.

Steps: This measure should continue for eligible housing units within the 65 DNL (see **Section 2.5.1.1** and **Exhibit 2-3**).

Costs: Total costs would be dependent on the number of units that choose to participate and the Fair Market Value (FMV) for each unit, among other expenses.

For the 102 mobile homes in the Birchwood Mobile Estates, the costs are slightly more complicated as the assumption is that the land is owned by the mobile home park and the mobile homes are mostly owner-occupied. For the 102 mobile homes the total costs are estimated at around \$8,017,200 or around \$78,600 per unit and would include the FMV for each property, relocation expenses, moving expense, remediation and/or demolition expenses, legal expenses, and program management expenses. In addition, it is estimated that the resulting buy-out of the mobile home park would be around \$3,420,000 include FMV for the property and lose of rental income over the years, legal expenses, and program management expenses. Overall, land acquisition costs for the mobile home park could be \$11,437,200.

For the single mobile home, the acquisition cost is estimated at \$130,800.

Total acquisition costs could total \$11,568,000 if all units participated. Of the total acquisition costs, soft costs (administration and program management) are estimated to average around 30% of the total project costs.

Schedule: This measure could be implemented following receipt of the FAA Record of Approval, and completion of NEPA review and based on the availability of FAA and local funding.

Effects on Other Programs/Measures: This measure is not expected to impact other programs or measures. However, the owner of the single mobile home declines land acquisition, they would be offered an avigation easement that would be placed on the property and attached to the deed.

NOISE COMPATIBILITY PROGRAM MEASURE: M-D

Description: Offer Avigation Easements to owner-occupied single-family homes within NMPA #1 and NMPA #2 if acquisition (within 70 DNL noise contour only) and/or sound insulation is declined.

Background and Intent: This measure will offer a cash payment in exchange for the avigation easement in case owners decline acquisition and/or sound insulation. The avigation easement would be placed on the property and would be attached to the deed for all future owners. It ultimately deems the property compatible land use.

Relationship to 1997 NCP: This is a new measure and was not included in the 1997 NCP.

Land Use Compatibility Improvement: This measure has the potential to convert single- and multi-family housing units into compatible uses.

Responsible Implementing Parties: Duluth Airport Authority

Implementation Steps, Costs, and Phasing:

FAA Requested Action: FAA approval of new measure and funding will be requested to implement this program.

Steps: This measure should continue for eligible housing units within the 65 DNL (see **Section 2.5.1.1** and **Exhibit 2-3**).

Costs: Total costs would be dependent on the number of units that choose to participate and the Fair Market Value (FMV) for each unit, among other expenses.

The cost of the avigation easement is set based on a percentage of the FMV for each unit. The easement almost always does not exceed \$3,000 per unit. The administration (soft costs) for an avigation easement program could easily run as much as double the actual cost of the easements.

For the single- and multi-family homes the avigation easement cost is estimated at \$384,000 including both hard cost (cost of the easement and the soft cost (administration). However, that cost is based on all 64 residential units participating as they would have to decline sound insulation or acquisition (within 70 DNL noise contour only).

Schedule: This measure could be implemented following receipt of the FAA Record of Approval, completion of NEPA review and based on the availability of FAA and local funding.

Effects on Other Programs/Measures: This measure is not expected to impact other programs or measures. However, the owners of the single- or multi-family residential units would have to decline sound insulation or land acquisition (within 70 DNL only). They would be offered an avigation easement that would be placed on the property and attached to the deed.

NOISE COMPATIBILITY PROGRAM MEASURE: M-E

Description: Offer Avigation Easements to one (1) mobile home within NMPA #1 if acquisition is declined.

Background and Intent: This measure will offer a cash payment in exchange for the avigation easement in case owners decline acquisition. The avigation easement would be placed on the property and would be attached to the deed for all future owners. It ultimately deems the property compatible land use.

Relationship to 1997 NCP: This is a new measure and was not included in the 1997 NCP.

Land Use Compatibility Improvement: This measure has the potential to convert a single mobile home property into compatible use.

Responsible Implementing Parties: Duluth Airport Authority

Implementation Steps, Costs, and Phasing:

FAA Requested Action: FAA approval of new measure and funding will be requested to implement this program.

Steps: This measure should continue for the eligible mobile home within the 65 DNL (see **Section 2.5.1.1** and **Exhibit 2-3**).

Costs: Total costs would be dependent if the unit chose to participate and the Fair Market Value (FMV) for each unit, among other expenses.

The cost of the avigation easement is set based on a percentage of the FMV for each unit. The easement almost always does not exceed \$3,000 per unit. The administration (soft costs) for an avigation easement program could easily run as much as double the actual cost of the easements.

For the single mobile home, the avigation easement cost is estimated at no more than \$6,000 including both hard cost (cost of the easement) and the soft costs (administration). However, that cost is based on the mobile home declining acquisition.

Schedule: This measure could be implemented following receipt of the FAA Record of Approval, completion of the NEPA review and based on the availability of FAA and local funding.

Effects on Other Programs/Measures: This measure is not expected to impact other programs or measures. However, the owners of the mobile home property would have to decline land acquisition. They would be offered an avigation easement that would be placed on the property and attached to the deed.

NOISE COMPATIBILITY PROGRAM MEASURE: M-F

Description: Offer Avigation Easements to two (2) mobile homes within NMPA #2.

Background and Intent: This measure will offer a cash payment in exchange for an avigation easement. The avigation easement would be placed on the property and would be attached to the deed for all future owners. It ultimately deems the property compatible land use.

Relationship to 1997 NCP: This is a new measure and was not included in the 1997 NCP.

Land Use Compatibility Improvement: This measure has the potential to convert two (2) mobile home properties into compatible use.

Responsible Implementing Parties: Duluth Airport Authority

Implementation Steps, Costs, and Phasing:

FAA Requested Action: FAA approval of new measure and funding will be requested to implement this program.

Steps: This measure should continue for the two (2) eligible mobile home within NMPA #2 (see **Section 2.5.1.1** and **Exhibit 2-3**).

Costs: Total costs would be dependent if the unit chose to participate and the Fair Market Value (FMV) for each unit, among other expenses.

The cost of the avigation easement is set based on a percentage of the FMV for each unit. The easement almost always does not exceed \$3,000 per unit. The administration (soft costs) for an avigation easement program could easily run as much as double the actual cost of the easements.

For the two (2) mobile homes the avigation easement cost is estimated at no more than \$12,000 including both hard cost (cost of the easement) and the soft cost (administration). However, that cost is based on the participation of the mobile homes.

Schedule: This measure could be implemented following receipt of the FAA Record of Approval, completion of NEPA review and based on the availability of FAA and local funding.

Effects on Other Programs/Measures: This measure is not expected to impact other programs or measures. However, the owners of the mobile home property would be offered an avigation easement that would be placed on the property and attached to the deed.

2.5.1.1 Noise Mitigation Program Areas

The following section describes the areas within the Noise Mitigation Program Areas (NMPA) that would be potentially eligible for corrective mitigation measures described previously. Per the discussion undertaken at the PAC Meeting on September 17, 2021, we presented two areas identified for potential residential sound insulation. These areas are shown in **Exhibit 2-3, NMPA Boundaries and Residential Properties**.

The NMPAs are based on the Future (2026) NEM developed for this NCP update. Per FAA Order 5100.38D, noise mitigation may undertake block rounding to “...include parcels continuous to the project area” to include a reasonable additional number of otherwise ineligible parcels contiguous to the project area, if necessary to achieve equity in the neighborhood.¹ The requirements for block rounding are defined in the “*AIP Handbook, Change 1, dated February 26, 2019, Appendix R. Noise Compatibility Planning/Projects, Section R-9, Block Rounding, Table R-2, Block Rounding Requirements*”. All of the property identified both inside (NMPA #1) and outside (NMPA #2) the DNL 65 noise contour are subjected to the new FAA eligibility requirements. In addition, all properties must have been built prior to October 1, 1998 to be eligible. The final eligibility determination based on the build date will be made following approval of the program and once the program is underway.

NMPA #1 was defined as the area within the 65 DNL contour that is proposed for sound insulation, acquisition, or avigation easement. This area included 45 single-family residential units and 2 multi-family residential units. NMPA #1 also includes 102 mobile homes that are part of the acquisition program, and 1 mobile home included in the acquisition or avigation easement program. These mobile homes are not included in the sound insulation measures recommended in the NCP. The boundary of NMPA #1 was extended from the 65 DNL in the area near the Birchwood Mobile Estates (102 mobile homes), south of the airport, in order to capture the entire mobile home parcel within the NMPA #1 boundary.

NMPA #2 is defined as the block rounding area and is shown as the blue cross-hatched area located outside of the 65 DNL noise contour. The purpose of the block rounding was “to include parcels contiguous to the project area” and where the “DNL 65 dB contour does not have a reasonable end point.” It is the desire of the DAA to expand the noise mitigation area to include these areas outside the 65 DNL noise contour, per FAA policy². Where possible, block rounding was used to prevent the noise mitigation area from splitting a block. This area includes 17 single-family residential units that are located in close proximity to the 65 DNL noise contour. NMPA #2 also includes 2 mobile homes that are not included in the recommended block rounding area for sound insulation. However, these 2 mobile homes outside of the 65 DNL are in the recommended block rounding area for avigation easement offer in the NCP.

¹ U.S. Department of Transportation, Federal Aviation Administration, Order 5100.38D, Airport Improvement Program Handbook, Appendix R, Noise Compatibility Planning/Projects, September 30, 2014.

² FAA Order 5100.38D, *Airport Improvement Program Handbook, Change 1, dated February 26, 2019, Appendix R. Noise Compatibility Planning/Projects, Section R-9., Block Rounding*

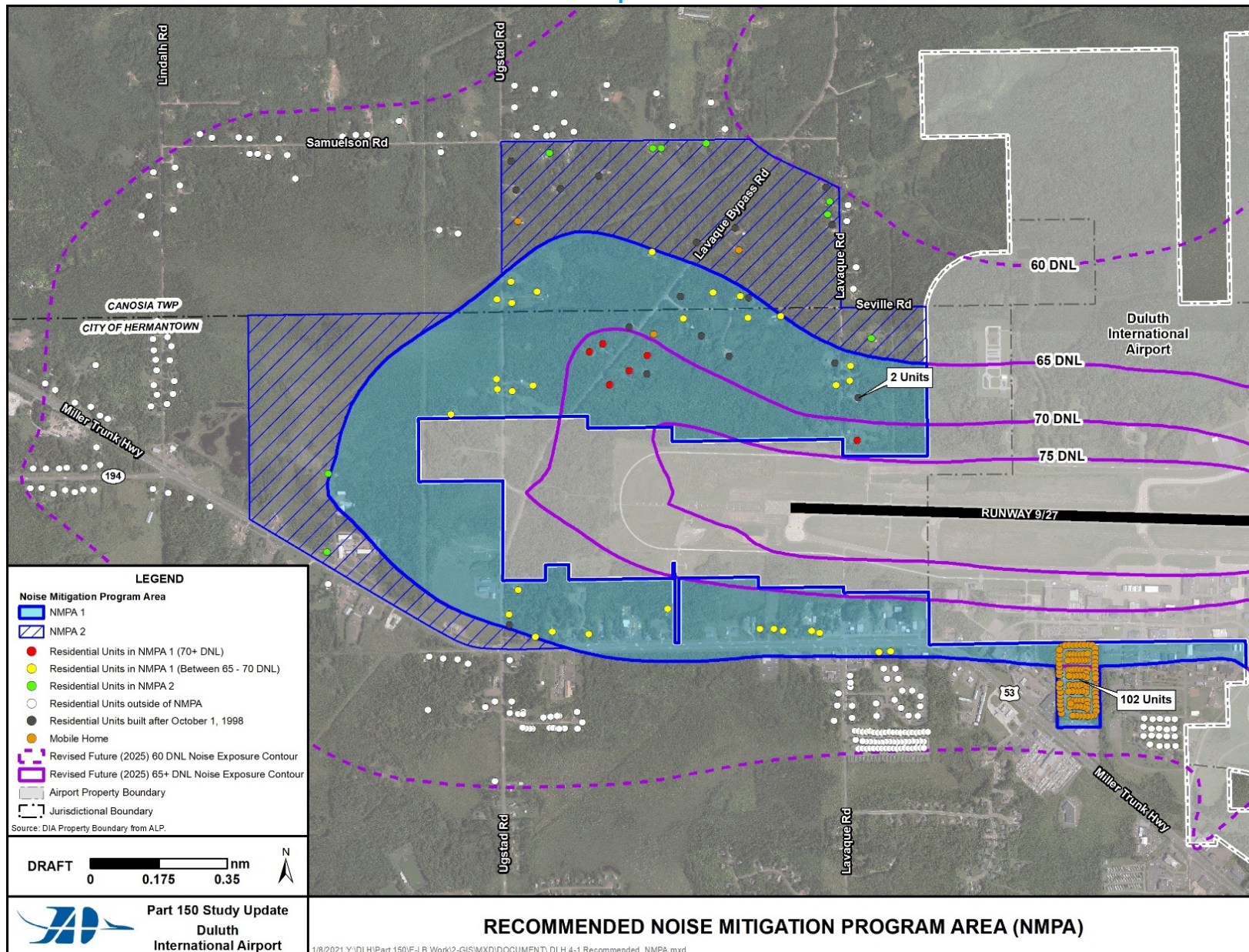
The explanation of the colored dots on the exhibits are as follows:

- Red – Residential units in NMPA #1 and in the 70+ DNL noise contours (6 properties)
- Yellow – Residential units in NMPA #1 and between 65 - 70 DNL noise contours (31 properties)
- Green – Residential units in NMPA #2 (9 properties)
- White – Residential units outside of NMPA #1 and NMPA #2 (No property count provided)
- Gray – Residential units in NMPA #1 (10 properties) and NMPA #2 (8 properties) potentially built after October 1, 1998. The 8 properties in NMPA #2 built after October 1, 1998 are identified in Table 2. The single gray dot within the 70+ DNL contour while potentially not eligible for sound insulation would still be eligible for acquisition in the NCP recommendations.
- Orange – Mobile home residences located in NMPA #1 (103 properties) and NMPA #2 (2 properties)

As noted above, the boundaries of the proposed NMPA #2 were developed in an effort to provide noise mitigation assistance to areas outside of the 65+ DNL contour. NMPA #2 covers the areas to the northwest of the airport and west of the airport on the Runway 09 approach end. These areas are impacted by direct overflights from military departure, low approach arrivals, and touch-and-go operations. Any increase in the number of military operations, flight patterns or fleet mix in this area has the potential to significantly increase the size and shape of the 65+ DNL contour and the number of impacted homes.

In contrast, areas to the south and southwest of the airport are not included in NMPA #2 and are impacted by lateral noise from military operations and not direct overflights. Due to the natural break points and the minimal effects that lateral noise from military operations has on the size of the contour, to the south and southwest of the airport, the NMPA #2 boundaries do not extend south from the 65+ DNL contour. Additionally, areas to the east of the airport are also not included in the NMPA #2 due to no impacted residential or noise sensitive locations. If the 65 DNL noise contour, to the east of the airport, is extended to the next logical break point at Rice Lake Road, the additional area only includes agricultural and open space and does not include any additional residences.

Exhibit 2-3 NMPA Boundaries and Residential Properties



Source: Saint Louis County Assessor, <https://www.stlouiscountymn.gov/departments-a-z/assessor/property-information>

NMPA Housing Counts

The housing counts for both NMPA #1 and NMPA #2 are summarized in **Table 2-7, NMPA Housing Counts**. We propose defining NMPA #2 as a block rounding area to include the additional 17 single-family residences for sound insulation, acquisition, or avigation easement and the additional 2 mobile homes for avigation easement in our land use mitigation recommendations for the NCP at DLH.

For all property included in NMPA #1 and NMPA #2, excluding the Birchwood Mobile Estates (102 mobile homes), avigation easements shall be considered if acquisition and/or sound insulation is declined. Residences offered sound insulation shall grant an avigation easement as a condition to be included in the mitigation program. If sound insulation is declined by a property owner, avigation easement shall be offered. The use of avigation easements does not reduce the noise impacts on people or by itself does not change noncompatible land uses to compatible land uses. However, use of avigation easements constitutes a suitable compatibility measure according to Federal guidelines.

As noted previously eligible structures must have been built prior to October 1, 1998 and meet the FAA's interior noise level requirements to be consider for sound insulation treatment. The determination of eligibility would occur during the testing phase of an implemented sound insulation program.

Table 2-7 NMPA Housing Counts

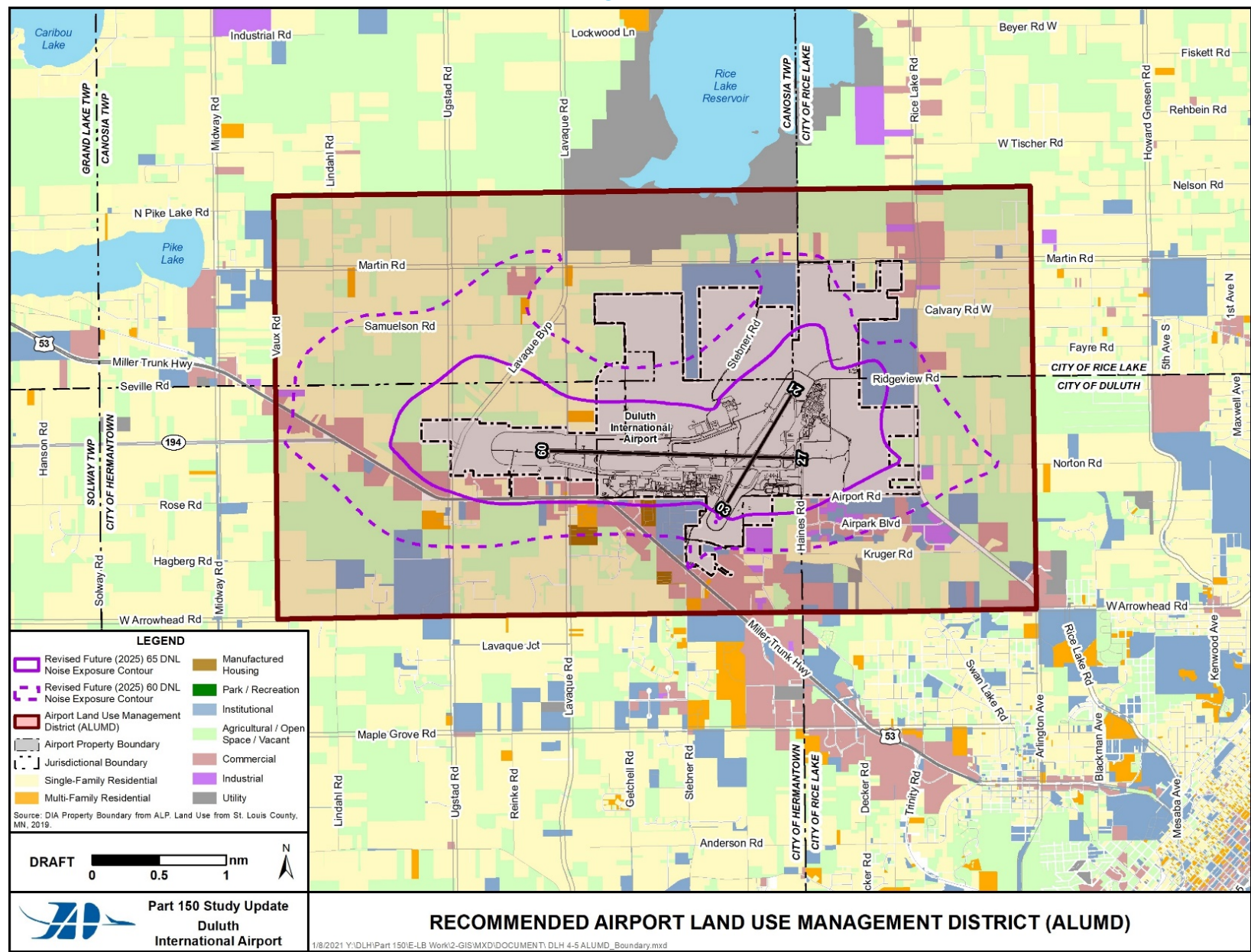
LAND USE	NMPA #1		NMPA #2		TOTAL	
	TOTAL HOUSING UNITS	POPULATION	TOTAL HOUSING UNITS	POPULATION	TOTAL HOUSING UNITS	POPULATION
Single-Family Residential	45	93	17	40	62	133
Multi-Family Residential	2	4	0	0	2	4
Mobile Homes (Brown dots)	103	193	2	5	105	198
Total	150	290	19	45	169	335

Source: Saint Louis County Assessor, <https://www.stlouiscountymn.gov/departments-a-z/assessor/property-information>

2.5.2 Preventative Land Use Mitigation Measures

Table 2-8, *Preventative Land Use Mitigation Measures*, provides a description of the recommended preventative land use measures, the responsible party for implementing the measure, costs that would be incurred by the airport, local governments and airport users and the current implementation status of the measure. It is important that each measure is fully understood and has the support of the DAA board members moving forward. **Table 2-9, *Preventative Land Use Mitigation Measures Estimated Cost***, provides the estimated cost to implement the measure. **Exhibit 2-4, *Recommended Airport Land Use Management District (ALUMD)*** depicts the boundary of the ALUMD that is recommended as a land use mitigation measure in the NCP.

Exhibit 2-4 Recommended Airport Land Use Management District (ALUMD)



Source: Landrum & Brown analysis, 2020.

Table 2-8 Preventative Land Use Mitigation Measures

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
PREVENTATIVE LAND USE MITIGATION MEASURES					
<i>(formerly 1997 NCP Measure M-1)</i> Measure M-G: Develop an ALUMD	DAA, Cities of Duluth, Hermantown, Rice Lake, Saint Louis County and JAZB	Minimal costs of up to \$50,000	None	None	This is a new measure
Measure M-H: Adopt Updated Subdivision Regulations	DAA, Cities of Duluth, Hermantown, Rice Lake, Saint Louis County, JAZB	Minimal costs of up to \$50,000	Loss of tax base	None	This is a new measure
Measure M-I: Adopt Improved Building Codes	DAA, Cities of Duluth, Hermantown, Rice Lake, Saint Louis County and JAZB	Minimal costs of up to \$50,000	Minimal administrative costs	None	This is a new measure
Measure M-J: Develop a Voluntary Fair Disclosure Program	Duluth Board of Realtors, Lake Superior Area Realtors, Cities of Duluth, Hermantown, Rice Lake, Saint Louis County and JAZB	Minimal costs of up to \$50,000	Minimal administrative costs	None	This is a new measure

Table 2-9 Preventative Land Use Mitigation Measures Estimated Costs

TYPE OF MEASURE	DIRECT COST (TOTAL)	DIRECT COST TO FAA	DIRECT COST TO AIRPORT	DIRECT COST TO LOCAL GOVERNMENT	DIRECT COST TO USERS
Measure M-G: Develop an ALUMD	\$50,000	None	\$50,000	Minimal	None
Measure M-H: Adopt Updated Subdivision Regulations	\$50,000	None	\$50,000	Minimal	None
Measure M-I: Adopt Improved Building Codes	\$50,000	None	\$50,000	Minimal	None
Measure M-J: Develop a Voluntary Fair Disclosure Program	50,000	None	\$50,000	Minimal	None
SUBTOTAL	\$200,000 plus administrative costs	\$0	\$200,000 plus administrative costs	Minimal administrative costs; plus loss of tax base	None

The preventative land use mitigation measures are presented as a series of “plates” that summarize pertinent information required about each of the measures by 14 CFR Part 150 guidance. This information includes:

- A description and the background and intent of the measure;
- The relationship to the previous (1997) NCP;
- The anticipated effect on land use compatibility;
- The party (or parties) responsible for implementation;
- The steps necessary for implementation, its anticipated cost, and the projected timing for implementation; and
- The effects, if any, to other planning programs and other measures.

NOISE COMPATIBILITY PROGRAM MEASURE: M-G

Description: Develop an Airport Land Use Management District (ALUMD).

Background and Intent: This measure would develop a fixed boundary within which land use controls will be recommended. These controls will include updates to subdivision regulations, updates to building codes, and a voluntary fair disclosure program. It is recommended to make the ALUMD a fixed boundary so that changes in the noise contours over time do not require revisiting the boundaries. While previous recommendations will offer mitigation to residential property owners within the 65 DNL and out to the 60 DNL through the designated NMPB areas, these recommendations allow people in the area that they may experience direct overflights, that an airport is nearby and that, at times, they may experience disruptive noise levels.

Relationship to 1997 NCP: This is a new measure and was not included in the 1997 NCP.

Land Use Compatibility Improvement: This measure has the potential to mitigate residential use impacts by improving building codes, updating subdivision regulation, and disclosure.

Responsible Implementing Parties: Duluth Airport Authority, Cities of Duluth, Hermantown, and Rice Lake and Saint Louis County.

Implementation Steps, Costs, and Phasing:

FAA Requested Action: FAA approval of new measure and funding will be requested to implement this program.

Steps:

- Secure FAA funding and DAA budget approval.
- Engage with the Joint Airport Zoning Board (JAZB), or other like agency, to assist with the boundary definitions and to develop initial contacts with the jurisdictions.
- Identify the final boundaries of the ALUMD (see **Exhibit 2-4**).
- Request that all local jurisdictions incorporate the boundaries of the ALUMD into their current land use planning documents.

Costs: The total cost of implementation would include contracting with a planning agency to assist with the final boundary definitions and the coordination with local jurisdictions. While the DAA and the local jurisdictions will have some minor administrative costs, most of the cost would be for the determination of the final boundary. Total cost is estimated at approximately \$50,000.

Schedule: This measure could be implemented following receipt of the FAA Record of Approval and based on the availability of FAA and local funding.

Effects on Other Programs/Measures: This measure is not expected to impact other programs or measures.

NOISE COMPATIBILITY PROGRAM MEASURE: M-H

Description: Adopt Updated Subdivision Regulations.

Background and Intent: During the review of the plats for new subdivisions by public entities, the site plans would be reviewed to ensure the design minimizes noise impacts. This could include the use of more open public space or by decreasing the density of development within a subdivision. The intent is to minimize the density of residences that could be subjected to aircraft noise and to minimize noise complaints against the airport.

Relationship to 1997 NCP: This is a new measure and was not included in the 1997 NCP.

Land Use Compatibility Improvement: This measure has the potential include more open space within a new development and to reduce the density of development within a subdivision. While the property is not considered incompatible use, it has the potential to reduce noise issues within the community.

Responsible Implementing Parties: Cities of Duluth, Hermantown, Rice Lake and Saint Louis County.

Implementation Steps, Costs, and Phasing:

FAA Requested Action: FAA approval of new measure and funding will be requested to implement this program.

Steps:

- Secure FAA funding.
- Engage with the JAZB, or other like agency, to assist with the development of new subdivision regulations and to coordinate with the local jurisdictions.
- Request that all local jurisdictions incorporate the new subdivision regulations into their current land use planning documents.

Costs: The total cost of implementation would include contracting with an agency to assist with the development of new general subdivision regulations and the coordination with local jurisdictions. While the local jurisdictions will have some minor administrative costs, most of the cost would be for the development of the new subdivision regulations. Total cost is estimated at approximately \$50,000.

Schedule: This measure could be implemented following receipt of the FAA Record of Approval and based on the availability of FAA and local funding.

Effects on Other Programs/Measures: This measure is not expected to impact other programs or measures.

NOISE COMPATIBILITY PROGRAM MEASURE: M-I

Description: Adopt Improved Building Codes.

Background and Intent: This measure would update the existing building codes to ensure that any new or remodeled residential construction would meet or exceed FAA criteria for sound insulation.

Relationship to 1997 NCP: This is a new measure and was not included in the 1997 NCP.

Land Use Compatibility Improvement: This measure has the potential to reduce noise for new development or the remodeling of residential property. It would ensure that materials for doors, windows, and insulation are installed to a certain standard to upgrade noise reduction capabilities. While the properties would not be considered incompatible use, the improved building codes would have the potential to reduce noise issues within the community.

Responsible Implementing Parties: Cities of Duluth, Hermantown, Rice Lake and Saint Louis County

Implementation Steps, Costs, and Phasing:

FAA Requested Action: FAA approval of new measure and funding will be requested to implement this program.

Steps:

- Secure FAA funding.
- Engage with the JAZB, or other like agency, to assist with the development of new building codes and to coordinate with the local jurisdictions.
- Request that all local jurisdictions incorporate the new building codes into their current land use planning documents.

Costs: The total cost of implementation would include contracting with a planning agency to assist with the development of the new building codes and the coordination with local jurisdictions. While the local jurisdictions will have some minor administrative costs, most of the cost would be for the development of the new building codes. Total cost is estimated at approximately \$50,000.

Schedule: This measure could be implemented following receipt of the FAA Record of Approval and based on the availability of FAA and local funding.

Effects on Other Programs/Measures: This measure is not expected to impact other programs or measures.

NOISE COMPATIBILITY PROGRAM MEASURE: M-J

Description: Develop a Voluntary Fair Disclosure Program

Background and Intent: Will disclose through regulations on the seller or their representatives at the time of sale that an existing property or plats of buildable lots in a new subdivision could be subjected to aircraft noise. Potential buyers will be made aware before they purchase the property that it is in an area that has the probability of receiving noise from aircraft.

Relationship to 1997 NCP: This is a new measure and was not included in the 1997 NCP.

Land Use Compatibility Improvement: This measure has the potential to alert news purchasers of residential property that they are moving into an area that could be subjected to noise from aircraft.

Responsible Implementing Parties: Duluth Board of Realtors, Lake Superior Area Realtors, Cities of Duluth, Hermantown Rice Lake and Saint Louis County.

Implementation Steps, Costs, and Phasing:

FAA Requested Action: FAA approval of new measure.

Steps:

- Have the Duluth Board of Realtors and the Lake Superior Area Realtors work together to develop language for the disclosure program and to coordinate with the local jurisdictions.
- Request that all local jurisdictions incorporate the new disclosure program into their current land use planning documents.

Costs: Minimal cost for the local agencies developing the program language and coordinating with jurisdictions. Total cost is estimated at approximately \$50,000.

Schedule: This measure could be implemented following receipt of the FAA Record of Approval and based on the availability of FAA and local funding.

Effects on Other Programs/Measures: This measure is not expected to impact other programs or measures.

2.6 Program Management Screening Analysis

This section presents the program management alternatives that were considered for inclusion in the DLH 2021 NCP. The proposed alternatives were evaluated for the anticipated benefits and costs associated with its implementation. Unlike the previous NCP elements, program management alternatives are simply qualitatively screened as they are more related to public outreach and a quantitative benefit cannot typically be quantified.

2.6.1 Program Management Screening Analysis Summary

This section summarizes the qualitative screening analysis of modified or potential new program management alternatives. **Table 2-10, Program Management Alternatives Screening Analysis Summary** presents a summary of the program management alternatives screening. The "Evaluation and Recommendation" column provides a brief synopsis of the issues and findings associated with each program management alternative and notes whether the alternative was recommended for inclusion in the DLH 2021 NCP.

Each program management alternative and the qualitative screening was reviewed with the membership of the PAC and the results of the qualitative screening was presented at the 3rd public workshop which was conducted in February of 2021. Those program management alternatives that were determined to warrant inclusion in the DLH 2021 NCP are discussed in greater detail in **Section 2.7**.

Table 2-10 Program Management Screening Analysis Summary

DESCRIPTION	BENEFITS	DRAWBACKS	EVALUATION AND RECOMMENDATION
Continued logging of noise complaints	This alternative would provide airport staff with data on potential or merging noise issues around the airport.	Costs for staff to maintain website, respond to telephone complaints and/or logging complaints in a formal manner.	Airport staff and MnANG staff should continue to receive noise complaints on an as-required basis. Due to the low level of noise complaints, acquiring a noise complaint system is not recommended. However, a more formal system of complaint logging should be used by airport and MnANG staff and the information used as a basis for future noise abatement committee meetings. As a result, it is RECOMMENDED that the present system of logging noise complaints be continued with modification and should be included in the NCP.
Initiate community roundtable or noise abatement committee	This alternative has the potential to bring together airport staff, FAA Air Traffic Control Tower, MnANG, airlines (including cargo operators), FBO, officials of neighboring governmental entities, and representatives from impacted neighborhoods to discuss airport noise issues and work toward a common goal.	Labor costs and time for staff to attend meetings, document meeting minutes, distribute meeting material.	This alternative has the ability to improve community relations bringing together all interested parties to discuss noise issues and to review recent noise complaints. As a result, this alternative is RECOMMENDED to be continued and should be included in the NCP.
Initiate noise monitoring program	This alternative would provide the airport with information regarding aircraft noise levels to the public.	Costs to purchase, run, and maintain permanent noise monitoring system or portable noise monitors including staff costs to run the system and to analyze the data.	Due to the low level of noise complaints and the cost to implement and maintain a noise monitoring system/program, this alternative is NOT RECOMMENDED to be included in the NCP
Perform regular updates to NEM and review of NCP	This alternative ensures the NEMs and the NCP continues to mitigate aircraft noise to the extent possible. It also provides continued opportunity for public outreach and public involvement in planning for noise compatibility.	Cost to update NEM and NCP, although AIP funding may be available to offset some of the study cost.	Due to the benefits of documenting future impacts and non-compatible land uses within the 65+ DNL this alternative is RECOMMENDED to be included in the NCP.

2.7 Recommended Program Management Measures

There are three (3) recommended program management measures recommend for inclusion in the DLH 2021 NCP:

- **Measure P-A:** Continued logging of noise complaints and develop a more formal procedure for logging noise complaints by both DAA and MnANG staff.
- **Measure P-B:** Initiate community roundtable or noise abatement committee.
- **Measure P-C:** Perform regular updates to NEM's and review of NCP.

Table 2-11, *Program Management Measures*, provides a description of the recommended measures, the responsible party for implementing the measure, costs that would be incurred by the airport, local governments and airport users and the current implementation status of the measure. The recommended program management measures where discussed with the PAC and presented at the 3rd Public Workshop that occurred February 2021. It is important that each measure is fully understood and has the support of the DAA board members moving forward. **Table 2-12, *Program Management Measures Estimated Cost***, provides the estimated cost to implement the measure.

Table 2-11 Program Management Measures

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
PROGRAM MANAGEMENT MEASURES					
<i>(formerly 1997 NCP Measure A-1)</i> Measure P-A: Continue Logging of Noise Complaints	DAA and MnANG	Minimal administrative costs to answer telephones and to log noise complaints	None	None	This is a continuation of the existing process with a slight modification to be undertaken by the DAA and MnANG
<i>(formerly 1997 NCP Measure A-2)</i> Measure P-B: Initiate Community Roundtable or Noise Abatement Committee	DAA	Minimal administrative costs to participate on a regular basis	Minimal administrative costs to participate on a regular basis	None	This is considered a new measure since it was never implemented in the previous NCP.
Measure P-C: Perform regular Updates to NEMs and Review of NCP	DAA	\$350,000 – \$750,000	Minimal administrative costs	None	This is a new measure

Table 2-12 Program Management Measures Estimated Costs

TYPE OF MEASURE	DIRECT COST (TOTAL)	DIRECT COST TO FAA (80% SHARE)	DIRECT COST TO AIRPORT (20% SHARE)	DIRECT COST TO LOCAL GOVERNMENT	DIRECT COST TO USERS
Measure P-A: Continue Logging of Noise Complaints	Minimal Administrative Costs	None	Minimal Administrative Costs	None	None
Measure P-B: Initiate Community Roundtable or Noise Abatement Committee	Minimal Administrative Costs	None	Minimal Administrative Costs	None	None
Measure P-C: Perform regular updates to the NEM's and review of NCP	NEM Only \$350,000 to \$400,000 NEM and NCP \$650,000 to \$750,000	NEM Only \$280,000 to \$320,000 NEM and NCP \$520,000 to \$600,000	NEM Only \$70,000 to \$80,000 NEM and NCP \$130,000 to \$150,000	None	None
SUBTOTAL	\$350,000 to \$750,000 plus administrative costs	\$280,000 to \$600,000 plus administrative costs	\$70,000 to \$150,000 plus administrative costs	Minimal administrative costs; plus loss of tax base	None

3 DLH 2021 NCP Public Involvement

Throughout the development of the DLH 2021 NCP information regarding the types of measures that were analyzed and eventually recommend were first reviewed by the PAC.

Table 3-1 PAC Invitees, lists each organization and representative that is invited to each PAC meeting. Also invited to each PAC meeting are representatives from the FAA, DAA staff, SEH and L&B.

Table 3-1 PAC Invitees

Organization	Invite Contact
City of Duluth	Adam Fulton
City of Hermantown	John Mulder
Canosia Township	Kevin Cornick (until March 2021)
Canosia Township	Penny Dieryck (as of March 2021)
City of Rice Lake	Suzanne Herstad
City of Rice Lake	Toni Blomdahl
City of Rice Lake	John Hegstrom
City of Rice Lake	John Werner
Air National Guard 148th Fighter Wing	Col. Blomquist
Air National Guard 148th Fighter Wing	Ryan Blazevic
Air National Guard 148th Fighter Wing	Audra Flanagan
Duluth International Airport Tenant Association (DIATA)	Bill King
Duluth Chamber of Commerce	Dave Ross
Hermantown Chamber of Commerce	Kim Parameter
Metropolitan Interstate Council (MIC)	Ron Chicka
UWS, Transportation and Logistics	Daniel Rust
Senator Tina Smith's Office	Hannah Alstead
Senator Klobuchar's Office	Ida Rukavina
Congressman Stauber's Office	John Eloranta
Local Resident	Ken Butler
Local Resident	Ken Stromquist
Minnesota Pollution Control Agency (MPCA)	Jeff Udd
Citizens Committee for Environmental Concern (CCEC)	Dwight Morrison
Air Traffic Control Tower	Scott Rautio
Military Affairs Committee - Duluth Chamber	Patt Mullen
MnDOT Office of Aeronautics	Kevin Carlson
MnDOT Office of Aeronautics	Matt Lebbens
MnDOT Office of Aeronautics	Don Berre
MnDOT Office of Aeronautics	Thomas Klevan

The PAC was requested to review detailed information regarding the NCP and provide feedback and or comments throughout the process. The following information provides a summary of the public involvement coordination that occurred during the development of the DLH 2021 NCP.

- **PAC Meeting #1 (September 16th, 2019)** – Participants were shown background information outlining the Part 150 process, including noise modeling, NCP development and public involvement and coordination.
- **PAC Meeting #2 (March 5th, 2020)** – Participants were shown the draft noise contours for the DLH Part 150 and reviewed the input parameters for the required FAA noise model. Additionally, the elements utilized in a NCP to address impacts within the 65+ DNL noise contour were discussed.
- **PAC Meeting #3 (September 17th, 2020)** – Participants were shown background information related to the elements that are analyzed as part of a NCP and specific types of noise abatement, land use mitigation and program management measures that are typically analyzed during a Part 150 study. The DLH 2021 NCP screening, analysis (including noise modeling) and initial recommendations were presented followed by a question and answer session related to each potential NCP recommendation.
- **NCP Development Coordination (August 18th and 20th, 2020)** – The study team held coordination meetings with governmental representatives surrounding DLH. Representatives from the cities of Duluth, Hermantown, Rice Lake and Saint Louis County meet with the study team to review the Future (2026) noise contours, land use mitigation options and a detailed review of the preventative land use mitigation options. The review of the preventative land use mitigation options was focused on areas within each jurisdiction. Below is a list of the representatives for each jurisdiction that attended the coordination meetings:

City of Duluth

Adam Fulton, Deputy Director, Planning & Economic Development
Steve Robertson, Senior Planner

City of Hermantown

John Mulder, City Administrator
Eric Johnson, Community Development Director

City of Rice Lake

John Werner, Mayor
Suzanne Herstad, City Council Member
Toni Blomdahl, City Council Member

Saint Louis County

Jenny Bourbonais, Planning Manager
Thomas Stanley, Assistant County Attorney

- **PAC Meeting #4 (February 3rd, 2021)** – Participants were presented detailed information on the DLH 2021 NCP recommendations, including total costs for each measure. Over the course of this meeting participants were asked to submit their level of support, via a meeting poll, for each recommended measure. The polling included submissions from FAA staff, for the purpose of isolating local stakeholders, differences in rating were reported without FAA staff included in the results. Below are the results of the polling that occurred, results are based on a sliding scale of 1 to 5 with 1 being “Do not support” and 5 being “Strongly support”:
 - Residential Sound Insulation Program (Measure M-A) **4.6**
 - Residential acquisition program (Measure M-B) **3.3**
 - Mobile home acquisition program (Measure M-C) **2.9**
 - Avigation easement of owner-occupied residential units (Measure M-D) **4.6**
 - Avigation easement for owner-occupied mobile home within NMPA #1 (Measure M-E) **4.3**
 - Avigation easement for owner-occupied mobile homes within NMPA #2 (Measure M-F) **4.2**
 - Airport Land Use Management District (ALUMD)(Measure M-G) **4.3**
 - Updated subdivision regulations (Measure M-H) **3.8**
 - Improved building codes (Measure M-I) **4.6**
 - Voluntary fair disclosure program (Measure M-J) **4.8**
 - Continued logging of noise complaints (Measure P-A) **5.0**
 - Initiate Community Roundtable or Noise Abatement Committee (Measure P-B) **2.9**
 - Perform regular updates to NEM and review of NCP (Measure P-C) **3.5**
- **NCP Recommendations Coordination (April 12, 2021)** – Following the fourth PAC meeting where the NCP recommendations were reviewed individual coordination meetings with local municipalities were offered. Of the surrounding municipalities the City of Rice Lake was the only municipal body to request the additional coordination. During this coordination meeting the final recommendations and cost were reviewed. Also discussed was how the NCP recommendations could potential impact the City of Rice Lake.
- **Public Workshops and General Public Outreach** – In addition to the public involvement opportunities provided by the PAC, the public was invited to participate in the Part 150 process through three Public Workshops thus far in the process. Public invitations to these workshops have included postcard invitations (666 individual postcards to each public workshop) to surrounding property owners, social media posts,

press releases and other methods. These meetings included presentations of project materials, analysis and recommendations as well as opportunities for the public to ask questions and provide feedback, both during the event and for a period of 30 days after.

A summary of public involvement opportunities so far is summarized below:

- Public Workshops (3)
 - October 2019
 - August 2020
 - February 2021
- DLH Master Plan Open House – Included a Part 150 Study Project Information Station (September 2019)
- The project website includes project background information, FAQ including how to get involved, meeting information and an ongoing opportunity to submit questions or comments.