Southern Departure Study

Jackson Hole Airport

Task Force Meeting # 5
August 16, 2022

Agenda

- Meeting Purpose
- Review of Options
- Task Force Comments Received Since Last Meeting
- Summary
- Task Force Discussion
- Next Steps
- Public Comment

Task Force Process

- Airport Board requested time to evaluate reasonable and feasible options to the KICNE 1 departure procedure
- Airport Board assembled consulting team composed of aircraft procedure designers, aircraft noise specialists, air traffic specialists, pilots and environmental specialists.
- Designed and evaluated seven Southern Departure Options, conforming to FAA design criteria and standards
- Evaluated noise effects for each Option, transparent process
- Considered comments from the public and responded to comments from Task Force members

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Meeting Purpose

The presentation will present the evaluated Options for a revised departure procedure to the south along with the noise associated with each Option as it relates to noise sensitive land uses.

Task Force Objectives/Guidelines from the Board

- Identify and prioritize possible improvements to southern departures that will reduce aircraft noise intrusion. (*Task Force Meeting #1 on February 10, 2022, Slide 5*)
- Solutions which optimize for one group at the expense of others will not be carried forward—noise will not shift from one neighborhood to another. (*Task Force Meeting #1 on February 10, 2022, Slide 7*)
- This includes all noise sensitive uses including public lands.

> As stated in the third amendment to the Use Agreement, dated May 19, 2011, the Airport shall work to *"develop and implement such reasonable and cost effective mitigation measures as may be available to reduce environmental impacts on the Park to the lowest practicable levels consistent with the safe and efficient operations of the Airport, and with applicable law and contractual obligations."*

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Flight Procedures

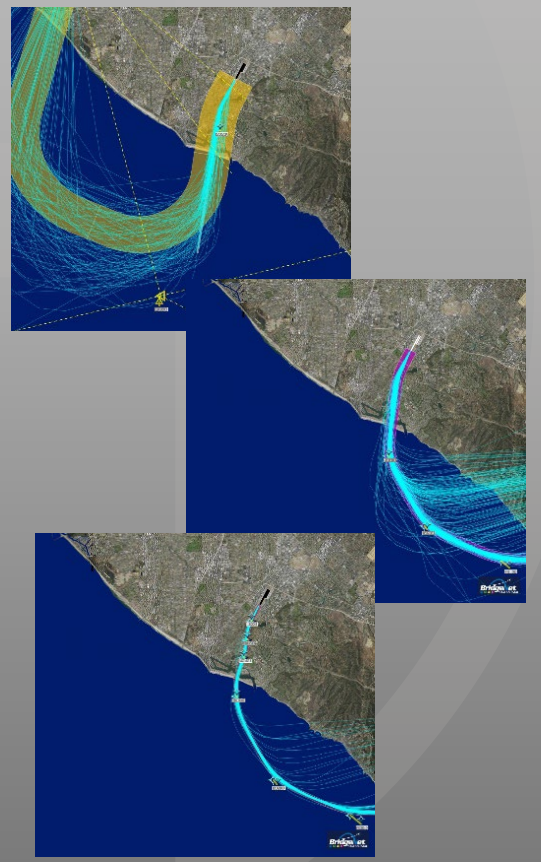
ALPIN	FAA KICNE	C1 RNAV SE	C2 RNP SE	C3 RNAV SW	C4 RNP SW	C5 RNP East	C6 ZIPET
Existing	S East	S East	S East	S West	S West	Corkscrew	RNAV St
Original Concept #		**1**	**5**	**2**	**4**	**6**	**3**

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.

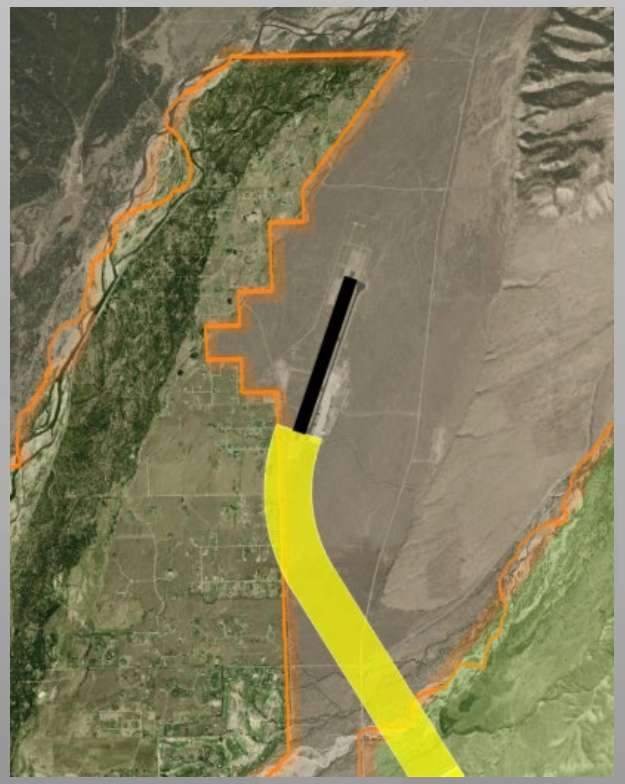
RNP – RNP is a type of RNAV procedure that allows an aircraft to fly a straight or curved path with a very high level of precision. They are more commonly used for arrivals with only limited use for departures at airports where the very high precision provides added value. To fly an RNP procedure, an 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 RNPs 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.

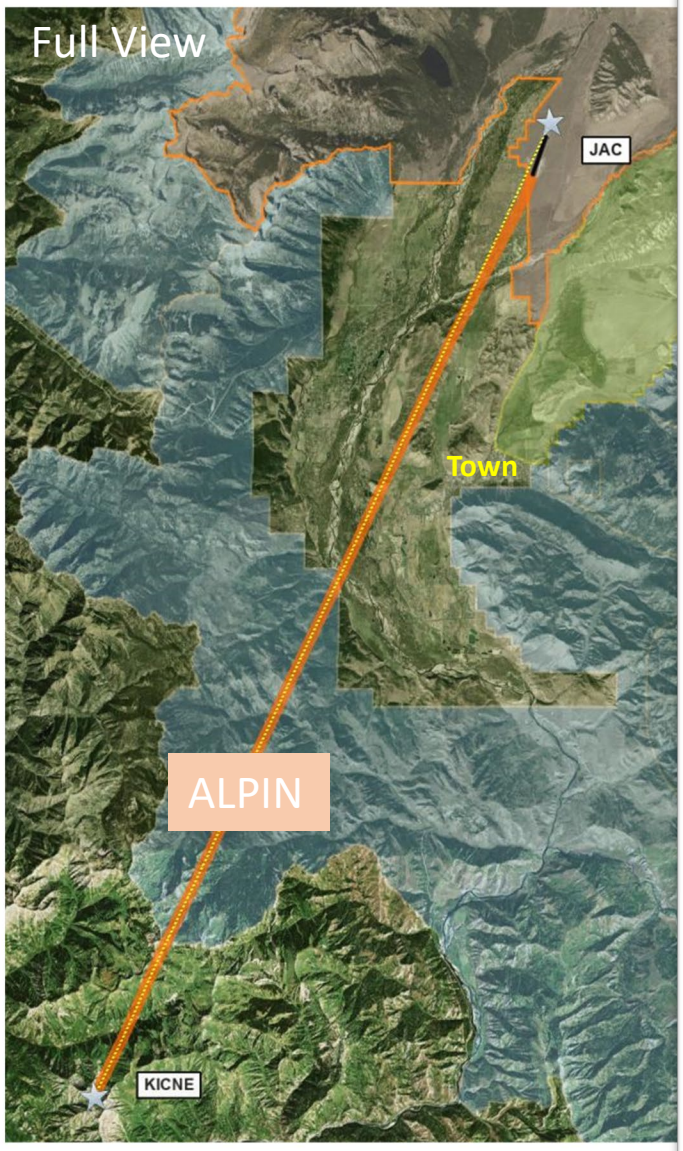


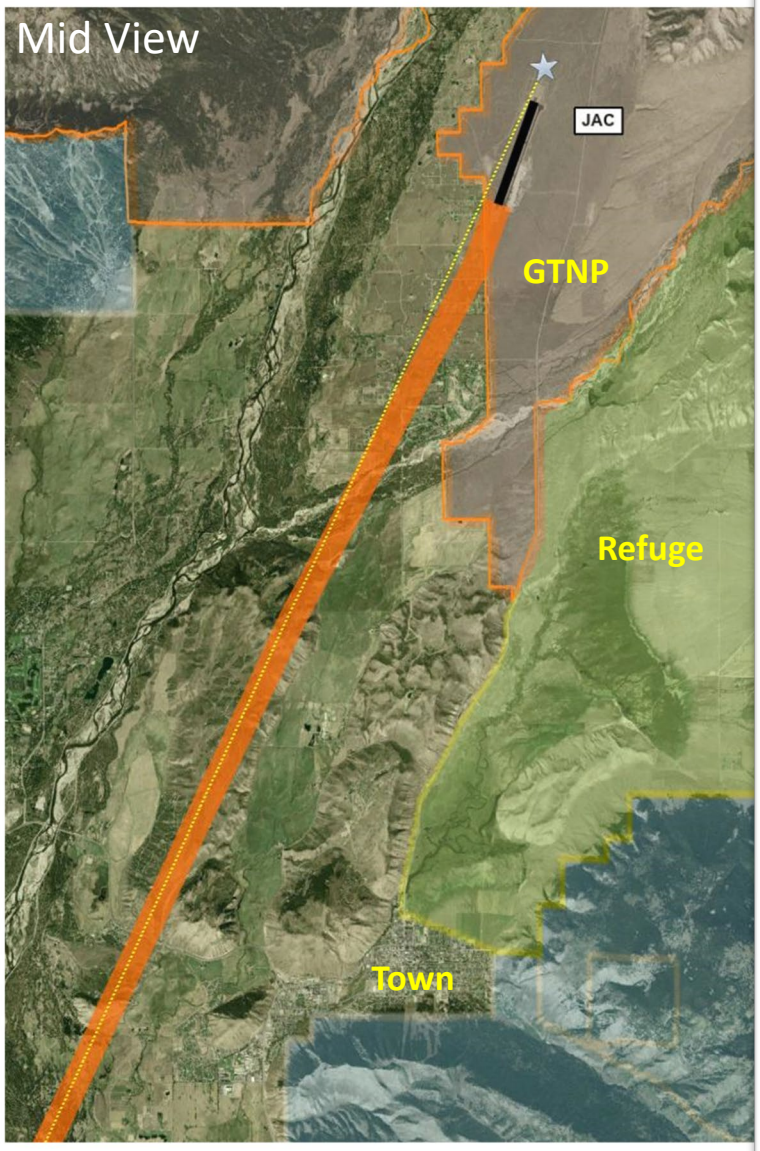
Historical Noise Abatement Left Turn

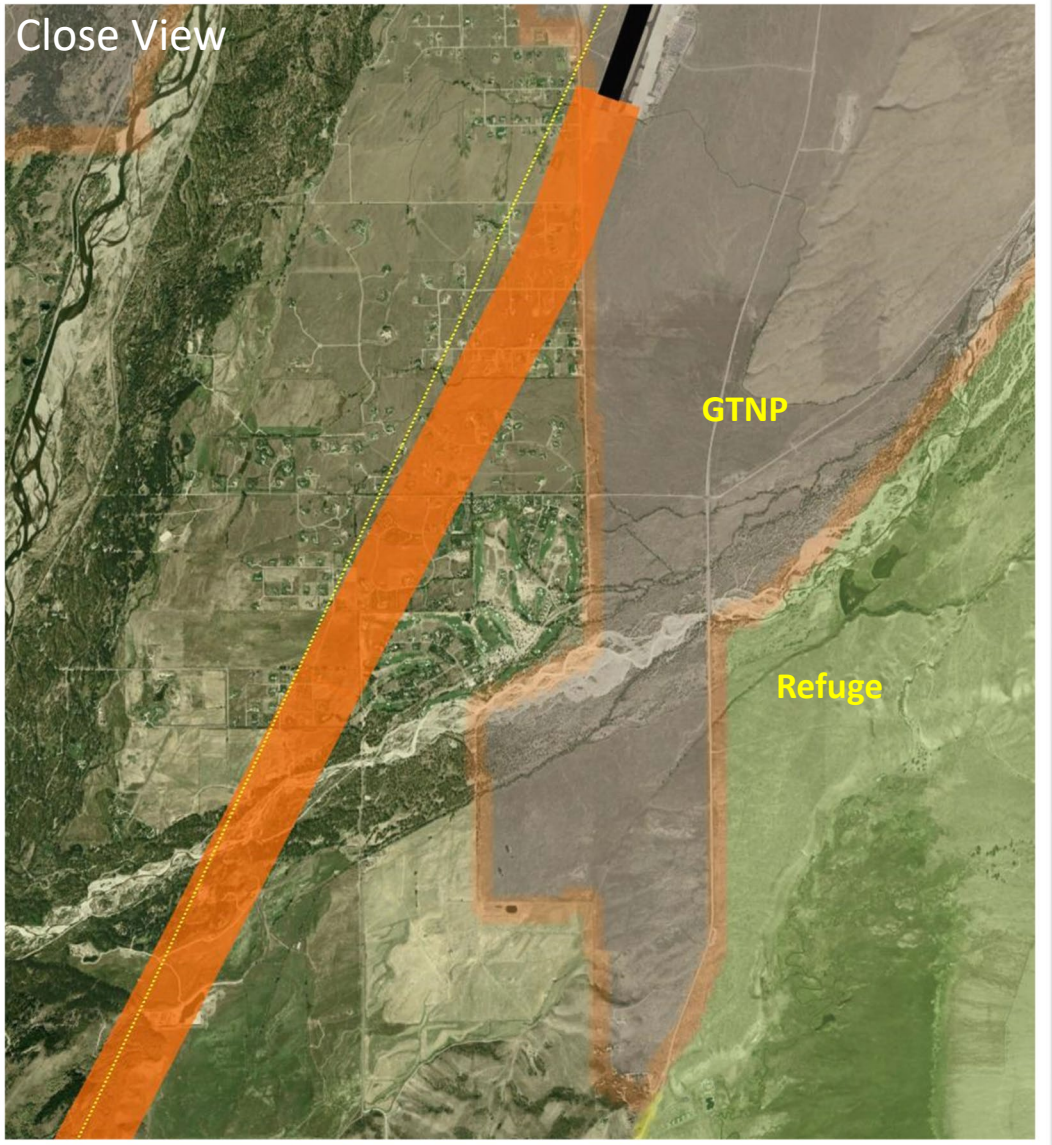
- Historically aircraft made an unguided left turn on departure when departing on Visual Flight Rules (VFR) conditions
- As a result of air traffic automation and flight department practices to improve standardization and safety, this turn was effective discontinued roughly 20 years ago
- Today, Air Traffic and Flight Departments expect an aircraft to depart on a published – instrument flight procedure
- As part of the Part 150 (completed in 2018) the Board proposed the development of a left turn departure procedure
- The FAA evaluated a new potential path KICNE, which was paused for additional community input
- The Southern Departure Task Force assessed noise for the KICNE, as well as other procedure routing options



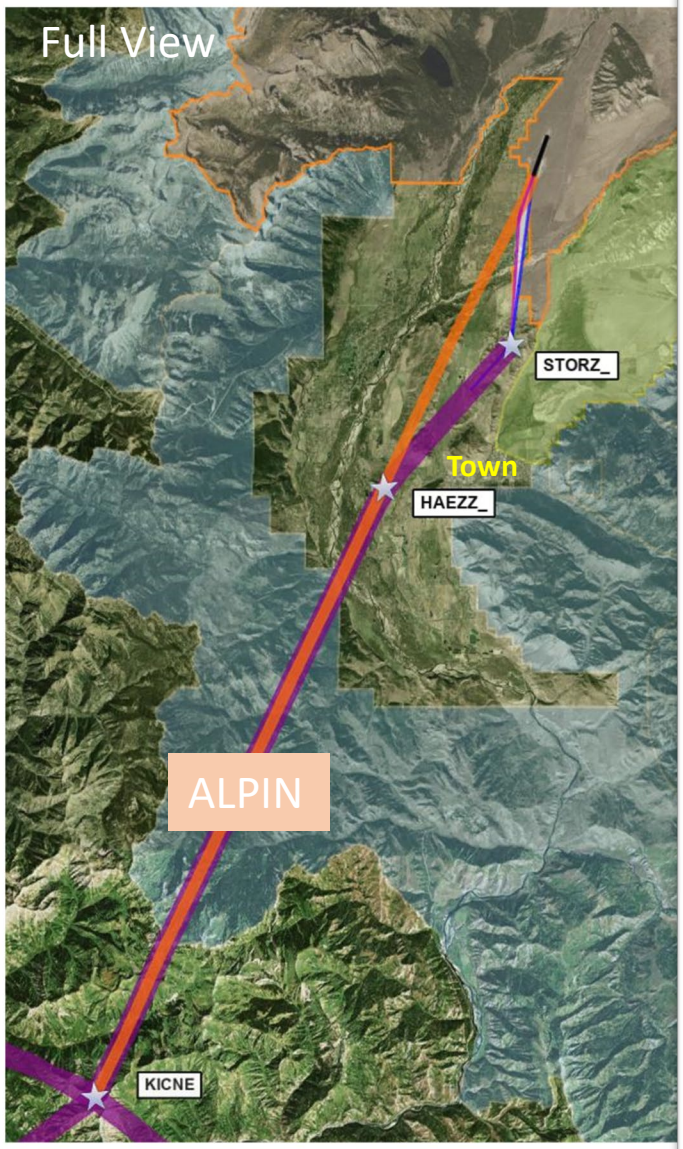
Existing ALPIN and RNAV Overlay

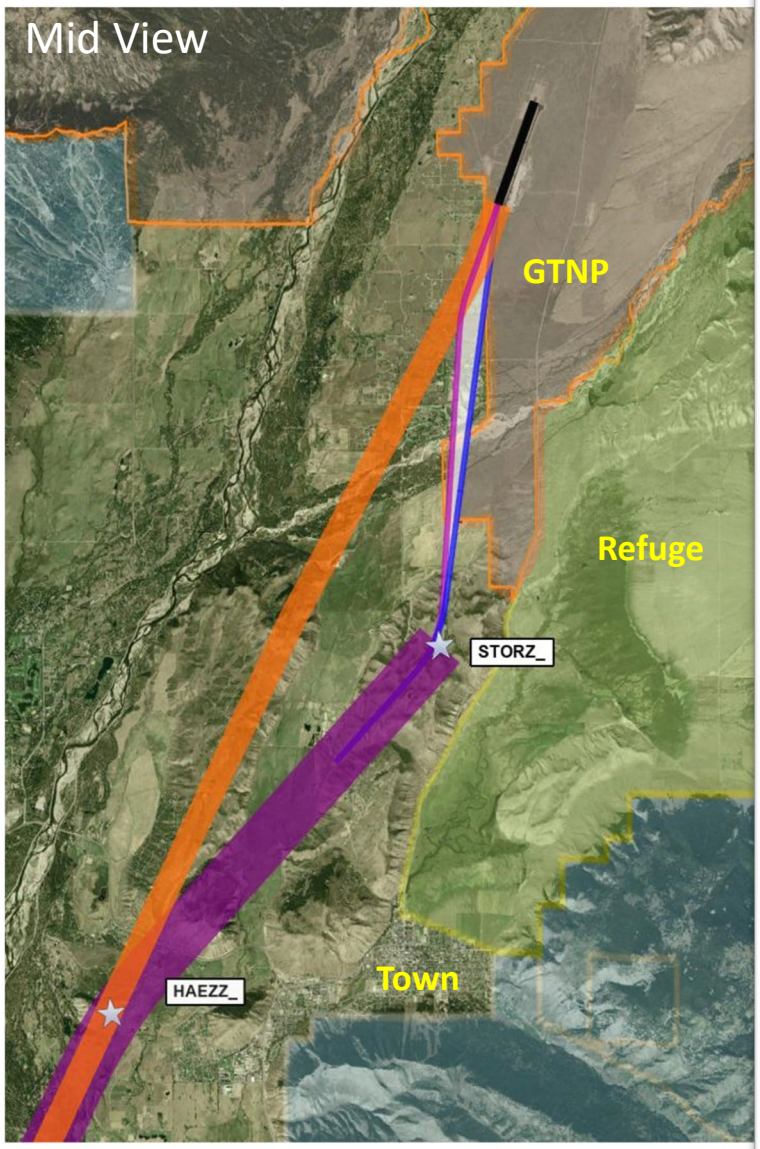


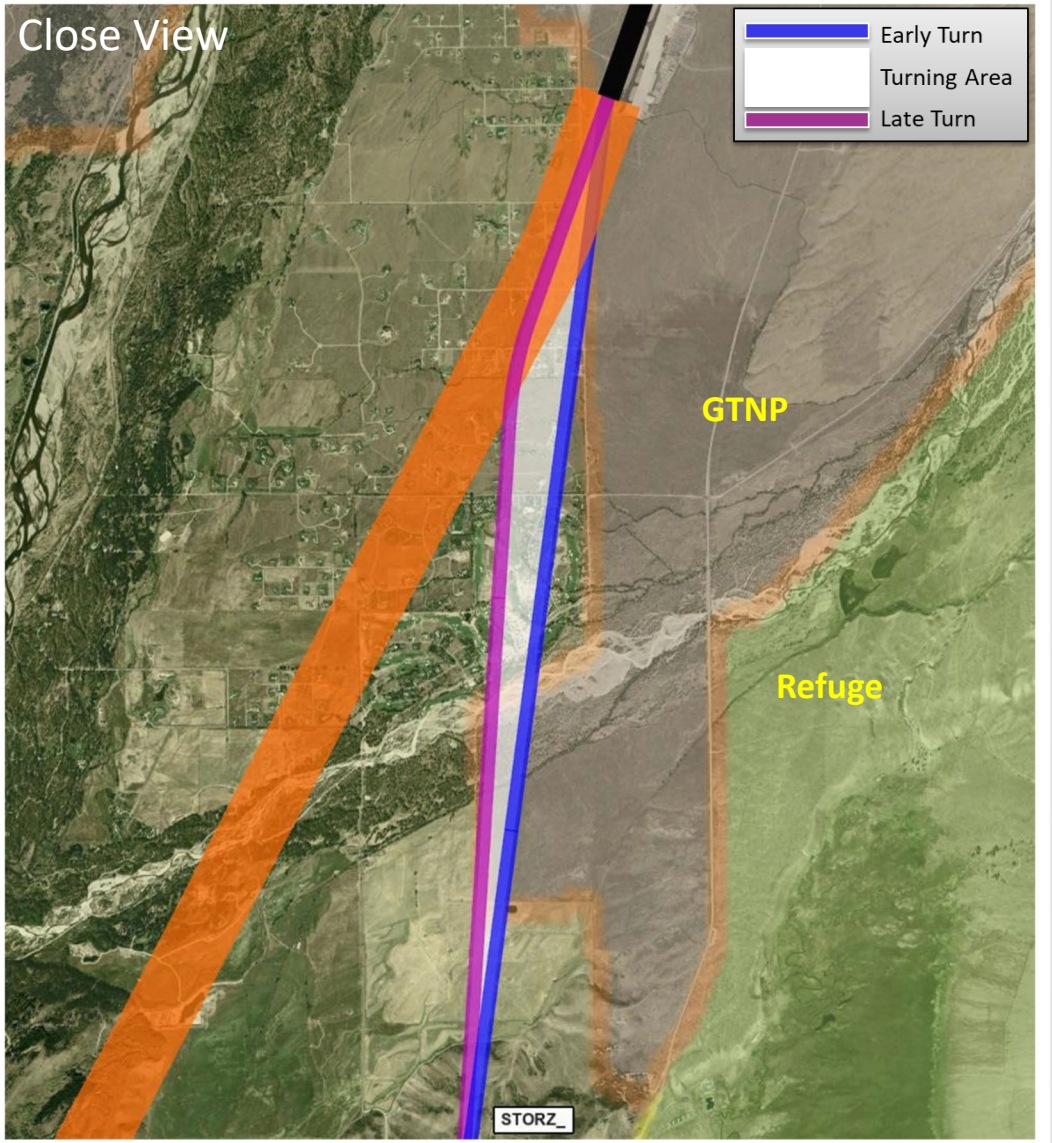




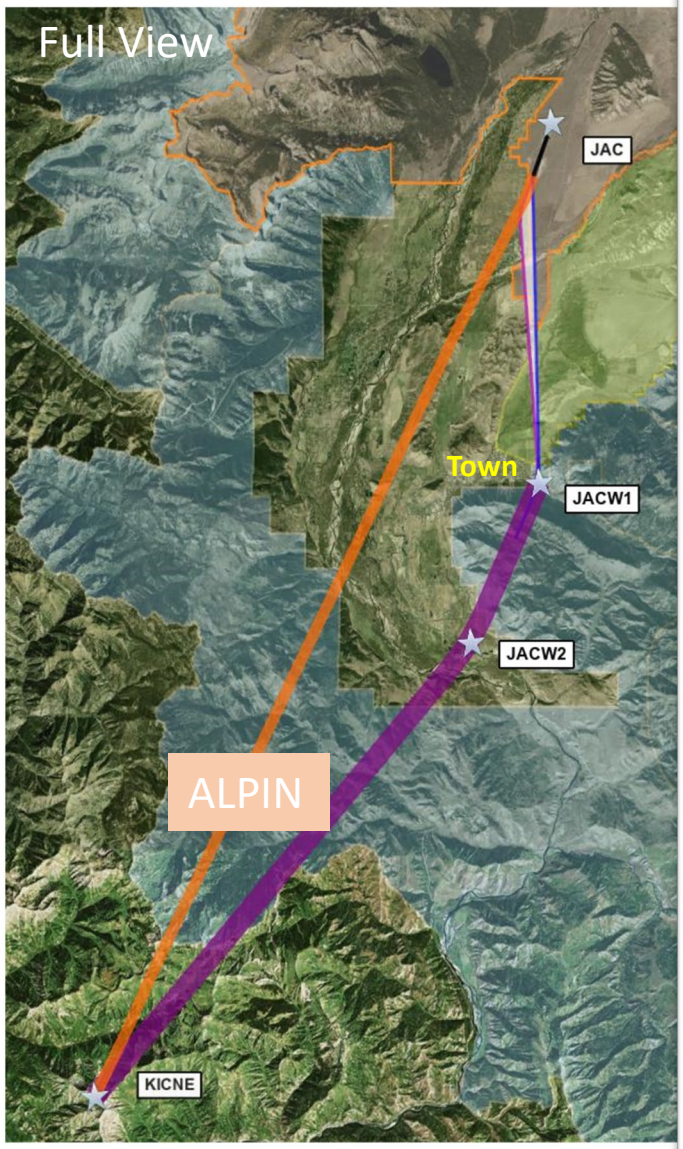
FAA KICNE ONE (RNAV)

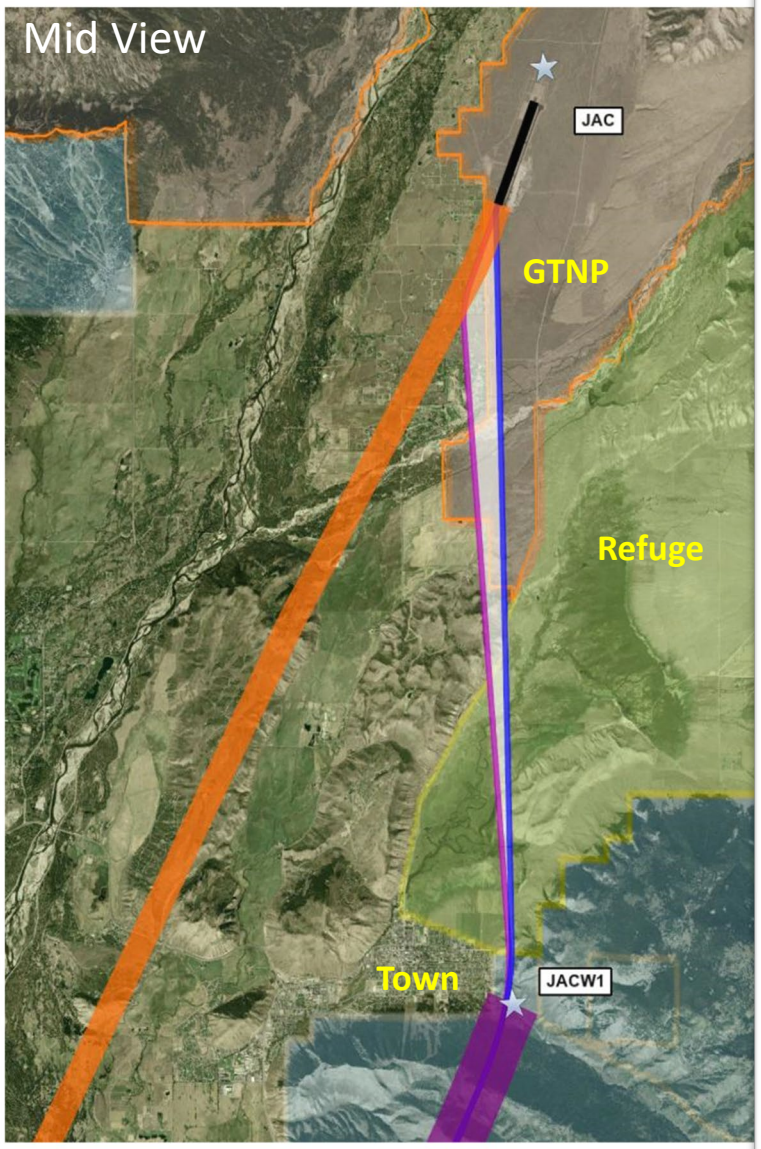


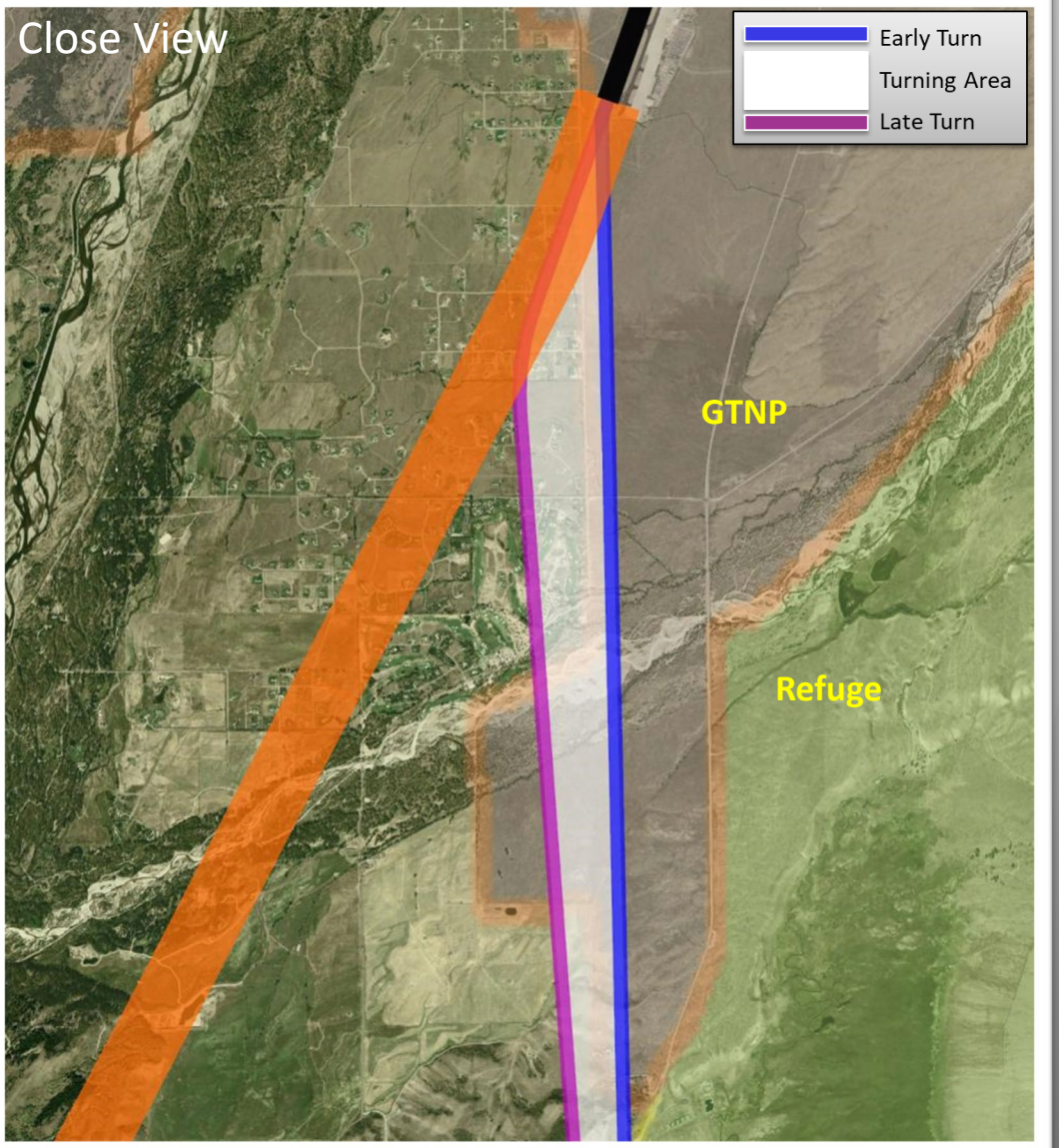




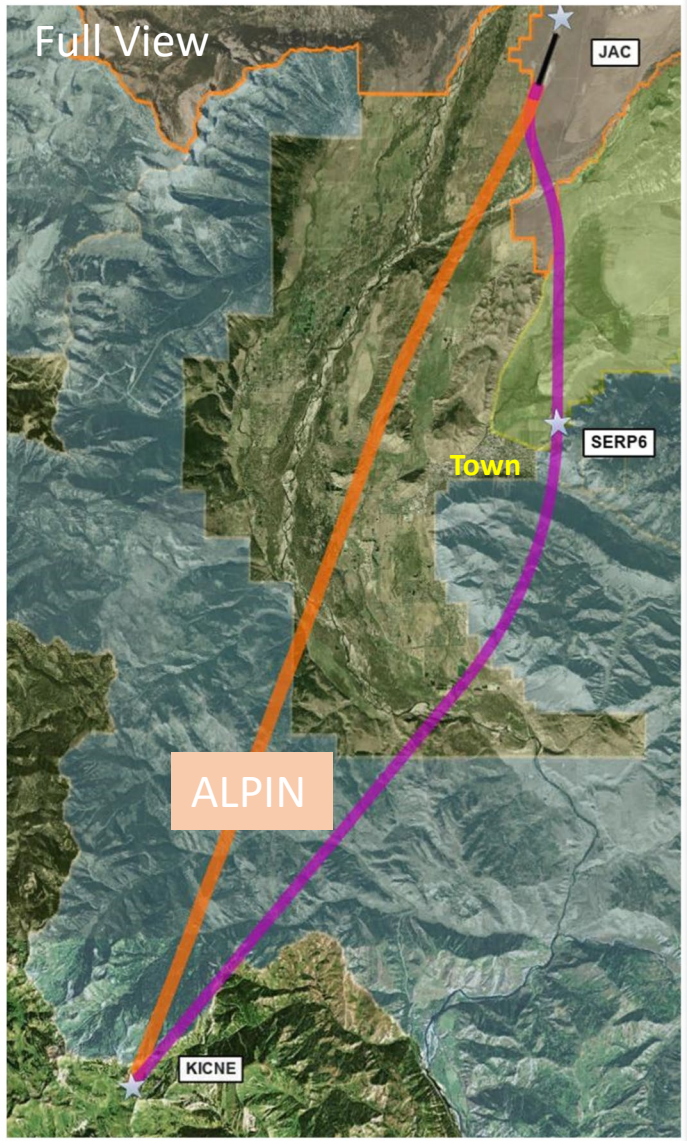
C1 RNAV to Southeast (*Concept #1 RNAV DP – East Shift*)

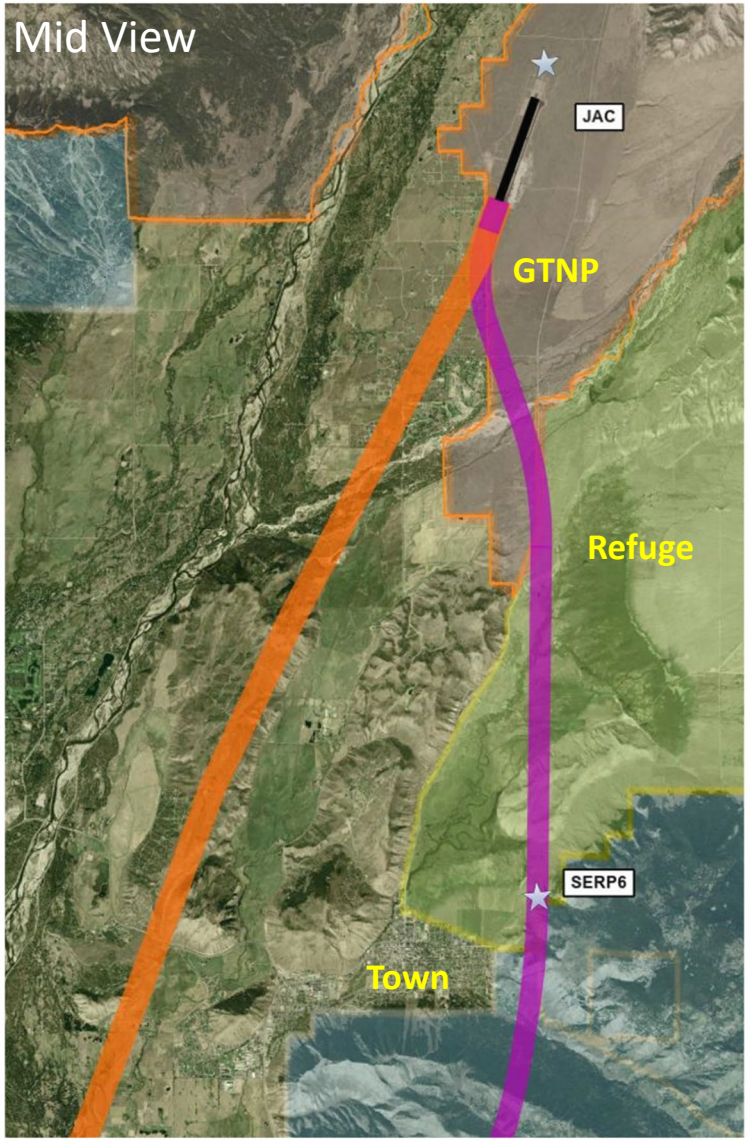


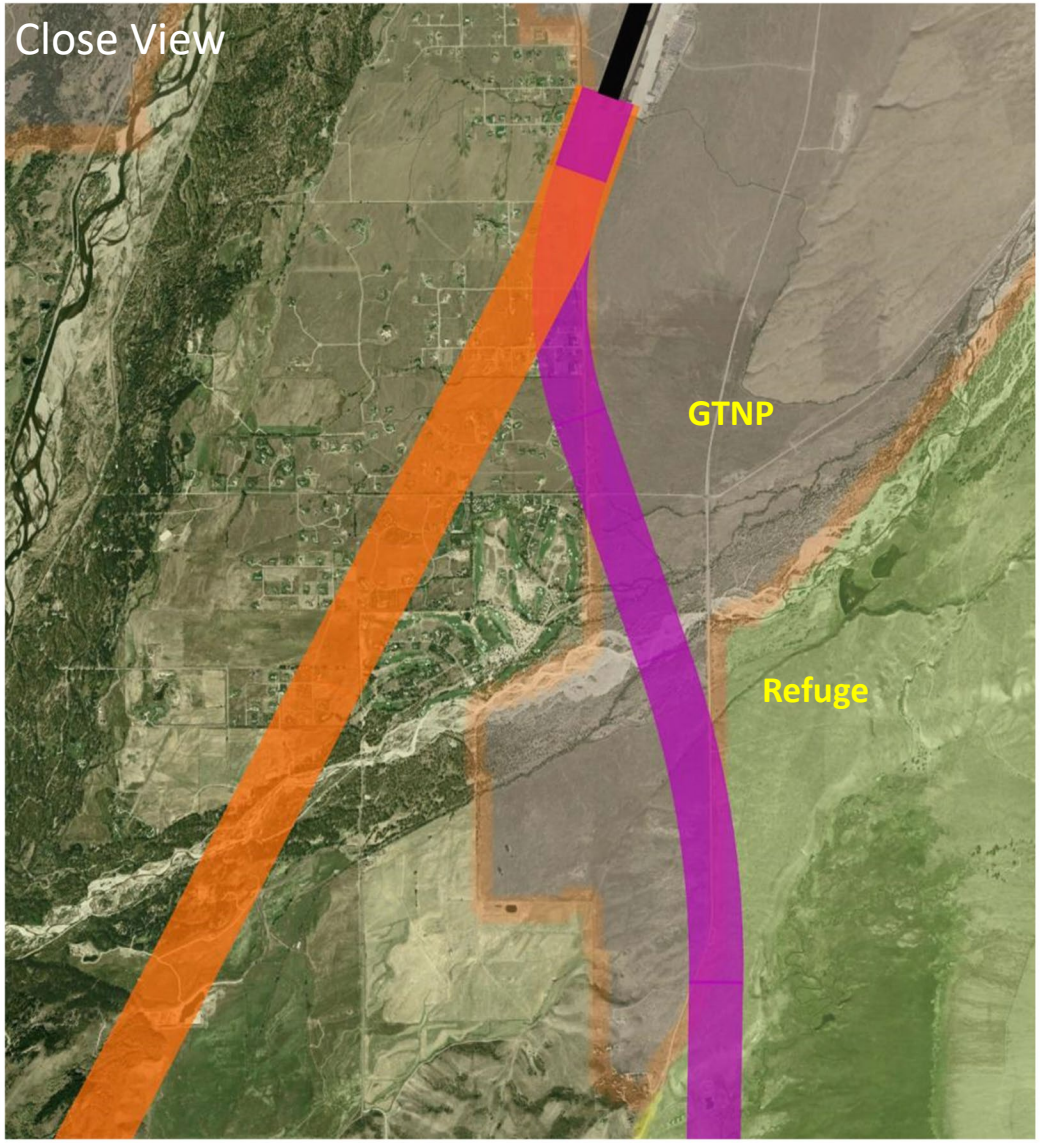




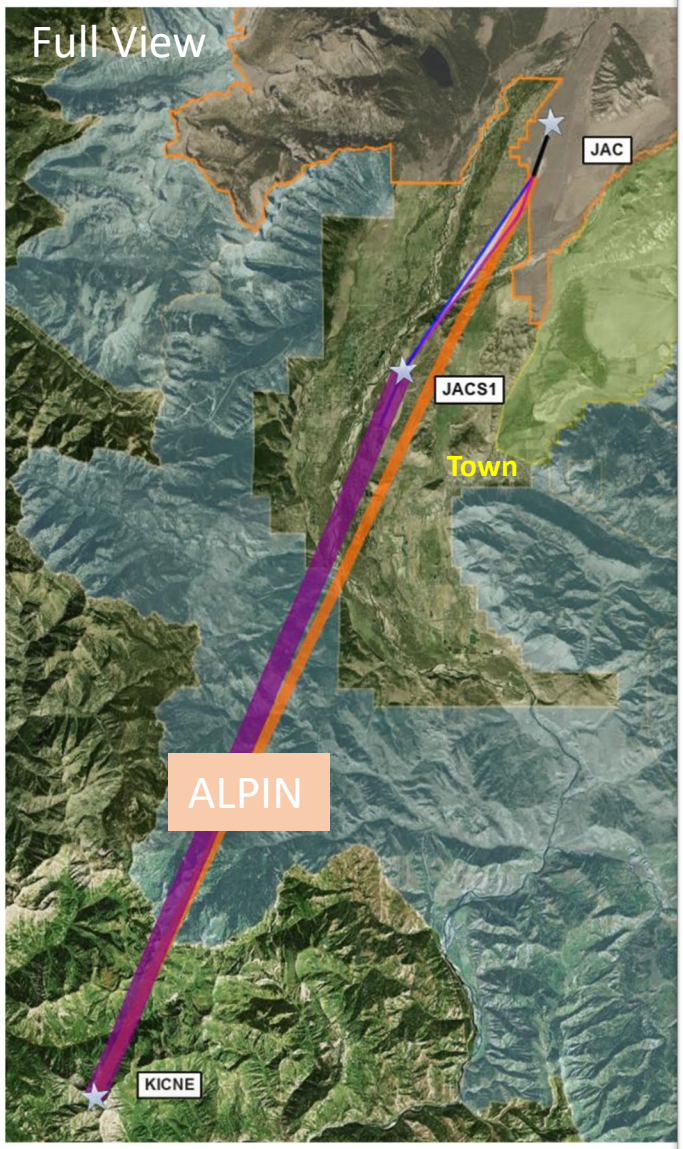
C2 RNP to Southeast (*Concept #5 Immediate Turn to Southeast*)

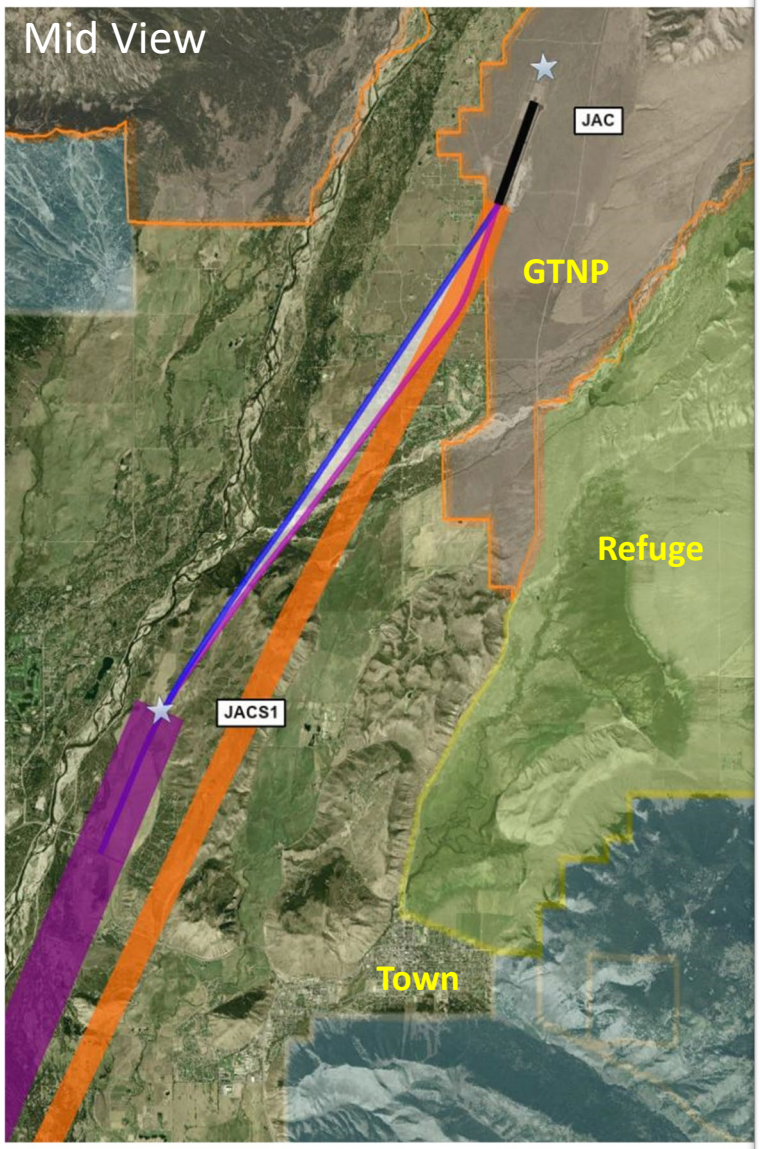


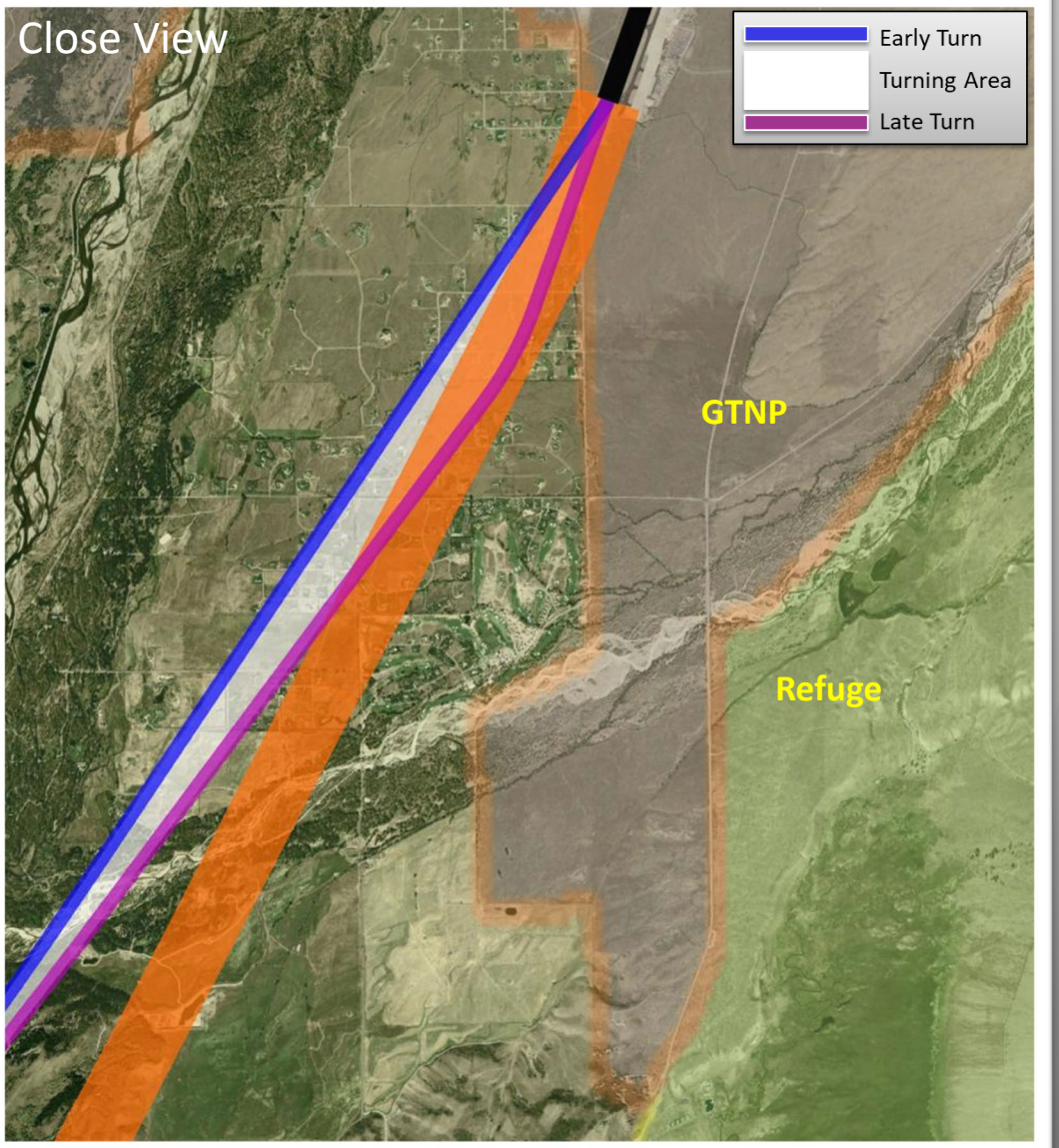




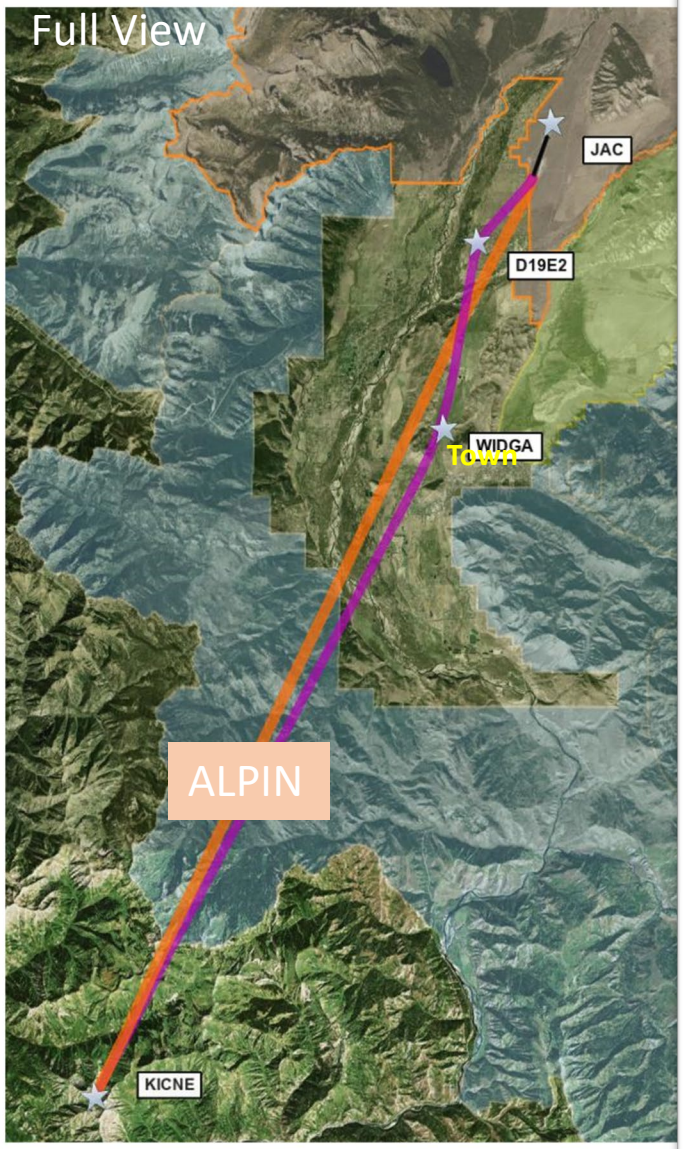
C3 RNAV to Southwest (*Concept #2 RNAV DP – West Shift*)

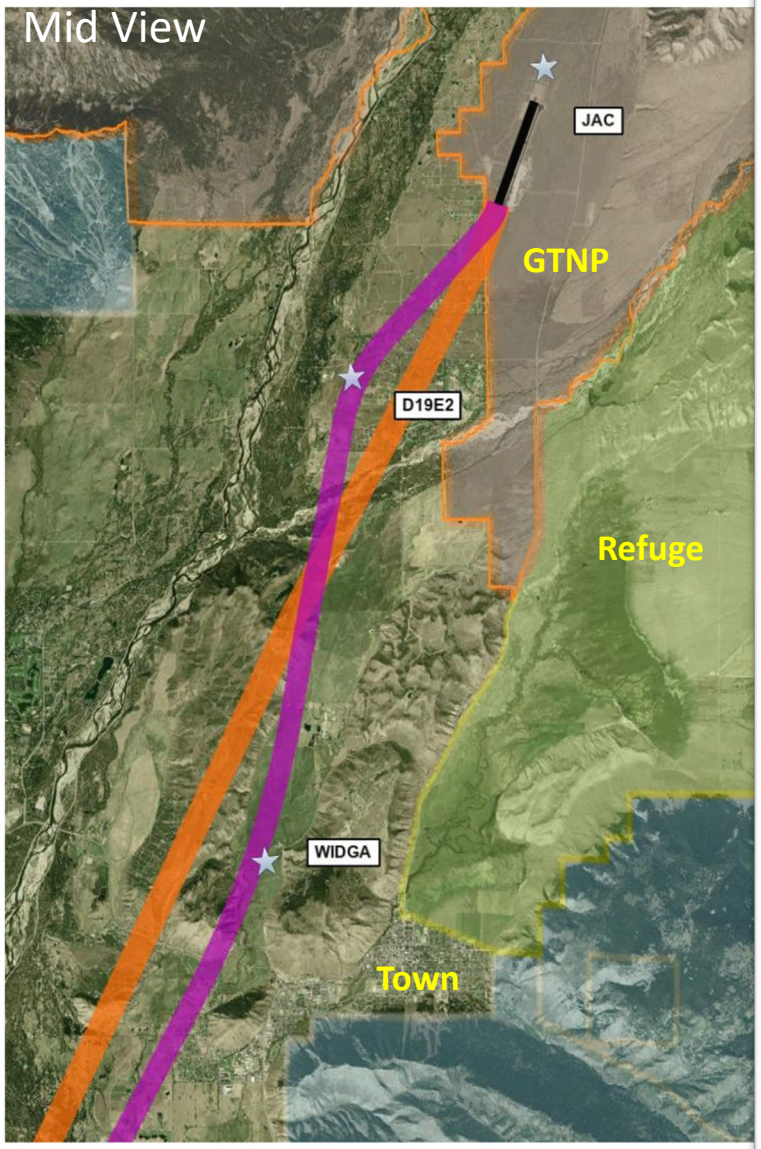


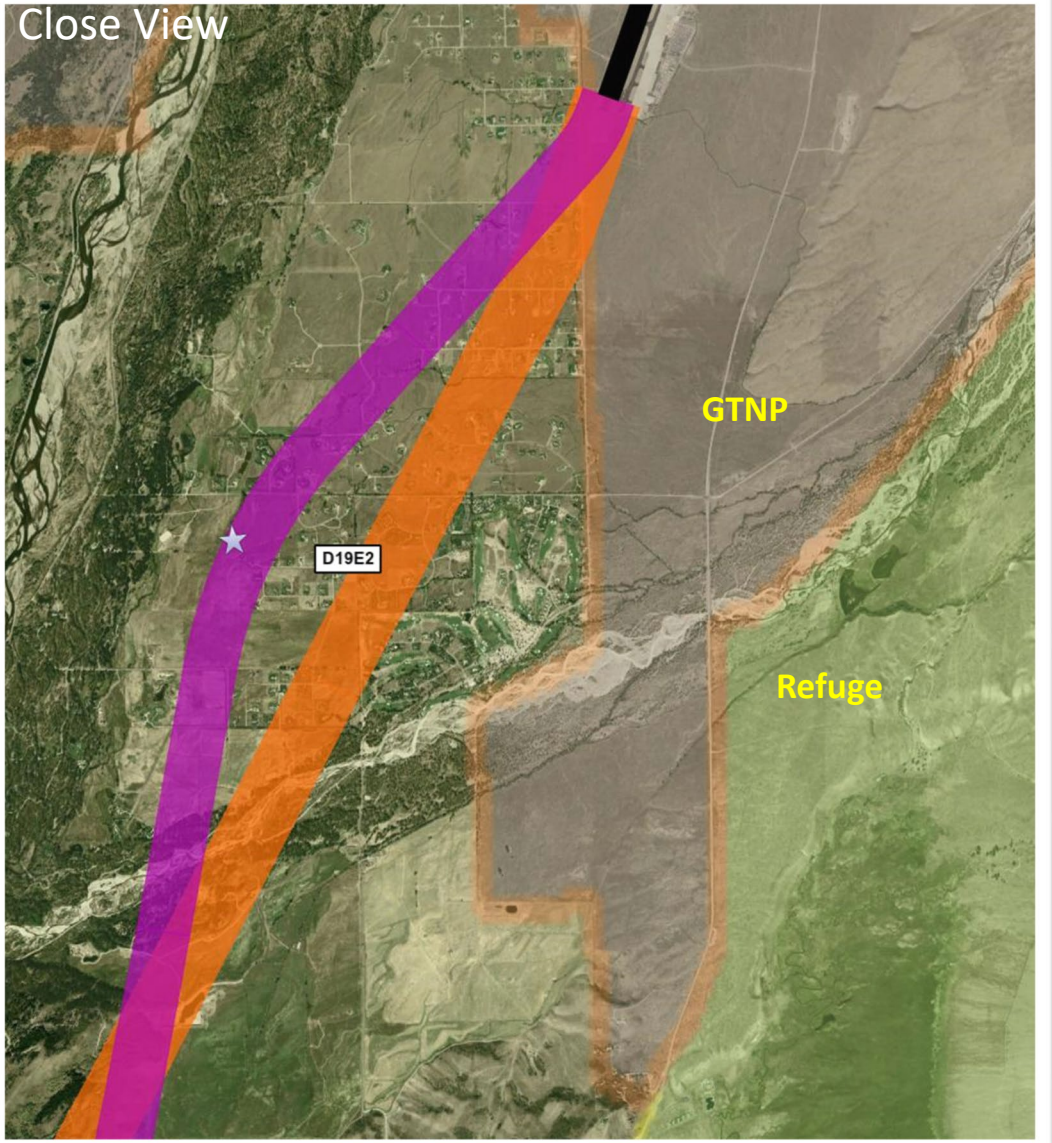




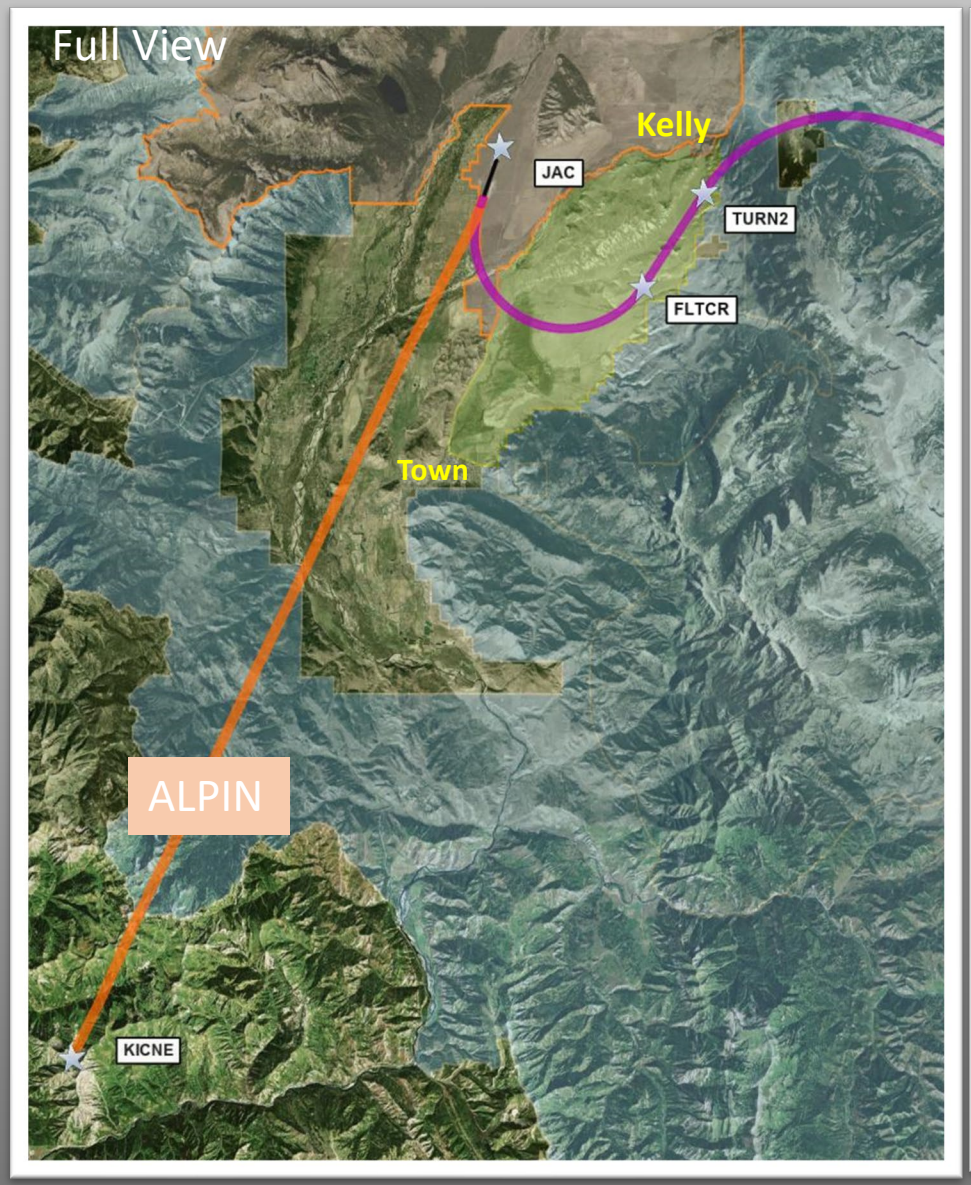
C4 RNP to Southwest (*Concept #4 Immediate Turn to Southwest*)

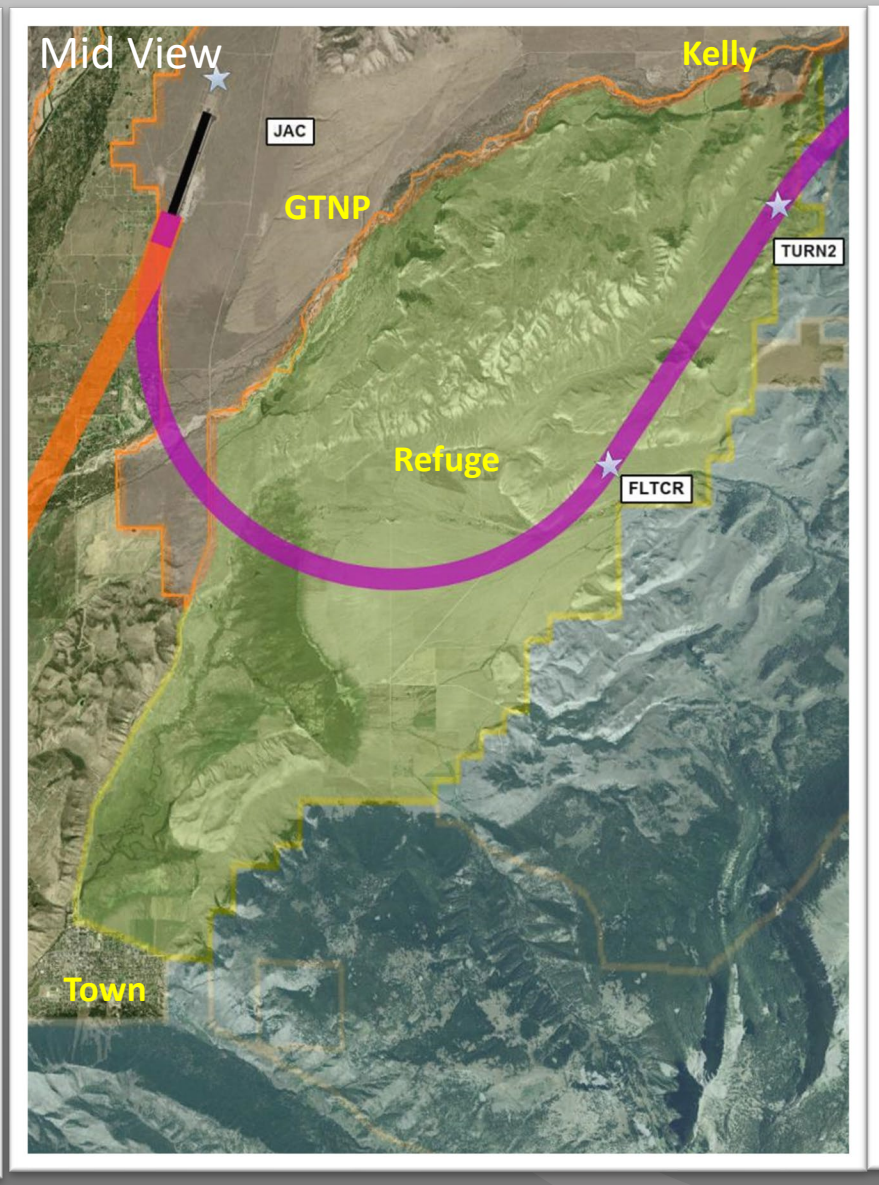


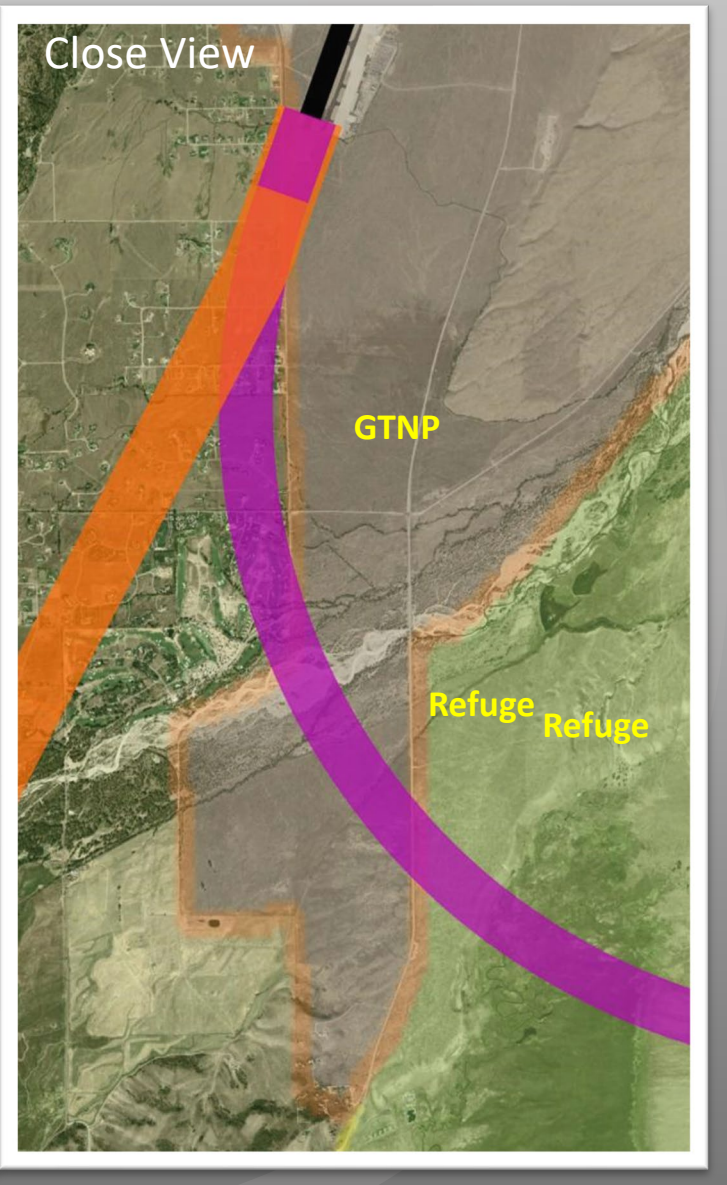




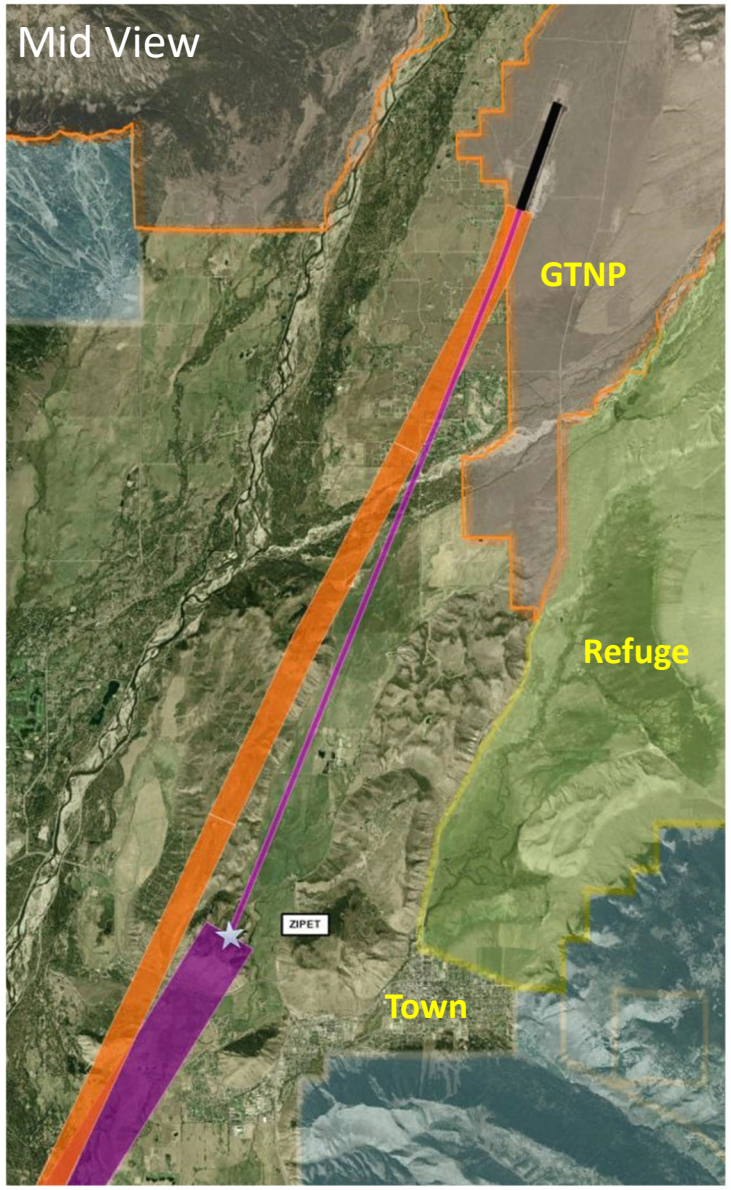
C5 RNP to East (*Concept #6 East Hook Departure/Corkscrew*)

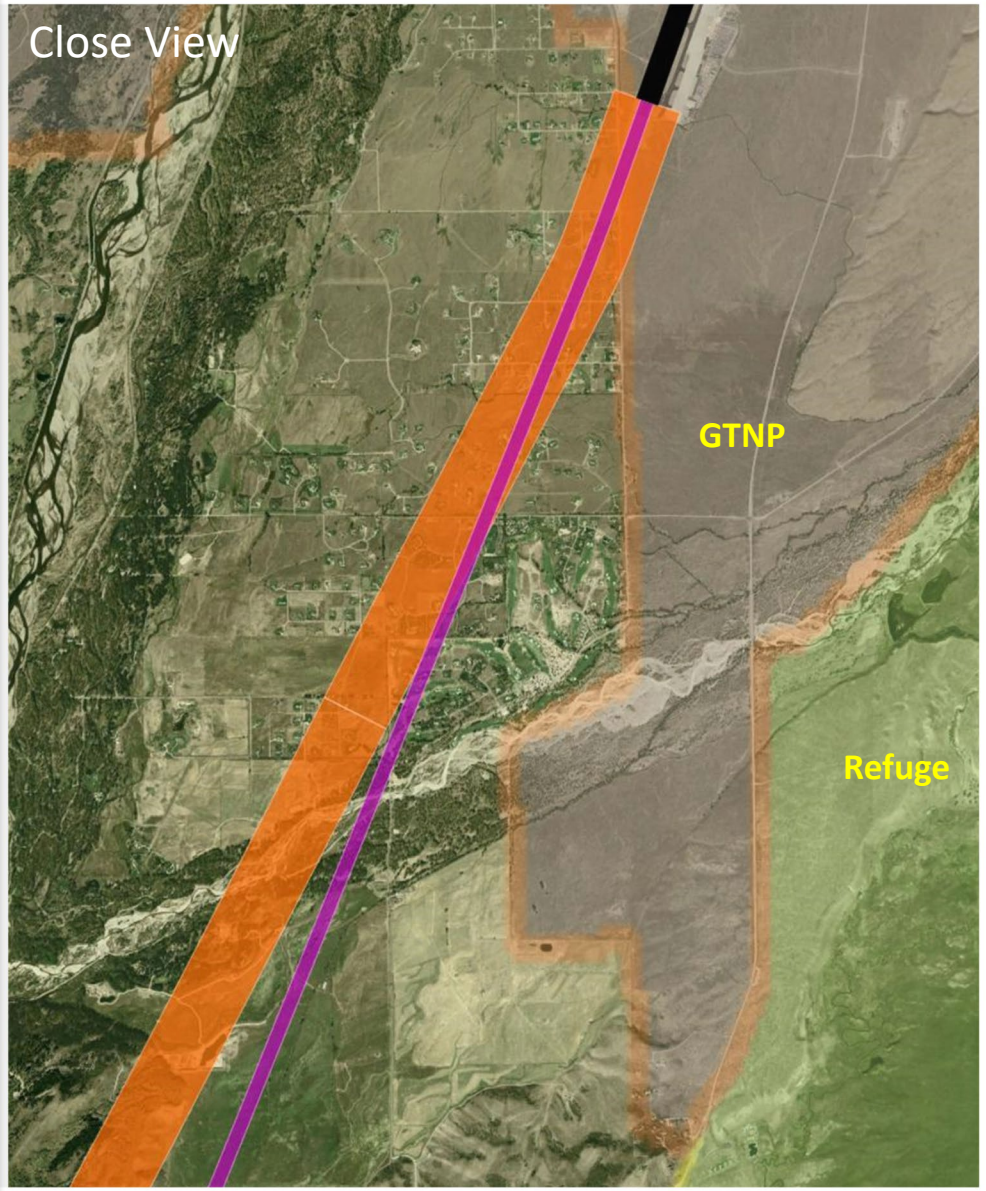




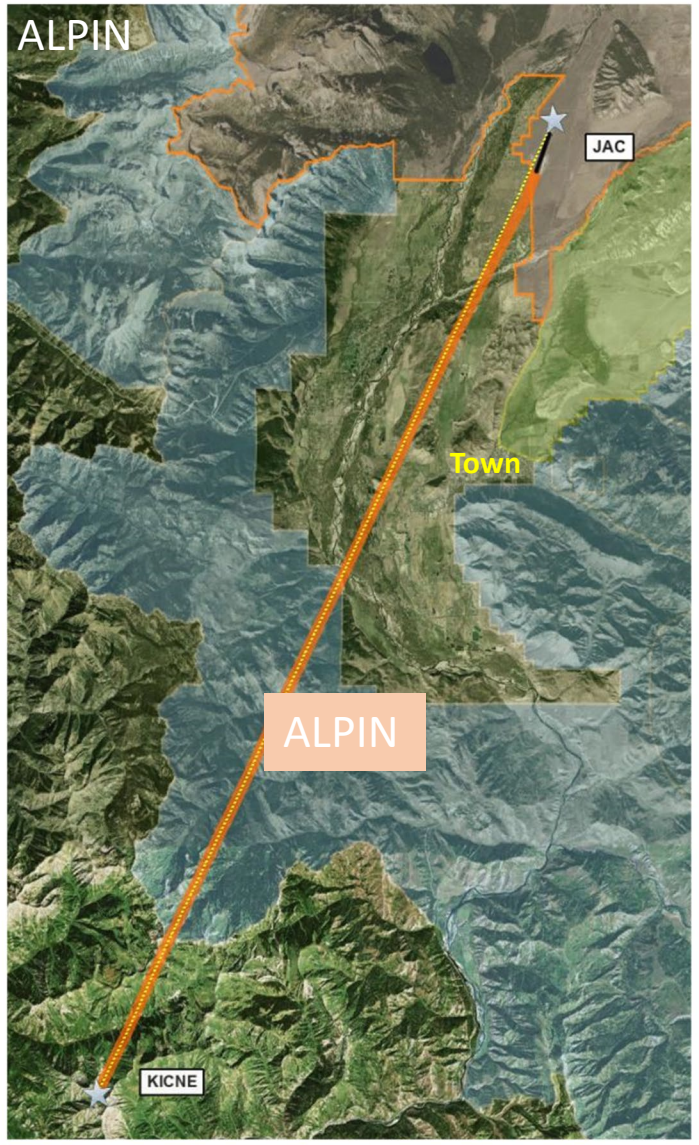


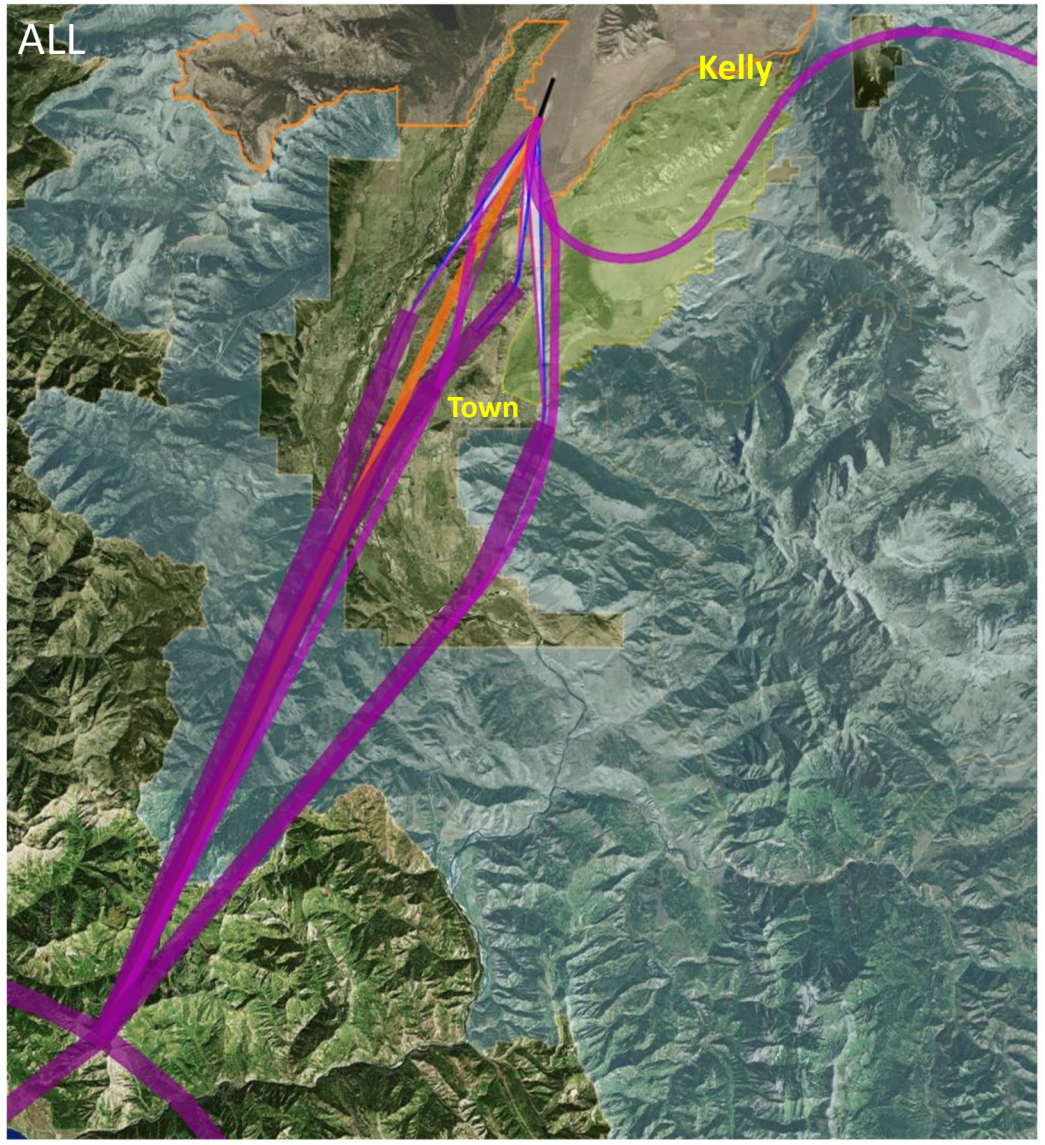
C6 ZIPET RNAV (*Concept #3*)

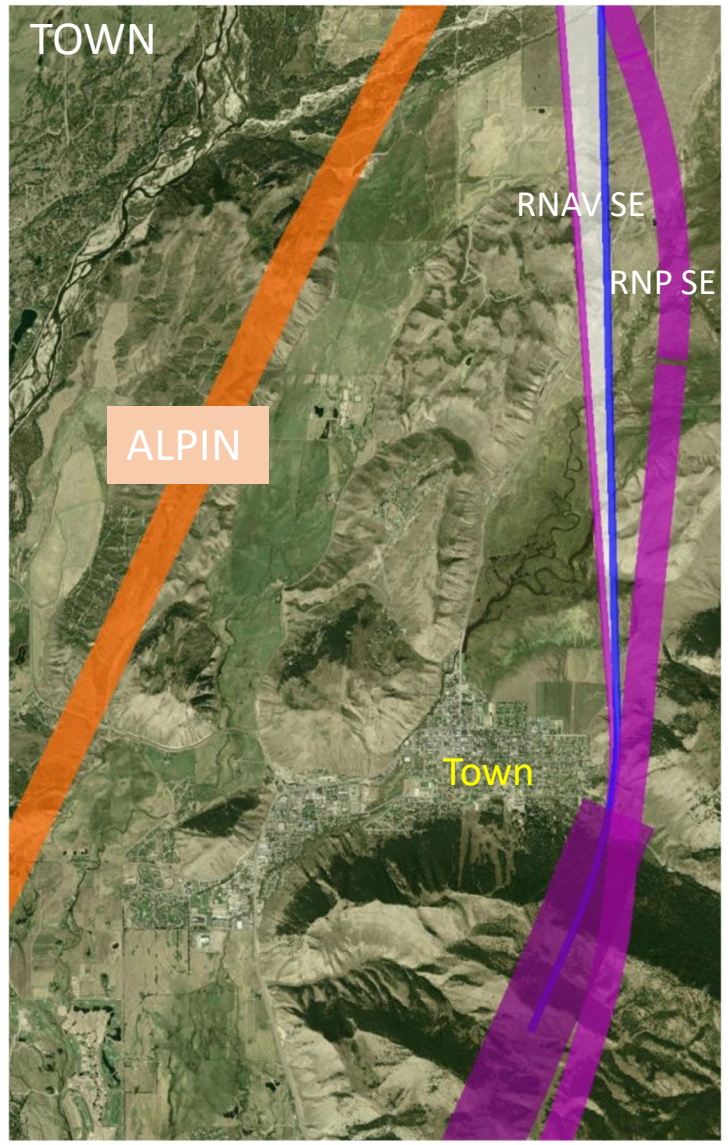




All Procedures







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Task Force Member Comments Summarized

- TJ McCann—No magic southern departure route. The current ALPIN THREE and the proposed RNAV overlay remains the most efficient way to route aircraft away from the Jackson Hole Airport to the south without shifting the noise footprint to other neighborhoods or Grand Teton National Park.

- **Thank you for your comment. No response needed.**

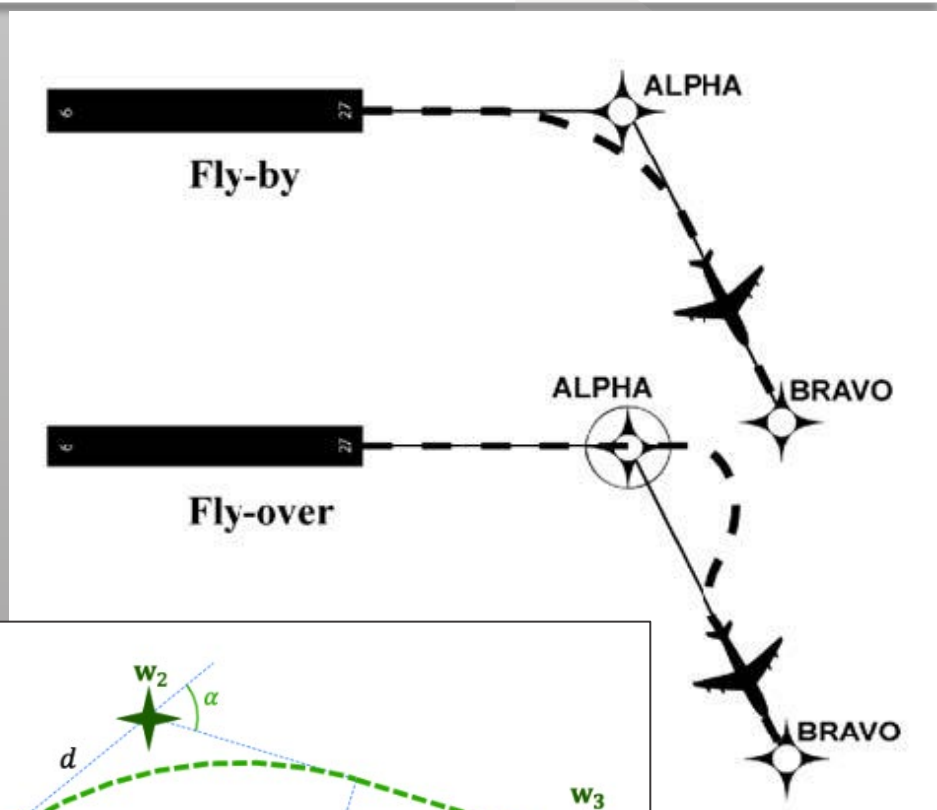
Task Force Member Comments Summarized

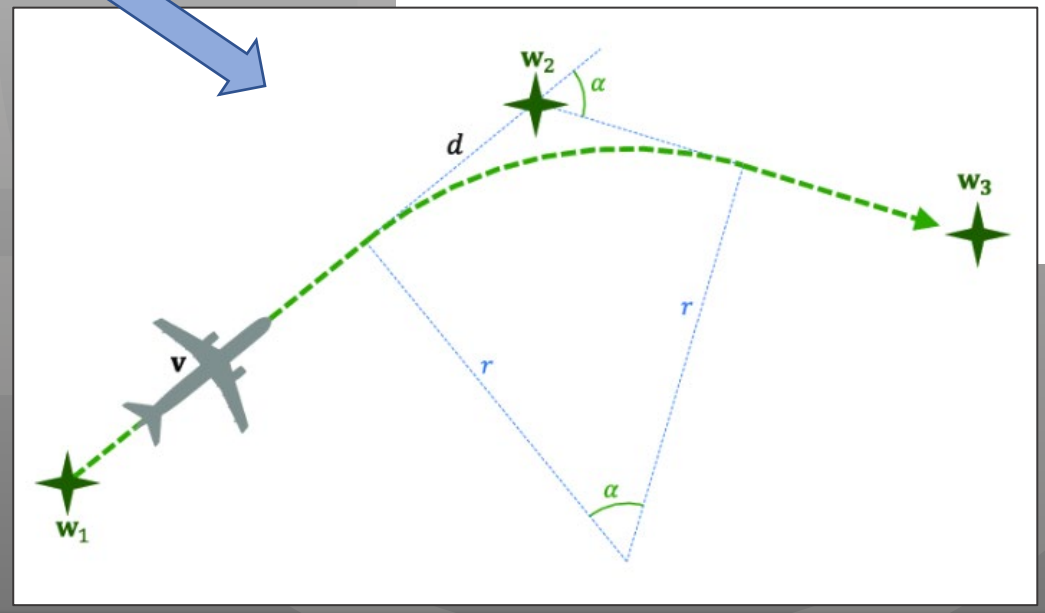
- Sally Painter—The original FAA approved flight route (KICNE) had a left turn than a right turn to join the track down the valley. Could we modify the Concept 1 flight path with a slightly more easterly left turn upon take off, flying over the gap between Hwy 89 and Spring Gulch, then a right turn to go between the Gros Ventre buttes, staying away from the Elk Refuge and town?

- **Thank you for your comment. An in-depth analysis of this routing was performed and detailed in the following technical slides.**

Turn Anticipation Recap

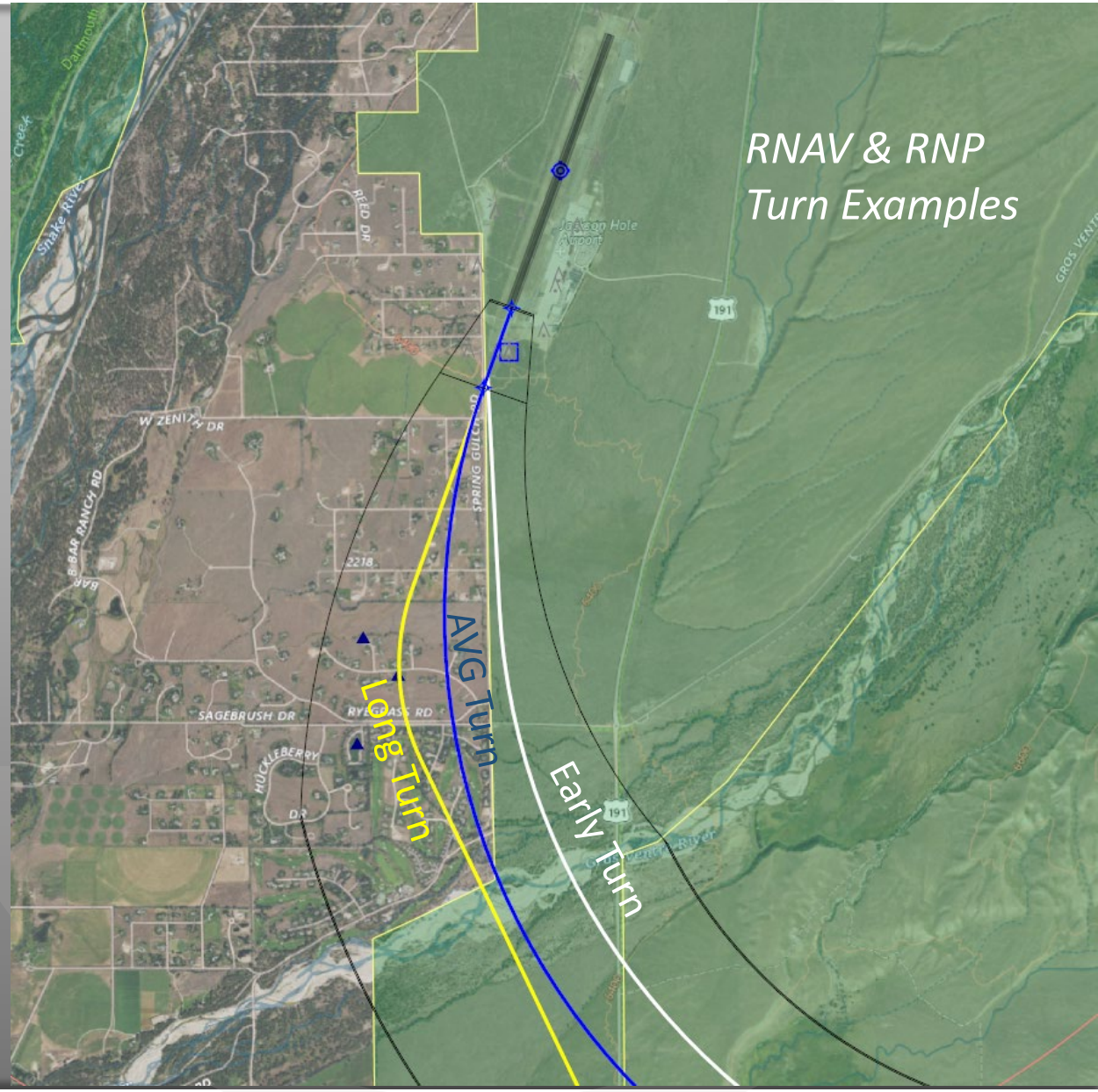
- Area Navigation (GPS) Procedure design requires '**Distance in Turn Anticipation**' (DTA) assessments to performed and adhered to.
- This provides room for the aircraft to start turning in advance of the GPS waypoint and then enough area to roll out of the turn before reaching the next waypoint.
- DTA buffers ensure aircraft can fly the turn points without excessive bank angles or maneuvering and accounts for varying wind & environmental conditions.





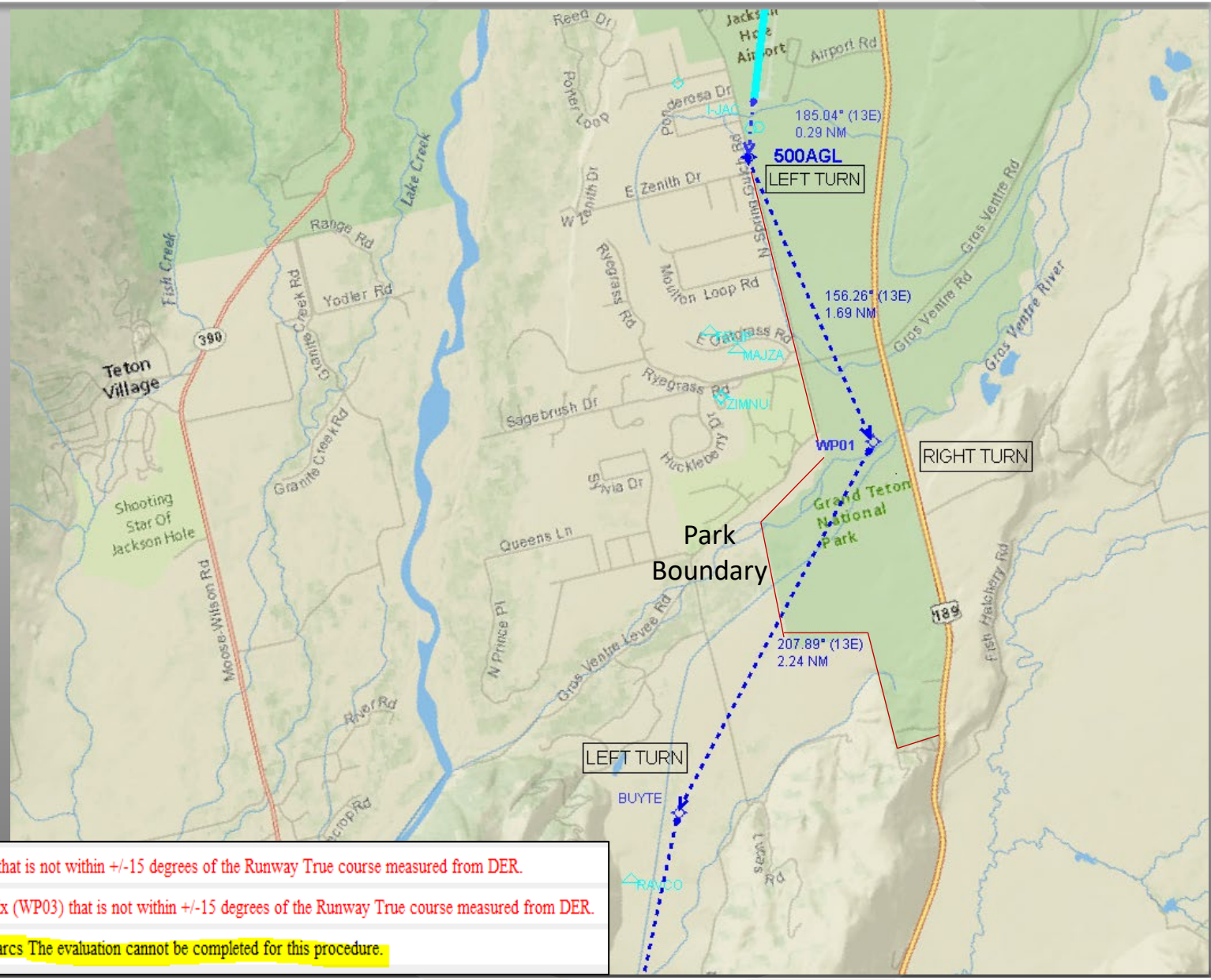
Flight Track Variability

- Aircraft reach 500 ft above ground level at different distances from the runway end
- This can lead to different flight tracks depending on the segment type and navigation used – such as RNAV



PAINTER REQUEST - RNAV PROPOSAL

- New design exceeds 15-degree initial course change limitation.
- Would require ~140-150 Knot speed limitation which is not practical for most jet aircraft.
- Does not meet turn anticipation standards which prevents design within FAA criteria for IFR Departures.



Example of FAA Design Criteria Violations:

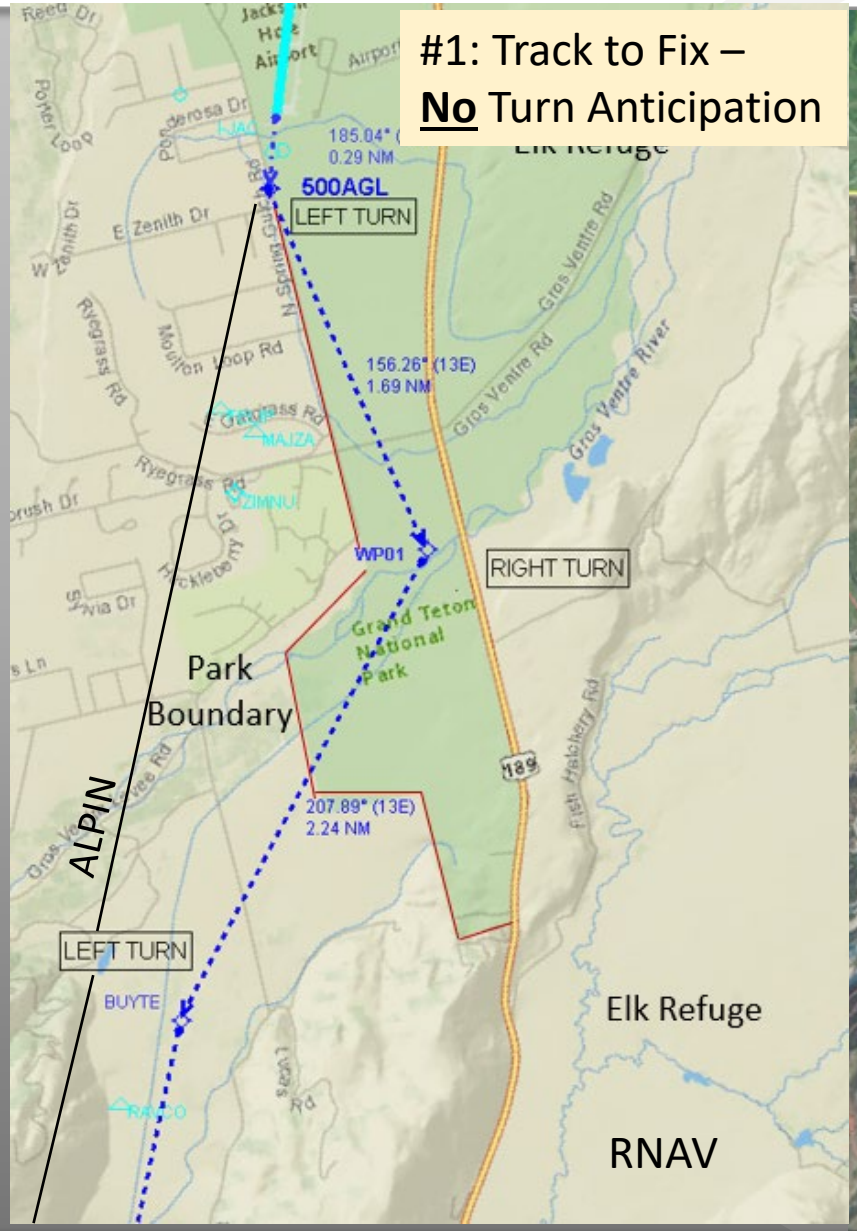
RDO75: [Waiver Required] The route beginning at RW19 and ending at ZIPET has a DF-DF leg sequence (joined at WP03) that is not within +/-15 degrees of the Runway True course measured from DER.

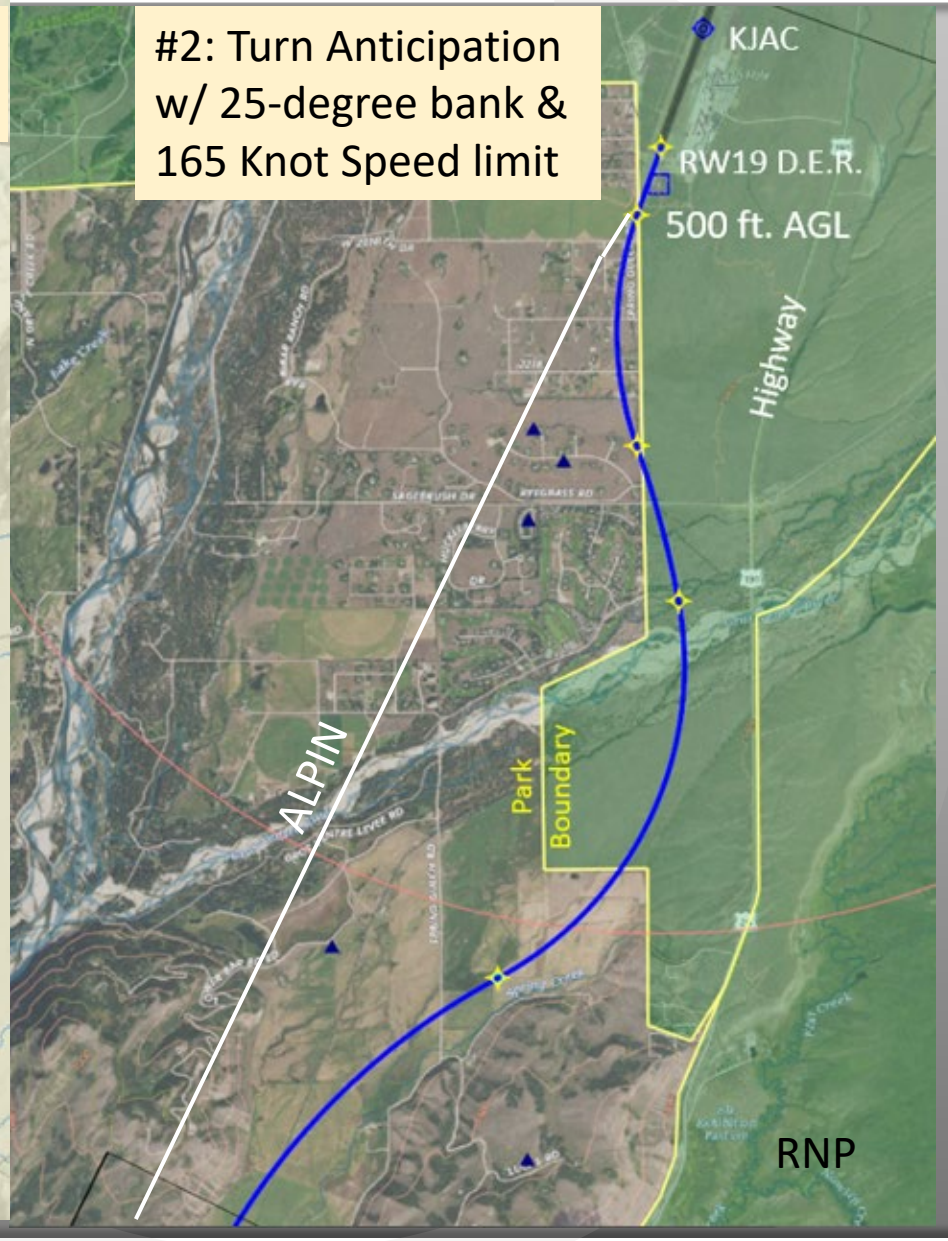
RDO82: [Waiver Required] The route beginning at RW19 and ending at ZIPET begins with a CF or DF leg terminating at a fix (WP03) that is not within +/-15 degrees of the Runway True course measured from DER.

RDO36: In the route beginning at RW19, the DF leg ending at WP04 is not allowed. The DF fix is located inside of the turn arcs The evaluation cannot be completed for this procedure.

RNAV vs RNP-AR Comparison

- Attempting to replicate the former visual path using standard turn anticipation rules requires conversion to Advanced RNP, 25-degree bank angles, and lower than standard speed limitations.
- With Turn Anticipation the actual path will still result in overflight of certain housing





Task Force Member Comments Summarized

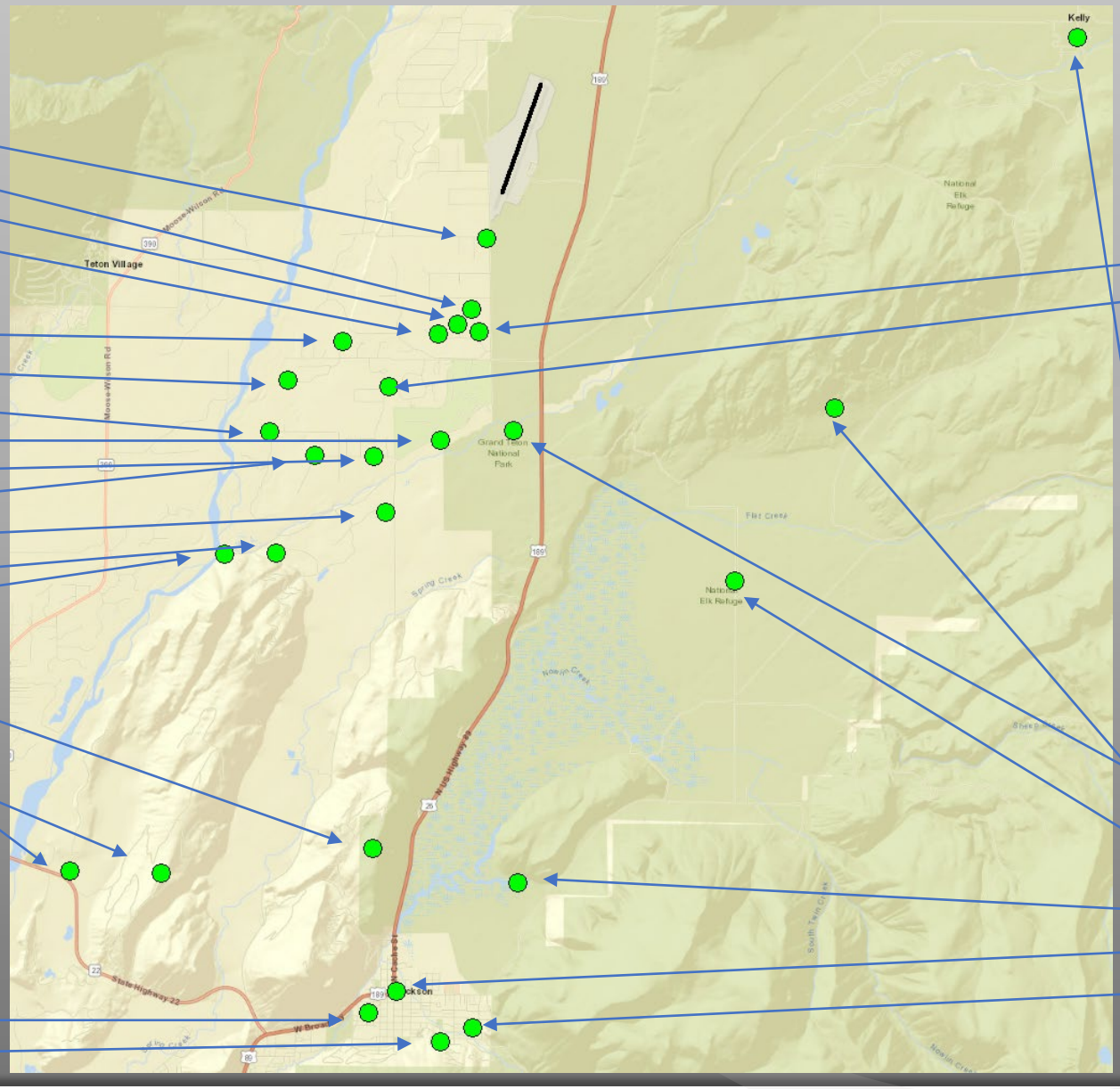
- Sally Painter—Please recalculate the presented (noise) table to provide 2 alternative renditions:

  (1) Add a column showing the estimated, current ambient noise at each location (absent the impact of existing flights), calculate the difference between ambient noise and the maximum noise at that location due to the existing and each proposed new flight path, and use that difference to redraw the presented colored table.

  Additional monitoring was completed to gather ambient levels at specific locations. We have added a column to the grid that illustrates ambient noise level (L50) at each location.

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/Ridgeview
Kelly
GTNP Gros Ventre
Elk Refuge (North)
Elk Refuge (Central)
Elk Refuge (South)
Town (Town Square)
Town (May Park)
Town (Catholic Church)
Town (Snow King)



Receptor Location
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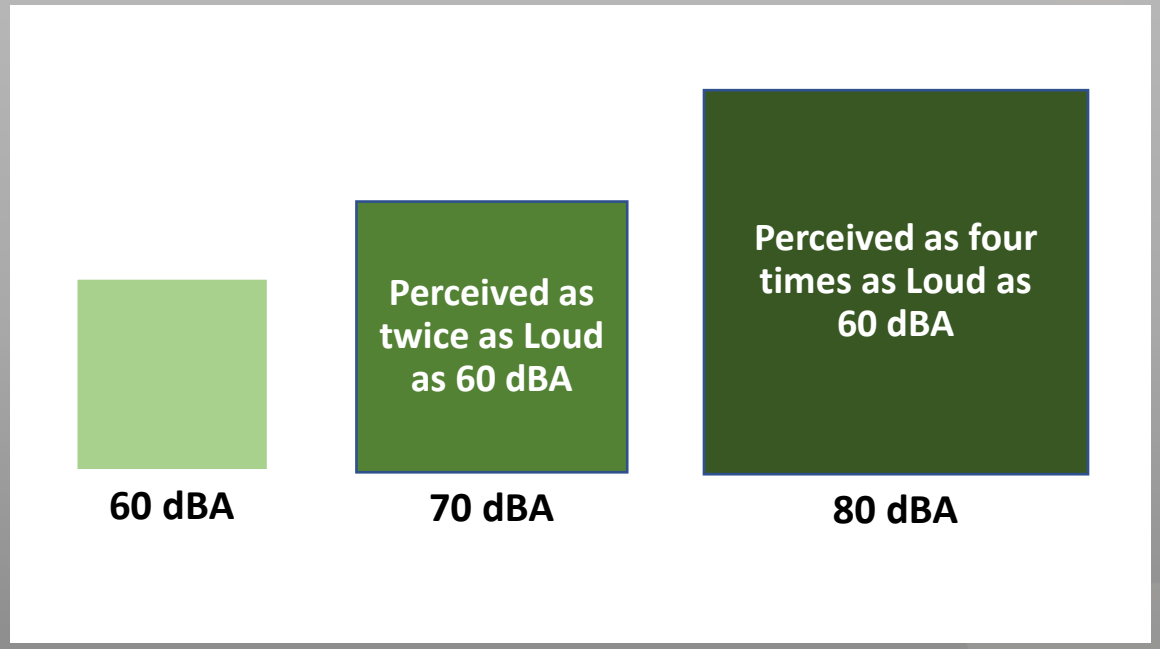
Lower Cascade RD
End of Red Tail
Queens Lane
Golf Course (East Side)
W Kings/W Zenith
W Kings/N Bear Lakes
Spring Gulch/Gros Ventre
Bar BC Lower
End of Gros Ventre Levee Rd
Spring Creek Ranch
Hwy 22/Walton Ranch Rd
Hwy 22/Ridgeview
Kelly
GTNP Gros Ventre
Elk Refuge (North)
Elk Refuge (Central)
Elk Refuge (South)
Town (Town Square)
Town (May Park)
Town (Catholic Church)
Town (Snow King)

Example Lmax (dBA) Noise Levels



- It generally takes a change of 3 dBA or greater to be perceived
- An increase of 10 dBA is generally perceived as doubling of the sound.
- An increase of 20 dBA is four times as loud.
- Combining Sounds
  - Adding two sounds at 60 dBA increases the noise to 63 dBA
  - Adding a sound of 60 dBA to a sound of 70 dBA increases the noise to 70.4 dBA

Note: This information presents dBA sounds. DNL is a very different noise metric that is not represented here.

Lmax Noise Levels at Sample Locations

Change Relative to Existing ALPIN

Receptor Location *Aug 11 with C4 and C5 Update*	Ambient Day (L50)	MAXIMUM SINGLE EVENT NOISE LEVEL FROM FLYOVER (LMAX)							
		Original Concept #	1	5	2	4	6	3	
		ALPIN	FAA KICNE	C1 RNAV SE	C2 RNP SE	C3 RNAV SW	C4 RNP SW	C5 RNP East	C6 ZIPET
		Existing	S East	S East	S East	S West	S West	Corkscrew	RNAV St
Moulton (Spring Gulth/Zenith Dr)	42	**85**	85	85	85	84	83	85	84
280 S Moulton Loop	36	**79**	81	80	80	76	71	81	78
Bar B Bar (Fox Trail)	35	**79**	79	77	77	77	71	79	80
Bar B Bar (Oak Grass)	37	**80**	75	72	71	79	72	75	80
Bar B Bar (Blue Stem)	35	**74**	80	80	80	71	66	80	74
Zenith Rd/Sylvia	34	**77**	66	63	60	78	72	64	75
Lower Cascade RD	35	**65**	58	56	56	69	76	58	64
End of Red Tail	35	**60**	53	51	50	63	69	52	59
Queens Lane	35	**58**	52	50	48	63	65	50	57
Golf Course (East Side)	42	**69**	76	71	65	65	59	69	72
W Kings/W Zenith	35	**72**	64	60	56	69	67	59	72
W Kings/N Bear Lakes	35	**66**	56	53	50	71	71	53	63
Spring Gulch/Gros Ventre	35	**68**	64	58	55	62	63	57	70
Bar BC Lower	35	**66**	51	48	45	68	67	47	62
End of Gros Ventre Levee Rd	35	**60**	47	45	42	66	61	44	57
Spring Creek Ranch	33	**51**	63	57	53	45	58	36	56
Hwy 22/Walton Ranch Rd	44	**61**	55	38	35	66	54	30	55
Hwy 22/Ridgeview	31	**68**	63	42	39	62	63	31	65
Kelly	35	**31**	31	31	31	31	31	55	31
GTNP Gros Ventre	35	**60**	69	75	78	57	53	77	61
Elk Refuge (North)	32	**37**	38	40	41	37	37	54	37
Elk Refuge (Central)	32	**38**	42	44	49	38	36	68	39
Elk Refuge (South)	32	**42**	50	67	66	38	46	40	45
Town (Town Square)	46	**47**	52	59	56	41	52	33	51
Town (May Park)	42	**41**	47	66	64	37	46	33	45
Town (Catholic Church)	43	**48**	53	56	54	42	54	32	52
Town (Base Snow King)	44	**43**	48	63	61	38	48	32	47

CHANGE RELATIVE TO EXISTING ALPIN						
Original #	1	5	2	4	6	3
FAA KICNE	C1 RNAV SE	C2 RNP SE	C3 RNAV SW	C4 RNP SW	C5 RNP East	C6 ZIPET
S East	S East	S East	S West	S West	Corkscrew	RNAV St
0	0	0	0	-2	0	-1
2	1	2	-2	-8	3	0
0	-2	-3	-3	-9	0	0
-5	-8	-9	-1	-8	-5	0
6	6	6	-3	-8	7	0
-11	-15	-17	1	-5	-13	-2
-7	-9	-9	4	11	-7	-1
-7	-9	-10	3	8	-8	-2
-7	-9	-11	5	6	-9	-1
7	2	-4	-4	-10	0	3
-9	-12	-16	-3	-6	-13	-1
-10	-13	-16	5	5	-13	-3
-4	-9	-13	-6	-5	-10	2
-15	-18	-21	2	1	-19	-4
-13	-16	-18	6	0	-17	-4
11	5	1	-6	6	-15	5
-6	-23	-26	5	-7	-31	-6
-5	-26	-29	-6	-5	-37	-3
0	0	0	0	0	24	0
10	16	18	-2	-6	17	1
1	3	4	0	-1	17	0
4	6	11	-1	-2	30	1
8	25	24	-4	4	-2	3
6	12	9	-5	6	-14	4
5	24	22	-5	5	-8	4
5	9	6	-5	6	-16	5
5	20	18	-5	5	-11	4

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

Note: dB ratio increase is same regardless of starting level

Lmax Noise Levels at Sample Locations

Change Relative to Highest between Existing ALPIN or Ambient

Receptor Location *Aug 11 with C4 and C5 Update*	Ambient Day (L50)	MAXIMUM SINGLE EVENT NOISE LEVEL FROM FLYOVER (LMAX)							
		Original Concept #	1	5	2	4	6	3	
		ALPIN	FAA KICNE	C1 RNAV SE	C2 RNP SE	C3 RNAV SW	C4 RNP SW	C5 RNP East	C6 ZIPET
		Existing	S East	S East	S East	S West	S West	Corkscrew	RNAV St
Moulton (Spring Gulth/Zenith Dr)	42	**85**	85	85	85	84	83	85	84
280 S Moulton Loop	36	**79**	81	80	80	76	71	81	78
Bar B Bar (Fox Trail)	35	**79**	79	77	77	77	71	79	80
Bar B Bar (Oak Grass)	37	**80**	75	72	71	79	72	75	80
Bar B Bar (Blue Stem)	35	**74**	80	80	80	71	66	80	74
Zenith Rd/Sylvia	34	**77**	66	63	60	78	72	64	75
Lower Cascade RD	35	**65**	58	56	56	69	76	58	64
End of Red Tail	35	**60**	53	51	50	63	69	52	59
Queens Lane	35	**58**	52	50	48	63	65	50	57
Golf Course (East Side)	42	**69**	76	71	65	65	59	69	72
W Kings/W Zenith	35	**72**	64	60	56	69	67	59	72
W Kings/N Bear Lakes	35	**66**	56	53	50	71	71	53	63
Spring Gulch/Gros Ventre	35	**68**	64	58	55	62	63	57	70
Bar BC Lower	35	**66**	51	48	45	68	67	47	62
End of Gros Ventre Levee Rd	35	**60**	47	45	42	66	61	44	57
Spring Creek Ranch	33	**51**	63	57	53	45	58	36	56
Hwy 22/Walton Ranch Rd	44	**61**	55	38	35	66	54	30	55
Hwy 22/Ridgeview	31	**68**	63	42	39	62	63	31	65
Kelly	35	**31**	31	31	31	31	31	55	31
GTNP Gros Ventre	35	**60**	69	75	78	57	53	77	61
Elk Refuge (North)	32	**37**	38	40	41	37	37	54	37
Elk Refuge (Central)	32	**38**	42	44	49	38	36	68	39
Elk Refuge (South)	32	**42**	50	67	66	38	46	40	45
Town (Town Square)	46	**47**	52	59	56	41	52	33	51
Town (May Park)	42	**41**	47	66	64	37	46	33	45
Town (Catholic Church)	43	**48**	53	56	54	42	54	32	52
Town (Base Snow King)	44	**43**	48	63	61	38	48	32	47

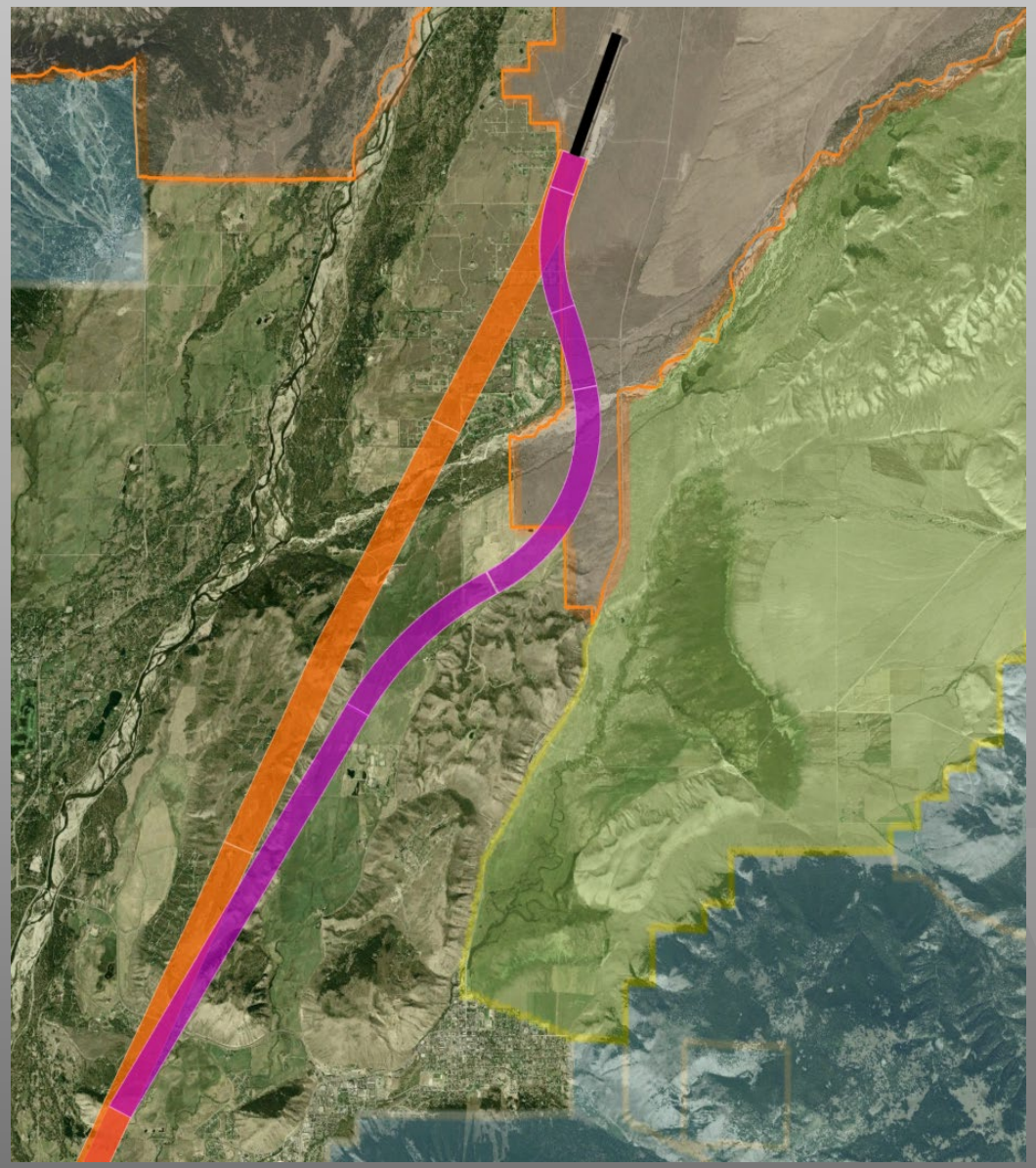
CHANGE RELATIVE TO HIGHEST OF EXISTING ALPIN OR AMBIENT						
Original #	1	5	2	4	6	3
FAA KICNE	C1 RNAV SE	C2 RNP SE	C3 RNAV SW	C4 RNP SW	C5 RNP East	C6 ZIPET
S East	S East	S East	S West	S West	Corkscrew	RNAV St
0	0	0	0	-2	0	-1
2	1	2	-2	-8	3	0
0	-2	-3	-3	-9	0	0
-5	-8	-9	-1	-8	-5	0
6	6	6	-3	-8	7	0
-11	-15	-17	1	-5	-13	-2
-7	-9	-9	4	11	-7	-1
-7	-9	-10	3	8	-8	-2
-7	-9	-11	5	6	-9	-1
7	2	-4	-4	-10	0	3
-9	-12	-16	-3	-6	-13	-1
-10	-13	-16	5	5	-13	-3
-4	-9	-13	-6	-5	-10	2
-15	-18	-21	2	1	-19	-4
-13	-16	-18	6	0	-17	-4
11	5	1	-6	6	-15	5
-6	-23	-26	5	-7	-31	-6
-5	-26	-29	-6	-5	-37	-3
-4	-4	-4	-4	-4	20	-4
10	16	18	-2	-6	17	1
1	3	4	0	-1	17	0
4	6	11	-1	-2	30	1
8	25	24	-4	4	-2	3
6	12	9	-5	6	-14	4
5	24	22	-5	4	-9	3
5	9	6	-5	6	-16	5
4	19	17	-6	4	-12	3

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

PAINTER REQUEST – RNAV AND RNP PROPOSAL



Receptor Location *Updated Aug 11*	Ambient Day (L50)	LMAX MAXIMUM ALPIN Existing	LMAX MAXIMUM PAINTER RNAV	LMAX MAXIMUM PAINTER RNP	CHANGE PAINTER RNAV	CHANGE PAINTER RNP
Moulton (Spring Gulth/Zenith Dr)	42	**85**	84	85	0	0
280 S Moulton Loop	36	**79**	75	80	-3	2
Bar B Bar (Fox Trail)	35	**79**	71	77	-8	-3
Bar B Bar (Oak Grass)	37	**80**	67	71	-13	-9
Bar B Bar (Blue Stem)	35	**74**	76	80	2	6
Zenith Rd/Sylvia	34	**77**	58	60	-19	-17
Lower Cascade RD	35	**65**	54	56	-11	-9
End of Red Tail	35	**60**	49	50	-11	-10
Queens Lane	35	**58**	49	49	-10	-9
Golf Course (East Side)	42	**69**	66	65	-3	-4
W Kings/W Zenith	35	**72**	58	56	-14	-16
W Kings/N Bear Lakes	35	**66**	53	52	-13	-14
Spring Gulch/Gros Ventre	35	**68**	65	61	-3	-6
Bar BC Lower	35	**66**	57	58	-9	-8
End of Gros Ventre Levee Rd	35	**60**	53	55	-8	-6
Spring Creek Ranch	33	**51**	58	54	7	3
Hwy 22/Walton Ranch Rd	44	**61**	55	59	-6	-2
Hwy 22/Ridgeview	31	**66**	64	67	-4	-1
Kelly	35	**31**	31	31	0	0
GTNP Gros Ventre	35	**60**	78	78	18	18
Elk Refuge (North)	32	**37**	42	42	5	5
Elk Refuge (Central)	32	**38**	46	46	7	8
Elk Refuge (South)	32	**42**	46	44	4	2
Town (Town Square)	46	**47**	51	47	4	1
Town (May Park)	42	**41**	45	42	4	1
Town (Catholic Church)	43	**48**	52	48	4	1
Town (Base Snow King)	44	**46**	46	43	4	1

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

Task Force Comments Summarized

- Sally Painter—Please recalculate the presented (noise) table to provide 2 alternative renditions:

  (2) Add a column showing the estimated, current maximum noise at each location (absent the impact of existing flights), calculate the difference between the existing maximum noise and the maximum noise at the location due to the existing and each proposed new flight path, and use that difference to redraw the presented colored table.

  A maximum noise level (such as a loud car event, separate from aircraft events) will not be included in the analysis because it is not a reasonable comparison in that all sites will occasionally have higher noise events. It is not possible to have a consistent comparison between Maximum noise levels values.

Task Force Comments Summarized

- Jeremy Barnum - When looking at impacts to the Park, the concepts have impacts on Kelly (in the park), Gros Ventre (in the park), and the Elk Refuge North, specifically on the Gros Ventre River (part of the Wild and Scenic River System) and the Gros Ventre campground, which is the biggest campground in the park. **Four of the six procedures would result in increased noise on areas of the Park. In the interest of transparency and a productive conversation, the Park would have serious reservations about those concepts, but particularly the corkscrew option would result in a large impact. With red impacts (10 dBA impacts or greater) for that concept, it would be substantial. It would be a regression, not progression to shift more noise to the Park. The Park would oppose Concept 5 and have serious concerns about Concepts 1 and 2, as well.** It is important to consider that when discussing options of compromise, it needs to be taken within the context of the big picture challenges - noise not just to the south, increased visitors, encroachment into areas, climate change- because all of these factors can degrade public lands and are part of the compromise.

> As stated in the third amendment to the Use Agreement, dated May 19, 2011, the Airport shall work to *"develop and implement such reasonable and cost effective mitigation measures as may be available to reduce environmental impacts on the Park to the lowest practicable levels consistent with the safe and efficient operations of the Airport, and with applicable law and contractual obligations."*

- **Thank you for your comment.**

Task Force Comments Summarized

- Sally Painter – Could we consider fanning or “spreading the wealth” as a possibility?

- **Fanning: utilizing multiple established departure procedures that are sorted by aircraft type or destination direction**
- **Not a dynamic decision by the tower – departure track assignment is built into the air traffic control automation**
- **The control tower and the flight crew are the authorities for operational decision-making**
- **Any fanning will require broader community input (which is relevant for any flight procedure changes)**

Task Force Comments Summarized

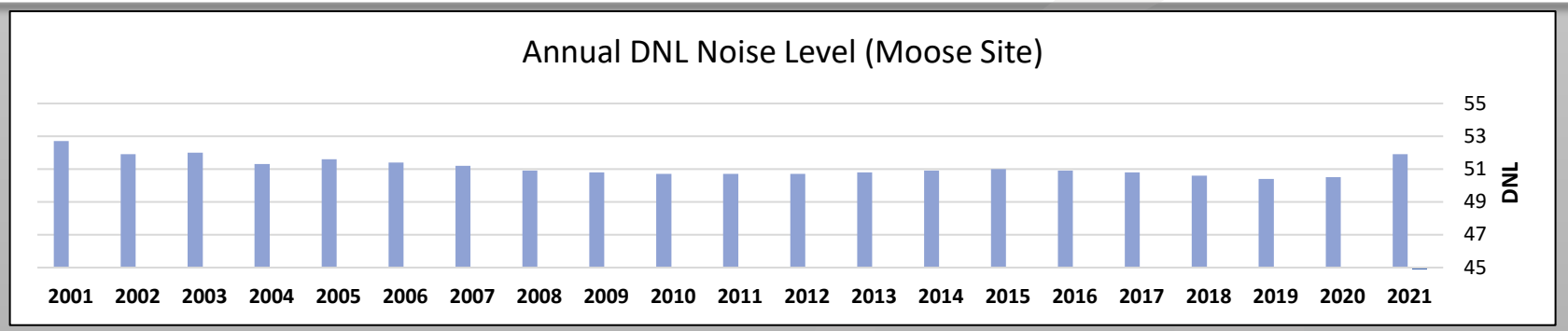
- Sally Painter: Does JAC believe it complies with the “compatible lands” clause and, if so, why?

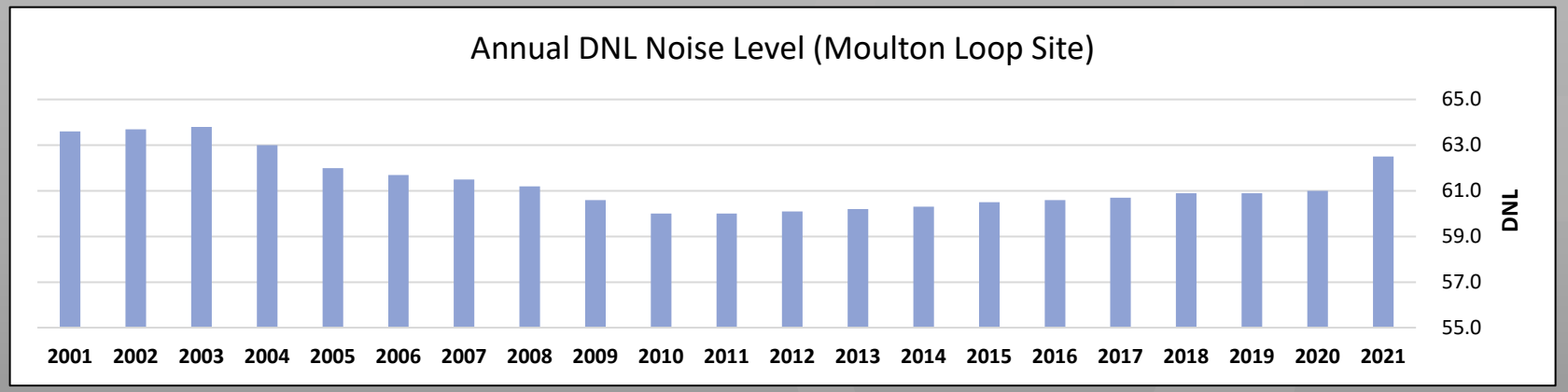
Yes, JAC believes it is in compliance. Though this is a goal toward which the Board works, the 1983 Use Agreement does not require that JAC “must be compatible with adjacent lands.” Rather, the Agreement required the Board to complete a revised noise abatement plan. The primary objective of the plan was to ensure that airport operations remained compatible with the Park, and not result in significant noise increases in noise sensitive areas of the Park. An additional objective of the plan was to “seek to ensure” that aircraft noise exposure would be reasonably compatible with other adjacent land uses. In this vein, an FAR (Federal Aviation Regulations)* Part 150 Study was completed, and the Board adopted the noise abatement plan in March 1985. This plan was submitted to and accepted by the Department of the Interior, thus fulfilling this requirement of the 1983 Agreement.

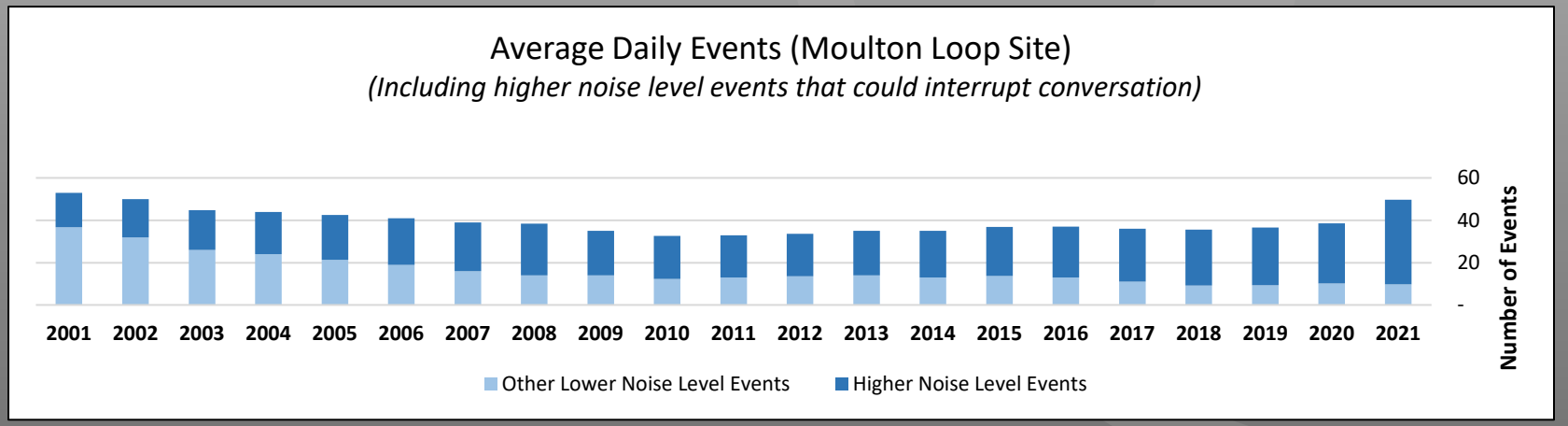
FAR Part 150 is FAA’s process for studying and giving surrounding land uses notice of forecast airport noise. FAA’s standard for compatibility is 65 DNL for noise sensitive uses. Today, there are no residences near the Airport which are within the 65 DNL noise contour.

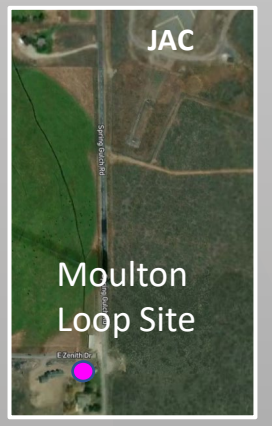
*FAR is now organized under CFR (Code of Federal Regulations).

Historical Changes in DNL Noise Levels









This data reflects updated modeled noise results of full year annual operations using the most recent version of the FAA AEDT, the FAA official noise model, for all years. This noise analysis uses a common methodology and the most advanced technology available to accurately compare year over year trends.

Task Force Comments Summarized

- Sally Painter: Does JAC believe it complies with the flight limitation clause and, if so, why?

The 1983 Use Agreement contains no limit on the number of flights. Rather, compatibility with the Park is measured by a single event noise limit, and two cumulative noise limits. The 2011 Amendment to the Use Agreement added an additional requirement, that the Board work to "reduce environmental impacts on the Park to the lowest practicable levels" consistent with safe and efficient Airport operations and applicable law.

The Average Daily Departures (or ADD) limit is a mechanism adopted by the Board to enforce the cumulative noise limits. This ADD limit is based on equivalency with the noisier "base class" of aircraft which were operating at the Airport in 1985. This limit on the number of aircraft does not go into effect unless and until a cumulative noise limit has been reached. In fact, because of federal preemption, this limit on the number of flights cannot go into effect unless and until a cumulative noise limit is reached.

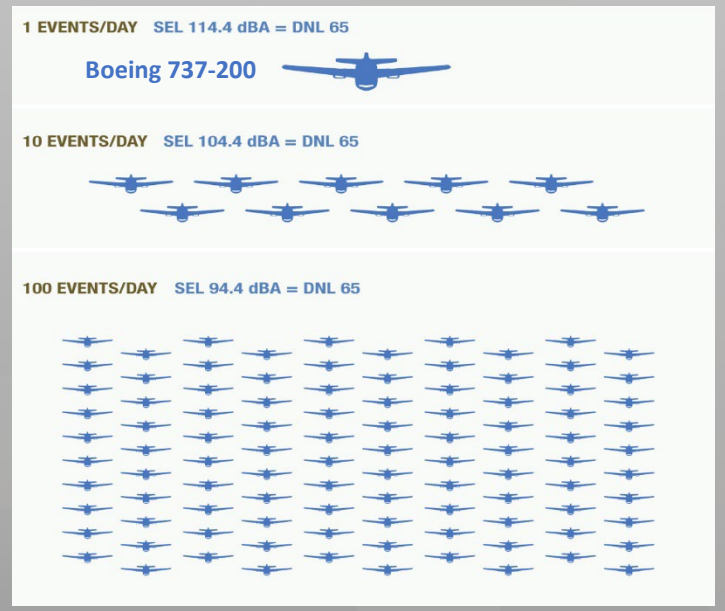
ADDs and Equivalency

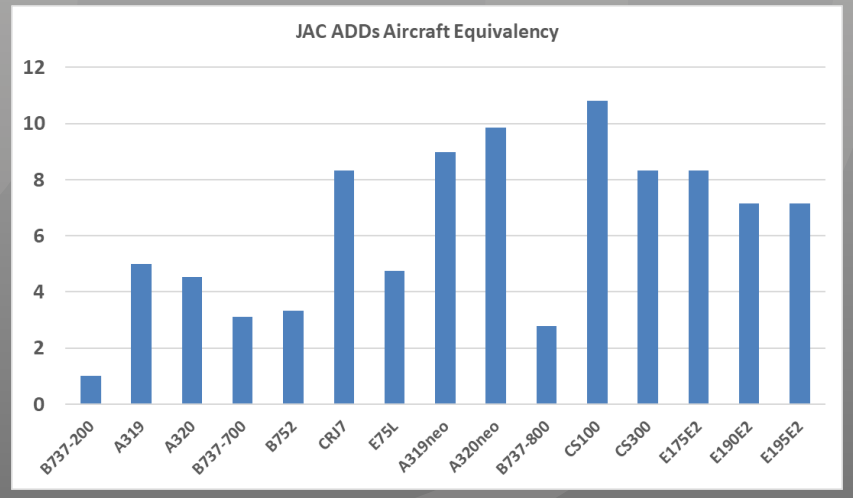
- The Airline Access Plan provides a mechanism for the Airport to continue to meet the DNL noise limits with the Park.
- The Board adopted a Noise Abatement Rule in March 1985 which considered the B-737-200 as the “base class” aircraft (which was the aircraft that operated at JAC at the time).
- This rule is similar to how the Access Plan at John Wayne Airport works. John Wayne and Jackson Hole are the only two airports in the country that have such restrictions
- Under this Rule, no more than 6.85 daily departures of the base class aircraft, averaged quarterly, and no more than 6.5 daily departures averaged annually, may operate at the Airport.
- If an aircraft is quieter than the base class aircraft, it may operate in greater numbers based on an “equivalency” formula that is similar to the equivalence in DNL.

2019	2020	2021	2022
Q1 2019 – 4.66 Q2 2019 – 3.09 Q3 2019 – 5.93 Q4 2019 – 2.86 2019 Annual – 4.14	Q1 2020 – 3.86 Q2 2020 – 1.01 Q3 2020 – 5.05 Q4 2020 – 3.71 2020 Annual – 3.41	Q1 2021 – 3.89 Q2 2021 – 3.44 Q3 2021 – 5.62 Q4 2021 – 2.15 2021 Annual – 3.77	Q1 2022 – 4.05 Q2 2022* - .31

*Runway Closure Majority of Q2 2022

Same DNL Equivalency





Additional Questions that have come to the Task Force

- May Airport curfew be made mandatory or enforced?
- May Airport extend the hours of the voluntary curfew?
- Will replacement of antiquated GA facilities increase noise?
- Do Teton County noise regulations apply to aircraft?
- May the Airport limit or control jet aircraft emissions?

Additional Questions

- May Airport curfew be made mandatory or enforced?

Unfortunately, the answer is no, based on today's circumstances. In 1990, Congress phased out noisier Stage 2 aircraft, but also prohibited local airports from unilaterally imposing noise or capacity restrictions. A mandatory curfew would be just such a restriction, and the Airport is required to comply with law. No exceptions exist for airports in national parks or near residential areas. Such an exception would need congressional action. Only the few airports which had curfews prior to 1990 are "grandfathered" and allowed to continue their enforcement. This includes Washington National Airport's which was adopted in the early 1980s. A mandatory curfew would require FAA approval. Although the FAA has a process to achieve approval, no Airport has received such approval, and our Part 150 studies have determined that our Airport is not even eligible for any such approval.

Additional Questions

- May Airport extend the hours of the voluntary curfew?

Yes. The Task Force Chair will discuss this with the Board.

Additional Questions

- Will replacement of antiquated GA facilities increase noise?

The Board has not made a decision to expand GA hangar facilities. The Board will carefully consider noise in making any such decisions.

Additional Questions

- Do Teton County noise regulations apply to aircraft?

No. The Federal government has preempted the areas of both air traffic control and regulation of aircraft noise at its source. Therefore, no local or state laws apply to noise generated by an aircraft in flight. In fact, page 6-53 the Teton County Land Development Regulations states "Aviation shall be exempt from the noise standards in Section 6.4.3."

Additional Questions

- May the Airport limit or control jet aircraft emissions?

To protect public health, the U.S. Environmental Protection Agency has established National Ambient Air Quality Standards for outdoor concentrations. Pollutants of concern include ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_X), nitrogen dioxide (NO_X), particulate matter of two sizes (2.5 and 10 micron) and lead (Pb). The Wyoming DEQ, which administers the air quality program, has determined that Teton County meets air quality standards for all of those pollutants. We rely on those air quality standards to protect the public health.

Jet engines emit pollutants just as cars and trucks do. Under the federal Clean Air Act, the U.S Environmental Protection Agency sets emission standards for aircraft engines, and FAA sets certification requirements for those engines to show compliance with EPA's standards. All aircraft operating at JAC must meet those standards. Local governments, including airports, are prohibited from adopting their own standards or otherwise regulating aircraft emissions.

As A Reminder!

- Any procedure change must comply with NEPA.
  - Uses FAA criteria for flight procedure changes
  - FAA or contractor will prepare the document
- Must comply with contractual obligations with respect to GTNP
- Must get input from affected citizens for any new flight path that moves noise from one affected area to the other

Agenda

- Meeting Purpose
- Review of Options
- Task Force Comments Received Since Last Meeting
- **Summary**
- Task Force Discussion
- Next Steps
- Public Comment

Summary

Summary

- The Task Force has studied seven different concepts and completed extensive analysis
- All concepts developed based on FAA design criteria and safety standards, including Task Force member recommended procedure
- RNP procedures are not likely to be available for many of the aircraft for a 5-year time period
- All of the new procedures result in a noticeable movement of noise from one noise sensitive area to another

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Task Force Discussion

Agenda

- Meeting Purpose
- Review of Options
- Task Force Comments Received Since Last Meeting
- Summary
- Task Force Discussion
- **Next Steps**
- Public Comment

Next Steps

- Next Steps
  - Consolidate Task Force Discussion Points
  - Draft Report to Board
  - Board Presentation
  - Board Discussion, Decision and Recommendation

Agenda

- Meeting Purpose
- Review of Options
- Task Force Comments Received Since Last Meeting
- Summary
- Task Force Discussion
- Next Steps
- Public Comment

Discussion

Public Comment

- Please use the airport website for concerns. Click the "Community" tab and then the "Contact" tab.

Noise Concerns

Live Flight Map

To better address noise concerns, we suggest filling out this Noise Form using the information available on the live flight map above.

To file a noise complaint with the Federal Aviation Administration, please click here.

Operational Concerns

Please email community@jhairport.org for concerns and inquiries that do not involve airport/aircraft noise.