I-69 Connector

(from I-69C/US 281 to I-69E/US 77 in Hidalgo, Cameron and Willacy counties)

Preliminary Routes Memorandum

Pharr District

CSJ Number(s): 0921-00-090

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated 12-9-2019, and executed by FHWA and TxDOT.

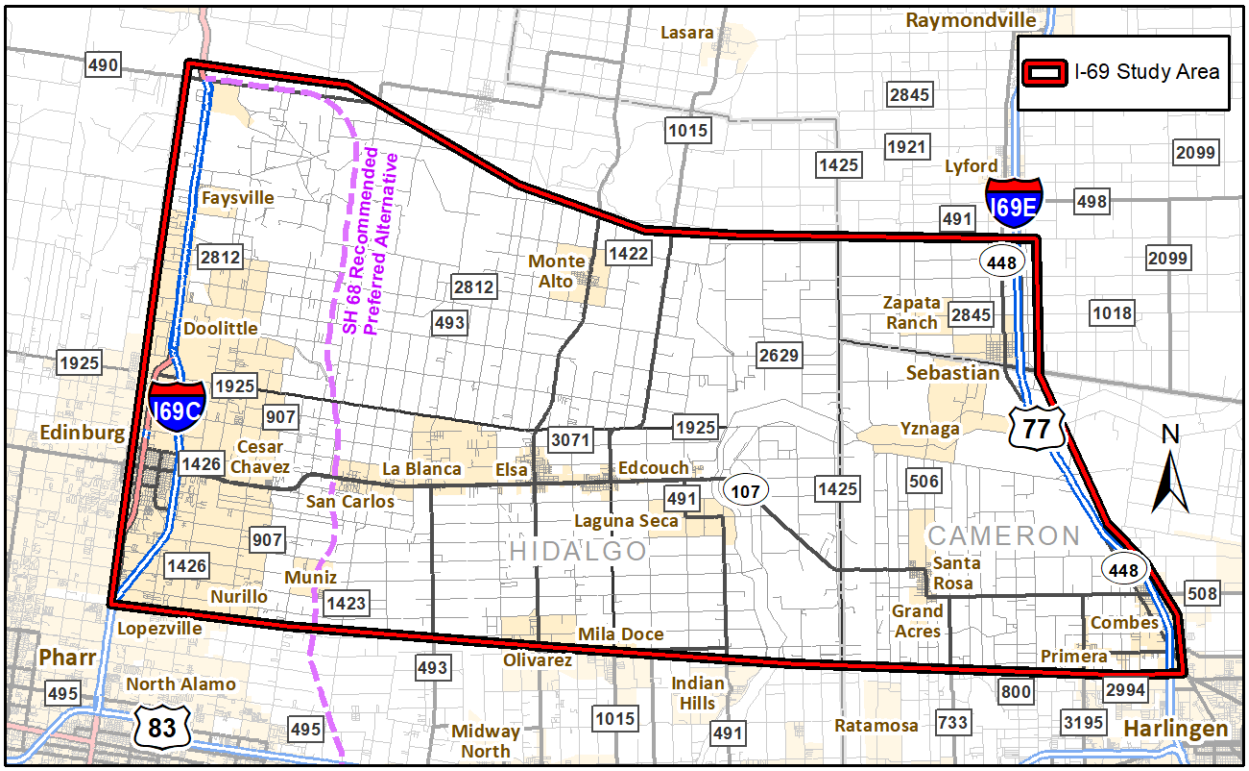
Table of Contents

Attachments

Tables

Introduction

The Texas Department of Transportation (TxDOT) Pharr District is conducting a study to evaluate a potential new connection from I-69C/US 281 to I-69E/US 77 in Hidalgo, Cameron and Willacy counties. The study area covers approximately 400 square miles and is generally bound by I-69C/US 281 to the west, I-69E/US 77 to the east, the community of Faysville and the City of Lyford to the north, and the City of Edinburg and the town of Combes (near Mile 12) to the south.



I-69 Connector Study Area

The I-69 Connector is being developed based on a March 2015 FM 1925 (Monte Cristo Road) Needs Assessment Study that evaluated improving and expanding FM 1925 from the proposed SH 68 to I-69E/US 77. Due to projected development and population growth in the region, TxDOT determined the study should expand to evaluate alternatives other than FM 1925 as part of the advanced planning process, and the study was rebranded as the I-69 Connector.

This memorandum identifies the goals and objectives of the project, outlines preliminary corridor alternatives that were developed, and summarizes the evaluation criteria for selection of the primary corridor alternatives.

Study Goals and Objectives

The TxDOT Project Development Process Manual outlines standard procedures for a project, which includes six phases: planning, environmental, right-of-way (ROW) and utilities, design, plans, specifications and estimates (PS&E), and letting. Currently in the planning phase, TxDOT identified the need for an additional east-west

corridor as a part of their 2019 regional long-range transportation plan; this project is one of the District's major projects.

The goal of the study is to examine existing and new location transportation corridors for passenger cars and trucks between I-69C/US 281 and I-69E/US 77 with the objectives being to:

- Alleviate traffic congestion on I-2
- Provide additional capacity and infrastructure to meet future population growth and travel demand
- Provide an additional hurricane evacuation route in the Lower Rio Grande Valley (LRGV)
- Improve mobility
- Enhance the overall connectivity of the transportation network in the LRGV

At the conclusion of the corridor planning study, TxDOT will determine (1) whether an east-west facility is needed within the study area, (2) what type of facility is needed, (3) the optimum location for the facility, and (4) the potential timeframe for implementation.

Development of Preliminary Corridor Alternatives

Fifteen preliminary corridor alternatives **(Attachment A)** were developed between I-69C/US 281 and I-69E/US 77 based on public input, traffic analyses, engineering parameters, and environmental constraints. The preliminary corridor alternatives are grouped in relation to the northern, central, and southern study area. As shown in **Attachment A**, there are four alternatives in the northern study area (Alternatives N1 to N3 and NNL), four alternatives in the central study area (Alternatives C1 to C3 and CNL), and seven alternatives in the southern study area (Alternatives S1 to S6 and SNL). The corridor alternatives extend to the north as far as Encinitos Road at I-69C/US 281 and CR 1400/Ponciana Road at I-69E/US 77, and to the south as far as E. Canton Road at I-69C/US 281 and on new location at I-69E/US 77 near Combes.

The preliminary corridor alternatives would satisfy the ultimate corridor configuration for a controlled-access facility, which would consist of four 12-foot-wide travel lanes (two in each direction) and two frontage roads each with two 12-foot-wide travel lanes, separated from the mainlanes by a median. Consistent with the existing I-2 and proposed SH 68 ROW, the proposed typical ROW width would be approximately 350 feet as shown in **Attachment B** but would increase at major intersections. The design speed for all alternatives is 70 miles per hour.

During the development of alternatives, all efforts were made to:

- Avoid and/or minimize displacements
- Minimize impacts to parcels
- Maximize use of existing ROW
- Minimize impacts to human and natural resources

The preliminary corridor alternatives were developed in accordance with the latest edition of the TxDOT Roadway Design Manual.

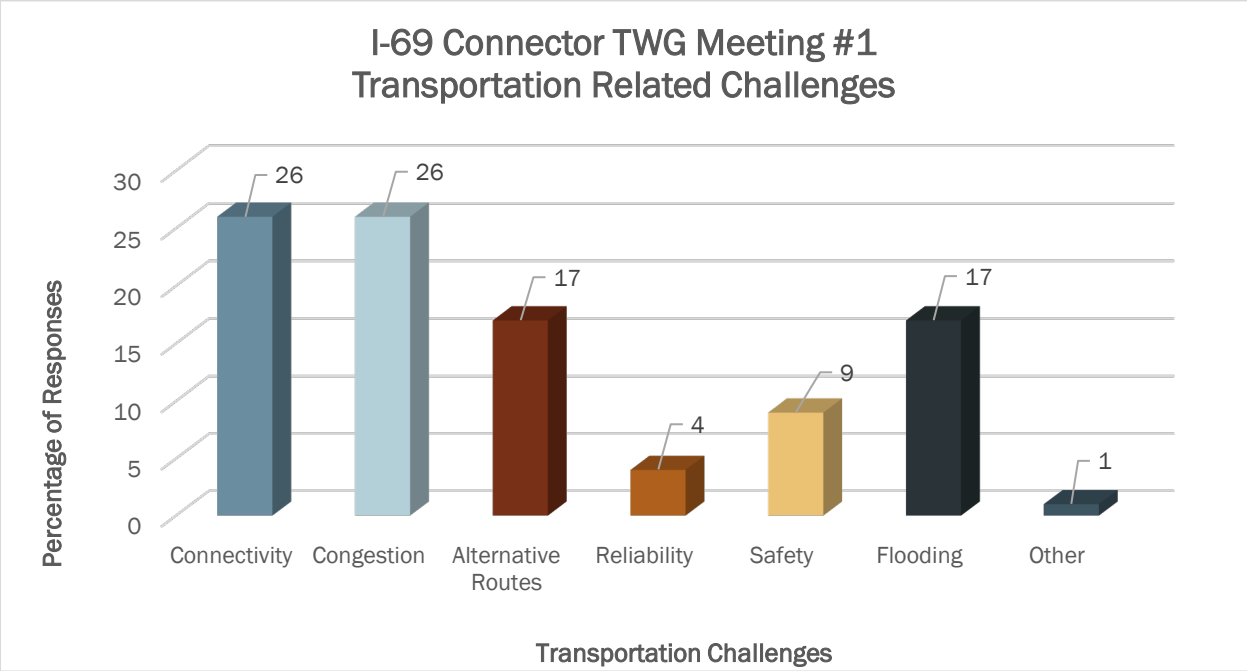
Public Involvement

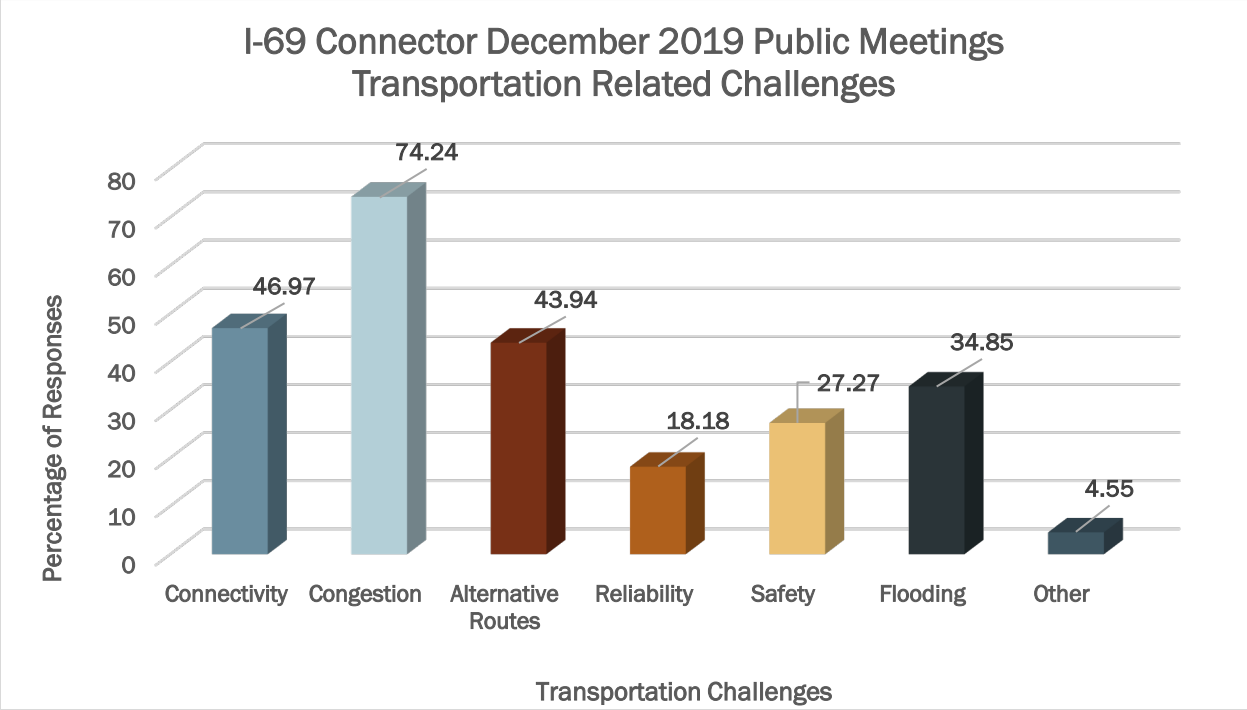
Leading up to the development of corridor alternatives, several outreach activities were conducted for stakeholders (local officials, agencies, and residents) to provide input on the study. The purpose of these activities was to:

- Introduce the I-69 Connector Corridor Feasibility Study
- Develop project goals and objectives
- Discuss planned developments and potential constraints
- Gather input on current transportation issues and future needs
- Learn about key issues and concerns
- Receive input on potential locations for an east-west facility within the study area

A Technical Workgroup (TWG) was formed comprised of local officials/agencies and/or their representatives, and a meeting was conducted on October 2, 2019. Twenty-seven TWG members attended and provided input via a survey. Two public meetings (featuring the same information) were held on Tuesday, December 10, 2019 in Hidalgo County and on Thursday, December 12, 2019 in Cameron County. The meetings were conducted in an open house format. A total of 85 individuals attended both meetings and 17 comments and 69 surveys were received. The input obtained from the TWG and the public was used and considered in the development of the preliminary corridor alternatives.

The following graphs show input received from the TWG meeting and public meetings in response to a survey question regarding “transportation related challenges encountered within the study area”. At the meetings, respondents could select any or all of the six options shown, as well as “other”, where they could provide their own answer.





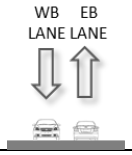
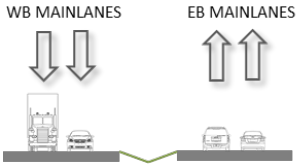
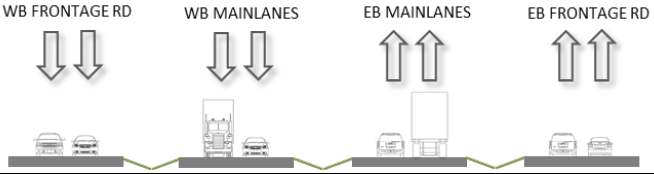
Based on the survey responses received from the TWG and the public, congestion, connectivity, alternative routes, and flooding are primary concerns.

Traffic Studies

An Origin and Destination (O-D) Study was conducted to evaluate the traffic patterns motorists currently generate on the available transportation facilities in the LRGV, within the boundaries of Hidalgo, Cameron, and Willacy Counties. StreetLight Insight's O-D Metric was used to collect trip generation and distribution information and identify the trip patterns and attributes associated with the passenger and commercial vehicles. The information retrieved from the O-D study was used in the evaluation of a potential connector between I-69C/US 281 and I-69E/US 77 and formed the basis for the preliminary corridor alternatives.

Due to the proximity of the preliminary corridor alternatives within each study area, the four preliminary corridor alternatives in the northern study area were grouped as Northern Corridor Alternatives. Similarly, the four alternatives in the central study area and seven alternatives in the southern study area were grouped as Central Corridor Alternatives and Southern Corridor Alternatives, respectively. StreetLight Insight's O-D and 2018 annual average daily traffic (AADT) results were analyzed to obtain 2018 AADT along the preliminary corridor alternatives. Preliminary traffic analysis was performed to estimate 2025 and 2045 AADT with an assumed growth rate of 2% per year. The preliminary traffic estimates distinguish the differences across the study areas as shown in Table 1. The potential typical sections that would accommodate these traffic volumes are also included in Table 1.

Table 1: Preliminary Corridor Alternatives AADT Estimates

Alternative	2025 AADT	2045 AADT	Potential Typical Section**
Northern Corridor Alternatives (N1 to N3 & NNL)*	4,530	6,330	Collector 
Central Corridor Alternatives (C1 to C3 & CNL)*	14,760	20,680	Arterial 
Southern Corridor Alternatives (S1 to S6 & SNL)*	32,810	45,950	Freeway 

* Refer to Attachment A for Preliminary Corridor Alternatives

**NOTE:

1. The engineering and environmental data collected for the Preliminary Corridor Alternatives are based on a 350-foot-wide proposed ROW.
2. The freeway typical section shown may differ from the proposed I-69 Connector 350-foot freeway ultimate typical section shown in Attachment B.

As shown in **Table 1**, based on the preliminary traffic analysis for east-west travel between I-69C/US 281 and I-69E/US 77, there is a sevenfold difference in AADT between the southern and northern corridors, a threefold difference between the central and northern corridors, and a twofold difference between the southern and central corridors. Since alleviating traffic congestion along I-2 is one of the objectives of this study, estimates were developed for the reduction in traffic along I-2 that would occur with an alternative east-west corridor in place. The results are summarized in **Table 2**.

Table 2: Reduction in I-2 AADT with I-69 Connector

Alternative	2025 Reduction in I-2 AADT	2045 Reduction in I-2 AADT	2025/2045 Percent Reduction
Northern Corridor Alternatives (N1 to N3 & NNL)*	490	690	0.4%
Central Corridor Alternatives (C1 to C3 & CNL)*	5,900	8,250	5.3%
Southern Corridor Alternatives (S1 to S6 & SNL)*	20,850	29,200	18.7%

* Refer to Attachment A for the Preliminary Corridor Alternatives

As shown in Table 2, the southern corridor alternatives would provide the largest congestion relief from I-2 at 18.7%. The data shows that if a southern corridor alternative is put in place, 20,850 and 29,200 vehicles would be removed from I-2 in 2025 and 2045, respectively. This number decreases threefold to 5,900 and 8,250 AADT (5.3%) for the central corridor alternatives in 2025 and 2045. Very few vehicles (0.4%) would use the northern corridor alternatives instead of I-2 for east-west travel between I-69C/US 281 and I-69E/US 77.

Engineering Parameters and Environmental Constraints

A desktop evaluation using publicly available geographic information system (GIS) data was performed to identify the existing conditions within the proposed 350-foot corridors and determine how each corridor alternative may affect the environment. Engineering parameters and existing environmental constraints were identified within the study area and used as evaluation criteria for screening preliminary corridor alternatives.

Engineering

Information on the engineering parameters, gathered for each alternative, is listed in **Table 3**.

Table 3: Description of Engineering Parameters Evaluated

Parameter	Description
Length of Facility	The length of each corridor was measured.
Proposed ROW Requirements	Potential proposed ROW acreage estimates were calculated based on a typical ROW width of 350 feet.
Estimated Construction Cost	Preliminary construction costs for each alternative corridor were calculated on a cost per square foot of pavement basis using an ultimate typical section with 350 feet of ROW. The proposed

Parameter	Description
	preliminary costs considered the ultimate build out for travel lanes and associated ROW costs.
Railroad Crossings	The number of railroad crossings was quantified for each alternative.
Drainage Easement Crossings*	GIS files for the drainage ditches/system within Hidalgo County, Cameron County and Willacy County Drainage Districts were obtained and mapped within the study area. The total number of drainage ditch crossings was calculated for each alternative.
Transmission Line Crossings	GIS files for electric transmission lines within the study area were obtained from Homeland Infrastructure Foundation-Level Data (HIFLD). The number of crossings was calculated for each alternative.
Wind Farms	A review of existing wind farms within the study area was conducted.

*NOTE: Drainage outfall locations were not taken into account for this corridor planning study, but they will be addressed during detailed design of the preferred corridor alternative.

Environmental Constraints

An environmental constraint is defined as an environmental factor or consideration (such as natural or human resources) that could impose limitations on project planning or design. To identify potential environmental constraints, Blanton & Associates, Inc. performed a review of databases and graphically mapped resource information within each study corridor. Environmental categories evaluated from desktop data sources include land use, community, hazardous materials, cultural resources, and natural resources.

Land Use

Land use data within the study area were collected from the Hidalgo, Cameron, and Willacy county tax appraisal districts (CAD data), aerial imagery, and available land use zoning information. These data were evaluated based on aerial interpretation and desktop analysis to analyze the impacts of each preliminary corridor alternative for the categories described in **Table 4**.

Table 4: Description of Land Use Evaluated

Constraint	Description
Parcels Impacted	CAD data was analyzed to determine the number of parcels that could potentially be impacted by each preliminary corridor alternative.
Residential	Acreage was determined by aerial imagery interpretation of the presence of housing on a parcel and CAD data listing property type.
Agricultural	Acreage was determined by aerial imagery interpretation and CAD data listing property type.
Commercial/Industrial	Acreage was determined by aerial imagery interpretation and CAD data listing property type.
Institutional (Government Facilities, Schools, Churches, Hospitals, Museums)	Data for the location of Texas public schools (including charter and alternative schools) was obtained from the Texas Education Agency (TEA). The location of Texas museums was gathered from the Texas Historical Commission (THC). Locations of government facilities, churches, hospitals, and private schools

Constraint	Description
	were evaluated based on aerial interpretation and CAD data listing property type.
Transportation	Transportation facilities were identified by aerial imagery interpretation, which identified the number of acres of existing transportation facilities that each preliminary corridor alternative utilized.
Parks (Local, State, Federal)	Section 4(f) of the Department of Transportation Act of 1966 helps protect publicly owned lands such as parks, recreational areas, wildlife and waterfowl refuges, and significant historic sites from impacts associated with roadway construction and improvements. Acreage was determined by aerial imagery interpretation and CAD data listing property type.
Undeveloped	Land that did not fall under residential, agricultural, commercial/industrial, institutional, parklands, or transportation uses was categorized as undeveloped land. CAD data and aerial imagery interpretation were used to identify the number of acres of existing undeveloped land that each corridor impacted.

Community Impacts

Community impacts consider social and economic factors of planned projects on communities (**Table 5**).

Table 5: Description of Community Impacts Evaluated

Constraint	Description
Neighborhoods Bisected	Analyzing the number of neighborhoods bisected by each preliminary corridor alternative provides a screening tool on the potential impacts to community cohesion. CAD data and aerial imagery interpretation were used to identify the number of neighborhoods bisected by each preliminary corridor alternative.
Colonias	The Office of the Attorney General of Texas (OAG) maintains data on colonias within Texas and defines colonias as substandard housing developments where residents lack basic services such as drinking water, sewage treatment, and paved roads. The OAG data were analyzed to determine the number of mapped colonias that each preliminary corridor alternative potentially impacts.

Hazardous Materials Impacts

Hazardous materials refers to a broad category of hazardous wastes, hazardous substances, and toxic chemicals with the potential to negatively impact human health or the environment (**Table 6**).

Table 6: Description of Hazardous Materials Evaluated

Constraint	Description
Potential Hazardous Materials Sites	Data from the Texas Commission on Environmental Quality (TCEQ) were obtained. The potential hazardous materials sites assessed were municipal solid waste facilities, radioactive sites, superfund sites, petroleum storage tanks, and leaking petroleum storage tanks. A more refined database search would be performed as project alternatives are advanced for further study.
Oil and Gas Pipeline Crossings	Data on oil and gas pipeline locations within the study area were obtained from the Railroad Commission of Texas (RRC). The number of crossings by each preliminary corridor alternative was analyzed.
Oil and Gas Wells Active	Data on active oil and gas well locations within the study were obtained from the RRC. The number of active oil and gas wells impacted by each preliminary corridor alternative was analyzed.
Oil and Gas Wells Dry Hole	An oil and gas dry hole is a completed well not capable of producing in paying quantities. Data on dry holes were obtained from the RRC and analyzed to determine impacts by each preliminary corridor alternative.
Oil and Gas Wells Plugged	Statewide Rule 14(b)(2) requires plugging operation commence on wells that have been inactive within one year after operations have ceased. Data on plugged wells were obtained from the RRC and analyzed to determine impacts by each preliminary corridor alternative.
Oil and Gas Wells Permitted	Permitted oil and gas wells are planned wells permitted by the RRC that have not be drilled. Data on permitted wells were obtained from the RRC and analyzed to determine impacts by each preliminary corridor alternative.
Landfills	The municipal solid waste landfill database information was obtained from the TCEQ, and it includes location information on active and inactive landfills where solid waste is treated or stored.

Cultural Resources

Cultural resources are structures, buildings, archeological sites, districts (a collection of related structures, buildings, and/or archeological sites), cemeteries, and objects. Both federal and state laws require consideration of cultural resources during project planning (**Table 7**).

Table 7: Description of Cultural Resources Evaluated

Constraint	Description
Previously-recorded Historic Resources	For this analysis, previously-recorded historic resources included National Register of Historic Places (NRHP) properties, NRHP Districts, Museums, Courthouses, Cemeteries, Texas Historical Markers, and State of Texas Historic Sites. These data were obtained from the Texas Historical Commission (THC).
NRHP Sites	The NRHP is the official list of the Nation's historic places worthy of preservation as authorized by the National Historic Preservation Act of 1966. The NRHP is

Constraint	Description
	maintained by the National Park Services, with data on NRHP sites in Texas maintained and provided by the THC.
Known Archeological Sites	Known archeological sites records are maintained by the THC and collected within the THC Restricted Archeological Sites ATLAS (TARL) database. This information can only be accessed by registered archeologists and is not for public disclosure.
State Antiquities Landmarks (SALs)	SALs are cultural resources designated by the THC and receive legal protection under the Antiquities Code of Texas. All cultural resources on non-federal public lands in the State of Texas are eligible to be designated as SALs. Data on the location of SALs was obtained from the TARL.
Cemeteries	Section 711 (Cemeteries) of the Texas Health and Safety Code of 1989, as amended 2017 (Texas Health and Safety Code Title 8, Subtitle C), and associated regulations (13 TAC 22) regulate the protection of cemeteries within the State of Texas. This statute and regulations state that a railroad, street, road, alley, pipeline, telephone, telegraph, electric line, wind turbine, cellular telephone tower, or other public utility or thoroughfare may not be placed through, over, or across a part of a dedicated cemetery without consent. Known cemetery location data were obtained from the THC.

Natural Resources

Natural resources include water, biological resources, wetlands, floodplains, and wildlife. Both federal and state laws protect natural resources, and require consideration and evaluation of these resources during project planning (**Table 8**).

Table 8: Description of Natural Resources Evaluated

Constraint	Description
NWR/WMAs	The National Wildlife Refuge (NWR) system is designated protected areas of the U.S. managed by the U.S. Fish and Wildlife Service (USFWS). Location data were gathered from the USFWS. The WMA (Wildlife Management Area) is a database layer provided by Texas Parks and Wildlife Department (TPWD). WMAs are sites used to perform research on wildlife habitats and wildlife populations. They are also used for resource management, education, and to provide opportunities for outdoor recreation.
Prime/Unique Farmland Soils	The Natural Resources Conservation Survey (NRCS), an agency under the U.S. Department of Agriculture (USDA), provides leadership in a partnership effort to help people conserve, maintain, and improve natural resources and the environment. The NRCS is responsible for administering the Farmland Protection Policy Act (FPPA). Prime farmlands are distributed throughout the study area.

Constraint	Description
Threatened or Endangered (T&E) Species Potential Habitat	In Texas, animal or plant species of conservation concern may be listed as T&E species under the authority of state law and/or under the U.S. Endangered Species Act (ESA) of 1973. T&E potential habitat data from the Texas Natural Diversity Database (TXNDD) was obtained to determine the potential probability of impacts to these species within the study area.
Critical Habitat	Critical habitat are areas of designated habitat that the USFWS believes to be essential to species conservation. Locations of critical habitat were obtained from USFWS.
Mapped Stream Crossings	Data from the National Hydrography Dataset (NHD) were obtained to evaluate the number of mapped stream crossings that each preliminary corridor alternative impacts.
Irrigation/Drainage Canals	Within the LRGV irrigation/drainage canals are a natural, agricultural, and cultural resource. The irrigation provides agricultural production and is managed by drainage irrigation districts. Some of the irrigation/drainage canals are included on the NRHP for their historic significance. Water management is important to the economic landscape of the LRGV. When preliminary alternatives corridors are advanced for further study, this category may be further refined into different types of impact (e.g., potential cultural resource impact). Data from the NHD were used to evaluate the number of irrigation/drainage canals that may be impacted by each preliminary corridor alternative.
100-Year Floodplain	The 100-year floodplain is the land that is predicted to flood during a 100-year storm, which has a 1 percent chance of occurring in any given year. The 100-year floodplain is used by Federal Emergency Management Agency (FEMA) to administer the federal flood insurance program and local governments to regulate development.
National Wetlands Inventory (NWI) Features	NWI is a resource that provides detailed information on the abundance, characteristics, and distribution of US Wetlands, and is maintained by the USFWS. NWI Features provide screening data on the likely location of wetlands features, which must be verified by field surveys by qualified wetland biologists. The data were evaluated for both number of NWI features impacted and acres impacted.
Encroachment of IBWC Boundary	The International Boundary and Water Commission (IBWC) is a binational organization between the U.S. and Mexico established in 1889 to apply the rules of the Convention of 1884 that established the rules for determining the location of the international boundary between the U.S. and Mexico. The IBWC is tasked with enforcing and regulating boundary and water issues on the border. Data from the IBWC for the location of IBWC waters were obtained, specifically regarding the USIBWC North Floodway, which collects runoff from Cameron, Hidalgo, and Willacy counties.

Description of Preliminary Corridor Alternatives

Of the four corridor alternatives in the northern study area, three are a combination of existing roads and new location and one alternative is entirely on new location. The three combination alternatives begin as an improvement/widening of an existing roadway and follow Ramseyer Drive (N1), FM 2812 (N2), and Encinitos Road (N3). Each alternative diverts to avoid the LRGV NWR. Alternatives N1 and N2 combine south of the LRGV NWR to connect to I-69E/US 77 approximately 0.25 miles south of C W Line Road West (near Sebastian), and Alternative N3 diverts to the north and connects to I-69E/US 77 using CR 1400 E/Ponciana Road. The new location alternative (NNL) begins between Ramseyer Drive and Benito A Ramirez Road, proceeds east to the south of the LRGV NWR, and connects with I-69E south of the town of Sebastian.

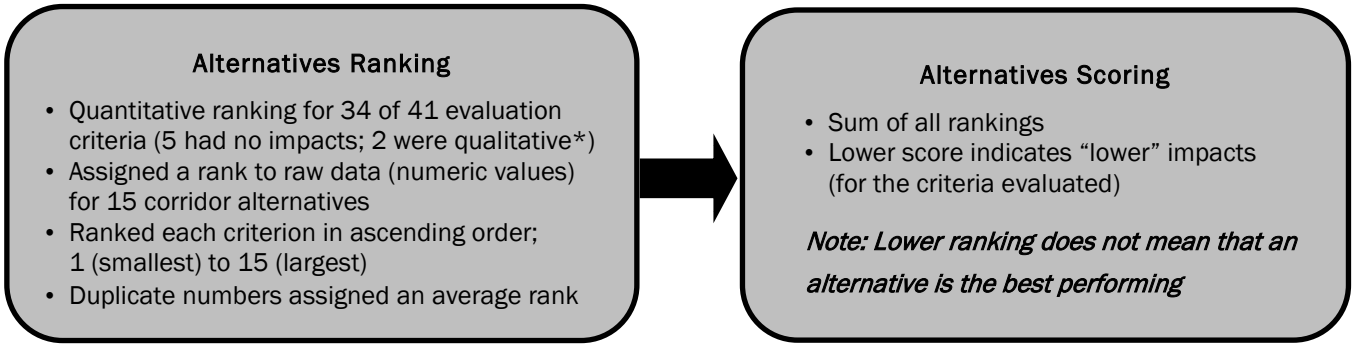
Of the four corridor alternatives in the central study area, three are a combination of existing roads and new location and one is an entirely new location alternative. The three combination alternatives begin as an improvement/widening of existing roadways and primarily follow E. Mile 17½ Road/Russell Road (C1), E. Rogers Road (C2), and FM 1925/Monte Cristo Road (C3). Alternative C2 begins at FM 1925 then diverts south to follow E. Rogers Road before converging again with FM 1925 near FM 88, and Alternative C3 converges with the other alternatives east of FM 491. The combined alternatives diverge north of the Las Palomas Wildlife Management Area (WMA), and connect to I-69E between CR 835 and CR 472, south of Sebastian. The new location alternative (CNL) starts between E. Mile 17½ Road and E Chapin Street and proceeds east, then diverts north near FM 88 to avoid the IBWC floodway and Las Palomas WMA before connecting to I-69E north of the Business 77/I-69E intersection (south of Sebastian).

The southern study area was determined to be the most probable location for an effective relief route for I-2, and as such, seven corridor alternatives were developed. Six alternatives are a combination of existing roads and new location and one alternative is entirely on new location. The six combination alternatives each begin as an improvement/widening of an existing roadway and primarily follow E. Canton Road (S1), E. Iowa Road (S2), E. Curve Road (S3), SH 107 (S4 and S5), and E. Richardson Road (S6). All six combination alternatives divert south of the Las Palomas WMA, and connect to I-69E/US 77 at various new locations north of Combes. The new location alternative (SNL) begins between SH 107/E. University Drive and E. Richardson Road and proceeds east, then diverts south near Rogerslacy to avoid Las Palomas WMA and converges with Alternatives S3 and S4 to connect with I-69E north of Combes.

Screening of Preliminary Corridor Alternatives

The preliminary corridor alternatives were compared using the engineering parameters and existing environmental constraints (**Attachment C**). The information collected provides a baseline for understanding potential resources that could be impacted by each preliminary corridor alternative. As shown in **Attachment C**, evaluation criteria are split into categories of meeting study objectives, engineering parameters, and environmental constraints, providing an opportunity to screen and compare preliminary corridor alternatives.

Due to the number of alternatives and the numerous evaluation criteria, a ranking methodology was used to initially evaluate the raw data to help differentiate between corridor alternatives.



*Note: qualitative assessments were conducted for meeting the study goal and objectives and T&E Species Potential Habitat; the qualitative assessments were based on low, medium and high.

The ranking and resulting scores for the 15 preliminary corridor alternatives are provided in **Attachment D**.

Study Goal and Objectives

As noted above, these criteria are based on a qualitative assessment, and similar to the traffic analysis, distinguish differences across study areas rather than alternatives (**Table 9**). A rating of "Low", "Medium" and "High" was used to assess most of the objectives.

Table 9: Evaluation of Study Objectives

Evaluation Criteria	Unit of Measurement	South	Central	North
Meets Goals and Objectives				
1. Alleviate traffic congestion on I-2	Low/Med/High	High	Med	Low
2. Provide additional capacity and infrastructure to meet future population growth and travel demand	Low/Med/High	High	Med	Low
3. Provide an additional hurricane evacuation route in the LRGV	Yes/No	Yes	Yes	Yes
4. Improve mobility	Low/Med/High	Med-High	Med-High	Low
5. Enhance overall connectivity of the transportation network in the LRGV	Low/Med/High	Med-High	Med-High	Low

As shown in **Table 9**, the southern study area had mostly "high" and "medium-high" ratings in terms of meeting the study objectives, while the northern study area had only "low" ratings. In summary:

- Objective No. 1 - given that the southern corridor alternatives would provide the most congestion relief for I-2 (as shown in **Table 2**) and the northern corridor alternatives would provide the least; the southern study area is assigned a "high", central assigned a "medium", and the northern study area assigned a "low" rating.
- Objective No. 2 - population and density projections show growth in the study area trending primarily between I-2 and SH 107, which directly correlates to the traffic projections. As such, the southern study area is assigned a "high", central assigned a "medium", and the northern study area assigned a "low" rating.

- Objective No. 3 - all corridor alternatives would serve as a hurricane evacuation route.
- Objective No. 4 - because both the south (centered on SH 107) and central (centered on FM 1925) corridor alternatives would improve mobility in the study area, they were assigned a rating of "medium-high". Since current and projected development in the northern study area is low, the northern study area assigned a "low" rating.
- Objective No. 5 - since many of the existing roads within the study area are discontinuous, both the south and central corridor alternatives would comparatively enhance east-west connectivity, and are assigned a "medium-high" rating. The northern study area is assigned a "low" rating based on existing travel patterns.

To quantitatively differentiate how each study area meets the study objectives, the following numeric scoring methodology was used.

The ranking and resulting scores for the goals and objectives are provided in **Attachment E**. These preliminary study objectives may be further refined based on input from TxDOT, the TWG, and the public.

Engineering Parameters

A comparison of the engineering parameters for each alternative is summarized as follows:

- *Length of Facility*: Alternative SNL would be the shortest route at 24.83 miles within the southern study area. Within the central study area, Alternative C3 would be the shortest route at 22.88 miles and within the northern study area, Alternative N3 would be the shortest route at 22.41 miles.
- *Proposed ROW Requirements (350-foot Corridor)*: Alternative SNL would require the least ROW (1,054 acres) within the southern study area. Within the central study area, Alternative C3 would require the least ROW at 971 acres, and within the northern study area, Alternative N3 would require the least ROW at 951 acres.
- *Estimated Construction Cost*: Alternative SNL would have the lowest estimated construction cost at $382.49 million within the southern study area. Within the central study area, Alternative C3 would have the lowest estimated construction cost at $352.61 million and Alternative N3 would have the lowest estimated construction cost at $345.26 million within the northern study area.
- *Railroad Crossings*: The UPRR railroad parallels US 77 within the eastern portion of the study area. Each corridor would cross the UPRR. Alternatives S1, S2, S5, and S6 cross two.

- *Drainage Easement Crossings*: In the southern study area, Alternatives S3, S4, S5, S6, and SNL cross three drainage canals and Alternatives S1 and S2 cross five. In the central study area, Alternative C3 crosses seven canals; all other alternatives cross six. In the northern study area, Alternatives N1 and N2 cross three drainage canals and Alternatives N3 and NNL cross two.
- *Transmission Line Crossings*: In the southern study area, Alternatives S2 and S3 cross two transmission lines, all other alternatives cross three. In the central study area, Alternative C3 crosses five, Alternatives C1 and C2 cross four, and Alternative CNL crosses two. None of the alternatives in the northern study area crosses transmission lines.
- *Wind Farms*: No existing wind farms were found within the study area; however, future wind farms are being planned (mainly in the eastern portion of the study area). Any development of viable alternatives would consider potential conflict with planned wind farms.

Environmental Constraints

Information gathered on the environmental resources and categories for each alternative are presented below. These categories represent the existing baseline conditions and will be used and further refined during subsequent study. This is a comparison of raw data available within the study area and provides a basis for existing conditions moving forward. However, it is important to note that the northern and eastern portion of the study area are more rural and therefore less developed than the southern and western portions of the study area.

Land Use

- *Parcels Impacted:* Alternative SNL would impact the lowest number of parcels (419) and Alternative S6 would impact the highest number of parcels (1,044) in the southern study area. In the central study area, Alternative CNL would impact the lowest number of parcels (239) and Alternative C1 would impact the highest number of parcels (538). In the northern study area, Alternative NNL would impact the lowest number of parcels (402) and Alternative N1 would impact the highest number of parcels (534).
- *Residential:* In the southern study area, Alternative SNL would impact the lowest number of residential acres (85) and Alternative S2 would impact the highest number of residential acres (231). In the central study area, Alternative CNL would impact the lowest number of residential acres (66) and Alternative C1 would impact the highest number of residential acres (134). In the northern study area, Alternative NNL would impact the lowest number of residential acres (88) and Alternative N1 would impact the highest number of residential acres (138).
- *Agricultural*: In the southern study area, Alternative S6 would impact the lowest number of agricultural acres (433) and Alternative SNL would impact the highest number of agricultural acres (822). In the central study area, Alternative C3 would impact the lowest number of agricultural acres (534) and Alternative CNL would impact the highest number of agricultural acres (791). In the northern study area, Alternative N3 would impact the lowest number of agricultural acres (498) and Alternative NNL would impact the highest number of residential acres (699).
- *Commercial/Industrial*: In the southern study area, Alternative SNL would impact the lowest number of commercial/industrial acres (6) and Alternative S5 would impact the highest number of

commercial/industrial acres (86). In the central study area, Alternative C1 would impact the lowest number of commercial/industrial acres (5) and Alternative C3 would impact the highest number of commercial/industrial acres (17). In the northern study area, Alternative NNL would impact the lowest number of commercial/industrial acres (1) and Alternative N2 would impact the highest number of commercial/industrial acres (19).

- *Institutional (Government Facilities, Schools, Churches, Hospitals, Museums)*: In the southern study area, Alternatives S3 and S4 would impact the lowest number of institutional acres (0) and Alternative S6 would impact the highest number of institutional acres (30). In the central study area, Alternative CNL would impact the lowest number of institutional acres (0) and Alternative C2 would impact the highest number of institutional acres (5). In the northern study area, Alternative NNL would impact the lowest number of institutional acres (0) and Alternative N3 would impact the highest number of acres (15).
- *Transportation*: In the southern study area, Alternative SNL would utilize the lowest number of existing transportation acreage (31) and Alternative S5 would utilize the highest number of existing transportation acreage (348). In the central study area, Alternative CNL would utilize the lowest number of existing transportation acreage (25) and Alternative C3 would utilize the highest number of existing transportation acreage (184). In the northern study area, Alternative NNL would utilize the lowest number of existing transportation acres (26) and Alternative N1 would utilize the highest number of existing transportation acres (144).
- *Parks (Local, State, Federal)*: All alternatives would have zero acres of impacts to public parks; however, each preliminary alternative would cross a portion of the Lower Rio Grande National Wildlife Refuge. Detailed field investigations were not completed to determine if additional Section 4(f) resources are located within the study area. Therefore, Section 4(f) impacts may result from construction of any of the preliminary corridor alternatives.
- *Undeveloped*: In the southern study area, Alternatives S2 and S5 would impact the lowest number of undeveloped acres (81) and Alternative S3 would impact the highest number of undeveloped acres (136). In the central study area, Alternative CNL would impact the lowest number of undeveloped acres (103) and Alternative C3 would impact the highest number of undeveloped acres (143). In the northern study area, Alternative NNL would impact the lowest number of undeveloped acres (147) and Alternative N3 would impact the highest number of undeveloped acres (230).

Community Impacts

- *Neighborhoods Bisected:* In the southern study area, Alternative S6 would bisect the fewest neighborhoods (3) and Alternative S1 would bisect the most (15). In the central study area, Alternative CNL would bisect the fewest neighborhoods (1) and Alternatives C1 and C2 would bisect the most neighborhoods (11). In the northern study area, Alternative NNL would bisect the fewest neighborhoods (8) and Alternative N1 would bisect the most neighborhoods (12).
- *Colonias:* In the southern study area, Alternative SNL would impact the fewest colonias (4) and Alternative S5 would impact the most alternatives (20). In the central study area, Alternatives C1 and CNL would impact the fewest colonias (6) and Alternative C3 would impact the most colonias (13). In the northern

study area, Alternative N3 would impact the fewest colonias (1) and Alternative NNL would impact the most colonias (4).

Hazardous Materials Impacts

- *Potential Hazardous Materials Sites*: In the southern study area, Alternative SNL would impact the fewest potential hazardous materials sites (0) and Alternative S5 would impact the most (36). In the central study area, Alternative CNL would impact the fewest potential hazardous materials sites (0) and Alternative C3 would impact the most (6). In the northern study area, Alternatives N1 and NNL would impact the fewest potential hazardous materials sites (0) and Alternative N2 would impact the most (3).
- *Oil and Gas Pipeline Crossings*: In the southern study area, Alternative S3 would cross the fewest pipelines (11) and Alternative S6 would cross the most pipelines (39). In the central study area, Alternative C1 would cross the fewest pipelines (17) and Alternative C3 would cross the most pipelines (62). In the northern study area, Alternative N2 would cross the fewest pipelines (13) and Alternative N3 would cross the most pipelines (27).
- *Oil and Gas Wells Active*: Only Alternative S4 would intersect an active oil/gas well (1).
- *Oil and Gas Wells Dry Hole*: Alternatives S5, S6, CNL, N1, N2, and NNL would intersect an oil/gas well dry hole (1).
- *Oil and Gas Wells Plugged*: Alternative N5 would intersect the most plugged oil/gas wells (5), and Alternatives S1, S4, N1, and NNL would each intersect one plugged oil/gas well.
- *Oil and Gas Wells Permitted*: Alternative N1 would intersect the most permitted oil/gas wells (3) and Alternative CNL would impact one permitted oil/gas well.
- *Landfills*: Only Alternative N3 would impact landfills. Alternative N3 would potentially impact 5.76 acres of landfills.

Cultural Resources

- *Previously-recorded Historic Resources*: Alternatives S1, S2, and S3 would each impact one previously-recorded historic resource.
- *NRHP Sites*: No preliminary corridor alternative would impact an NRHP site.
- *Known Archeological Sites*: Alternatives C2 and C3 would impact three known archeological sites, and Alternative C1 would impact two known archeological sites.
- *SALs*: No preliminary corridor alternative would impact a SAL.
- *Cemeteries*: Alternative S6 would impact a known cemetery.

Natural Resources

- *NWR/WMA*: In the southern study area, Alternatives S3, S4, and SNL would impact the fewest acres of NWR/WMA (3.70) and Alternatives S5 and S6 would impact the most (4.34). In the central study area, Alternatives C2 and C3 would impact the fewest acres (8.32) and Alternative CNL would impact the most

(9.12). In the northern study area, Alternatives N1 and N2 would impact the fewest acres (2.69) and Alternative N3 would impact the most (3.24).

- *Prime/Unique Farmland Soils*: In the southern study area, prime farmland impacts ranged from 665.68 acres (Alternative S4) to 885.40 acres (Alternative S2). In the central study area, prime farmland impacts ranged from 718.96 acres (Alternative C3) to 771.79 acres (Alternative CNL). In the northern study area, prime farmland impacts ranged from 540.22 acres (Alternative N3) to 696.25 acres (Alternative NNL).
- *T&E Species Potential Habitat*: Alternative N3 had a medium impact to T&E species potential habitat, and the other preliminary corridor alternatives had low impact to T&E potential habitat.
- *Critical Habitat*: None of the preliminary corridor alternatives impact critical habitat.
- *Mapped Stream Crossings*: None of the preliminary corridor alternatives impact mapped stream crossings.
- *Irrigation/Drainage Canals*: In the southern study area, Alternative S5 would impact the fewest canals (42) and Alternative S3 would impact the most (52). In the central study area, Alternative C2, C3, and CNL would impact the fewest canals (34) and Alternative C1 the most (41). In the northern study area, Alternative N3 would impact the fewest canals (16) and Alternative N2 the most (41).
- *100-Year Floodplain*: In the southern study area, Alternative S2 would impact the fewest acres of floodplain (194.78) and Alternative SNL would impact the most (292.98). In the central study area, Alternative CNL would impact the fewest acres of floodplain (254.14) and Alternative C2 would impact the most (428.79). In the northern study area, Alternative N3 would impact the fewest acres of floodplain (15.03) and Alternative N1 would impact the most (332.39). It is important to note that FEMA has not mapped all areas within the study area.
- *NWI Features*: In the southern study area, Alternative SNL would impact the fewest acres of NWI features (7.68) and Alternative S3 would impact the most (22.90). In the central study area, Alternative CNL would impact the fewest acres of NWI features (13.84) and Alternative C3 would impact the most (26.75). In the northern study area, Alternative N3 would impact the fewest acres of NWI features (5.98) and Alternative N2 would impact the most (31.63).
- *Encroachment of IBWC Boundary*: In the southern study area, Alternative S2 would impact the fewest acres (18.70) and Alternative SNL would impact the most (30.40). In the central study area, Alternative CNL would impact the fewest acres (30.52) and Alternatives C2 and C3 would impact the most (63.04). In the northern study area, the analysis determined there were no impacts to this resource from any of the preliminary corridor alternatives.

Alternatives Scoring and Ranking

Table 10 provides the preliminary scoring and ranking for each preliminary corridor alternative based on the evaluation criteria shown in **Attachment C** and the scoring and ranking information provided in **Attachment D**.

It should be noted that the scoring and ranking is a high-level numerical screening of existing conditions and a lower ranking/score does not mean that an alternative is the best performing. The ranking is solely based on engineering parameters and environmental constraints and does not consider how each alternative performs with respect to traffic and meeting the study goals and objectives.

Table 10: Preliminary Corridor Alternatives Scoring and Ranking

Alternative	Score	Rank	2025 Estimated AADT	2045 Estimated AADT	Meet Study Objectives
S1	321.5	14	32,810	45,950	7.5
S2	301.0	11			
S3	280.5	7			
S4	304.0	13			
S5	296.0	10			
S6	326.5	15			
SNL	233.0	5			
C1	284.5	8	14,760	20,680	5.5
C2	291.5	9			
C3	303.0	12			
CNL	235.5	6			
N1	211.5	3	4,530	6,330	2.0
N2	222.5	4			
N3	178.5	2			
NNL	170.5	1			

Scoring and ranking based on existing conditions (engineering and environmental resources) indicate the northern corridor alternatives as being more desirable (lower impacts) and the southern corridor alternatives being less desirable (greater impacts); this correlates to the level of development within the study areas. In contrast, the southern corridor alternatives would accommodate higher projected traffic volumes. Since the southern study area is more heavily developed than the central and northern study areas, it presents more challenges to avoid impacts to human and natural resources. The northern corridor alternatives exhibit the least number of conflicts with the human environment because the northern study area is primarily rural and sparsely populated.

Table 11 provides the preliminary corridor alternatives scoring and ranking by study area (northern, central and southern), the estimated traffic volumes, and the study goals and objectives scores.

Table 11: Preliminary Corridor Alternatives Scoring and Ranking (by Study Area)

SOUTH	SCORE	RANK
S1	321.5	6
S2	301.0	4
S3	280.5	2
S4	304.0	5
S5	296.0	3
S6	326.5	7
SNL	233.0	1

CENTRAL	SCORE	RANK
C1	284.5	2
C2	291.5	3
C3	303.0	4
CNL	235.5	1

NORTH	SCORE	RANK
N1	211.5	3
N2	222.5	4
N3	178.5	2
NNL	170.5	1

2025 EST. AADT	32,810
2045 EST. AADT	45,950
Meets G&Os	7.5

2025 EST. AADT	14,760
2045 EST. AADT	20,680
Meets G&Os	5.5

2025 EST. AADT	4,530
2045 EST. AADT	6,330
Meets G&Os	2.0

As indicated in **Table 11**, the new location alternatives (SNL, CNL and NNL) are shown to be more desirable within their respective study area.

Recommended Primary Corridor Alternatives

Methodology

The Pharr District reviewed the data for the preliminary corridor alternatives and developed a methodology for shortlisting corridor alternatives. The methodology focused on the following categories:

1) Traffic projections: the Pharr District considered which corridor alternatives (northern, central and southern) would provide better traffic relief on the surrounding roadway network and I-2.

2) Study goals and objectives: the Pharr District considered how well the corridor alternatives (northern, central and southern) meet the goals and objectives of the study.

3) Environmental impacts: the Pharr District identified nine environmental criteria as most important to the community. These priority environmental criteria are listed in **Table 12**.

Table 1: Priority Environmental Criteria

No.	Environmental Criteria	Reason for Prioritization
1	Parcels impacted	• Minimize the number of parcels impacted • Limit impacts on the human environment
2	Residential	• Limit impacts to residential land use • Avoid need to relocate and/or displace area residents
3	Colonias	• Minimize the number of colonias impacted per environmental justice requirements
4	Floodplain	• Minimize impacts to the 100-year floodplain
5	Wildlife Refuge	• Ecotourism is an important industry in the LRGV

No.	Environmental Criteria	Reason for Prioritization
6	NWI features	• Federal requirements to achieve no net loss of wetlands • Avoid, minimize, and mitigate impacts to wetlands
7	Agricultural	• Minimize impacts to agricultural parcels due to the economic benefits for the LRGV
8	Prime/unique farmland soils	• Prime/unique farmland soils ties back to agricultural impacts • Provides fertile soils for crop production
9	Cemeteries	• Avoid need to relocate cemeteries

Because the preliminary corridor alternatives are 350-foot swaths on a map at this planning stage, the Pharr District did not consider the engineering parameters as an important factor for shortlisting corridor alternatives.

The preliminary corridor alternatives were presented to the Pharr District Administration on July 10, 2020 for their review and recommendation on the primary corridor alternatives to be carried forward for further study. A review of traffic projections, study goals and objectives, and environmental data is summarized below.

Traffic Projections

The data shows that the southern corridor alternatives would attract more traffic than the central and northern corridor alternatives and would accommodate a freeway typical section. The northern corridor alternatives do not remove significant traffic from I-2 and a two-lane collector is the recommended typical section based on the traffic projections.

Study Goals and Objectives

The weighted scoring shows that the southern and central corridor alternatives do better at meeting the study objectives. Since many of the study objectives relate to traffic performance, the northern corridor alternatives score the lowest in terms of meeting the study goals and objectives.

Environmental Constraints

Scores for the 15 preliminary corridor alternatives for all (engineering and environmental) criteria were compared to the scores for the nine environmental criteria that the Pharr District deemed as priority (**Table 13**).

Table 2: Preliminary Corridor Alternatives Scoring Comparison (by Study Area)

All Criteria

SOUTH	SCORE	RANK
S1	321.5	6
S2	301.0	4
S3	280.5	2
S4	304.0	5
S5	296.0	3
S6	326.5	7
SNL	233.0	1

CENTRAL	SCORE	RANK
C1	284.5	2
C2	291.5	3
C3	303.0	4
CNL	235.5	1

NORTH	SCORE	RANK
N1	211.5	3
N2	222.5	4
N3	178.5	2
NNL	170.5	1

9 Environmental Priority Criteria

SOUTH	SCORE	RANK
S1	89.5	4
S2	99.0	7
S3	97.0	5
S4	88.0	3
S5	81.5	2
S6	98.0	6
SNL	72.5	1

CENTRAL	SCORE	RANK
C1	103.5	4
C2	98.5	3
C3	96.5	2
CNL	74.5	1

NORTH	SCORE	RANK
N1	56.0	3
N2	61.0	4
N3	35.5	1
NNL	49.0	2

As shown in **Table 13**, the rankings change when only the nine priority environmental criteria are considered:

- SNL and S5 were the top ranked southern corridor alternatives
- CNL was the top ranked central corridor alternative
- N3 was the top ranked northern corridor alternative

Based on a review of traffic, goals and objectives, and environmental data using the methodology outlined above, weighted scoring supports carrying forward Alternatives SNL, S5 and CNL for further study. Although Alternative N3 has the lowest environmental impacts, it has low projected traffic volumes and a low score for meeting the study objectives.

Primary Corridor Alternatives Recommended For Further Study

At the conclusion of the July 2020 meeting, the Pharr District Administration concurred with the project team's recommendations. Their recommendations were as follows:

1. Advance two southern and one central corridor alternatives for further study

   South: **Alternative SNL** and **Alternative S5**

   Central: **Alternative CNL**

2. The team should develop a new alternative that is a combination of Alternatives CNL and SNL/S5 (dependent on which combination has the lower environmental impacts) for further study.

3. While the data supports eliminating Alternative N3, it should be carried forward for TWG and public review.

The Primary Corridor Alternatives recommended for further study during the July 2020 meeting are shown in **Attachment F**.

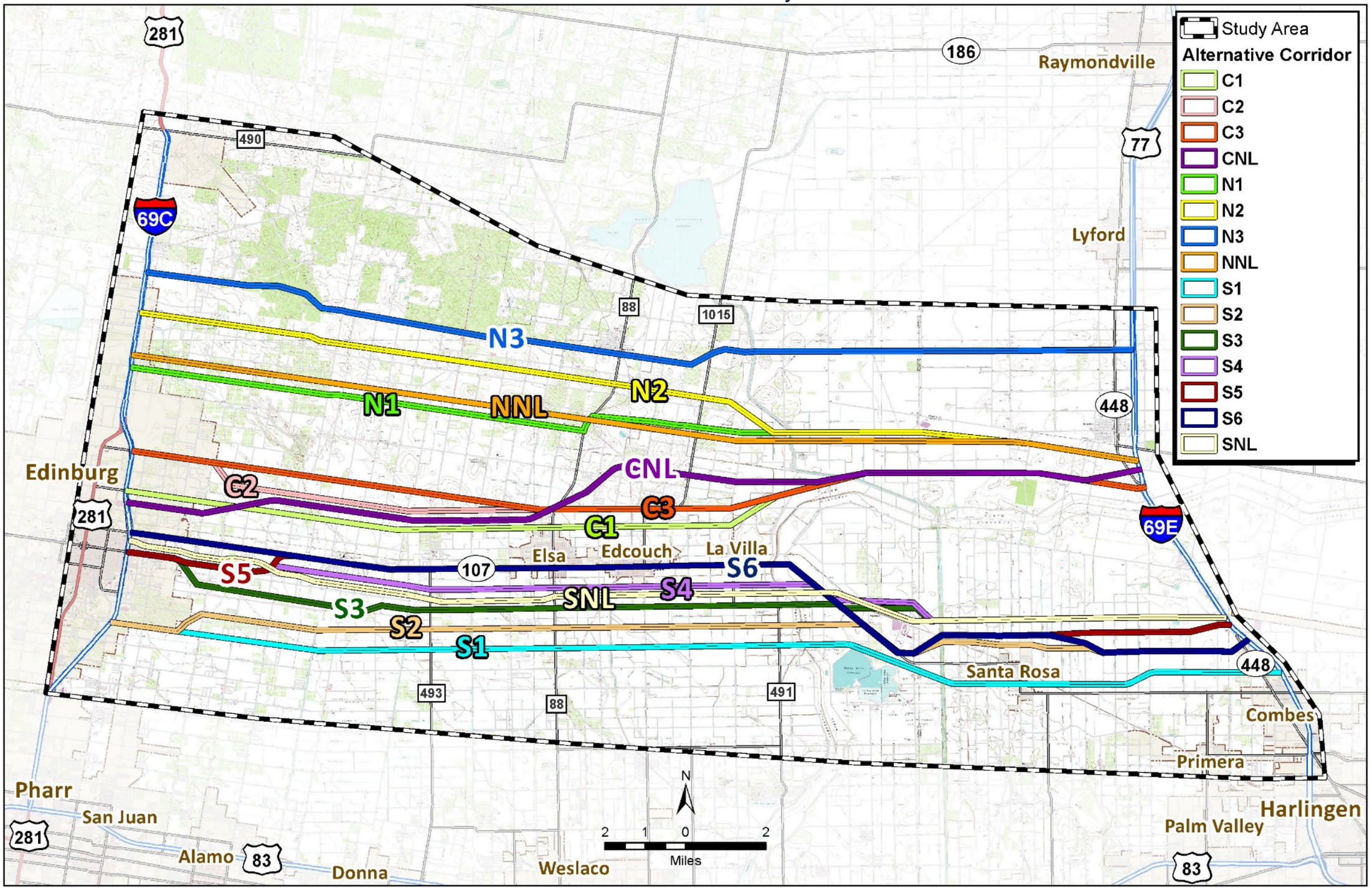
Next Steps

A second meeting with the TWG is planned to present the preliminary corridor alternatives, and obtain their feedback on the primary corridor alternatives the Pharr District recommended be advanced for further study. A second series of public meetings are also planned to present the corridor alternatives to the public. The team will develop a new combination alternative to be presented during the second round of TWG and public meetings.

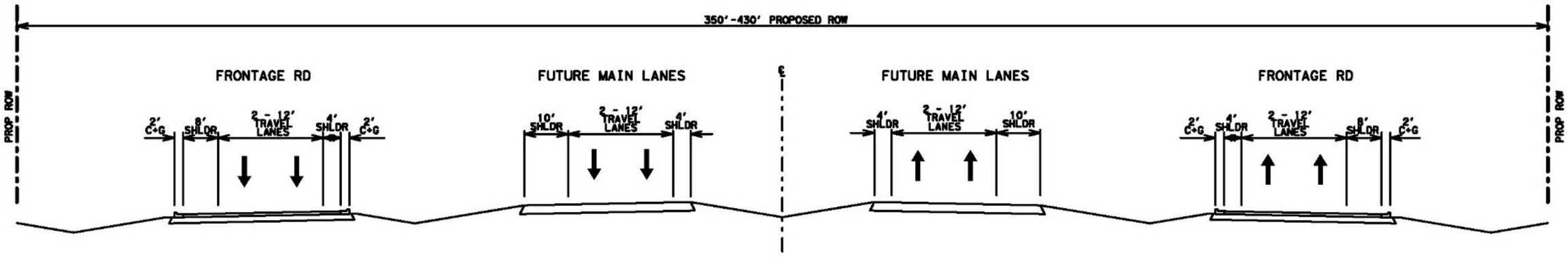
Detailed traffic projections will be performed for the four primary corridor alternatives to further distinguish among alternatives and assist in identifying a preferred alternative to be carried forward into the next phase of study.

ATTACHMENTS

Attachment A: I-69 Connector Preliminary Corridor Alternatives



Attachment B: I-69 Connector Proposed Typical Section



Attachment C-1: Preliminary Corridor Alternatives Evaluation Matrix

Evaluation Criteria	Unit of Measurement	Alternative S1	Alternative S2	Alternative S3	Alternative S4	Alternative S5	Alternative S6	Alternative SNL
Engineering Parameters								
Length of Facility	Miles	26.44	26.08	25.14	25.01	25.85	26.22	24.83
Proposed ROW Requirements	Acres	1122	1107	1067	1062	1097	1113	1054
Estimated Construction Cost	$(Millions)	407.05	401.59	387.24	385.27	398.19	404.01	382.49
Design Speed	mph	70	70	70	70	70	70	70
Railroad Crossings	Number	2	2	1	1	2	2	1
Drainage Easement Crossings	Number	5	5	3	3	3	3	3
Transmission Line Crossings	Number	3	2	2	3	3	3	3
Wind Farms	Acres	0	0	0	0	0	0	0
Human Environment Resources								
Parcels Impacted	Number	867	840	632	702	1033	1044	419
Residential	Acres	215	231	119	139	110	128	85
Agricultural	Acres	603	628	667	613	449	433	822
Commercial/Industrial	Acres	18	10	17	26	86	81	6
Institutional (Government Facilities, Schools, Churches, Hospitals, Museums)	Acres	15	12	0	0	23	30	9
Transportation	Acres	142	146	128	154	348	335	31
Parks (Local, State, Federal)	Acres	0	0	0	0	0	0	0
Undeveloped	Acres	129	81	136	130	81	106	109
Community Impacts								
Neighborhoods Bisected	Number	15	9	8	9	6	3	6
Colonias	Number	6	7	7	12	20	15	4
Hazardous Materials Impacts								
Potential Hazardous Materials Sites	Number	1	1	2	4	36	34	0
Oil & Gas Pipeline Crossings	Number	28	31	11	21	37	39	27
Oil and Gas Wells								
Active	Number	0	0	0	1	0	0	0
Dry Hole	Number	0	0	0	0	1	1	0
Plugged	Number	1	0	0	1	0	0	0
Permitted	Number	0	0	0	0	0	0	0
Landfills	Acres	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cultural Resources								
Previously-recorded Historic Resources	Number	1	1	1	0	0	0	0
NRHP Sites	Number	0	0	0	0	0	0	0
Known Archeological Sites	Number	0	0	0	0	0	0	0
State Antiquities Landmark	Number	0	0	0	0	0	0	0
Cemeteries	Number	0	0	0	0	0	1	0

Evaluation Criteria	Unit of Measurement	Alternative S1	Alternative S2	Alternative S3	Alternative S4	Alternative S5	Alternative S6	Alternative SNL
Natural Resources								
Wildlife Refuges/Wildlife Management Areas	Acres	4.06	4.21	3.70	3.70	4.34	4.34	3.70
Prime/Unique Farmland Soils	Acres	810.65	885.40	774.81	655.68	666.43	694.17	697.21
Threatened/Endangered Species Potential Habitat	Low/Medium/High	Low	Low	Low	Low	Low	Low	Low
Critical Habitat	Acres	0	0	0	0	0	0	0
Mapped Stream Crossings	Number	0	0	0	0	0	0	0
Irrigation/Drainage Canals	Number	46	49	52	51	42	46	47
100-Year Floodplain	Acres	230.23	194.78	280.64	287.44	247.09	257.79	292.98
National Wetland Inventory Features	Number/Acres	34/11.43	42/9.98	54/22.90	60/11.66	41/8.52	42/16.75	43/7.68
Encroachment of IBWC Boundary	Acres	19.83	18.70	19.74	34.85	21.99	21.99	30.40

Key:

Lowest impacts

Highest impacts

Attachment C-2: Preliminary Corridor Alternatives Evaluation Matrix

Evaluation Criteria	Unit of Measurement	Alternative C1	Alternative C2	Alternative C3	Alternative CNL	Alternative N1	Alternative N2	Alternative N3	Alternative NNL
Engineering Parameters									
Length of Facility	Miles	23.18	23.14	22.88	23.63	22.87	22.76	22.41	22.65
Proposed ROW Requirements	Acres	984	982	971	1003	971	966	951	961
Estimated Construction Cost	$(Millions)	357.23	356.63	352.61	363.78	352.49	350.79	345.26	349.07
Design Speed	mph	70	70	70	70	70	70	70	70
Railroad Crossings	Number	1	1	1	1	1	1	1	1
Drainage Easement Crossings	Number	6	6	7	6	3	3	2	2
Transmission Line Crossings	Number	4	4	5	2	0	0	0	0
Wind Farms	Acres	0	0	0	0	0	0	0	0
Community Resources									
Parcels Impacted	Number	538	524	483	239	534	519	452	402
Residential	Acres	134	130	89	66	138	89	112	88
Agricultural	Acres	623	582	534	791	521	605	498	699
Commercial/Industrial	Acres	5	12	17	10	3	19	2	1
Institutional (Government Facilities, Schools, Churches, Hospitals, Museums)	Acres	3	5	4	0	1	5	15	0
Transportation	Acres	104	135	184	25	144	100	94	26
Parks (Local, State, Federal)	Acres	0	0	0	0	0	0	0	0
Undeveloped	Acres	115	118	143	103	164	148	230	147
Community Impacts									
Neighborhoods Bisected	Number	11	11	8	1	12	9	9	8
Colonias	Number	6	12	13	6	3	3	1	4
Hazardous Materials Impacts									
Potential Hazardous Materials Sites	Number	1	5	6	0	0	3	2	0
Oil & Gas Pipeline Crossings	Number	17	18	62	18	16	13	27	9
Oil and Gas Wells									
Active	Number	0	0	0	0	0	0	0	0
Dry Hole	Number	0	0	0	1	1	1	0	1
Plugged	Number	0	0	0	0	0	1	5	1
Permitted	Number	0	0	0	1	3	0	0	0
Landfills	Acres	0.00	0.00	0.00	0.00	0.00	0.00	5.76	0.00
Cultural Resources									
Previously-recorded Historic Resources	Number	0	0	0	0	0	0	0	0
NRHP Sites	Number	0	0	0	0	0	0	0	0
Known Archeological Sites	Number	2	3	3	0	0	0	0	0
State Antiquities Landmark	Number	0	0	0	0	0	0	0	0
Cemeteries	Number	0	0	0	0	0	0	0	0
Natural Resources									
Wildlife Refuges/Wildlife Management Areas	Acres	8.33	8.32	8.32	9.12	2.69	2.69	3.24	3.21
Prime/Unique Farmland Soils	Acres	751.51	731.82	718.96	771.79	681.68	654.64	540.22	696.25
Threatened/Endangered Species Potential Habitat	Low/Medium/High	Low	Low	Low	Low	Low	Low	Medium	Low
Critical Habitat	Acres	0	0	0	0	0	0	0	0

Evaluation Criteria	Unit of Measurement	Alternative C1	Alternative C2	Alternative C3	Alternative CNL	Alternative N1	Alternative N2	Alternative N3	Alternative NNL
Mapped Stream Crossings	Number	0	0	0	0	0	0	0	0
Irrigation/Drainage Canals	Number	41	34	34	34	21	41	16	27
100-Year Floodplain	Acres	379.19	428.79	380.44	254.14	332.39	260.76	15.03	226.46
National Wetland Inventory Features	Number/Acres	47/15.61	38/16.96	47/26.75	40/13.84	20/8.53	37/31.63	10/5.98	29/13.47
Encroachment of IBWC Boundary	Acres	63.03	63.04	63.04	30.52	0.00	0.00	0.00	0.00

Key:

Lowest impacts

Highest impacts

Attachment D: Preliminary Corridor Alternatives Ranking and Scoring

Evaluation Criteria	Alternative S1	Alternative S2	Alternative S3	Alternative S4	Alternative S5	Alternative S6	Alternative SNL	Alternative C1	Alternative C2	Alternative C3	Alternative CNL	Alternative N1	Alternative N2	Alternative N3	Alternative NNL
Engineering Parameters															
Length of Facility	15	13	11	10	12	14	9	7	6	5	8	4	3	1	2
Proposed ROW Requirements	15	13	11	10	12	14	9	7	6	4.5	8	4.5	3	1	2
Estimated Construction Cost	15	13	11	10	12	14	9	7	6	5	8	4	3	1	2
Railroad Crossings	13.5	13.5	6	6	13.5	13.5	6	6	6	6	6	6	6	6	6
Drainage Easement Crossings	10.5	10.5	6	6	6	6	6	13	13	15	13	6	6	1.5	1.5
Transmission Line Crossings	10	6	6	10	10	10	10	13.5	13.5	15	6	2.5	2.5	2.5	2.5
Human Environment Resources															
Parcels Impacted	13	12	10	11	14	15	3	9	7	5	1	8	6	4	2
Potential Impacted Properties															
Residential	14	15	8	13	6	9	2	11	10	4.5	1	12	4.5	7	3
Agricultural	7	11	12	9	2	1	15	10	6	5	14	4	8	3	13
Commercial/Industrial	11	6.5	9.5	13	15	14	5	4	8	9.5	6.5	3	12	2	1
Institutional (Schools, Churches, Hospitals, Museums)	12.5	11	2.5	2.5	14	15	10	6	8.5	7	2.5	5	8.5	12.5	2.5
Transportation	9	11	7	12	15	14	3	6	8	13	1	10	5	4	2
Parks (Local, State, Federal)	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Undeveloped	8	1.5	10	9	1.5	4	5	6	7	11	3	14	13	15	12
Community Impacts															
Neighborhoods Bisected	15	9.5	6	9.5	3.5	2	3.5	12.5	12.5	6	1	14	9.5	9.5	6
Colonias	7	9.5	9.5	11.5	15	14	4.5	7	11.5	13	7	2.5	2.5	1	4.5
Hazardous Materials Impacts															
Potential Hazardous Materials Sites	6	6	8.5	11	15	14	2.5	6	12	13	2.5	2.5	10	8.5	2.5
Oil & Gas Pipeline Crossings	11	12	2	8	13	14	9.5	5	6.5	15	6.5	4	3	9.5	1
Oil & Gas Wells															
Active	7.5	7.5	7.5	15	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Dry Hole	5	5	5	5	12.5	12.5	5	5	5	5	12.5	12.5	12.5	5	12.5
Plugged	12.5	5.5	5.5	12.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	12.5	15	12.5
Permitted	7	7	7	7	7	7	7	7	7	7	14	15	7	7	7
Landfills	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	15	7.5
Cultural Resources															
Previously-recorded Historic Resources	14	14	14	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Known Archeological Sites	6.5	6.5	6.5	6.5	6.5	6.5	6.5	13	14.5	14.5	6.5	6.5	6.5	6.5	6.5
Cemeteries	7.5	7.5	7.5	7.5	7.5	15	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Natural Resources															
Wildlife Refuges/Wildlife Management Areas	8	9	6	6	10.5	10.5	6	14	12.5	12.5	15	1.5	1.5	4	3
Prime/Unique Farmland Soils	14	15	13	3	4	6	8	11	10	9	12	5	2	1	7
Irrigation/Drainage Canals	10.5	13	15	14	9	10.5	12	7.5	5	5	5	2	7.5	1	3
100-Year Floodplain	4	2	9	10	5	7	11	13	15	14	6	12	8	1	3
National Wetland Inventory Features	4	9.5	14	15	8	9.5	11	12.5	6	12.5	7	2	5	1	3
National Wetland Inventory Features	6	5	13	7	3	11	2	10	12	14	9	4	15	1	8
Encroachment of IBWC Boundary	7	5	6	12	8.5	8.5	10	13	14.5	14.5	11	2.5	2.5	2.5	2.5
	321.5	**301**	**280.5**	**304**	**296**	**326.5**	**233**	**284.5**	**291.5**	**303**	**235.5**	**211.5**	**222.5**	**178.5**	**170.5**

Attachment E: Goals and Objectives Ranking and Scoring

	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	
Criteria	Alleviate traffic congestion on I-2	Provide additional capacity & infrastructure to meet future population growth & travel demand	Provide an additional hurricane evacuation route in the LRGV	Improve mobility	Enhance overall connectivity of the transportation network in the LRGV	Scoring
Weighting	30%	20%	25%	10%	15%	100%
SOUTH	9	9	5	7	7	**7.5**
CENTRAL	5	5	5	7	7	**5.5**
NORTH	1	1	5	1	1	**2.8**

Rating scale: Low = 1; Medium = 5; High = 9

Note:

Weighting of the objectives correlates to factors deemed important by the TWG and public in the 2019 community survey (Congestion, Connectivity, Alternative Routes, Flooding, and Safety).

Attachment F: I-69 Connector Primary Corridor Alternatives (July 10, 2020)