
# Lake Elmo Airport Advisory Commission

**December 1, 2021**

# LEAAC Goal & Purpose

**(as stated in approved bylaws)**

GOAL:

This Commission is formed to **further the general welfare of the community and the Lake Elmo Airport**, a public airport in Baytown Township, County of Washington, state of Minnesota, through minimizing or resolving problems created by the aircraft operations at the airport.

PURPOSE:

1. The Commission shall advise the community and the Metropolitan Airports Commission with regard to all matters affecting the Lake Elmo Airport, the classification, rules and regulations supplied to the operation of the Airport and the development of lands adjacent to the Airport.

2. The Commission shall cooperate with the Metropolitan Airports Commission staff in reviewing matters affecting the use and control of the Lake Elmo Airport.

3. The Commission shall make its recommendations to the Metropolitan Airports Commission regarding any proposal affecting the use or operations of Lake Elmo Airport.

# Agenda

Welcome & Introductions

Approval of Meeting Minutes: 8-25-2021

Airport Manager Update

Evaporator Briefing

Mobile Sound Monitoring Study Update

Q3 Operations & Complaints Summary

Public Comment

Member Comment

Set LEAAC meeting schedule

Adjourn

# Welcome and Introductions

## Luke Peterson

LEAAC Meeting Chair

# Membership Roster

| Community/Public Representatives | Airport User Representatives |
|---|---|
| Ken Roberts | Dag Selander |
| Susan St. Ores | Marlon Gunderson |
| Mary McComber | Robyn Stoller |
| Dan Kyllo, Co-Chair (Community/Public) | Keith Bergman |
| Rick Weyrauch | Jim Thomas |
| Ted Kozlowski | Luke Peterson, Co-Chair (Airport Users) |
| Gary Kriesel | Jeff Morgan |


# Approval of LEAAC Meeting Minutes for 8/25/2021

# Correction to Draft Minutes

**METROPOLITAN AIRPORTS COMMISSION**
**LAKE ELMO AIRPORT ADVISORY COMMISSION**
**DRAFT MEETING MINUTES**
Wednesday, August 25, 2021, 3:00 p.m.
**Teleconference Only**

3. **Member Elections**

**Nominations and Elections of Community/Public Chair**

**Philip Tiedeman, Airport Manager – Lake Elmo Airport** opened the business item to nominations for the role of Chair of the Community Group. Mr. Tiedeman mentioned that the same process applied to the User Chair would be used for the Community/Public Chair nomination and election process. Representative Kyllo was the only nomination for this position.

**Representative Kriesel moved and Representative St. Ores seconded to:**
**Close the nominations for the Chair of the Community Group.**

**The motion passed on the following roll call vote:**

**Ayes: Six** **Holtz, St. Ores, Kyllo, Weyrauch, Gladhill, Howard**
**Nays: None**
**Abstain: None**

With a majority vote, Representative Kyllo was elected as the Chair of the Community Group.

3. **Member Elections**

**Nominations and Elections of Airport User Chair**

**Michele Ross, Technical Advisor** updated the attendees about the chair nomination and election process. Ms. Ross opened the item to nominations and discussion for the role of Chair of the User Group. Representative Peterson was the only nomination for this position.

**Representative Peterson moved and Representative Gunderson seconded to:**

**Elect Representative Peterson as the User Representative Co-Chair**

**The motion passed on the following roll call vote:**

**Ayes: Three Gunderson, Peterson, Morgan**
**Nays: None**
**Abstain: None**

With a majority vote, Representative Peterson was elected as the Chair of the User Group. Ms. Ross explained that each Co-Chair could choose to moderate the rest of the current meeting. Both Chair Kyllo and Chair Peterson deferred their appointment to the next business meeting.

# Airport Manager Update


**Phil Tiedeman, MAC**

Airport Manager
(Lake Elmo Airport &
Anoka Count-Blaine Airport)

# Airport Manager Update

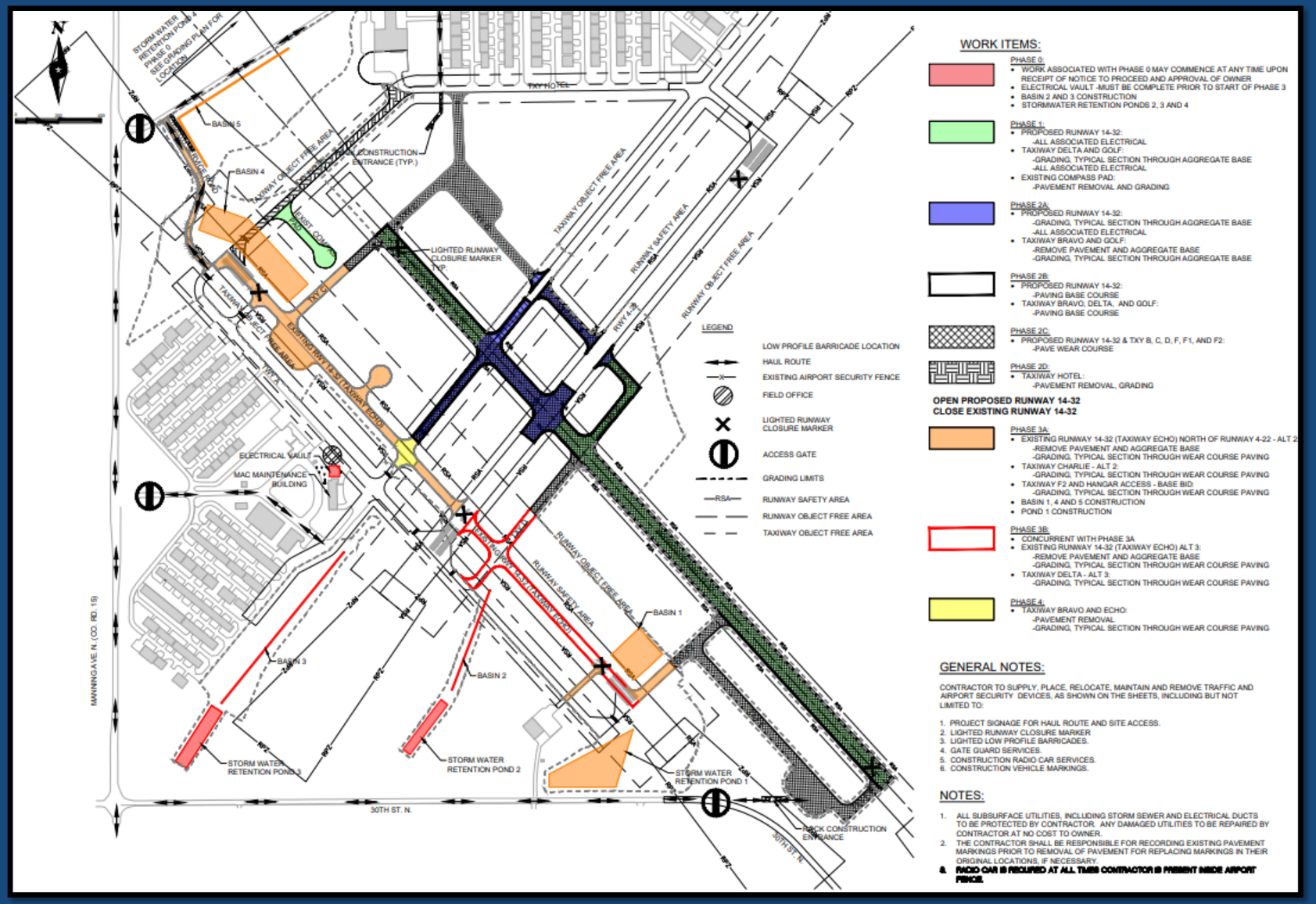
- Construction – Phase 2:
  - Tree clearing
  - Fence Repair and Gate
- Construction – Phase 3:
  - Excavation and grading
  - Runway lighting
  - Vault Building
- Winter Operations
  - Seasonal Crew Member
  - Clearing Priorities
  - Contact Numbers:

  <u>On-site Maintenance Crew</u>

  **612-919-3508**

  <u>Afterhours</u> (MAC Airside Operations)

  **612-726-5111**



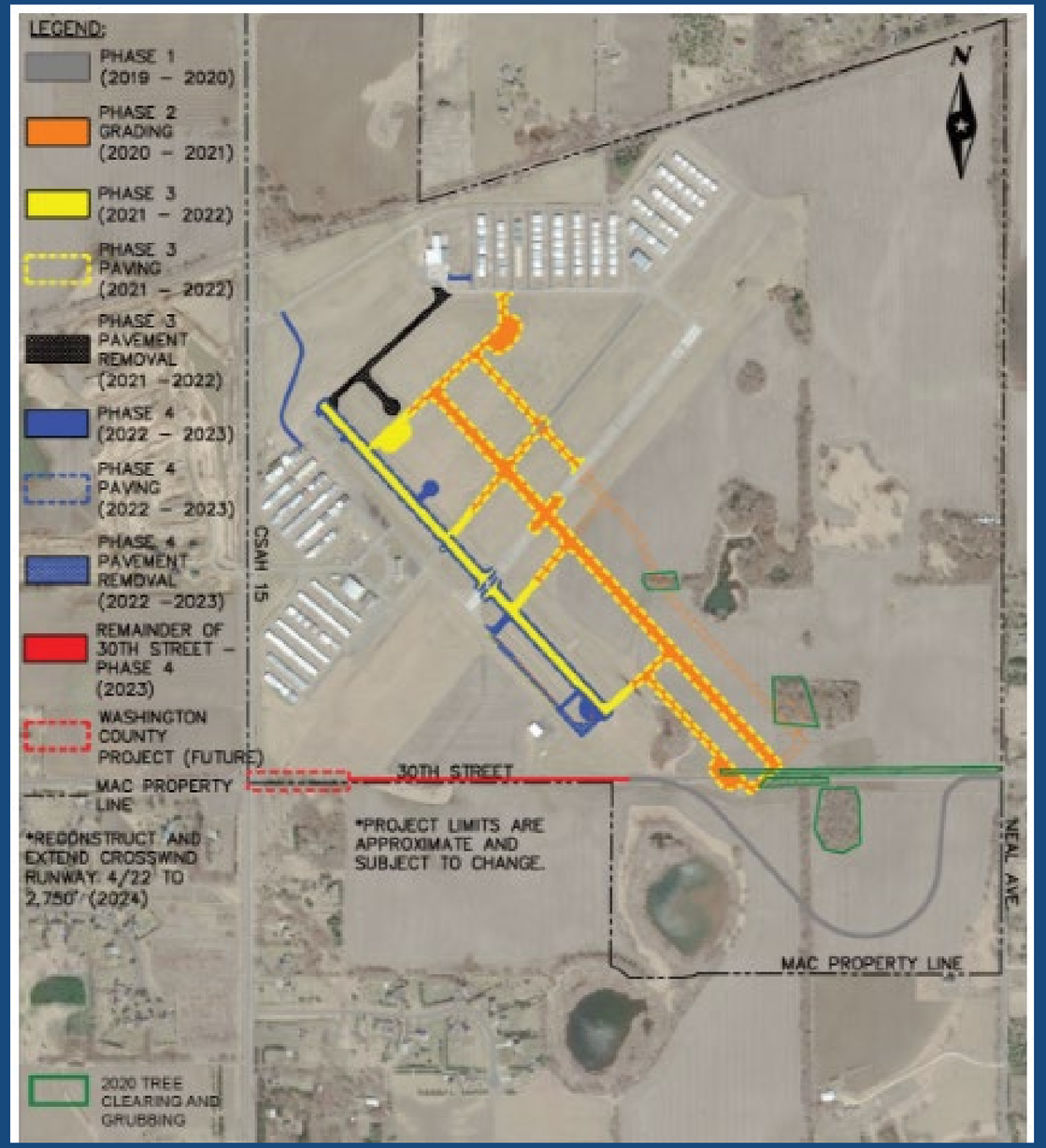
# Evaporator Briefing

**Pat Mosites, MAC**
Project Manager

**Lindsay Reidt, SEH**
**Jeremy Walgrave, SEH**

# Runway 14/32 Replacement – Lake Elmo Airport

## Overall Project Schedule & Phasing

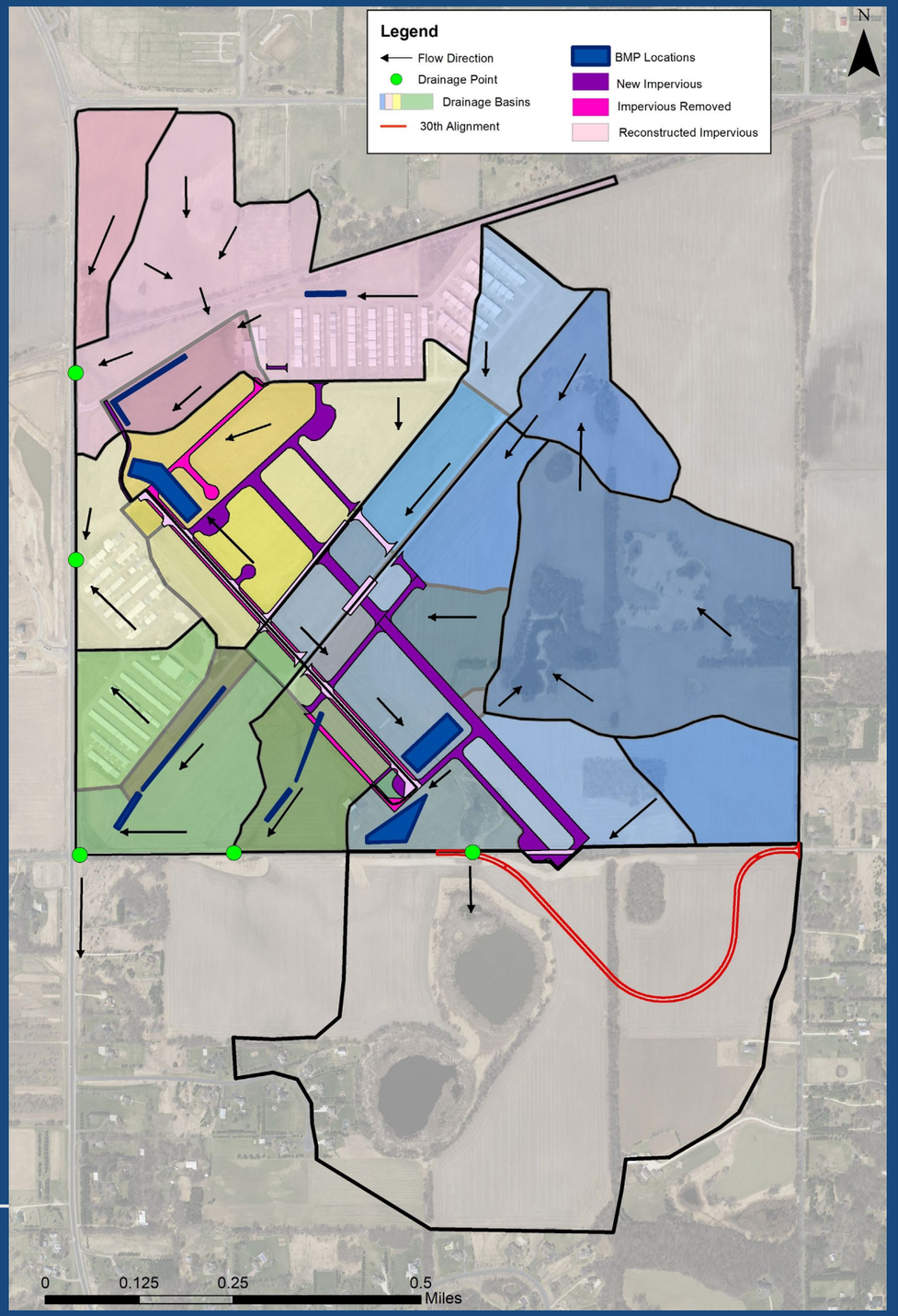


# Phase 2 – Existing Conditions

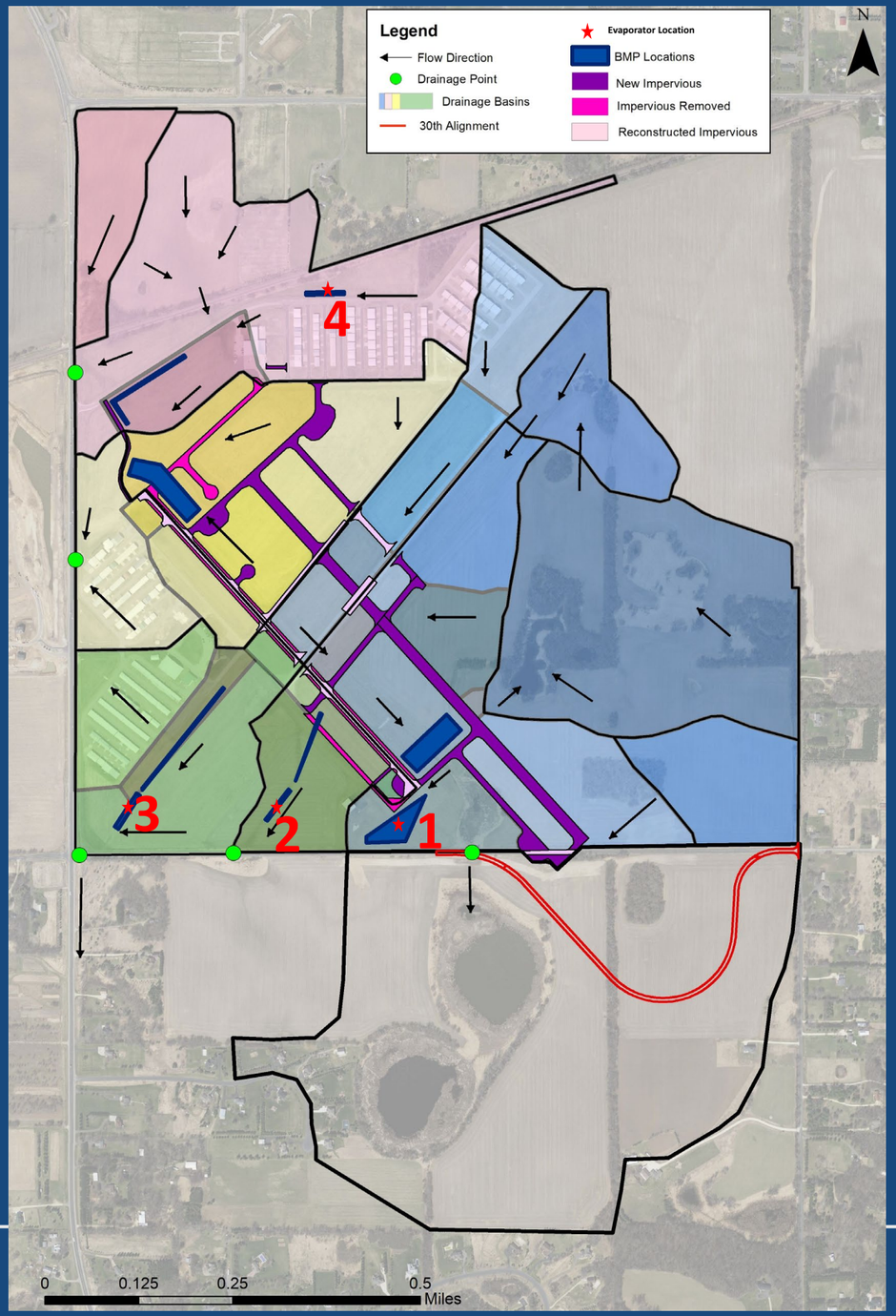
# Stormwater Analysis

## Proposed Drainage

- No change in drainage basin areas or discharge locations
- Water Quality and Rate Control will be accomplished with filtration basins
- Volume Control will be achieved with evaporation



# Evaporator Locations



# Evaporator Equipment

- Evaporation Equipment
- Mist is sprayed out of the sides of the unit keeping it close to the water surface, which minimizes drift

# Evaporator - Operations

- **Operational Details**
  - Anticipated Hours and Days of Operation Based on Expected Performance

| Pond | Hour/Day | Days/Year |
|---|---|---|
| 1 | 10 | 85 |
| 2 | 10 | 32 |
| 3 | 10 | 32 |
| 4 | 10 | 32 |

- **Evaporation Season**
  - May 1 to Sep 1 (123 days) – this is the anticipated period of operation

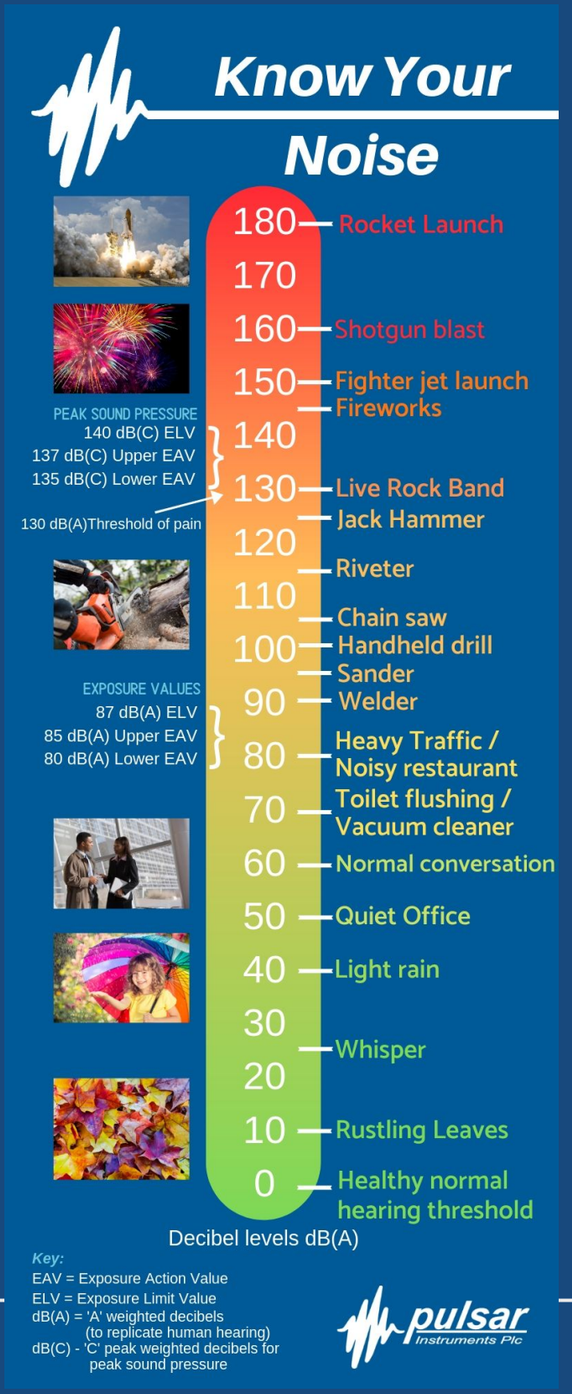
- **Contingency**
  - The plan provides significant flexibility and potential for excess evaporation to mitigate for wet periods and downtime for maintenance and repairs
  - The hours of operation can be increased
  - The period of operation can be extended

SEH

# Evaporator - Noise

## Evaporation Equipment

- Electric power will be used to minimize noise
- At a distance of 8 feet, the decibel level of the Apex 2.0 is around 65 decibels.  According the chart, this falls between “Normal Conversation” and “Toilet flushing/Vacuum Cleaner.”



# Questions?

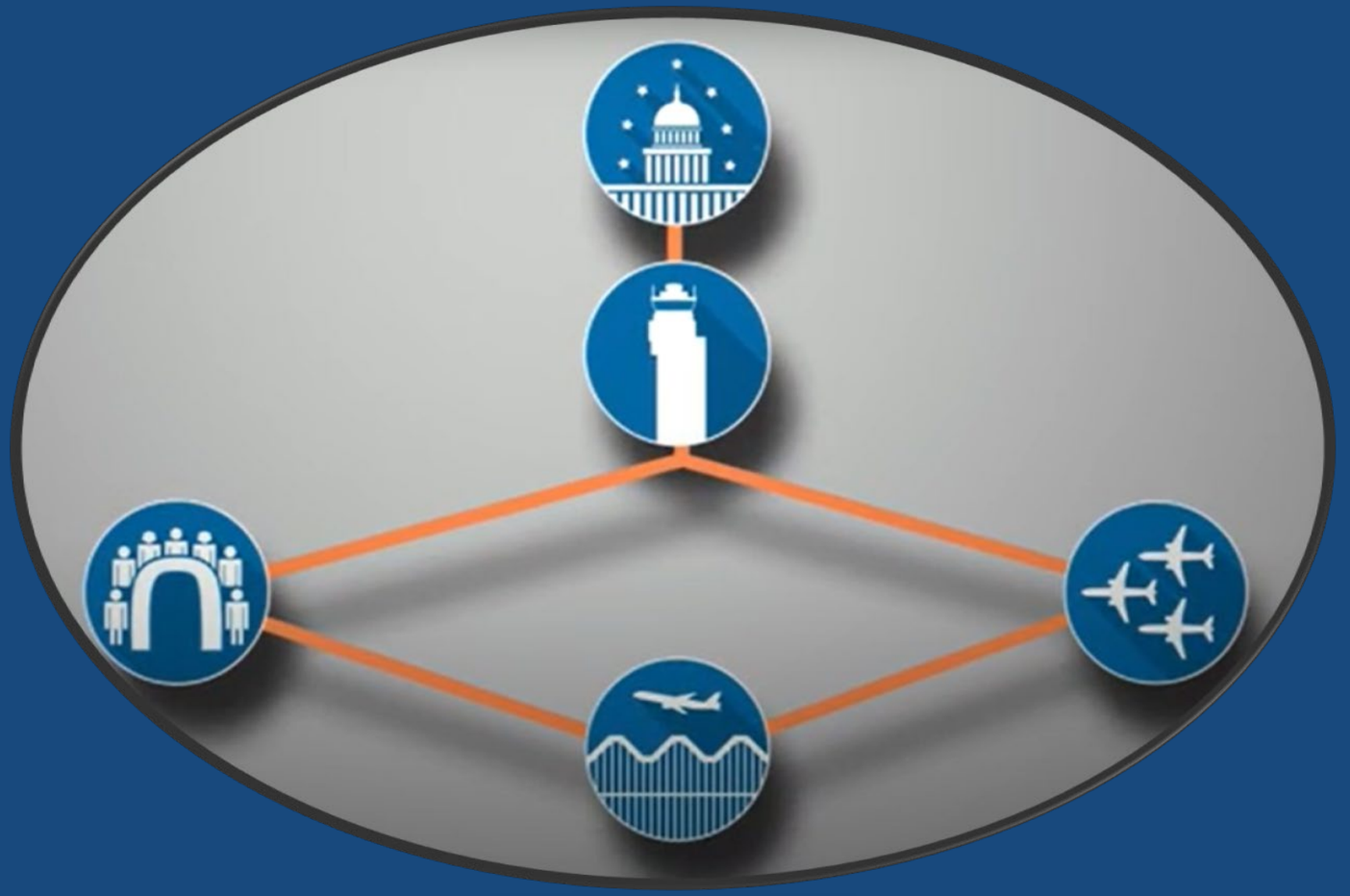

Project Updates and Newsletters Available at:

https://metroairports.org/general-aviation/airports/lake-elmo/lake-elmo-airport-construction

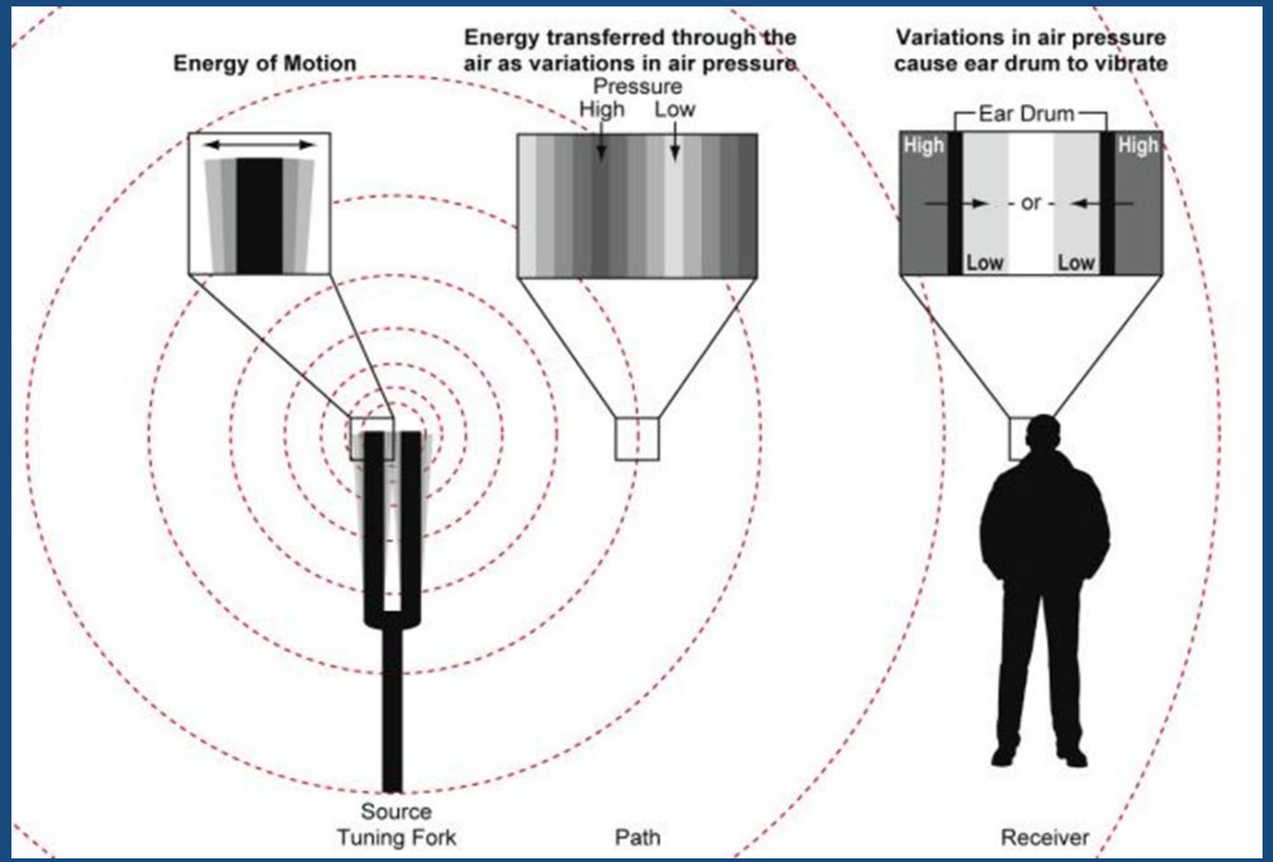
# Mobile Sound Monitoring Study Update

**Michele Ross, MAC**
Community Relations
Assistant Manager

# Aircraft Noise Basics: www.metroairports.org

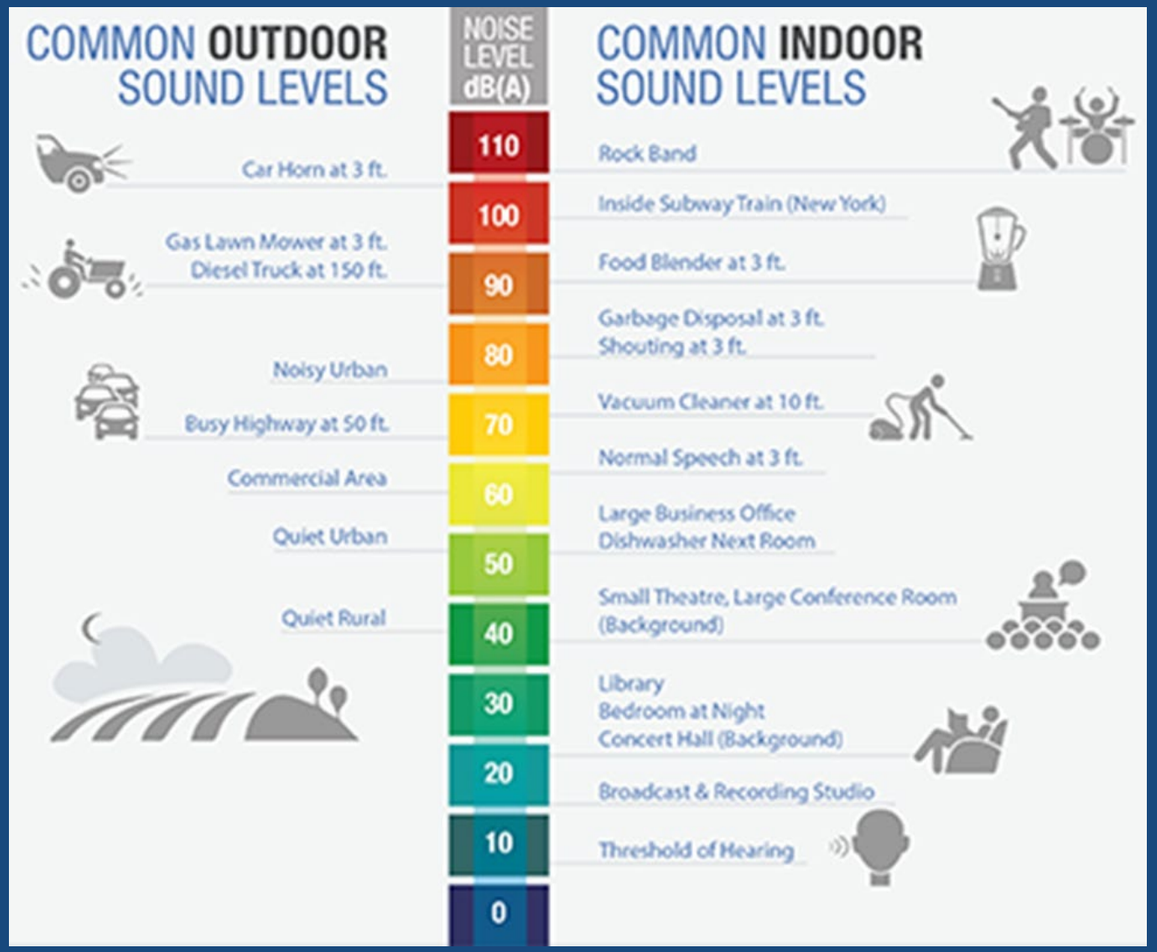


# What is Sound?




- ***Sound*** is measurable energy transmitted through a medium as pressure waves
- ***Noise*** is any "unwanted" sound
- Sound is objective; Noise is subjective
- We relate sound and noise by considering effects
  - Annoyance/situation
  - Speech interference
  - Sleep disruption

# Decibels




- Sound is measured in Decibels (dB)
- Decibels is a logarithmic scale referenced to threshold of hearing
- Why?
  - We hear sound pressures over a HUGE range
  - Decibels compress this range to match the way we interpret sound pressure
    - 0 to 140 dB
    - 0.000000003 to 0.003 lbs. per sq. inch (psi)

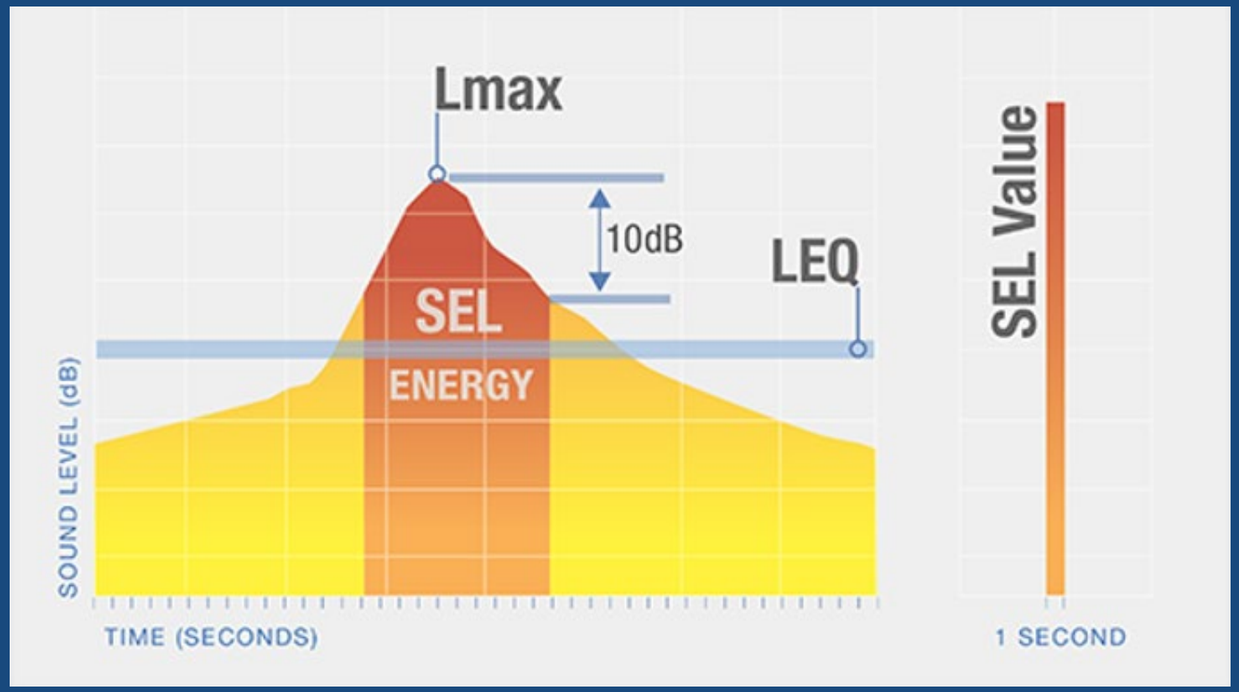
# Human Perception

- Factors that influence perception:
  - Objective factors:
    - Composition/Tonality/Amplitude
    - Duration
    - Timing
  - Subjective Factors:
    - Tolerance/Sensitivity
    - Biology
    - Experience/Preferences

# Common Aircraft Noise Metrics

- Event Metrics
  - Maximum Sound Level ($L_{max}$ / $LA_{max}$)
  - Equivalent Sound Level ($L_{eq}$ / $LA_{eq}$)
  - Event Duration
- Summary Metrics
  - Sound Exposure Level (SEL or $L_E$ / $LA_E$)
  - Day-Night Average Sound Level (DNL)
    - Aircraft DNL (ADNL)
    - Community DNL (CDNL)
- Other Metrics:
  - Time Above a Threshold ($TA_n$)
  - Number Above a Threshold ($NA_n$)
- **MAC measures and reports sound data using an A-Weighted filter which is similar to human hearing. These values are notated with an A in some metrics ($LA_{max}$).**

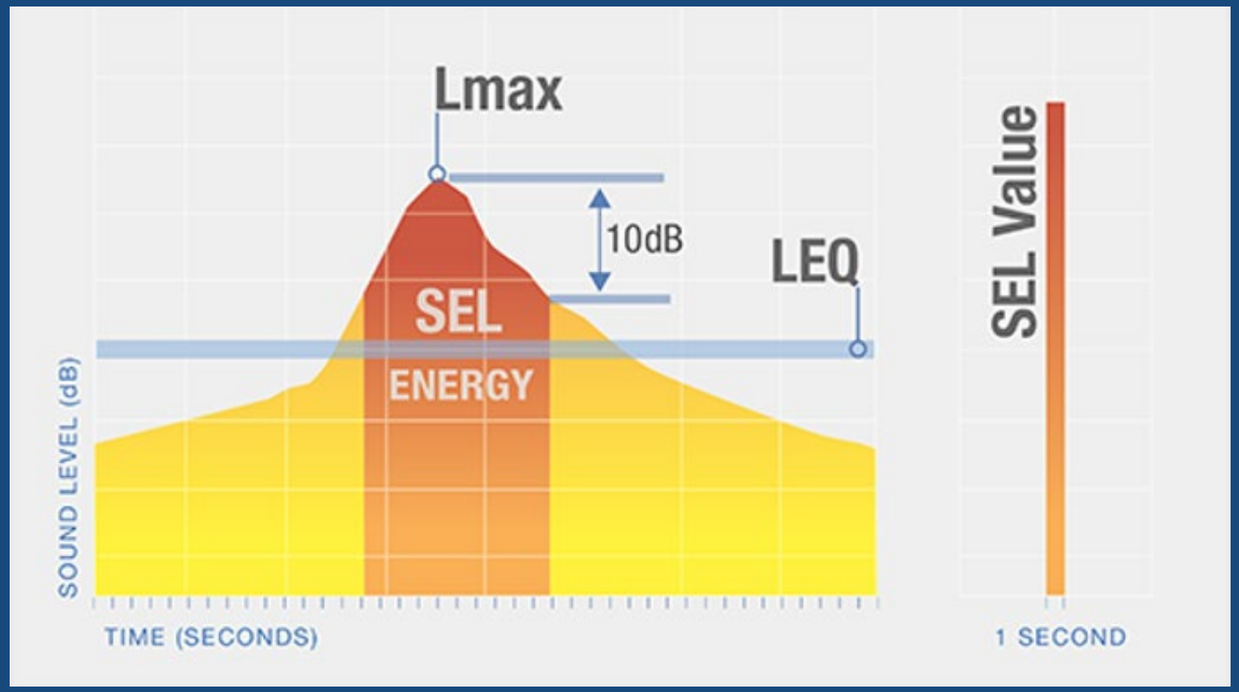
# Maximum Sound Level ($L_{max}$)




- Because of the variation in level of a sound event, it is often convenient to describe the event with its maximum sound level, abbreviated as Lmax
- Accounts only for sound amplitude (A-weighted sound level)
- Two events may have the same maximum level, but much different exposures

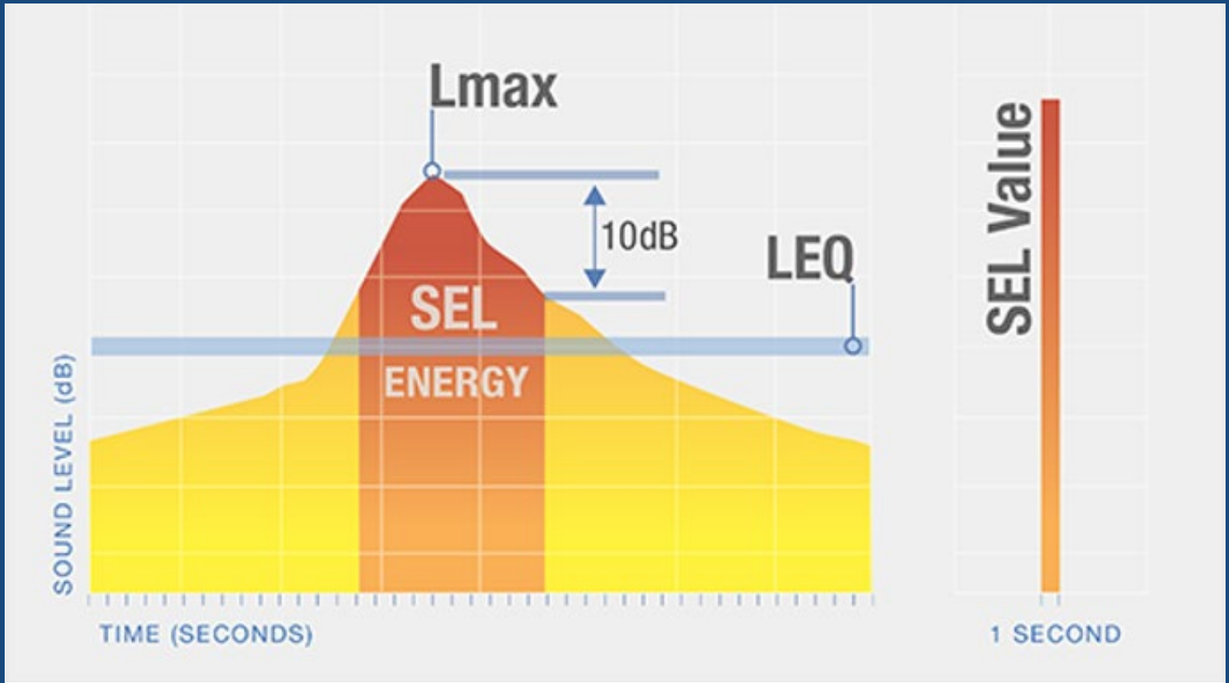
**($LA_{max}$ is the notation for A-weighted level)**

# Equivalent Sound Level (Leq)




- Equivalent Sound Level (Leq)
  - The energy average noise level over a specified time period e.g., Leq(1hr) of 80 dB

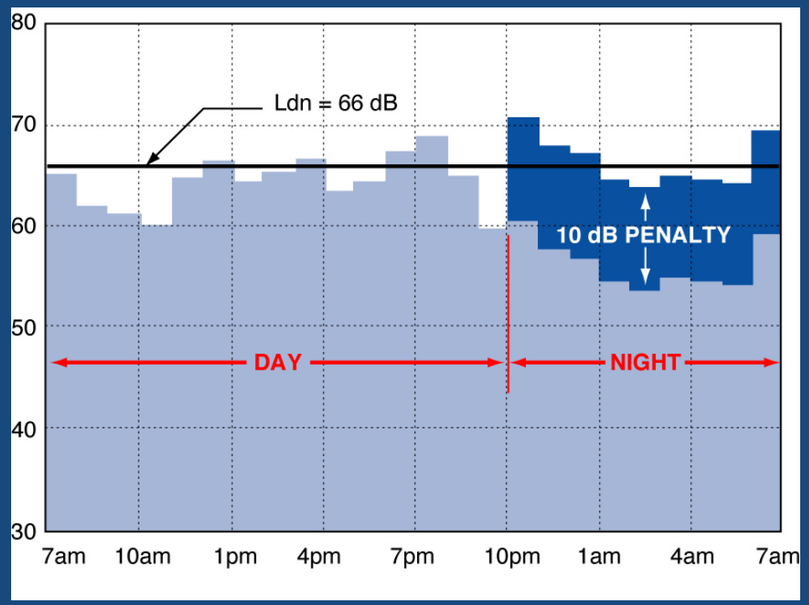
# Sound Exposure Level (SEL)

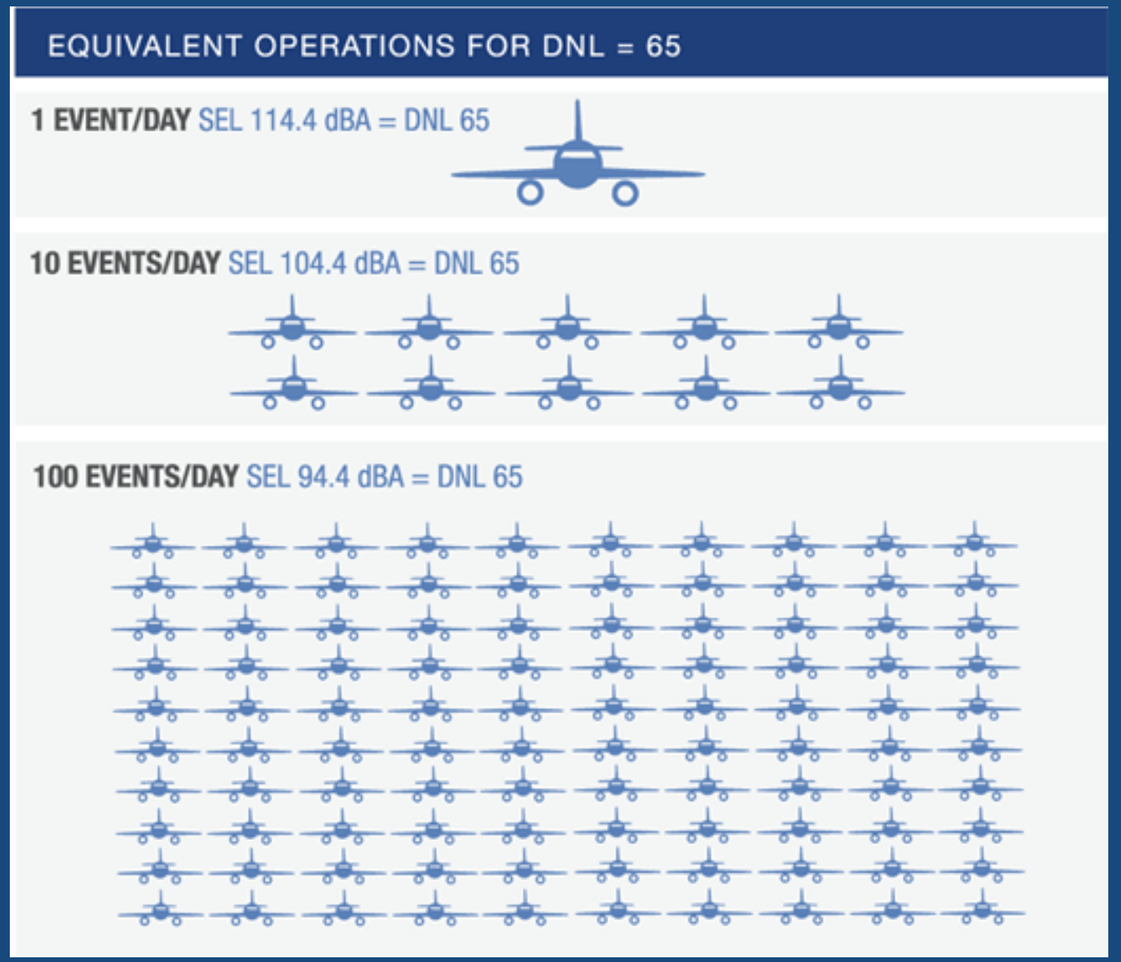



- SEL describes a sound event by compressing and expressing the energy as a 1 second event.
- Cannot compare sound events without using a normalized unit.

# Day-Night Average Sound Level (DNL)

- A way to describe the noise dose for a 24-hour period
- Accounts for noise event “noisiness” (SEL)
- Accounts for number of noise events
- Provides an additional weighting factor for nighttime operations



# Other Metrics

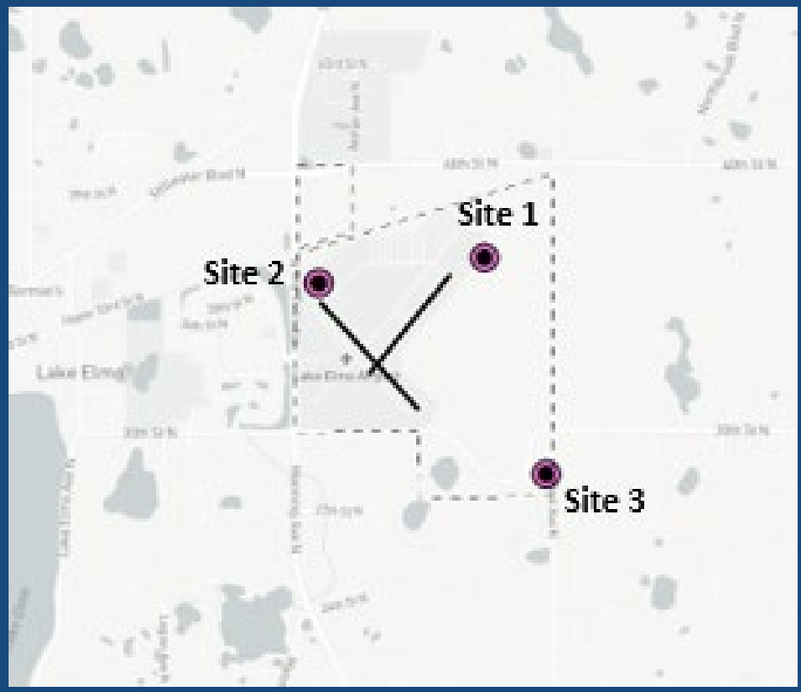
- Time Above (TA)
  - The time above a specified noise level (or threshold) e.g., 30 minutes/day above 80 dB
- Number Above (NA)
  - The number of events above a specified noise level (or threshold) e.g., 30 aircraft events/day above 80 dB Lmax or SEL
- Equivalent Sound Level (Leq)
  - The energy average noise level over a specified time period e.g., Leq(1hr) of 80 dB

# Study Scope

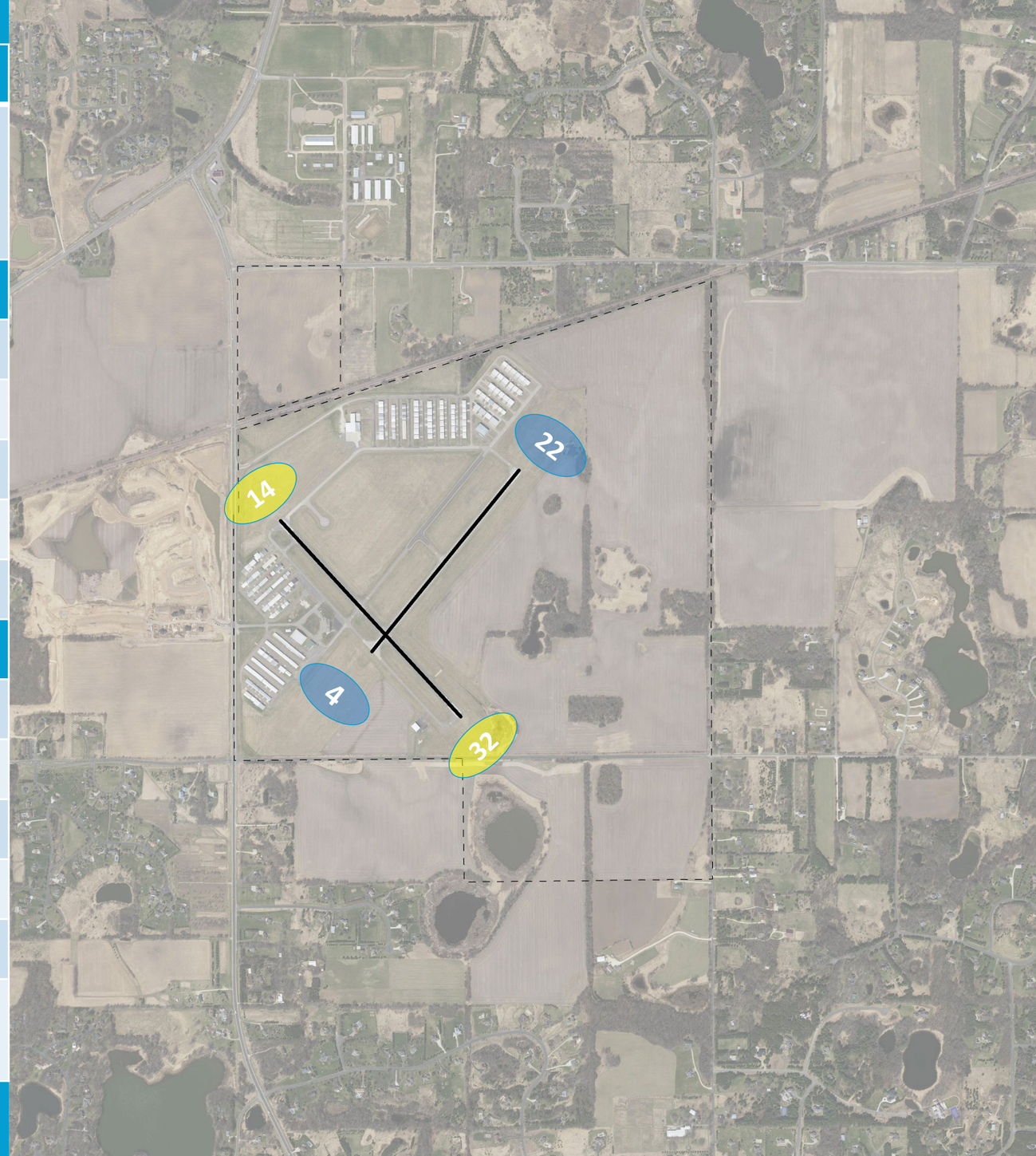
- The purpose of the study is to measure sounds associated with aircraft activity at Lake Elmo Airport (21D)
- The MAC conducted a Mobile Sound Monitoring Study in support of the LEAAC Work Plan.
- The intent of the study is to facilitate a better understanding about how aircraft sound assessments are conducted and share data specifically about 21D aircraft activity and associated sound exposure.

# Field Measurements

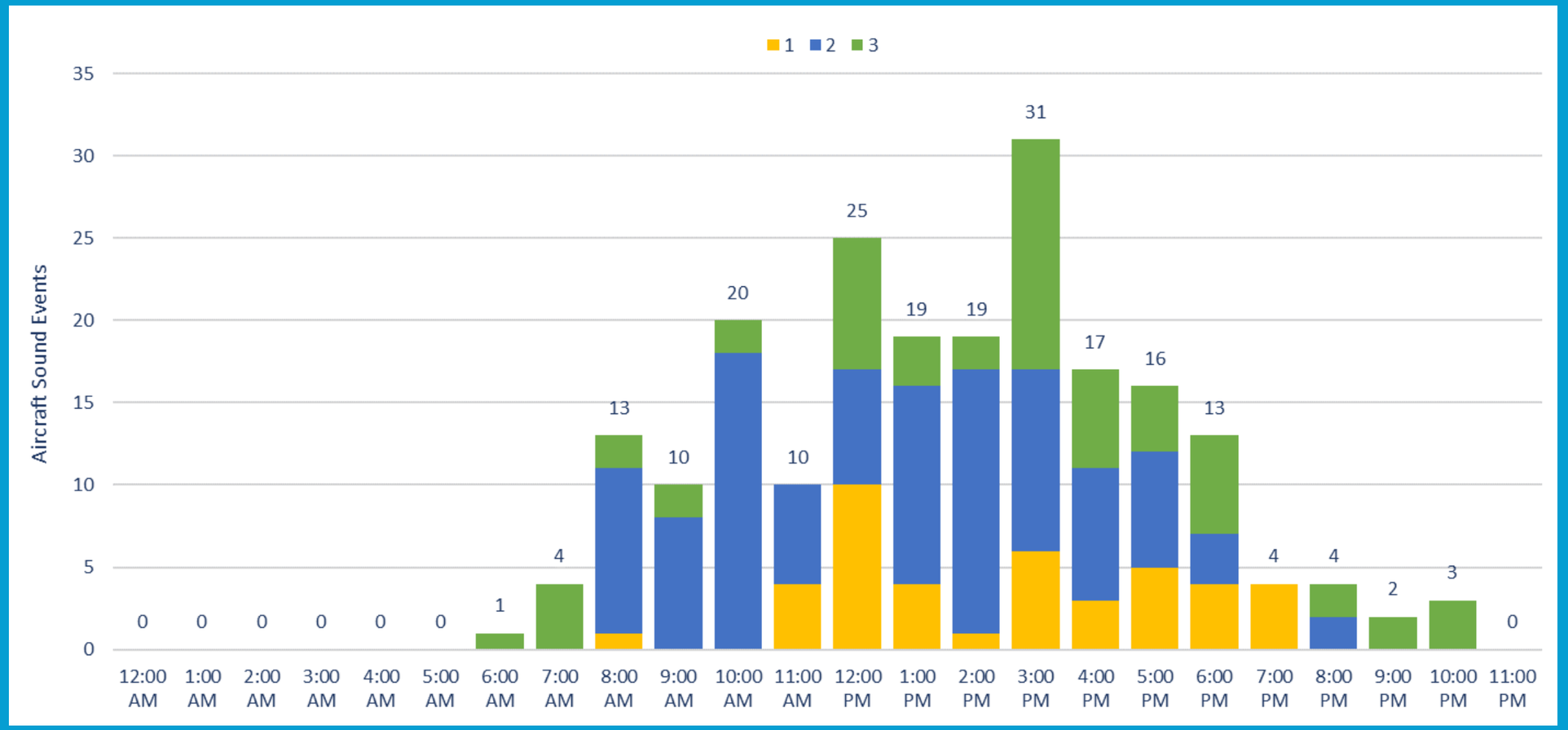
- Field-measured sound data were collected continuously for seven consecutive days: Aug. 4-Aug. 10
- Placement of equipment captured quality samples of 21D aircraft activity
- Data were collected from three monitoring locations



| Daily 21D Aircraft Activity per Runway | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Runway | Wed. Aug 4 | Thurs. Aug 5 | Fri. Aug 6 | Sat. Aug 7 | Sun. Aug 8 | Mon. Aug 9 | Tues. Aug 10 | Total |
| **21D Arrivals (435)** | | | | | | | | |
| **4** | - | - | 5 | 1 | - | 24 | - | **30** |
| **14** | 2 | 17 | 8 | 2 | 43 | 50 | 17 | **139** |
| **22** | 88 | 13 | 1 | - | 9 | 1 | 55 | **167** |
| **32** | 1 | - | 69 | - | 3 | 13 | 12 | **98** |
| **blank** | - | - | - | - | - | 1 | - | **1** |
| **21D Departures (429)** | | | | | | | | |
| **4** | - | - | 4 | 1 | - | 22 | - | **27** |
| **14** | 4 | 15 | 10 | - | 38 | 47 | 17 | **131** |
| **22** | 84 | 15 | 2 | - | 13 | 1 | 52 | **167** |
| **32** | - | - | 69 | - | - | 16 | 16 | **101** |
| **blank** | - | - | - | - | - | 3 | - | **3** |
| **Daily Total** | **179** | **60** | **168** | **4** | **106** | **178** | **169** | **864** |



| Number of Measured Single Event 21D Aircraft Sounds | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Wed. Aug 4 | Thurs. Aug 5 | Fri. Aug 6 | Sat. Aug 7 | Sun. Aug 8 | Mon. Aug 9 | Tues. Aug 10 | Site Total |
| **Site 1** | 5 | 2 | 5 | 1 | 1 | 24 | 4 | 42 |
| **Site 2** | 3 | 2 | 67 | - | 1 | 18 | 17 | 108 |
| **Site 3** | 6 | 6 | 8 | - | 18 | 11 | 12 | 61 |
| **Daily Total** | 14 | 10 | 80 | 1 | 20 | 53 | 33 | 211 |



| Number of Single Event Aircraft Sounds by Level | | | | |
|---|---|---|---|---|
| **Site** | # of Events > 65dBA | # of Events > 80dBA | # of Events > 90dBA | # of Events > 100dBA |
| **Aircraft Arrivals** | | | | |
| **1** | 23 | 2 | 0 | 0 |
| **2** | 43 | 8 | 0 | 0 |
| **3** | 25 | 1 | 0 | 0 |
| **Arrival Total** | 91 | 11 | 0 | 0 |
| **Aircraft Departures** | | | | |
| **1** | 19 | 3 | 0 | 0 |
| **2** | 65 | 29 | 0 | 0 |
| **3** | 36 | 3 | 0 | 0 |
| **Departure Total** | 120 | 35 | 0 | 0 |
| **Total Aircraft Events** | 211 | 46 | 0 | 0 |

| Top-Ten Measured 21D Aircraft Sound Events | | | | | |
|---|---|---|---|---|---|
| **Date and Time** | Site | $L_{max}$ | Duration | SEL | Aircraft Type |
| 8/6/2021 11:05 | 1 | 89.8 | 15 | 93.5 | C72R |
| 8/10/2021 13:12 | 2 | 89.1 | 17 | 94.7 | PA32 |
| 8/6/2021 15:03 | 2 | 87.6 | 12 | 91.8 | BE35 |
| 8/6/2021 10:01 | 2 | 86.9 | 12 | 90.6 | C77R |
| 8/6/2021 12:18 | 2 | 85.4 | 11 | 89.1 | M20T |
| 8/6/2021 14:25 | 2 | 84.9 | 13 | 89.9 | SR22 |
| 8/6/2021 12:51 | 2 | 84.3 | 11 | 89.2 | C310 |
| 8/6/2021 15:08 | 2 | 84.2 | 12 | 88.3 | PT6A |
| 8/10/2021 14:17 | 2 | 84.2 | 10 | 88.2 | P750 |
| 8/6/2021 14:39 | 2 | 84 | 11 | 88.3 | P750 |

# Modeled Results

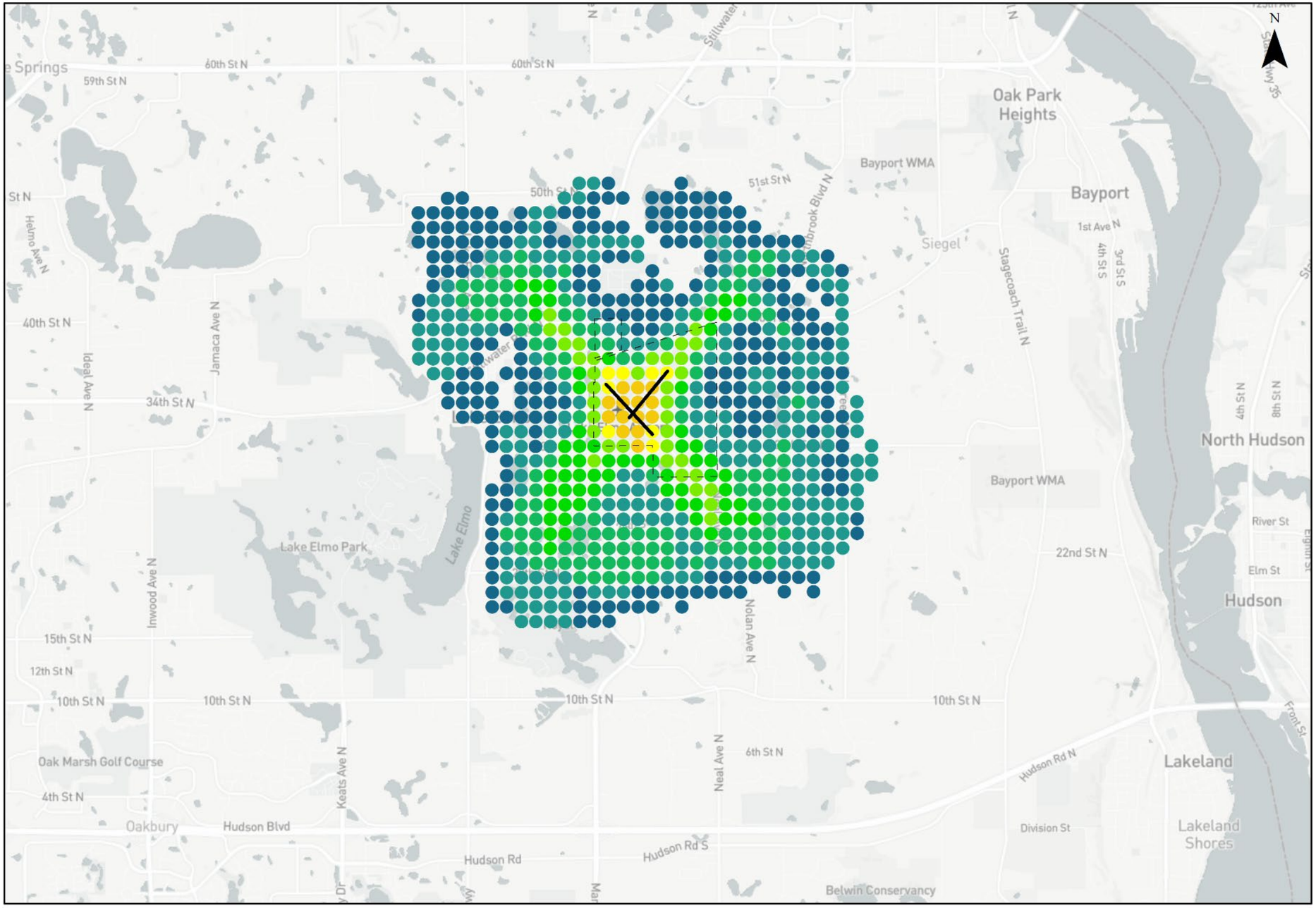
FAA-approved modeling software was used to calculate 21D aircraft sound exposure during the study period:

- utilizing available flight track data within a 15-mile area surrounding 21D and certificated noise levels for aircraft types operating during the study period
- calculated sound exposure across a 15-mile diameter grid of equally spaced analysis locations
- counted the number of events above 65 dB (Number Above)
- calculated the amount time that sound levels exceeded 65 dB (Time Above)
- considered average weather conditions during the study period
- considered terrain
- help inform the LEAAC and airport neighbors about 21D aircraft activity and corresponding sound levels

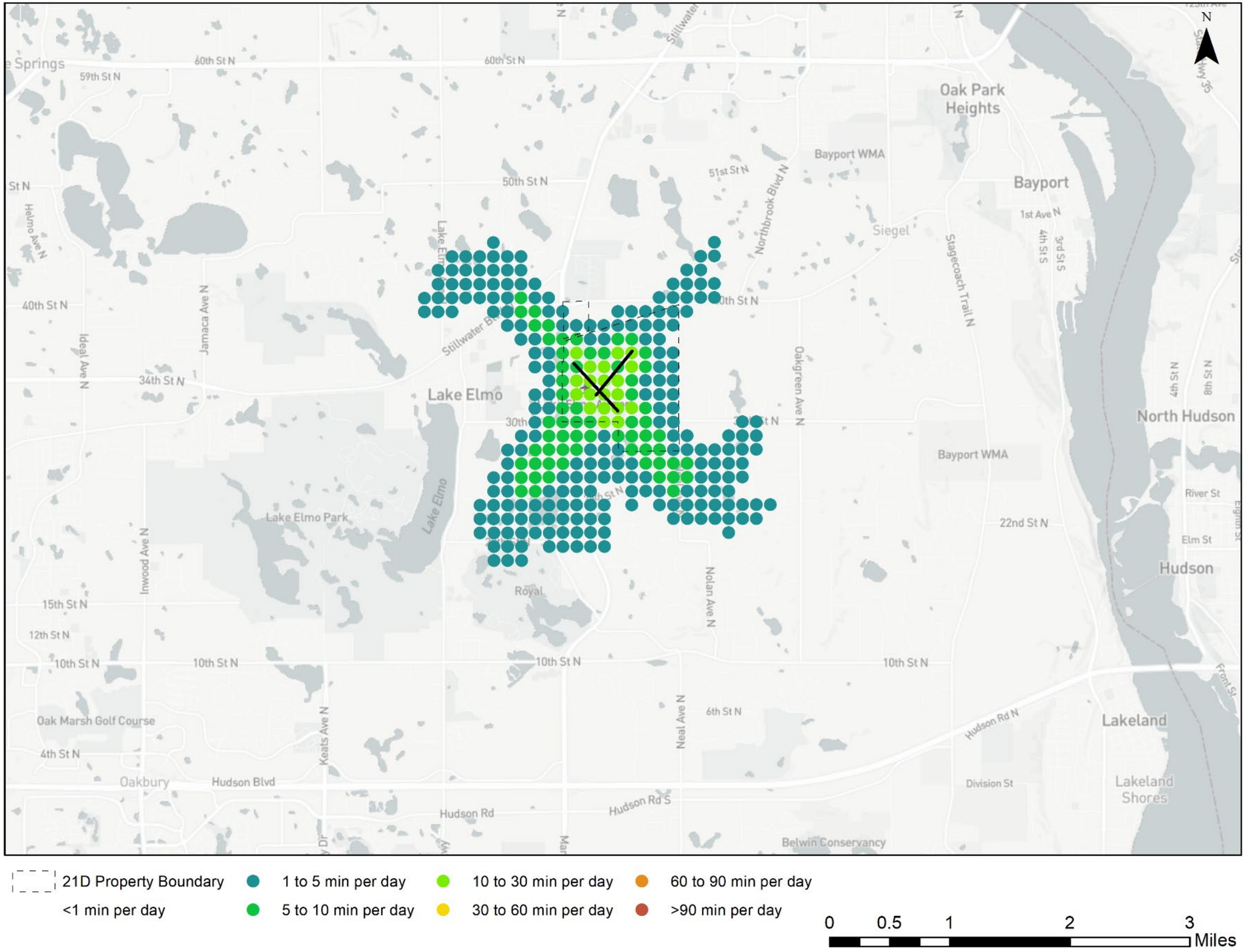
# Model Input

- 22,500 unique points spaced 0.1 nautical miles apart arranged in a 15-mile by 15-mile square centered on the Lake Elmo Airport
- Weather
- Terrain
- 21D Aircraft Operations and Fleet Mix

| Measured vs. Modeled Number Above Sound Levels | | | |
|---|---|---|---|
| | $N^{65}$ Measured | $N^{65}$ Modeled | Difference |
| **Site 1** | 42 | 218 | 176 |
| **Site 2** | 108 | 307 | 199 |
| **Site 3** | 61 | 150 | 89 |

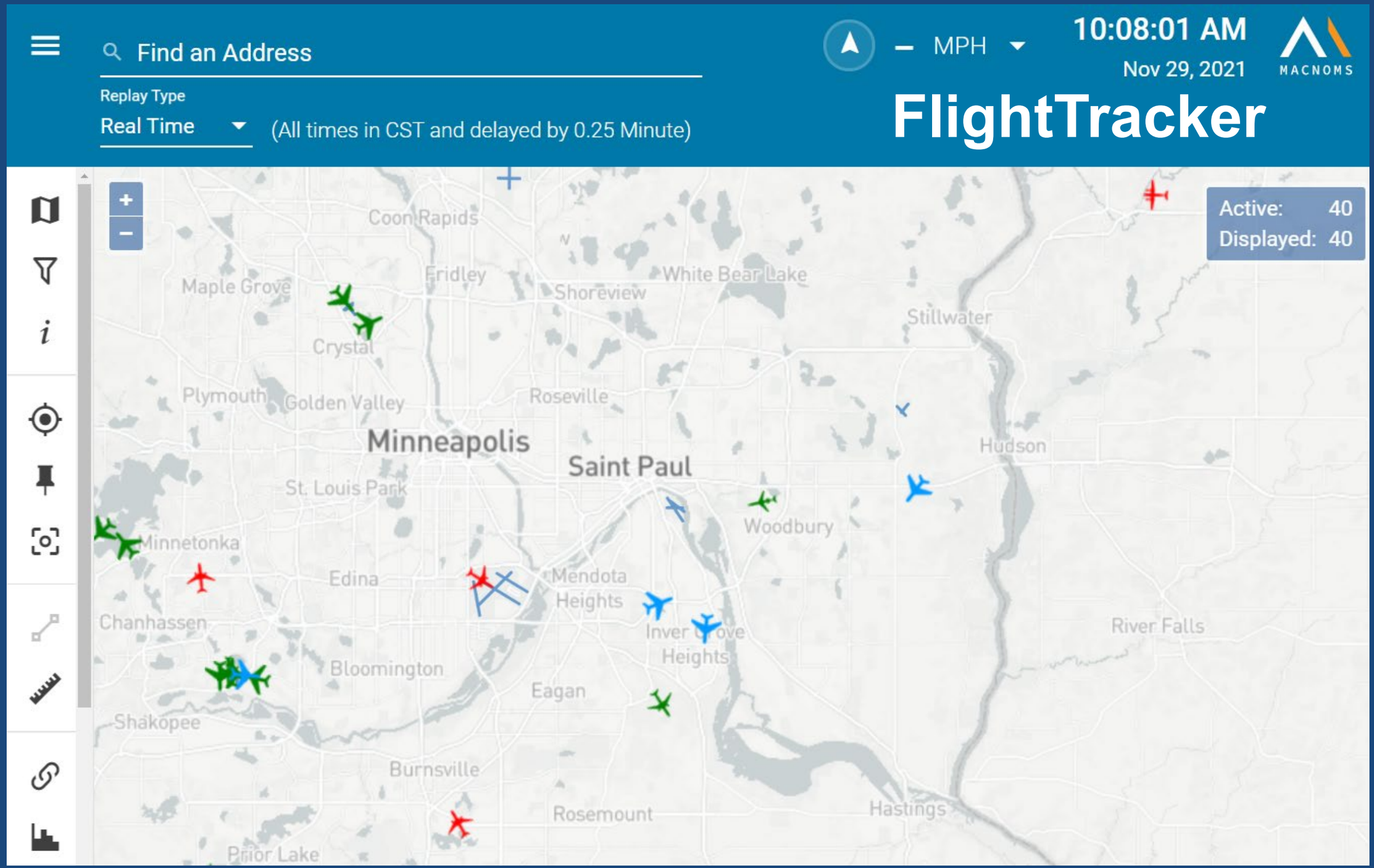


| Measured vs. Modeled Time Above Sound Levels | | | |
|---|---|---|---|
| | $TA^{65}$ Measured | $TA^{65}$ Modeled | Difference |
| **Site 1** | 7.4 | 30.4 | 23.0 |
| **Site 2** | 22.7 | 74.62 | 52.0 |
| **Site 3** | 10.6 | 26.02 | 15.4 |



# Quarter 3 Aircraft Operations & Noise Complaints Summary

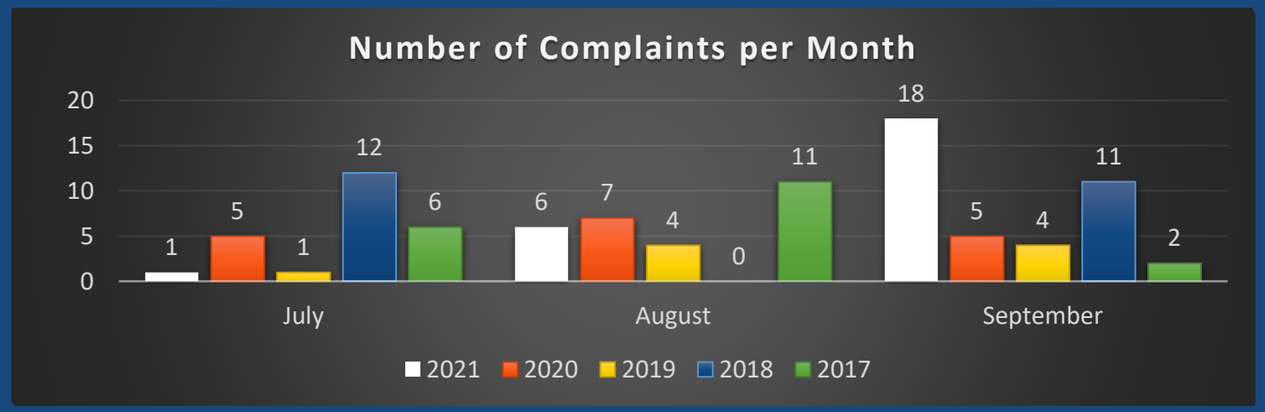
**Jennifer Lewis, MAC**
Community Relations Coordinator

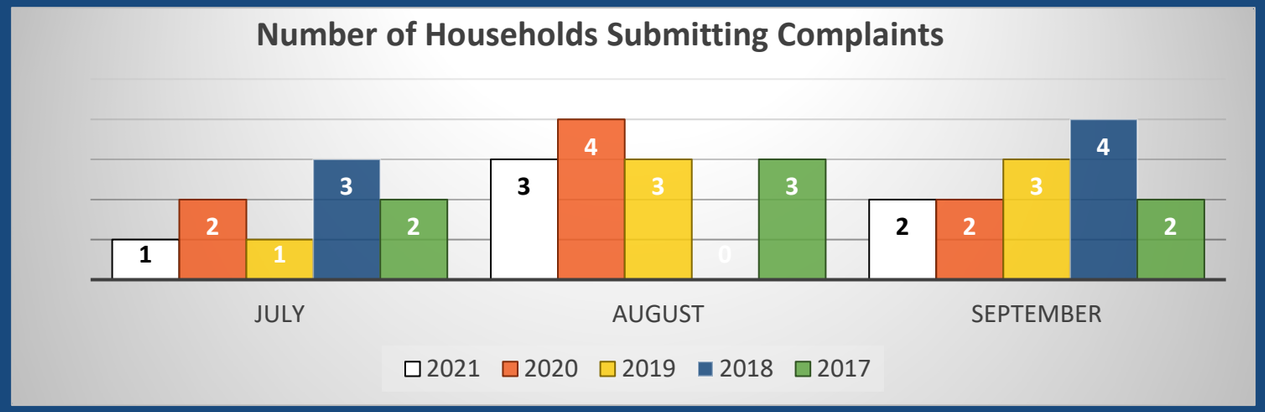

Find an Address
Replay Type
Real Time
(All times in CST and delayed by 0.25 Minute)
– MPH
10:08:01 AM
Nov 29, 2021
MACNOMS
FlightTracker
Active: 40
Displayed: 40
Coon Rapids
Fridley
White Bear Lake
Maple Grove
Shoreview
Stillwater
Crystal
Plymouth
Golden Valley
Roseville
Minneapolis
Saint Paul
Hudson
St. Louis Park
Woodbury
Minnetonka
Edina
Mendota Heights
Chanhassen
Inver Grove Heights
River Falls
Bloomington
Eagan
Shakopee
Burnsville
Rosemount
Hastings
Prior Lake

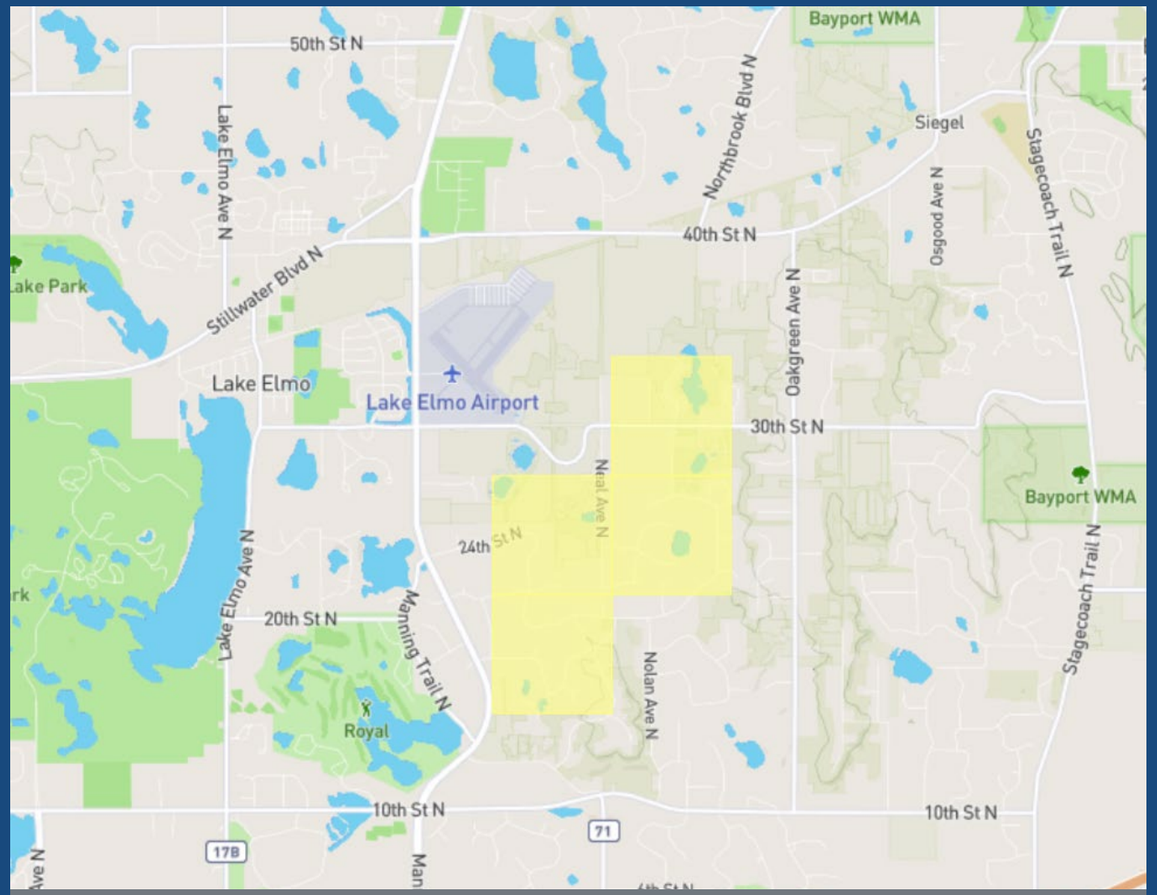
# Q3 2021 Aircraft Operations and Noise Complaints

## COMPLAINTS

| | | | | |
|---|---|---|---|---|
| 2021 | 25 COMPLAINTS | 4 LOCATIONS | 7 NIGHTTIME COMPLAINTS | 3 NIGHTTIME HOUSEHOLDS |
| 2020 | 17 COMPLAINTS | 6 LOCATIONS | 4 NIGHTTIME COMPLAINTS | 2 NIGHTTIME HOUSEHOLDS |



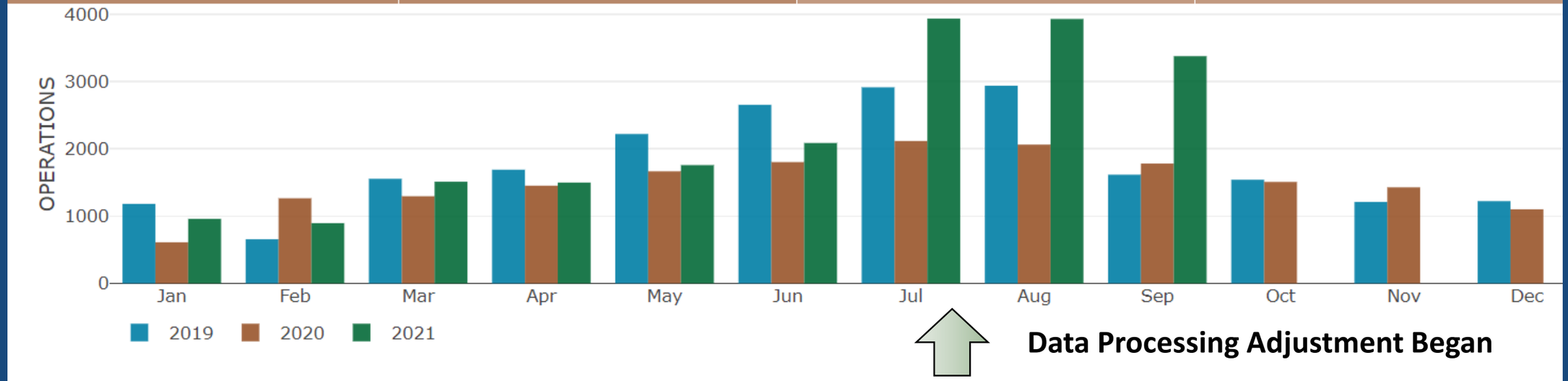




| AIRCRAFT TYPE | OPERATIONS | % | COMPLAINTS | % |
|---|---|---|---|---|
| PISTON | 10,828 | 96.4 % | 23 | 92.0 % |
| TURBO-PROP | 81 | 0.7 % | 2 | 8.0 % |
| HELICOPTER | 103 | 0.9 % | 0 | 0.0 % |
| UNKNOWN | 225 | 2.0 % | 0 | 0.0 % |
| RUN-UP | 0 | 0.0 % | 0 | 0.0 % |

# 21D Aircraft Operations Q3 2021

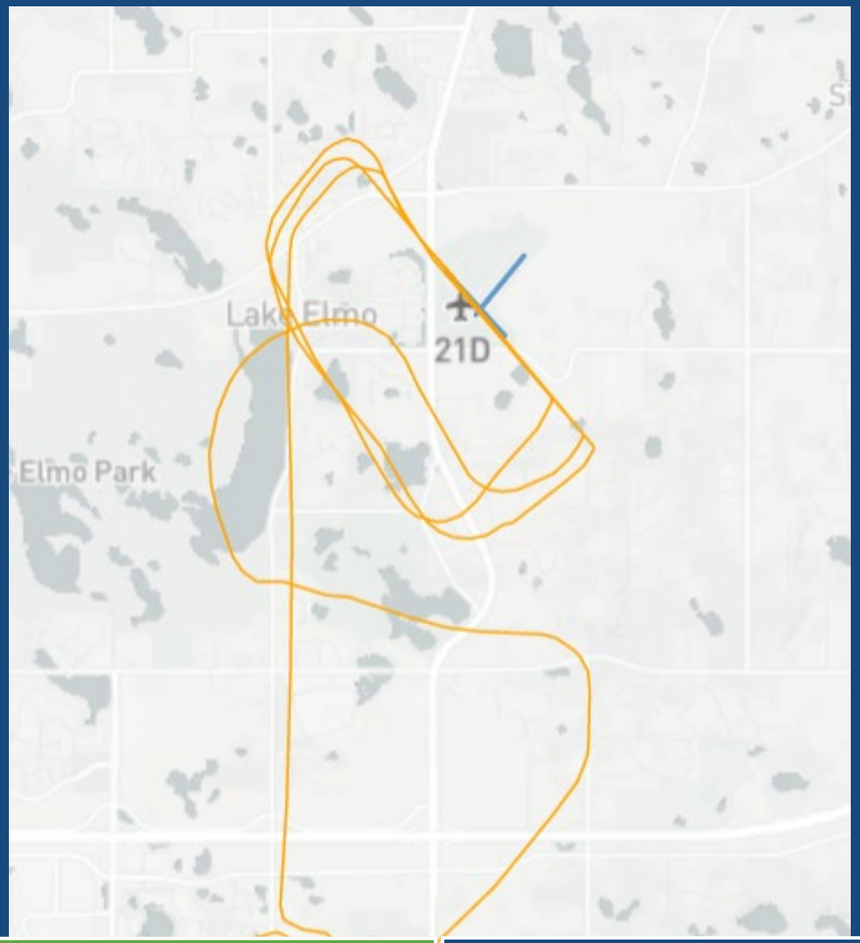
## OPERATIONS

| 2021 | | 2020 | |
|---|---|---|---|
| **11237** OPERATIONS | **163** NIGHTTIME OPERATIONS | **5957** OPERATIONS | **123** NIGHTTIME OPERATIONS |




Beginning on July 1, 2021, the MACNOMS methodology for counting operations was updated to more accurately reflect total aircraft departures or arrivals at MAC airports.

# MACNOMS Data Process Update

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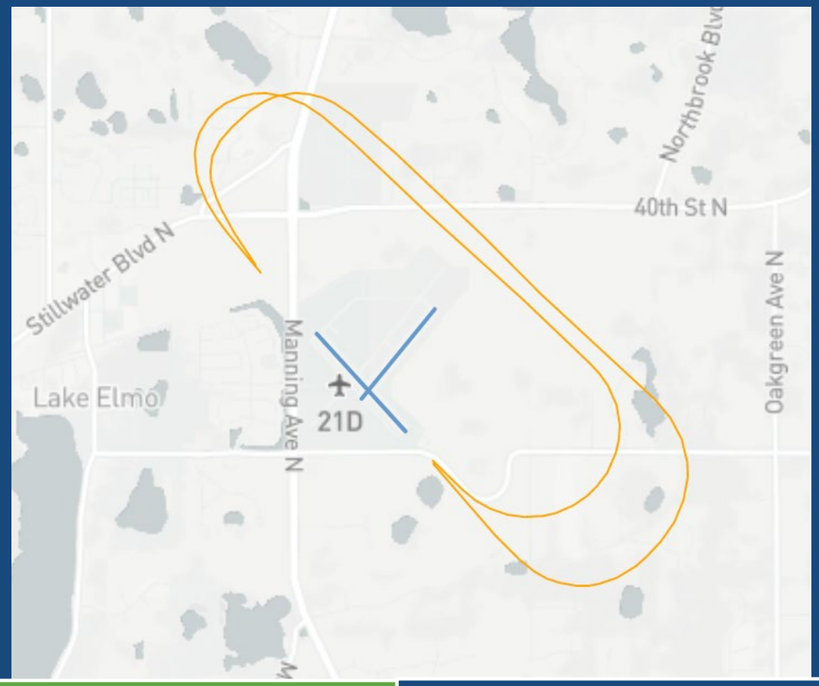


Before July 2021
- 2 operations
  - 1 arrival, 1 departure

After July 2021
- 6 operations
  - 3 arrivals
  - 3 departures

Before July 2021
- 2 operations
  - 1 arrival, 1 departure

After July 2021
- 4 operations
  - 2 arrivals
  - 2 departures


# Public Comment

Members of the public are welcome to share their remarks with the Commission.
Please state your name and address

Limit remarks to 3 minutes


# Member Comments

# Set LEAAC Meeting Schedule

# LEAAC Meeting Date Options:

<u>Frequency/Date:</u>
Quarterly, Fourth Wednesday
3 p.m. (2 hours)

<u>Forum:</u>
In-person, Hybrid, Virtual?


# Thank you for joining us!