RIGHT OF WAY PRESERVATION RECOMMENDATION REPORT

SH 21 Corridor Preservation Study

Hays County, Texas

October 30, 2020

Contents

1 Project Purpose and Need 1
1.1 Purpose 1
1.2 Need 1
1.3 Study Area 1
1.4 Supporting Data 1
2 Corridor Alternatives 5
2.1 Six-Lane Divided Major Arterial 5
2.2 Six Lane Divided Arterial with Managed Lanes 5
2.3 Rural / Urban Freeway 6
2.4 Bypass Routes 6
2.4.1 Uhland Bypass Option 7
2.4.2 Niederwald Options 7
3 Traffic Operational Analysis 9
3.1 Analysis Results 9
3.2 Conclusions 11
4 Environmental Constraints Analysis 13
4.1 Anticipated Environmental Document Type 13
4.2 Environmental Resource Impacts 13
4.2.1 Gary Job Corps 13
4.2.2 San Marcos Airport 13
4.2.3 Archeological and Historic Resources 14
4.2.4 Environmental Justice 14
4.2.5 Displacements 14
4.2.6 Waters of the US and Wetlands 14
4.2.7 Threatened and Endangered Species 14
4.2.8 Hazardous Materials 15
4.3 Uhland Alternatives and Bypasses 15
4.3.1 Uhland Area Alternative 1 15
4.3.2 Uhland Area Alternative 2 16
4.3.3 Uhland Area Alternative 3 17
4.3.4 Uhland Area Alternative 4 18
4.4 Niederwald Alternatives and Bypasses 19
4.4.1 Niederwald Area Alternative 1 19
4.4.2 Niederwald Area Alternative 2 19
4.4.3 Niederwald Area Alternative 3 20
4.4.4 Niederwald Area Alternative 4 21
5 Corridor Drainage Impacts 23
5.1 FEMA Zone AE crossings 23
5.1.1 Bypass Creek 23
5.1.2 Plum Creek 25
5.1.3 Brushy Creek 25
5.2 FEMA Zone A crossings 26
6 Virtual Public Outreach 28
6.1 Community Analysis 28

6.2 Stakeholder Outreach 28
6.2.1 Tier One Stakeholders 28
6.2.2 Tier Two Stakeholders 28
6.2.3 Tier Three Stakeholders 28
6.3 Stakeholder Outreach 29
6.4 Virtual Town Halls 29
6.4.1 Welcome Videos 29
6.4.2 Visual Presentations 29
6.4.3 Opportunity for Comment 29
6.5 Virtual Town Hall Results 30
6.5.1 First Virtual Town Hall – May 18th – May 31st 30
6.5.2 Second Virtual Town Hall – August 18th – September 1st 31
7 Major Utility Impacts 32
7.1 Identified Utility Companies 32
7.2 Desktop Review of Utility Facilities 32
7.3 Alternatives Analyses for Utilities 33
7.4 Estimated Number and Magnitude of Reimbursable Utility Accommodations 35
8 Right of Way Impacts 36
8.1 Total right of way impacts 36
8.2 Uhland Project Area 36
8.2.1 Uhland Area Alternative 1 36
8.2.2 Uhland Area Alternative 2 36
8.2.3 Uhland Area Alternative 3 37
8.2.4 Uhland Area Alternative 4 37
8.2.5 Uhland Bypass Summary 37
8.3 Niederwald Project Area 38
8.3.1 Niederwald Area Alternatives 1 & 2 38
8.3.2 Niederwald Area Alternative 3 38
8.3.3 Niederwald Area Alternative 4 38
8.3.4 Niederwald Bypass Summary 38
8.4 Right of Way Summary for all Alternatives 39
9 Planning Level Project Cost Estimates 41
10 Project Recommendations 43
10.1 Recommended Typical Section & Typical Right of Way 43
10.2 Bypass Recommendations 43
10.2.1 Uhland Area 44
10.2.2 Niederwald Area 44
10.2.3 Runway Protective Zone Analysis 44

Figures & Tables

Figure 1-1. Study Area 1
Figure 1-2. Population Growth 2
Figure 1-3. Traffic Growth 2
Figure 1-4. Crash Data 3
Figure 1-5. Level of Service 4
Figure 2-1. Six-Lane Divided Major Arterial 5
Figure 2-2. Managed Lanes 6
Figure 2-3. Freeway 6
Figure 2-4. Uhland Bypass Options 7
Figure 2-5. Niederwald Non-Bypass Alternative 1 7
Figure 2-6. Niederwald Non-Bypass Alternative 2 7
Figure 2-7. Niederwald Bypass Options 8
Table 3-1. Managed Lane Section - Level of Service 9
Table 3-2. Six-Lane Divided Major Arterial - Level of Service 10
Table 3-3. Freeway - Level of Service 11
Table 3-4. Estimated Travel Time Summary 12
Figure 4-1. Western Uhland Bypass 16
Figure 4-2. Eastern (E-1) Uhland Bypass 17
Figure 4-3. Eastern (E-2) Uhland Bypass 18
Figure 4-4. Western Niederwald Alternative 19
Figure 4-5. Eastern Niederwald Alternative 20
Figure 4-6. Eastern Niederwald Bypass 20
Figure 4-7. Western Niederwald Bypass 21
Table 5-1. Summary of Existing Drainage Structures 23
Figure 5-2. Bypass Creek 24
Figure 5-3. Plum Creek 25
Figure 5-4. Brushy Creek 26
Figure 5-5. Zone A Floodplains – Exhibit 1 27
Figure 5-6. Zone A Floodplains – Exhibit 2 27
Table 7-1. Project Area Identified Utilities 32
Table 7-2. Schematic Level Estimates Utility Relocation Costs 35
Table 8-1. Summary of right of way needs by alternative 39
Table 8-2. Opinion of Probable Right of Way Cost 40
Table 9-1. Opinion of Planning Level Total Project Costs 41
Figure 10-1. Recommended Typical Section 43

1 Project Purpose and Need

1.1 Purpose

The purpose of the proposed project is to determine long term roadway improvements necessary to improve mobility and safety on SH 21 between SH 80 and the Hays County line near US 183 in order to allow for preservation of the needed future right of way (ROW).

1.2 Need

The SH 21 corridor is reaching the end of its lifespan. The current geometric conditions on SH 21 are inadequate to meet the future traffic volume demands, resulting in increased congestion, unsafe travel conditions, and reduced mobility.

The SH 21 Corridor Preservation Study includes an evaluation of future roadway alternatives with the goal of identifying and preserving the required ROW for future corridor improvements.

1.3 Study Area

The SH 21 Corridor Preservation Study area includes a 17-mile section of SH 21 through Hays County, connecting SH 80 to US 183 / SH 130 (Figure 1-1). This segment of SH 21 lies at the border of these two counties and serves as a significant link in both the local and regional transportation network, connecting multiple cities, school districts and major highway corridors.

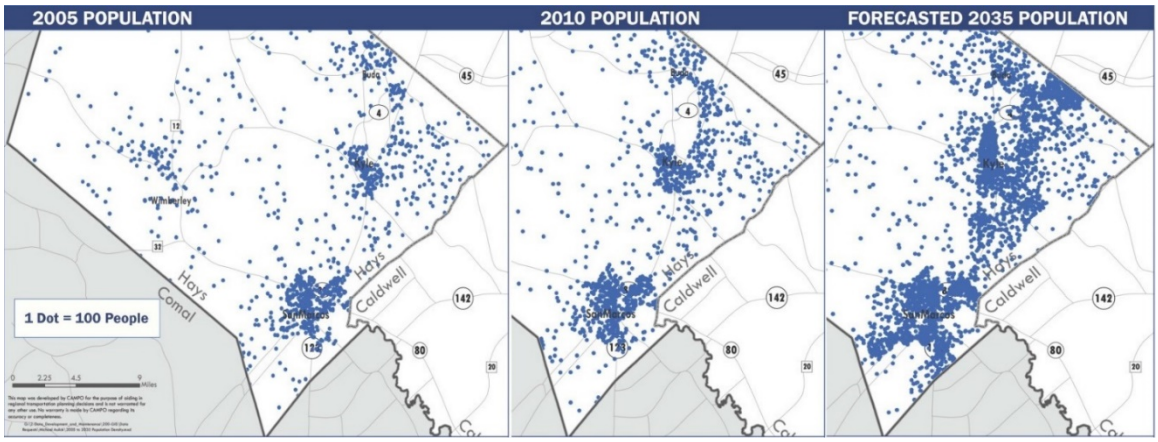
Figure 1-1. Study Area

1.4 Supporting Data

Hays County is one of the fastest growing counties in the state of Texas (Figure 1-2). Since 2000, the population has increased 164% and is forecasted to increase another 144% by 2040. As the area continues to grow and water needs are better met towards the east, growth in Caldwell County is also anticipated to experience a significant increase of more than 78% by 2040.

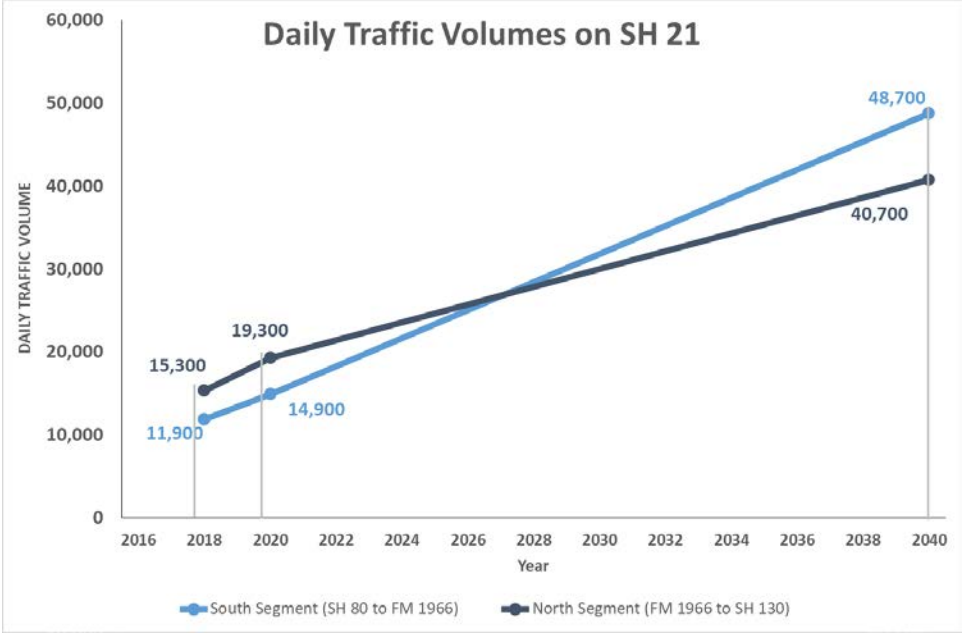
Current population growth projections indicate that the Austin-San Antonio region will have the same population in 20 years that Dallas-Fort Worth does today.

Figure 1-2. Population Growth



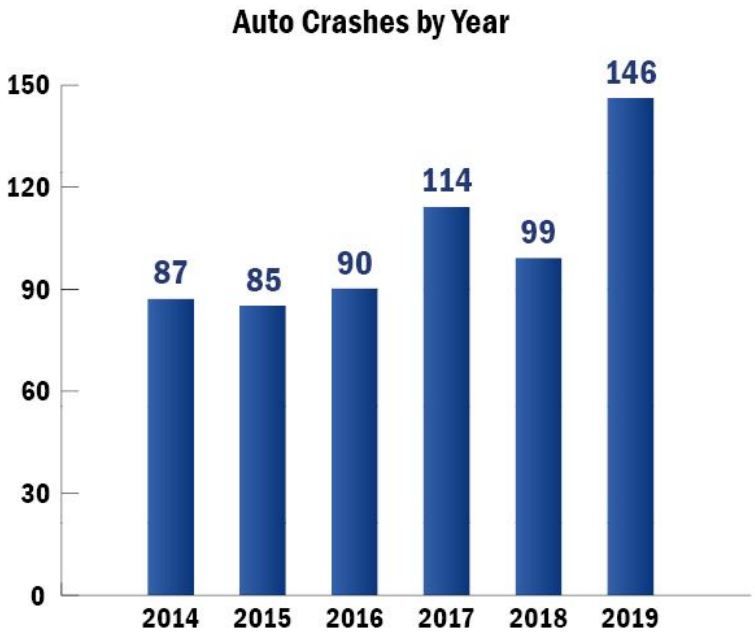
Due to the current and anticipated growth within the project area, it is anticipated that SH 21 will also increase in annual average daily traffic (AADT) volumes. As shown in Figure 1-3, traffic on SH 21 within the project limits is expected to more than double between years 2018 and 2040 (the design year).

Figure 1-3. Traffic Growth



Crash data within the project limits was obtained from TxDOT in order to assess existing safety issues (Figure 1-4). This analysis spanned a five-year period, from 2014 through 2019, and it was determined that the existing facility has experienced a 68% increase during that five-year period. It is anticipated that the projected increase in traffic over the next twenty years will eventually lead to higher crash rates. While the proposed super 2 roadway currently being constructed by TxDOT will result in improved safety along the corridor, it does not address the long-term capacity and safety needs of the roadway.

Figure 1-4. Crash Data



Source: TxDOT Crash Record Information System

A Level of Service (LOS) analysis was performed on the existing roadway configuration using current as well as anticipated 2040 traffic volumes. While the existing two lane super 2 roadway has acceptable performance under current and near term traffic conditions, the anticipated LOS in 2040 at most of the intersections falls to an F indicating a breakdown in the network, resulting in a forced traffic flow in which the traffic approaching an intersection exceeds the amount that can be served. This is often characterized by stop-and-go waves, poor travel times, low comfort and convenience levels and increased accident exposure. (Figure 1-5).

Figure 1-5. Level of Service

SH 21 INTERSECTIONS ALONG THE CORRIDOR	TRAFFIC CONTROL	EXISTING 2020 OPERATIONS AM LOS	EXISTING 2020 OPERATIONS PM LOS	FORECASTED 2040 NO BUILD OPERATIONS AM LOS	FORECASTED 2040 NO BUILD OPERATIONS PM LOS
SH 130 Northbound	Signal	B	B	F	B
SH 130 Southbound	Signal	C	B	F	C
FM 2001/Niederwald Strasse	Signal	C	C	F	F
CR 126/Rohde Rd.	2 STOP	F	E	F	F
Realigned FM 2001/Rohde Rd.	Signal	-	-	F	F
High Rd.	2 STOP	F	F	F	F
FM 2720	Signal	B	B	F	F
RM 150	Signal	C	C	F	F
FM 1966	2 STOP	C	C	F	F
FM 110 NB Ramp/Future Airport Access	Signal	-	-	D	F
FM 110 SB Ramp	Signal	-	-	E	F
Bogie Dr/Arnold Ave.	2 STOP	C	C	F	F
Newberry Tr.	2 STOP	B	B	F	F
SH 80 Westbound	4 STOP	B	B	F	F
SH 80 Eastbound	4 STOP	C	D	F	F

LEGEND
Seconds of Delay per Vehicle

	A	B	C	D	E	F
Signalized	0 - 10	10 - 20	20 - 35	35 - 55	55 - 80	> 80
Stop Controlled	0 - 10	10 - 15	15 - 25	25 - 35	35 - 50	> 50

2 Corridor Alternatives

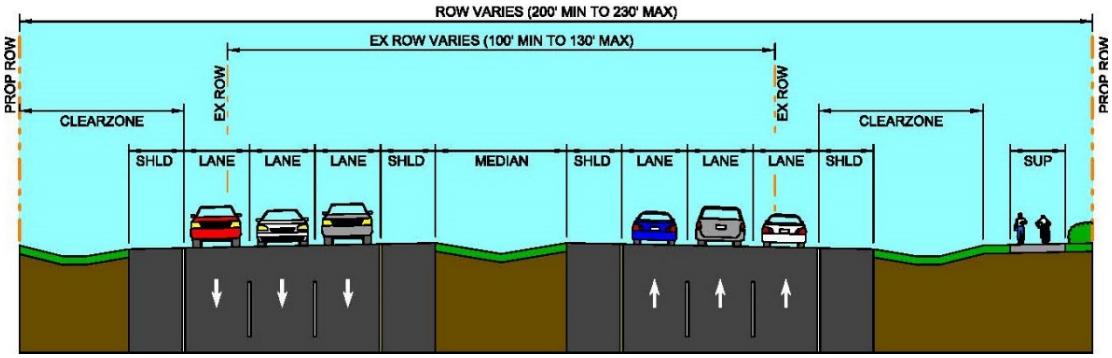
Three improvement alternatives are proposed for the corridor. The alternatives considered provide a range of facility types as well as typical ROW preservation needs. A description of each of the improvement alternatives is provided below.

Various alternatives were considered to address the rapid population and traffic volume growth as well as safety concerns along the corridor while limiting impacts to environmental resources, businesses and residences.

2.1 Six-Lane Divided Major Arterial

This alternative proposes a six-lane divided major arterial section (MAD 6) with three general purpose lanes in each direction for the corridor (Figure 2-1). The MAD 6 section is the roadway section which was included in the current CAMPO and Hays County transportation plans for the SH 21 corridor. The anticipated ROW for this section varies between 200 and 230 feet in width.

Figure 2-1. Six-Lane Divided Major Arterial

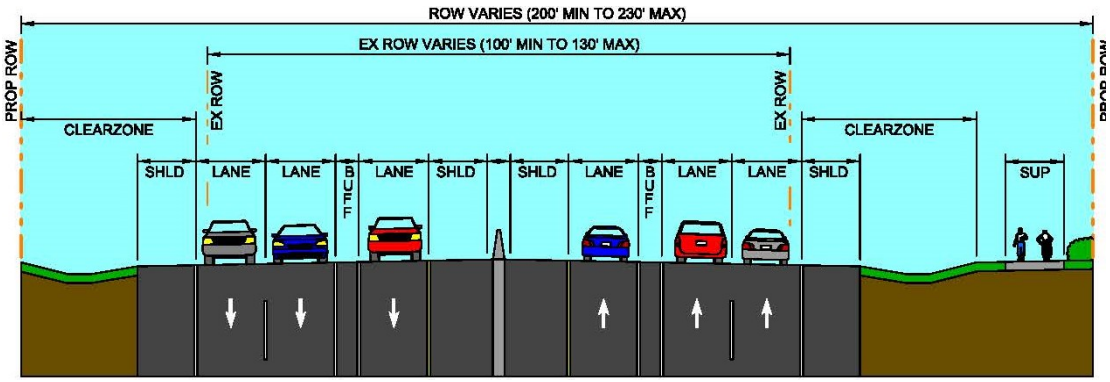


The MAD 6 section increases corridor capacity while addressing safety concern by providing a wide grassy median between the opposing traffic directions. However, this section does not address the differential speed of through traffic versus vehicles entering/exiting the facility from the numerous driveways along the corridor.

2.2 Six Lane Divided Arterial with Managed Lanes

This alternative proposes a six-lane divided major arterial section with managed lanes for the corridor (Figure 2-2). The section provides two general-purpose travel lanes in each direction and one managed lane in each direction. At the time of this study, the type of managed lane facility has not been identified. Additional detail and analysis of managed lane operations will be required to progress design of this alternative including the addition of overpasses for the managed lanes at all intersections along the corridor in order to provide for unimpeded flow within the lanes. The anticipated ROW for this section varies between 200 and 230 feet in width.

Figure 2-2. Managed Lanes

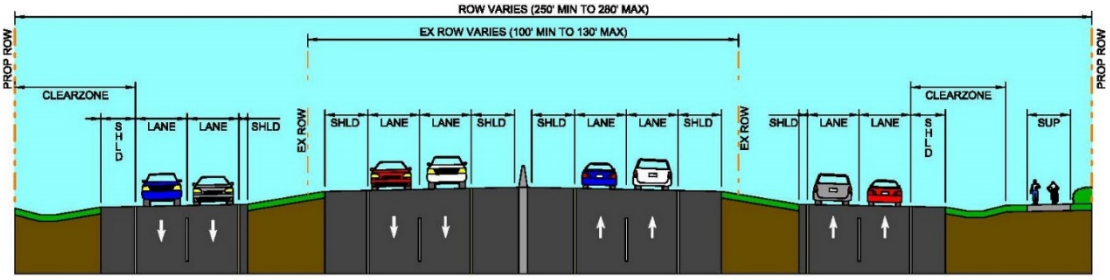


The managed lane section increases corridor capacity while addressing safety concern by providing a rigid concrete barrier between the opposing traffic directions. However, this section does not address the differential speed of through traffic versus vehicles entering/exiting the facility from the numerous driveways along the corridor.

2.3 Rural / Urban Freeway

This alternative proposes a four-lane divided freeway section with frontage roads for the corridor (Figure 2-3). The section provides two freeway travel lanes and two frontage road travel lanes in each direction. The anticipated ROW for this section varies between 250 and 280 feet in width. Additional width may be necessary in the vicinity of entrance and exit ramps as well as at major intersections where grade separations are provided.

Figure 2-3. Freeway



The freeway section increases corridor capacity while addressing safety concern by providing a rigid concrete barrier between the opposing traffic directions. This section also addresses the differential speed of through traffic versus vehicles entering/exiting the facility from the numerous driveways along the corridor through the use of frontage roads.

2.4 Bypass Routes

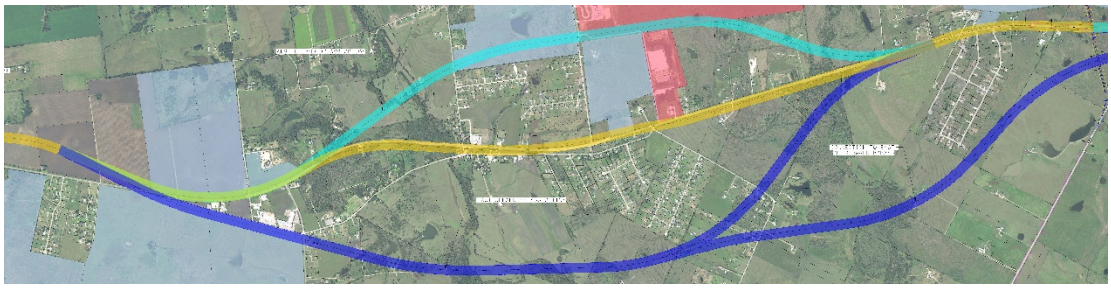
Construction of bypass routes are under consideration around the cities of Uhland and Niederwald. Right-of-way constraints in both cities limit the possibility of widening of SH 21 without significant impacts to adjacent residences and businesses. Bypass routes would drastically reduce these impacts while diverting through traffic on the corridor improving safety and maintaining access to local traffic on a business route along the existing SH 21 alignment. The bypasses also improve safety by separating the through

traffic away from the local business traffic within these communities. Neither of these communities nor Hays County have the resources to maintain these segments of the existing roadway. Therefore, it is anticipated that TxDOT would still own and maintain the existing roadway as a business route.

2.4.1 Uhland Bypass Option

Options were investigated for placing a bypass to the east and west of Uhland in the vicinity of RM 150. The two eastern bypass options were quickly determined to have substantially more impact than the western bypass route. During the first virtual town hall, public comments expressed support for the western bypass. Additionally, this route was supported by both the City of Uhland as well as Hays CISD during the initial stakeholder outreach.

Figure 2-4. Uhland Bypass Options



2.4.2 Niederwald Options

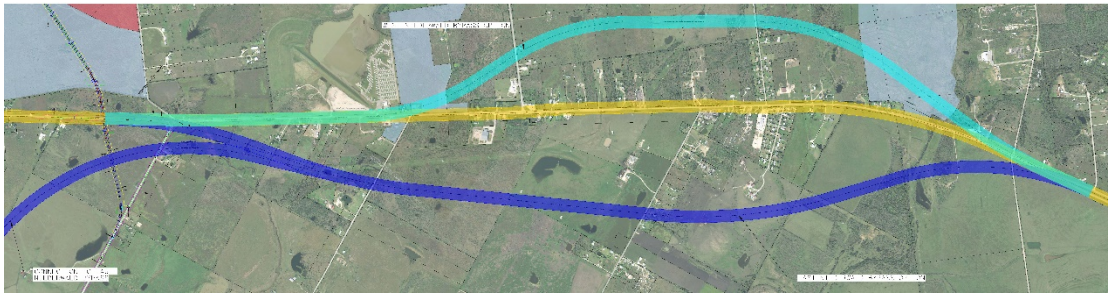
Several options were developed for the Niederwald area and presented to major stakeholders for consideration. The options developed included two alternatives for staying roughly on the current SH 21 alignment, with one alternative missing the Trinity United Church of Christ to the east and the other alternative staying along the eastern side of SH 21 and missing the Sac-n-Pac. See Figures 2.5 and 2.6 below.

Figure 2-5. Niederwald Non-Bypass Alternative 1

Figure 2-6. Niederwald Non-Bypass Alternative 2

The project team also investigated alternatives placing a bypass to the east and west of Niederwald in the vicinity of FM 2001. See Figure 2-7. A western bypass was quickly determined to have substantially more impact than the western bypass route due to current development construction. Additional discussions were held with key stakeholders impacted by each option. After further consideration and discussion with the Hays County and Caldwell County Commissioners, these options were not presented to the public in the second town hall due to concerns raised by Caldwell County.

Figure 2-7. Niederwald Bypass Options



The alternatives shown in Figure 2-5 and 2.6 were included in the second virtual town hall to gather public comment. Significant negative feedback was received from the public on these alternatives during the second virtual town hall. These comments will be explored and discussed in more depth in Section 5 – Virtual Public Outreach.

3 Traffic Operational Analysis

A traffic operational analysis was conducted on SH 21 to evaluate future corridor operations and strategically plan for the required future ROW of the corridor. No Build conditions and the three improvement alternatives were evaluated for the corridor. Twelve key intersections were modeled to simulate traffic conditions on the corridor.

The traffic operational analysis indicates that rural / urban freeway section, while requiring the most right of way, provides the most capacity with the lowest delays and can be implemented in phases to accommodate growth over the next 20 years.

3.1 Analysis Results

All three alternatives (six-lane divided, managed lane, and urban freeway) were determined to be feasible to accommodate corridor growth. Without the proposed improvements, motorists by the year 2040 would experience level of service (LOS) “F” throughout most of the project corridor. With the proposed improvements, the corridor would be mostly LOS “C” or better. LOS is measured during peak hours on an “A” to “F” rating scale, where “A” is free flow and “F” is stopped traffic. Microsimulation modeling of the preferred alternative is recommended as schematic design progresses.

The worst performing of the three sections investigated was the managed lane option. The LOS for this option was mostly LOS “D” with a few LOS “E” and LOS “F” as shown in Table 3-1.

Table 3-1. Managed Lane Section - Level of Service

LEVEL OF SERVICE FOR FORECASTED 2040 BUILD MANAGED LANE OPTION			
SH 21 INTERSECTIONS ALONG THE CORRIDOR	TRAFFIC CONTROL	AM LOS	PM LOS
SH 130 Northbound		E	D
SH 130 Southbound		D	F
FM 2001/Niederwald Strasse		C	C
CR 126/Rohde Rd.	2 STOP	D	F
Realigned FM 2001/Rohde Rd.		E	F
High Rd.		D	E
FM 2720		D	D
RM 150		D	D
FM 1966		B	B
FM 110 NB Ramp/Future Airport Access		C	C
FM 110 SB Ramp		C	D
Bogie Dr/Arnold Ave.		B	C
Newberry Tr.		C	E
SH 80 Westbound		E	E
SH 80 Eastbound		E	F

LEGEND (Seconds of Delay per Vehicle)

	A	B	C	D	E	F
Signalized	0 - 10	10 - 20	20 - 35	35 - 55	55 - 80	> 80
Stop Controlled	0 - 10	10 - 15	15 - 25	25 - 35	35 - 50	> 50

The six-lane divided major arterial section performs a little better providing LOS “C” and “D” at most intersections with a few LOS “E” and “F” as shown in Table 3-2.

Table 3-2. Six-Lane Divided Major Arterial - Level of Service

LEVEL OF SERVICE FOR FORECASTED 2040 BUILD RURAL SIX LANE			
SH 21 INTERSECTIONS ALONG THE CORRIDOR	TRAFFIC CONTROL	AM LOS	PM LOS
SH 130 Northbound		E	C
SH 130 Southbound		D	F
FM 2001/Niederwald Strasse		B	B
CR 126/Rohde Rd.	2 STOP	D	F
Realigned FM 2001/Rohde Rd.		E	E
High Rd.		C	D
FM 2720		C	C
RM 150		D	C
FM 1966		B	B
FM 110 NB Ramp/Future Airport Access		C	C
FM 110 SB Ramp		C	C
Bogie Dr/Arnold Ave.		B	C
Newberry Tr.		B	D
SH 80 Westbound		E	E
SH 80 Eastbound		E	F

LEGEND (Seconds of Delay per Vehicle)

	A	B	C	D	E	F
Signalized	0 - 10	10 - 20	20 - 35	35 - 55	55 - 80	> 80
Stop Controlled	0 - 10	10 - 15	15 - 25	25 - 35	35 - 50	> 50

The best performing alternative is the rural freeway section with two main lanes in each direction along with wide shoulders and two-lane frontage roads. This alternative provides LOS “B” and “C” with very few LOS “D” or greater as shown in Table 3.3 on the next page.

It is important to note that the interchanges of SH 21 and SH 80 on the west and SH 21 and SH 130 on the east were identified as the most congested intersections on the corridor. Construction of direct connectors should be considered at these locations to accommodate the highly directional turning movements. Detailed micro-simulation modeling is recommended, as well as coordination with stakeholders to finalize design of these interchanges.

Table 3-3. Freeway - Level of Service

LEVEL OF SERVICE FOR FORECASTED 2040 BUILD RURAL FREEWAY		EASTBOUND SH 21		WESTBOUND SH 21	
SH 21 INTERSECTIONS ALONG THE CORRIDOR	TRAFFIC CONTROL	AM LOS	PM LOS	AM LOS	PM LOS
SH 130 Northbound		A	B	D	C
SH 130 Southbound		C	C	A	B
FM 2001/Niederwald Strasse		B	C	B	B
CR 126/Rohde Rd.	2 STOP	-	-	C	B
Realigned FM 2001/Rohde Rd.		C	B	C	C
High Rd.		B	C	B	C
FM 2720		B	B	B	B
RM 150		B	B	C	B
FM 1966	2 STOP	C	C	C	C
FM 110 NB Ramp/Future Airport Access		C	C	C	C
FM 110 SB Ramp		C	D	B	C
Bogie Dr./Arnold Ave.	2 STOP	A	E	A	B
Newberry Tr.	2 STOP	-	-	C	B
SH 80 Westbound		A	B	F	E
SH 80 Eastbound		C	D	B	D

LEGEND (Seconds of Delay per Vehicle)

	A	B	C	D	E	F
Signalized	0 - 10	10 - 20	20 - 35	35 - 55	55 - 80	> 80
Stop Controlled	0 - 10	10 - 15	15 - 25	25 - 35	35 - 50	> 50

3.2 Conclusions

All three alternatives (six-lane divided, managed lane, and urban freeway) were determined to be feasible to accommodate the anticipated traffic growth along the corridor in varying degrees. The six-lane divided section will provide a more 'urban' feel along the corridor, requires the least ROW and one of the general-purpose travel lanes could be reconfigured to a managed lane or added to the center median in the future if desired.

The freeway section provides the most improved safety, capacity, lowest traffic delays as shown in Table 3-4 below. This roadway section will require the largest ROW width, ranging between 250 ft. and 280 ft. or more in the vicinity of intersection and entrance/exit ramp locations, to accommodate the improvements. Additional ROW will likely be necessary at intersections to accommodate deceleration lanes, acceleration lanes, and direct connects. The freeway section could be implemented in a phased manner to accommodate traffic growth over the next 20 years while also providing capacity for future traffic growth along the corridor.

Table 3-4. Estimated Travel Time Summary

Scenario	Peak Period	SH 21 Corridor Travel Time (min)	
		EB	WB
2020 Existing	AM	19.5	19.9
	PM	19.1	20.0
2040 No Build	AM	58.4	32.6
	PM	26.4	37.8
2040 6 Lane Arterial	AM	24.7	25.8
	PM	26.0	27.4
2040 Managed Lanes	AM	27.2	27.6
	PM	27.6	33.3
2040 Freeway Mainlines	AM	15.5	15.6
	PM	16.7	15.7
2040 Freeway Frontage Roads	AM	22.5	21.8
	PM	23.0	22.1

4 Environmental Constraints Analysis

4.1 Anticipated Environmental Document Type

An Environmental Assessment is anticipated for the proposed project. The potential inclusion of bypasses is not anticipated to change the document type.

It is anticipated that Hays County will apply for state or federal funding for this project, or that TxDOT will complete design / construction. Therefore, an Environmental Assessment (EA) would be anticipated for the proposed project and the potential inclusion of bypasses would not be expected to change the document type. Technical reports required for the proposed project include biological analyses, such as a Species Analysis Form and Tier I Site Assessment; water resources studies, including a Surface Water Analysis Form and Waters of the U.S. Delineation report; a Community Impact Analysis; a Hazardous Materials Initial Site Assessment; cultural resources technical studies, including an Archeological Background Study and survey and a Historical Resources Project Coordination Request and survey; an Air Quality Analysis; and a Traffic Noise Analysis. If additional bypasses are included as part of the proposed project, required technical reports would not be expected to change. Moreover, if the proposed project footprint uses a 200-ft ROW for a divided major arterial or a 280-ft ROW for a freeway section, the environmental documentation required would not differ; however, a larger amount of ROW would require more environmental resource surveys and time.

4.2 Environmental Resource Impacts

The proposed improvements along SH 21 from SH 80 to US 183 could result in the following anticipated impacts to environmental resources.

4.2.1 Gary Job Corps

The Gary Job Corps is located on Federal Department of Labor property. The Gary Softball fields lie on parkland and are subject to protection under Chapter 26 of the Texas Parks and Wildlife Code and Section 4(f) of the Department of Transportation Act of 1966. If ROW is taken from the Gary Job Corps, compliance with both Chapter 26 and Section 4(f) would be required. A public hearing would be required under Chapter 26 for any use or taking of protected land. Coordination with the park owners, as well as an evaluation of the property, would be required to comply with Section 4(f).

4.2.2 San Marcos Airport

Any ROW taken from San Marcos Regional Airport will require additional coordination with the Federal Aviation Administration (FAA). Additionally, SH 21 currently lies within two Runway Protective Zones (RPZ) as well as below the runway glide slopes. Recent FAA action has made the taking of ROW from within an RPZ very difficult. Therefore, additional measures such as a bypass or tunnel may be necessary. The project team is currently coordinating with airport administration to initiate further discussion with the local FAA representative.

4.2.3 Archeological and Historic Resources

There is potential for archeological and historic resources to be encountered within the project study area. The SH 21 study areas are considered high probability areas for intact cultural resources. A more detailed cultural resource survey would be recommended for the study areas during the schematic development phase.

4.2.4 Environmental Justice

Environmental Justice (EJ) populations are present within the study area: each of the six census tracts within the project area has a minority population of greater than 50%. Two of the six census tracts contain low income populations. The project area also contains several community facilities including five religious facilities (New Hope Baptist Church, St. John's Lutheran Church, Trinity United Church-Christ, Arca de Salvacion, and Soul Harvest Fellowship Church) and three educational facilities (Gary Job Corps, Texas Hill Country School, and Austin Academy of Aviation).

4.2.5 Displacements

The proposed improvements on the corridor will result in numerous displacements of both business and residences. The bypasses currently being considered at Uhland and Niederwald would significantly reduce required displacements in these two communities.

If a bypass is required in the vicinity of the San Marcos Regional Airport, it is anticipated that additional displacements would be required due to the proximity of Quail Hollow and Dove Meadow subdivisions.

Additional information regarding number and types of displacements is provided in Section 7 – Right of Way Impacts.

4.2.6 Waters of the US and Wetlands

The proposed project alignment intersects 18 streams/creeks. Additionally, the project area contains 66 wetlands, as mapped by the USACE National Wetlands Inventory. If the placement of fill in a water of the U.S., including streams and adjacent wetlands is necessary, a Clean Water Act (CWA) Section 404 permit from the U.S. Army Corps of Engineers (USACE) will be required (depending upon the type and extent of impacts: a Nationwide Permit 14 for Linear Transportation Projects, or Individual Permit may be required). The proposed project intersects 18 flood hazard zones (zones A, AE, and AH). If proposed, improvements will impact or modify the 100-year Federal Emergency Management Agency (FEMA) floodplain, coordination with the Floodplain Administrator will be required. The project team has initiated discussions with Hays and Caldwell County Floodplain Administrators to obtain the most current hydrologic and hydraulic models. Atlas 14 data is being taken into consideration in the evaluation of possible impacts to these resources.

4.2.7 Threatened and Endangered Species

According to the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) List, 31 federally listed threatened, endangered, and candidate species have the potential to occur within the project area. There is no critical habitat

within the project area. The Texas Parks and Wildlife Department (TPWD) Rare, Threatened, and Endangered (RTEST) list identified 207 species of state concern with potential to occur within the project area. Based on the habitat within the project area, it was determined that the proposed project has the potential to impact 6 federally listed and 5 State listed species.

FEDERALLY LISTED:

- Whooping crane
- Comal Springs dryopid beetle
- Golden orb
- Texas fatmucket
- Texas fawnsfoot
- Texas pimpleback

STATE LISTED:

- Black Rail
- False spike mussel
- Guadalupe orb
- Cagle's map turtle
- Timber rattlesnake

4.2.8 Hazardous Materials

There are 55 sites with listed hazardous materials within 0.5 mile of the project area, including 5 leaking petroleum storage tanks within 500 feet of SH 21. The project area also contains two dry holes, one permitted location, and five pipelines adjacent to or near the proposed alignment. Additional evaluation will be necessary after the facility type and anticipated ROW needs are more fully determined.

4.3 Uhland Alternatives and Bypasses

Three alternatives were investigated in the Uhland area ranging from staying roughly on the existing SH 21 alignment (Alternative 1) to three bypasses, two to the East (Alternatives 3 & 4) and one to West of the City of Uhland (Alternative 2). See Figures 4-1 through 4-3.

The preliminary alignments for the bypasses were developed based on freeway design criteria and a 70-mph design speed. If any of these concepts advance into the next phase, the design criteria and geometrics can be further evaluated and optimized to further reduce impacts.

4.3.1 Uhland Area Alternative 1

This alternative consists of staying roughly on the existing SH 21 alignment with minor shifts to the east or west to avoid as many impacts to residential and commercial properties as possible. The proposed alignment would utilize excess State ROW on the eastern side, and open property on the western side to avoid the Supermercado, St. John Lutheran Church as well as other residences and businesses located on the northern end of this area. This alternative is shown in Figure 4-1 and Figure 4-2 as the yellow alignment.

4.3.2 Uhland Area Alternative 2

This 4.3-mile bypass to the West of Uhland (light blue), from approximately Grist Mill Road to just south of Rohde Road, would significantly reduce impacts and displacements to businesses and residences along SH 21, but would require acquisition of ROW from Hays CISD adjacent to the Uhland Elementary school. The project team presented this concept to the public and Hays CISD. The response was generally positive.

Figure 4-1. Western Uhland Bypass

There are three block groups within 0.25 mi of the Uhland western bypass alternative. Environmental Justice populations are present within the project area. All three of the block groups have a minority population greater than 50% of the total block group population. One of the block groups has a median household income that is below 80% of the median county household income. Additional commercial and residential displacements could result from this bypass. Further design is required to determine the number and locations of these. There is one additional educational facility, the Uhland Public Elementary School, in the bypass project area as well.

There are additional water resources within the Uhland West Bypass Alternative Alignment project area including 5 NHD stream/creek crossings associated with Plum Creek, Brushy Creek, and several unnamed and unspecified streams/creeks, one pond/lake, 17 NWI wetlands, and seven AE flood zone crossings. Four of the seven flood zone crossings and eight of the 17 wetlands are also within (overlap with) the 500-foot buffer area for the SH 21 corridor.

There are two hazardous materials sites within the alternative alignment project area. One site, an FRXT site, (ID 110033990983) overlaps with the original project. There is also a PST site (ID 90509) within the alternative alignment project area. There are no LPST within 500 feet of the proposed bypass.

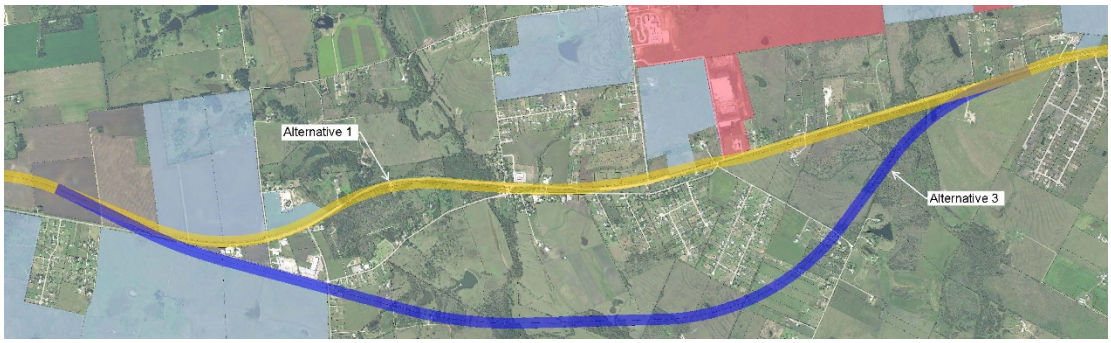
The Camino intersects the Uhland West Bypass Alternative Alignment near its northern terminus. There are no additional cultural resources within the alternative alignment project area; however, due to a high probability for intact cultural resources based on the previously recorded sites in the area and the proximity to waterways, an archeological resources survey of the project area would be required.

There are no additional biological resources within the alternative alignment project area to report.

4.3.3 Uhland Area Alternative 3

This 4.9-mile bypass is to the East of Uhland (dark blue) from Old Spanish Trail Road to south of Rohde Road. This bypass would reduce impacts and displacements to businesses and residences along SH 21 but would require acquisition of ROW and property displacements within Caldwell County. This alternative was not presented to the public during the virtual town hall process due to the clear preference of the western bypass noted during the initial stakeholder outreach process.

Figure 4-2. Eastern (E-1) Uhland Bypass



There are three block groups within 0.25 mi of this eastern bypass alternative. Environmental Justice populations are present within the project area. All three of the block groups have a minority population greater than 50% of the total block group population. Two of the block groups have a median household income that is below 80% of the median county household income. Additional commercial and residential displacements could result from this bypass. Further design is required to determine the number and locations of these.

There are additional water resources within the Uhland E-2 Bypass Alternative Alignment project area including 6 NHD stream/creek crossings associated with Elm Creek, Brushy Creek, and several unnamed and unspecified streams/creeks, three ponds/lakes, 20 NWI wetlands, and seven A/AE flood zone crossings. Six of the seven flood zone crossings and five of the 20 wetlands are also within (overlap with) the 500-foot buffer area for the SH 21 corridor.

There are four unlocated hazardous materials sites that potentially fall within the alternative alignment project area. These sites include one LPST (ID 106465) and 3 PSTs (ID 4689, 64046, and 53823). These sites cannot be mapped due to limited or incomplete address information.

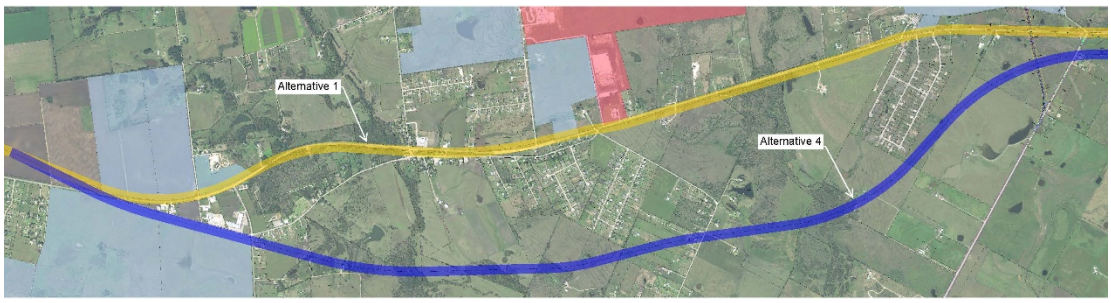
There are no additional cultural resources within the alternative alignment project area; however, due to a high probability for intact cultural resources based on the proximity to stream terraces and floodplains, an archeological resources survey of the project area would be required.

There are no additional biological resources within the alternative alignment project area to report.

4.3.4 Uhland Area Alternative 4

This 6.6-mile bypass is to the East of Uhland (dark blue) from Old Spanish Trail Road to south of Rohde Road. This bypass would reduce impacts and displacements to businesses and residences along SH 21 but would require acquisition of ROW within Caldwell County. This alternative was not presented to the public during the virtual town hall process due to the clear preference of the western bypass noted during the initial stakeholder outreach process.

Figure 4-3. Eastern (E-2) Uhland Bypass



There are three block groups within 0.25 mi of this eastern bypass alternative. Environmental Justice populations are present within the project area. All three of the block groups have a minority population greater than 50% of the total block group population. One of the block groups has a median household income that is below 80% of the median county household income. Additional commercial and residential displacements could result from this bypass. Further design is required to determine the number and locations of these. There is one additional religious facility, the Church of St. Michael, in the bypass project area as well.

There are additional water resources within the alternative project area including seven NHD stream/creek crossings associated with Plum Creek, Brushy Creek, and several unnamed and unspecified streams/creeks, four ponds/lakes, 21 NWI wetlands, and four A/AE flood zone crossings. One of the 7 stream/creek crossings, all 4 flood zones, and 5 of the 21 wetlands are also within (overlap with) the 500-foot buffer area for the SH 21 corridor.

There are five located hazardous materials sites within the alternative alignment project area including an ECHOR06, FRSTX, ICISNPDES, and two PST sites. Both PST sites (ID 78241 and 86553) overlap with the original project. There are four unlocated hazardous materials sites that potentially fall within the alternative alignment project area. These sites include one LPST (ID 106465) and 3 PSTs (ID 4689, 64046, and 53823). These sites cannot be mapped due to limited or incomplete address information.

The El Camino Real De Los Tejas National Historic Trail overlaps the southwestern end of the bypass study area. The trail roughly follows the current SH 21 route with a branch that roughly follows the Old Spanish Trail. There are no additional cultural resources within the alternative alignment project area; however, due to a high probability for intact cultural resources based on the proximity to stream terraces and floodplains, an archeological resources survey of the project area would be required.

There are no additional biological resources within the alternative alignment project area to report.

4.4 Niederwald Alternatives and Bypasses

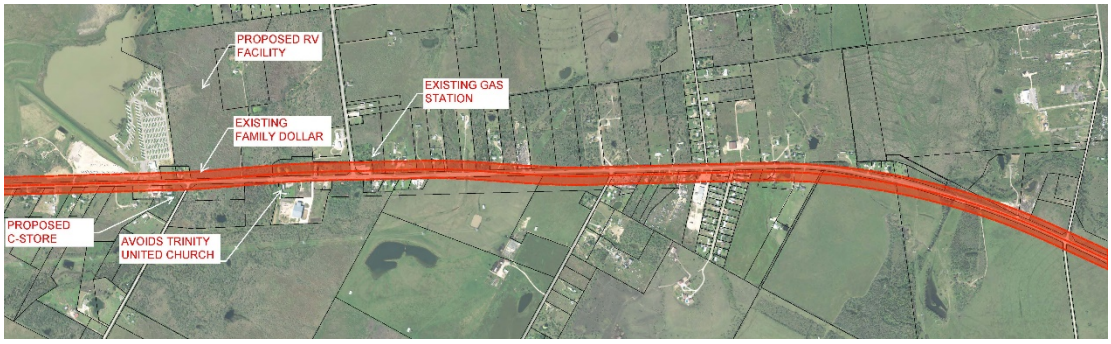
Several alternatives were investigated in the Niederwald area from two options staying roughly on the existing SH 21 alignment (Alternatives 1 & 2) to two bypasses, one to the East and one to the West of the City of Niederwald (Alternatives 3 & 4). See Figures 4-4 through 4-7.

The preliminary alignments for the bypasses were developed based on freeway design criteria and a 70-mph design speed. If any of these concepts advance into the next phase, the design criteria and geometrics can be further evaluated and optimized to further reduce impacts.

4.4.1 Niederwald Area Alternative 1

This alternative runs roughly on the west side of SH 21 to just beyond the Trinity United Church of Christ then transitions to the Eastern side north of FM 2001. This alternative impacts a large number of both residential and commercial parcels along both the eastern and western sides of SH 21 including but not limited to Longhorn RV Storage, Family Dollar, and the Sac-N-Pac.

Figure 4-4. Western Niederwald Alternative



4.4.2 Niederwald Area Alternative 2

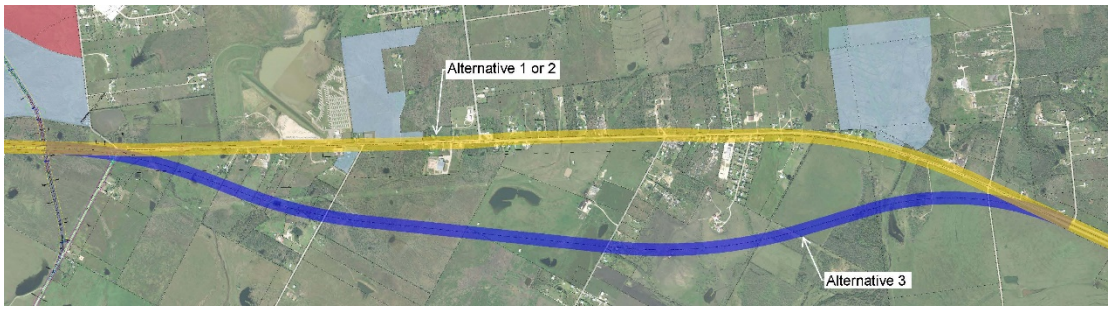
This alternative runs on the east side of SH 21 from just south of FM 2001 East to Williamson Road. This alternative also has a significant impact to both residential and commercial parcels including but not limited to Longhorn RV Storage, Family Dollar, and the Trinity United Church of Christ. The church was constructed in 1954, therefore it does not currently fall within the classification of a historic structure. However, this classification can change in the future and it has been noted that the church has been in continuous operation since its founding and is valued by the community.

Figure 4-5. Eastern Niederwald Alternative

4.4.3 Niederwald Area Alternative 3

This 4.1-mile bypass to the east of the City of Niederwald (dark blue) runs through Caldwell County from just north of Rhode Road to just south of SH 130. The eastern bypass avoids the impacts above but increases the complexity of the tie in back to the original SH 21 alignment south of SH 130.

Figure 4-6. Eastern Niederwald Bypass



There are three block groups within 0.25 miles of this eastern bypass alternative Environmental Justice populations are present within the project area. All three of the block groups have a minority population greater than 50% of the total block group population. Two of the block groups have a median household income that is below 80% of the median county household income. Additional commercial and residential displacements could result from this bypass. Further design is required to determine the number and locations of these.

There are additional water resources within the eastern bypass project area including nine NHD stream/creek crossings associated with Elm Creek, Cowpen Creek, and several unnamed and unspecified streams/creeks, five ponds/lakes, 42 NWI wetlands, and three zone A flood crossings. Two of the nine stream/creek crossings, two of the three flood zones, and 12 of the 42 NWI wetlands are also within (overlap with) the 500-foot buffer area for the SH 21 corridor.

There are five hazardous materials sites within the alternative alignment project area, including one PST site (ID 35798). No additional LPST sites were identified.

There is one archeological site (41CW126) within the eastern bypass project area. This site is a historic, mid-20th century trash dump located along an unnamed tributary of Elm Creek south of SH 21. The site was determined ineligible for inclusion in the NRHP in

2009. There are no additional cultural resources within the alternative alignment project area; however, due to a high probability for intact cultural resources based on the previously recorded sites in the area and the proximity to waterways, an archeological resources survey of the project area would be required.

4.4.4 Niederwald Area Alternative 4

This 4.3-mile bypass to the west of the City of Niederwald (light blue) runs through Hays County from just north of Rhode Road to just south of SH 130. The western bypass, as depicted in Figure 4-7, impacts the Family Dollar, one proposed development immediately adjacent to the Family Dollar as well as a development further to the north near Williamson Road that began construction shortly after this study began.

Figure 4-7. Western Niederwald Bypass

There are four block groups within 0.25 miles of this western bypass alternative. Environmental Justice populations are present within the project area. All four of the block groups have a minority population greater than 50% of the total block group population. Three of the block groups have a median household income that is below 80% of the median county household income. Additional commercial and residential displacements could result from this bypass. Further design is required to determine the number and locations of these.

There are additional water resources within the western alternative project area including 9 NHD stream/creek crossings associated with Elm Creek, Cowpen Creek, and several unnamed and unspecified streams/creeks, one pond/lake, 36 NWI wetlands, and five zone A flood crossings. Four of the 9 identified stream/creek crossings, 21 of the 36 NWI wetlands, and all four of the flood crossings are also within (overlap with) the 500-foot buffer area for the SH 21 corridor.

The radius report identified four hazardous materials sites within the western alternative project area. One additional LPST (ID 106465) was identified on publicly available TCEQ GIS data.

One cemetery (Niederwald Cemetery) is located within the study area. Niederwald Cemetery is approximately 0.48 mile from the intersection of Williamson Road and SH 21. There are no additional cultural resources within the alternative alignment project area; however, due to a high probability for intact cultural resources based on the

previously recorded sites in the area and the proximity to waterways, an archeological resources survey of the project area would be required.

5 Corridor Drainage Impacts

The proposed SH21 roadway alignment crosses six (6) FEMA designated Zone AE floodplain and twelve (12) FEMA designated Zone A floodplain. Table 5-1 below summarizes the locations, structure types and FEMA information of these crossings.

Table 5-1. Summary of Existing Drainage Structures

Item	Existing Roadway Station	Structure Type	River/Creek Name	County	FEMA Zone	FEMA Map Number	Date
1	53+83	1-6x4 RCB	Stream BPC-1	Hays	AE	48209C 0394F	9/2/2005
2	68+00	6-5x3 RCB	Stream BPC-2	Hays	AE	48209C 0394F	9/2/2005
3	100+78	9-6x6 RCB	Bypass Creek	Hays	AE	48209C 0394F	9/2/2005
4	266+87	4-7x6 RCB	Hemphill Creek	Caldwell	A	48055C 0075E	6/19/2012
				Hays	A	48209C 0415F	9/2/2005
5	334+55	1-10x3 RCB	Clear Fork Plum Creek	Caldwell	A	48055C 0100E	6/19/2012
				Caldwell	A	48055C 0100E	6/19/2012
6	344+00	4-9x6 RCB	Clear Fork Plum Creek	Caldwell	A	48055C 0100E	6/19/2012
7	351+00	2-8x3 RCB	Clear Fork Plum Creek	Caldwell	A	48055C 0100E	6/19/2012
8	490+00	Bridge	Plum Creek	Hays	AE	48209C 0410F	9/2/2005
9	500+50	2-6x4 RCB	Plum Creek Trib	Caldwell	AE	48055C 0100E	6/19/2012
				Hays	AE	48209C 0410F	9/2/2005
10	598+00	Bridge	Brushy Creek	Hays	AE	48209C 0410F	9/2/2005
				Caldwell	AE	48055C 0100E	6/19/2012
11	675+80	2-6x6 RCB	Elm Creek	Hays	A	48209C 0430F	9/2/2005
12	683+65	1-3x1 RCB	Elm Creek	Hays	A	48209C 0430F	9/2/2005
13	691+50	2-10x7 RCB	Elm Creek	Hays	A	48209C 0430F	9/2/2005
14	697+50	2-72" RCP	Elm Creek	Hays	A	48209C 0430F	9/2/2005
15	748+00	Bridge	Elm Creek Trib 1A	Hays	A	48209C 0315F	9/2/2005
				Caldwell	A	48055C 0025E	6/19/2012
16	777+29	2-10x7 RCB	Elm Creek Trib 1B	Hays	A	48209C 0315F	9/2/2005
				Caldwell	A	48055C 0025E	6/19/2012
17	836+00	2-7x4 RCB	Cowpen Creek Trib	Hays	A	48209C 0315F	9/2/2005
				Caldwell	A	48055C 0025E	6/19/2012
18	850+50	Bridge	Cowpen Creek	Hays	A	48453C 0715H	9/26/2008
				Caldwell	A	48055C 0025E	6/19/2012

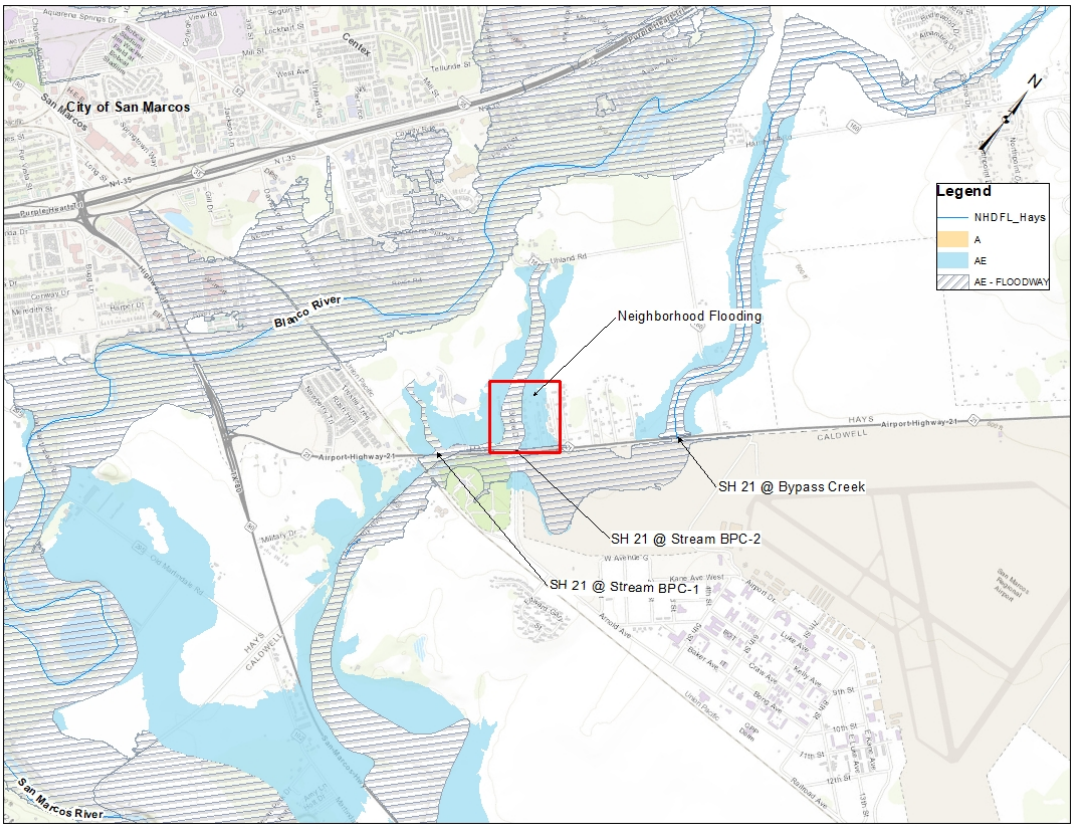
5.1 FEMA Zone AE crossings

5.1.1 Bypass Creek

Bypass Creek includes two (2) tributaries and the main creek. The main Bypass Creek crossing is located approximately 1.7 miles to the northeast of SH 21 and Texas Highway 80. Bypass Creek meanders and flows parallel to SH 21 from north to southwest and forced the traffic lanes to be within the FEMA designated floodways. Stream BPC-2 crossing is a tributary of Bypass creek located between the main Bypass

Creek crossing and Stream BPC-1 crossing. According to the conversation with Hays County Floodplain Administrator, the neighborhood near Stream BPC-2 flooded during the 2013 Halloween Flood and the 2015 Memorial Day Flood as shown in Figure 5-2 below. This is mainly due to the invert elevation of the cross-drainage structures being much higher than the neighborhood and water backing up from the main Bypass Creek.

Figure 5-2. Bypass Creek



The proposed roadway improvements will likely result in extension and addition to the existing culverts at all three crossings. Based on FEMA Floodway regulation NFIP 60.3 (d)(3), any development within the adopted regulatory floodway is prohibited unless such development would not result in any increase in flood levels during the 1 percent AEP event (100-year flood frequency event). The impacts resulting from the proposed SH21 roadway improvements will be analyzed once a preferred roadway design has been selected. The proposed increase in runoffs towards each crossing will be calculated to account for additional impervious areas. The most recent effective hydraulic models will be reviewed and utilized to calculate the water surface elevations for existing and proposed conditions. Mitigation measures will be analyzed based on the results of the hydraulic models.

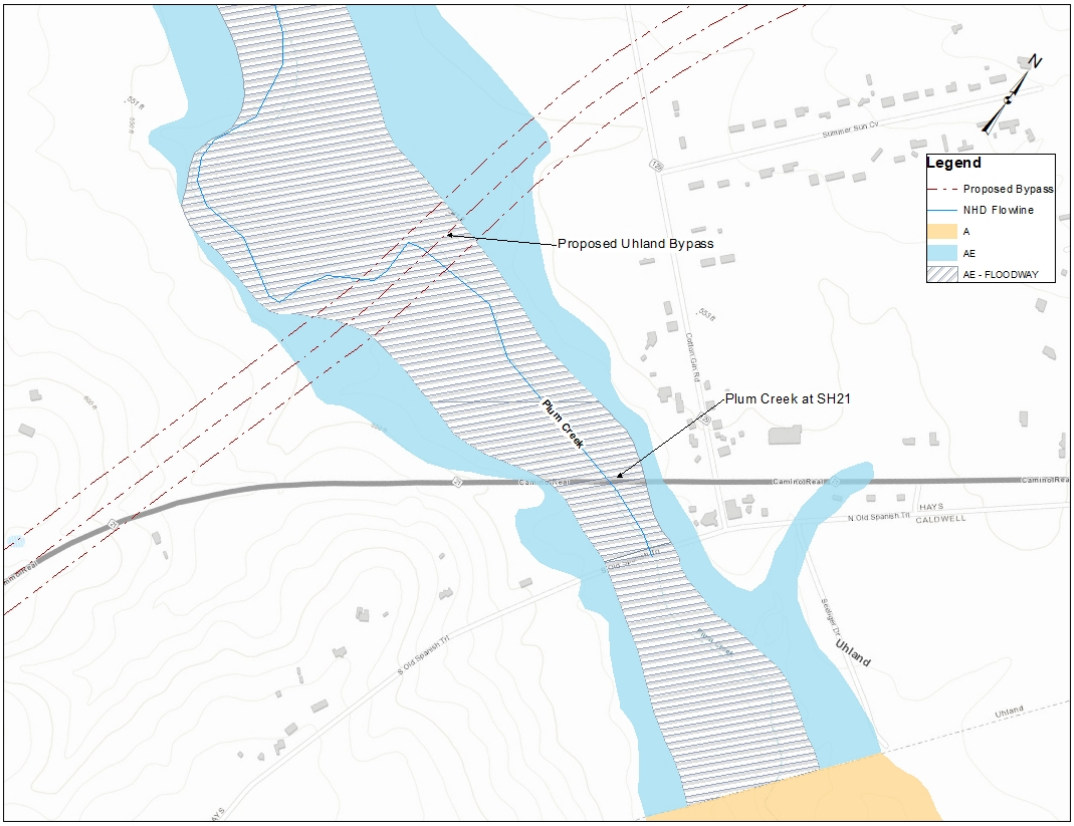
A few alternatives can be considered to mitigate impacts within the regulatory floodways:

- Adding additional barrels to provide conveyance and offset the amount of fill.
- Channel excavation to offset the amount of fill.
- Replacing culvert structures with bridge to span over the floodplain.

5.1.2 Plum Creek

Plum Creek crossing is located approximately nine (9) miles to the northeast of SH21 and Texas Highway 80 as shown in Figure 5-3. According to Halff's 2014 hydraulic model obtained from Hays County, the existing bridge is a 15-span, 600-ft long bridge. The 2014 hydraulic model indicates that the existing bridge passes 1-percent-annual-chance flood event without overtopping.

Figure 5-3. Plum Creek



The proposed bypass routes around the cities of Uhland and Niederwald are shown in Figure 2. If this option is selected, the design is subject to FEMA regulation of no increase to the base flood elevation (1% AEP event). The proposed bypass bridge can span over 100-year floodplain (approximately 1700-ft) to make sure no construction activities are performed in the regulatory floodway. Additionally, a detailed hydraulic study shall be performed for any proposed alternatives to mitigate such impacts.

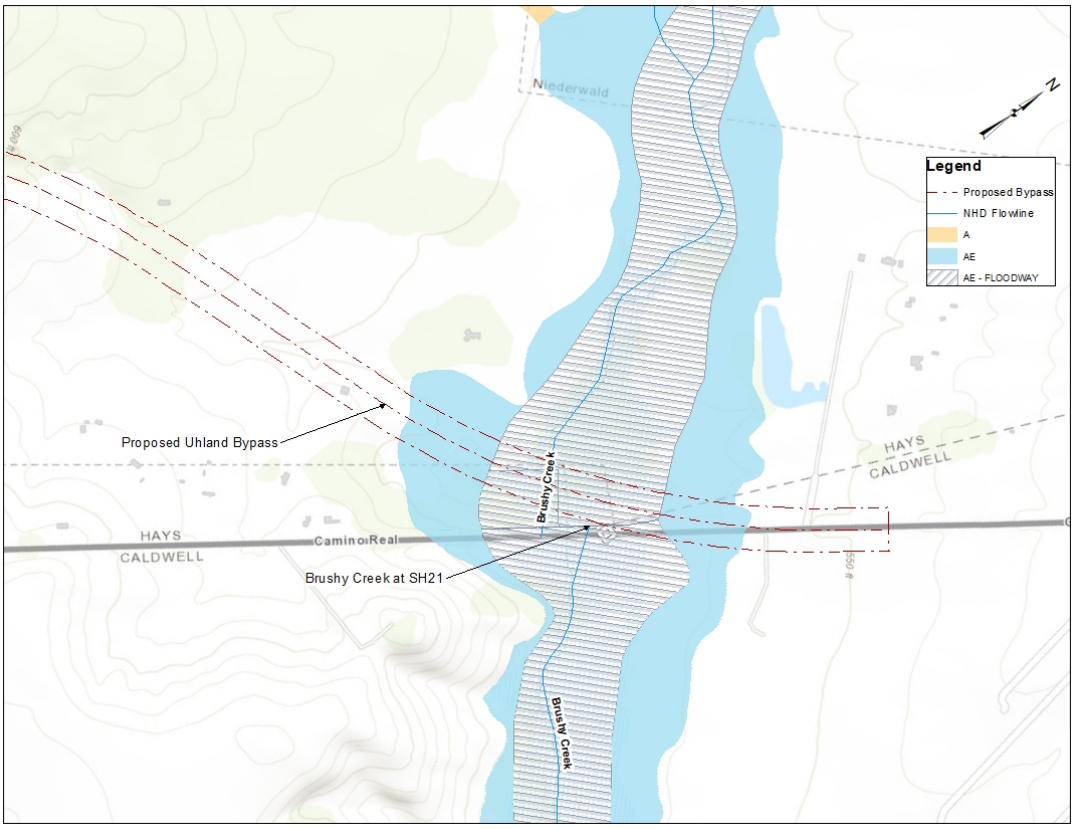
5.1.3 Brushy Creek

Brushy Creek crossing is located approximately two (2) miles to the east of Plum Creek crossing. According to Halff's 2014 hydraulic model obtained from Hays County, the existing bridge is a 9-span, 378-ft long bridge. The 2014 hydraulic model indicates that the existing bridge passes 1-percent-annual-chance flood event without overtopping.

The proposed bypass routes around the cities of Uhland and Niederwald are shown in Figure 5-4. If this option is selected, the design is subject to FEMA regulation of no increase to the base flood elevation (1% AEP event). The proposed bypass bridge can

span over 100-year floodplain (approximately 2145-ft) to make sure no construction activities are performed in the regulatory floodway. Additionally, a detailed hydraulic study shall be performed for any proposed alternatives to mitigate such impacts.

Figure 5-4. Brushy Creek



5.2 FEMA Zone A crossings

There are twelve (12) crossings located in the FEMA designated Zone A floodplains as shown in Figure 5-5 and Figure 5-6. FEMA Zone A areas are subject to inundation by 1-percent-annual-chance flood event determined using approximate methodologies. No base flood elevations and flood depths have been determined based on approved detailed hydraulic analysis. The hydrology and hydraulic analyses will be based on existing models provided by Hays County and Caldwell County. For where no existing models are available, HDR will develop the models for both existing condition and proposed condition to provide base flood elevations and floodplain boundaries.

Figure 5-5. Zone A Floodplains – Exhibit 1

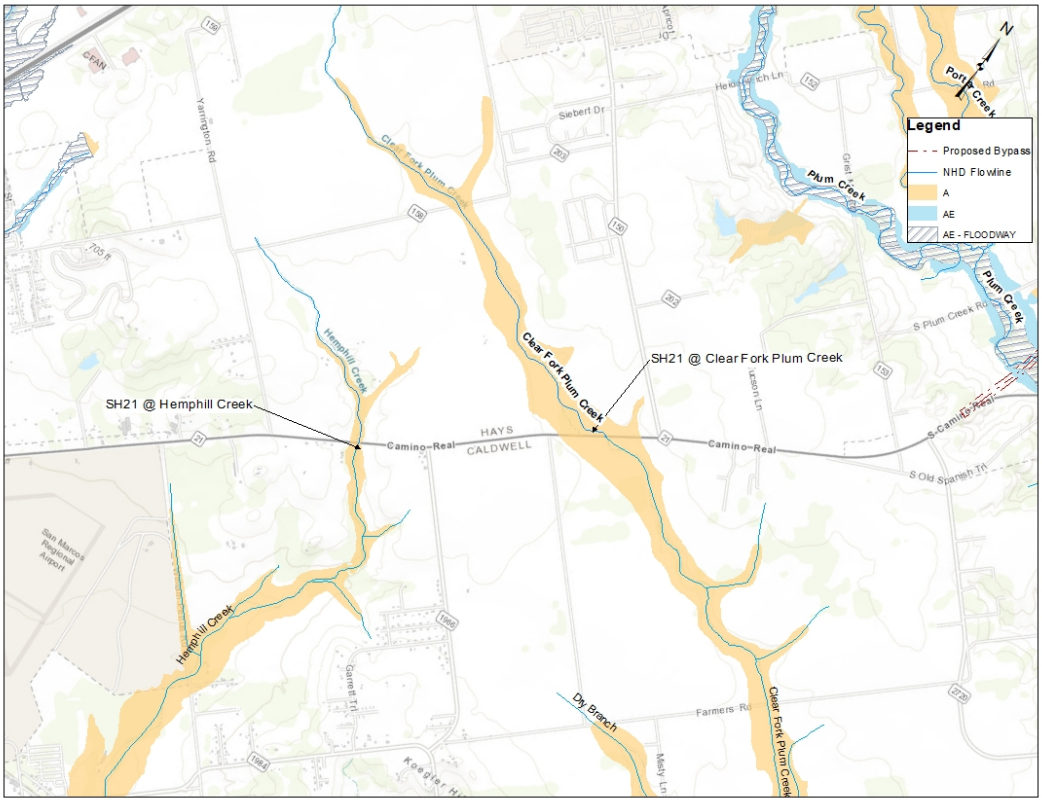
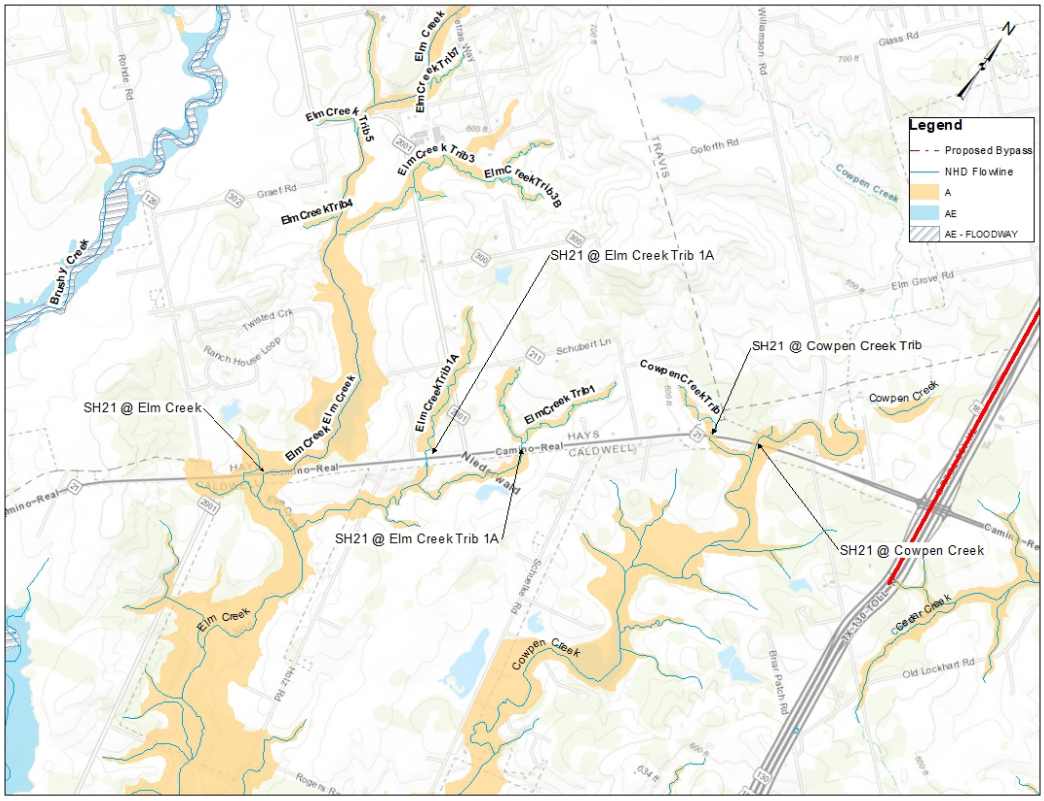


Figure 5-6. Zone A Floodplains – Exhibit 2



6 Virtual Public Outreach

6.1 Community Analysis

An analysis of the community was performed based on equitable outreach techniques. This outreach was designed to be mobile-friendly, interactive, easy to use, accessible, and multilingual; and taking into account the unique needs of this specific community.

Success!

First Virtual Town Hall

Unique visitors: 1,373

Page Views: 2,959

Comments: 101

Second Virtual Town Hall

Unique visitors: 777

Page Views: 2,158

Comments: 88

6.2 Stakeholder Outreach

Stakeholder outreach and public involvement are critical to the success of any project, particularly for large and complicated projects such as this one. Therefore, the public involvement team took into consideration a wide range of local, regional, and federal stakeholders. To efficiently reach out to each identified stakeholder, the extensive stakeholder list was broken down into three separate tiers.

6.2.1 Tier One Stakeholders

Tier one consisting of local and regional governments, the local school district, and private industries and institutions located immediately adjacent to the SH 21 corridor, such as the Cities of Uhland and San Marcos, the Gary Job Corps Center, Hays CISD, and others.

6.2.2 Tier Two Stakeholders

Tier two also contains stakeholders that are immediately adjacent to the corridor including local faith communities, utility providers, several landowners, and local government entities that reside outside of Hays County, such as Caldwell County and Lockhart ISD, in addition to several state and federal officials.

6.2.3 Tier Three Stakeholders

Tier three is comprised of neighborhoods and homeowners' associations located adjacent to the SH 21 corridor, as well as local and regional governments residing outside Hays County and not immediately adjacent to the SH 21 study limits.

All stakeholders identified were contacted and briefed on the study ahead of the first virtual town hall. The public involvement team met personally and virtually with tier one and two stakeholders on many occasions throughout the project in order to brief individuals and entities, as well as gather and collect pertinent information on conflicting future plans and general concerns.

6.3 Stakeholder Outreach

With the novel coronavirus disease (COVID-19) citizens were barred from traditional outreach methods. Social media and online engagement tools offered an opportunity to expand and diversify participation in the public involvement process, bringing more people to the (metaphorical) table. These tools provided new opportunities for the County and project team to collect and share information with the community, expanded the reach of traditional engagement activities, and produced additional data to support essential planning activities and services that keep infrastructure moving. Moreover, online tools and social media platforms removed the time constraints of in-person meetings, offered opportunities for citizens to participate in new and interactive ways, and brought new voices into the engagement process.

6.4 Virtual Town Halls

A virtual town hall was hosted on the project website from May 18th through May 31st. All traditional town hall materials and exhibits were available digitally: boards, mapping exercises, sign-in information, and comment forms. The entire town hall process was made available in English and Spanish, as well as tailored to those who required assistive technologies (deaf or those with visual and mobility impairments). The landing page for the town hall asked those participating to “sign in” to allow the project team to capture the same data that would be gathered at a live event. The virtual town hall also included the following elements.

6.4.1 Welcome Videos

A welcome video featuring Hays County Commissioners Debbie Ingaslbe (Pct. 1) and Mark Jones (Pct. 2) that told the story of why Hays County is working on (and funding) this project.

6.4.2 Visual Presentations

A slide/visual board presentation that explained the purpose of the Virtual Town Hall, the history of the project, timeline, and progress thus far.

6.4.3 Opportunity for Comment

An online form along with an online mapping exercise was provided to gather feedback from the public. The interactive map allowed users to post comments with their feedback about key intersections, alignments, etc. An online mapping tool was used that allowed citizens to drop a pin and place comments or ask questions directly on an embedded map of the study area. With this tool, zones were highlighted for feedback in specific areas and citizens were asked to sort their comments into categories. This data will be a crucial reference point for further development of the project.

6.5 Virtual Town Hall Results

6.5.1 First Virtual Town Hall – May 18th – May 31st

Virtual Town Hall Metrics

Unique visitors: 1,373
Page views: 2,959
Comments: 101 (through mapping exercise or comment form)

WHAT DEVICE PEOPLE USED

- 53% accessed the site with a mobile device
- 45% used a desktop
- 2% used a tablet

HOW PEOPLE ACCESSED THE SITE

- 77% accessed the site directly (clicked a link from an email, news article, or advertisement)
- 15% accessed the site within Facebook
- 5% accessed the site via Google search
- Remaining 3% accessed the site within Twitter

MISC. FACTS:

- Most popular pages were “Welcome Video” and “Exhibits”
- Average amount of time spent on site is just under 11 minutes.
- Less than 1% of visitors were from outside central Texas.
- 6.5% viewed Spanish exhibits

What We Heard

A general summary of the public comments revolved around the following five issues:

- Concern regarding regional population increase
- Concern regarding anticipated traffic volume increases
- Safety improvements such as dedicated turn lanes at the San Marcos Regional Airport, High Road and RM 150 and shoulders along the length of the corridor
- Concerns about ROW and impact on individual properties
- Concerns about keeping “small town feel” and dark skies

For more detailed information regarding these comments, please refer to the *SH 21 Corridor Preservation Study – Virtual Town Hall 1 Summary Report*.

6.5.2 Second Virtual Town Hall – August 18th – September 1st

Virtual Town Hall Metrics

Unique visitors: 777
Page views: 2,158
Comments: 88 (through mapping exercise or comment form)

WHAT DEVICE PEOPLE USED

- 60% accessed the site using a desktop
- 37% used a mobile device
- 3% used a tablet

HOW PEOPLE ACCESSED THE SITE

- 85% accessed the site directly (clicked a link from an email, news article, or advertisement)
- 7% accessed the site within Facebook
- 6% accessed the site via Google search
- 2% accessed the site within Twitter, NextDoor

MISC. FACTS:

- Most popular pages were “Welcome Video” and “Exhibits”.
- Average amount of time spent on site is just over 11 minutes.
- Less than 1% of visitors were from outside central Texas.
- 5% viewed Spanish exhibits.

What We Heard

A general summary of the public comments revolved around the following issues:

- Regional Population Increase: Like the first town hall, several comments recognized the need for an expanded highway with the growing population.
- Anticipated Traffic Volume Increase: Similar to the above category, several comments acknowledged the growth in traffic volume due to population growth and new developments, and recognized the need for an expanded highway. This is, again, consistent with data from the first town hall.
- Concerns about impact to Plum Creek Watershed were written in as comments to the mapping exercise
- Several commenters were concerned about the lack of a Niederwald Bypass
- Several commenters were concerned about the Uhland Bypass option and stated a preference for the roadway to continue through the City, as opposed to a bypass.
- There were also commenters who expressed interest in keeping the Uhland Bypass fearing an expansion would “destroy… property.”
- There were continued concerns about ROW and impact on individual properties
- One commenter urged the County and planning team to meet with the Airport and FAA.
- One commenter encouraged coordination with other San Marcos-area projects.

For more detailed information regarding these comments, please refer to the *SH 21 Corridor Preservation Study – Virtual Town Hall 2 Summary Report*.

7 Major Utility Impacts

A utility one-call (811) was performed to identify utility companies for alternatives along the SH 21 corridor. Utility facility records (Quality Level D) were assessed, as available. High-level analyses were performed to identify potential utility issues and conflicts with identified and presumed property interests. Utility facilities with identified property interests were evaluated against several project alternatives to estimate the number and magnitude of reimbursable utility accommodations within the project corridor.

Efforts were made during the development of alignment alternatives to avoid major utilities located outside of the ROW or within easements and would require relocation reimbursement.

7.1 Identified Utility Companies

The table below compiles utility companies identified by the utility one-call and/or companies identified through other means, who reported having facilities within the project area. It should be noted that other utility companies could be present, i.e., who may not be part of the utility one-call network and/or where utility records requests were not granted.

Table 7-1. Project Area Identified Utilities

No.	Identified Utilities Entities/Companies	Type	Facilities Identified within Project Corridor
1	AT&T Long Distance	Telecommunications	Yes
2	AT&T Local Loop	Telecommunications	Yes
3	Bluebonnet Electric Cooperative	Electric	Yes
4	Canyon Regional Water Authority	Water	Yes
5	CenterPoint Energy	Gas	Yes
6	Centurylink	Telecommunications	Yes
7	Charter Communications	Telecommunications	Yes
8	County Line Special Utility District	Water & Wastewater	Yes
9	Creedmoor Maha Water Supply Corp	Water	Yes
10	Energy Transfer Company (Oasis)	Pipeline	Yes
11	Enterprise Products North San Antonio	Pipeline	Yes
12	Fiber Light, LLC	Telecommunications	Yes
13	Goforth Special Utility District	Water & Wastewater	Yes
14	Grande Communications	Telecommunications	Yes
15	Guadalupe-Blanco River Authority	Water	Yes
16	Kinder Morgan	Pipeline	Yes
17	Pedernales Electric Cooperative, Inc.	Electric	Yes
18	Zayo Group	Telecommunications	Yes

7.2 Desktop Review of Utility Facilities

In addition to the utility one-call, “desktop” reviews were conducted of the National Pipeline Mapping System, Texas Railroad Commission and Google Earth to identify large-scale utility facilities. Wherever possible such facilities, i.e., pipelines, cellular towers, and transmission lines, should be avoided and accommodated, as they often have long-lead times for materials and construction.

These facilities also tend to have existing property interests (i.e., easement or deed), which lead to reimbursable utility accommodations, where in conflict. In addition, reimbursable utility expenses may include replacement easements, should a utility need to relocate from its current alignment and/or vacate its existing property interests.

The following is a summary of the aforementioned "desktop" findings, where utilities were identified, and nearby roadways are listed.

- National Pipeline Mapping System and Texas Railroad Commission identified several transmission pipelines.
    - Enterprise Products - natural gas regulator station and pipeline as crossing SH 21, near Bogie Drive
    - Kinder Morgan - natural gas pipeline as crossing SH 21, approximately 0.05 mile east of CR 229
    - Enterprise Products - natural gas pipeline as crossing SH 21, approximately 0.5 mile west of Market Road 150
    - Texas Gas Service - abandoned, natural gas pipeline as crossing SH 21, along the west side of Market Road 150
    - Shell Pipeline - abandoned, crude oil (hazardous materials) pipeline as crossing SH 21, approximately 0.1 mile north of FM 2720
    - Energy Transfer - natural gas pipeline as crossing SH 21, approximately 0.25 mile west of CR 222
- Telecommunications or cellular towers were identified along the south side of existing SH 21 corridor.
    - American Tower - cellular tower SH 21 and Market Road 150
    - American Tower - cellular tower SH 21 and CR 227
    - Crown Castle - cellular tower SH 21 and 0.5 mile west of FM 2001
- AT&T – a combined regeneration station for long-line or transmission fiber optics and a remote central office for local loop or distribution fiber optics and telephone, approximately 0.05 miles east of the SH 21 and FM 2001 intersection
- LCRA - high-voltage overhead transmission electric lines were identified as crossing SH 21
    - Approximately 0.25 miles west of CR 222 with a steel structure to the south of existing SH 21
    - Approximately 0.45 miles west of Williamson Road
- County Line Water Supply Corporation - water supply tanks and pump station identified along the south side of SH 21, approximately 0.10 miles from FM 1966

7.3 Alternatives Analyses for Utilities

Six (6) alternatives were evaluated for this high-level utility assessment. Many of the utility facilities within the existing SH 21 corridor are typically within roadway ROW via permit, where facility adjustments/relocations would largely be expenses for the respective utility companies. In turn, facilities within existing roadway ROW were not the focus of this utility assessment, unless such facilities are considered potential long-lead items.

Portions of the Proposed SH 21 Main Lanes and much of the bypass alternative areas are outside of existing roadway ROW. Utility adjustments/relocations under such conditions would be largely be expected to be reimbursable utility accommodations, as existing property rights would need to be replaced.

The following utility companies have been identified with facilities either outside of existing ROW and/or existing property rights for the following alternatives.

Proposed SH 21 Main Lanes

- AT&T - regeneration station for long-line fiber optics and long-line fiber optics
- AT&T - a remote central office for distribution or local loop facilities and fiber optics and telephone
- Bluebonnet Electric Cooperative - overhead electric, distribution & service lines at various locations
- CenterPoint Energy – natural gas, distribution 4” pipeline
- County Line Water Supply Corporation – various water and wastewater
- Energy Transfer - natural gas, transmission 16” pipeline
- Enterprise Products - natural gas, transmission 16” pipeline
- Enterprise Products - natural gas regulator station and distribution, 4” pipeline
- Goforth Special Utility District – various water, distribution
- Guadalupe-Blanco River Authority – water, transmission 30” pipeline
- Kinder Morgan - natural gas, transmission 40” pipeline
- Pedernales Electric Cooperative – overhead electric, distribution & service lines at various locations
- Shell Pipeline - abandoned, crude oil (hazardous materials) pipeline

Uhland West Bypass

- County Line Water Supply Corporation – various water and wastewater
- Pedernales Electric Cooperative – overhead electric, distribution & service lines at various locations
- Shell Pipeline – Removal of abandoned crude oil pipeline

Uhland Alternative 3 (East)

- Bluebonnet Electric Cooperative - overhead electric, distribution & service lines at various locations
- County Line Water Supply Corporation – various water and wastewater

Uhland Alternative 4 (East)

- Bluebonnet Electric Cooperative - overhead electric, distribution & service lines at various locations
- County Line Water Supply Corporation – various water, distribution
- Goforth Special Utility District – various water, distribution

Niederwald Alternative 3 (East)

- Bluebonnet Electric Cooperative - overhead electric, distribution & service lines at various locations
- CenterPoint Energy – natural gas, distribution 4” pipeline
- County Line Water Supply Corporation – various water, distribution
- Energy Transfer - natural gas, transmission 16” pipeline
- Goforth Special Utility District – various water, distribution

Niederwald Alternative 4 (West)

- CenterPoint Energy – natural gas, distribution 4” pipeline
- County Line Water Supply Corporation – various water, distribution
- Energy Transfer - natural gas, transmission 16” pipeline
- Goforth Special Utility District – water 6”, distribution

- Pedernales Electric Cooperative – overhead electric, distribution & service lines at various locations

7.4 Estimated Number and Magnitude of Reimbursable Utility Accommodations

The estimated number and magnitude of reimbursable utility accommodations are summarized in the table below by project alternative. It should be noted these preliminary "high level" utilities and costs are in current (2020) dollars and based on schematic-level analyses and available utility record information (SUE Quality Level D). Actual utility costs will vary, depending on actual conditions, subsequent project designs and timing of relocations.

Table 7-2. Schematic Level Estimates Utility Relocation Costs

Project Alternatives	Estimated Reimbursable Utility Accommodations	Estimated Utility Impacts
Proposed SH 21 Main Lanes	22	$21,000,000
Uhland Alternative 2 (West)	6	$700,000
Uhland Alternative 3 (East)	8	$1,300,000
Uhland Alternative 4 (East)	8	$400,000
Niederwald Alternative 3 (East)	9	$900,000
Niederwald Alternative 4 (West)	15	$3,200,000

8 Right of Way Impacts

The proposed improvements along SH 21 were developed to minimize the number of parcel acquisitions as well as the number of residential and commercial displacements.

Where feasible, the alignment for the proposed improvements was offset to either the western or eastern side of the existing alignment to avoid homes, businesses or major utilities such as water storage tanks and cell towers to minimize community disruption and overall project cost.

Implementing both the Uhland Alternative 2 (West) and Niederwald Alternative 4 (East) bypasses options would reduce the total number of impacted parcels by 87 and the total number of displacements by 28.

A summary of the anticipated right of way impacts for the various alternatives is outlined in the sections below. All cost estimations provided are preliminary and are based on current (2020) dollars.

8.1 Total right of way impacts

The total number of parcels that would be impacted by the proposed improvements along the corridor assuming a freeway section are 242 with a total area of 14,330,000 sq. ft. or 329 acres.

Within the impacted parcels, a total of 44 residences and businesses would be displaced. The number of residences and businesses displaced would not differ significantly between the various roadway types (freeway, 6-lane divided major arterial and managed lanes) and therefore are not discussed in this report. Residence and business displacements could be reduced by the bypass alternatives in the vicinity of the City of Uhland and City of Niederwald as discussed below.

8.2 Uhland Project Area

8.2.1 Uhland Area Alternative 1

Maintaining the existing SH 21 alignment through Uhland results in impacts to 54 parcels and 8 displacements, for a total of 62 separate parcel impacts. The total acreage of ROW acquisition required is approximately 96 acres.

8.2.2 Uhland Area Alternative 2

The western bypass around Uhland results in 22 parcel impacts and 2 displacements, for a total of 24 separate parcel impacts. The total acreage of ROW acquisitions required is approximately 134 acres. The bypass is a net decrease of property impacts, reduced from 62 parcel impacts along the existing SH 21 alignment, however, there is an increase of total ROW acquisition for the new roadway construction.

It should be noted that the property to the south of Uhland Elementary has a Planned Development District (PDD) in place with the City of Uhland. Since the property is not currently in development, the City of Uhland, in conjunction with Hays County, should

discuss with the property developer as soon as possible to determine the viability of this proposed bypass option.

8.2.3 Uhland Area Alternative 3

The eastern bypass around Uhland results in 37 parcel impacts and 9 displacements, for a total of 46 separate parcel impacts. The total acreage of ROW acquisitions required is approximately 149 acres. The bypass is a net decrease of property impacts, reduced from 62 parcel impacts along the existing SH 21 alignment, however, there is an increase of total ROW acquisition for the new roadway construction.

This alternative, when compared to the western bypass, results in impacts to approximately 39 parcels with approximately 8 more displacements.

8.2.4 Uhland Area Alternative 4

This alternative joins the eastern bypass for both Uhland and Neiderwald. This bypass would reduce impacts and displacements to businesses and residences along SH 21 but would require acquisition of ROW within Caldwell County. This alternative was not presented to the public during the virtual town hall process due to the clear preference of the western bypass noted during the initial stakeholder outreach process.

Impacts along the SH 21 existing alignment for this segment include 134 parcel impacts and 38 displacements for a total ROW impact of 185 acres.

When this alternative is combined with the Niederwald eastern bypass (Alternative 4 below), the new 6.6 mile eastern bypass would reduce the parcel impacts from 134 to 77 and reduce the displacements from 38 to 13. This is a new decrease of 102 parcel impacts but the resulting ROW acquisition needed for this bypass alternative is 297 acres.

8.2.5 Uhland Bypass Summary

The total number of parcels that would be impacted by the proposed improvements along the corridor would be reduced by 16 or 38 if the east or west bypass were implemented, respectively. Right-of-way acquisition would increase by 53 acres or 38 acres if the east or west bypass were implemented, respectively.

Total estimated right of way costs for the project, if the East Uhland bypass is implemented would be increased by approximately $6 million and increased by approximately $2 million for the West Uhland Bypass. The cost increase is the result of additional ROW acquisition for the new roadway construction of the bypass. However, the number of parcels impacted, as well as the number of parcel acquisitions, is reduced by the Western Bypass. The number of parcels impacted is reduced by the Eastern Bypass as well, but the number of parcel acquisitions is increased by one.

8.3 Niederwald Project Area

8.3.1 Niederwald Area Alternatives 1 & 2

Maintaining the existing SH 21 alignment through Niederwald results in impacts to 61 parcels and 29 displacements, for a total of 90 separate parcel impacts. The total acreage of ROW acquisition required is approximately 75 acres. In addition, due to the Sac-N-Pac also being a gas station, there will likely be the need for hazardous material mitigation on ROW acquired from this parcel.

Several meetings were conducted with the City of Niederwald regarding Alternative 1 and 2. During these meetings, *the City expressed that both of these alternatives would result in a significant reduction in their property and sales tax revenue* due to their limited taxing ability and an already small operating budget.

8.3.2 Niederwald Area Alternative 3

The eastern bypass around Niederwald results in 27 parcel impacts and 1 displacement, for a total of 28 separate parcel impacts. The total acreage of ROW acquisitions required is approximately 119 acres. The bypass is a net decrease of property impacts, reduced from 90 parcels impacts along the existing SH 21 alignment, however, there is an increase of total ROW acquisition for the new roadway construction.

8.3.3 Niederwald Area Alternative 4

The western bypass around Niederwald results in 34 parcel impacts and 7 displacements, for a total of 41 separate parcel impacts. The total acreage of ROW acquisitions required is approximately 112 acres. The bypass is a net decrease of property impacts, reduced from 90 parcel impacts along the existing SH 21 alignment, however, there is an increase of total ROW acquisition for the new roadway construction.

8.3.4 Niederwald Bypass Summary

The total number of parcels that would be impacted by the proposed improvements along the corridor would be reduced by 62 or 49 if the east or west bypass were implemented, respectively. Right-of-way acquisition would increase by 44 acres or 37 acres if the east or west bypass were implemented, respectively.

Total estimated right of way costs for the project, if the East Niederwald bypass is implemented would be decreased by approximately $9 million and decreased by approximately $6 million for the West Niederwald Bypass. The cost increase is the result of additional ROW acquisition for the new roadway construction of the bypass. However, the number of parcels impacted, as well as the number of parcel acquisitions, is reduced by both bypass alternatives around Niederwald.

The cost decrease is due to the reduction of property acquisitions from the bypass alternatives. While overall ROW acquisition is increased in total acres, the increase is from fewer parcels and does not include as many property displacements as the mainline alternative.

8.4 Right of Way Summary for all Alternatives

The table below presents a summary of overall right of way impacts for the various alternatives investigated during this initial phase of the SH 21 Corridor Preservation Study. A more detailed evaluation of these impacts will be necessary during the NEPA process in a subsequent phase of this project.

Table 8-1. Summary of right of way needs by alternative

Alternative	Parcel Impacts (without Displacements)		Parcel Acquisitions (with displacements)		Parcel Totals	
Exist SH 21	299 AC	198 EA	30 AC	44 EA	329 AC	242 EA
City of Uhland Bypass Alternatives						
Exist SH 21 Alternative 1	92 AC	54 EA	4 AC	8 EA	96 AC	62 EA
East Bypass Alternative 3	143 AC	37 EA	6 AC	9 EA	149 AC	46 EA
West Bypass Alternative 2	125 AC	22 EA	9 AC	2 EA	134 AC	24 EA
City of Niederwald Bypass Alternatives						
Exist SH 21 Alternative 1/2	60 AC	61 EA	15 AC	29 EA	75 AC	90 EA
East Bypass Alternative 3	117 AC	27 EA	2 AC	1 EA	119 AC	28 EA
West Bypass Alternative 4	93 AC	34 EA	19 AC	7 EA	112 AC	41 EA
Complete East Bypass Alternative (South of Uhland to North of Niederwald)						
Exist SH 21	162 AC	134 EA	23 AC	38 EA	185 AC	172 EA
East Bypass Uhland Alt. 3 + Niederwald Alt. 3	271 AC	57 EA	26 AC	13 EA	297 AC	70 EA

Total estimated right of way costs for the project, shown below in Table 8-2, if the proposed improvements substantially follow the existing SH 21 alignment would be approximately $55.2 million assuming the freeway section and a 260’ wide roadway section on average. This cost would be reduced approximately $4.3 million for the 6-lane divided major arterial section and managed lane section, which both have an average roadway width of 230’.

The Uhland west alternative is approximately $4 - $5 million less than the east alternative due to a reduction in required ROW due to a shorter overall length.

The Niederwald east alternative, while longer in length, is approximately $3 million less than the west alternative due to the overall impacts to current developments and displacement of commercial properties such as the Family Dollar.

Table 8-2. Opinion of Probable Right of Way Cost

Facility Type	Along Existing SH 21 Alignment	Uhland Alt. 2 (West)	Uhland Alt. 3 (East)	Niederwald Alt. 3 (East)	Niederwald Alt. 4 (West)	Uhland Alt. 3 (East) & Niederwald Alt. 3 (East)
Rural Freeway	$ 55.2M	+$ 1.7M	+$ 6.2M	-$ 8.5M	-$ 5.6M	+$ 2.2M
Major Arterial (MAD 6)	$ 50.9M	+$ 1.2M	+$ 5.5M	-$ 9.1M	-$ 6.1M	+$ 4.6M
Managed Lane	$ 50.9M	+$ 1.2M	+$ 5.5M	-$ 9.1M	-$ 6.1M	+$ 4.6M

Assumptions used for the evaluation of right of way costs are as follows (all estimates are in 2020 dollars and will need to be escalated for year of acquisition costs):

Unit cost per sq. ft. of right of way take: $2.50 per sq. ft.

Cost of a ROW take with a residential displacement was estimated at $400,000 per displacement due to the relocation and moving assistance that would be required in addition to the property acquisition.

Cost of a right-or-way take with a major commercial displacement was estimated at the current appraisal district valuation plus $230,000 for relocation and moving assistance that would be required in addition to the property acquisition.

The costs identified above are high-level approximations only for the primary intent of comparing the various alternatives.

9 Planning Level Project Cost Estimates

A planning level cost estimate was developed for the project corridor to assist in Hays County and TxDOT in budgeting for the anticipated long-term improvements identified along the project corridor. The cost estimates identified in the table below include estimated right of way acquisition/relocation costs, utility relocation costs for those utilities outside of existing county or state right of way, and construction costs. The estimates do not include the professional services costs associated with these items such as preparation of the environmental clearance documentation, schematic development, detailed design, utility coordination services, or right of way acquisition services.

Engineer's Opinion of Planning Level Total Project costs including right of way acquisition and construction for the three studied facility types are:

Rural Freeway = $292M

Divided Arterial = $255M

Managed Lanes = $263M

Total estimated costs for the project, shown below in Table 9-1, if the proposed improvements substantially follow the existing SH 21 alignment would be approximately $292.1 million assuming the freeway section and a 260' wide roadway section on average. This cost would be reduced approximately $37.4 million for the 6-lane divided major arterial section and $28.8 million for the managed lane section, which both have an average roadway width of 230'. The primary cost differential between the major arterial and the manage lane is the additional pavement required for the buffer between the primary travel lanes and managed lane.

The Uhland west alternative is approximately $8 - $9 million less than the east alternative due to a reduction in required ROW as well as the reduced amount of pavement due to a shorter overall length.

The Niederwald east alternative, while longer in length, is approximately $8 - $9M million less than the west alternative due to the overall impacts to current developments and displacement of commercial properties such as the Family Dollar.

Table 9-1. Opinion of Planning Level Total Project Costs

Facility Type	Along Existing SH 21 Alignment	Uhland Alt. 2 (West)	Uhland Alt. 3 (East)	Niederwald Alt. 3 (East)	Niederwald Alt. 4 (West)	Uhland Alt. 3 (East) & Niederwald Alt. 3 (East)
Rural Freeway	$ 292.1M	+$ 3.3M	+$ 11.1M	-$ 9.2M	+$ 2.4M	+$ 5M
Major Arterial (MAD 6)	$ 254.7M	+$ 2.5M	+$ 11.9M	-$ 9.9M	+$ 1.4M	+$ 7.2M
Managed Lane	$ 263.3M	+$ 2.6M	+$ 10M	-$ 9.9M	+$ 1.6M	+$ 7.4M

Overall project costs in current (2020) dollars and will need to be escalated for year of acquisition costs or construction activities.

The assumptions used for the estimates in Table 9-1 are identified below:

- Continuously reinforced concrete pavement for mainlanes, frontage roads and ramps. Cost could be reduced by utilizing asphalt pavement for the frontage roads and ramps.
- Grade separated interchanges at major intersections only.
  - FM 110
  - Yarrington Road
  - FM 150
  - FM 2001
- Direct connectors for the interchanges at SH 80 and SH 130 were not included.
- 10-ft wide shared use path along the full length of the corridor.

A more detailed breakdown can be provided upon request.

10 Project Recommendations

10.1 Recommended Typical Section & Typical Right of Way

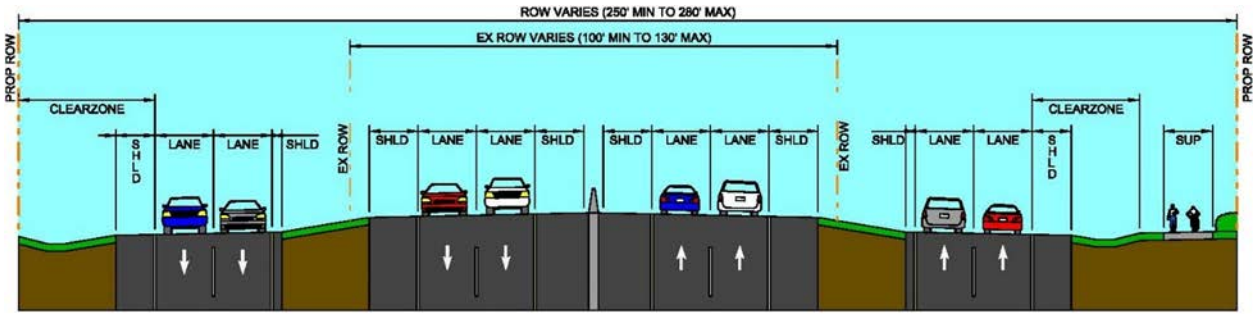
Based on the projected level of service, population and traffic growth as well as the safety concerns associated with the differential speeds between through traffic and vehicles entering/exiting the facility from the numerous driveways located along the corridor, the project team recommends that right of way be acquired for the future expansion of SH 21 to a full freeway section with frontage roads. The proposed improvements would be phased in over time as traffic volumes increase.

The anticipated right of way width for these proposed improvements would vary between 250-ft to 280-ft in most locations. Specific locations, such as at ramps and intersections, along with the interchanges at SH 890 and SH 130 may require additional width. These needs will be further evaluated in the next phase of the project which will include schematic development in conjunction with the preparation of a NEPA compliant environmental document.

Due to the anticipated population and traffic volume growth as well as the safety concerns associated with the numerous driveways located along the corridor, a freeway section with frontage roads is recommended.

The project team also recommends implementing bypasses in the vicinity of Uhland and Niederwald. Prior to implementation, the alternatives identified within this report will need to be further evaluated within the Federal NEPA process in a subsequent phase of this project.

Figure 10-1. Recommended Typical Section



10.2 Bypass Recommendations

Several bypass alternatives were evaluated in both the Uhland and Niederwald regions of the project corridor due to the current narrow right of way width, significant number of residential and commercial structures immediately adjacent to the existing roadway, and safety concerns due to the differential speeds between through traffic and local business traffic. Eastern and western bypasses were included in the alternatives investigated in each of these locations. Due to the boundary between Hays and Caldwell counties lying along the centerline of SH 21, a western bypass would lie entirely in Hays County while an eastern bypass would lie entirely in Caldwell County. Although the high level

evaluation of the project corridor has identified several reasonable and feasible alternatives, it should be noted that due to SH 21 being a State highway in which federal funding will ultimately be involved, each alternative will need to be further evaluated within the National Environmental Policy Act (NEPA) process in a subsequent phase of the project.

10.2.1 Uhland Area

Four alternatives were evaluated in the Uhland area as part of this study. The concept of a bypass was widely well received by the public and stakeholders during both the first and second virtual town halls. Due to the positive public response and support of Hays CISD, the project team recommends advancing the western alternative into the next project phase. ***However, due to the property immediately to the south of Uhland Elementary having a PDD in place with the City of Uhland, the City and County should enter into discussions with the property developer as soon as possible to determine the viability of this proposed bypass option.***

10.2.2 Niederwald Area

Four alternatives were also evaluated in the Niederwald area. The two alternatives that roughly follow the existing SH 21 alignment were presented during the second virtual town hall. As discussed in the virtual town hall summary portion of this report, both of the alternatives received extensive negative responses from the public. Additional discussions were held with the City of Niederwald at which time it was determined that these two alternatives would have a significant negative impact on the City's property and sales tax bases. As previously discussed, the western bypass alternative was also deemed to have significant impact on current and future developments on either end of the project. Lastly, the eastern bypass, appears to be feasible. However, this bypass lies entirely in Caldwell County and outside the jurisdiction of Hays County which is the sponsor of this study. Prior to a recommendation being made for this segment of the corridor, additional study is recommended along with additional coordination between Hays County, Caldwell County, City of Niederwald and TxDOT to resolve the complex issues encountered in this portion of the project corridor.

10.2.3 Runway Protective Zone Analysis

The project team engaged the City of San Marcos (COSM) Airport administration as well as the Federal Aviation Administration (FAA) representative regarding the potential expansion of the current SH 21 roadway through a COSM Airport runway protective zone throughout this initial phase of the project. The FAA was very appreciative of the early engagement and determined that any approval of the taking and use of airport property for this type of roadway expansion will require additional coordination with the FAA and the completion of a Runway Protective Zone Analysis. Preparation of the Runway Protective Zone Analysis report is recommended to be included in the next phase of the project. The FAA also noted that once approval, if granted, is obtained, it could take 12 – 18 months to complete the transfer of ROW.