

PLEASE NOTE:

The concept numbers have changed.

**Please see next slide with previous
concept numbers correlated with current
numbers.**



Lmax Noise Levels at Sample Locations

Previous Concept numbers C1 C5 C2 C4 C6

Receptor Location	ALPIN	FAA KICNE	C1 RNAV SE	C2 RNP SE	C3 RNAV SW	C4 RNP SW	C5 RNP East	FAA KICNE	C1 RNAV SE	C2 RNP SE	C3 RNAV SW	C4 RNP SW	C5 RNP East
	Existing	S East	S East	S East	S West	S West	Corkscrew	S East	S East	S East	S West	S West	Corkscrew
Moulton (Spring Gulth/Zenith Dr)	85	85	85	84	84	83	84	0	0	-1	0	-2	0
280 S Moulton Loop	79	81	80	78	76	71	78	2	1	0	-2	-8	-1
Bar B Bar (Fox Trail)	79	79	77	74	77	71	74	0	-2	-5	-3	-9	-5
Bar B Bar (Oak Grass)	80	75	72	70	79	72	69	-5	-8	-10	-1	-8	-11
Bar B Bar (Blue Stem)	74	80	80	79	71	66	79	6	6	6	-3	-8	5
Zenith Rd/Sylvia	77	66	63	61	78	72	60	-11	-15	-16	1	-5	-17
Lower Cascade RD	65	58	56	55	69	76	55	-7	-9	-10	4	11	-10
End of Red Tail	60	53	51	50	63	69	50	-7	-9	-10	3	8	-11
Queens Lane	58	52	50	48	63	65	48	-7	-9	-10	5	6	-11
Golf Course (East Side)	69	76	71	67	65	59	65	7	2	-2	-4	-10	-4
W Kings/W Zenith	72	64	60	57	69	67	56	-9	-12	-15	-3	-6	-16
W Kings/N Bear Lakes	66	56	53	51	71	71	50	-10	-13	-15	5	5	-16
Spring Gulch/Gros Ventre	68	64	58	56	62	63	54	-4	-9	-11	-6	-5	-13
Bar BC Lower	66	51	48	46	68	67	45	-15	-18	-20	2	1	-21
End of Gros Ventre Levee Rd	60	47	45	43	66	61	42	-13	-16	-17	6	0	-18
Spring Creek Ranch	51	63	57	53	45	58	35	11	5	2	-6	6	-17
Hwy 22/Walton Ranch Rd	61	55	38	36	66	54	29	-6	-23	-25	5	-7	-32
Hwy 22/N Bar Y	66	64	39	38	63	60	28	-1	-26	-28	-3	-5	-37
Kelly	31	31	31	31	31	31	55	0	0	0	0	0	24
GTNP Gros Ventre	60	69	75	78	57	53	77	10	16	18	-2	-6	18
Elk Refuge (North)	37	38	40	40	37	37	54	1	3	3	0	-1	17
Elk Refuge (Central)	38	42	44	50	38	36	67	4	6	12	-1	-2	29
Elk Refuge (South)	42	50	67	66	38	46	39	8	25	24	-4	4	-3
Town (Town Square)	47	52	59	57	41	52	32	6	12	11	-5	6	-15
Town (May Park)	41	47	66	65	37	46	32	5	24	23	-5	5	-9

Change in Single Event Lmax (dBA) Noise Levels
(Departing A319 Aircraft)

- +10 dBA or greater increase
- + 4 to +9 dBA increase
- -3 to + 3 dBA change
- -4 to -9 dBA decrease
- -10 dBA or greater decrease

is there noise sensitive land uses with a noticeable decrease in single event noise (-4 to -9 dBA decrease)						
Is there noise sensitive land uses with a very noticeable decrease in single event noise (+10 dBA or greater)						
Is there noise sensitive land uses with a noticeable increase in single event noise (+4 to +9 dBA increase)						
Is there noise sensitive land uses with a very noticeable increase in single event noise (+10 dBA or greater)						

South Departure Flight Procedure Evaluation

Jackson Hole Airport
June 29, 2022



Presentation Outline

The presentation will show the operational and noise analysis results through a series of questions and answers based upon information requested by the committee



Questions?

- ❖ What are the proposed flight procedure options?
- ❖ What altitude are aircraft flying today?
- ❖ What are the air traffic constraints with turning left?
- ❖ How would the noise change and what is the potential perception?
- ❖ What is the noise from an individual flight on each procedure?
- ❖ How would these options be studied in the Environmental Process?
- ❖ Summary and Next Steps



Question 1

- ❖ What are the proposed flight procedure options?
- ❖ What altitude are aircraft flying today?
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Flight Procedures

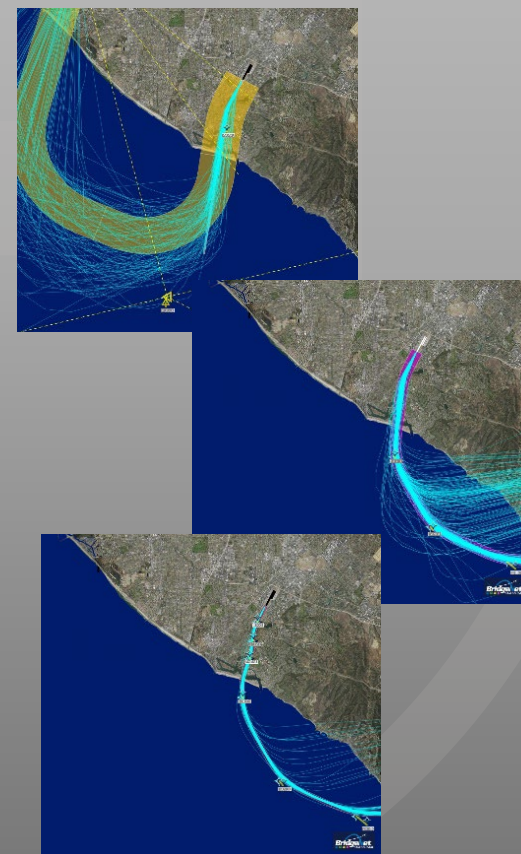
	PROCEDURE						
	ALPIN Existing	FAA KICNE S East	C1 RNAV SE S East	C2 RNP SE S East	C3 RNAV SW S West	C4 RNP SW S West	C5 RNP East Corkscrew
Type of Procedure	CONV	RNAV	RNAV	RNP	RNAV	RNP	RNP

CONVENTIONAL – The current ALPIN is a **conventional** procedure that uses a ground-based radio signal NAVAID to provide aircraft positional guidance. The FAA is replacing these procedures with modern RNAV satellite-based procedures. Many of these conventional procedures will remain for some period of time as backup procedures or for use by smaller non RNAV equipped aircraft.

RNAV – RNAV procedures are satellite-based procedures that use the signal from GPS to provide guidance flying GPS defined waypoints. The RNAV concepts at JAC involve flying runway heading to an altitude of around 500 feet and then turning and flying to the first and subsequent waypoints. Flights will show a variation in the initial turn due to the differences in climb rates until reaching the first waypoint where then the path becomes more concentrated.

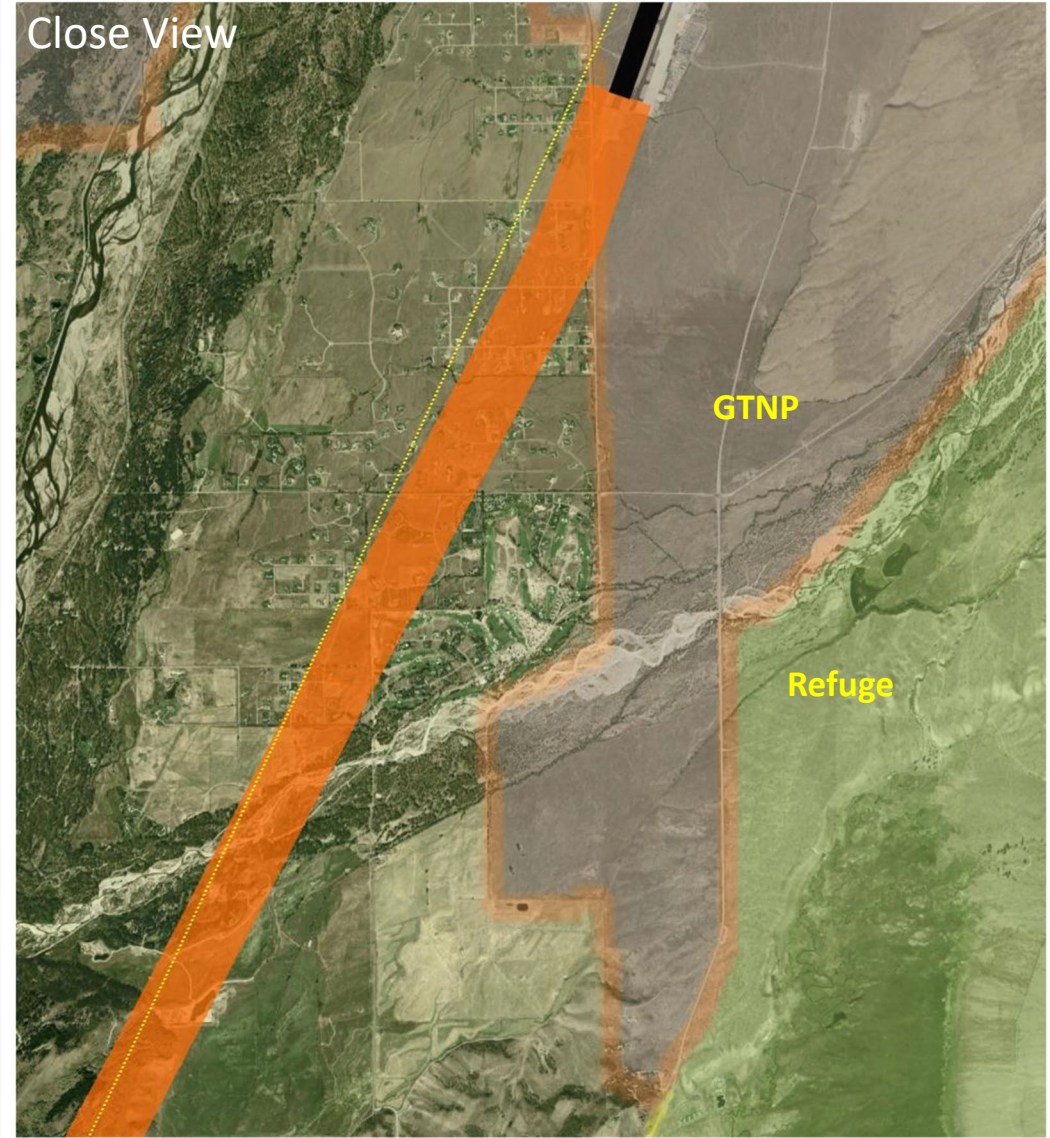
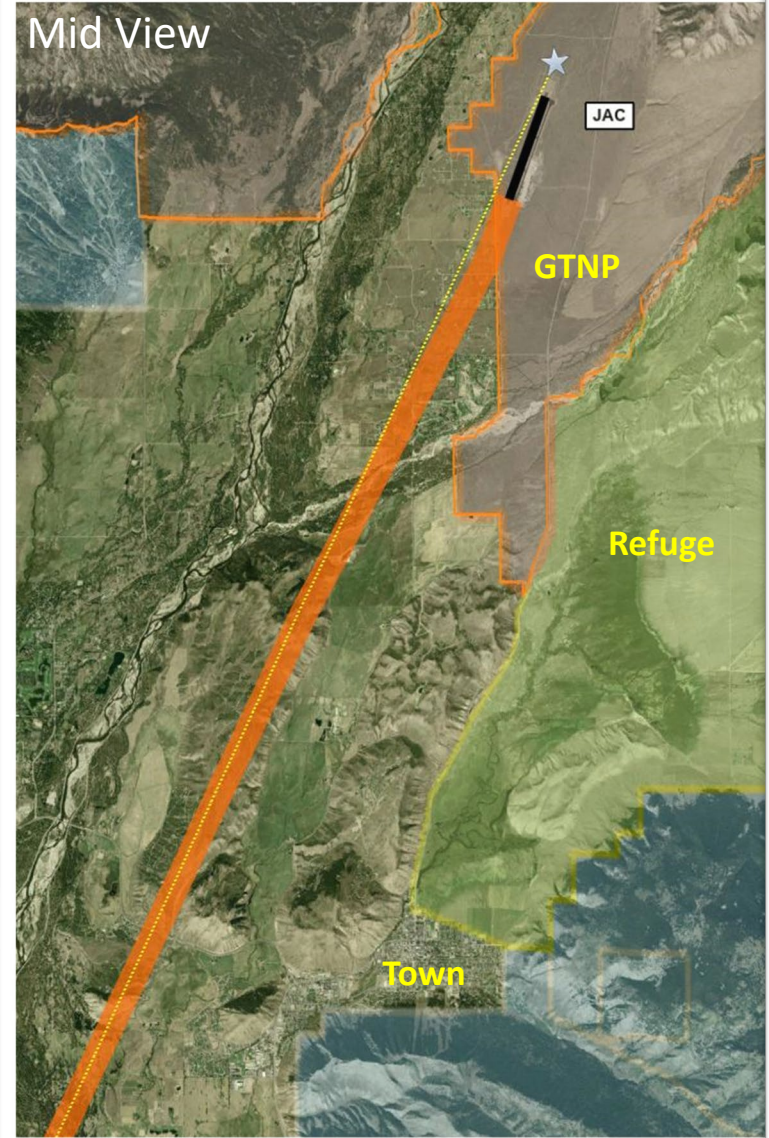
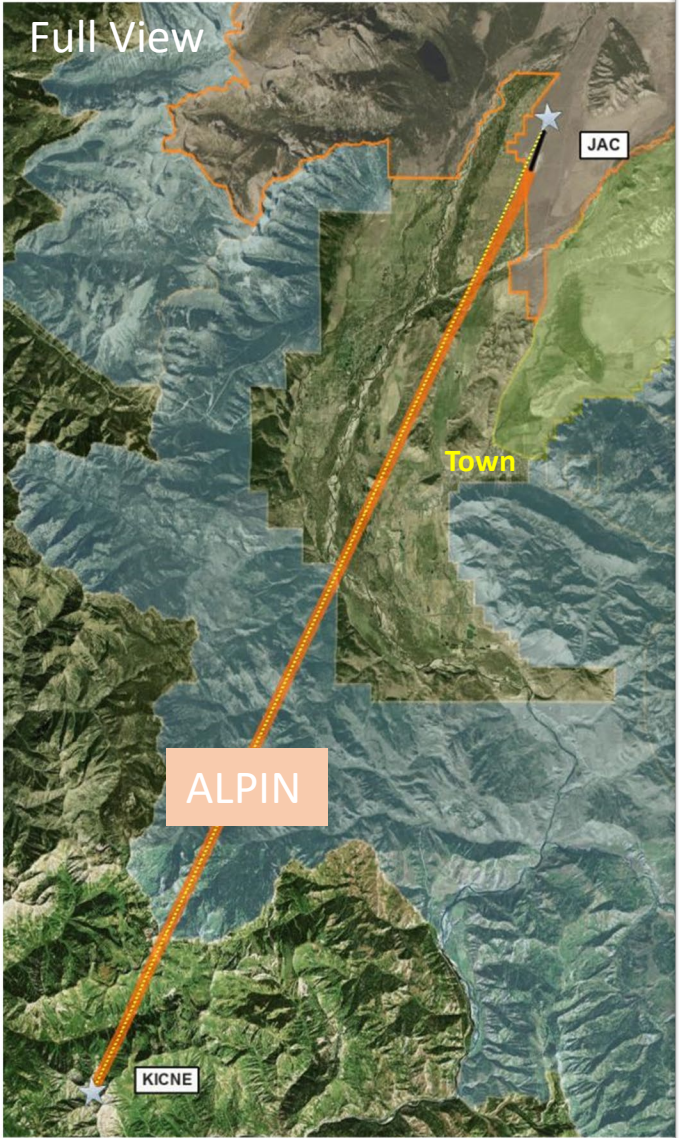
RNP – RNP is a type of RNAV procedure that allows an aircraft to fly a straight or curved path with a very high level of precision. They are more commonly used for arrivals with only limited use for departures at airports where the very high precision provides added value. To fly an RNP procedure, an aircraft must be equipped with the technology, the pilot trained in using the technology and the operator has a reporting system on its use. An aircraft flying an RNP will generally fly the exact path of the procedure in a very precise manner. Departure RNP's not be available in significant numbers for a number of years.

Note: All three types of procedures require the aircraft to fly runway heading to approximately 500 feet before the initial turn.



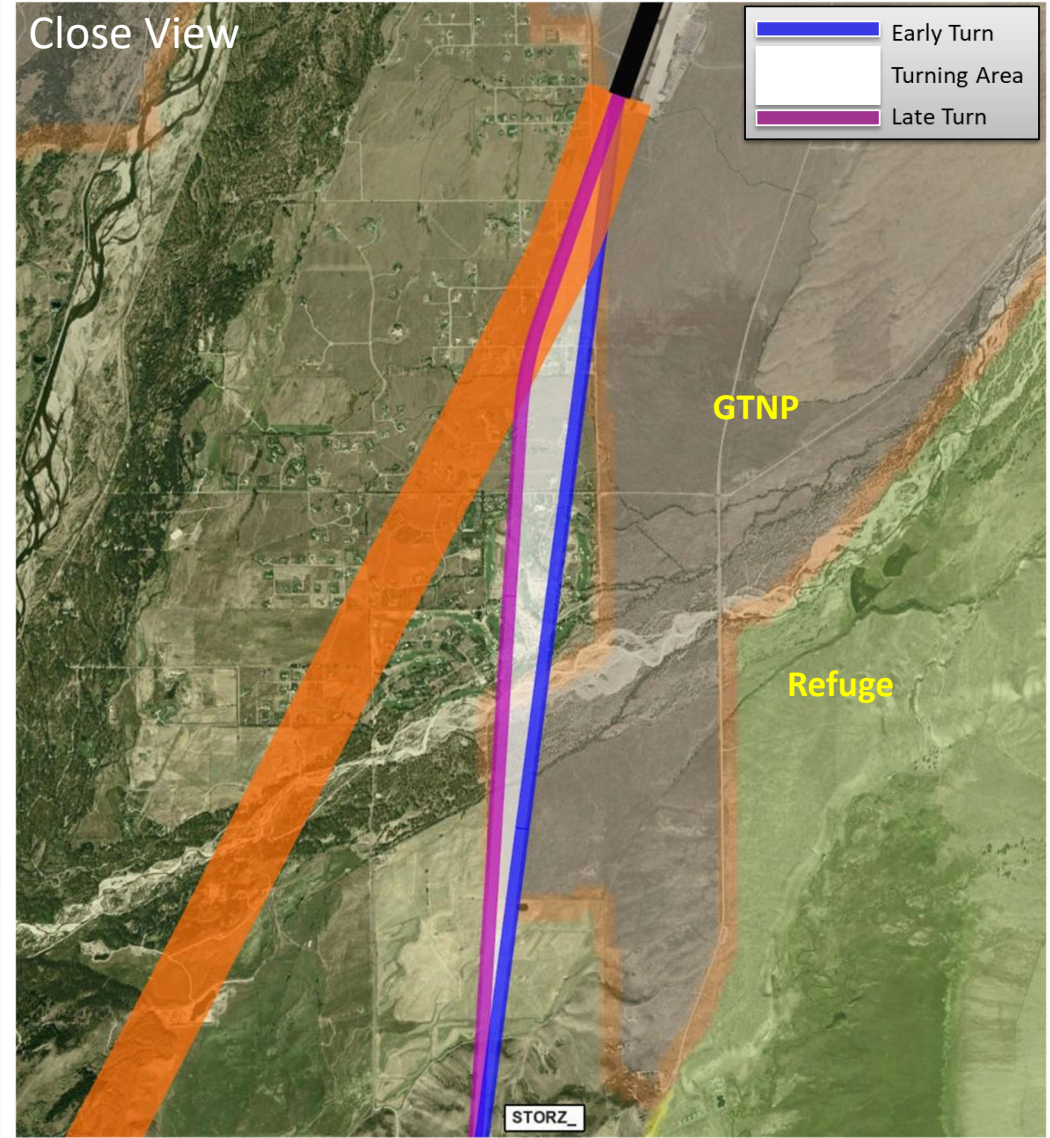
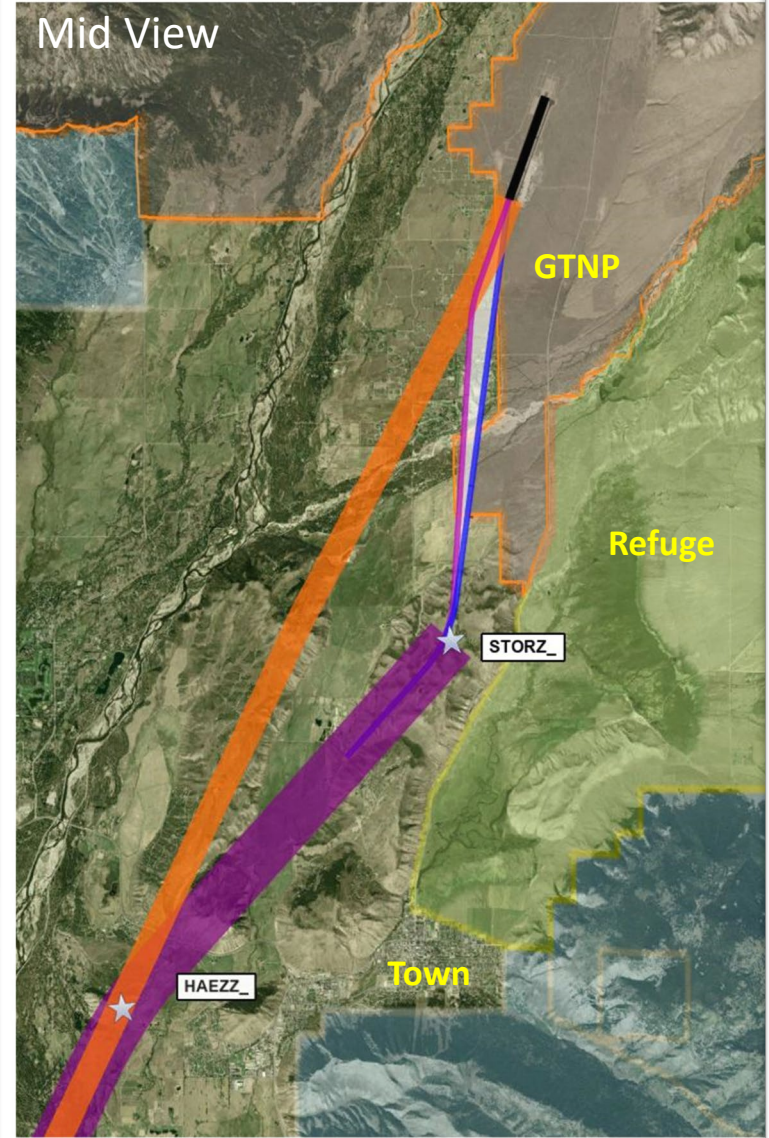
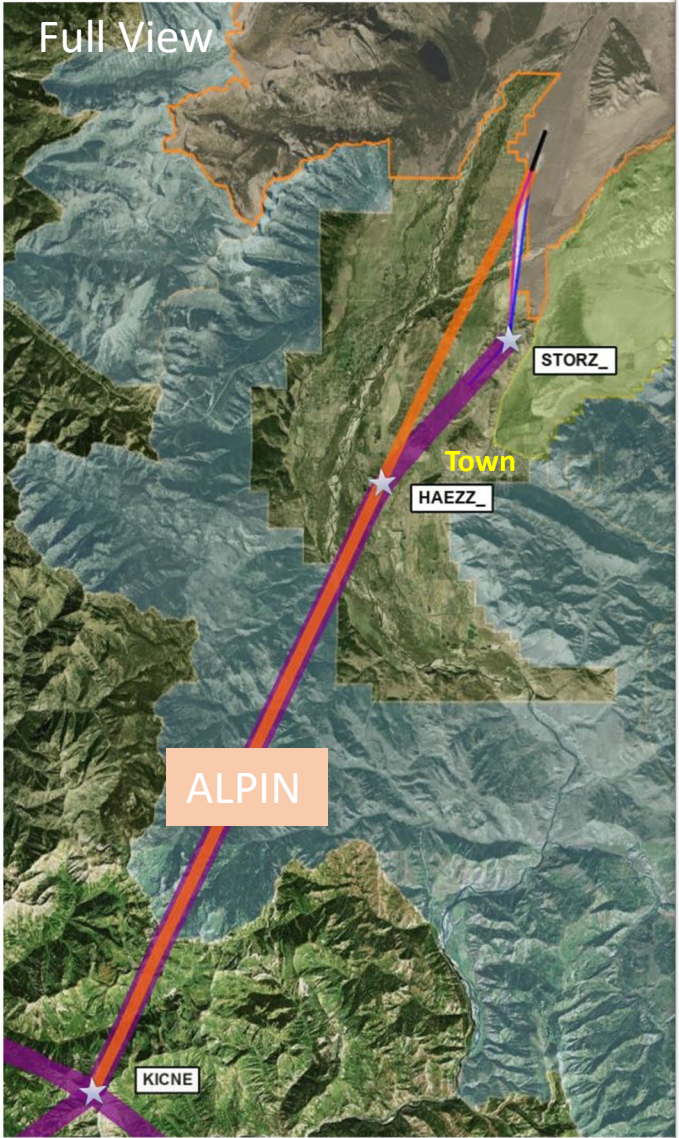


Existing ALPIN



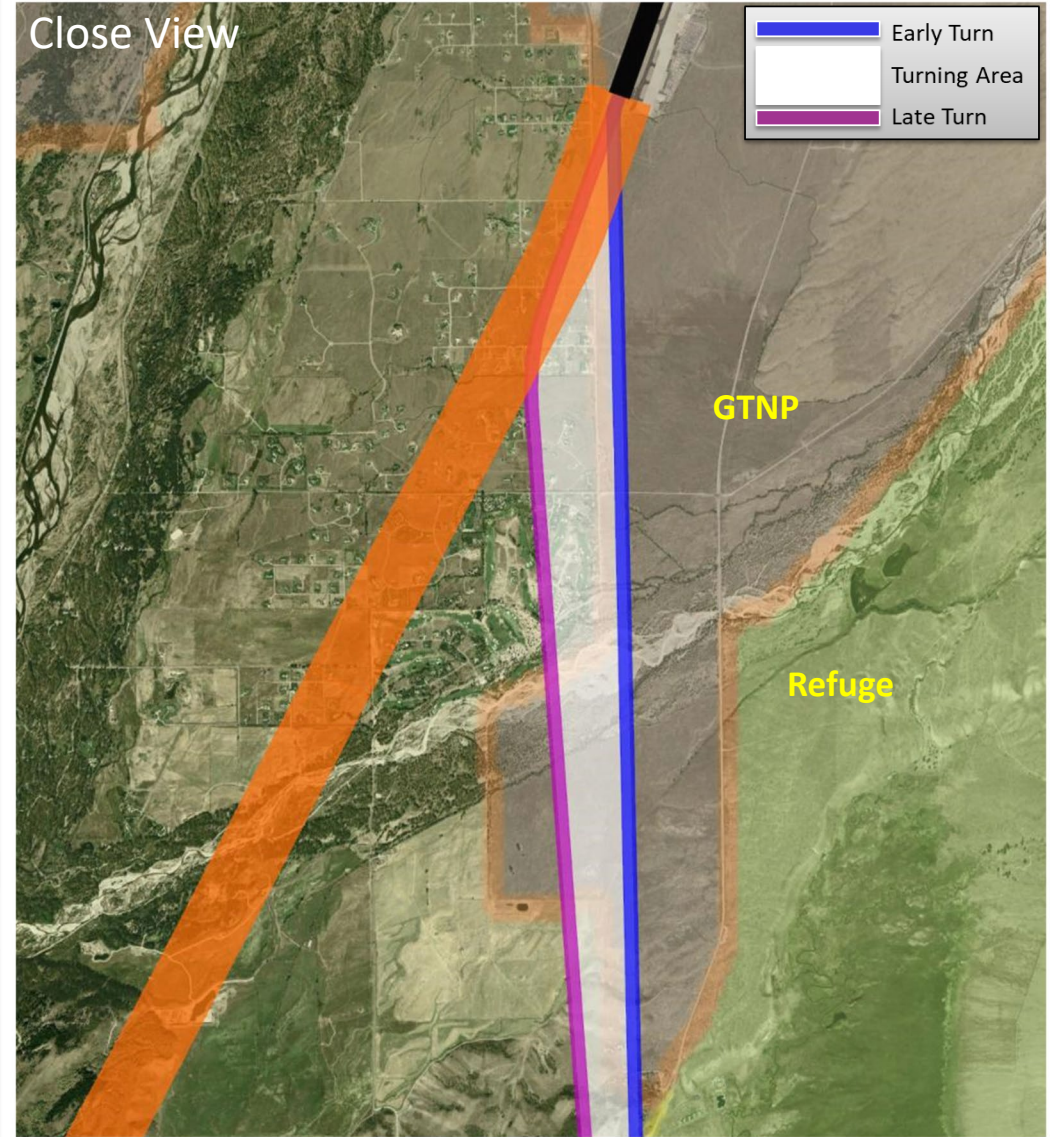
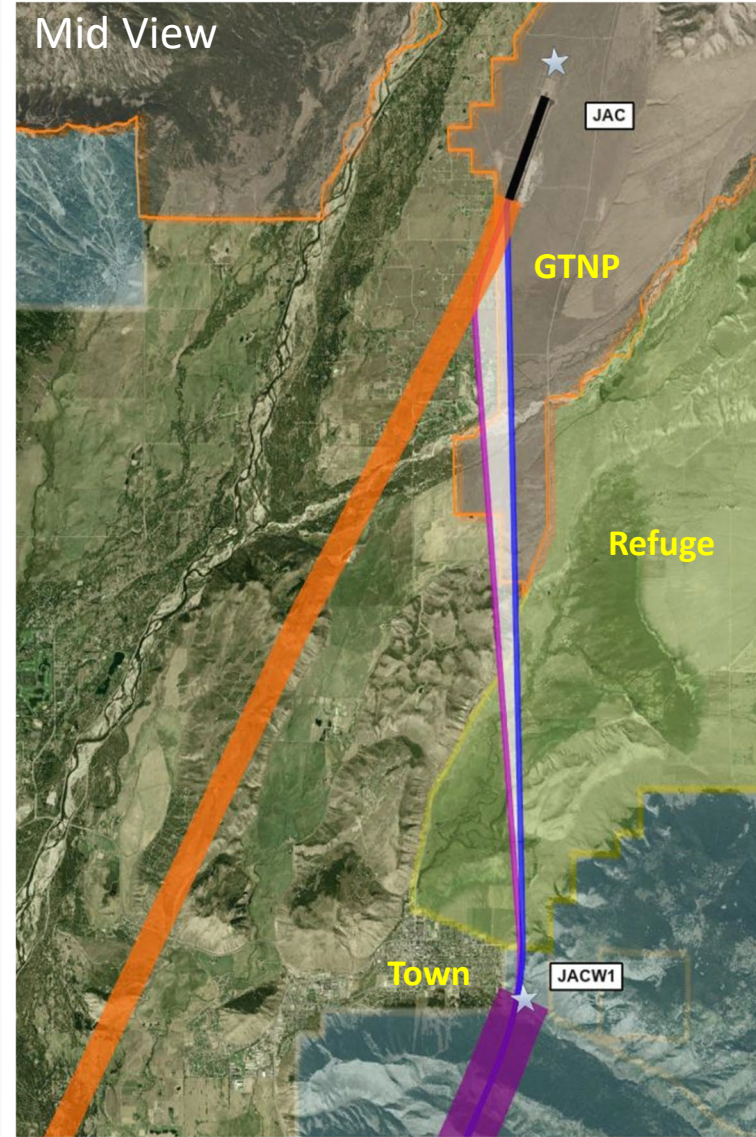
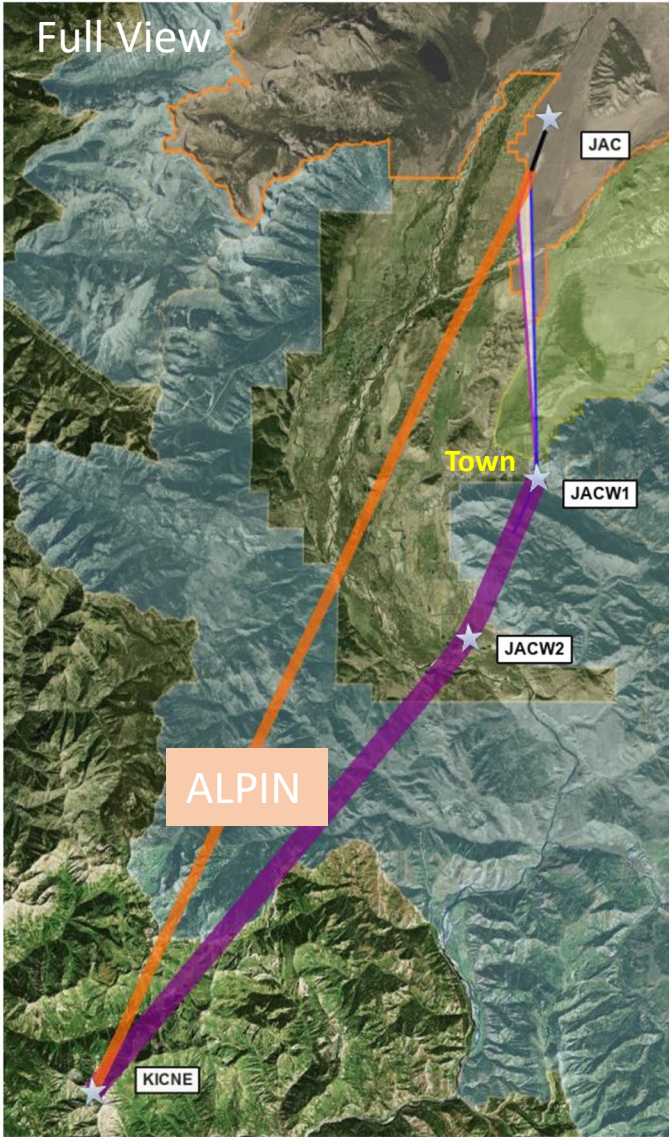


FAA KICNE ONE (RNAV)



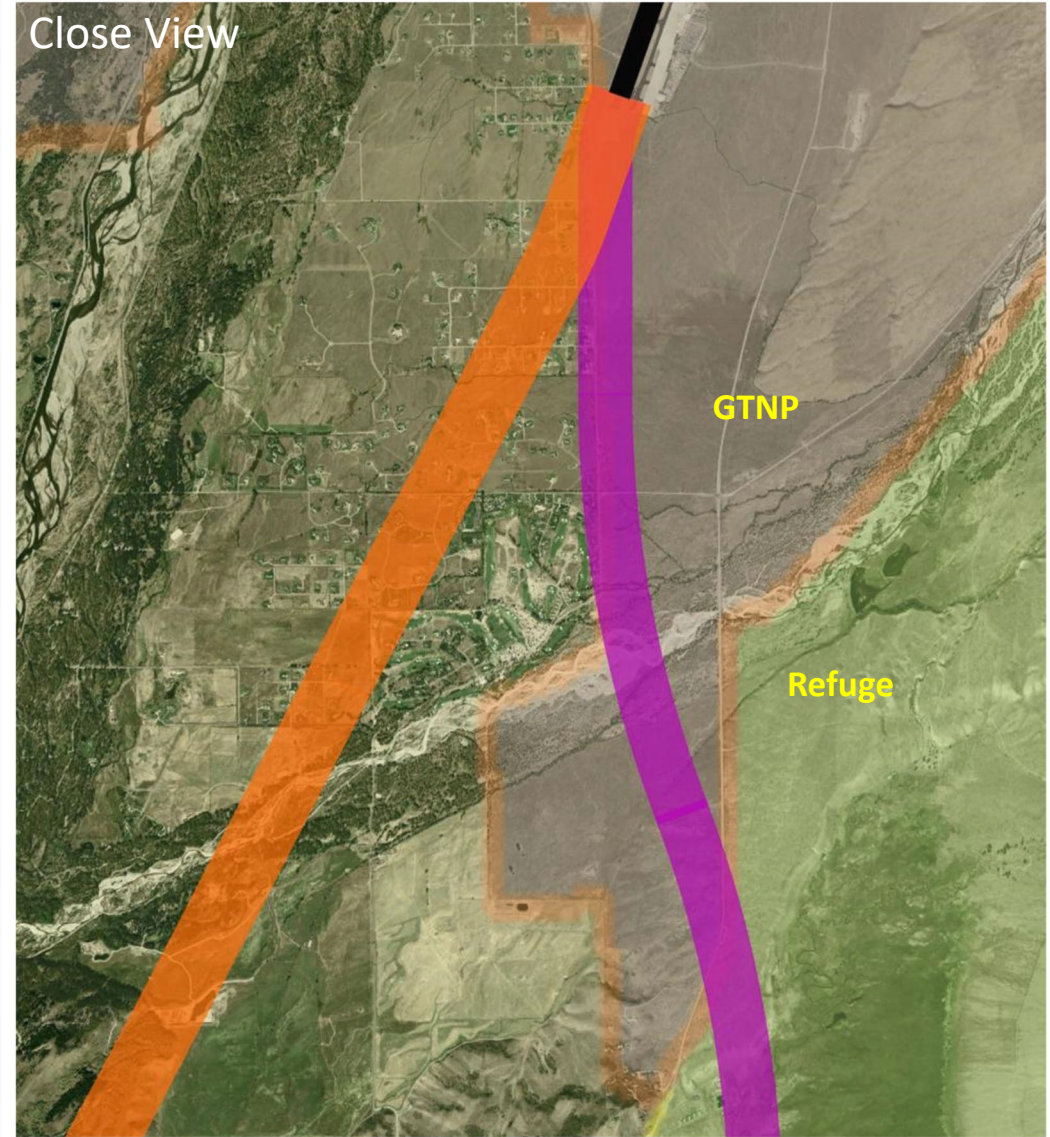
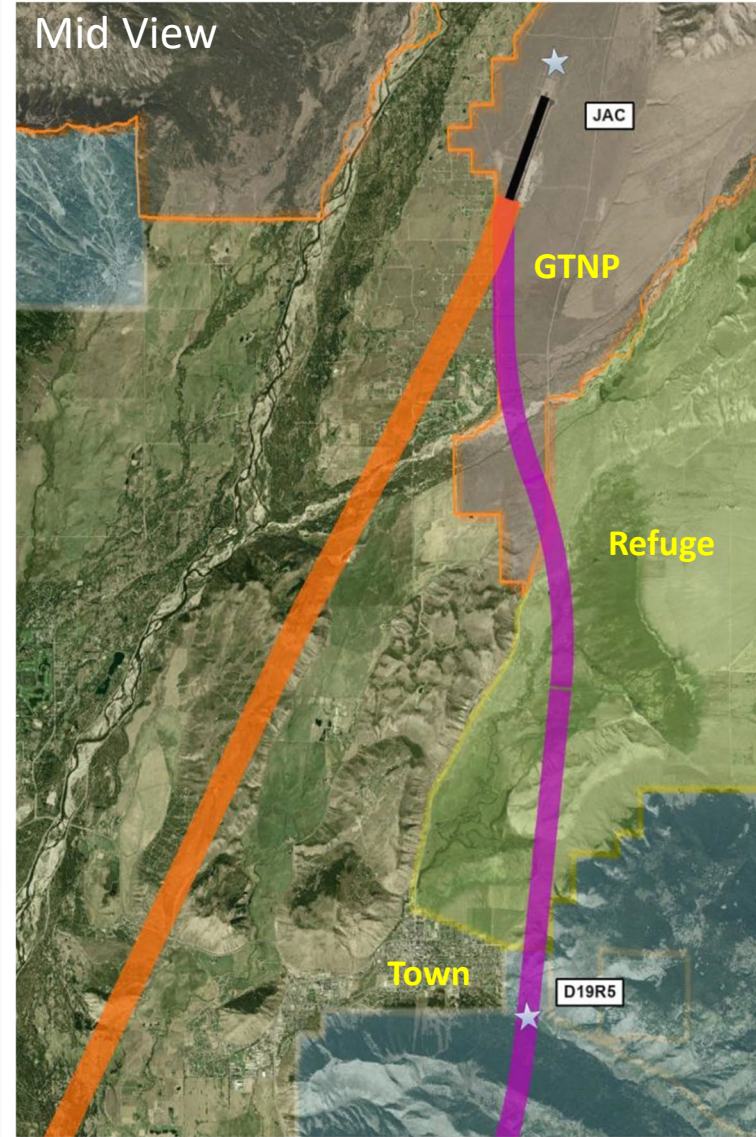
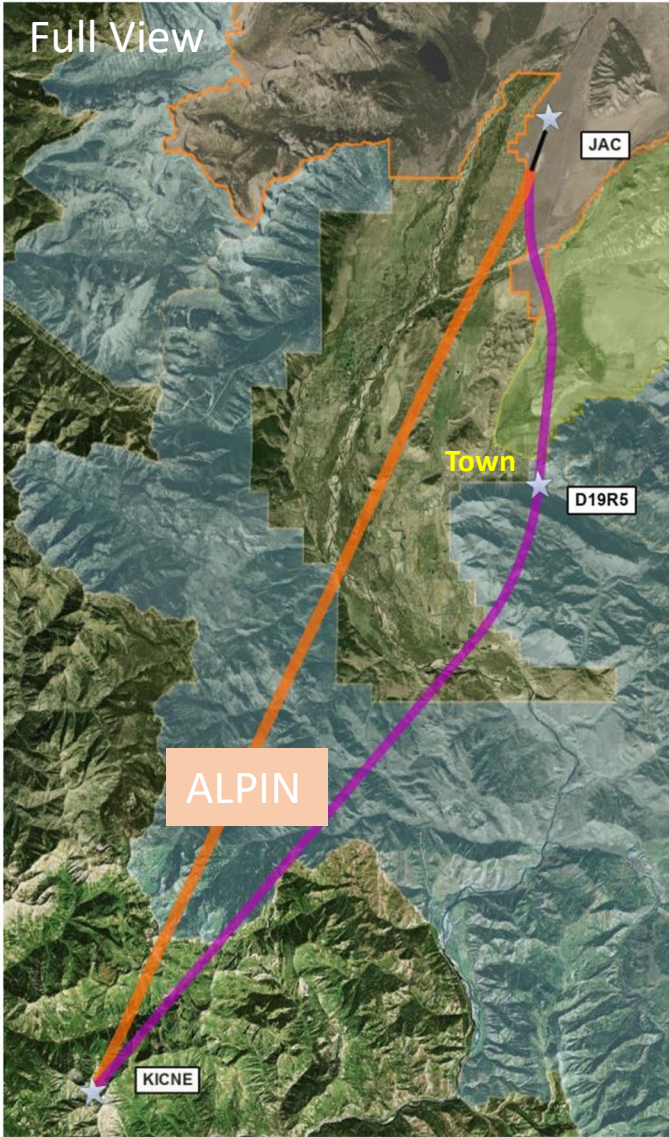


C1 RNAV to Southeast



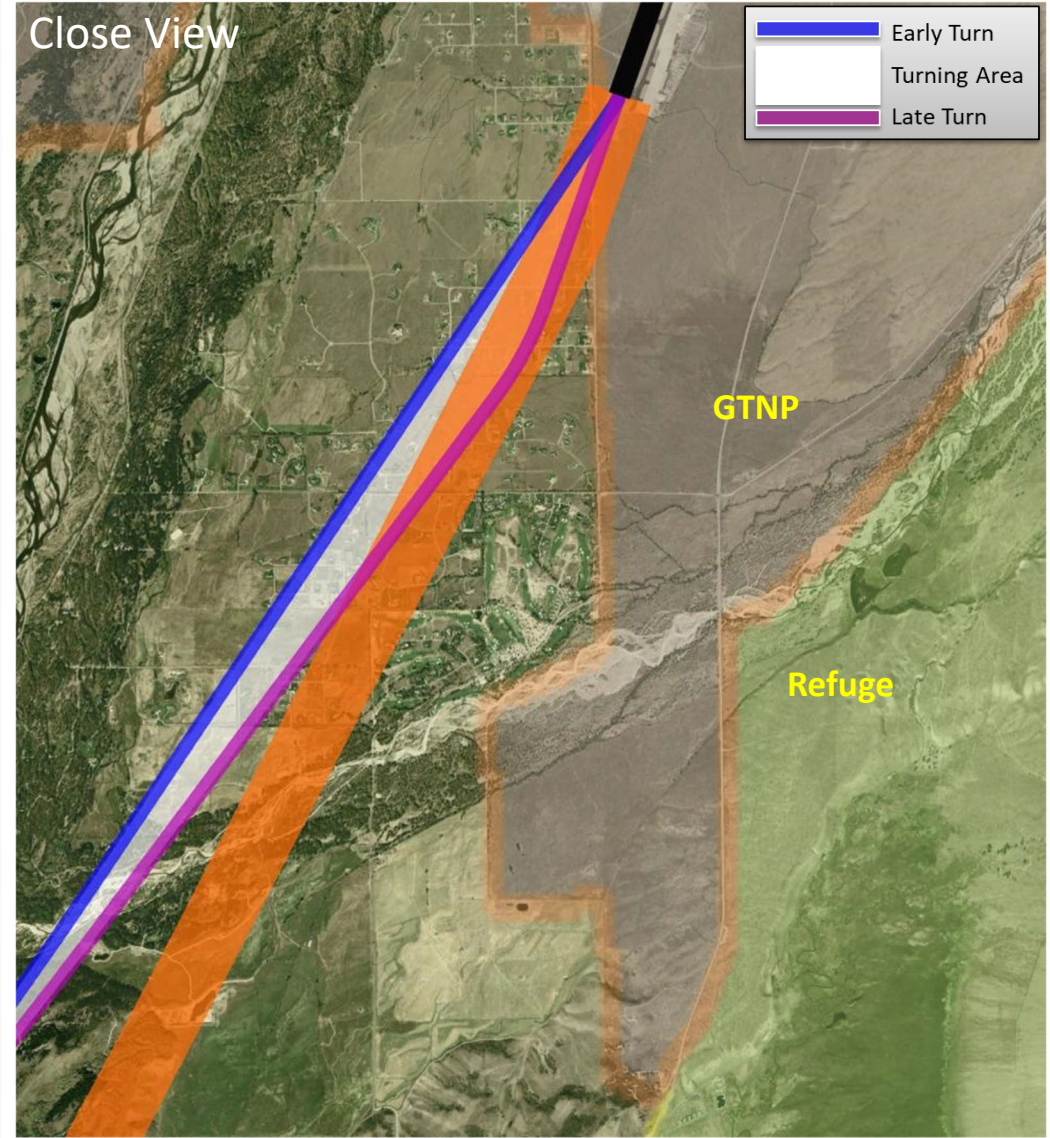
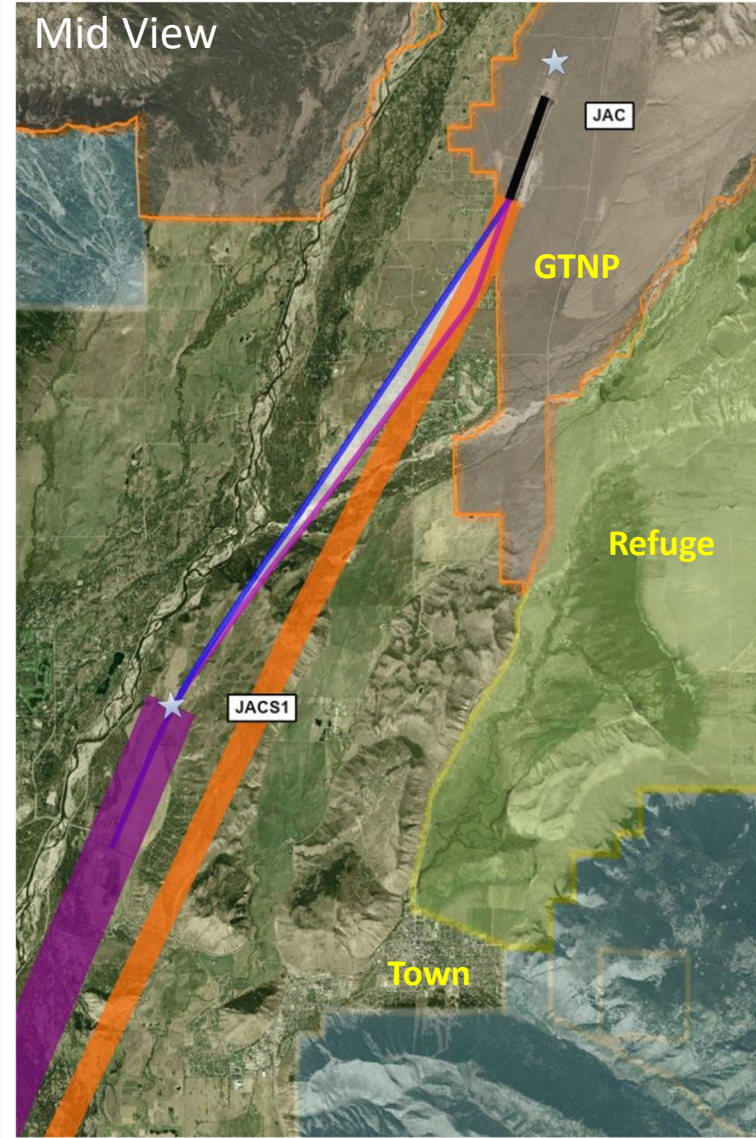
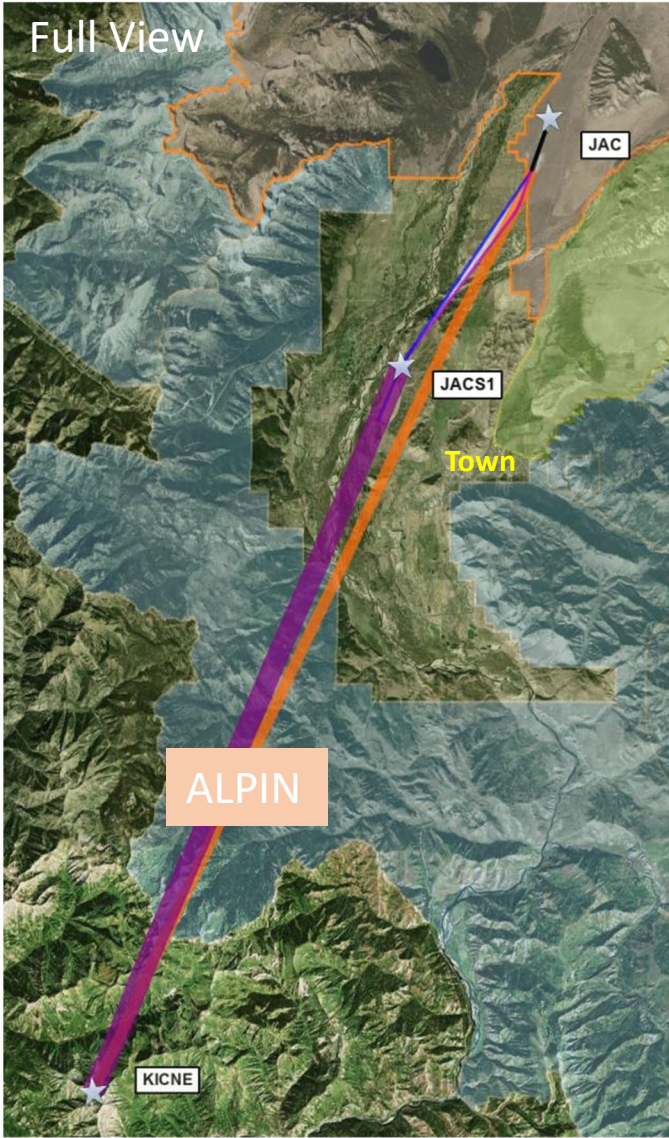


C2 RNP to Southeast



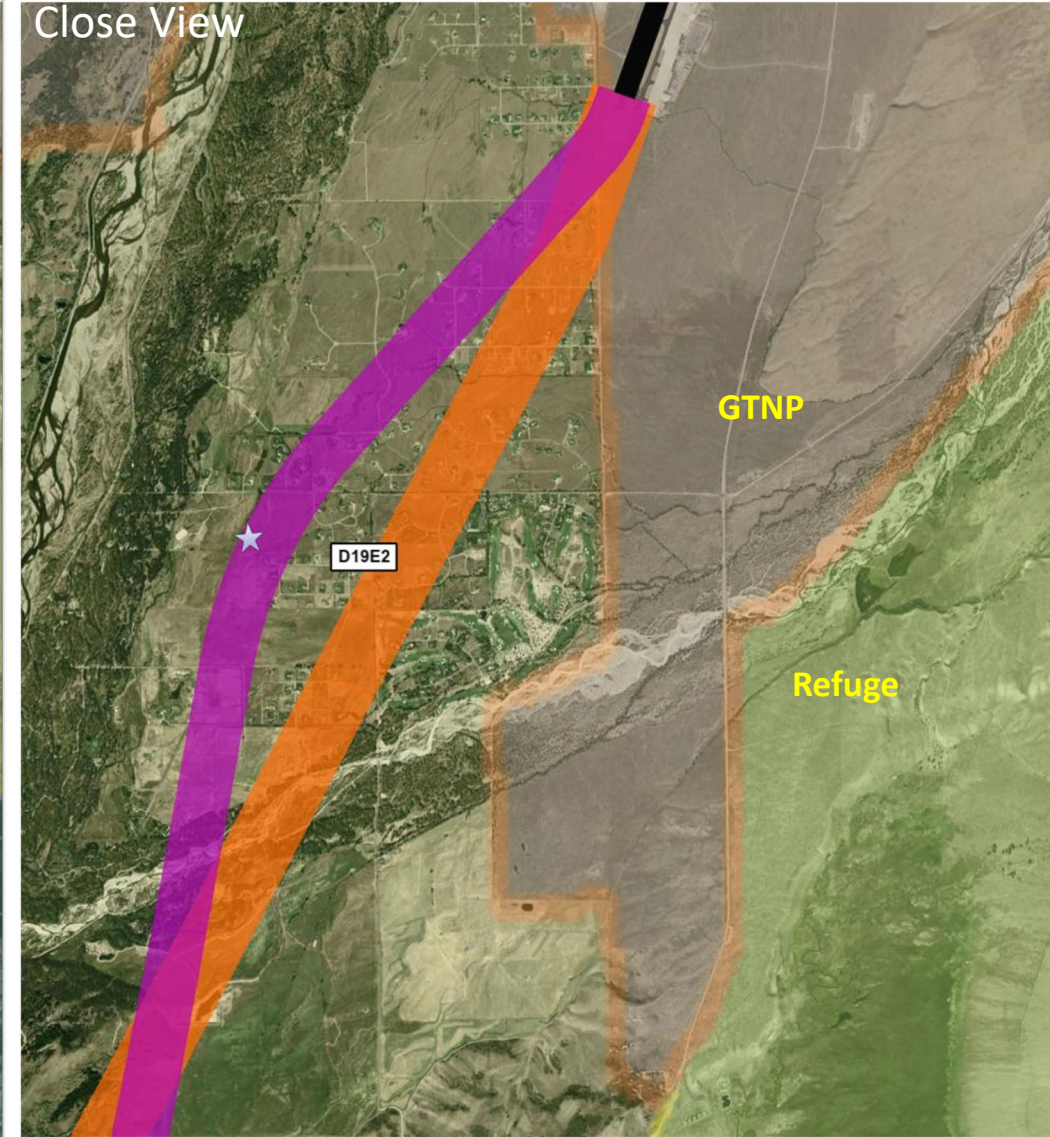
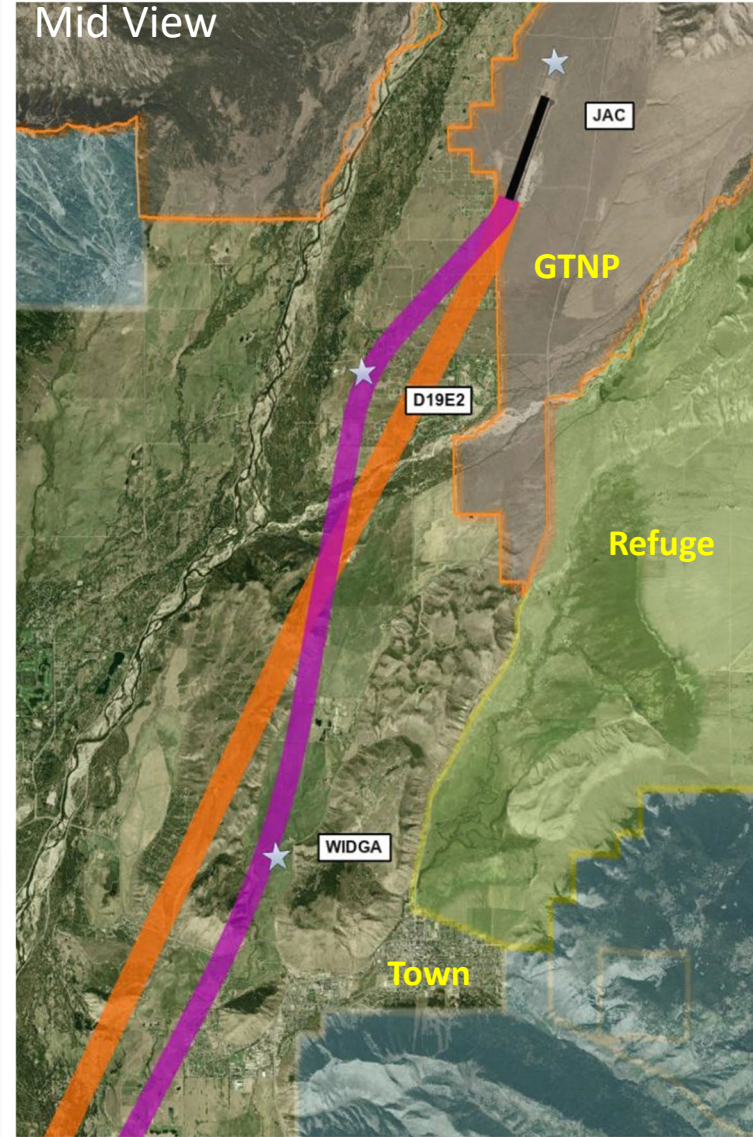
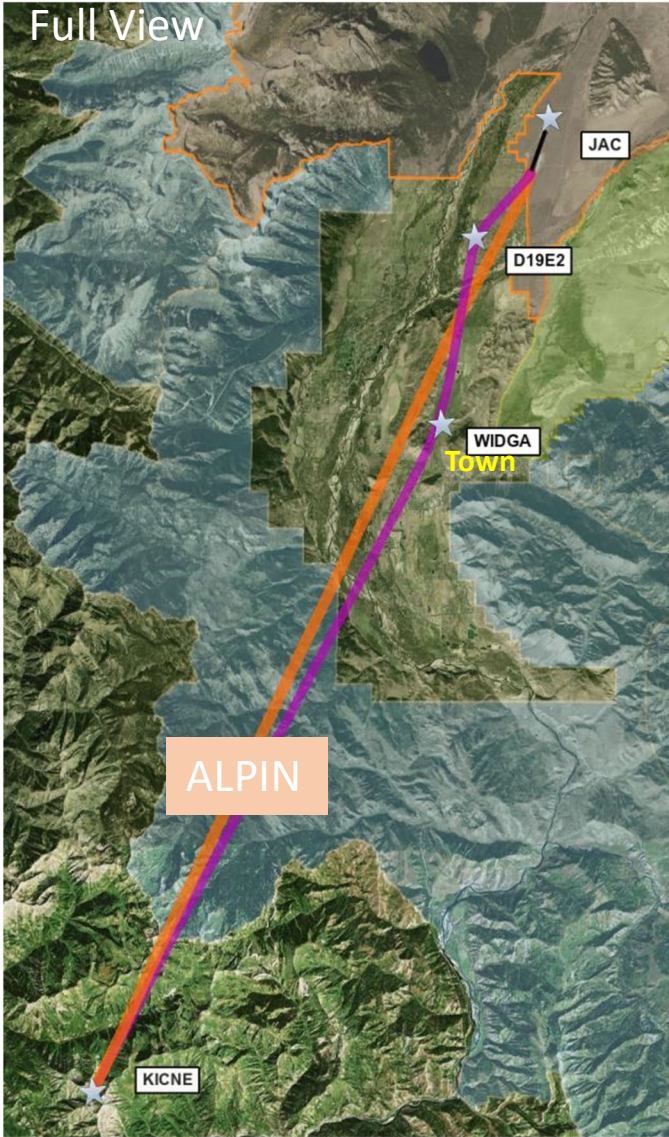


C3 RNAV to Southwest

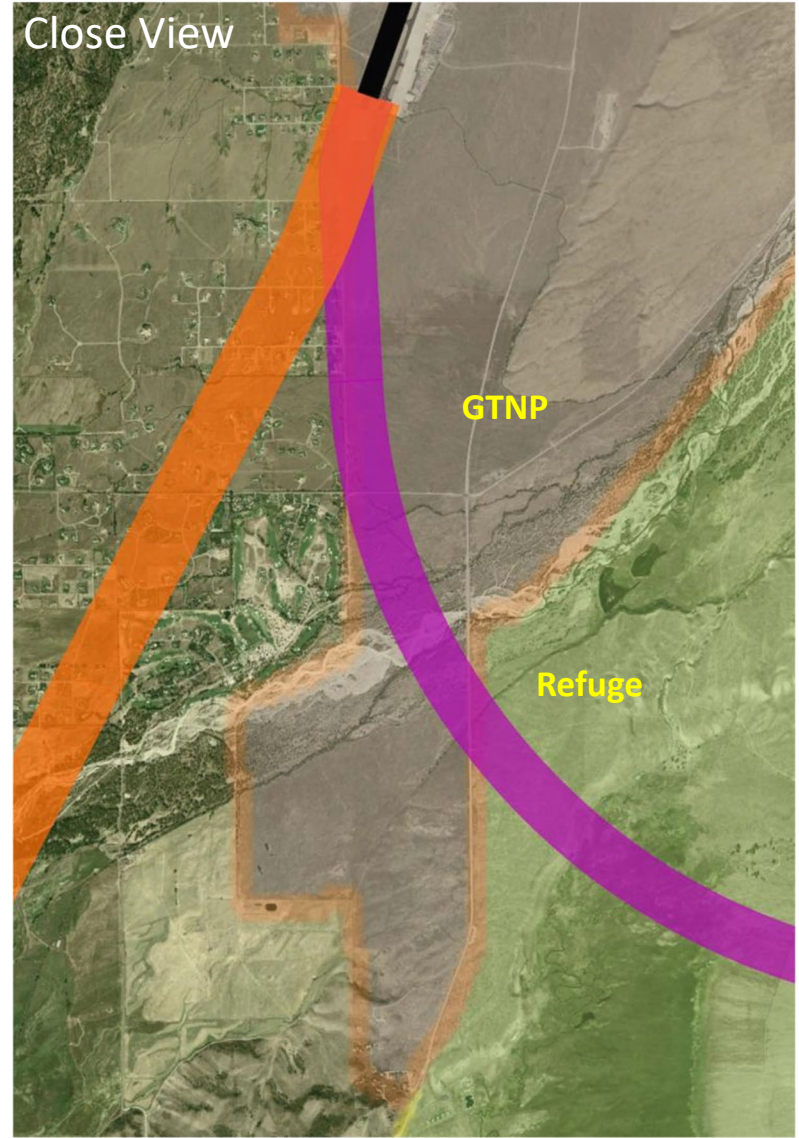
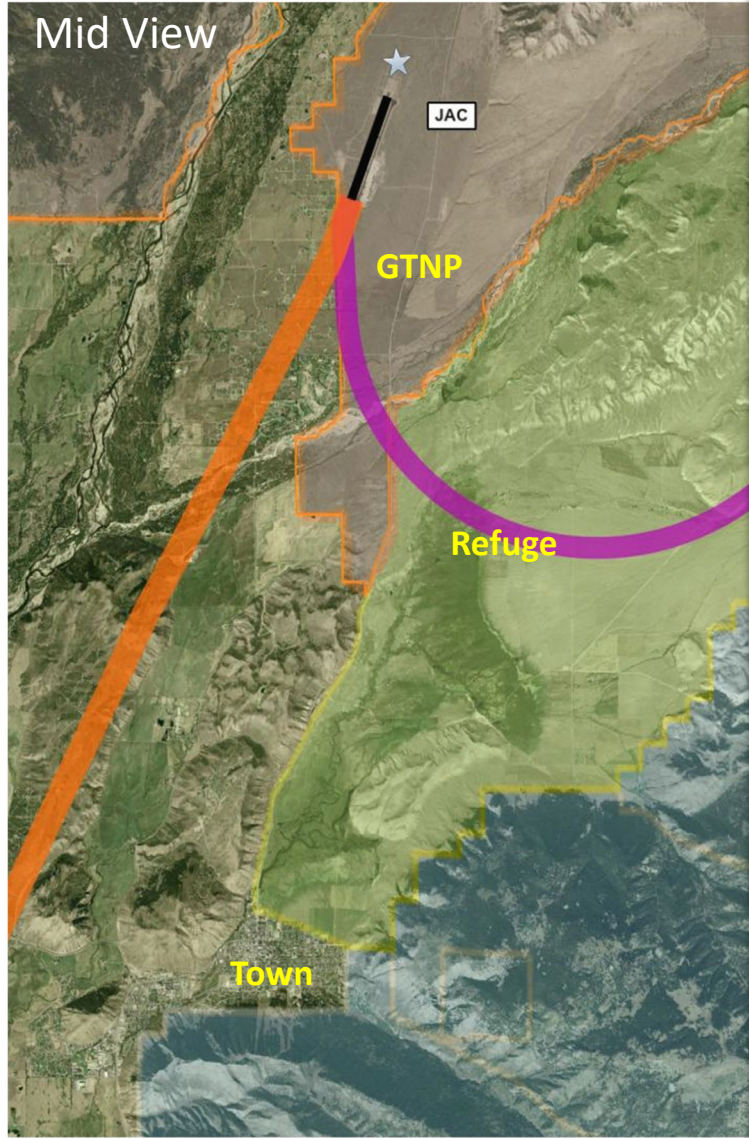
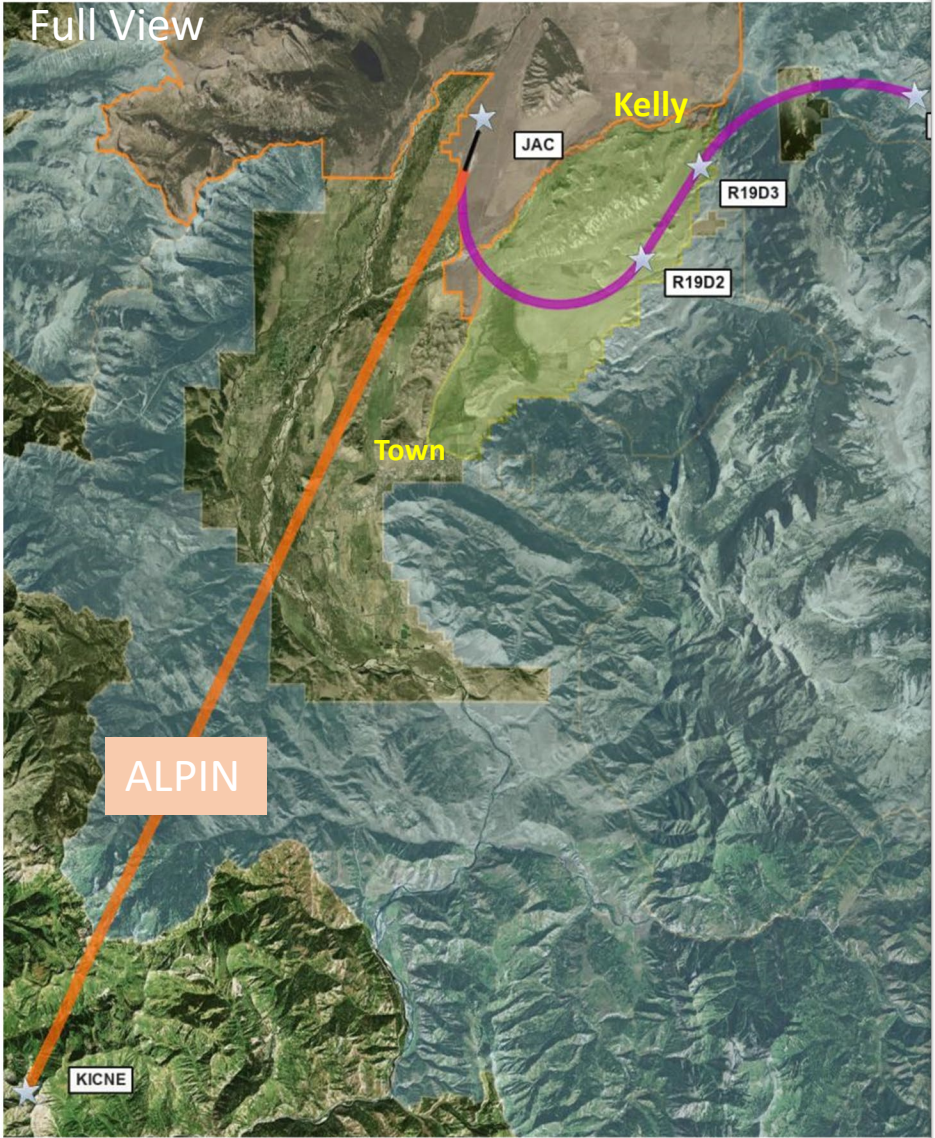




C4 RNP to Southwest

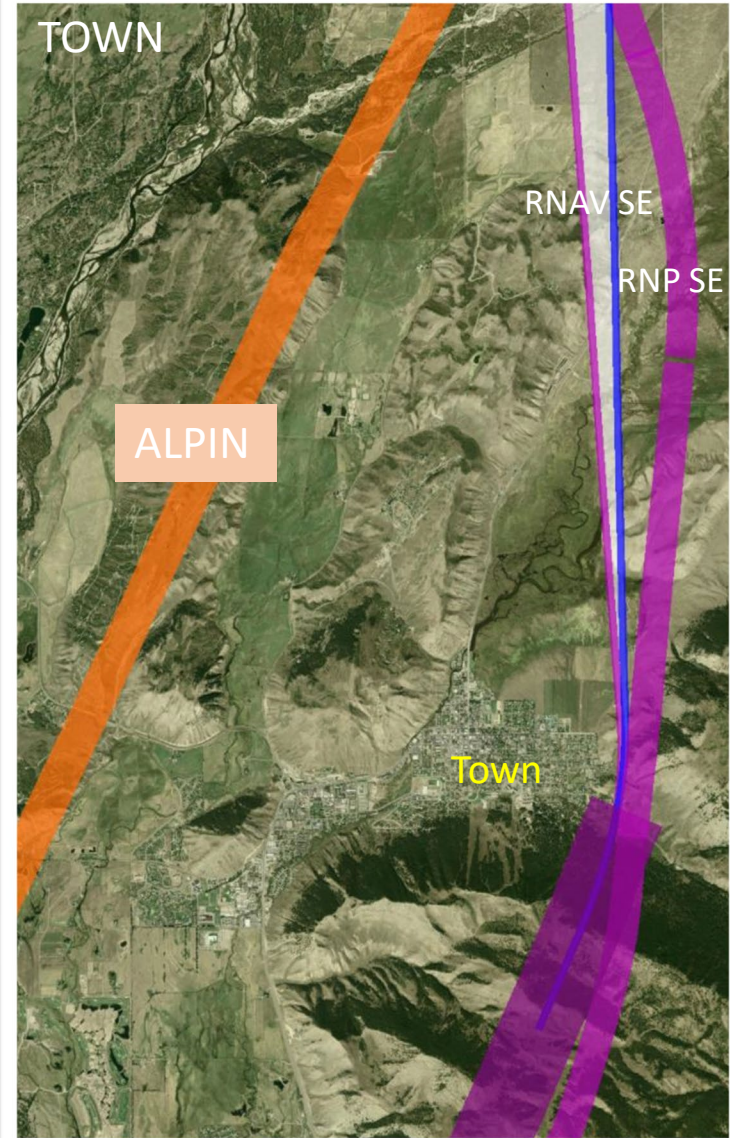
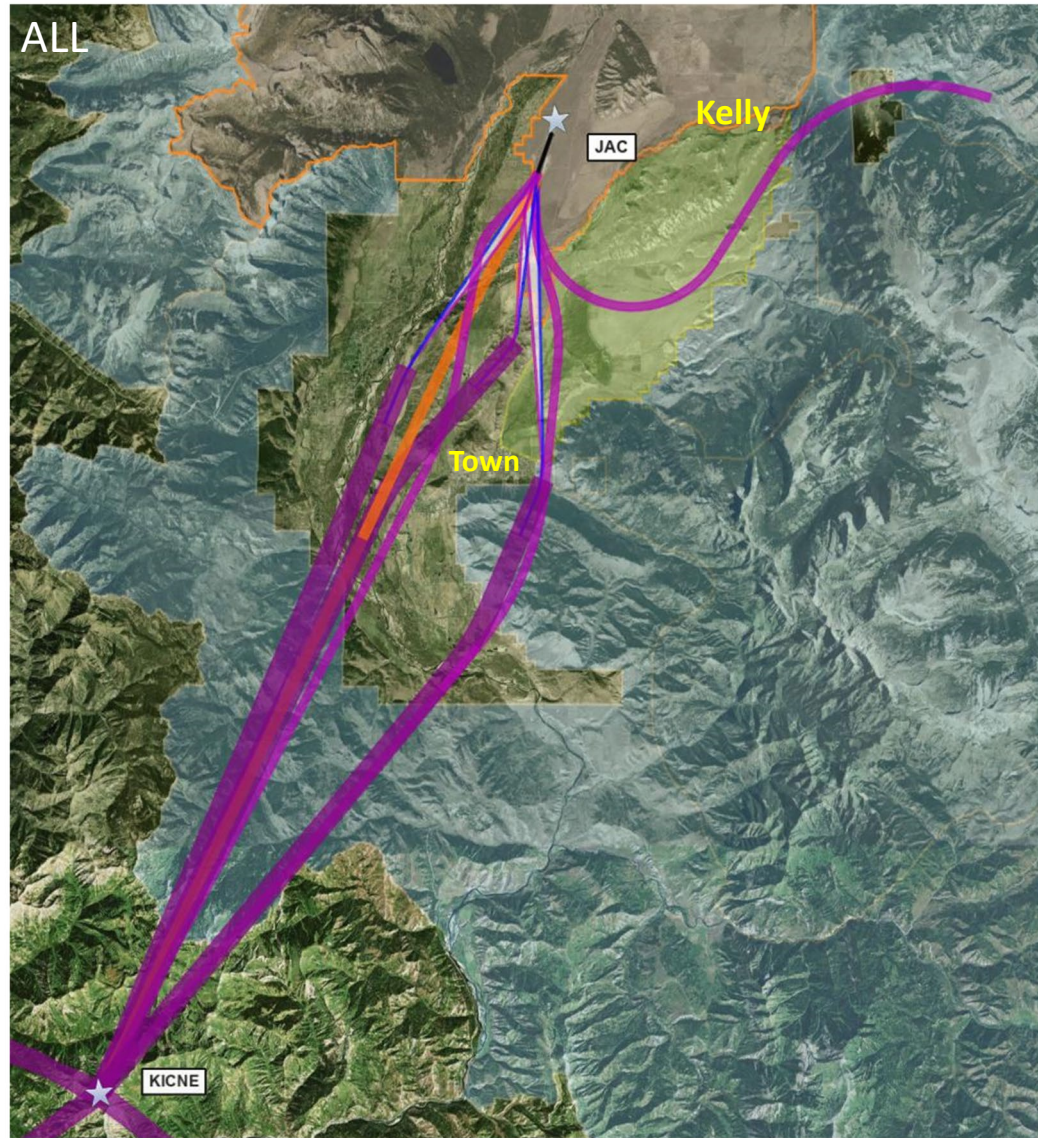
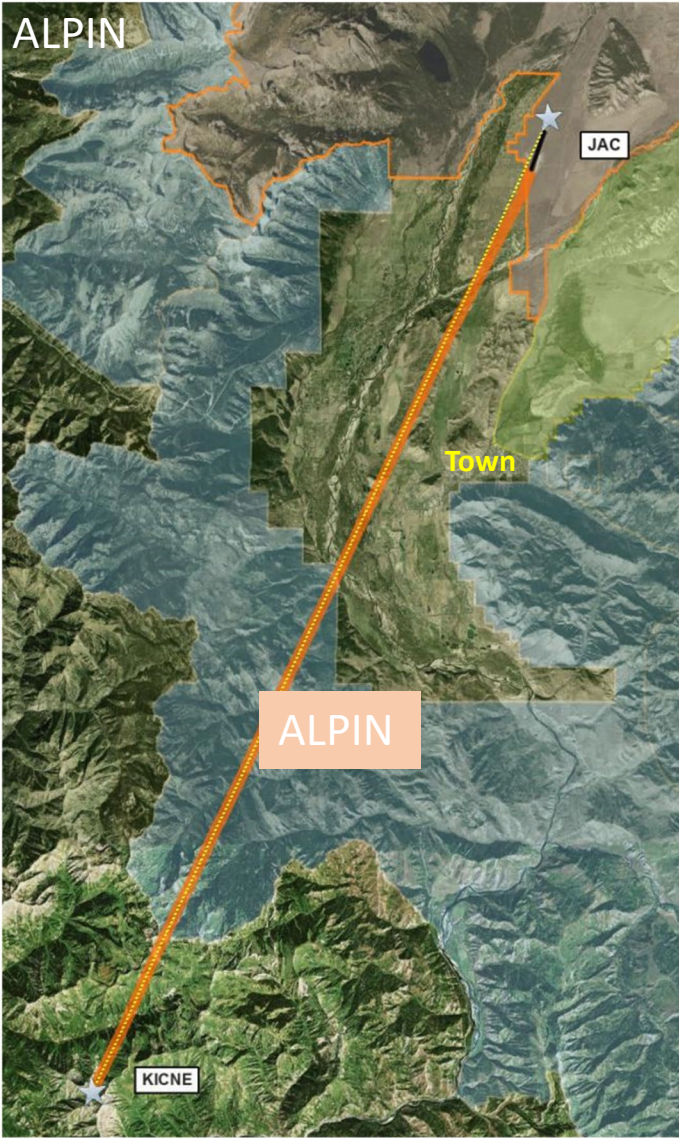


C5 RNP to East (Corkscrew)





All Procedures

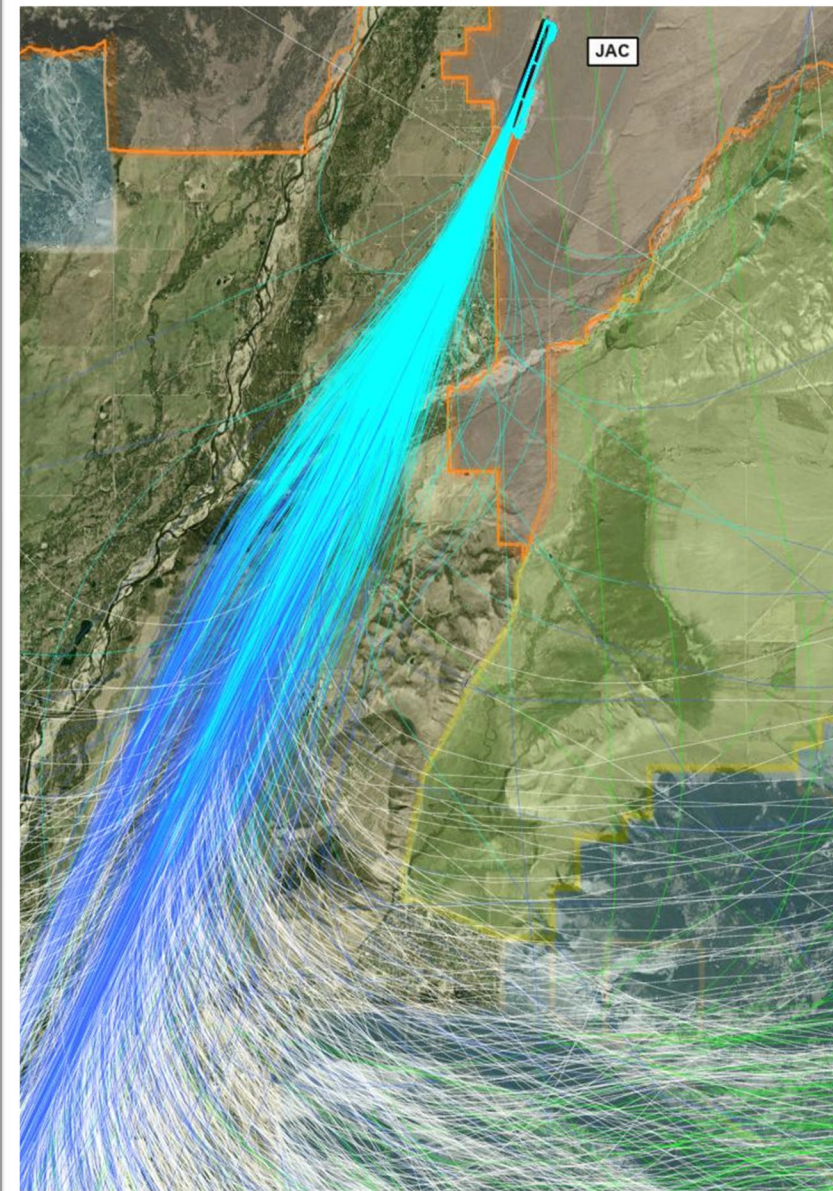
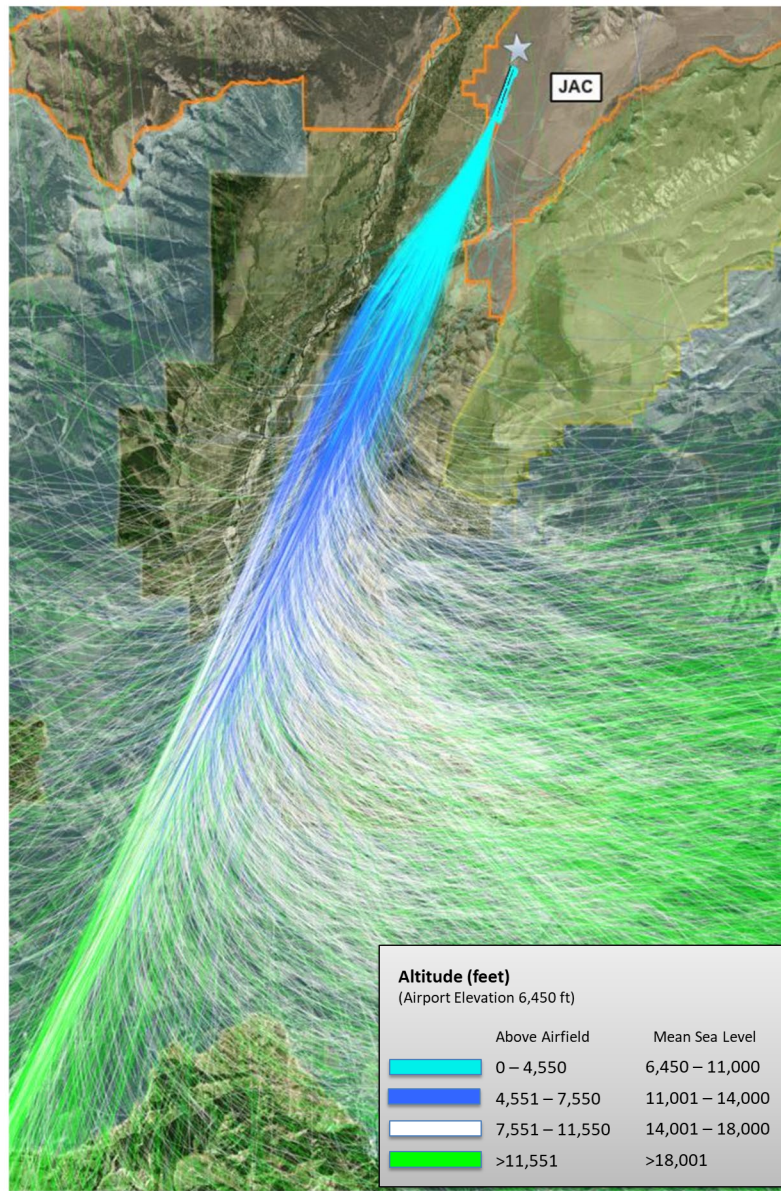
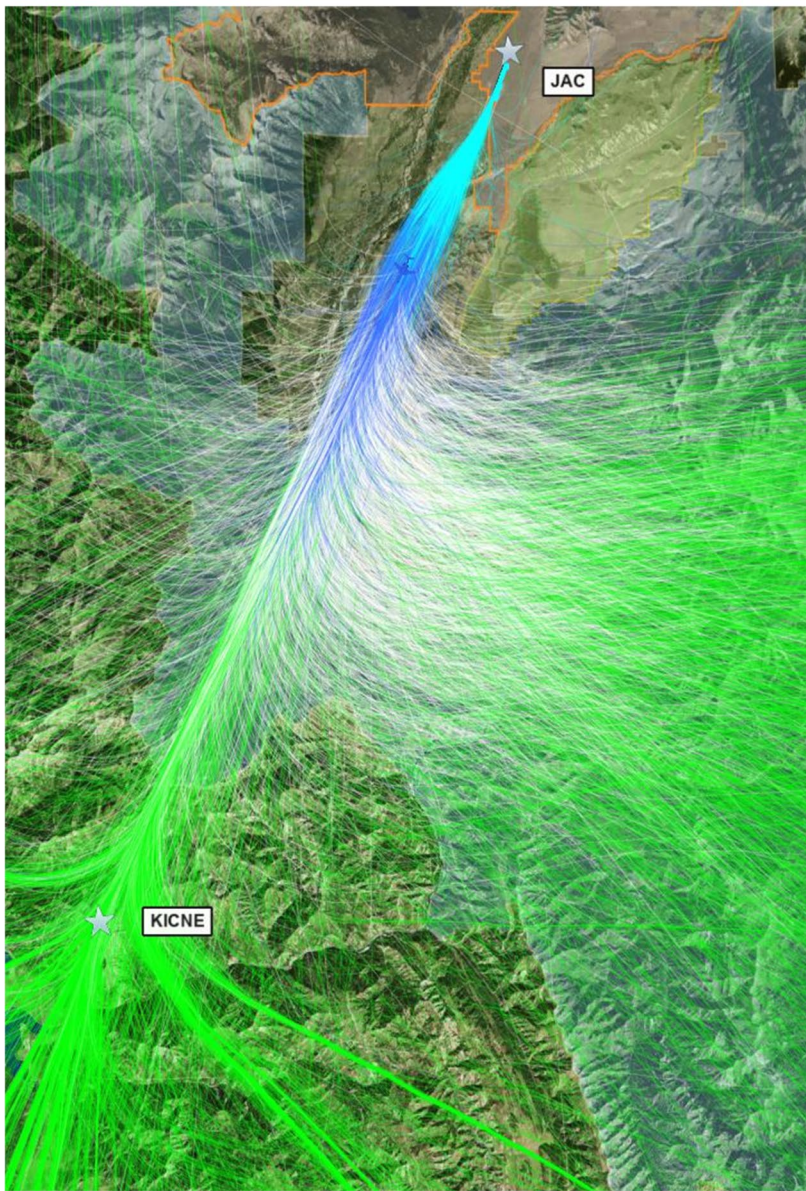




Question 2

- ❖ What are the proposed flight procedure options?
- ❖ What altitude are aircraft flying today?
 - Where over the ground do they reach 500 feet?
 - What altitude are aircraft when abreast of the Town?
 - What altitude do aircraft turn to the east?
- ❖ What are the air traffic constraints with turning left?
- ❖ How would the noise change and what is the potential perception?
- ❖ What is the noise from an individual flight on each procedure?
- ❖ How would these options be studied in the Environmental Process?
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Radar Tracks Colored by Altitude





Existing Altitudes (ALPIN Departure Procedure)

Distance Description (General)	Distance From from Runway End	ALL JETS		BUSINESS JETS ONLY		All JETS % 500 feet Above Airport Elev
		Avg Altitude (feet) Above Airport Elev	Avg Altitude (feet) Above Sea Level	Avg Altitude (feet) Above Airport Elev	Avg Altitude (feet) Above Sea Level	
	<i>Airport Elev.</i>	6,450	--	6,450	--	
Runway End (South)	0.0	197	6,647	225	6,675	5%
Spring Gulch Road	0.5	687	7,137	674	7,124	72%
Moulton Loop South Road	1.0	1,220	7,670	1,146	7,596	99%
Bar B Bar Subdivision	1.5	1,710	8,160	1,601	8,051	100%
Sage Bush Road	2.0	2,161	8,611	2,058	8,508	100%
Gros Ventre River	3.0	2,967	9,417	2,980	9,430	100%
Bar B C Subdivision	4.0	3,681	10,131	3,860	10,310	100%
Tangent to Spring Creek Ranch	6.0	5,018	11,468	5,460	11,910	100%
Hwy 22 (Tangent to Town of Jackson)	8.0	6,291	12,741	6,859	13,309	100%

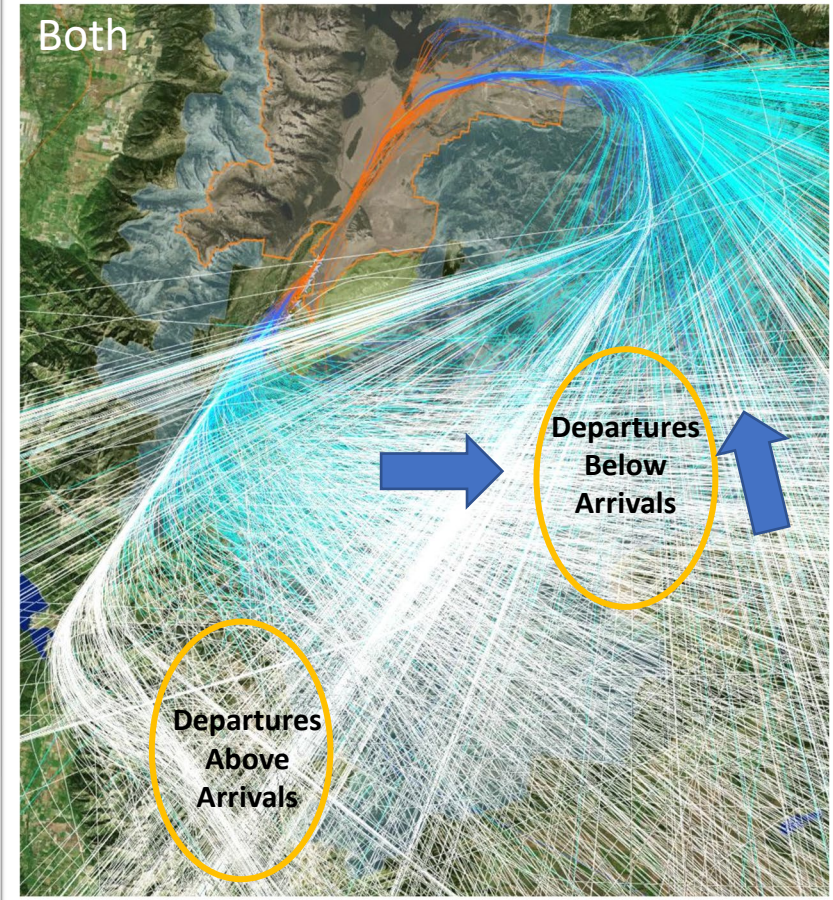
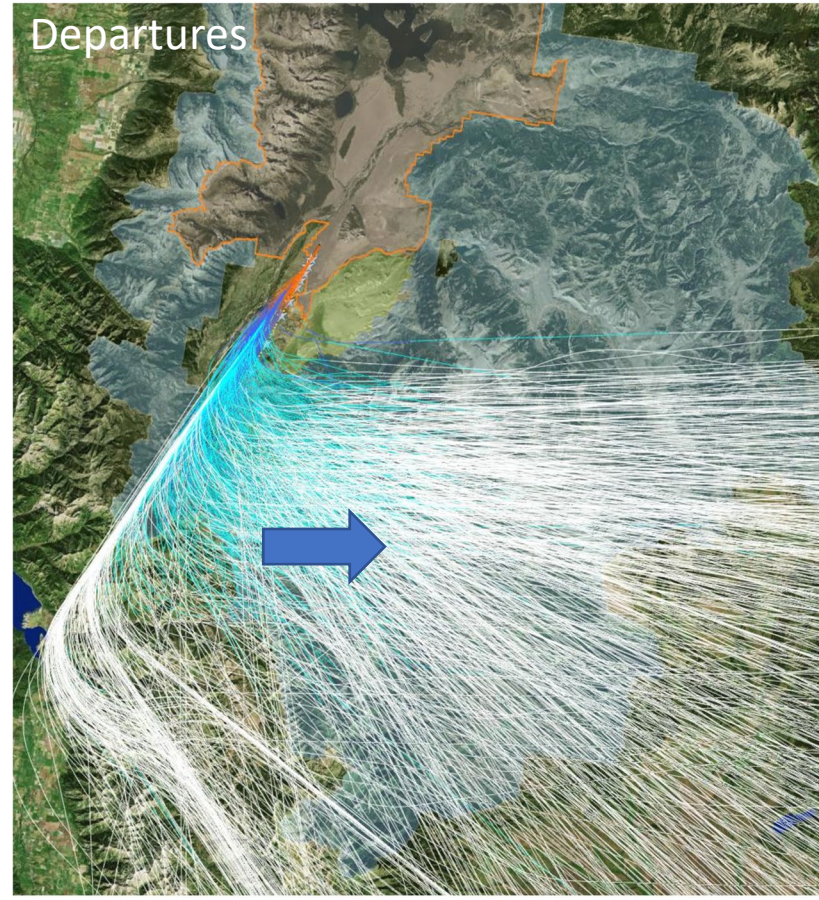
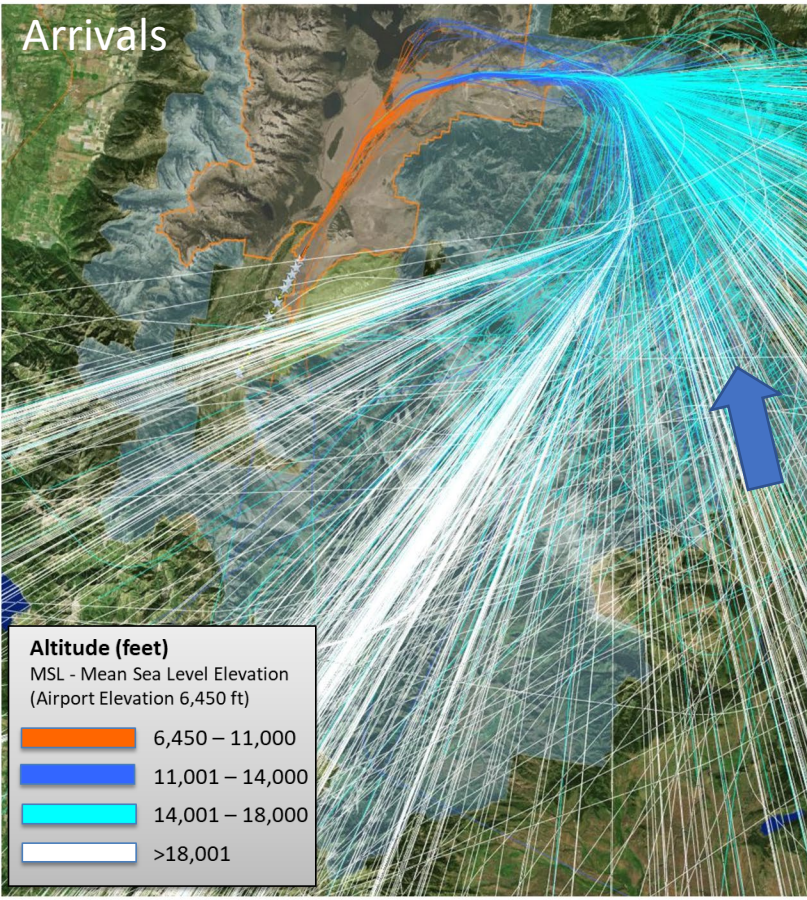


Questions?

- ❖ What are the proposed flight procedure options?
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Air Traffic Interactions



1,700 Jet Departures and Arrivals to/from south and east on Runway 19 in Jan and Feb 2022



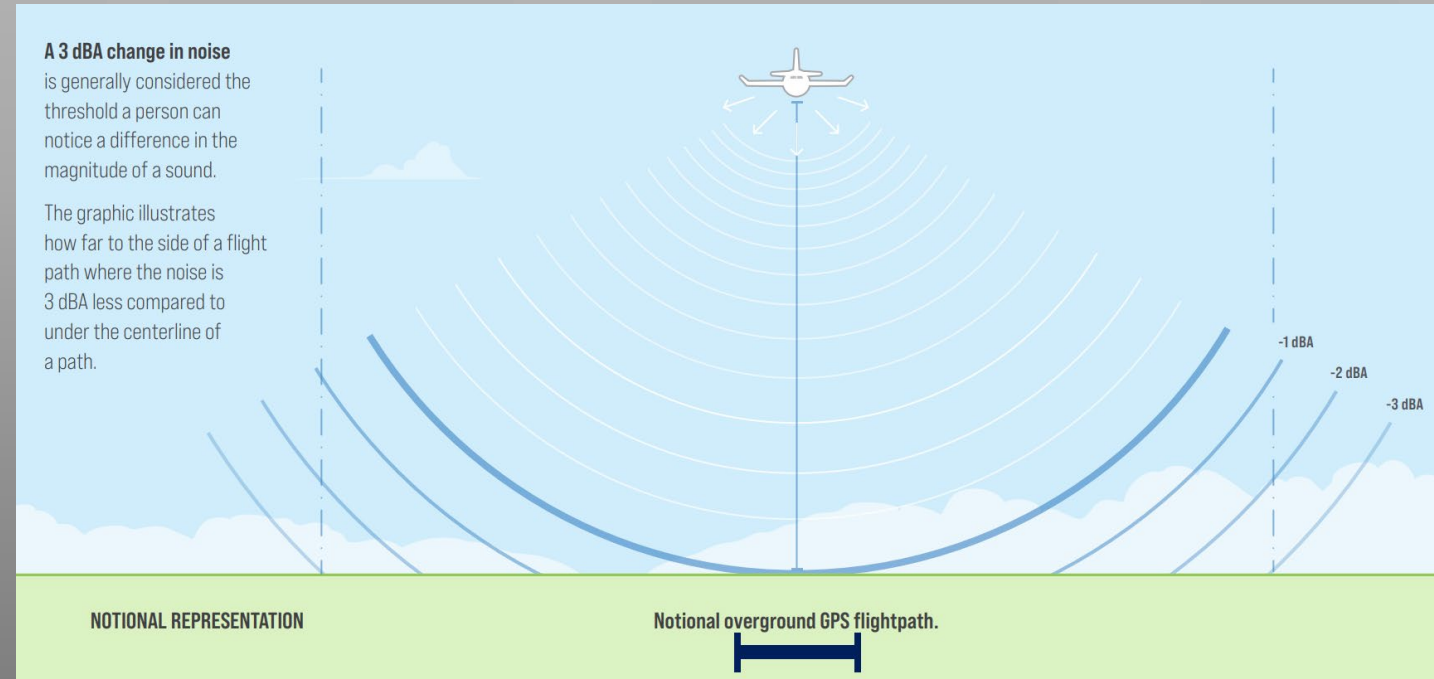
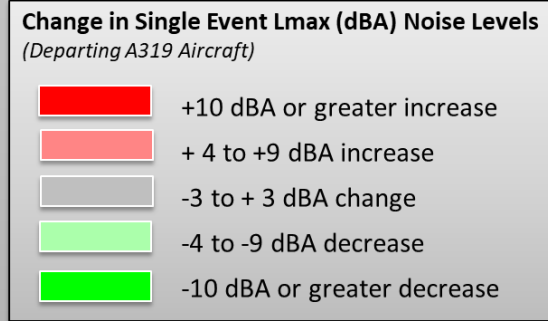
Questions?

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- ❖ What altitude are aircraft flying today?
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Evaluation of Change

- ❖ The evaluation is based on **single event dBA** sound of a single flight and not a cumulative **DNL**. Changes in DNL are scaled very differently.
- ❖ Changes of noise of 3 dBA or less is considered the threshold of what the human ear can detect.
- ❖ Change of a dBA noise of 10 dBA is perceived as a doubling or half of noise.
- ❖ Increases are more noticed the decreases.
- ❖ Changes of less than 3 dBA not considered
- ❖ Changes of 3 to 9 dBA are considered a noticeable change
- ❖ Changes of 10 dBA or more are considered a very noticeable



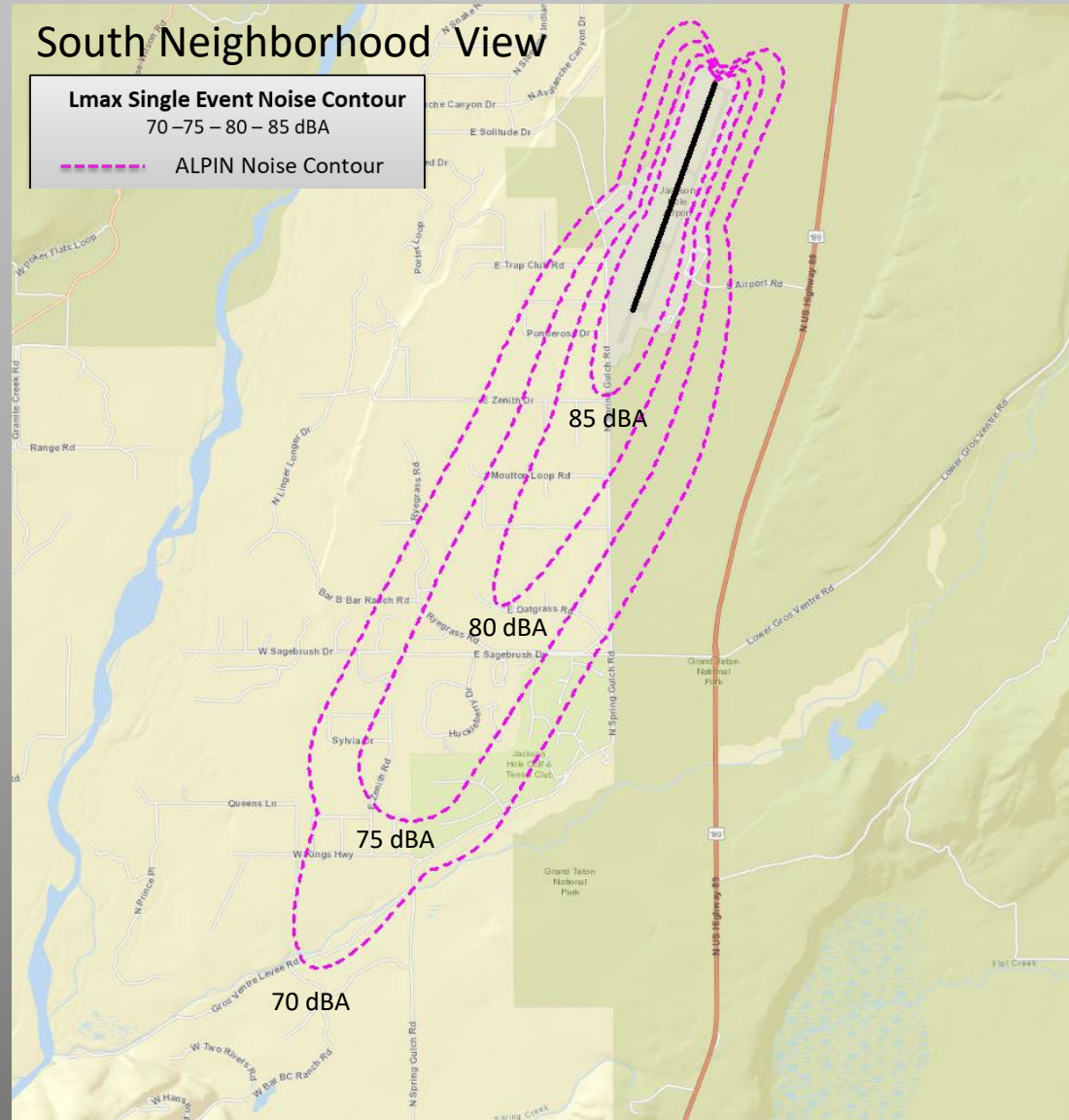


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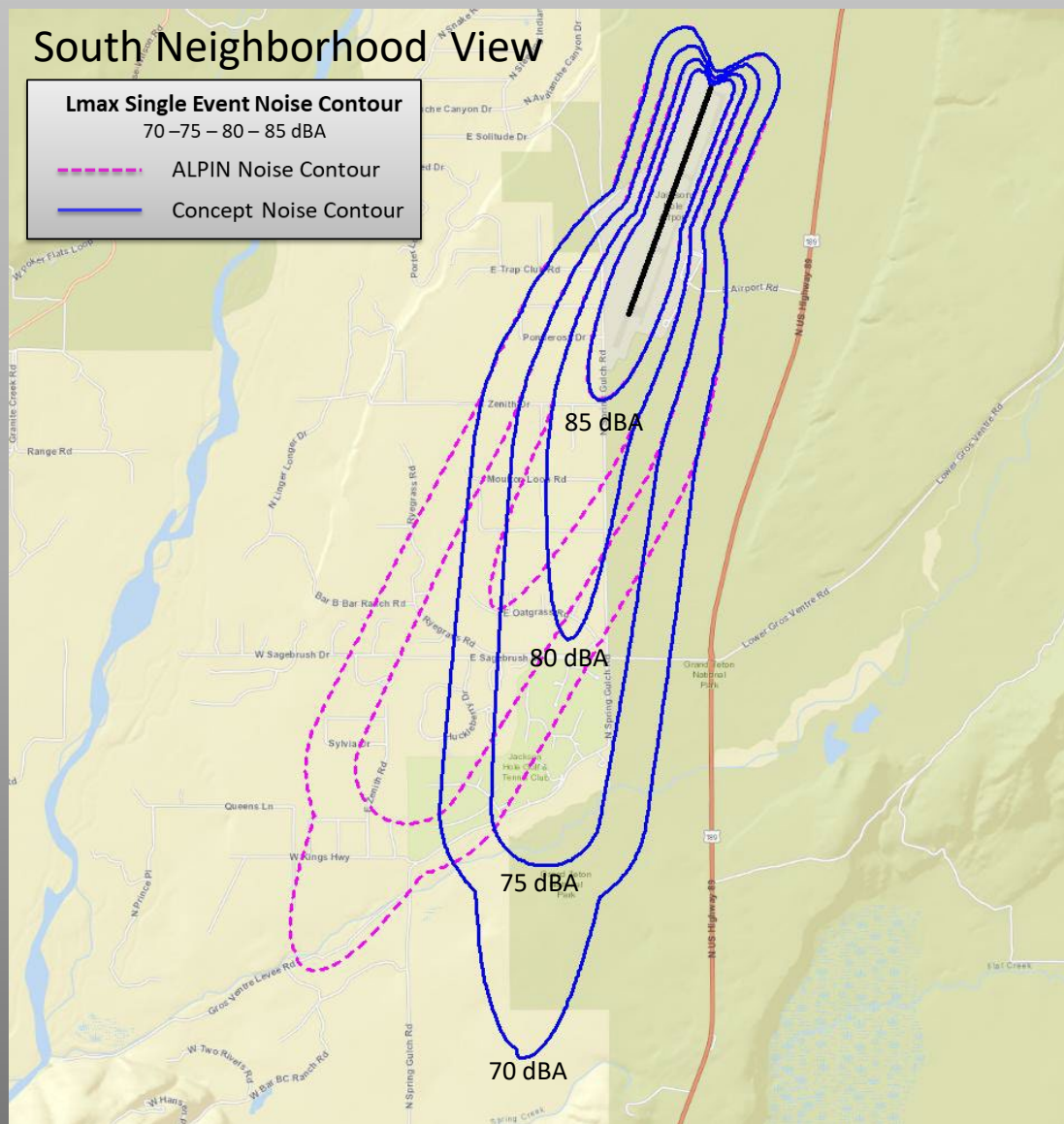
Lmax Noise Contour – Existing ALPIN



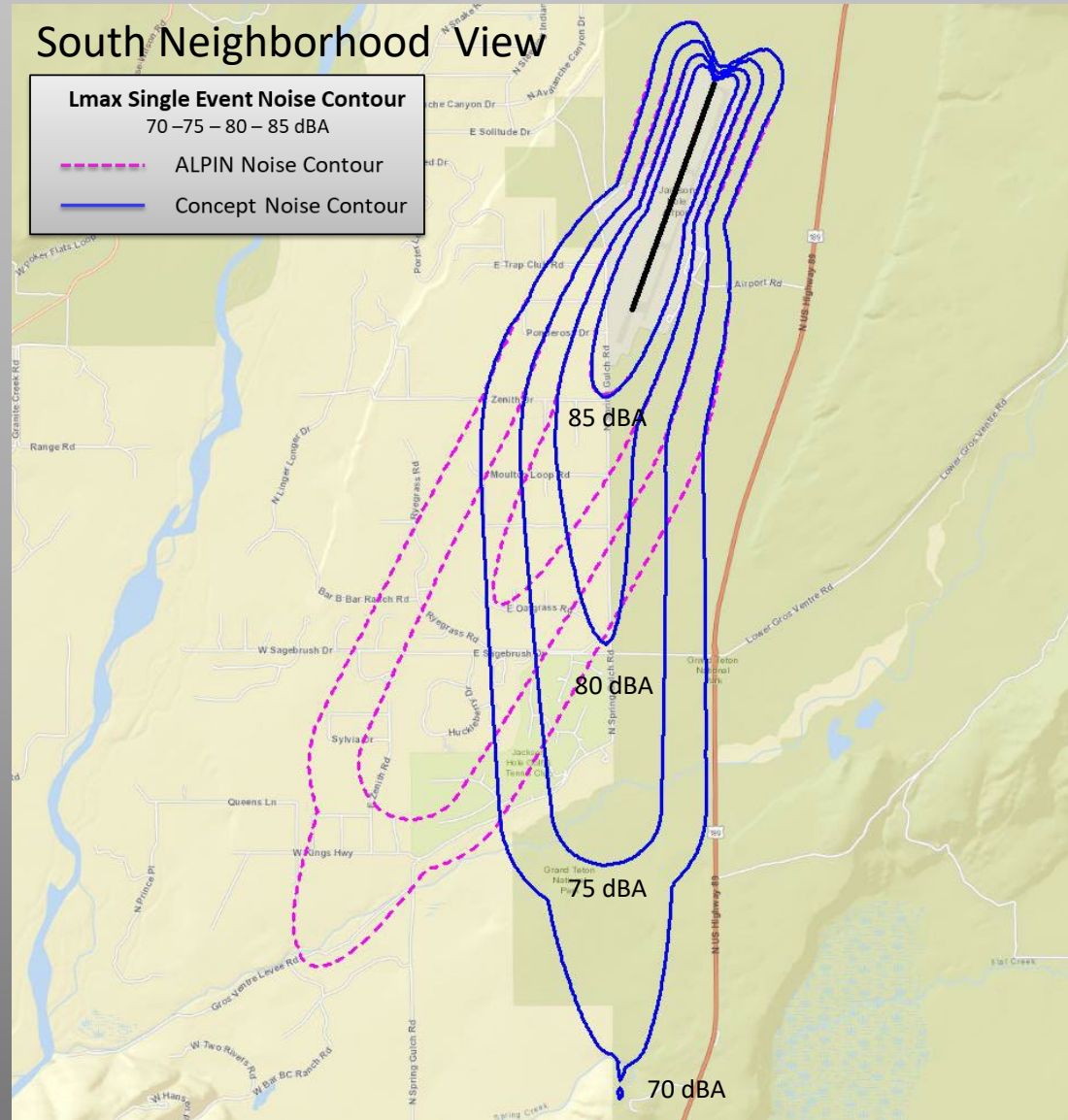
- ❖ Single Event Noise Contour of an Individual Flight (dBA Noise Level)
- ❖ FAA's AEDT Noise Model
- ❖ A319 Departure to Denver



Lmax Noise Contour – FAA KICNE

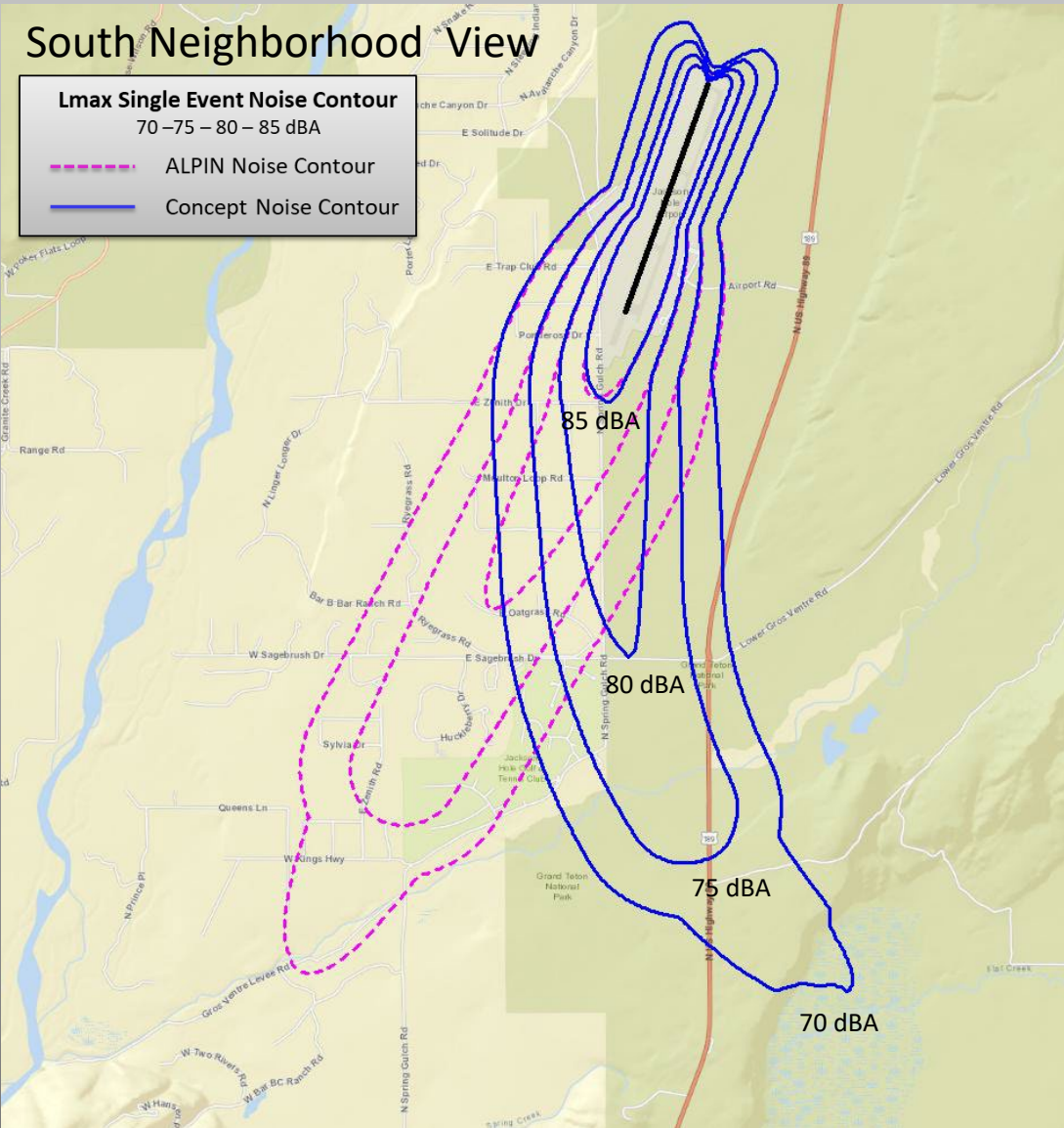


Lmax Noise Contour – C1 RNAV to Southeast



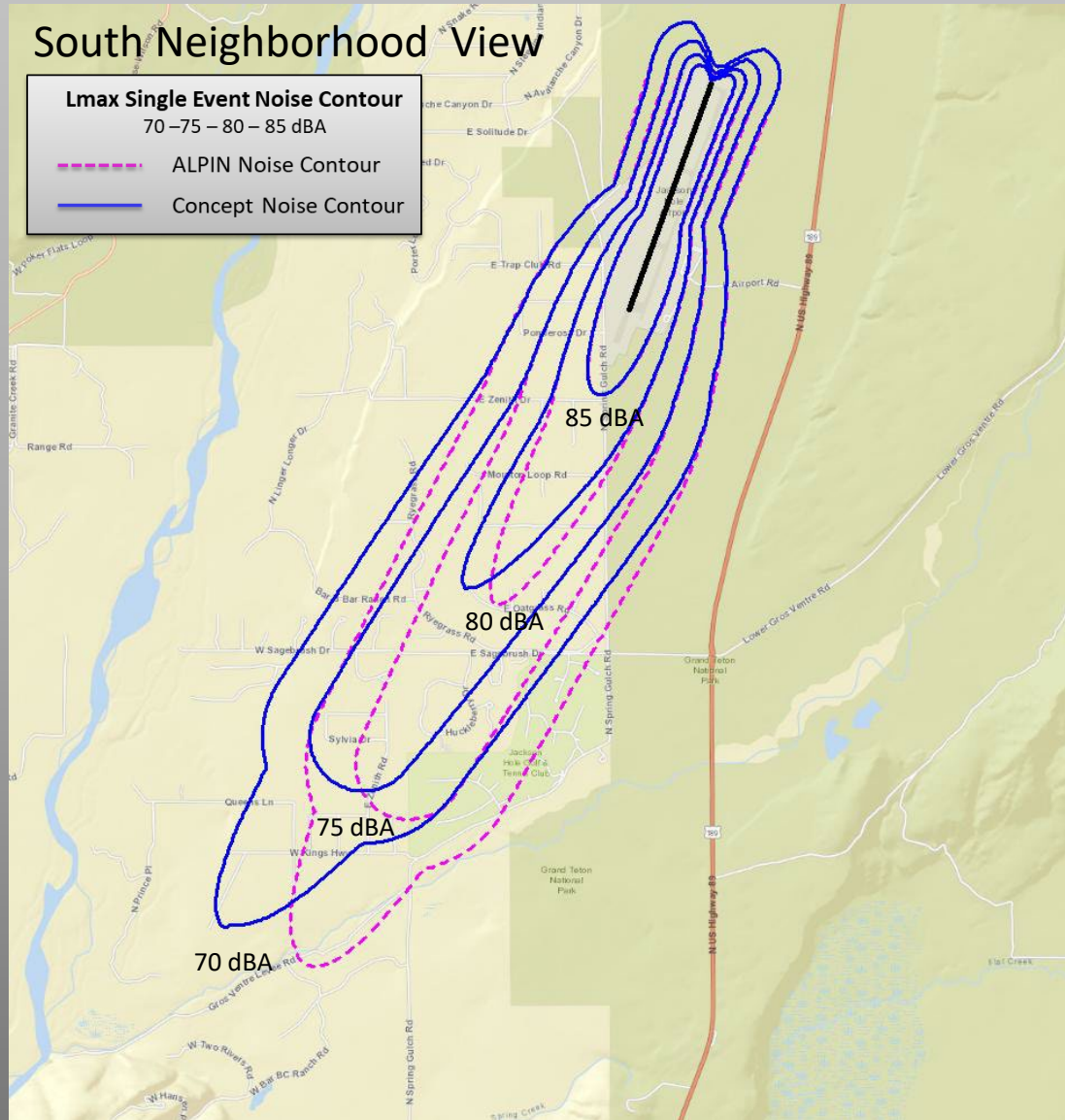


Lmax Noise Contour – C2 RNP to Southeast



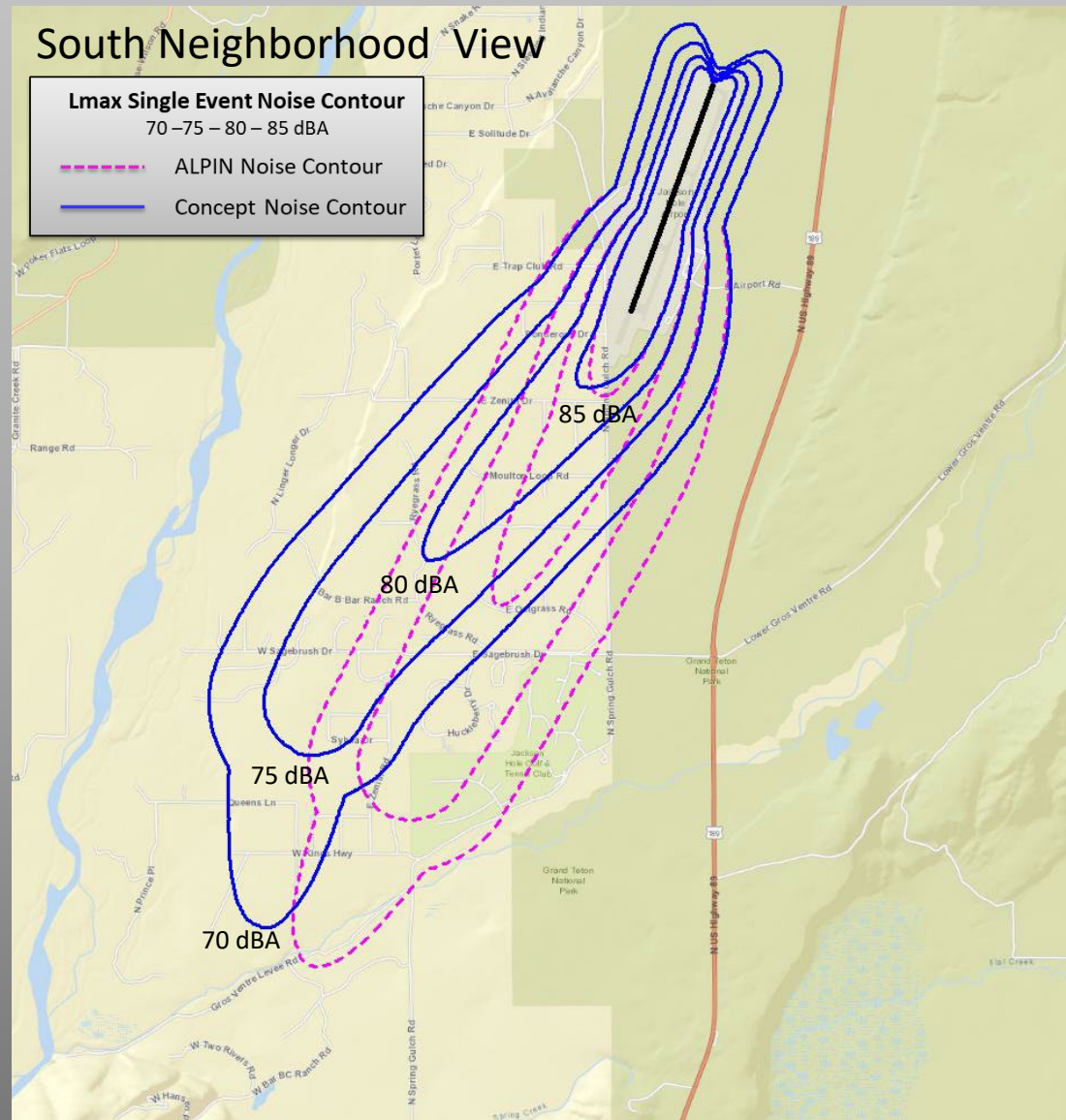


Lmax Noise Contour – C3 RNAV to Southwest



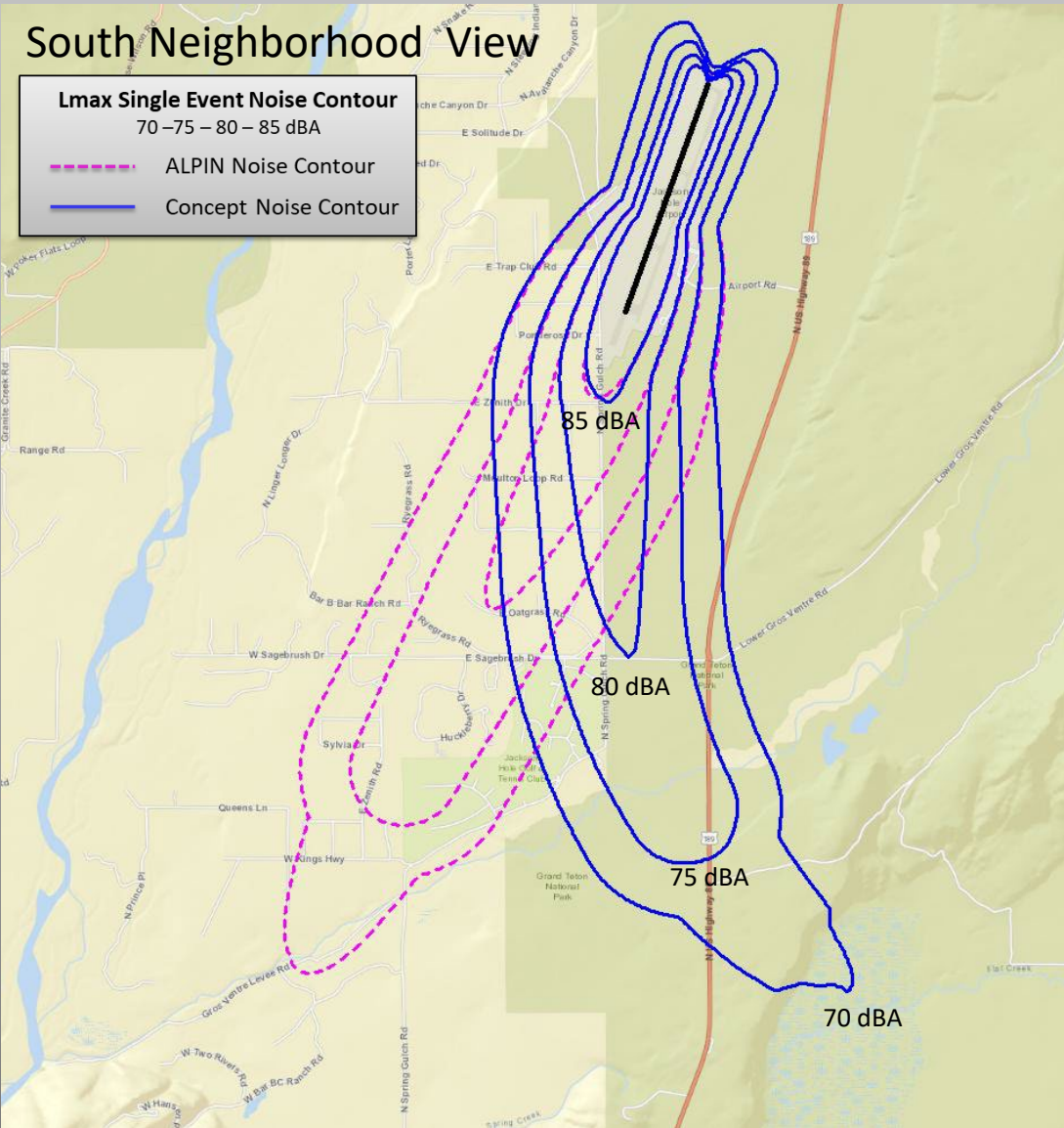


Lmax Noise Contour – C4 RNP to Southwest





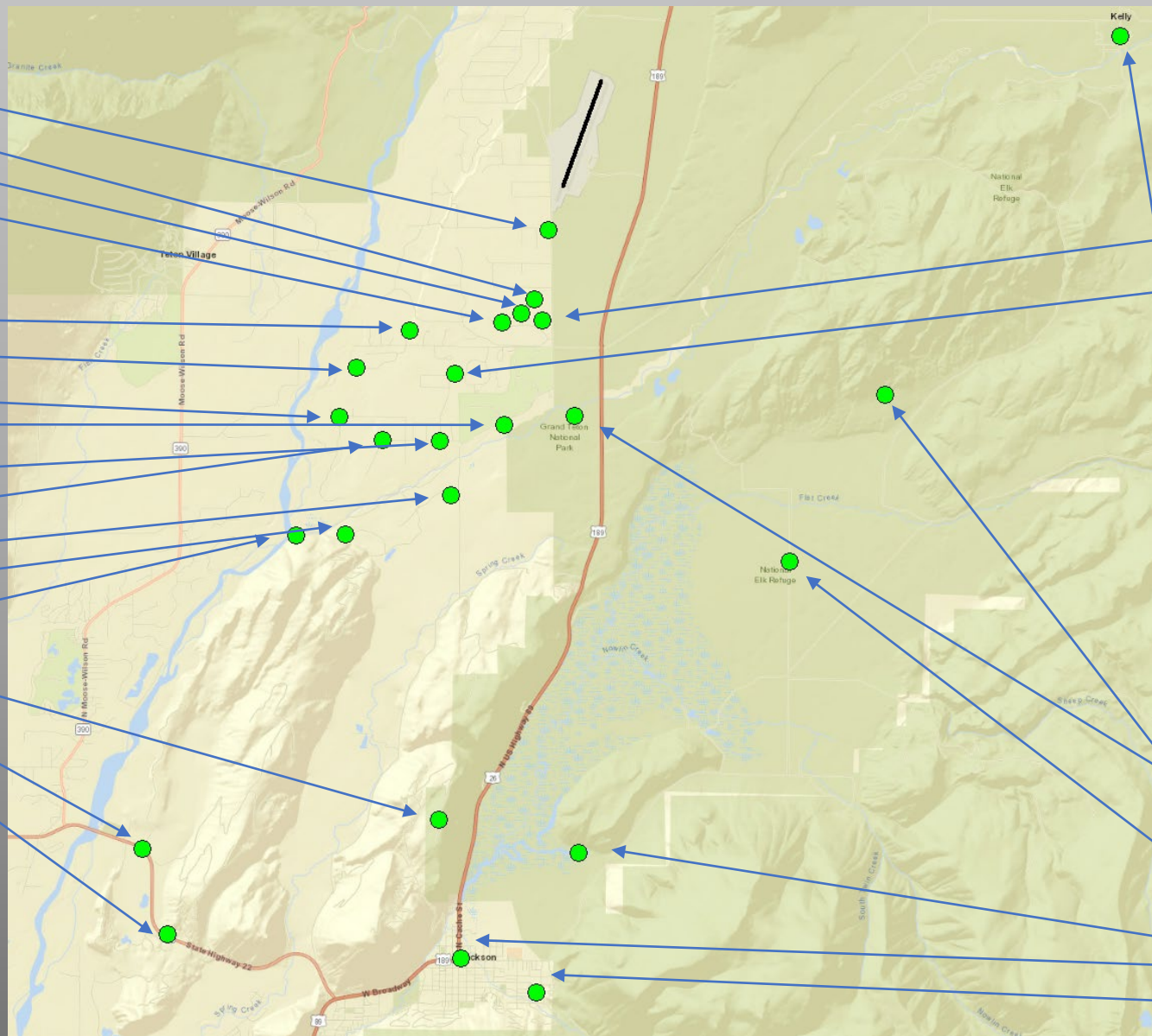
Lmax Noise Contour – C5 RNP to East (corkscrew)





Representative Evaluation Locations

Receptor Location
Moulton (Spring Gulth/Zenith Dr)
280 S Moulton Loop
Bar B Bar (Fox Trail)
Bar B Bar (Oak Grass)
Bar B Bar (Blue Stem)
Zenith Rd/Sylvia
Lower Cascade RD
End of Red Tail
Queens Lane
Golf Course (East Side)
W Kings/W Zenith
W Kings/N Bear Lakes
Spring Gulch/Gros Ventre
Bar BC Lower
End of Gros Ventre Levee Rd
Spring Creek Ranch
Hwy 22/Walton Ranch Rd
Hwy 22/N Bar Y
Kelly
GTNP Gros Ventre
Elk Refuge (North)
Elk Refuge (Central)
Elk Refuge (South)
Town (Town Square)
Town (May Park)



Receptor Location
Moulton (Spring Gulth/Zenith Dr)
280 S Moulton Loop
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Bar B Bar (Oak Grass)
Bar B Bar (Blue Stem)
Zenith Rd/Sylvia
Lower Cascade RD
End of Red Tail
Queens Lane
Golf Course (East Side)
W Kings/W Zenith
W Kings/N Bear Lakes
Spring Gulch/Gros Ventre
Bar BC Lower
End of Gros Ventre Levee Rd
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Elk Refuge (North)
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Elk Refuge (South)
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Town (May Park)



Lmax Noise Levels at Sample Locations

Receptor Location	ALPIN	FAA KICNE	C1 RNAV SE	C2 RNP SE	C3 RNAV SW	C4 RNP SW	C5 RNP East	FAA KICNE	C1 RNAV SE	C2 RNP SE	C3 RNAV SW	C4 RNP SW	C5 RNP East
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280 S Moulton Loop	79	81	80	78	76	71	78	2	1	0	-2	-8	-1
Bar B Bar (Fox Trail)	79	79	77	74	77	71	74	0	-2	-5	-3	-9	-5
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Lower Cascade RD	65	58	56	55	69	76	55	-7	-9	-10	4	11	-10
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Bar BC Lower	66	51	48	46	68	67	45	-15	-18	-20	2	1	-21
End of Gros Ventre Levee Rd	60	47	45	43	66	61	42	-13	-16	-17	6	0	-18
Spring Creek Ranch	51	63	57	53	45	58	35	11	5	2	-6	6	-17
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Hwy 22/N Bar Y	66	64	39	38	63	60	28	-1	-26	-28	-3	-5	-37
Kelly	31	31	31	31	31	31	55	0	0	0	0	0	24
GTNP Gros Ventre	60	69	75	78	57	53	77	10	16	18	-2	-6	18
Elk Refuge (North)	37	38	40	40	37	37	54	1	3	3	0	-1	17
Elk Refuge (Central)	38	42	44	50	38	36	67	4	6	12	-1	-2	29
Elk Refuge (South)	42	50	67	66	38	46	39	8	25	24	-4	4	-3
Town (Town Square)	47	52	59	57	41	52	32	6	12	11	-5	6	-15
Town (May Park)	41	47	66	65	37	46	32	5	24	23	-5	5	-9
is there noise sensitive land uses with a noticeable decrease in single event noise (-4 to -9 dBA decrease)													
Is there noise sensitive land uses with a very noticeable decrease in single event noise (+10 dBA or greater)													
Is there noise sensitive land uses with a noticeable increase in single event noise (+4 to +9 dBA increase)													
Is there noise sensitive land uses with a very noticeable increase in single event noise (+10 dBA or greater)													

Change in Single Event Lmax (dBA) Noise Levels
(Departing A319 Aircraft)

- +10 dBA or greater increase
- + 4 to +9 dBA increase
- -3 to + 3 dBA change
- -4 to -9 dBA decrease
- -10 dBA or greater decrease



Questions?

- ❖ What are the proposed flight procedure options?
- ❖ What altitude are aircraft flying today?
- ❖ What are the air traffic constraints with turning left?
- ❖ How would the noise change and what is the potential perception?
- ❖ What is the noise from an individual flight on each procedure?
- ❖ **How would these options be studied in the Environmental Process?**
- ❖ Summary and Next Steps



Any Change in Procedure Environmental Review

- ❖ Must comply with NEPA.
 - Uses FAA criteria for flight procedure changes
- ❖ Must comply with strict regulations with respect to GTNP and the Elk Refuge



Questions?

- ❖ What are the proposed flight procedure options?
- ❖ What altitude are aircraft flying today?
- ❖ What are the air traffic constraints with turning left?
- ❖ How would the noise change and what is the potential perception?
- ❖ What is the noise from an individual flight on each procedure?
- ❖ How would these options be studied in the Environmental Process?
- ❖ **Summary and Next Steps**

❖ Summary

- RNP procedures are not likely to be available for much of the aircraft for a 5-year time period
- There are air traffic constraints in turning to the left
- Any of the new procedure result in a noticeable movement of noise from one noise sensitive area to another

❖ Next Steps

- Taskforce absorbs and reviews this new information
- Provide questions and comments by July 11th
- Begin preparing board draft of taskforce work for review at August meeting