

# *Largo Canyon Access Alternatives Evaluation Public Meeting*



RFP:20-22-15



*June 29, 2023*



# *Introductions*



# ***Introductions***



## ***San Juan County***

***Mike Stark** - County Manager*

***Nick Porell, PE** - Public Works Director*

## ***Consultant Team***

### ***AECOM***

• ***Chris Rosol, PE** - Project Manager*

### ***Ecosphere Environmental***

• ***Joey Herring** - Environmental*

# *Existing Conditions*



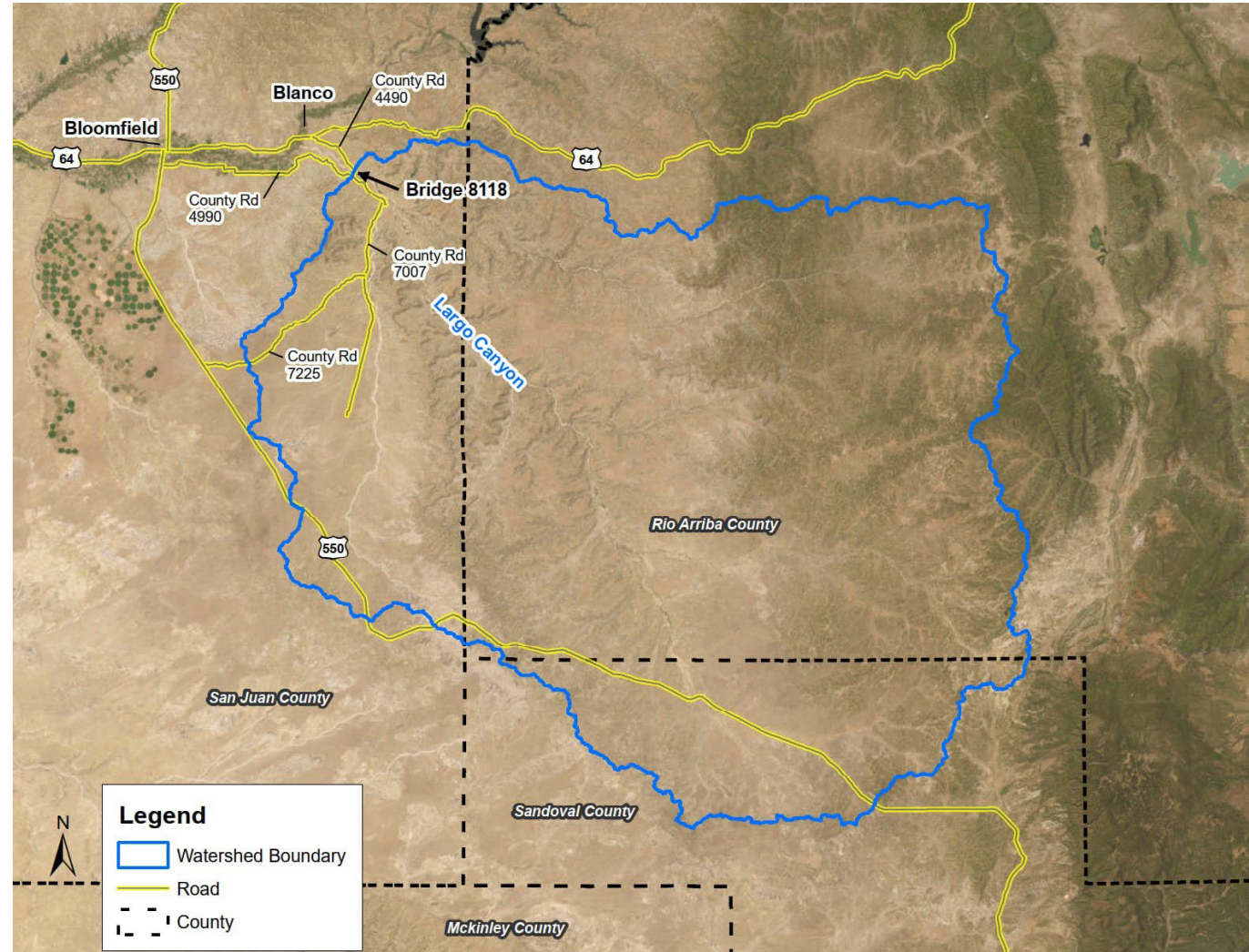
# Existing Conditions: *Largo Wash*



- Artificially constrained, meandering channel.
- Natural width varies
  - ~700' upstream,
  - 1,000 ft downstream
  - Between abutments: 252'
- Channel forces water to make 2-90° bends upstream of the bridge.
- Significant sediment deposition upstream
- Excessive flow velocities beneath bridge- significant scour at west abutment

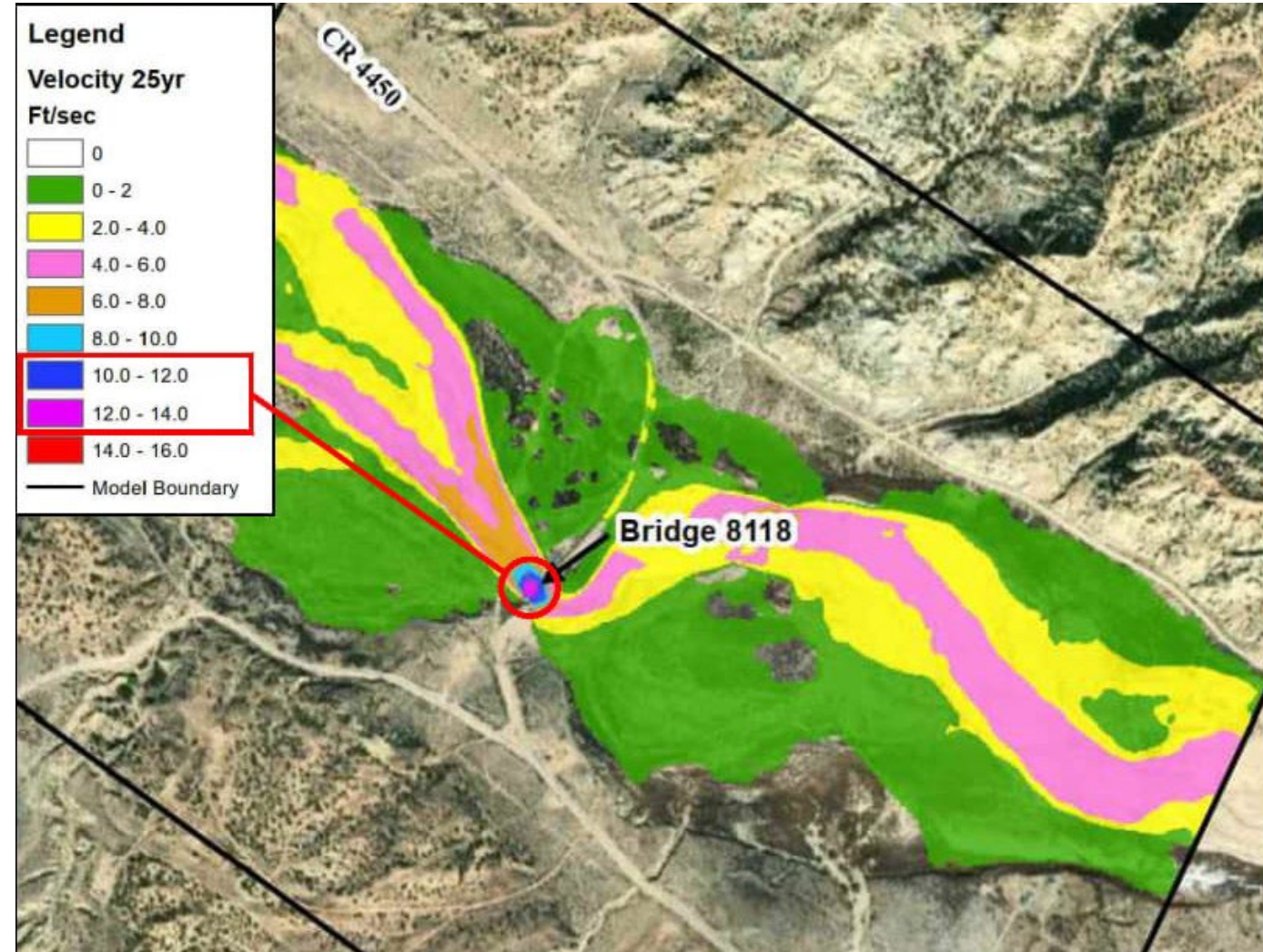
# Existing Conditions: *Largo Wash*

- Bridge 8118 is at the bottom of 1,700 mi<sup>2</sup> watershed.
- Watershed Hydrology: NM Regression Equation:
  - Developed by the USGS
  - NM specific
  - Unique NM characteristics - Decades of historic climate data, elevation, topography, stream gauge data.
  - Strong Correlation between observed flows (gauge data) vs modeled flows.
- Model Results:
  - 25-yr Volume = 7,184 cfs
  - 50-yr Volume = 9,089 cfs
  - 100-yr Volume = 11,555 cfs



# Existing Conditions: *Largo Wash*

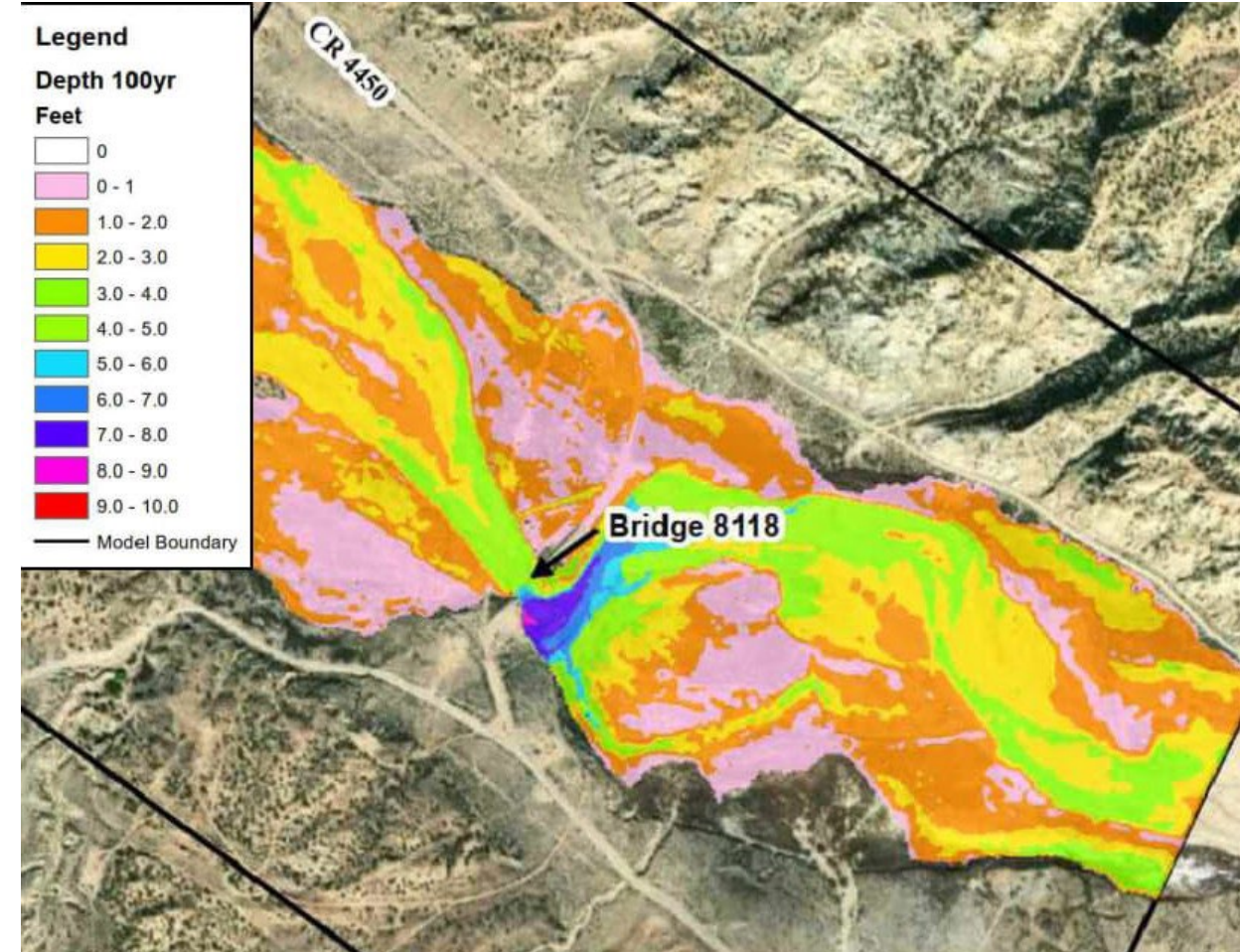
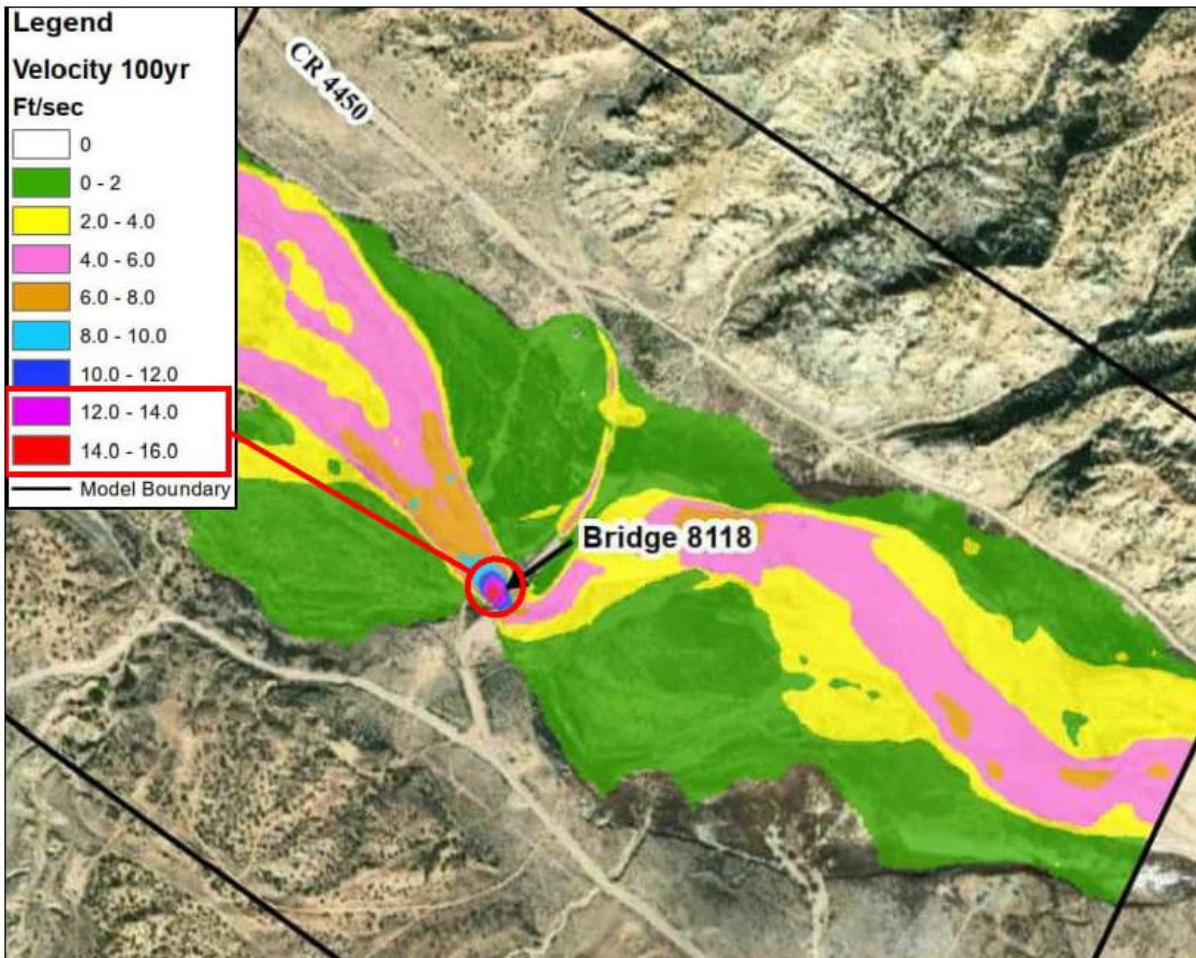
- Channel Hydraulics - Modeled using Stream and River Hydraulics 2D (SRH 2D) Software
- Model results:
  - 25-yr Volume = 7,184 cfs
  - 25-yr WSE=5,633.5 ft
  - **25-yr V = 11.7 fps**
  - 100-yr Flows 11,550 cfs
  - 100-yr WSE= 5,634.40 ft
  - **100-yr V=12.6 fps**
- Excessive velocities encountered during more frequent, low intensity storm events.
- West Abutment is at risk due to scour.
- East approach at risk due to overtopping.



# Existing Conditions: *Largo Wash*

100-year Flow Velocity

• 100-year Flow Depths





# Existing Conditions: *Largo Wash*



- West abutment continues to be scoured due to high velocities and abrupt change in channel direction.
- West Abutment in 2010

# Existing Conditions: *Largo Wash*



- West abutment continues to be scoured due to high velocities and abrupt change in channel direction.
- West Abutment in 2010, Left
- Abutment in 2022, Right

# Existing Conditions: **Bridge 8118**

- 2017 NMDOT Inspection:
- National Bridge Inventory Ratings: 0-9 worst/best
  - Deck: 5 - Fair
  - **Superstructure: 4 - Poor**
  - Substructure: 5 - Fair
  - Bridge Rail, Approach Rail and Rail ends: 0 - Substandard
  - Deck geometry: 2 - (single lane, 12' between rail)
  - Scour: 3 - Unstable
  - Max Capacity: 10 tons
  - Max Height: 10 ft
- Bridge is Functionally Obsolete due to deck geometry and bridge rail.
- Numerous heavily damaged structural members due to vehicle collisions.
- Corrosion of joint plates
- Bridge deck surface is worn, deck plating has failed in places.
- Bridge support bearings are no longer functional.
- Erosion protection measures have failed at west abutment



# Existing Conditions: **Bridge 8118**

- Bridge Construction
  - Bridge is on 16" piles, 60' long
  - A 2012 geotechnical study estimated the scour depth to be 20-30' for 100-year storm.
  - Drill depths to 100' without encountering bedrock
- Preservation Efforts by the County
  - Reduced load rating to 10 tons - before 1991
  - Max Height reduced from 14 to 10' - 2009
  - Constructed silt fencing - 2014
  - Constructed stone filled steel cage at west abutment - 2017
- Long Term Recommendations: Replace Structure



# Largo Canyon Access Alternatives Evaluation

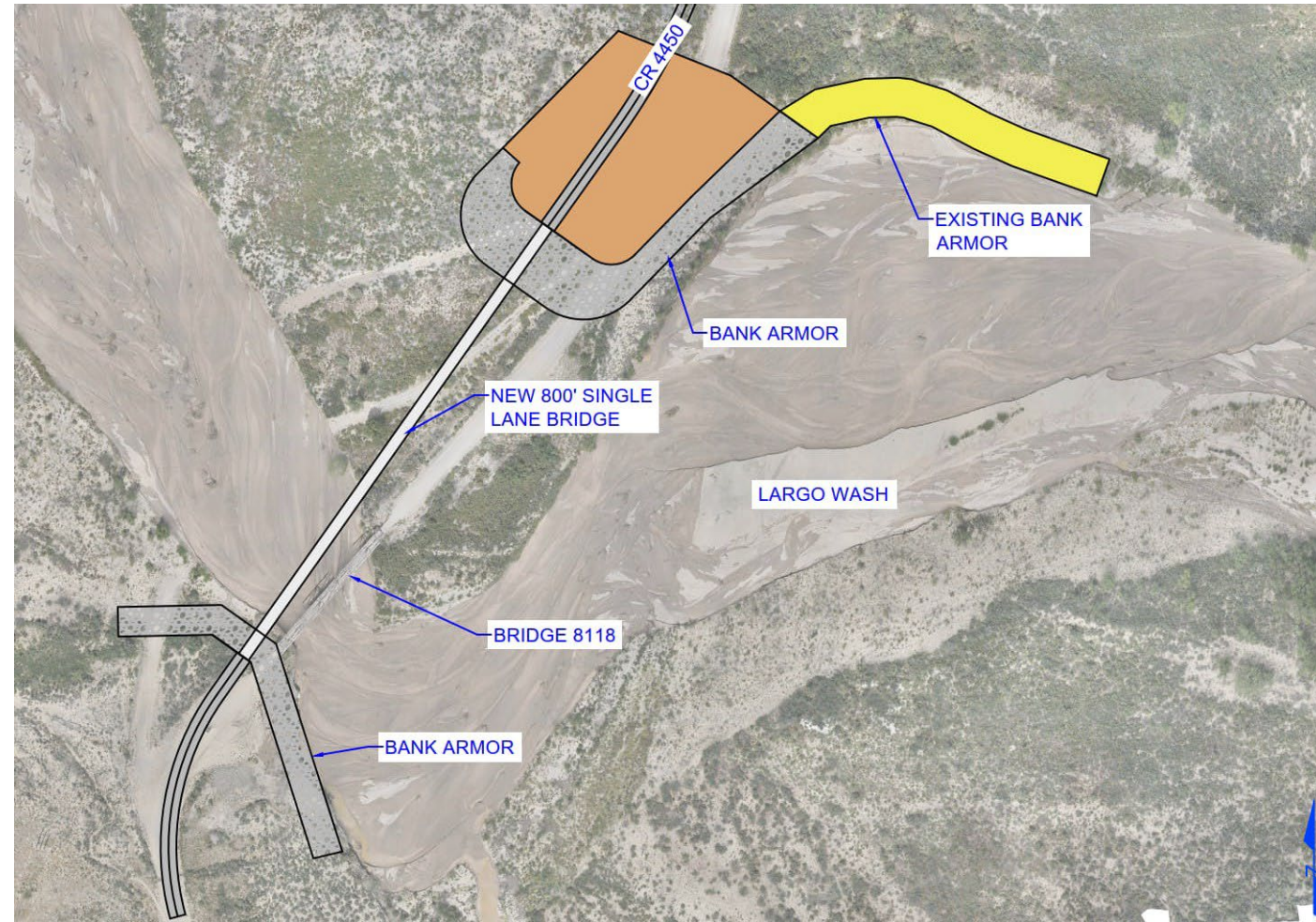


- Alt A: Replace existing Bridge with new structure.
- Alt B: New River Crossing with new bridge across San Juan
- Alt C: Reroute Traffic - US 550/CR 4990
- Alt D: Reroute traffic - US 550/CR 7225/CR 7007



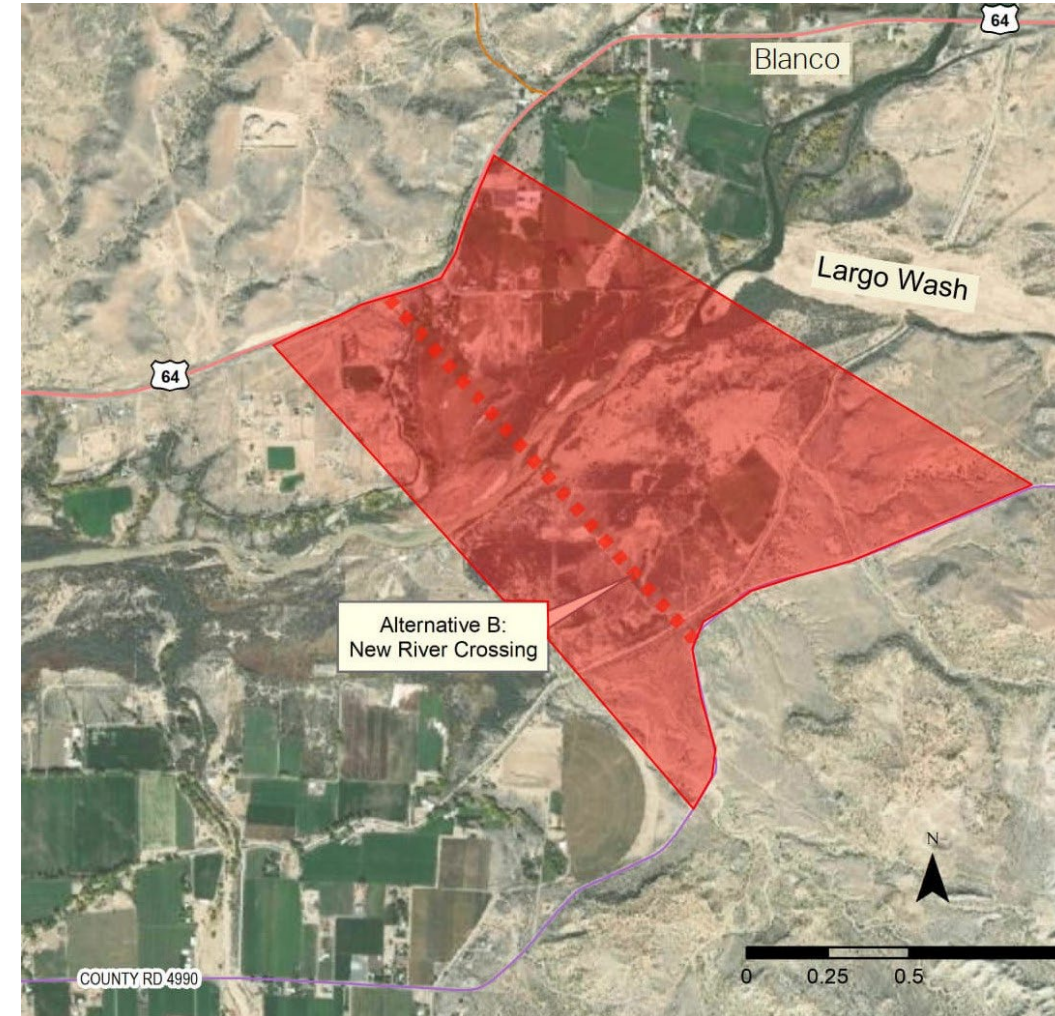
# Largo Canyon Access Alternatives

- **Alternative A:** Replace existing Bridge 8118 with an appropriate structure. Remove Bridge 8118.
- Minimum Estimated Structure Length: 800' to pass the flows **and** provide a more favorable flow path.
- Requires regrading and armoring the main channel upstream of the new structure.
- Existing bridge would be removed.
- Estimated Cost: \$13.3 million
- Estimated travel Time/Distance:
  - 25-30 min/18 miles
  - Calculated between US 550/US 64 to CR 4450/CR 7007

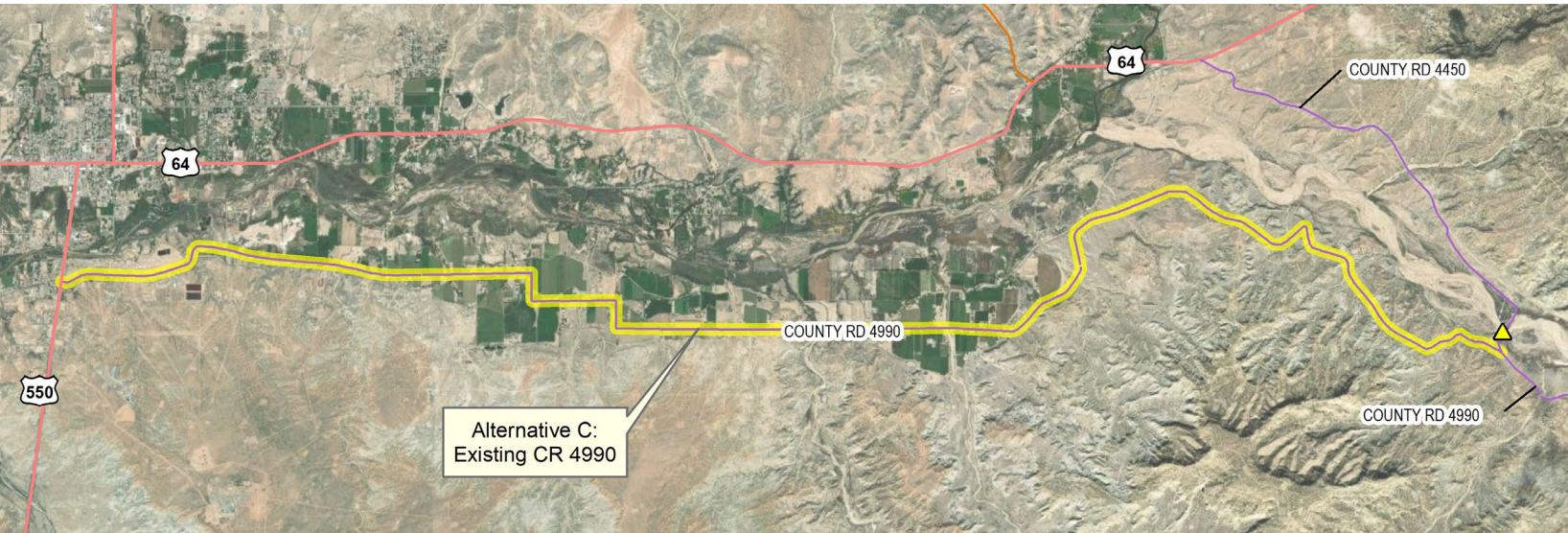


# Largo Canyon Access Alternatives

- **Alternative B:** Replace existing crossing with a new San Juan River crossing between US 64 west of Blanco and CR 4990.
- Connects to CR 4990 west of Largo Wash
- Removes bridge 8118.
- Detailed study required to determine appropriate location.
- Requires r/w acquisition through developed private parcels.
- Inadequate infrastructure on either side of the river.
- Lengthy and expensive permitting process, 8-12 yrs. or more.
- Estimated Cost: \$ 16.9 million (will vary with final location)
- Travel time varies with final location. similar to Alt A.



# Largo Canyon Access Alternatives



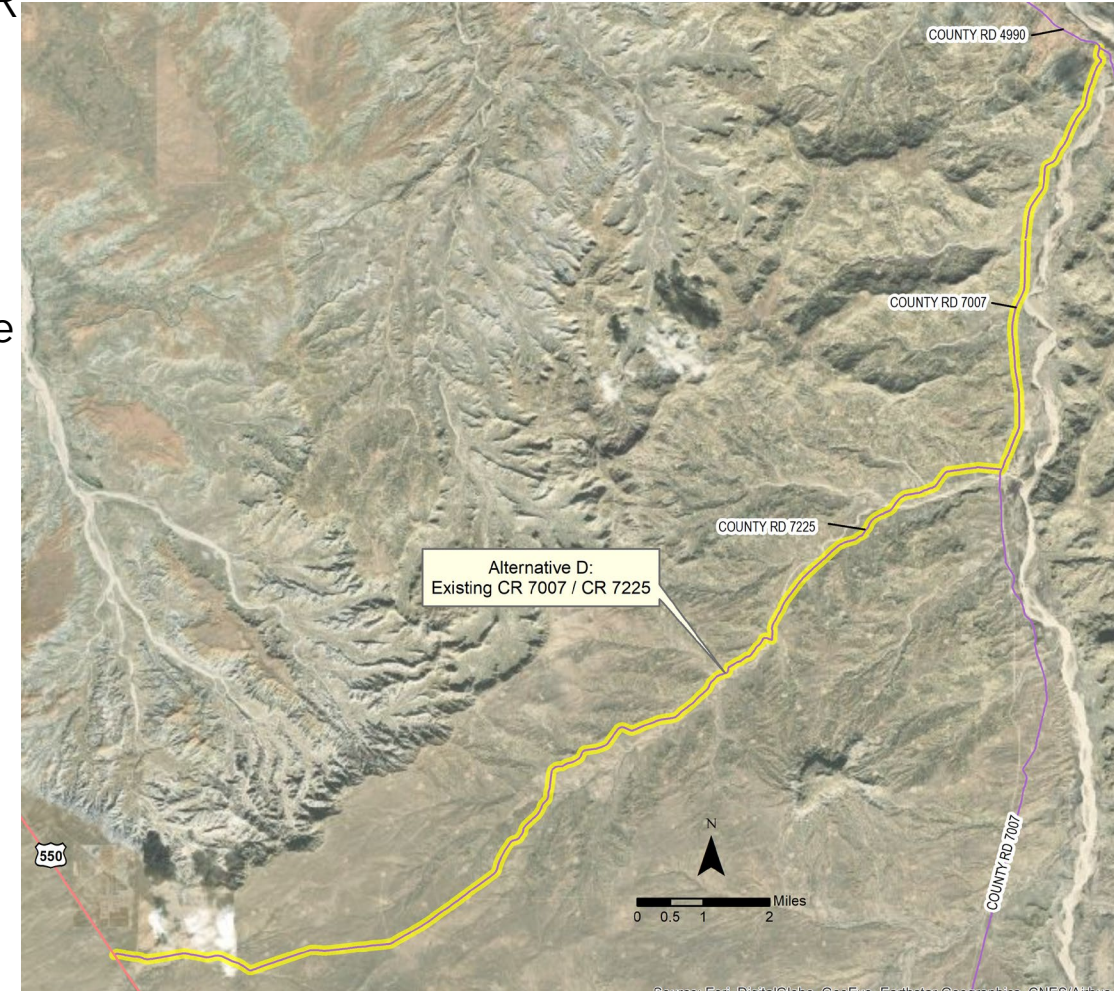
- **Alternative C:** Reroute traffic to existing route CR 4990, removes Bridge 8118.
- Follows existing roadway and r/w.
- Upgrades to drainage, roadway geometry and signing needed.

- No significant increase in travel time or distance (30-35 min/19 mi.)
- Currently carries redirected traffic due to restrictions on Bridge 8118.
- Shortest implementation time: almost immediately.
- Estimated cost: \$3.5 million of improvements to CR 4990



# Largo Canyon Access Alternatives

- **Alternative D:** Reroute traffic to existing route US 550/CR 7225/CR 7007. Remove Bridge 8118.
- Significant geometric and drainage deficiencies.
- Significant upgrades to road surface, drainage and signing required before implementation.
- Road is currently not County maintained - Adds additional mileage and costs to County maintenance responsibility.
- At times unpassable by ordinary car or truck.
- Traverses tribal land - improvements require Navajo Nation and BIA coordination.
- May impact minority or low-income populations but not disproportionately
- Estimated Cost: \$ 5.1 million
- 4 to 5-year timeline:
- Significant increase in travel time and distance (65-70 min/35 mi.)



- Baseline Traffic Counts
  - 7-day/24 hr. counts (Oct 27 through Nov 3 '22)
  - Counts on CR 4450 at bridge and CR 4990 S-Curve and end of pavement, MP 9.6
  - CR 4450 Total ADT: 174 (87 Northbound/87 Southbound)
    - Passenger cars and light trucks only, excludes heavy trucks.
  - CR 4990 Total ADT: S-Curve: 1,156 vpd, MP 9.6: 110 vpd

Source: San Juan County Public Works Dept.

- CR 4990 Spring '23 Follow-up Traffic Counts
  - Pre and Post bridge closure traffic counts
  - 28-day counts, 14 pre-closure, 14 post-closure
  - 2 locations: east of the S-curve ~ MP 1.4, end of asphalt ~ MP 9.6
  - 28-day/24-hr counts, 14 pre closure, 14 post closure
  - Pre-closure total ADT: S-Curve: 1,110 vpd, MP 9.6: 135 vpd
  - Post-closure total ADT: S-Curve: 1,205 vpd, MP 9.6: 230 vpd
  - Difference: S-Curve: +95 vpd, MP 9.6: +95

Source: San Juan County Public Works Dept.

# *Largo Canyon Access Alternatives:* ***Evaluation Criteria***



- Evaluation Criteria - scoring out of 100 total points
- Cost Of Necessary Improvements
- Implementation Timeline: Considers funding, design time, agency approvals/permitting and construction
- Effect on Travel Distance and Time
- Future Maintenance Needs
- Environmental and Community Impacts: effect on sensitive populations, species or natural and cultural resources.
- System Connectivity: effect on access, emergency services,

# Largo Canyon Access Alternatives: Evaluation Matrix



Evaluation Criteria (weighted—100 pts total)	Alternative A: Replacement of Bridge 8118	SCORE	Alternative B: Construct a New Connection to US 64	SCORE	Alternative C: Close the existing crossing and reroute traffic to CR 4990	SCORE	Alternative D: Close the existing crossing and reroute traffic to CR 7225/CR 7007	SCORE
<b>Cost Of Necessary Improvements (25 Points)</b>  \$0-\$3.9 million: 25 points \$4-\$7.9 million: 20 points \$8-\$11.9 million: 15 points \$12-\$15.9 million: 10 points \$16-\$19.9 million: 5 points > \$20 million: 0 points	New Bridge and realign approximately 1,500 feet of CR 4550:  Estimated Cost: \$13.3 million	10	Design and construct new 1.7-mile roadway connection and 700-foot bridge.  Estimated Cost: \$16.9 million	5	Construct recommended improvements on CR 4990 for safety and improved operations. These include: consistent 2-ft paved shoulders enhanced visibility warning signs, paved surface rejuvenation (chip or slurry seal) isolated pavement patch repair Regrading and shaping of ditches, installation of culverts  Estimated Cost: \$ 3.5 million	25	Construct recommended improvements on CR 7225 and CR 7007 for safety and improved operations. These include: regrading and surface stabilization improvements, improvements at wash and arroyo crossings and signing improvements.  Estimated Cost: \$ 5.1 million	20
<b>Implementation Timeline (20 Points)</b>  0-4 years: 20 points 4-8 years: 15 points 8-12 years: 10 points 12-16 years: 5 points >16 years: 0 points	Estimated 5-years 3-4 years for design, permitting and project letting. 1-year for construction	15	Estimated 8-12 years from start to construction. 4-8 years for Phase I (study, Environmental clearances, and prelim design) 3-4 years for final design. 1-yr for construction	5	Closure and reroute can occur immediately pending public notification. Recommended improvements can be phased in. Signing and striping improvements between MPs 4.3 and 5.6 (90-degree bends), necessary geometric and drainage are highest priority. Other signing, striping, and pavement improvements can follow	20	Estimated 4-5 years Recommended improvements are required before implementation. 13.8 miles of CR 7225 road surface must be stabilized, especially where CR 7225 crosses arroyos and washes. CR 7225 crosses lands controlled by the Navajo Nation, additional coordination time likely and may extend implementation time.	15
<b>Effect on Travel Time (15 Points)</b>  0-10 minutes: 15 points 10-20 minutes: 10 points 20-30 minutes: 5 points 30+ minutes: 0 points	No Change in Travel Time or Distance	15	Estimate is based on the shortest straight-line distance “as the crow flies” between US 64 and CR 4990: Actual route may vary based on study results but will include descending and climbing out of river valley and a stretch through developed lands where speeds would be expected to be lower than that of open roadway. Estimated 5 to 8-minute increase in travel time, decrease in distance about 0.30 miles.	15	adds 1.1 mile and 7 minutes in travel time	15	adds 34.6 miles and more than 60 minutes additional travel time	0

# Largo Canyon Access Alternatives: Evaluation Matrix



Evaluation Criteria (weighted—100 pts total)	Alternative A: Replacement of Bridge 8118	SCORE	Alternative B: Construct a New Connection to US 64	SCORE	Alternative C: Close the existing crossing and reroute traffic to CR 4990	SCORE	Alternative D: Close the existing crossing and reroute traffic to CR 7225/CR 7007	SCORE
<b>Future Maintenance needs (10-points)</b>	<p>A new bridge will have a lower initial bridge maintenance cost</p> <p>Bridge crosses over ephemeral waterway which adds to maintenance and inspection costs.</p> <p>New bridge designed for 50+ yr. service life. Service life can be greatly extended with good maintenance program.</p> <p>Continued monitoring of channel and routine channel maintenance required for the life of the bridge</p>	7	<p>A new bridge will have a lower initial bridge maintenance cost</p> <p>Bridge crosses over perennial waterway which adds to maintenance and inspection costs.</p> <p>New bridge designed for 50+ yr. service life. Service life can be greatly extended with good maintenance program.</p> <p>Continued monitoring of riverbanks, abutments and piers and routine maintenance required for the life of the bridge</p>	7	<p>Additional traffic load is minimal relative the current traffic counts, incremental increase in maintenance can be expected to be minimal.</p> <p>Unpaved surface will require periodic blading and reshaping increased traffic will require more frequent reshaping efforts.</p> <p>CR 4990 crosses over no bodies of water, or large washes.</p> <p>Installation of new culverts at existing channel crossings will require regular maintenance and cleaning to remain effective.</p>	8	<p>Additional traffic load is minimal, incremental increase in maintenance can be expected to be minimal.</p> <p>Unpaved surface will require periodic blading and reshaping increased traffic will require more frequent reshaping efforts.</p> <p>CR 7225 crosses or runs parallel to several large washes and arroyos. Increased maintenance intervals will be necessary to maintain these areas.</p> <p>Installation of new culverts at existing channel crossings will require regular maintenance and cleaning to remain effective.</p>	6
<b>Environmental (20-points)</b>	<p>Wetlands have been identified upstream and downstream of the existing bridge. Likely modification to exiting channel will affect existing wetlands.</p> <p>One sensitive wildlife habitat and several sensitive vegetation habitats identified.</p> <p>One previously recorded archaeological site identified near existing bridge.</p> <p>Alternative does not reroute traffic through developed areas. No sensitive population groups identified per the definitions under EO 12898.</p>	9	<p>Numerous wetlands have been identified along San Juan River.</p> <p>Project would affect sensitive riverside wildlife, vegetation, and riparian habitats.</p> <p>Alternative will reroute traffic through developed areas on the north side of the river, the degree of which would be determined during the study phase.</p>	9	<p>No wetlands identified along alternative</p> <p>Two sensitive vegetation habitats identified. No sensitive wildlife habitats or archaeological sites.</p> <p>Alternative does reroute traffic through developed areas, however, no sensitive population groups were identified per the definitions under EO 12898.</p>	12	<p>No wetlands identified along alternative</p> <p>four sensitive vegetation habitats and one sensitive wildlife habitat identified. No archaeological sites.</p> <p>Alternative does not reroute traffic through developed areas, however, Alternative D is located within a minority and low-income population area, per the definitions under EO 12898.</p>	12

# Largo Canyon Access Alternatives: Evaluation Matrix



Evaluation Criteria (weighted—100 pts total)	Alternative A: Replacement of Bridge 8118	SCORE	Alternative B: Construct a New Connection to US 64	SCORE	Alternative C: Close the existing crossing and reroute traffic to CR 4990	SCORE	Alternative D: Close the existing crossing and reroute traffic to CR 7225/CR 7007	SCORE
	<b>System Connectivity (10-points)</b>	New bridge would maintain current connectivity to the larger network, including both east and west sides of Largo Canyon.	10	Connectivity would be maintained to the roadways on the west side of Largo Canyon, no connection to the roads on the east side roadways except by US 64	5	Connectivity would be maintained to the roadways on the west side of Largo Canyon, no connection to the roads on the east side roadways except by US 64	5	Connectivity would be maintained to the roadways on the west side of Largo Canyon, no connection to the roads on the east side roadways except by US 64
<b>Overall Total Score:</b>		67		49		86		59



#### Definitions of Rating Spread / Points Assignment

Performs Poorly (points as shown within each category above, overall summation <50 points)—fails to satisfy the criteria, points assigned as none (0) or at/near the bottom of the number of total points available in each subcategory

Neutral (points as shown within each category above, overall summation 50-75 points)—satisfies most criteria, performance is adequate, points assigned at or near the mid-point of the total points available in each subcategory

Performs Well (points as shown within each category above, overall summation 75 < points)—performance is good, points assigned in the upper third of the total points available in each subcategory

# Largo Canyon Access Alternatives: Evaluation Rankings



- **Alternative C:** Close the existing crossing and reroute traffic to CR 4990 - 86 points
  - Immediately deployable, lowest initial and maintenance cost, minimal impact on travel distance / time
- **Alternative A:** Replacement of Bridge 8118 - 67 Points
  - No change in travel distance/time, higher initial cost, increased maintenance costs, 5-yr implementation time
- **Alternative D:** Close the existing crossing and reroute traffic to CR 7225/7007 - 59 points
  - High initial cost, increased maintenance costs, greatest impact to travel time, 60+ minutes, 5-yr implementation time
- **Alternative B:** Construct a New Connection to US 64 - 49 points
  - Highest initial cost, increased maintenance costs, little to no impact on distance/travel time, longest implementation time, 12+ yrs.



## How to Get More Information or Provide Input Comments/Questions at the Meeting Tonight

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**Mail:**

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**Public comments are requested by July 14, 2023**