



APPENDIX J

DRO Traffic Analysis Report – Felsburg Holt & Ullevig

**DURANGO-LA PLATA COUNTY
AIRPORT MASTER PLAN:
TRAFFIC ANALYSIS REPORT**

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INTRODUCTION

In support of the Durango-La Plata County Airport Master Plan, vehicle access to and from the airport was analyzed to determine future needs relative to increased enplanements and terminal design alternatives. This analysis provides the documentation of traffic conditions (both existing and future forecast) relative to vehicle access to the airport, summary of stakeholder input pertaining to how access is provided today and what changes might be desired or planned, and analyses of terminal alternatives and access options to assist with alternative evaluation and selection of the Preferred Alternative.

TRAFFIC CONDITIONS

The Durango-La Plata County Airport lies approximately 15 miles southeast of the City of Durango and is accessed by La Plata County Road (CR) 309 via Colorado State Highway (SH) 172. Although CR 309 ends within the airport area, it also provides access to a few other industrial businesses, the largest being British Petroleum, which lies on the east side of CR 309 approximately halfway between the airport terminal and SH 172. CR 309 is intersected by CR 309A just north of the airport's parking lots, which runs east and loops around the airport's runway to the north before running south just east of the airport property. CR 309A provides access to non-commercial airport services along the perimeter of the airport, and provides access to a small number of homes and oil/gas wells southeast of the airport, ending at CR 318.

Traffic Safety

The existing SH 172 / CR 309 intersection has been identified as a traffic safety problem by both La Plata County and the Colorado Department of Transportation (CDOT). La Plata County Staff has rated the intersection #1 on a listing of intersections in need of improvement, and CDOT Staff agree that the configuration and location of the intersection causes sight distance limitations and increased crash potential. A brief survey of available crash information revealed that four crashes occurred along SH 172 and CR 309 in the vicinity of the intersection, many of them involving wild animal strikes. While the intersection crash data do not necessarily indicate an elevated safety risk, it is evident that safety concerns exist.

Existing & Historical Daily Traffic

The road network surrounding the airport and the daily traffic volumes along SH 172, CR 309, and SH 309A are shown in **Figure 1**. The most currently available count data shows approximately 7,800 vehicles per day (vpd) travel SH 172 west of CR 309, while approximately 5,500 vpd travel SH 172 east of CR 309. Roughly 3,100 vpd access CR 309, with 2,500 vpd counted just north of the airport. Approximately 900 vpd use CR 309A to access the non-commercial airport services, homes, and oil/gas wells, leaving approximately 1,600 vpd accessing the terminal and other airport services south of the terminal.

Historically, traffic accessing the terminal area via CR 309 has fluctuated between approximately 1,000 to 1,700 vpd since 2003, with exceptions during the previous reconstruction of the entrance to the airport in 2010. Since that reconstruction, daily traffic volumes have been around 1,600 vpd.

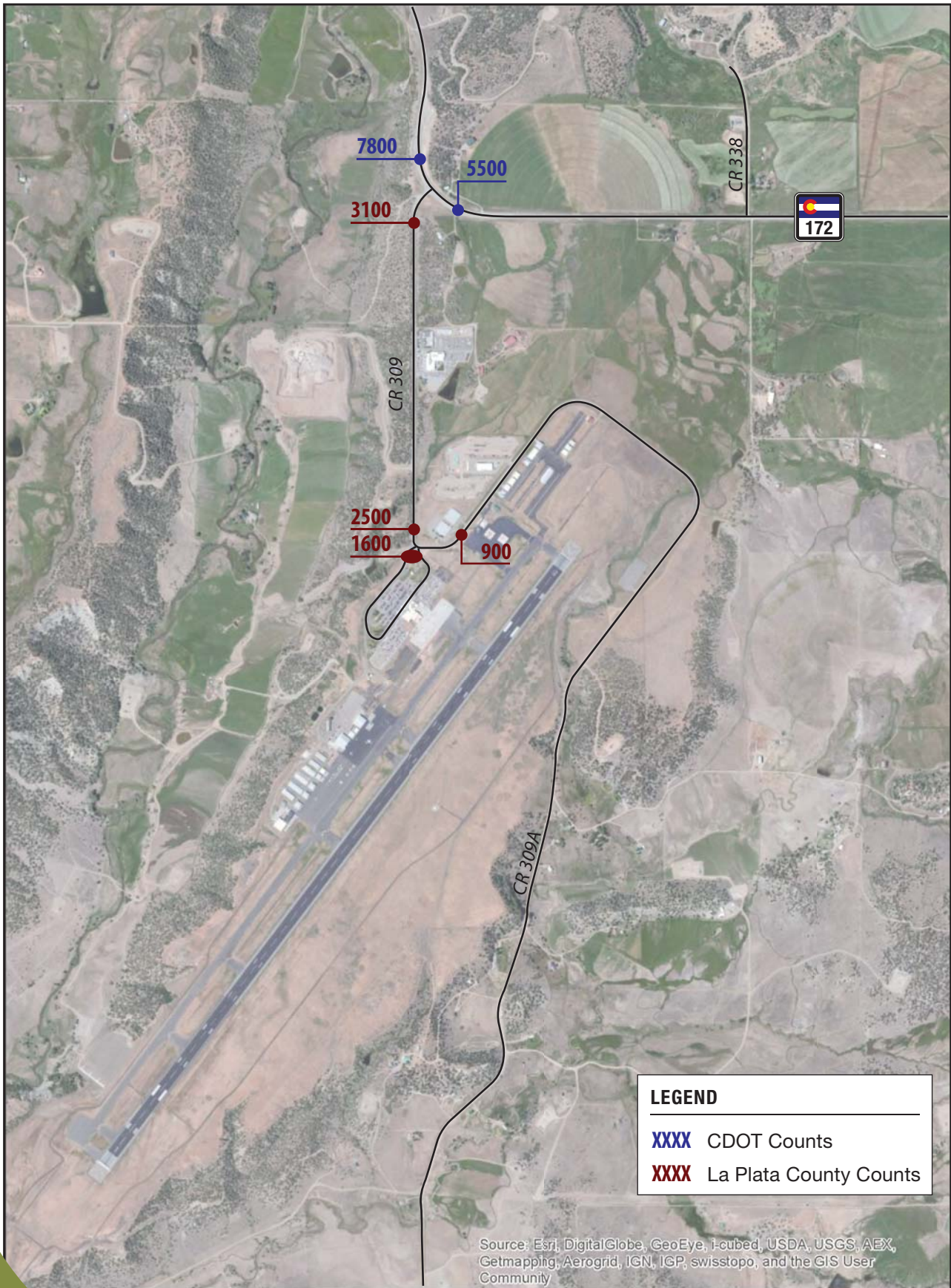


Figure 1
Existing Daily Traffic Volumes

NORTH

Future Daily Traffic

As part of the master planning process, Aviation has estimated enplanements at the airport to rise from 192,797 in 2013 to 390,941 in 2035 – an increase of 198,144 enplanements or 103 percent. Although the Institute of Transportation Engineers' (ITE) *Trip Generation Manual 9th Edition* does provide trip generation estimates for airports, it was concluded that the airports used within the studies that formed the ITE trip generation rates are too large and in different environments compared to the Durango-La Plata County Airport. Instead, the relationship between historical daily traffic counts and enplanements was analyzed in an attempt to project future traffic volumes

The projected growth in enplanements continues the steady trend of growth that the airport has experienced since 2003. However, historical traffic volumes accessing the terminal during the same time period have not shown a similar consistent growth pattern. Daily traffic volumes have varied over this time period, generally growing over the past decade, but a decreasing trend has been observed since 2011. In contrast, enplanements have grown each year since 2003, with an average of 8 percent growth per year. Because of the discrepancy, a range of 3,400 to 4,800 vpd was developed for the 2035 projected traffic related to the airport. The low range uses the traffic growth experienced over the past decade to project growth over the next two decades, while the high range uses the average trips per enplanement (during years with available count data and no known construction occurring) multiplied by the projected enplanements for 2035. Even when using the conservative high range volume, a two-lane roadway will provide enough capacity for traffic in 2035 and beyond, assuming no additional significant development occurs in the area, of which little to none is expected.

Using CDOT's web based future traffic estimation tool, traffic using SH 172 by 2035 is estimated to be 6,200 vpd east of the airport and 11,100 vpd west of the airport.

STAKEHOLDER OUTREACH

CDOT and La Plata County were contacted to obtain the history, known issues, and plans or preferences for the roadways surrounding the airport. Jim Horn, the CDOT Region 5 Access Manager, noted that the intersection of SH 172 and CR 309 had been recently reconstructed to improve accel/decel lanes for safety purposes, but CDOT prefers that the access to the airport be moved east to the intersection of SH 172 and CR 338 since this intersection does not lie on a curve, and the existing SH 172 / CR 309 intersection could be closed or limited, such as a $\frac{3}{4}$ movement with no left turns permitted from CR 309 to SH 172. Jim Davis, the County Engineer for La Plata County, stated that the movement of airport access further east along SH 172 was also a top priority for the County and provided traffic count data for CR 309 and CR 309A.

TERMINAL ALTERNATIVES

Three terminal alternatives have been developed as part of the Master Plan: Alternative 1 assumes that the current terminal building be modified to handle additional enplanements, Alternative 2 assumes a new terminal building would be built next to the existing terminal, and Alternative 3 assumes a new terminal building would be constructed east of the runway. Since Alternatives 1 and 2 keep a future terminal within the same general area west of the runway served by existing roadways and future traffic projections do not warrant roadway expansion,

the two alternatives were analyzed as one when looking at roadway access to the airport. The moving of the terminal to the east side of the airport property in Alternative 3 would require new roadway to access the relocated terminal. The following section presents the access options available for the terminal alternatives.

Regardless of which terminal alternative is chosen, the existing CR 309A will be moved further north to be outside of the runway protection zone (RPZ) to comply with FAA guidance and regulations.

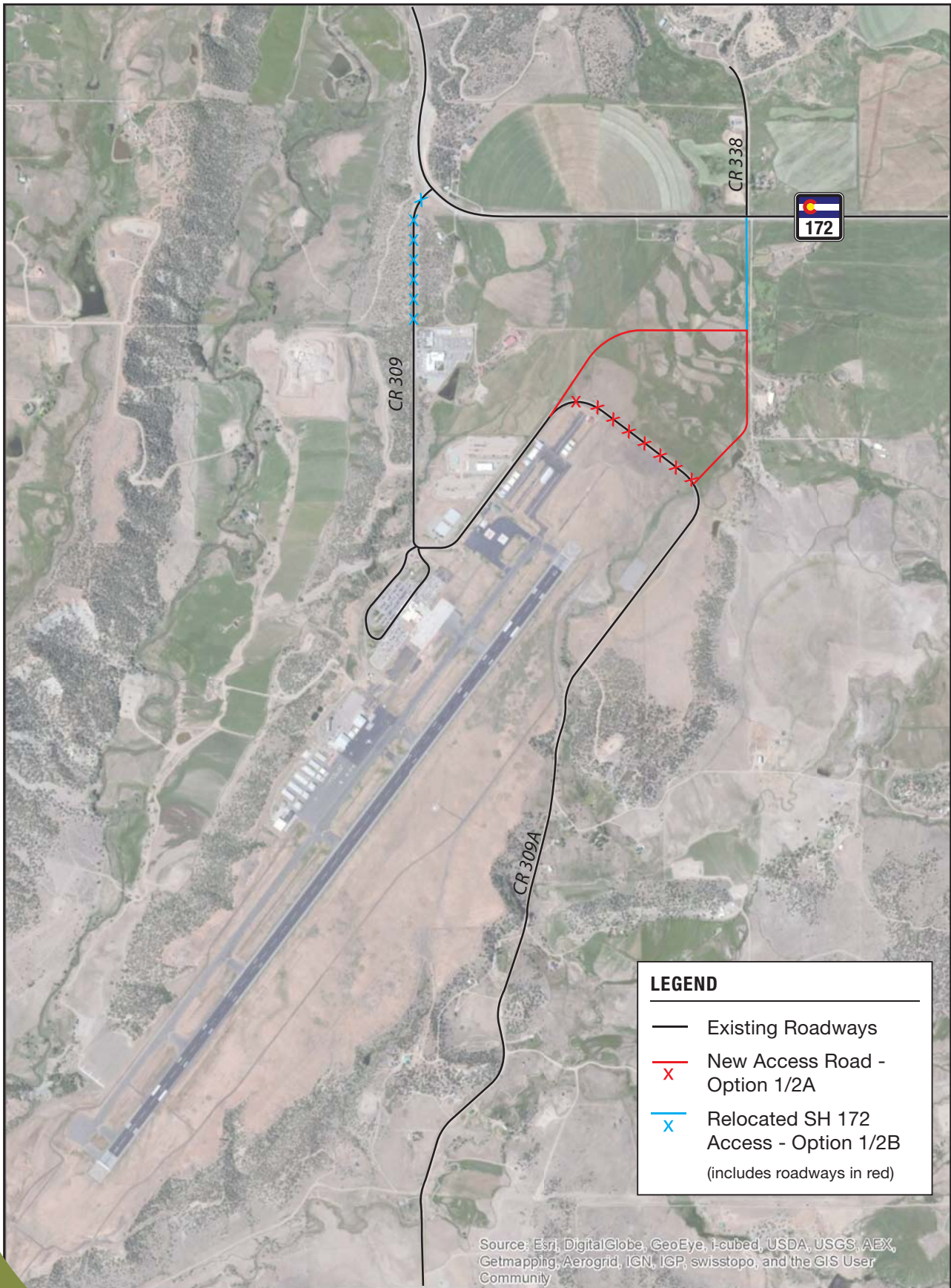
ACCESS OPTIONS

Two basic roadway options were developed based on input from the master planning team and contacted stakeholders: retain the existing access to the airport via CR 309 from SH 172 or move the access east along SH 172 to align with CR 338. Each of these options was adjusted for whether the terminal remains west of the runway or moves to the east side of the airport property, resulting in four access options. A fifth option was developed to further improve access should the existing access remain and the terminal moves to the east side of the airport property. **Table 1** lists the five joint terminal alternatives and access options along with descriptions of each. **Figure 2** illustrates the access options available for the first two terminal alternatives, while **Figure 3** illustrates the access options for Alternative 3.

Table 1. Airport Access Options by Terminal Alternative

Terminal Alternative	Access Options	Description*
West side of runway (1/2)	1/2A	Future terminal building remains west of the runway and existing access remains unchanged
	1/2B	Future terminal building remains west of the runway, access to the airport is moved to a new facility as an extension of CR 338 south of SH 172, and the existing SH 172 / CR 309 intersection is modified to not be a primary access to the airport (either closed or limited movements)
East side of runway (3)	3A	Future terminal building moves to the east side of the airport property and existing access remains unchanged, and CR 309A must be altered to provide access to the new terminal
	3B	Future terminal building moves to the east side of the airport property, access to the airport is moved to a new facility as an extension of CR 338 south of SH 172, and the existing SH 172 / CR 309 intersection is modified to not be a primary access to the airport (either closed or limited movements)
	3C	Future terminal building moves to the east side of the airport property and existing access remains unchanged but a new segment is constructed north of the British Petroleum site to connect to CR 309A and reduce visitor travel time, and CR 309A must be altered to provide access to the new terminal

*All options include moving CR 309A further north out of the RPZ to comply with FAA guidance and regulations



Source: Esri, DigitalGlobe, GeoEye, I-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

LEGEND

- Existing Roadways
- x— New Access Road - Option 1/2A
- x— Relocated SH 172 Access - Option 1/2B (includes roadways in red)

Figure 2
Access Options - West Side Terminal

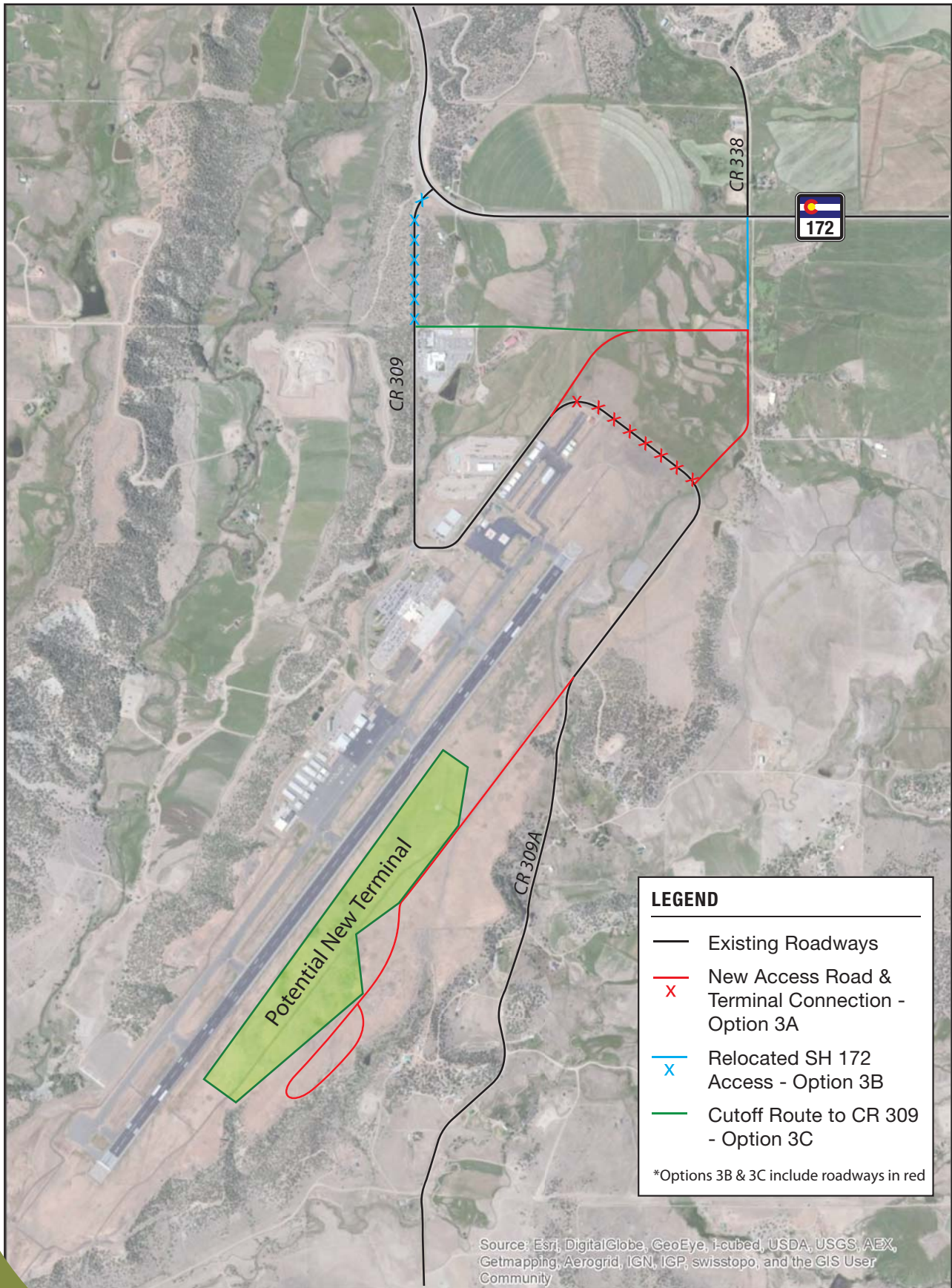


Figure 3
Access Options - East Side Terminal

ALTERNATIVES EVALUATION

To assist with screening of the alternatives and eventual identification of the Preferred Alternative, the terminal alternatives were matched with the access options and evaluated based on four measures: Traffic Safety, Traffic Efficiency, Estimated Construction Cost and Access Code considerations.

Traffic Safety was measured as the ability of each alternative to improve upon known roadway and intersection safety issues. As previously discussed, it is known that the existing SH 172 / CR 309 intersection raises safety concerns due to its location on the outside edge of a curve, and both CDOT and County Staff have expressed the importance of addressing these concerns.

Traffic Efficiency was measured as the ability of each alternative to provide for direct airport access to the regional roadway network and minimize out-of-direction travel.

Access Code considerations serve to provide a means of evaluating the CDOT process associated with implementing any of the access options. SH 172 is a state facility owned and managed by CDOT, and the CDOT Access Code outlines a particular set of criteria that apply to SH 172 and how other roadways access the highway. The access options were compared based on compatibility with these criteria.

Estimated Construction Costs were prepared for each of the access options to allow for comparison. Costs were prepared at a conceptual level, with simplifying assumptions for the amount of earthwork that would be required. A contingency of 20 percent was applied to each estimate to provide some allowance for higher than expected expenditures.

Table 2 outlines the performance of each terminal alternative / access option pairing in these categories.

Table 2. Alternative Evaluation Summary

Terminal Alternative	Access Option	Evaluation Category						
		Traffic Safety	Traffic Efficiency	Access Code	Estimated Construction Cost (\$M)			
					New Access Road	New Site roadway	Connect to SH 172	Total
West side of runway (1/2)	1/2A	No safety improvement	Direct SH 172 access	Minimal CDOT coordination	2.54	0	0	2.54 ¹
	1/2B	Safety benefit with relocated SH 172 access	Indirect access to SH 172	Permitting process required		0	0.97	3.51 ¹
East side of runway (3)	3A	No safety improvement	Indirect access to SH 172	Minimal CDOT coordination		3.71	0	6.25 ²
	3B	Safety benefit with relocated SH 172 access	Direct SH 172 access	Permitting process required		3.71	0.97	7.22 ²
	3C	No safety improvement	Moderate out of direction travel	Minimal CDOT coordination		3.71	1.65	7.90 ²

¹Cost does not include improvements to existing CR 309A west of runway, estimated at \$1.21 M

²Cost does not include improvements to existing CR 309A east of runway, estimated at \$2.40 M

The cost columns provide a breakdown of components. All of the options require the new access road to re-route CR 309A farther north of the runway. Relocating the terminal east of the runway would require approximately \$3.71 Million in new site roadway to be constructed. The cost to connect to SH 172 is zero when the existing access is maintained and would cost approximately \$0.97 Million to construct when relocated east.

As shown in **Table 2**, the “A” options that preserve the existing access to SH 172 via CR 309 are less costly, but do not provide safety benefits. The “B” options are more costly, but bring about safety benefits. Traffic would operate most efficiently when the terminal alternative is paired with an access option that lies on the same side of the runway.

These considerations are provided to assist in selecting a preferred alternative, and should be considered alongside other evaluation criteria being reviewed by the project team. Based on this limited, vehicular traffic-focused analysis of terminal alternatives and access options, keeping the terminal on the west side of the runway and relocating the SH 172 access east is the most cost-effective alternative.