DISCOVER

Flying Cloud Airport

2040 Long-Term Plan Update

March 4, 2025

MINNEAPOLIS SAINT PAUL METROPOLITAN AIRPORTS COMMISSION

MAC

Welcome Remarks

Brian Ryks

Executive Director and CEO

Metropolitan Airports Commission

Agenda

- Goals, Objectives, and Project Schedule
- FAA Coordination
- Long-Term Plan Review
- Preferred Alternative
- Noise Analysis
- Project Implementation and Next Steps

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Flying Cloud Airport

Long-Term Plan Goals, Objectives, and Project Schedule

Flying Cloud LTP Goals

Enhance airport safety

Preserve and, if possible, improve operational capabilities for the current family of aircraft using the airport

Promote financial sustainability of the MAC Reliever Airport system by exploring revenue opportunities for aeronautical and non-aeronautical development

Review of Discover Flying Cloud Events

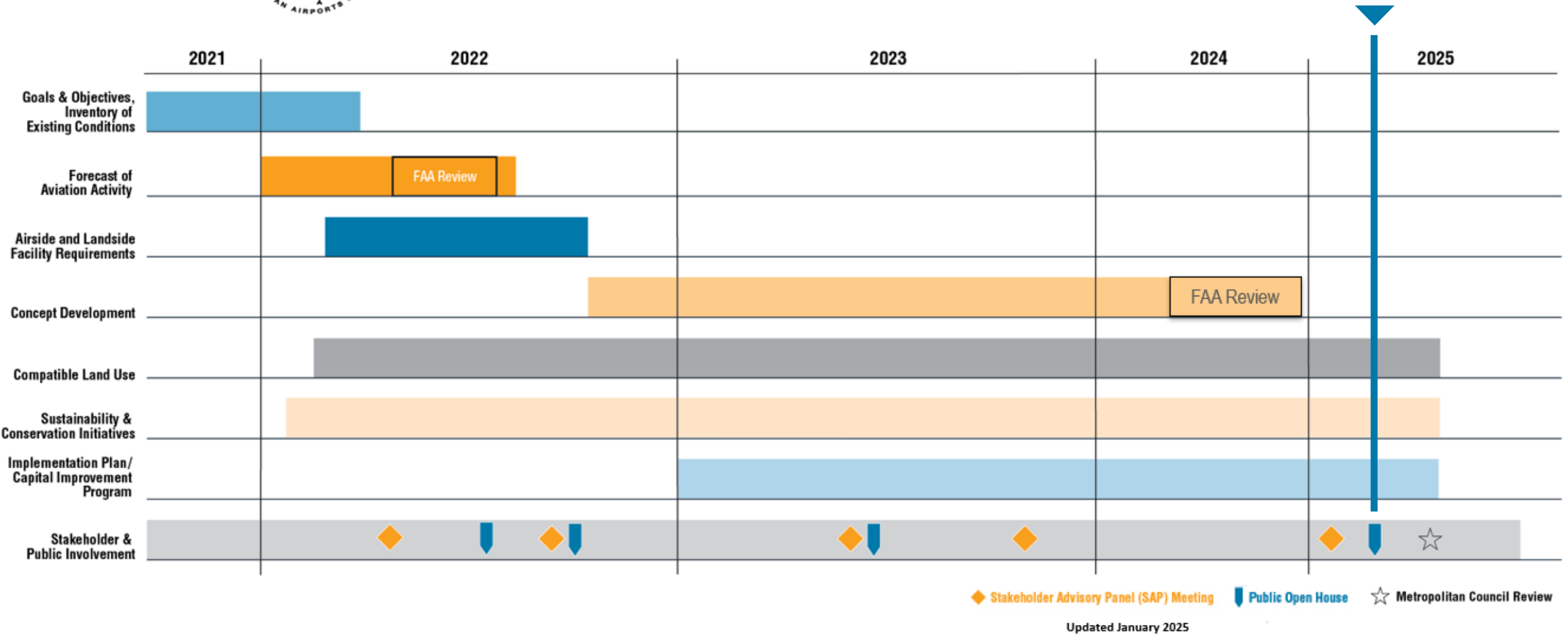
- Discover FCM #1 – June 2022 – Existing Conditions + Forecast Preview
- Discover FCM #2 – October 2022 – Facility Requirements + Noise
- Discover FCM #3 – May 2023 – Airfield Alternative Concepts
- Discover FCM #4 – March 2025 – Preferred Plan + Implementation

Evolution of the Long-Term Plan

- Identified need to upgrade Runway 10R-28L to C-II standards
- Forecast approved by the FAA in January 2023
  - Slow growth in overall aircraft operations (Approx. 0.37% CAGR)
- Tenants voiced need for hangar development opportunities
- Runway alternatives discussion resulted in EMAS both ends alternative
- Other airfield enhancements and support facilities identified
- Extensive coordination with FAA regarding Taxiway A extension to 10R
- Individual projects and cost estimates developed from preferred alternative

Metropolitan Airports Commission (MAC) Flying Cloud Airport (FCM)

2040 Long-Term Plan (LTP) Schedule



Updated January 2025

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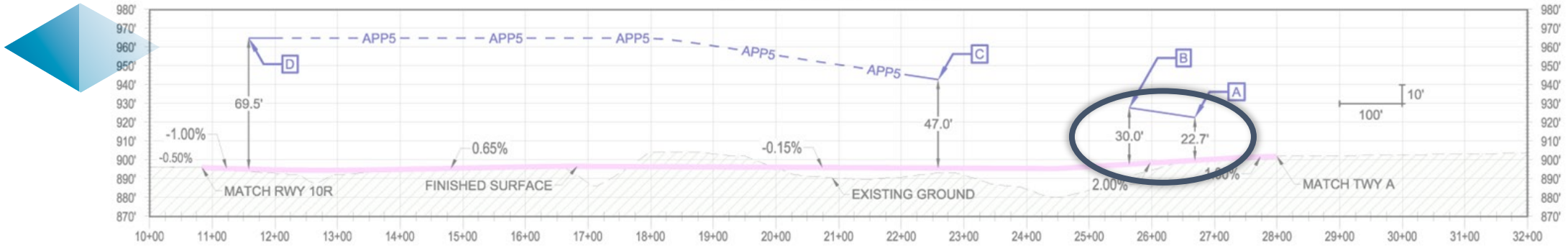
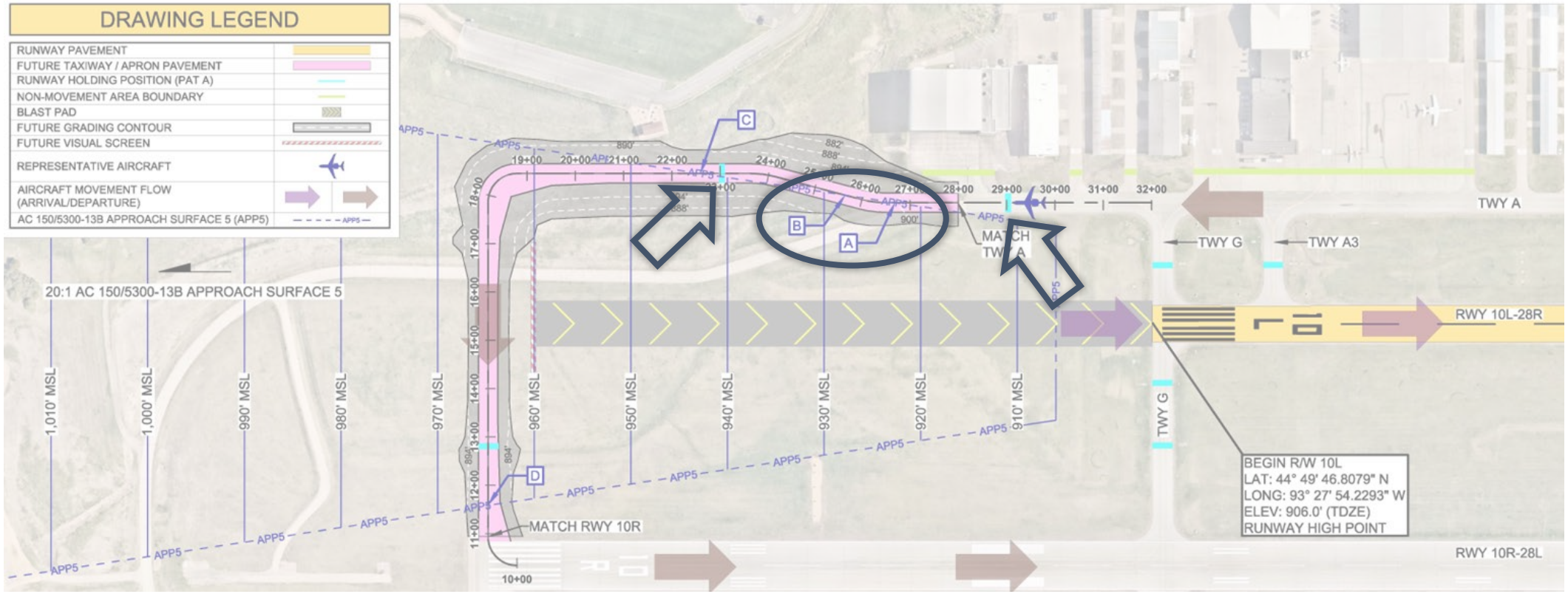
FAA Coordination

Taxiway A – Initially Preferred Alternative

PROFILE VIEW

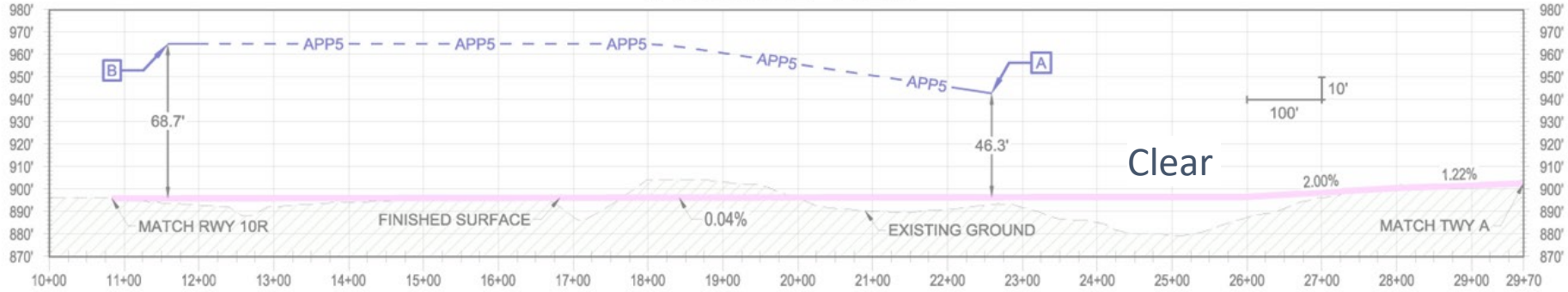


PLAN VIEW



Taxiway A – Revised Preferred Alternative

PROFILE VIEW



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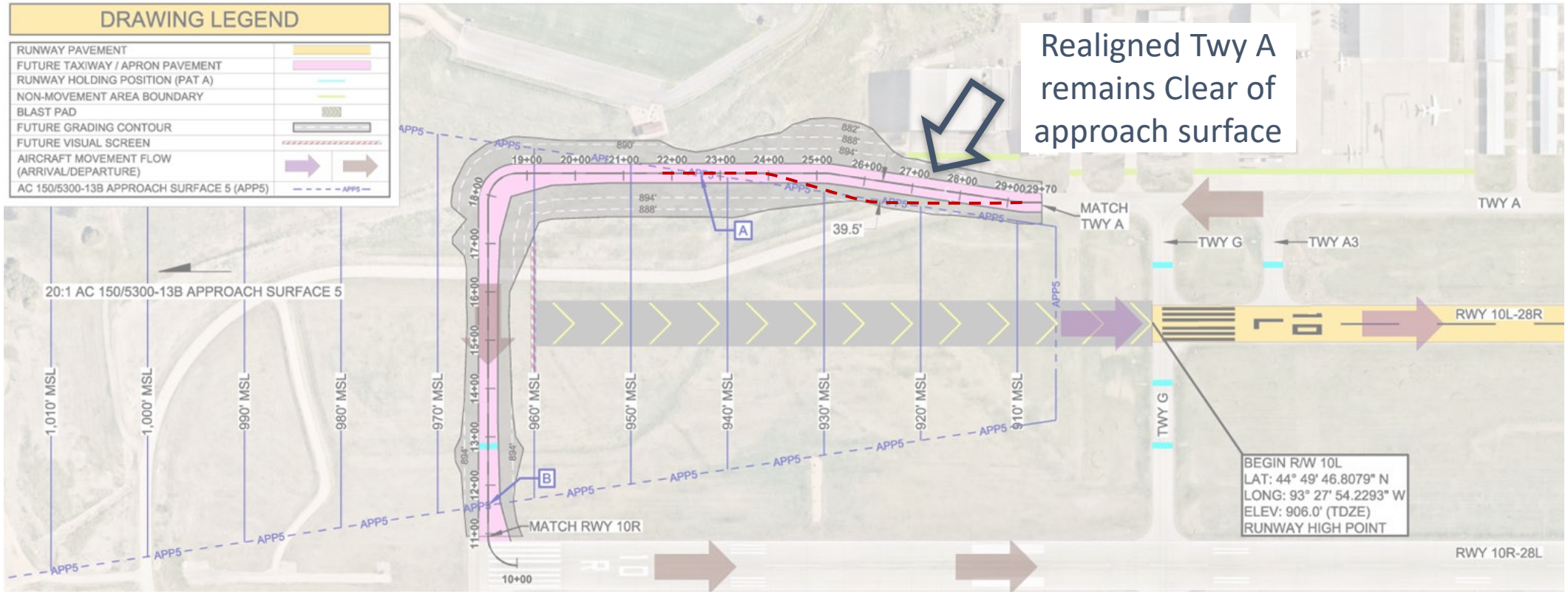
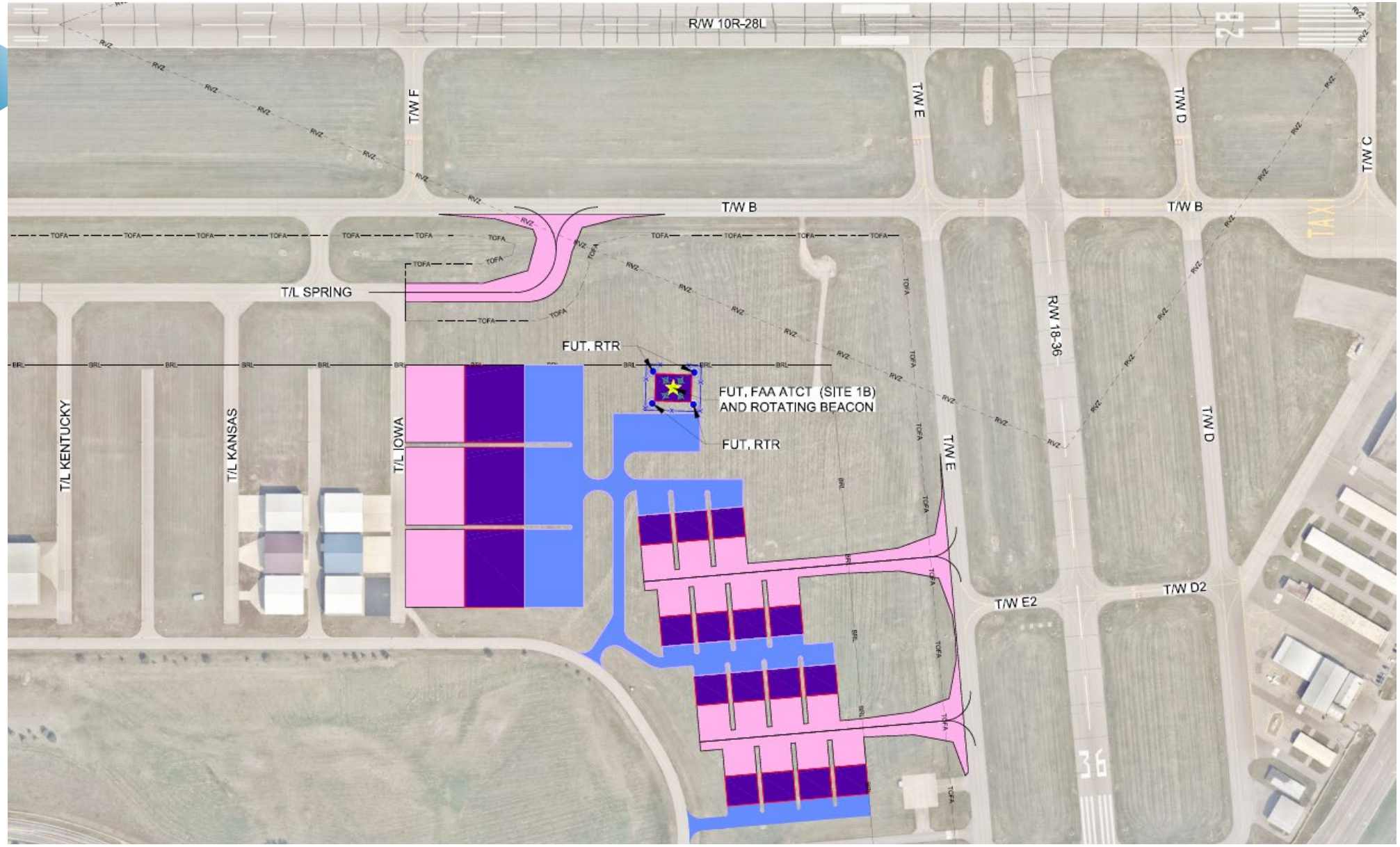


ATCT Relocation – FAA Site Design Ongoing



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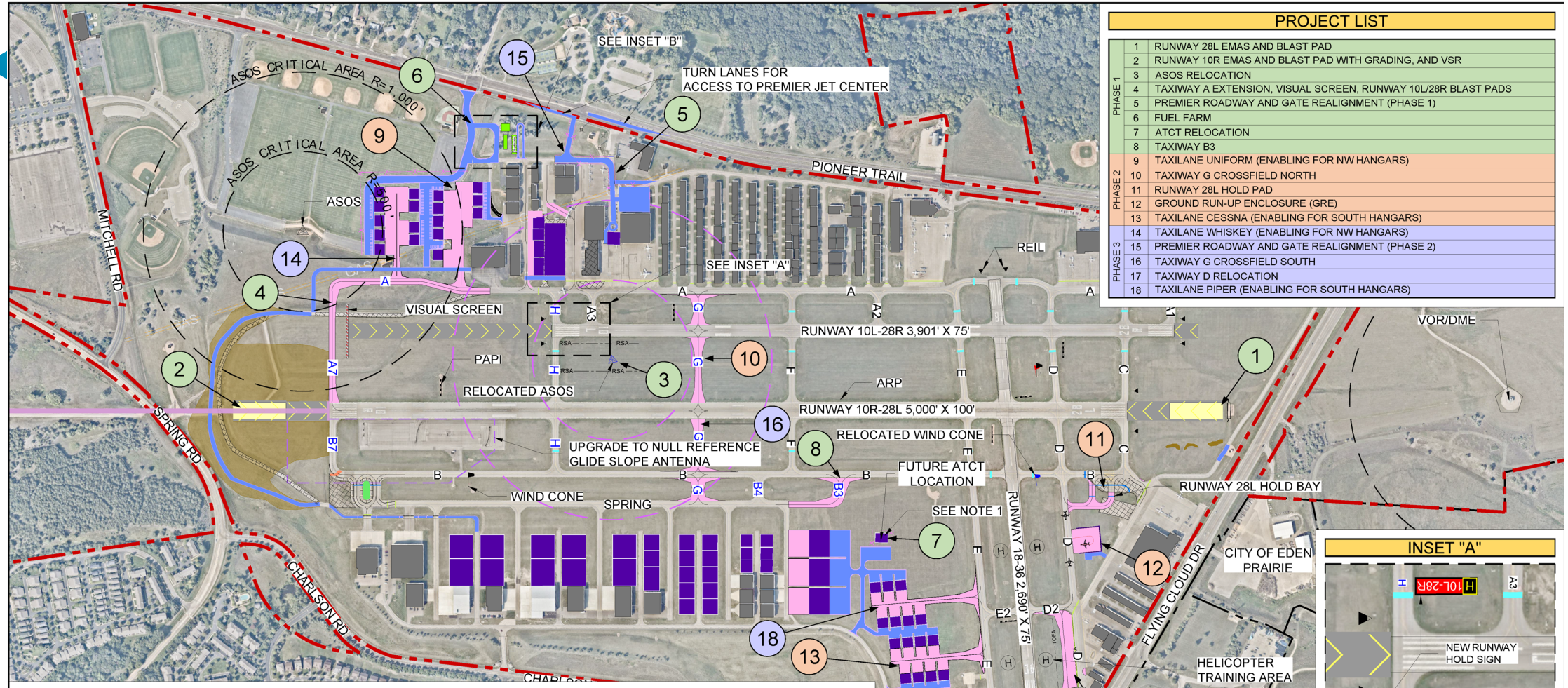
Flying Cloud Airport

Preferred Development Alternative

Preferred Alternative – Overall



PROJECT LIST

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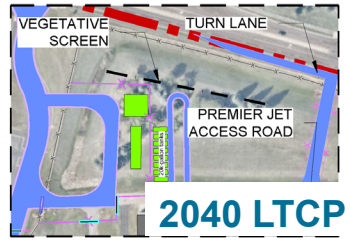
INSET "A"

INSET "B"



DRAWING LEGEND

FUTURE TAXIWAY / APRON PAVEMENT		ILS HOLDING POSITION (PATTERN B)	
PAINTED ISLAND		INTERMEDIATE HOLDING POSITION (PATTERN C)	
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FUTURE HANGAR		BLAST PAD	
PAVEMENT DEMOLITION		ENGINEERED MATERIAL ARRESTING SYSTEM (EMAS)	
AIRPORT PROPERTY LINE		MEDIUM INTENSITY APPROACH LIGHTING SYSTEM WITH RAIL (MALSR)	
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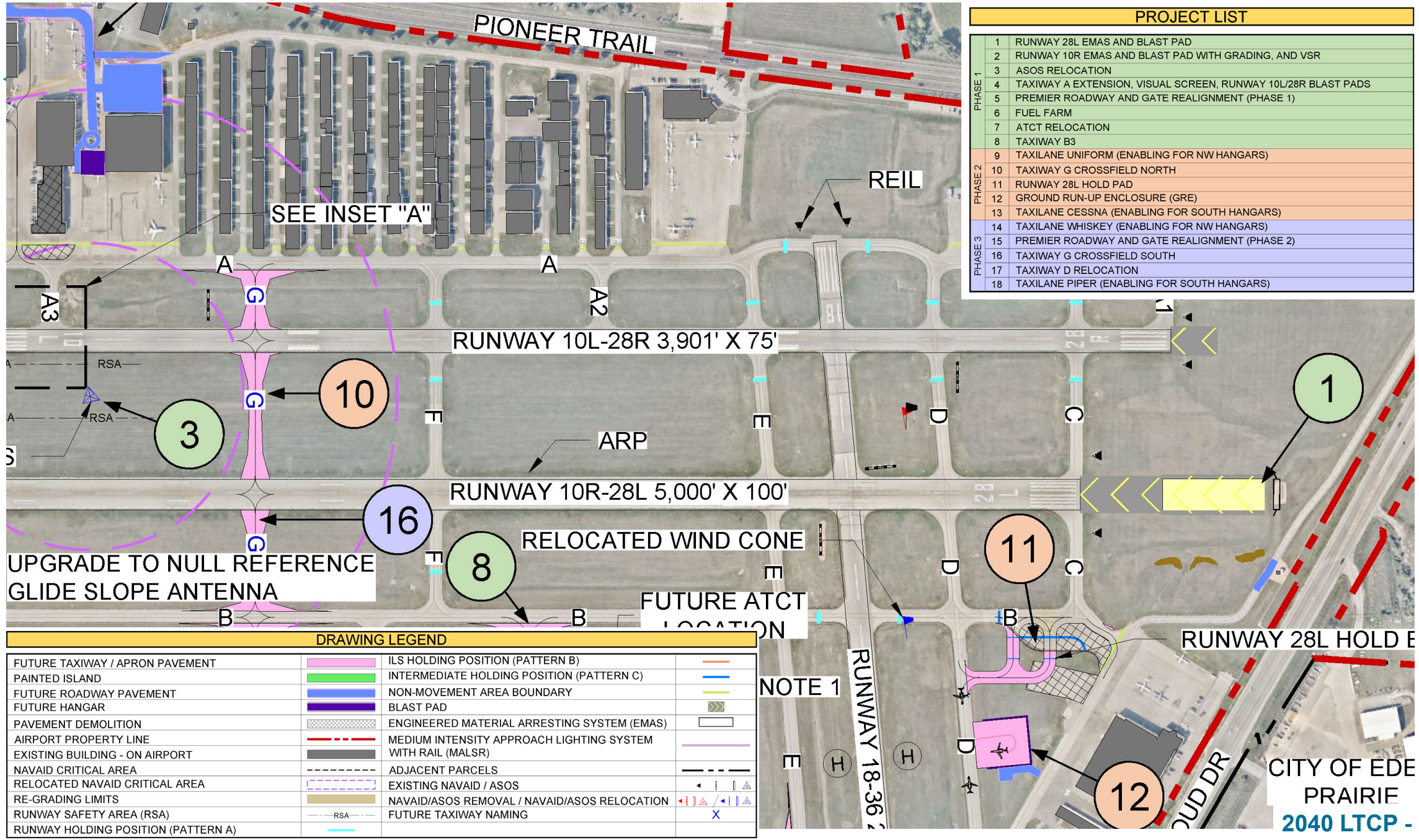
RUNWAY SAFETY AREA (RSA)	RSA	FUTURE TAXIWAY NAMING	X
RUNWAY HOLDING POSITION (PATTERN A)			

NOTES

1. PREFERRED FUTURE ATCT CAB SITE LOCATION AS NOTED FROM FAA SITING STUDY COMPLETED IN 2022.
2. AERIAL IMAGERY: NEARMAP (APRIL 2023)

2040 LTCP - DRAFT

Preliminary Draft Preferred Alternative – Northeast



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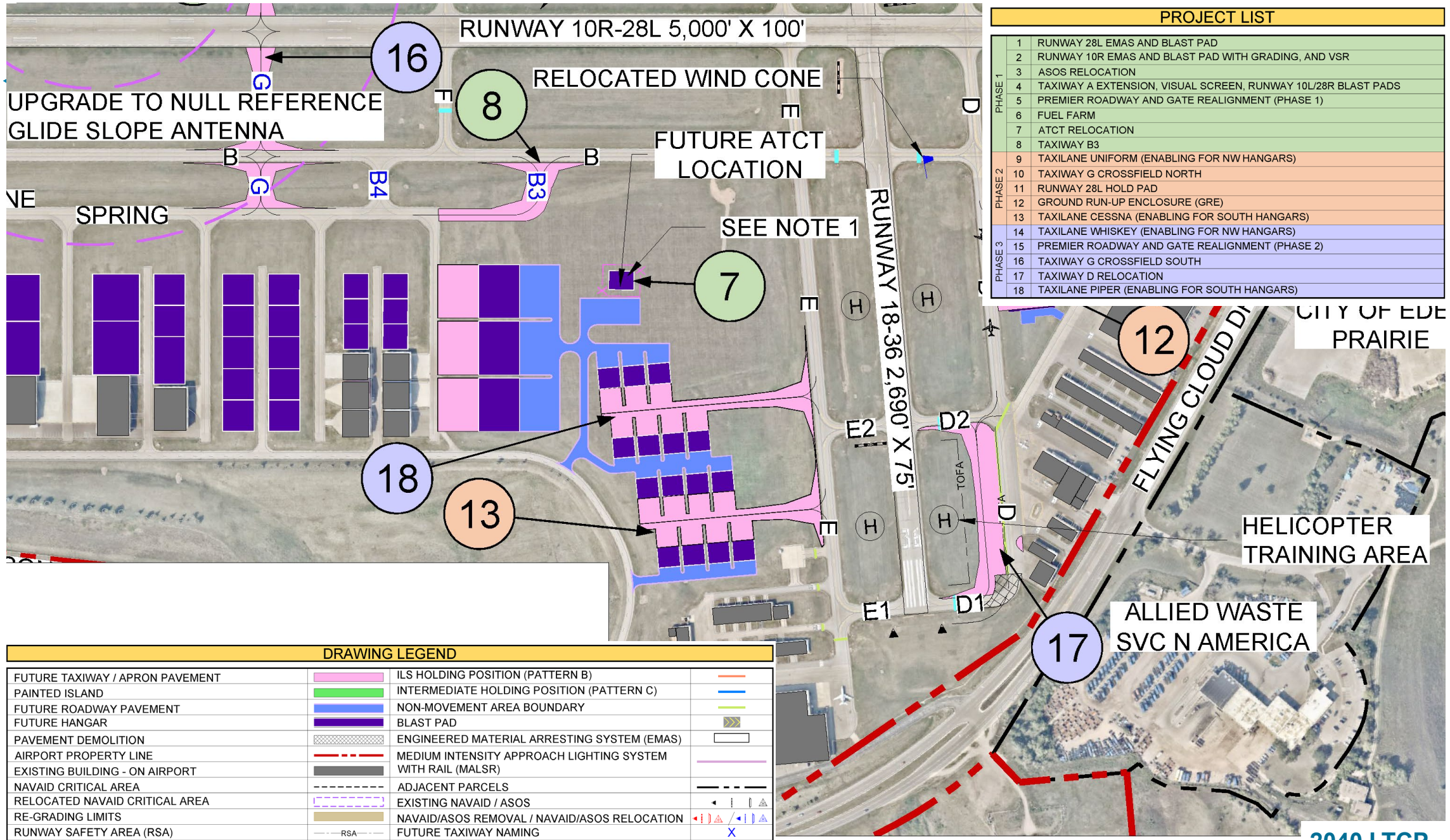
Preliminary Draft Preferred Alternative – Southeast



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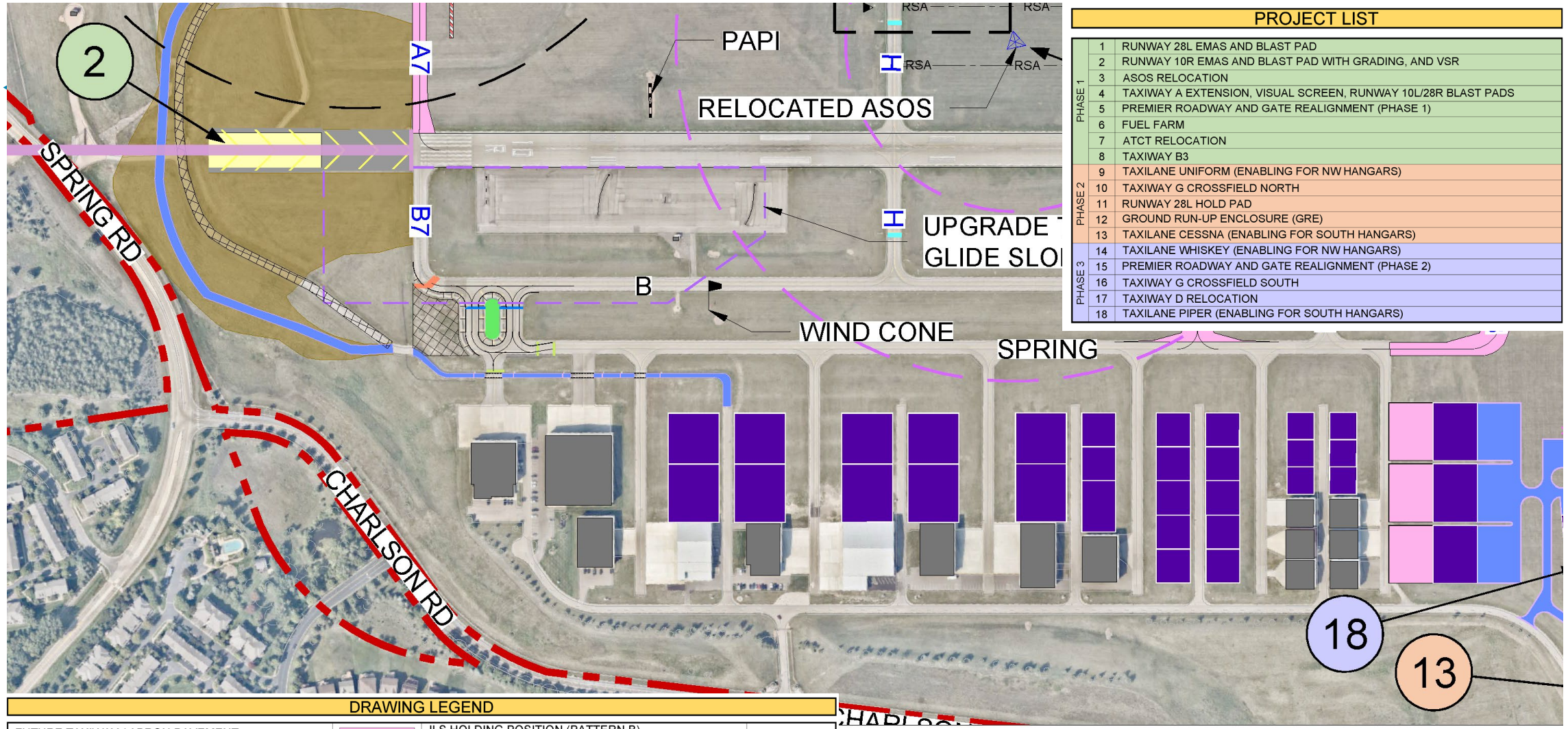
Preliminary Draft Preferred Alternative – Southwest



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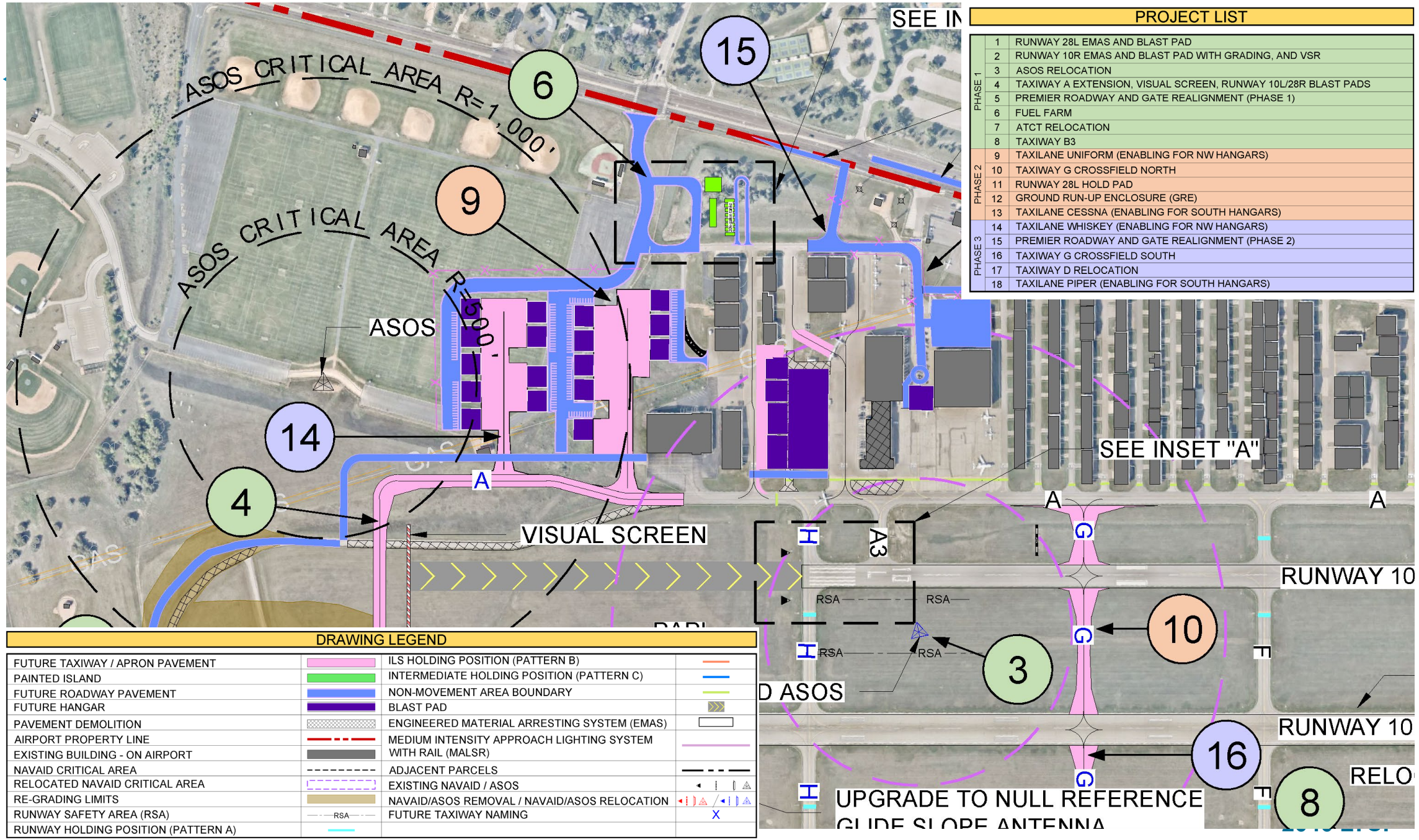

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DRAFT

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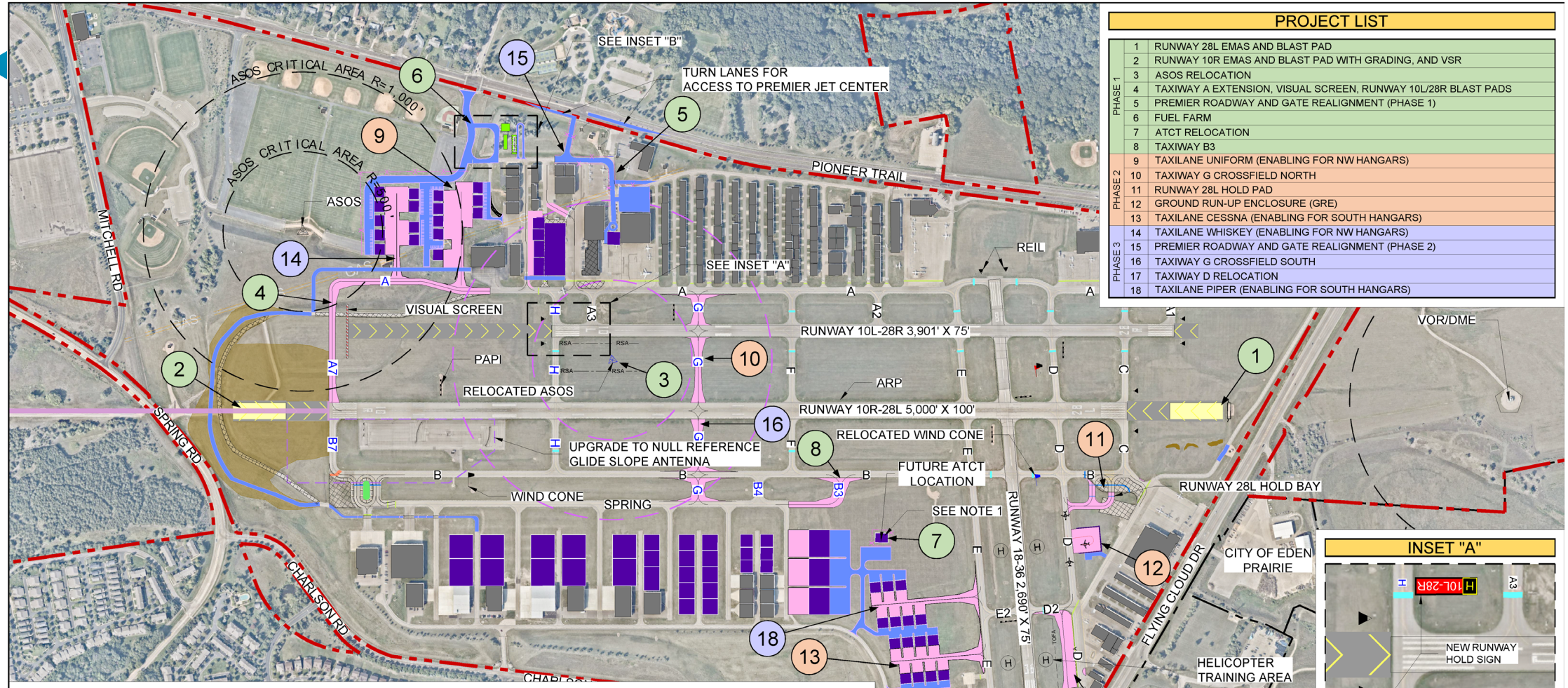

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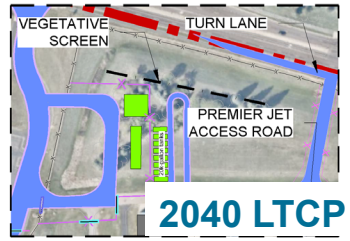

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2040 LTCP - DRAFT

Rough Order of Magnitude Cost Estimates

Costs based on 2024 dollars with no escalation

Project is an estimate of preference

- Not all projects will be constructed

Timing is subject to change

- Funding, environmental efforts, integration with other reliever airport timing

Project scope may change based on environmental review

- Additional opportunity for public comment

Project No.	Description	Cost
	Phase 1 Projects (0 – 5 years)	
1	28L EMAS and Blast Pad	$20,925,433
2	10R EMAS and Blast Pad; West Grading: VSR Relocation	$42,497,637
3	ASOS Relocation	$977,791
4	Taxiway Alpha Extension	$9,570,711
5	Premier Roadway and Gate Alignment (Phase 1)	$4,892,945
6	Fuel Farm (Alternative 1)	$5,773,608
7	ATCT Relocation	$2,236,203
8	Taxiway B2	$1,782,475
	Phase 2 Projects (6 – 10 years)	
9	Taxilane Uniform (enabling for NW hangars)	$10,126,432
10	Taxiway G North (Crossfield)	$2,486,407
11	Runway 27L Hold Pad	$1,540,706
12	Ground Run-Up Enclosure	$7,885,657
13	Taxilane Cessna (enabling for South hangars)	$4,004,375
	Phase 3 Projects (11 – 20 years)	
14	Taxilane Whiskey (enabling for NW hangars)	$4,118,089
15	Premier Roadway and Gate Alignment (Phase 2)	$2,682,356
16	Taxiway G South (Crossfield)	$2,496,665
17	Taxiway D Relocation	$2,582,833
18	Taxilane Piper (enabling for South hangars)	$7,990,787
	Total ROM costs	**$134,571,109**

Source: HNTB cost estimates
Note: Costs are presented in $2024 with no future escalation applied

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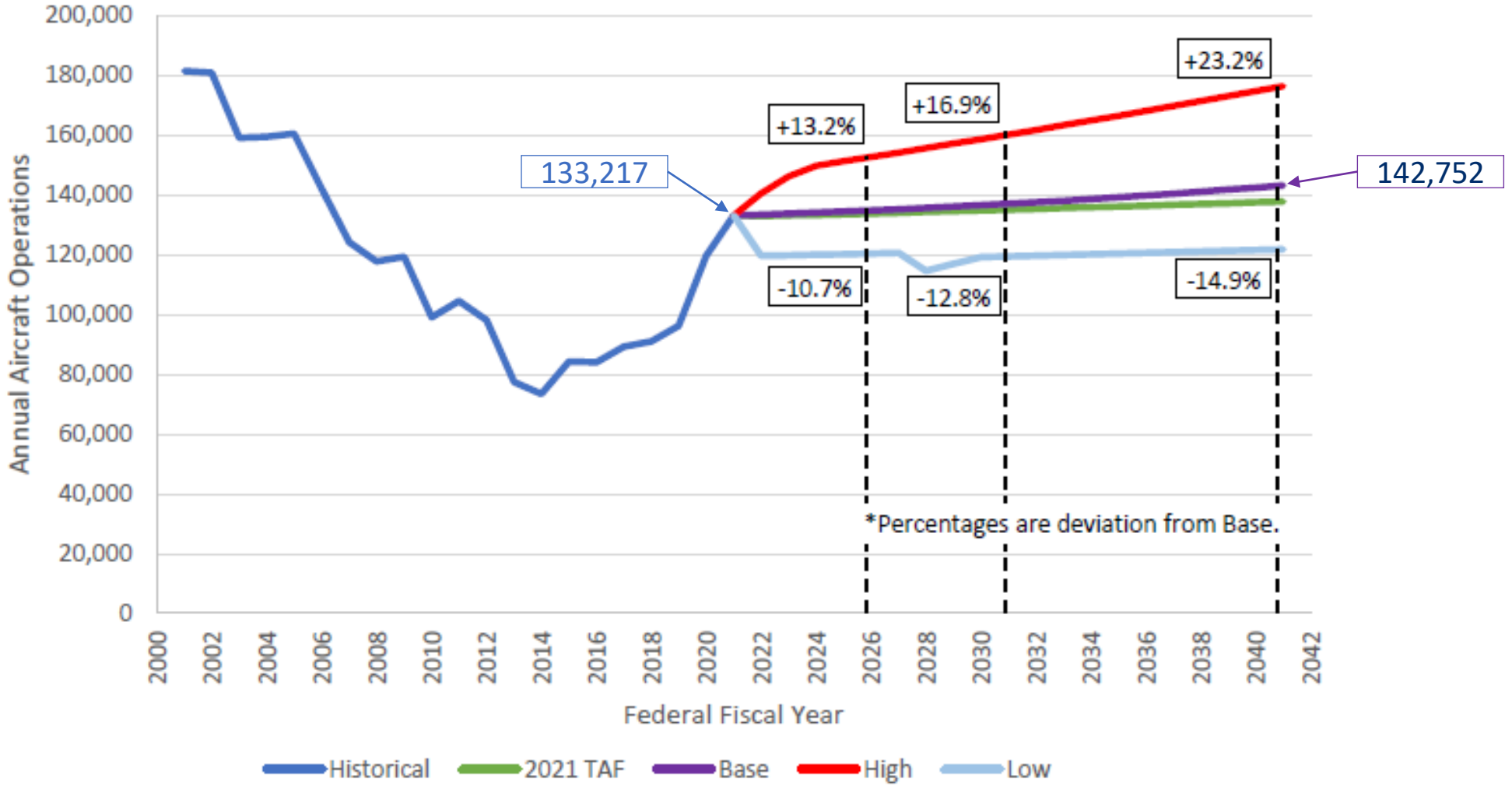
Flying Cloud Airport

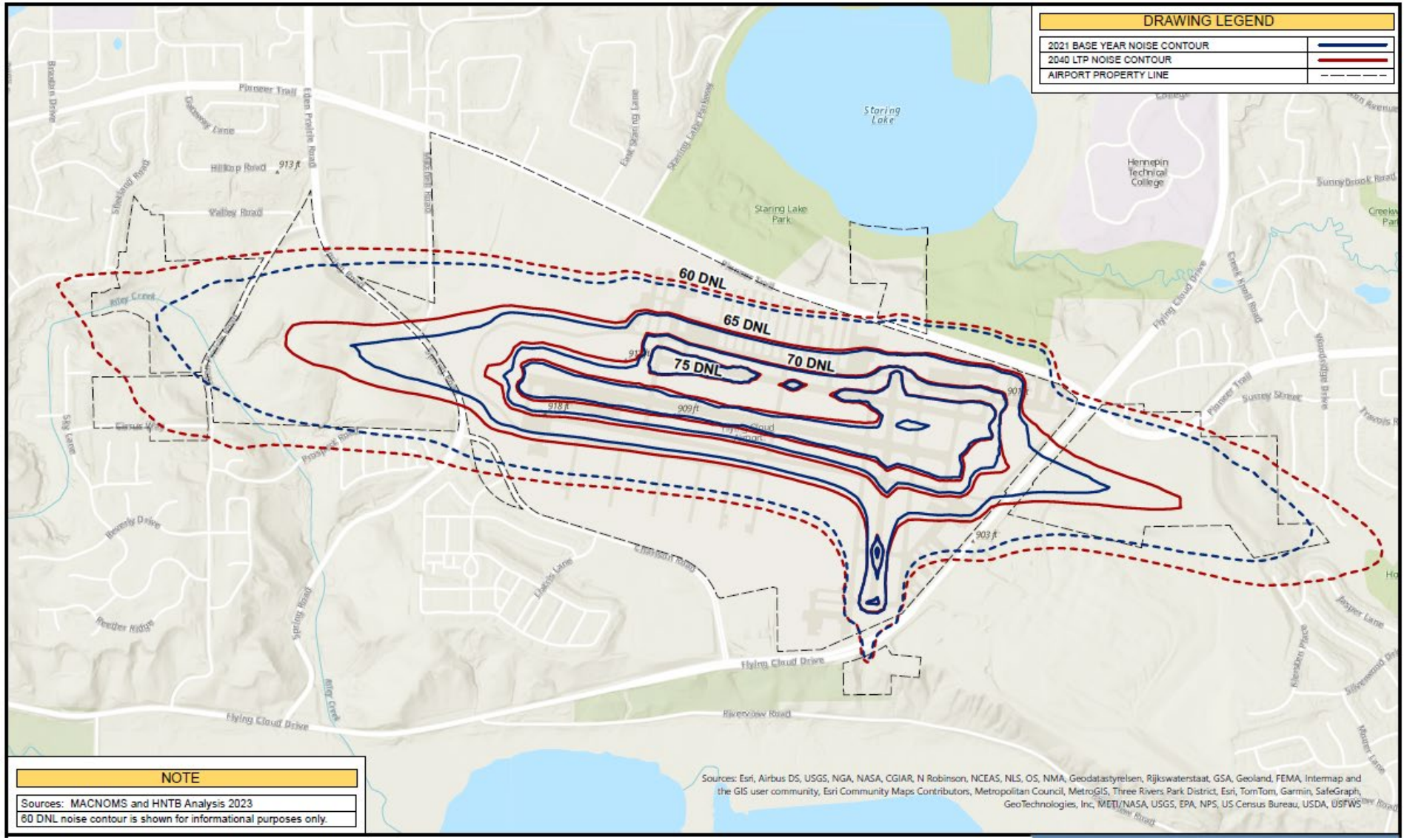
Noise Analysis

Annual Aircraft Operations Forecast



Source: HNTB and 2021 FAA Terminal Area Forecast, published 2022.

Understanding Future Airport Noise



Voluntary Noise Abatement at FCM

MAC maintains a Noise Abatement Plan for FCM – Fly Neighborly

- Preferential Runway Use
- Southbound turns after departure
- Noise Abatement departure and approach procedures
- Maintenance runups
- Helicopter training
- Voluntary nighttime restrictions
- Pilot outreach

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Flying Cloud Airport

Project Implementation and Next Steps

Key Steps Required – Project Implementation

Stakeholder Input	Final Stakeholder Advisory Panel (SAP) Meeting January 28, 2025
Public Meeting	MAC hosts final Discover Flying Cloud public meeting March 4 (4:30PM – 6:30PM)
FAA ALP Review	MAC submits proposed projects to the FAA via a draft Airport Layout Plan (ALP)
Public Comment	45-day Public comment period on the LTP report beginning February 19th through April 5th
Incorporate Feedback	Comments are addressed; Changes are made as required
Met Council Review	Metropolitan Council reviews and provides consistency review determination
Project Funding	MAC determines project funding from available funding sources
Environmental	MAC completes NEPA environmental review process based on project requirements
Construction	Design and Construction to advance

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Flying Cloud Airport

Questions?

Please complete our survey

Appendix Slides

What is an EMAS Bed?

Image showing an example of EMAS at St. Paul Downtown Airport (STP)

- EMAS - Engineered Material Arresting System
- Lightweight, crushable material placed at the end of a runway to safely stop an aircraft that overruns the end of the runway
- An FAA approved mitigation strategy when it is not practical to achieve the full standard Runway Safety Area
- The size varies and is based on dimensions of the runway safety area and aircraft using the airport

What is a Blast Pad?

Image showing an example of a Blast Pad at Crystal Airport (MIC)

- A surface adjacent to the ends of runways provided to reduce the erosive effect of jet blast and propeller wash
- Not usable pavement for aircraft operations
- Cannot be used in the calculation of aircraft performance
- They do not change the published runway length

What is a Visual Screen?

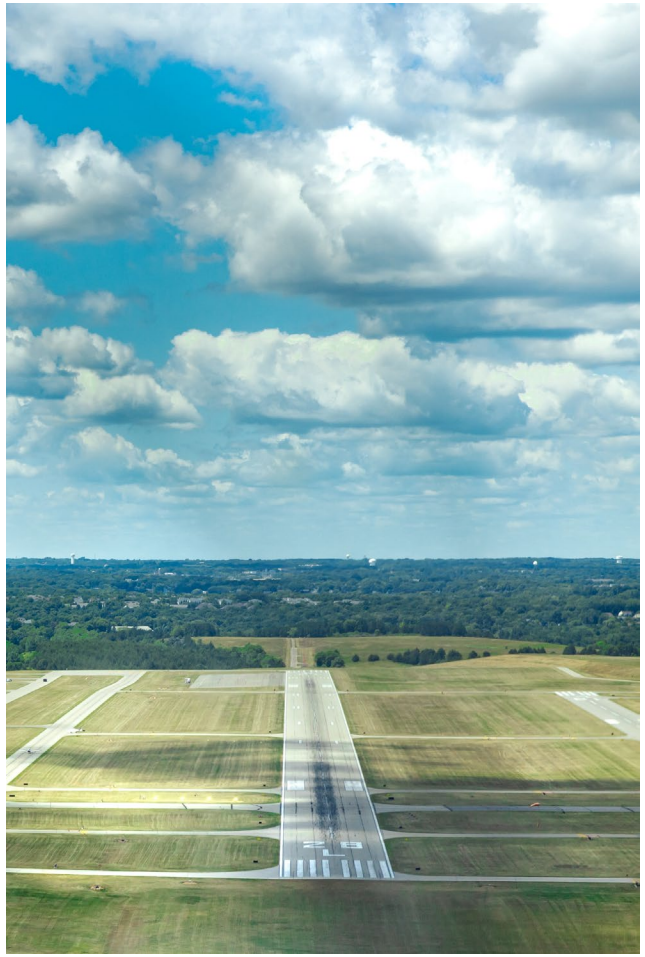
- Blocks the sight of aircraft using a taxiway
- Prevent pilots who are departing the runway from thinking an aircraft is crossing the active runway

What is a Ground Run Up Enclosure?

- A 3-sided, open top structure which can accommodate aircraft performing high-powered engine maintenance run ups
- They are acoustically and aerodynamically designed to dampen noise impact from engine maintenance run ups

Critical Aircraft

- FAA defines “Critical Aircraft” as the most demanding aircraft with greater than 500 annual operations at an airport
- The critical aircraft sets dimensional requirements of the airport
- Accurate critical aircraft determination helps ensure proper development of airport facilities



Critical Design Aircraft

Citation 3
(Previous)

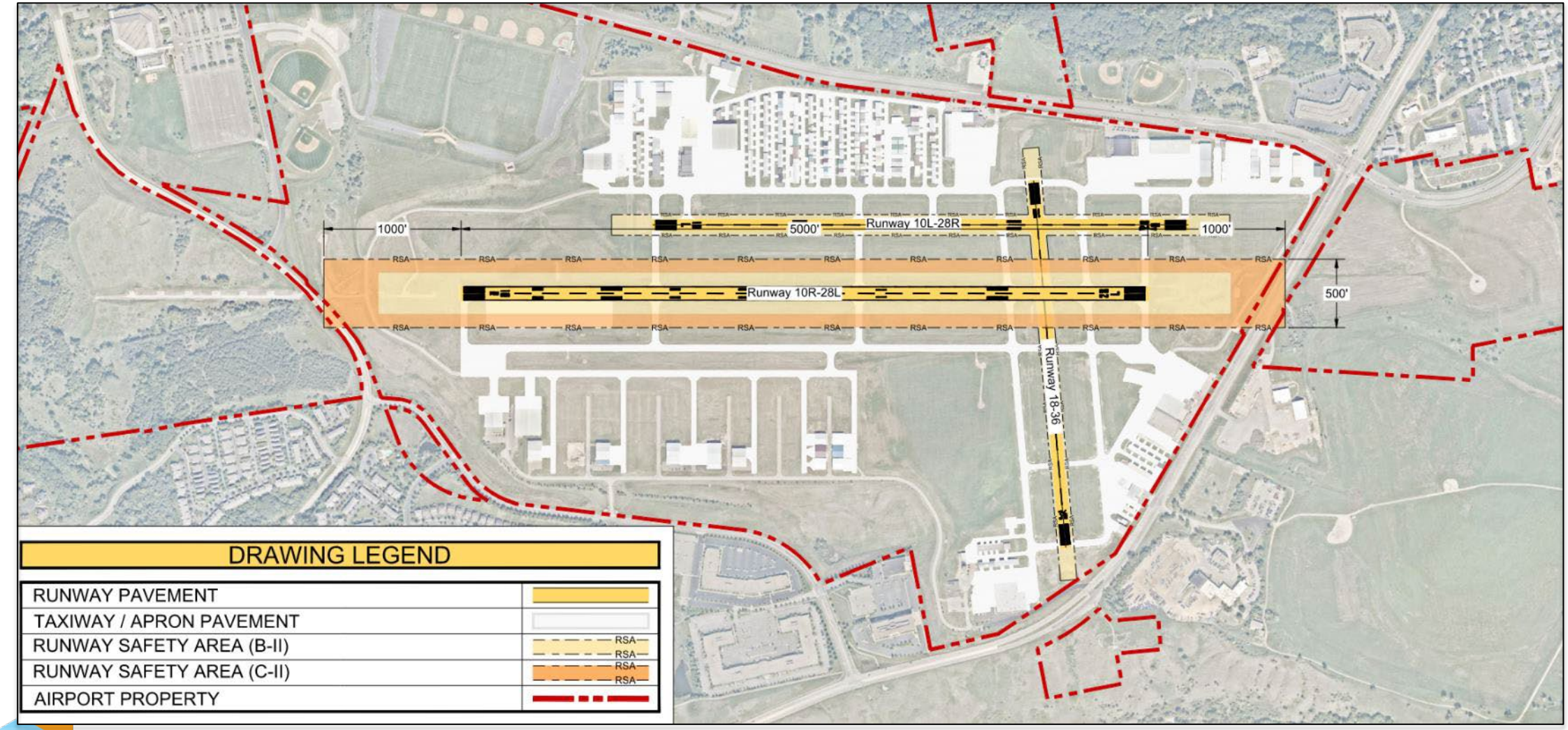
Wingspan: 53.5’
Tail Height: 17.25’
Max. Takeoff Weight: 22,000 lbs

Challenger 350
(Existing and Future)

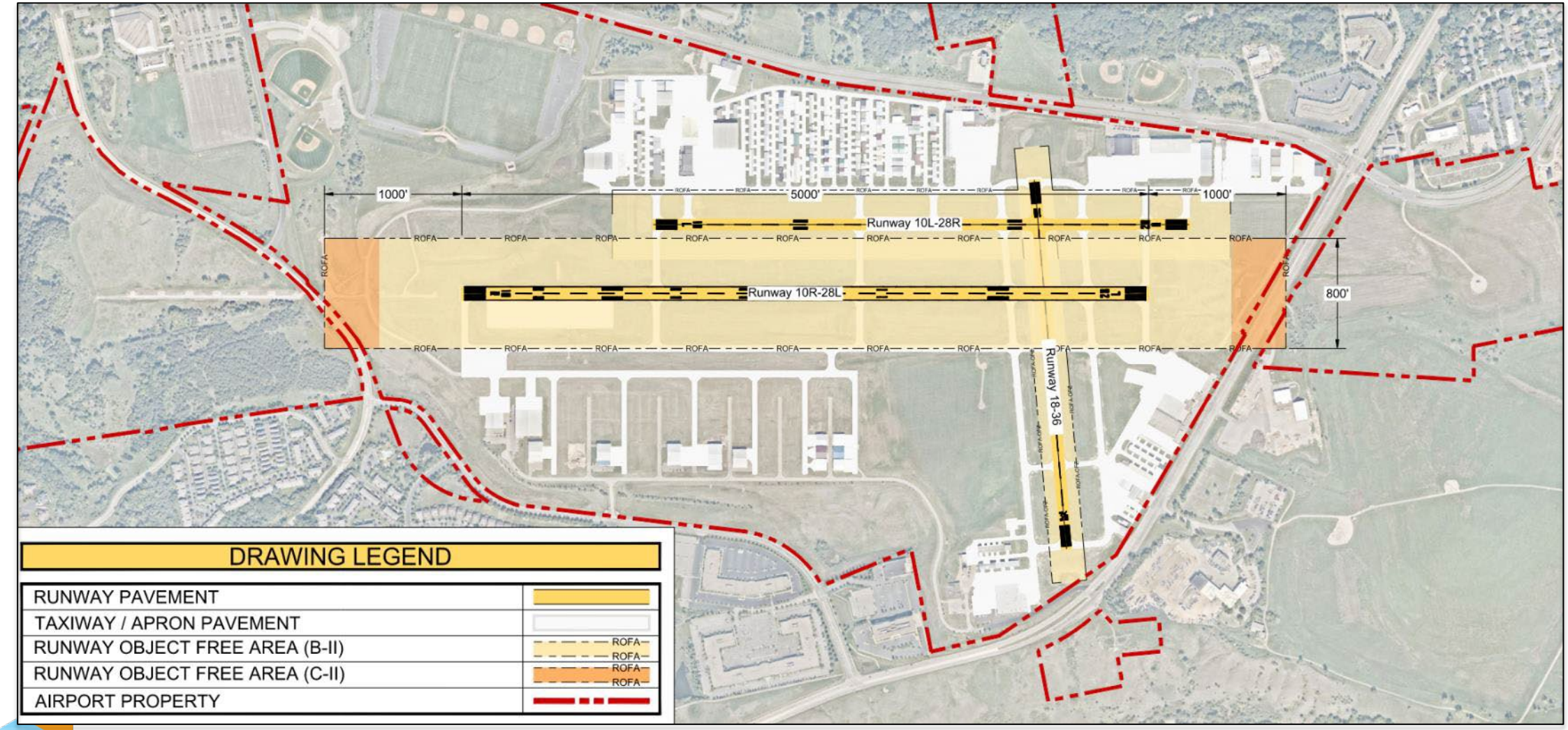
Wingspan: 69’
Tail Height: 20’
Max. Takeoff Weight: 40,600 lbs

Operations by C-II aircraft accounted for approximately 2% of total operations at FCM in 2021

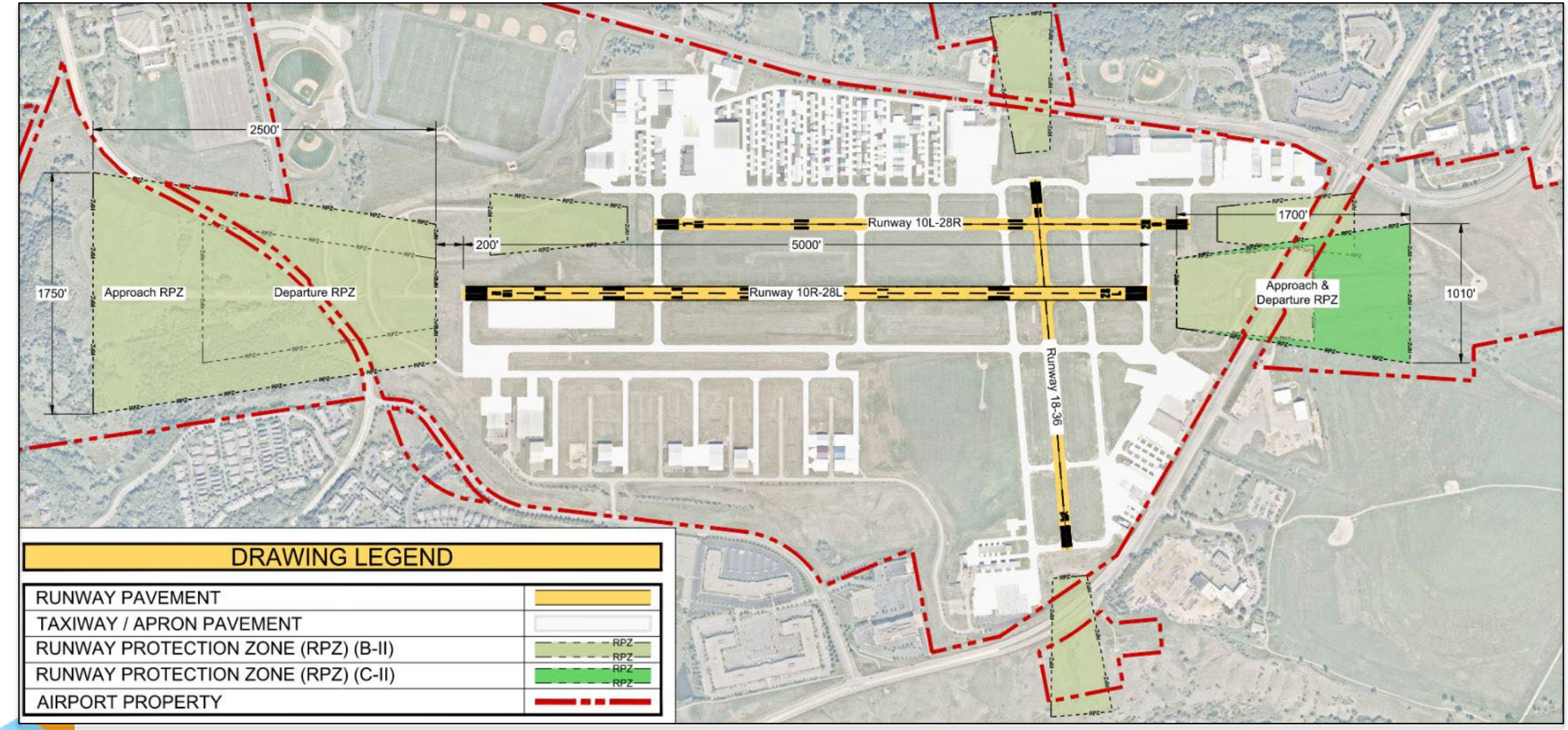
Facility Requirements – Runway Safety Area: C-II



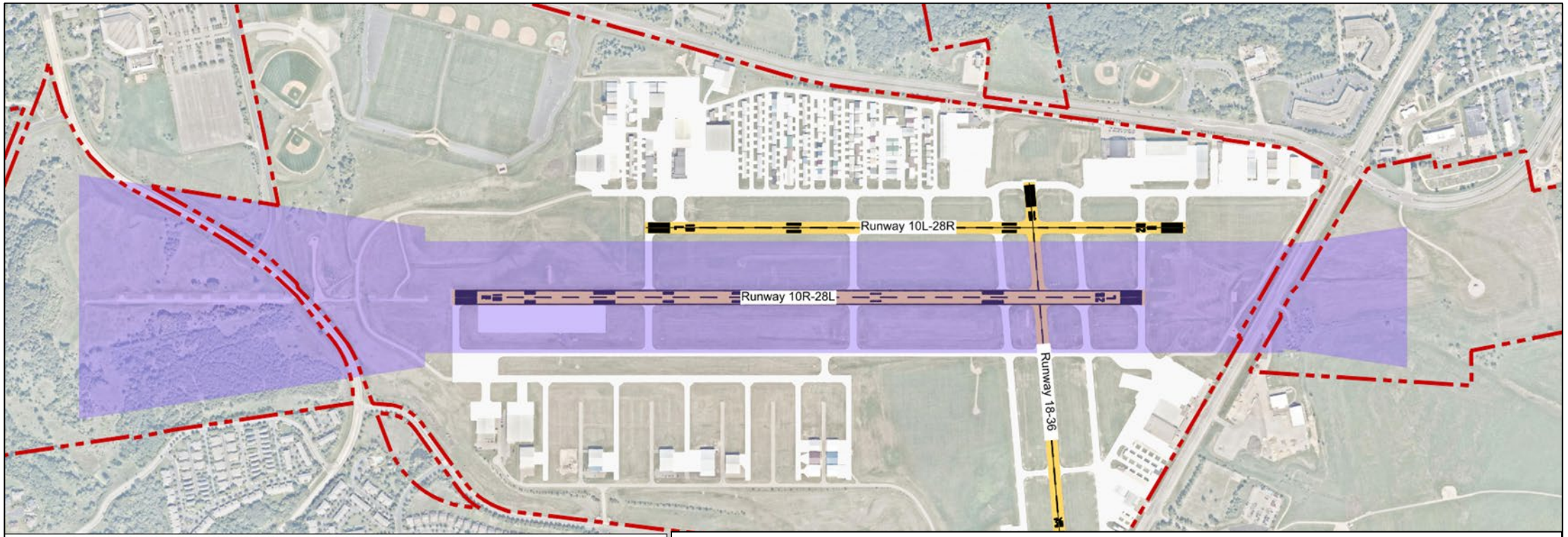
Facility Requirements – Runway Object Free Area: C-II



Facility Requirements – Runway Protection Zone: C-II



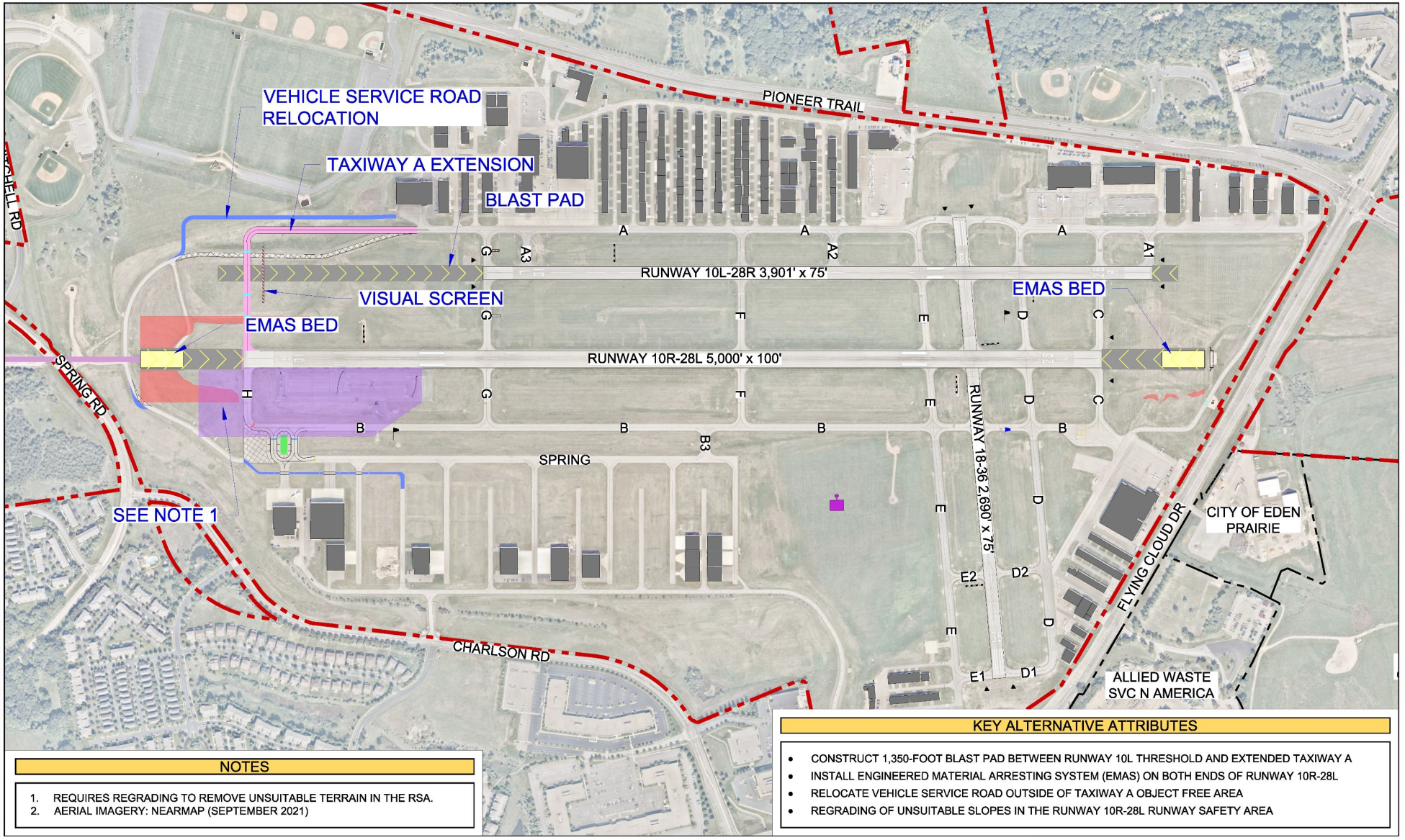
Critical Aircraft Focus Area



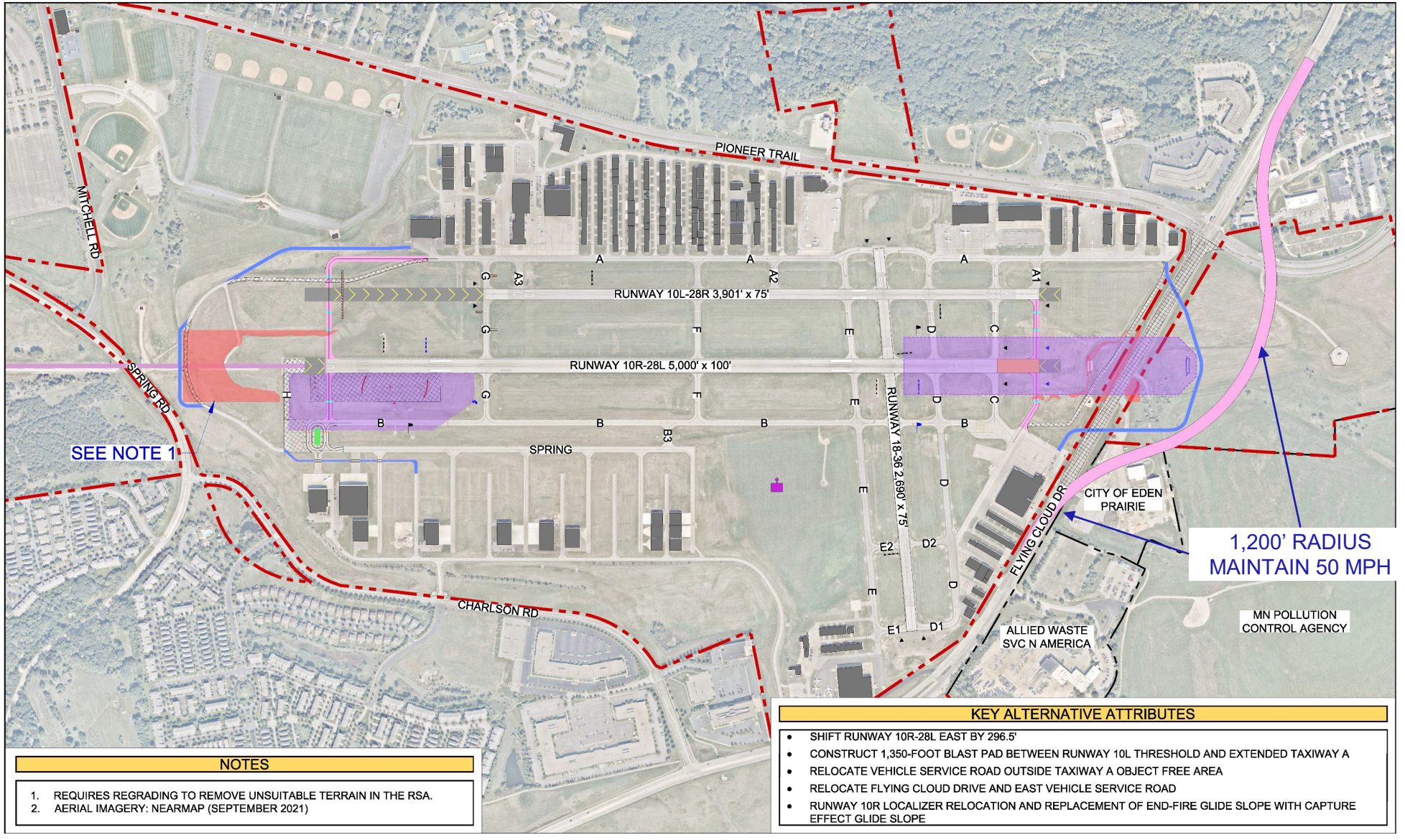
DRAWING LEGEND	
RUNWAY PAVEMENT	
TAXIWAY / APRON PAVEMENT	
C-II FOCUS AREA	
AIRPORT PROPERTY	

- Runway length is capped at 5,000 feet per Minnesota Legislation
- Minnesota Statute Section 473.641 prohibits MAC from extending the runway length at minor airports beyond 5,000 feet.

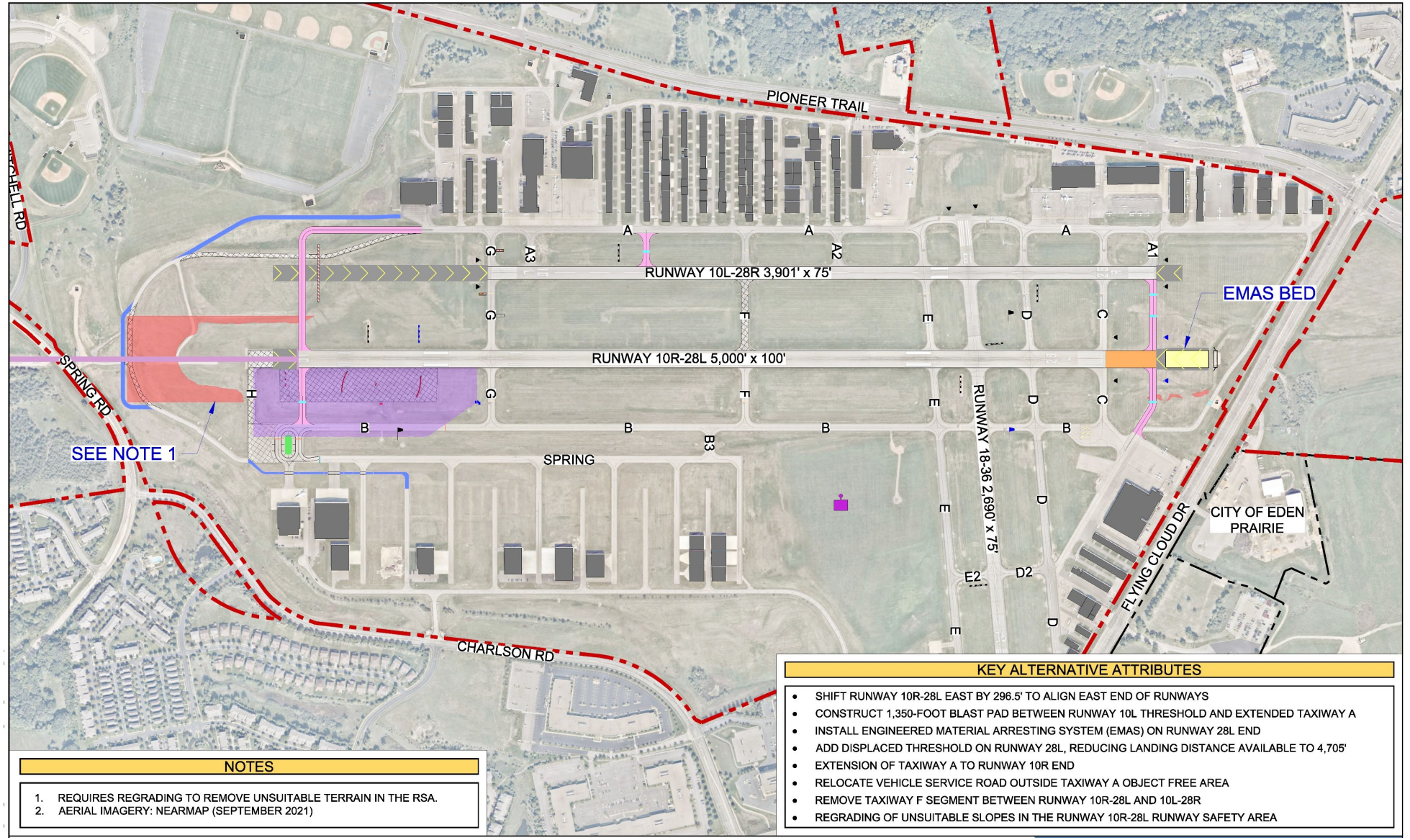
Runway Alternative 1



Runway Alternative 2



Runway Alternative 3



NOTES

1. REQUIRES REGRADING TO REMOVE UNSUITABLE TERRAIN IN THE RSA.
2. AERIAL IMAGERY: NEARMAP (SEPTEMBER 2021)

KEY ALTERNATIVE ATTRIBUTES

- SHIFT RUNWAY 10R-28L EAST BY 296.5' TO ALIGN EAST END OF RUNWAYS
- CONSTRUCT 1,350-FOOT BLAST PAD BETWEEN RUNWAY 10L THRESHOLD AND EXTENDED TAXIWAY A
- INSTALL ENGINEERED MATERIAL ARRESTING SYSTEM (EMAS) ON RUNWAY 28L END
- ADD DISPLACED THRESHOLD ON RUNWAY 28L, REDUCING LANDING DISTANCE AVAILABLE TO 4,705'
- EXTENSION OF TAXIWAY A TO RUNWAY 10R END
- RELOCATE VEHICLE SERVICE ROAD OUTSIDE TAXIWAY A OBJECT FREE AREA
- REMOVE TAXIWAY F SEGMENT BETWEEN RUNWAY 10R-28L AND 10L-28R
- REGRADING OF UNSUITABLE SLOPES IN THE RUNWAY 10R-28L RUNWAY SAFETY AREA

Engine Run Up Locations

- **Pre-takeoff** engine runups occur at runway ends and hold pads, which is consistent with operations at similar airports.
- **Maintenance** engine run ups, which last longer and create more noise than pre-takeoff run ups currently occur in the open on runways and taxiways (highlighted green dots)

Aviation Safety and Noise Abatement Act (ASNA) of 1979

Provides assistance to encourage airport operators to prepare and carry out noise compatibility programs.

Required FAA to establish a single, comprehensive and repeatable system for determining aircraft noise exposure and land use compatibility programs for airports – FAR Part 150*, Airport Land Use Compatibility Planning*

- Noise Exposure Maps (NEM, also called noise contours)
- Noise Compatibility Programs (NCP)
  - Land Use Measures (such airport overlay zoning)
  - Noise Abatement Measures (aircraft procedures)

Airport Noise and Capacity Act (ANCA) of 1990

U.S. Congress Found That:

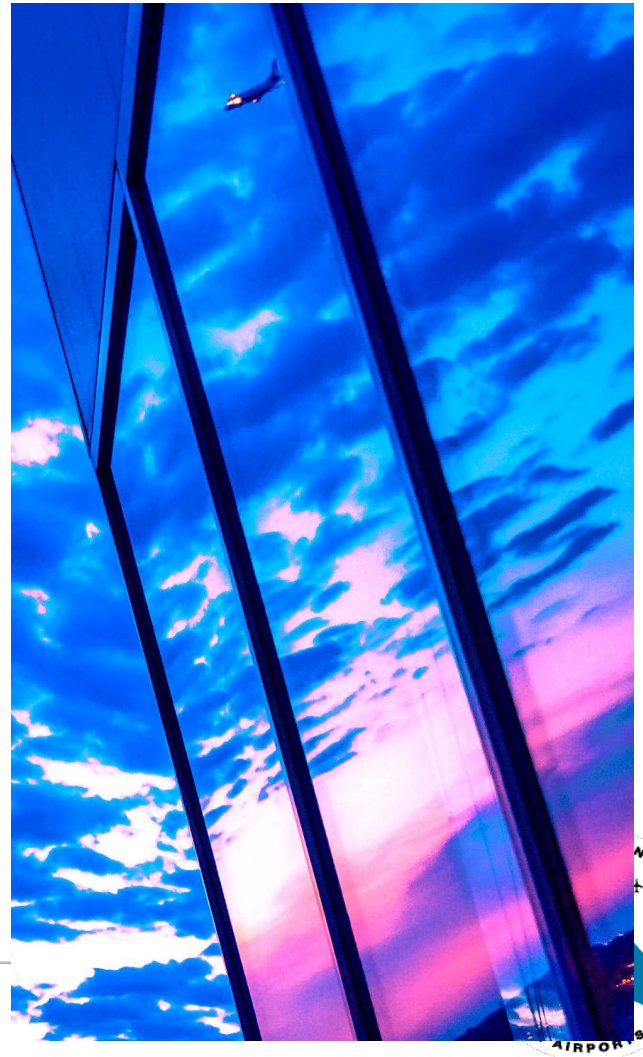
- Aviation noise management is critical
- Community noise concerns have led to uncoordinated and inconsistent restrictions on aviation that impede air transportation
- Local interests in aviation noise management shall be considered in determining national interest
- A noise policy must be carried out at a national level

Results:

- Required all aircraft over 75,000 pounds to meet specific noise standards (Stage 3) by 2000
- All aircraft under 75,000 pounds required to meet Stage 3 standards by 2015
- National program for the review and approval of airport noise and access restrictions
- FAA publishing of FAR Part 161, *Notice and Approval of Airport Noise and Access Restrictions*
- Discriminatory access restrictions are prohibited

Airport Noise and Capacity Act of 1990

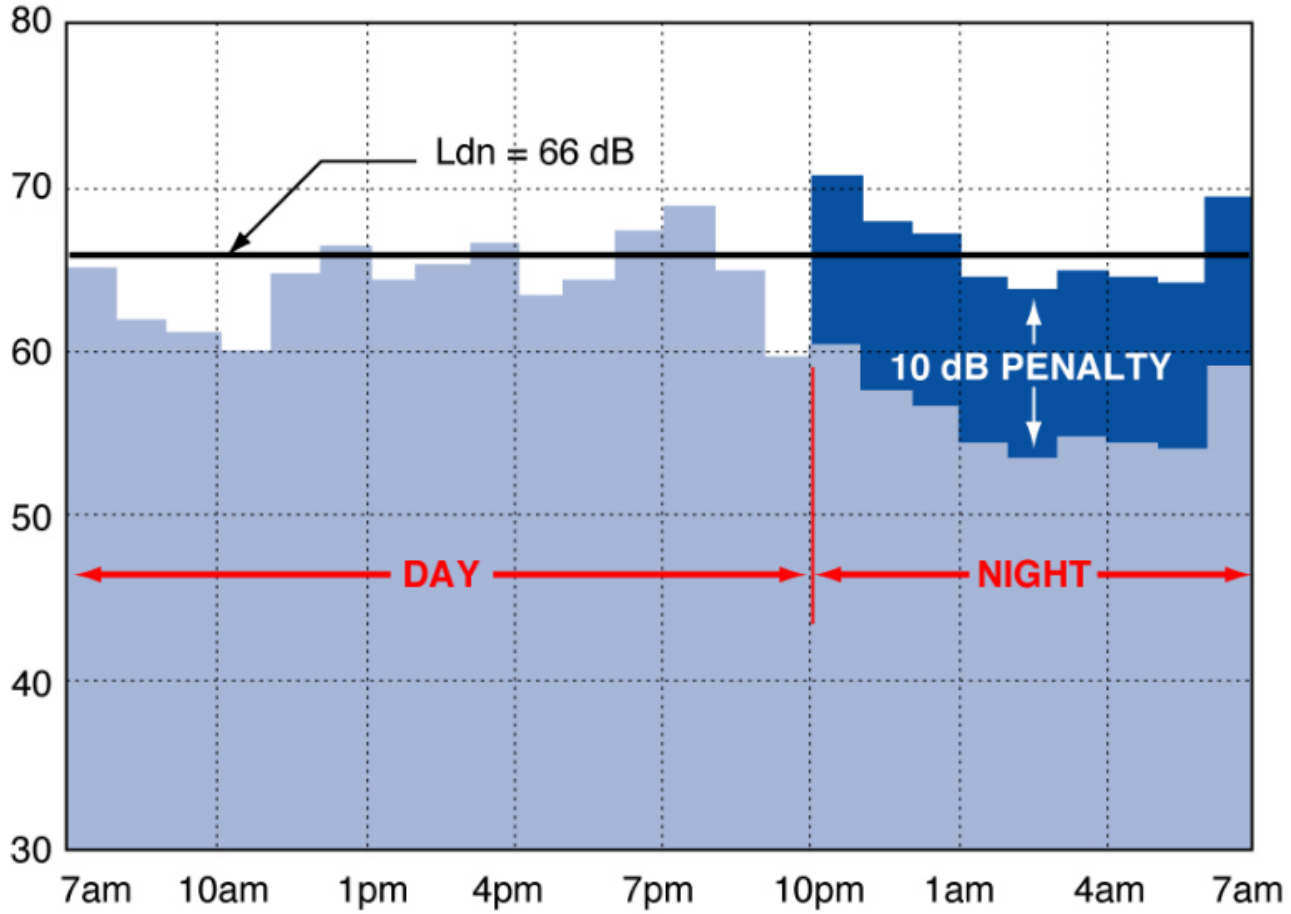
- Airport operators cannot implement access restrictions (such as curfews) without federal approval via the Part 161 study process
- Restricting operations is extremely difficult at a public-use facility
- The FAA has upheld that mandatory restrictions are discriminatory and therefore inconsistent with the conditions of receiving federal grants
- Some airports, such as San Jose and San Diego International, established curfews prior to the 1990 ANCA, which were grandfathered under the Act
- Since 1990 ANCA, the federal government has not granted approval to an airport access restriction



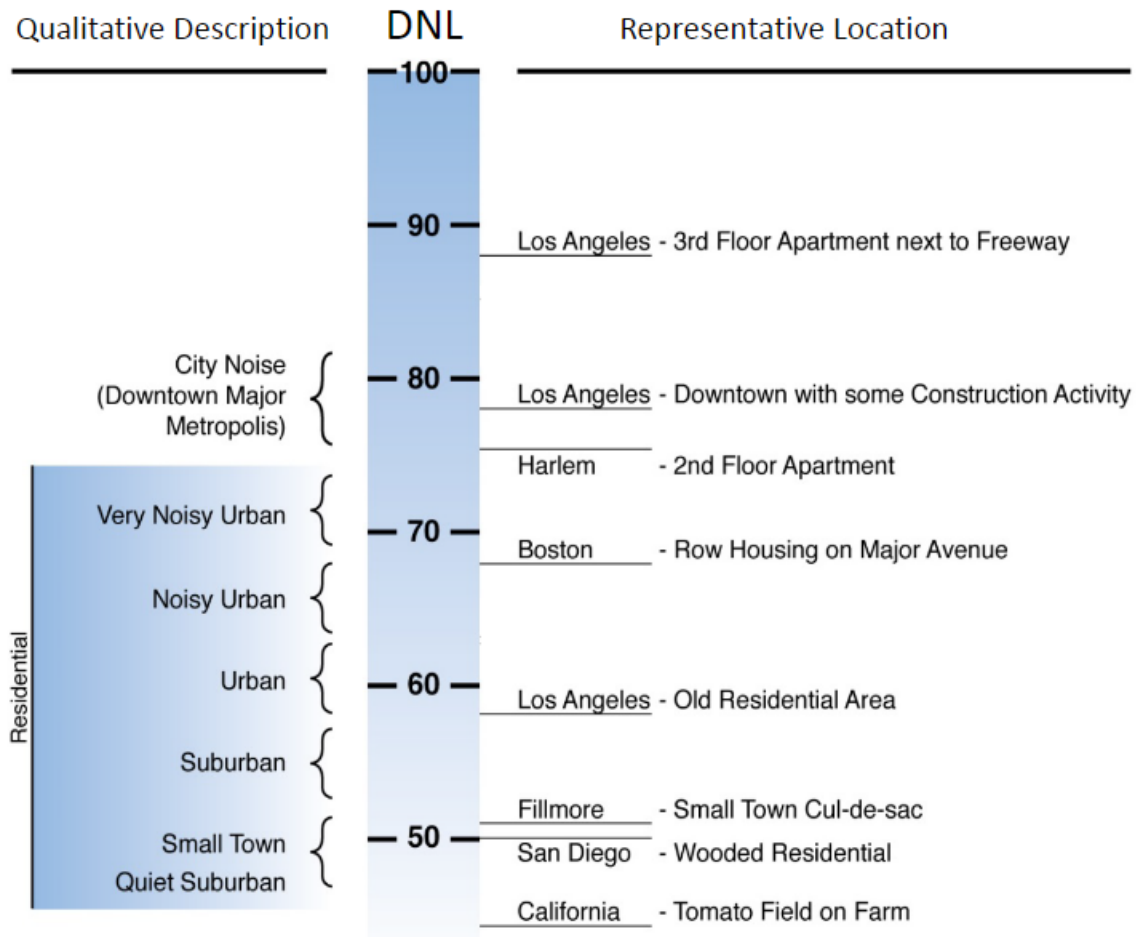
http://www.macnoise.com/aircraft-noise-basics/part-1-who-makes-decisions

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



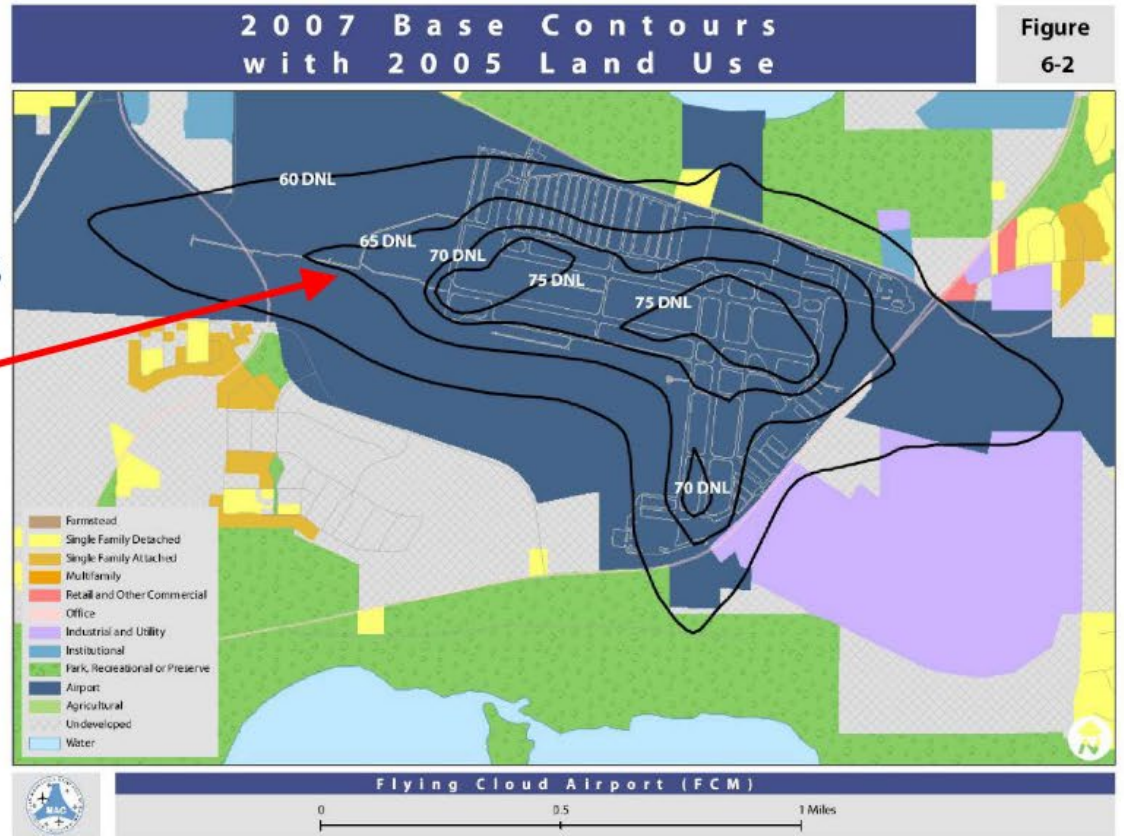
Examples of DNL



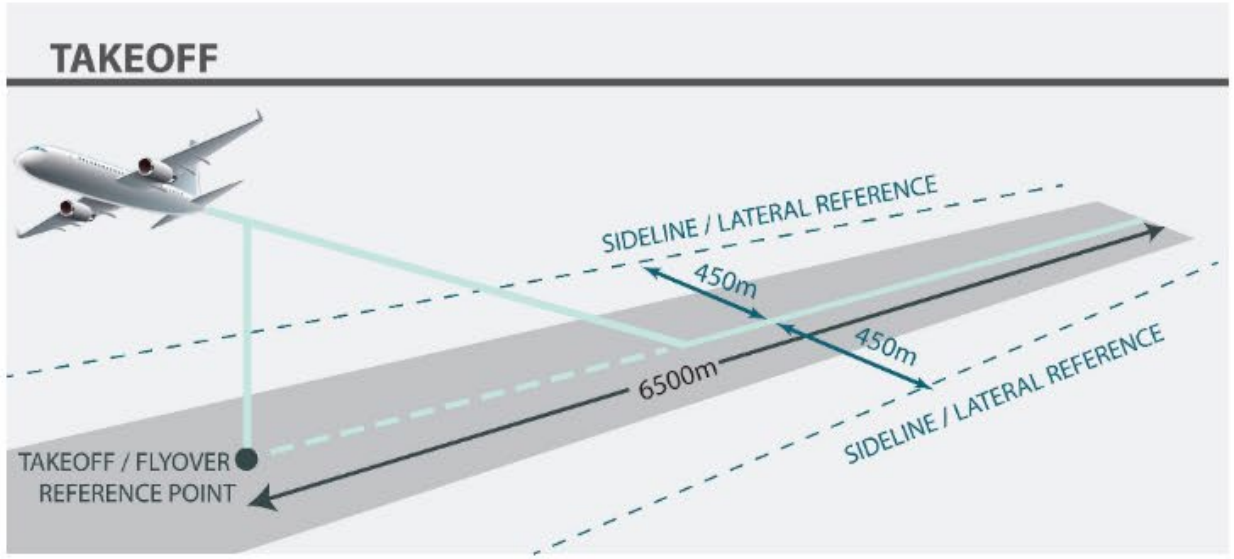
Source: United States Environmental Protection Agency, Information on Levels Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, March 1974, p. 14.

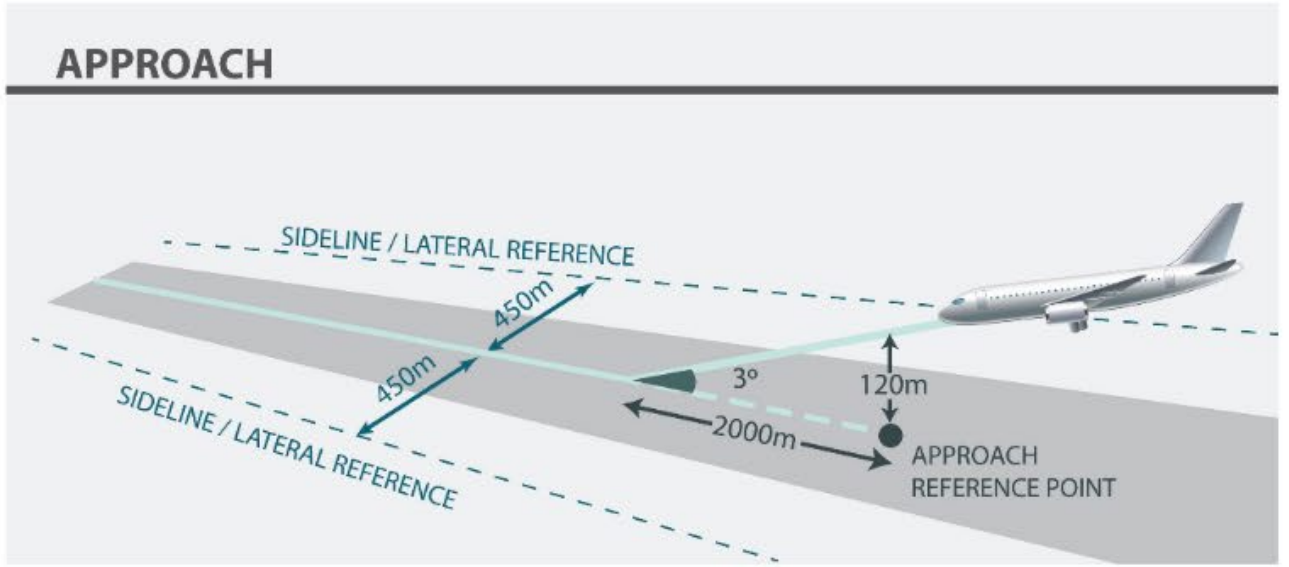
Flying Cloud Airport DNL Contour Set - 2007

- FAA requires consideration of 65, 70 and 75 dB DNL contours
- Key consideration is identification of incompatible land uses within contours
- FAA guidelines consider all land uses compatible below 65 dB DNL



14 CFR Part 36
Aircraft Noise Measurement Points





Locations can vary with aircraft stage, number of engines, and lift mechanism. Some types are certificated based on level flyover.

Noise Certification Levels: Predominant Aircraft at Flying Cloud Airport

				Noise Levels for Transport Category and Jet Airplanes (Part 36 Appendix B)				Noise Levels for Propeller-Driven Small Airplanes (Part 36 Appendix F and G)	
	Aircraft Type	Aircraft Category	Max Takeoff Weight (lbs)	Noise Stage	Landing (dB)	Sideline (dB)	Takeoff (dB)	Overflight (dB)	Takeoff (dB)
	Beechcraft King Air 200	Twin Turboprop	12,500	N/A				74.3	83.0
	Beechjet 400	GA Jet	16,300	3	91.0	93.2	86.3		
	Cirrus Design SR22	Single Engine Piston	3,400	N/A					83.5
	Cessna 560XL Citation Excel	GA Jet	20,200	5	93.1	84.9	72.2		
	Cessna 560 Citation V	GA Jet	16,630	4	85.7	95.9	82.9		
	Cessna 172 Skyhawk	Single Engine Piston	2,454	N/A					69.6
	Aero Commander	Two Engine Piston	6,750	N/A	No data available				

Sources: EASA TCDSN June 2018 – Type Certificate Data Sheet for Noise Files and http://www.flugzeuginfo.net/