Draft
Environmental Impact Statement

SH 68 from I-2/US 83 to I-69C/US 281
CSJs: 3629-01-001, -002, -003
Hidalgo County, Texas

Texas Department of Transportation – Pharr District

March 2018

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 December 16, 2014, and executed by FHWA and TxDOT.

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STATE HIGHWAY (SH) 68 ROADWAY PROJECT

FROM INTERSTATE HIGHWAY 2 (I-2)/ U.S. HIGHWAY (US) 83

TO INTERSTATE HIGHWAY 69 (I-69C)/ U.S. HIGHWAY 281

CSJ: 3629-01-001, -002, -003

HIDALGO COUNTY, TEXAS

DRAFT ENVIRONMENTAL IMPACT STATEMENT

Submitted Pursuant to 42 U.S.C. 4332(2)(c)

And 49 U.S.C. 303 by the

Texas Department of Transportation

3/13/18

Date of Approval

Texas Department of Transportation

March 2018

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by Texas Department of Transportation (TxDOT) pursuant to 23 U.S.C. 327, and a Memorandum of Understanding dated December 16, 2014 and executed by Federal Highway Administration (FHWA) and TxDOT.

TxDOT would issue a single Final Environmental Impact Statement (EIS) and Record of Decision (ROD) document pursuant to Pub. L. 112-141, 126 Stat. 405, Section 1319(b) unless TxDOT determines statutory criteria or practicability considerations preclude issuance of the combined document pursuant to Section 1319.

Comments on the Draft EIS (due 45 days from the date the Notice of Availability is published in the *Federal Register*) should be sent to the Texas Department of Transportation, Attention: Margil Maldonado, 600 W. US Expressway 83, Pharr, Texas 78577.

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ABSTRACT

The Texas Department of Transportation (TxDOT) has prepared a Draft Environmental Impact Statement (DEIS) to determine the potential environmental, social, and economic impacts of the proposed State Highway (SH) 68 improvements, a new highway facility from Interstate Highway (I)-2/U.S. Highway (US) 83 to I-69C/US 281, located in eastern Hidalgo County. The proposed project would begin at I-2/US 83 and travel north then west to connect to I-69C/US 281. The proposed project is described in the 2015–2040 Metropolitan Transportation Plan (MTP) and the 2017-2020 Statewide Transportation Improvement Program (STIP), as a proposed four-lane divided rural highway facility with future mainlanes and overpasses. Funding has been secured for Phase I of the project which extends from I-2/US 83 to Farm-to-Market (FM) 1925/Monte Cristo Road. Funding for future phases has not been determined; subsequently, SH 68 would be constructed in several phases, as funding becomes available. The current project is being pursued as a non-toll facility based on the availability of state and federal funds.

SH 68 is needed because there are limited current north-south roadways in the area and population is projected to increase substantially in the future, which will substantially increase traffic volume on current north-south roadways in the area. SH 68 is also needed to improve the emergency evacuation capacity of the state highway system in the south Texas region. The purpose of the SH 68 project is to accommodate population growth and higher traffic volumes, while relieving the burden on the limited number of existing north-south roadways, and provide an alternate north-south evacuation route during emergency events.

Three reasonable alternatives and the No-Build Alternative were evaluated to an equal level of detail in the DEIS, and each of the three reasonable alternatives would involve the following: the acquisition of new right-of-way (ROW); residential and commercial displacements; community impacts, including impacts to minority and low-income communities; access changes; conversion of existing land use to transportation use; potential impacts to floodplains, wetlands/waters of the U.S., historic properties, vegetation, protected species, and hazardous materials sites; and traffic noise impacts. All reasonable alternatives with the exception of the No-Build Alternative would potentially require ROW from resources eligible or potentially eligible for the National Register of Historic Places; therefore, the proposed project may require a Section 4(f) and Chapter 26 evaluation.

The 2014 Modified 2 Alternative was identified as the recommended preferred alternative and will be evaluated to a higher level of detail, as appropriate, in the Final EIS (FEIS) following a public hearing. TxDOT will issue a combined FEIS and Record of Decision document pursuant to Pub. L. 112-141, 126 Stat. 405, Section 1319(b) unless TxDOT determines statutory criteria or practicability considerations preclude issuance of the combined document pursuant to Section 1319.

Comments on the DEIS are due May 5, 2018 (45 days from the date of the Notice of Availability) and should be sent to:

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EXECUTIVE SUMMARY

ES.1 DESCRIPTION OF THE PROPOSED PROJECT

The Texas Department of Transportation (TxDOT), as the lead agency proposes to construct State Highway (SH) 68, a new highway facility from Interstate Highway (I)-2/U.S. Highway (US) 83 to I-69C/US 281, located in eastern Hidalgo County. The proposed project would begin at I-2/US 83 and travel north then west to connect to I-69C/US 281.

The proposed project is described in the 2015–2040 Metropolitan Transportation Plan (MTP) and the 2017-2020 Statewide Transportation Improvement Program (STIP), as a proposed four-lane divided rural highway facility with future mainlanes and overpasses. Funding has been secured for Phase I of the project; however, funding for future phases has not been determined. SH 68 would be constructed in several phases, as funding becomes available. The current project is being pursued as a non-toll facility based on the availability of state and federal funds.

Phase I would construct a new four-lane divided rural highway facility from I-2/US 83 to Farm-to-Market (FM) 1925, which is also known as Monte Cristo Road. The four-lane divided facility would serve as frontage roads for the ultimate facility and consist of two lanes in each direction with shoulders, separated by a grassy median. Future phases would extend the four-lane divided rural highway from FM 1925/Monte Cristo Road to I-69C/US 281, and eventually would complete the ultimate facility by constructing the mainlanes and overpasses. The proposed project is being developed as a highway facility.

The ultimate, controlled-access facility would be contained within a 350-foot typical right-of-way (ROW) width, with up to 400 feet of ROW needed at proposed grade separations. The proposed frontage roads would consist of two 12-foot wide lanes in each direction, with 4-foot wide inside shoulders and 8-foot wide outside shoulders. The frontage roads would include curb and gutter to accommodate drainage requirements. The proposed mainlanes would consist of two 12-foot wide lanes in each direction, with 4-foot wide inside shoulders and 10-foot wide outside shoulders. Mainlanes would be separated by a grassy median. Future mainlane overpasses are anticipated at major roadway crossings. Proposed future entrance and exit ramps would consist of 14-foot wide lanes, with 2-foot wide inside shoulders and 8-foot wide outside shoulders. The termini at I-2/US 83 and I-69C/US 281 would include proposed connections to existing frontage roads and proposed direct connector ramps to and from existing mainlanes.

ES.1.1 BACKGROUND AND HISTORY

In February 2013, the Texas Transportation Commission (TTC) designated SH 68 as a new state highway facility by Minute Order 113515 and project development began as an Environmental Assessment (EA). As part of this process, a Meeting with Affected Property Owners (MAPO) and a Public Meeting were held in September 2014. Based on the results of initial public outreach and potential impacts resulting from the project, TxDOT decided in February 2015 that the project would proceed as an Environmental Impact Statement (EIS). Efforts to complete the EA were ceased and the EIS process officially began on August 28, 2015, with the publication of a Notice of Intent (NOI) in both the Federal and Texas Registers.

The Draft Environmental Impact Statement (DEIS) is part of the schematic development and environmental phase of the project planning and continues the study of the preliminary alternatives identified in the EA as well as additional alternatives identified during the formal EIS public scoping process. Following review of the DEIS by Cooperating and Participating Agencies and a Public Hearing, TxDOT will prepare a Final EIS (FEIS) and Record of Decision (ROD).

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 December 16, 2014 and executed by Federal Highway Administration (FHWA) and TxDOT.

ES.2 PURPOSE AND NEED OF THE PROPOSED PROJECT

SH 68 is needed because there are limited current north-south roadways in the area and population is projected to increase substantially in the future, which will substantially increase traffic volume on current north-south roadways in the area. SH 68 is also needed to improve the emergency evacuation capacity of the state highway system in the south Texas region.

ES.2.1 Improve North-South Mobility

Discontinuous north-south roadways in the study area provide partial north south connectivity resulting in limited mobility. Examples of discontinuous on-system roads in the study area include FM 1426/Raul Longoria Road, FM 907/Alamo Road, FM 1423/Val Verde Road, and FM 493/Salinas Boulevard/La Blanca Road. There is no existing single roadway that currently connects I-2/US 83 with I-69C/US 281 within the study area. The proposed project would provide a single, continuous, new north-south roadway connecting I-2/US 83 to I-69C/US 281 that would improve mobility within the region.

A traffic forecasting study titled *State Highway (SH) 68 Traffic Forecasting Technical Memo* was completed in 2015 for the SH 68 project and was approved by TxDOT Transportation Planning and Programming Division (TP&P) on February 16, 2016 (TxDOT 2015b). The study concluded that almost every existing north-south facility in the surrounding area would experience an average annual growth rate of 2.5 percent, resulting in almost double the existing traffic by 2035 if SH 68 was not built. The study also determined that, if built, the SH 68 facility would result in the diversion of existing and future traffic from existing north-south facilities resulting in a marked reduction in traffic on those facilities. This reduction would also result in an approximate 10 percent reduction in traffic on I-69C between I-2 and FM 490 in 2035.

ES.2.2 Increase Travel Capacity for Local and Regional Traffic

The McAllen-Edinburg-Mission Metropolitan Statistical Area (MSA) covers Hidalgo County and is the fifth largest MSA in Texas and the 66th largest in the U.S. (U.S. Census 2010). As of the 2010 Census, the population in Hidalgo County was 774,763 and ranked as the eighth most populous county in Texas. Population growth is anticipated to continue in the region, with Hidalgo County population anticipated to reach over one million within the next 15 years. This projected increase in population would result in increased traffic growth throughout the county.

The combined growth of local population and traffic in the region has strained the capacity of the region's roadway network. Based on the 2015 annual average daily traffic (AADT) and projected 2035 AADT, regional traffic growth is projected to approximately double within the SH 68 study area. The traffic forecasting study concluded that the proposed SH 68 facility would provide significant mobility benefits for the local network. SH 68 would result in a 6.3 decrease in future traffic conditions (2035) north of the elevated interchange of I-2/US 83 and I-69C/US 281 and a 5.8 percent decrease east of the interchange.

ES.2.3 Provide Alternate North-South Evacuation Route During Emergency Events

Within the project study area, several roadways are designated as hurricane evacuation routes. Both I-2/US 83 and I-69C/US 281 are designated "Major Hurricane Evacuation Routes" with provisions for contraflow lane reversal. SH 107 is also a major evacuation route.

During inclement conditions, voluntary and/or mandatory evacuation of a community may be ordered to help protect human life. A hurricane evacuation analysis conducted for SH 68 determined that SH 68 would benefit evacuees should there be a need for faster ramp-up of evacuation traffic.

ES.3 ALTERNATIVES ANALYSIS

The alternatives analysis was conducted with cooperating and participating federal, state, local agencies, and the public through a formal scoping process. Through this formal scoping process, a full range of alternatives were established.

The full range of alternatives included the development and evaluation of modal alternatives, 600-foot wide study corridors, preliminary alternatives and reasonable alternatives. The 600-foot wide study corridors were narrowed to create 350-400-foot wide preliminary alternatives. Preliminary alternatives were screened and evaluated to identify reasonable alternatives. Reasonable alternatives were those alternatives advanced and carried forward for detailed analysis and discussion in the DEIS. Each study corridor and/or preliminary alternative considered was screened against a) the purpose and need for the project, b) identified critical issues, and c) project goal-based criteria in order to determine the reasonable alternatives for analysis in the DEIS.

ES.3.1 Identification of Reasonable Alternatives

Based on the analysis, the three reasonable alternatives carried forward were 2014 Modified 2 Alternative, 2014 Public Scoping Meeting (PSM) Alternative, and FM 1423 PSM Alternative. The No-Build Alternative was also carried forward for comparison. Section 4.0 provides an evaluation of the affected environment and environmental consequences of each reasonable alternative including the No-Build Alternative. The section includes refined information based on 2017 aerial imagery that became available after the January 2017 public meeting.

ES.3.2 Recommended Preferred Alternative

The variance in potential impacts between the three reasonable alternatives was minimal; however, some key potential impacts were deemed less desirable such that the FM 1423 PSM Alternative was eliminated from consideration as the recommended preferred alternative. These potential impacts included: a higher number of residential displacements (119 compared to 90 and 102); higher commercial displacements (33 compared to 5 and 8); higher impact to 100-year floodplains (161 acres compared to 149 and 140 acres), and greater potential to Section 4(f) property impacts. The 2014 PSM Alternative and 2014 Modified 2 Alternative share approximately 65 percent of the same route and the overall scale and magnitude of impacts from the two alternatives were relatively similar based on the same general alignment; therefore, the total project cost became a factor in the determination of a preferred alignment. The estimated total project cost of the 2014 PSM Alternative is $797 million compared to the 2014 Modified 2 Alternative at $768 million. Additionally, the design of the 2014 PSM Alternative would require the construction of approximately 63 bridge class structures over assumed eligible and/or potentially eligible historic irrigation canal crossings

or potential waters of the U.S. In comparison, the 2014 Modified 2 Alternative would require the construction of approximately 26 bridge class structures. Although efforts would be made to span crossings during final design; the increased number of crossings along the 2014 PSM Alternative introduces a higher risk of impacting a historic irrigation feature that may result in additional 4(f) impacts or potentially impacting waters of the U.S. Therefore, based on the lower estimated total cost of $768 million and the lower risk of Section 4(f) impacts to historic irrigation features, the 2014 Modified 2 Alternative, as shown on **Exhibit 3-4** in **Appendix A**, was identified as TxDOT's recommended preferred alternative.

ES.4 SUMMARY OF AGENCY COORDINATION

Agency coordination began with an Agency Scoping Meeting, which was held on March 29, 2016, to gather input on the Draft Project Coordination Plan, input on the project purpose and need, review study corridors, and identify potential resource issues or constraints. Those agencies invited to the meeting included the Natural Resources Conservation Service, Region 6 of the U.S. Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), U.S. Department of Housing and Urban Development (HUD), Federal Transit Administration (FTA), Secretary of State's office, Texas Parks and Wildlife Department (TPWD), State Historic Preservation Officer (SHPO), Railroad Commission of Texas (RRC), and the Texas Commission on Environmental Quality (TCEQ). The agencies that participated in the meeting included the USFWS, USACE, HUD, TPWD, and EPA.

Once the DEIS is completed, reviewed by TxDOT, and approved as satisfactory for further processing, a public hearing would be held and the document made available for public and agency comment. Once the public hearing process is completed, field surveys would be conducted as applicable for the recommended preferred alternative. Upon completion of surveys, coordination and/or permitting would be undertaken with agencies as warranted by either regulation or through TxDOT's Memorandum of Understandings with these agencies.

ES.5 SUMMARY OF PUBLIC INVOLVEMENT

Public involvement activities have been integrated throughout the development of the SH 68 project to provide opportunities for the public and agencies to provide meaningful input during project development. To help guide the public involvement process, TxDOT developed a Project Coordination Plan, which included a Public Involvement Plan (PIP), held agency and public scoping meetings, a public meeting, opened a SH 68 project office located in the study area, created a project telephone hotline, and conducted numerous stakeholder meetings. In addition, information was placed on the SH 68 project page on the TxDOT website (http://www.txdot.gov/inside-txdot/projects/studies/pharr/sh68.html) and social media announcements were made throughout the development of the project.

TxDOT established a project webpage in the summer of 2015 and the SH 68 Project Office was established in the spring of 2016. In addition to more traditional methods of public outreach such as newspaper advertisements and mailed notices, the TxDOT Pharr District and the TxDOT Public Involvement Section relied on social media (Twitter and Facebook) to help promote the public involvement activities. TxDOT sponsored a Facebook advertisement two weeks prior to the SH 68 PSM, and TxDOT sent an E-Blast on March 3, 2016 to contacts listed in the SH 68 Project Database.

A Modal Alternatives Conference was held for the project on January 22, 2016. Attendees included Hidalgo County Metropolitan Planning Organization (HCMPO), the Hidalgo County Regional Mobility Authority (HCRMA), municipalities, state agencies, representation from two international bridges, as well as the Pharr Economic Development Corporation.

A public scoping meeting was held on March 15, 2016 to gather input on the Draft Project Coordination Plan and Purpose and Need Statement, review study corridors, and identify potential resource issues or constraints. A total of 463 members of the public attended the meeting and 238 comments were received. The majority of comments received concerned impacts to personal property and cost associated with the project. Other comments received were over a preferred corridor identified by the commenters, opposition to a tolled facility, preference for a different location as opposed to the corridors presented at the meeting, concerns for native brushland impacts, bicycle accommodations, and impacts to businesses and farms.

An agency scoping meeting was held on March 29, 2016. The agencies that participated in the meeting included the USFWS, USACE, HUD, TPWD, and EPA. The TPWD provided a list of items to consider including impacts to potential wildlife corridors, impacts to rare and threatened species and their habitats, impacts to remnant vegetation and impacts to land used for wildlife habitat conservation. The HUD provided a list of HUD-assisted properties to consider, USACE requested a copy of preliminary study corridors being evaluated, and the EPA provided a list of issues and recommendations on all resources.

As a result of public and agency comments received during the scoping meetings, four additional study corridors were added. These additional study corridors were Tower Road, 2014 Modified 2, FM 1423 Modified (Golie Rd.) and FM 493 Modified.

A public meeting was held on January 3, 2107 to update the public on the project's history, status and next steps, including the presentation of the reasonable alternatives being advanced for further evaluation. The public meeting was attended by 382 members of the public, 11 media representatives, and one elected official. A total of 109 comments were received.

A total of 47 stakeholder meetings were held as part of the public involvement outreach. These meetings were held between April 30, 2014 and February 9, 2017. Additionally, six meetings with elected officials occurred between May 5, 2016 to June 6, 2017. To date, the following entities have passed resolutions of support:

City of Alamo	City of Mission
City of Alton	City of Penitas
City of Granjeno	City of San Juan
City of Hidalgo	City of Weslaco
City of La Joya	HCRMA
City of Mercedes	HCMPO

ES.6 CONCLUSION

A public hearing is anticipated to take place in Spring of 2018 to present and solicit comments on the recommended preferred alternative and the DEIS. The public as well as agencies will have an opportunity to provide comments during the formal comment period regarding the findings in the DEIS and project development process. The recommended preferred alternative will be evaluated to a higher level of detail, as appropriate, in the FEIS following the public hearing. The FEIS incorporates the DEIS with revisions made as appropriate throughout the document. The revisions will reflect any modifications to the project, updated information on the affected environment, changes in the assessment of impacts, the identification of mitigation measures, the results of coordination, comments received on the DEIS and responses to these comments. TxDOT will issue a combined FEIS and Record of Decision document pursuant to Pub. L. 112-141, 126 Stat. 405, Section 1319(b) unless TxDOT determines statutory criteria or practicability considerations preclude issuance of the combined document pursuant to Section 1319.

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Appendix B SH 68 Minute Order
Appendix C Planning Questionnaires and 2010-2040 MTP Table

List of Acronyms

Acronym/Abbreviation	Full Definition
AADT	Annual average daily traffic
ACM	Asbestos containing materials
ADT	Average daily traffic
AAGR	average annual growth rate
ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
ACT	Antiquities Code of Texas
Amsl	Above mean sea level
AOI	Area of influence
APE	Area(s) of potential effects
AST(s)	Aboveground Storage Tank(s)
ASTM	American Society for Testing and Materials
AVE	Area of visual effects
B&A	Blanton & Associates, Inc.
BG	Block Group
BGEPA	Bald and Golden Eagle Protection Act
BMPs	Best management practices
B.P.	Before Present
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAD	County Appraisal District
CAFE	Corporate Average Fuel Economy
CDP(s)	Census designated place(s)
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CGP	Construction General Permit
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2E	Carbon Dioxide equivalent
CR	County Road
CT	Census Tract
CWA	Clean Water Act
dB	Decibels
dB(A)	A-weighted decibels
DEIS	Draft Environmental Impact Statement
DHHS	U.S. Department of Health and Human Services
EA	Environmental Assessment
ECHO	Enforcement and Compliance Information System
EDR	Environmental Data Resources, Inc.
EFH	Essential fish habitat
EIS	Environmental Impact Statement
EJ	Environmental Justice
EMST	Ecological Mapping System of Texas

List of Acronyms

Acronym/Abbreviation	Full Definition
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPIC(s)	environmental permits, issues, and commitments
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FINDS	Facility Index System/Facility Registry System
FM	Farm-to-Market Road
FPPA	Farmland Protection Policy Act
FTA	Federal Transit Administration
FWCA	Fish and Wildlife Coordination Act
GCD	Groundwater Conservation District
GHG	Greenhouse Gas
GIS	Geographic information systems
GLO	General Land Office
GMA	Groundwater Management Areas
Halff	Halff Associates, Inc.
HCAD	Hidalgo County Appraisal District
HCDD	Hidalgo County Drainage District
HCID	Hidalgo County Irrigation District
HCMPO	Hidalgo County Metropolitan Planning Organization
HCRMA	Hidalgo County Regional Mobility Authority
HUD	U.S. Department of Housing and Urban Development
ID(s)	Irrigation District(s)
I-	Interstate Highway
I-2/US 83	Interstate Highway 2/ United States Highway 83
I-69C/US 281	Interstate Highway 69C/ United States Highway 281
IHWCA	Industrial Hazardous Waste Corrective Action
IPaC	Information for Planning and Conservation
IPCC	Intergovernmental Panel on Climate Change
ISD	Independent School District
ITS	Intelligent Transportation Systems
kV	Kilovolt
LEP	Limited English Proficiency
Leq	Average or equivalent sound
LPST	Leaking Petroleum Storage Tank
LRGV	Lower Rio Grande Valley
LRGV-NWR	Lower Rio Grande Valley National Wildlife Refuge
L&WCF	Land and Water Conservation Fund Act
LU	Landscape Unit
LU/LC	Land Use/Land Cover
MAPO	Meeting with Affected Property Owners

List of Acronyms

Acronym/Abbreviation	Full Definition
MBTA	Migratory Bird Treaty Act of 1918
MMPA	Marine Mammal Protection Act
MMT	Million Metric Tons
MOU	Memorandum of Understanding
mph	Miles per hour
MS4	Municipal separate storm sewer system
MSA	Metropolitan Statistical Area
MSAT	Mobile Source Air Toxics
MSFCA	Magnuson-Stevens Fishery Conservation and Management Act
MTP	Metropolitan Transportation Plan
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
NWP	Nationwide Permit
NWR	National Wildlife Refuge
O_3	Ozone
OTHM(s)	Official Texas Historical Marker(s)
PA	Programmatic Agreement
Pb	Lead
PCN	Pre-construction notification
PIP	Public Involvement Plan
PAPs	Potential Affected Parties
PM	Particulate Matter
$PM_{2.5}$	particulate matter with a diameter less than or equal to 2.5 micrometers
PM_{10}	particulate matter with a diameter less than or equal to 10 micrometers
Ppm	Parts per million
PS&E	Plans, Specifications, and Estimates
PSLs	Project Specific Locations
PSM	Public Scoping Meeting

List of Acronyms

Acronym/Abbreviation	Full Definition
RCP	Representative Concentration Pathways
RCRA	Resource Conservation and Recovery Act
RCRA NonGen/NLR	Resource Conservation Recovery Act-Non Generators/No Longer Regulated
RHA	Rivers and Harbors Act of 1899
ROD	Record of Decision
ROW	Right-of-way
RSA	Resource Study Area
RRC	Railroad Commission of Texas
RTHL(s)	Recorded Texas Historic Landmark(s)
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act
SAL(s)	State Antiquities Landmark(s)
SGCN	Species of greatest conservation need
SH	State Highway
SH 68	State Highway 68
SHPO	State Historic Preservation Officer
SO_2	Sulphur Dioxide
SOW	Statement of work
SPILLS	Spills Database
STIP	Statewide Transportation Improvement Program
SWF/LF	Permitted Solid Waste Facilities
SW3P	Stormwater Pollution Prevention Plan
SWRCY	Recycling Facility Listing
TAC	Texas Administrative Code
TCAP	Texas Conservation Action Plan
TCEQ	Texas Commission on Environmental Quality
TCPs	Traditional Cultural properties
TDM	Transportation Demand Management
TDS	Total dissolved solids
TERP	Texas Emissions Reduction Plan
THC	Texas Historical Commission
TIER 2	Tier 2 Chemical Inventory Reports
TMDL	Total Maximum Daily Load
TNM	Traffic Noise Model
TPDES	Texas Pollutant Discharge Elimination System
TP&P	TxDOT Transportation Planning and Programming Division
TPWC	Texas Parks and Wildlife Code
TPWD	Texas Parks and Wildlife Department
TSCA	Toxic Substances Control Act
TSM	Transportation System Management
TSS	Total Suspended Solids
TTC	Texas Transportation Commission
TWDB	Texas Water Development Board

List of Acronyms

Acronym/Abbreviation	Full Definition
TxDOT	Texas Department of Transportation
TXNDD	Texas Natural Diversity Database
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	U.S. Code
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground storage tank
UTP	Unified transportation program
VCP	Voluntary cleanup Program
VLF	Valley Land Fund
VMT	Vehicle Miles Traveled
VPD	Vehicles per day

1.0 INTRODUCTION

The Pharr District of the Texas Department of Transportation (TxDOT) proposes to construct State Highway (SH) 68, a new highway from Interstate Highway (I)-2/U.S. Highway (US) 83 to I-69C/US 281, located in eastern Hidalgo County. The proposed project corridor would begin at I-2/US 83 and travel north then west to connect to I-69C/US 281. The current project is being pursued as a non-toll facility based on the availability of state and federal funds.

Figure 1-1 provides a map showing the SH 68 project location in relation to Hidalgo County. The project would provide a single, continuous, new north-south roadway connecting I-2/US 83 to I-69C/US 281 that would improve mobility within the region. The total length of the project is approximately 22 miles and would require approximately 1,100 acres of right-of-way (ROW). In compliance with the National Environmental Policy Act (NEPA), TxDOT has prepared this Draft Environmental Impact Statement (DEIS) to determine the potential environmental, social, and economic impacts. 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 December 16, 2014, and executed by Federal Highway Administration (FHWA) and TxDOT.

1.1 Project History

The SH 68 project was originally conceived as a portion of a county-wide transportation improvement project known as the Hidalgo County Loop. In 2000, the Hidalgo County Metropolitan Planning Organization (HCMPO) added the Hidalgo County Loop to its Metropolitan Transportation Plan (MTP). Initial route and corridor studies to develop a loop around the perimeter of the major cities within Hidalgo County were initiated in 2002 by the Hidalgo County Commissioners Court. A route analysis study within a six-mile-wide corridor identified a preferred route for the Hidalgo County Loop, as documented in the *Hidalgo County Loop Alternatives Route Analysis Report*, adopted by the Commissioners Court on May 13, 2003 (Hidalgo County 2005).

In 2005, the Hidalgo County Regional Mobility Authority (HCRMA) was established to develop and finance various projects within Hidalgo County. A key project for establishment of the HCRMA was planning and development of the Hidalgo County Loop, a proposed toll-road network that, according to the Texas Transportation Commission (TTC) Minute Order 110315, “will provide an important reliever route for some of the noncommercial traffic, and will provide for improved traffic circulation within the county” (TTC 2005). The proposed Hidalgo County Loop was described in a 2009 public meeting summary report as “a system of projects that is approximately 122 miles long and is composed of six interconnected but independent

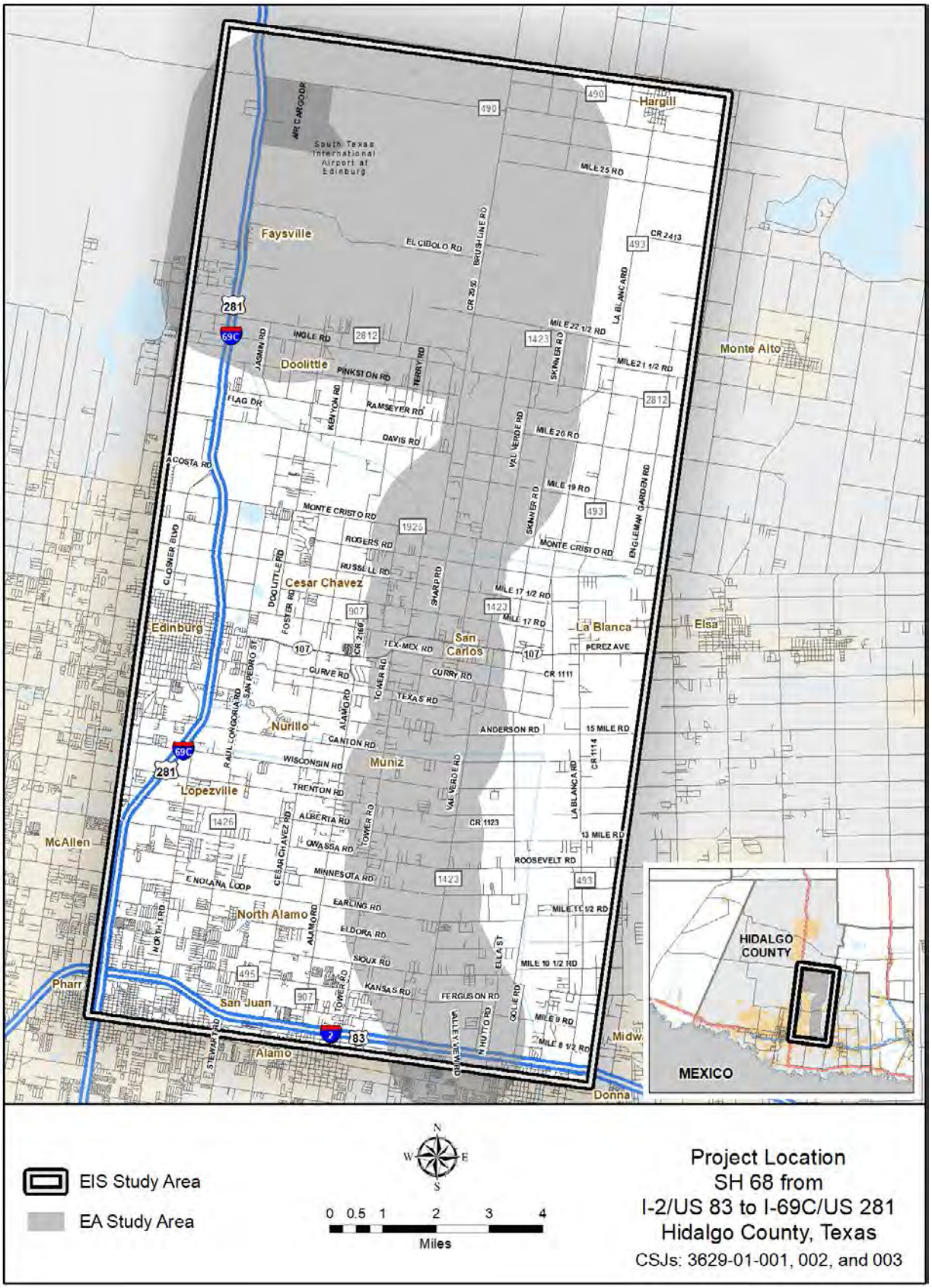

Figure 1-1. Project Location

projects." (HCRMA 2009). The six independent sections were developed and described as Sections A through F, with the section in the vicinity of the current SH 68 project area described as Section D.

The HCRMA determined that Section D of the original Hidalgo Loop was necessary as an individual project and was orginally pursued as a toll project. Because of the availability of state and federal funding, the project was pursued as a non-toll facility and it was determined that TxDOT would oversee and manage the development of the proposed SH 68 project (formerly known as Section D) instead of the HCRMA. In February 2013, the TTC formally designated SH 68 as a new state highway facility by Minute Order 113515 and project development began. An Environmental Assessment (EA) was initiated by TxDOT and in September of 2014 a public meeting and a Meeting with Affected Property Owners (MAPO) were conducted. The public meeting was heavily attended and feedback from the public suggested disapproval over the initial potential toll aspect of the project and the general alignment as it related to significant potential displacements. Based on the controversy from initial public outreach and because the project would consist of a new location facility with up to 1,100 acres of new ROW and displacements, it was decided in February 2015 that the project would proceed as an Environmental Impact Statement (EIS). The EIS process for SH 68 officially began on August 28, 2015, with the publication of a Notice of Intent (NOI) in both the Federal Register and the Texas Register.

Additional details regarding the project history can be found in the technical report titled *SH 68 Project History and EA Alternatives Report* which is available for review on the TxDOT website (http://www.txdot.gov/inside-txdot/projects/studies/pharr/sh68.html) and on file at TxDOT (2016).

1.2 Study Area

As part of the transition from an EA to an EIS, the study area was expanded in order to ensure all reasonable alternatives for the proposed action were examined. In addition, public involvement conducted prior to the initiation of the EIS process suggested that TxDOT should look at other existing north-south roadways both east and west of the study area developed during the EA process. Based on this information, the study area was expanded and presented to local/state technical experts and stakeholders representing various modes of transportation at a modal alternatives workshop held on January 22, 2016. These participants were asked to provide input regarding the study area boundaries for the project. The study area was also presented at the Public Scoping Meeting (PSM) on March 15, 2016 and the Agency Scoping Meeting on March 29, 2016. Based on input received at these meetings, TxDOT determined that the study area was appropriate for the development of the full range of alternatives for SH 68.

Figure 1-1 provides a comparison of the EA study area in relation to the EIS study area and to the roadway network.

The EIS study area is a rectangular area in eastern Hidalgo County, oriented generally parallel to I-69C/US 281 and I-2/US 83. The study area runs from south of I-2/US 83 to north of Farm-to-Market (FM) 490 (approximately 18.8 miles in length) and from east of FM 493/Salinas Boulevard/La Blanca Road to west of I-69C/US 281 (approximately 9.5 miles in width). It includes portions of the Cities of Edinburg, Pharr, San Juan, Alamo, and Donna. The area also includes unincorporated portions of Hidalgo County and the communities (census-designated places [CDP]) of Faysville, Hargill, Doolittle, Cesar Chavez, San Carlos, La Blanca, Nurillo, Muniz, Lopezville, and North Alamo. The study area includes approximately 179 square miles or 114,627 acres.

The southern (I-2/US 83) and western (I-69C/US 281) boundaries of the study area were determined based on the previous work associated with Section D of the Hidalgo County Loop. The eastern extent of the study area was chosen since the HCRMA has a long-term plan to investigate the need for an additional roadway identified as Section F, which is east of the SH 68 EIS study area in the vicinity of Mercedes, Texas (HCRMA 2012). The northern boundary was identified in the vicinity of FM 490 based on input from the City of Edinburg requesting that TxDOT consider connecting SH 68 near the South Texas International Airport at Edinburg.

The study area is located on the Hebbronville Plain, an area of relatively flat topography that ranges in elevation from 70 to 300 feet above mean sea level (Amsl) rising from the Rio Grande Delta (Bureau of Economic Geology 2017, Trowbridge 1932). This area is mostly rural, containing a mix of residential development, row-crop agriculture, orchard-based agriculture, undeveloped rangeland/pasture, and small amounts of industrial uses. The South Texas International Airport at Edinburg is located in the northwestern portion of the study area. The southwestern portion of the study area is more developed with residential and commercial land uses. The northern and eastern portions of the study area are less developed and exhibit more rural characteristics.

1.3 Existing Transportation Facilities

There are a variety of existing north-south roadways in the study area that provide two-lane or four-lane paved facilities, as well as smaller local paved and unpaved county and private roads (see **Figure 1-1**). On and off-system roadways that currently provide partial north-south connectivity within portions of the proposed project area include: FM 1426/Raul Longoria Road, FM 907/Alamo Road, Tower Road, County Road (CR) 2050/Brushline Road, FM 1423/Val Verde Road, and FM 493/Salinas Boulevard/La Blanca Road. Many of these roadways are discontinuous and primarily serve the southern half of the study area.

1.4 Proposed Facility

The proposed project would provide a new north-south highway connecting I-2/US 83 to I-69C/US 281 that would improve mobility within the region. The proposed controlled access freeway would include two northbound and two southbound frontage roads with future mainlanes and overpasses. Frontage roads and future mainlanes would be separated by grassy medians. The facility would be contained within a 350-foot typical ROW width, with up to 400 feet of ROW needed at proposed grade separations. The proposed frontage roads would consist of two 12-foot wide lanes in each direction, with 4-foot wide inside shoulders and 8-foot wide outside shoulders. The frontage roads would include curb and gutter to accommodate drainage requirements. The future mainlanes would consist of two 12-foot wide lanes in each direction, with 4-foot wide inside shoulders and 10-foot wide outside shoulders. It is anticipated that future mainlane overpasses would be located at major roadway crossings. Proposed entrance and exit ramps would consist of 14-foot wide lanes, with 2-foot wide inside shoulders and 8-foot wide outside shoulders. The termini at I-2/US 83 and I-69C/US 281 would include proposed connections to existing frontage roads and proposed direct connector ramps to and from existing mainlanes. **Figure 1-2** shows the proposed ultimate typical section.

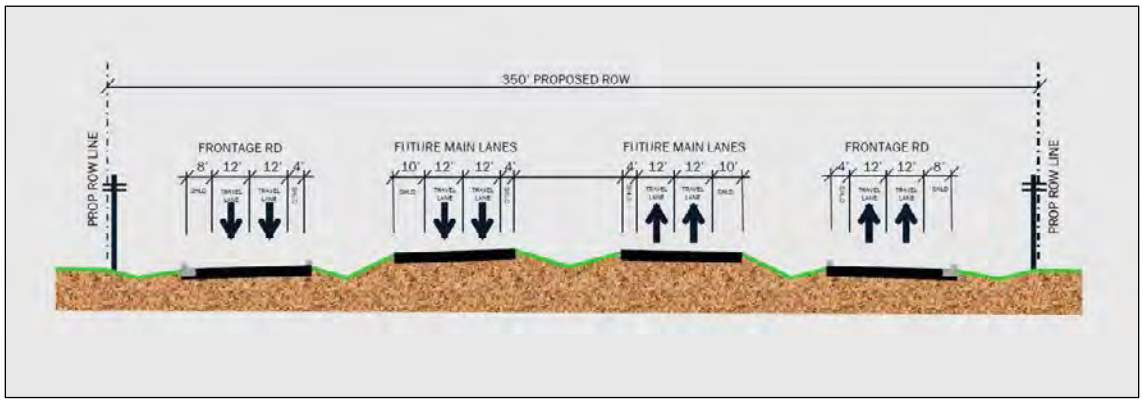

Figure 1-2. SH 68 Proposed Ultimate Typical Section

SH 68 would be constructed in several phases, as funding becomes available. Phase I would construct a new four-lane divided rural highway facility from I-2/US 83 to FM 1925/Monte Cristo Road. The four-lane divided facility would serve as frontage roads for the ultimate facility and consist of two lanes in each direction with shoulders, separated by a grassy median. Future phases would extend the four-lane divided rural highway from FM 1925/Monte Cristo Road to I-69C/US 281, and eventually would complete the ultimate facility by constructing the mainlanes and overpasses.

1.4.1 Logical Termini and Independent Utility

Federal regulations require that federally funded transportation projects have logical termini [23 Code of Federal Regulations (CFR) 771.111(f)(1)]. Simply stated, this means that a project must have rational beginning and end points. Those end points may not be created simply to avoid proper analysis of environmental impacts. The proposed project limits extend from I-2/US 83 to I-69C/US 281. These limits were chosen as logical termini as they are major traffic generators.

Federal regulations require that a project have independent utility and be a reasonable expenditure even if no other transportation improvements are made in the area [23 CFR 771.111(f)(2)]. This means a project must be able to provide benefit by itself, and that the project not compel further expenditures to make the project useful. Stated another way, a project must be able to satisfy its purpose and need with no other projects being built. A new roadway connecting I-2/US 83 to I-69C/US 281 would function independently and not require other roadway construction or improvements to fulfill the project's purpose and need. It would not predetermine locations and types of future transportation improvements.

1.4.2 Planning and Funding Information

SH 68 is described in the MTP and the Statewide Transportation Improvement Program (STIP) as a proposed four-lane divided rural highway facility with future mainlanes and overpasses. Relevant pages from 2015-2040 MTP of the HCMPO and the 2017-2020 STIP are included in **Exhibits 1-1.1** through **1-1.3** and **1-2** of **Appendix A** respectively.

Funding has been secured for Phase I which is estimated to cost approximately $95 million based on fiscal year 2018 (see **Exhibit 1-2** in **Appendix A**). Construction letting is anticipated to occur in 2022. Funding for potential phases has not been determined. The ultimate total project cost estimate for all build preliminary alternatives evaluated range from $723 million to $918 million based on 2017 dollars.

2.0 PURPOSE AND NEED

Under the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU) and its successors, a Purpose and Need Statement should include a "clear statement of the objectives that the proposed action is intended to achieve" (SAFETEA-LU 2005, sec. 1860(3)). For environmental documents prepared under the regulations under NEPA, the project's purpose and need also plays a key role in determining the range of alternatives that would be considered by providing screening criteria for determining whether alternatives are feasible and reasonable. Reasonable alternatives and the recommended preferred alternative must meet the project purpose and need. **Sections 2.1** through **2.3** provide the purpose and need for the project as well as supporting documentation.

2.1 Need for Proposed Project

SH 68 is needed because there are limited current north-south roadways in the area and population is projected to increase substantially in the future, which will substantially increase traffic volume on current north-south roadways in the area. SH 68 is also needed to improve the emergency evacuation capacity of the state highway system in the south Texas region.

2.2 Supporting Facts and/or Data

2.2.1 Improve North-South Mobility

Discontinuous north-south roadways in the study area only provide partial north south connectivity resulting in limited mobility. Examples of discontinuous on-system roads in the study area include FM 1426/Raul Longoria Road, FM 907/Alamo Road, FM 1423/Val Verde Road, and FM 493/Salinas Boulevard/La Blanca Road. There is no existing single roadway that currently connects I-2/US 83 with I-69C/US 281 within the study area. The proposed project would provide a single, continuous, new north-south roadway connecting I-2/US 83 to I-69C/US 281 that would improve mobility within the region.

A traffic forecasting study titled *State Highway (SH) 68 Traffic Forecasting Technical Memo* was completed in 2015 for the SH 68 project and was approved by TxDOT Transportation Planning and Programming Division (TP&P) on February 16, 2016 (TxDOT 2015b). The study concluded that almost every existing north-south facility in the surrounding area would experience an average annual growth rate (AAGR) of 2.5 percent, resulting in almost double the existing traffic by 2035 if SH 68 was not built. The study also determined that, if built, the SH 68 facility would result in the diversion of existing and future traffic from existing north-south facilities resulting in a marked reduction in traffic on those facilities. This reduction would also result in an approximate 10 percent reduction in traffic on I-69C between I-2 and FM 490.

2.2.2 Increase Travel Capacity for Local and Regional Traffic

2.2.2.1 *Population Growth*

The McAllen-Edinburg-Mission Metropolitan Statistical Area (MSA) covers Hidalgo County and is the fifth largest MSA in Texas and the 66th largest in the U.S. (U.S. Census 2010). As 2010, the population in Hidalgo County was 774,769 and ranked as the eighth most populous county in Texas (**Table 2-1).**

Table 2-1. Historical Population Estimates for Hidalgo County, 1960-2010

	1960[1]	1970[1]	1980[1]	1990[2]	2000[3]	2010[4]
Population	180,904	181,535	283,229	383,545	569,463	774,769

Sources: (1) U.S. Census Bureau 2010; (2) U.S. Census Bureau 1990; (3) U.S. Census Bureau 2000; (4) Texas Demographic Center 2017.

As shown in **Table 2-2**, population growth is anticipated to continue in the region, with Hidalgo County population anticipated to reach over one million within the next 15 years.

Table 2-2. Population Projections for Hidalgo County, 2020-2050

	2020	2030	2040	2050
Projected Population	948,305	1,145,413	1,345,740	1,553,142

Source: Texas Demographic Center 2017.

It is anticipated that the projected increase in population would result in increased traffic growth throughout the county. Based on the population estimates presented above, Hidalgo County is expected to see an AAGR of approximately 2.10 percent.

Cities in the vicinity of the proposed SH 68 project are projected to experience a population growth rate similar to Hidalgo County at 2.14 percent, with projected AAGRs ranging from approximately 2.12 to 2.15 percent as shown in **Table 2-3.**

Table 2-3. Projected Population Growth in SH 68 Cities

City	2010 Population	2040 Projected Population	AAGR
Alamo	18,000	34,000	2.14%
Donna	16,000	30,000	2.12%
Edinburg	77,000	145,000	2.13%
McAllen	129,000	244,000	2.15%
Mission	77,000	145,000	2.13%
Pharr	70,000	132,000	2.14%
Total	**387,000**	**730,000**	**2.14%**
Source: Census 2010 and Texas Water Development Board, 2016 Regional Water Plan.			

2.2.2.2 *Traffic Growth*

In order to provide supporting data for projected traffic growth in the region, two differing sets of data were analyzed. One set of data used the TxDOT Statewide Planning Map (2015a) and the other used a traffic forecasting study specifically for the SH 68 project titled *State Highway (SH) 68 Traffic Forecasting Technical Memo* (2015b) completed in 2015. The TxDOT Statewide Planning Map (2015a) provides future traffic estimates in support of planning operations at TxDOT. The estimates are for informational purposes and prefaced as not being suitable for legal, engineering, or surveying purposes. In order to provide more accurate traffic estimates, the SH 68 Traffic Forecasting Technical Memo (2015b) used several data sources to identify traffic estimates within the study area for SH 68. The SH 68 Traffic Forecasting Technical Memo was approved by TxDOT Transportation Planning and Programming Division (TP&P) on February 16, 2016 (TxDOT 2015b). Refer to the *State Highway (SH) 68 Traffic Forecasting Technical Memo* (2015b) for the methodology used in the study. Below is a summary of traffic estimates observed from the two sources.

The annual average daily traffic (AADT) is the total traffic for a year divided by 365. According to the TxDOT Statewide Planning Map (2015a), traffic in the year 2015 along I-69C/US 281 ranged from 13,581 AADT between FM 490 and El Cibolo Road to 75,461 AADT between Owassa Road and Eldora Road. Traffic in the year 2015 on I-2/US 83 ranged from 88,033 AADT between FM 1423/Val Verde Road and FM 493/Salinas Boulevard/La Blanca Road to 113,337 AADT between I-69C/US 281 and North I Road. Future 2035 traffic is projected to approximately double on I-69C/US 281 for each segment listed in Table 2-4 between the years 2015 and 2035. Traffic on I-2/US 83 is projected to increase, to 166,240 AADT between FM 907/Alamo Road and FM 1423/Val Verde Road to 217,610 AADT between I-69C/US 281 and North I Road by the year 2035. Based on the 2015 AADTs and projected 2035 AADTs (TxDOT 2015a), traffic growth is projected to approximately double within the SH 68 study area.

The TxDOT Statewide Planning Map (2015a) also provides estimates on the movement of freight (trucks) through the region.

Table 2-4. Existing and Projected Traffic within the SH 68 Study Area

Roadway and Roadway Segment	AADT 2015	AADT 2035	Future 24-Hour Truck Percentage
I-69C/US 281			
North of FM 490	14,453	26,310	36.2
FM 490 to El Cibolo Road	13,581	27,160	37.3
El Cibolo Road to FM 2812	16,672	32,010	34.1
FM 2812 to Ramseyer Road	22,157	42,540	30.6
North of Business 281	27,014	51,870	28.7
North of FM 1925	23,785	47,570	29.9
South of FM 1925	22,981	44,120	30.3
North of FM 2128	40,279	77,340	25.9
FM 2128 to SH 107	42,890	78,060	25.5
SH 107 to Canton Road	42,890	82,350	25.5
South of Canton Road	48,083	92,320	25.0
North of Bus 281/Owassa Road	52,672	101,130	24.6
Owassa Road to Eldora Road	75,461	144,890	23.2
Eldora Road to I-2/US 83	67,801	130,180	23.5
I-2/US 83			
I -69C/US 281 to North I Road	113,337	217,610	8.3
North I Road to Stewart Road	100,180	192,350	8.8
Stewart Road to FM 907/Alamo Road	93,314	179,160	9.1
FM 907 to FM 1423/Val Verde Road	86,585	166,240	9.5
FM 1423 to FM 493	88,033	169,020	9.4
FM 490			
East of I-69C/US 281	1,424	2,850	22.1
Brushline Road to CR 3392	1,089	2,180	25.1
CR 3392 to FM 493	2,070	4,140	19.2
FM 162/El Cibolo Road			
East of I-69C/US 281	3,396	6,790	6.6
FM 2812			
East of I-69C/US 281	10,018	20,040	5.1
Doolittle Road to Brushline Road	8,341	16,680	5.2
Brushline Road to CR 2171	3,564	7,130	18.2
CR 2171 to FM 493	2,755	5,510	18.6
FM 1925/Monte Cristo Road			
East of I-69C/US 281	15,604	28,400	4.8
FM 907 to Uresti Road	10,591	19,280	5.9
Uresti Road to FM 493	6,077	11,060	7.2
SH 107			
East of I-69C/US 281 to San Pedro Street	21,886	39,830	2.0
San Pedro Street to Cesar Chavez Road	20,524	37,350	2.0
Cesar Chavez Road to CR 2160	17,299	31,490	2.1
CR 2160 to East of Tower Road	15,810	28,780	2.2
East of Tower Road to East of CR 2336	17,523	31,890	2.1
East of CR 2336 to East of FM 1423	13,159	23,950	2.4
East of FM 1423 to FM 493	13,979	25,440	2.3

Table 2-4. Existing and Projected Traffic within the SH 68 Study Area

Roadway and Roadway Segment	AADT 2015	AADT 2035	Future 24-Hour Truck Percentage
FM 1423/Val Verde Road			
SH 107 to Anderson Road	6,007	12,020	4.7
Anderson Road to Alberta Road	7,107	14,220	4.4
Alberta Road to Sioux Road	14,532	29,070	3.4
Sioux Road to FM 495	14,857	29,720	3.4
FM 495 to I-2/US 83	14,359	28,720	3.4
FM 493/Salinas Boulevard/La Blanca Road			
FM 490 to CR 2418	1,605	3,210	6.1
CR 2418 to CR 2413	1,713	3,430	6.3
CR 2413 to FM 2812	2,378	4,760	6.8
FM 2812 to FM 2812	3,809	7,620	6.1
FM 2812 to FM 1925	5,153	10,310	5.1
FM 1925 to SH 107	7,020	14,040	4.4
SH 107 to Mile 15 Road	5,716	11,430	4.8
Mile 15 Road to Mile 12 Road	5,646	11,290	4.9
Mile 12 Road to 8 ½ Mile Road	16,894	33,790	3.2
8 ½ Mile Road to I-2/US 83	14,108	28,220	3.4
Source: TxDOT 2015a Statewide Planning Map, Future Traffic (AADT 2015, AADT 2035, Percent Truck)			

By the year 2035, the projected 24-hour percentage of trucks on I-69C/US 281 immediately north of the I-2/US 83 interchange between Eldora Road and I-2/US 83 is anticipated to be 23.5 percent. North of the interchange, the percentage of trucks on I-69C/US 281 is anticipated to increase through the Cities of Pharr and Edinburg to 37.3 percent between FM 490 and El Cibolo Road near the South Texas International Airport at Edinburg. Between I-69C/US 281 and FM 493/Salinas Boulevard/La Blanca Road, the percentage of trucks on I-2/US 83 is anticipated to range from 8.3 to 9.5 percent. **Table 2-4** provides the existing and projected traffic within the SH 68 study area and **Figure 1-1** displays the road locations.

The SH 68 Traffic Forecasting Technical Memo developed 2015 and 2035 traffic data for the SH 68 project by collecting historical and existing traffic count data and by applying the 2009 and 2035 Rio Grande Valley travel demand models. Average daily traffic (ADT) volumes represent the total two-way traffic on a roadway for some period less than a year, divided by the total number of days it represents, and includes both weekday and weekend traffic. Usually, ADT is adjusted for day of the week, seasonal variations, and/or vehicle classification. **Table 2-5** shows the 2015 ADT and the 2035 projected ADT for SH 68.

Table 2-5. Traffic Data for SH 68 from I-2/US 83 to I-69C/US 281

Location	2015 ADT	2035 ADT
I-69C/US 281 to FM 1925/Monte Cristo Road	6,120	20,400
FM 1925/Monte Cristo Road to SH 107	16,555	30,100
SH 107 to I-2/US 83	21,915	48,700
Source: SH 68 Traffic Forecasting Technical Memo, TxDOT, December 2015b		

The traffic forecasting study found that if SH 68 is not constructed, modeled traffic on I-69C/US 281 north of I-2/US 83 would increase to 217,000 vehicles per day (vpd) in the year 2035. This is a 67 percent increase over the 2015 observed traffic volumes by the study at close to 130,000 vehicles per day. Additionally, traffic forecast on I-2 within the study area for the year 2035 shows 171,000 vehicles per day. This is a 43 to 55 percent increase over the 110,000 to 120,000 vehicles per day observed in 2015 by the study. These 2035 model outputs are higher than the projected AADT volumes from the Statewide Planning Map. The study concluded that the proposed SH 68 facility would provide significant mobility benefits for the local network. Regional traffic and movement of freight would also see benefits. Emergency response for the local area would also improve with the addition of a new facility, and additional evacuation capacity would be available. The traffic forecasting study found that the elevated interchange of I-2/US 83 and I-69C/US 281 north of the interchange would result in an estimated 6.3 percent decrease in future traffic conditions (2035) and east of the interchange future traffic conditions (2035) would decrease an estimated 5.8 percent if SH 68 is constructed.

2.2.3 Provide Alternate North-South Evacuation Route During Emergency Events

Within the project study area, both I-2/US 83 and I-69C/US 281 are designated Major Evacuation Routes with provisions for contraflow lane reversal. SH 107 is also a Major Evacuation Route (see **Figure 2-1**).

The TxDOT Pharr District has published a brochure for the public showing alternate hurricane evacuation routes for the Rio Grande Valley. The alternate route map advises that "US 281 will not be able to handle all traffic evacuating from the Rio Grande Valley and the surrounding areas. Evacuees should consider alternate routes" (TxDOT 2016b). The proposed SH 68 route would provide an alternative north-south evacuation route for eastern Hidalgo County allowing evacuees an easier transition into the contraflow on I-69C/US 281 north of populated portions of Southern Hidalgo County. As discussed in the section above, the interchange at I-2/US 83 and I-69C/US 281 indicated a decrease in future traffic conditions. This decrease in future traffic conditions should help with evacuation during emergency events.

During inclement conditions, voluntary and/or mandatory evacuation of a community may be ordered to help protect human life. A hurricane evacuation analysis was conducted and determined that SH 68 would benefit evacuees should there be a need for faster ramp-up of evacuation traffic (TxDOT 2015b).

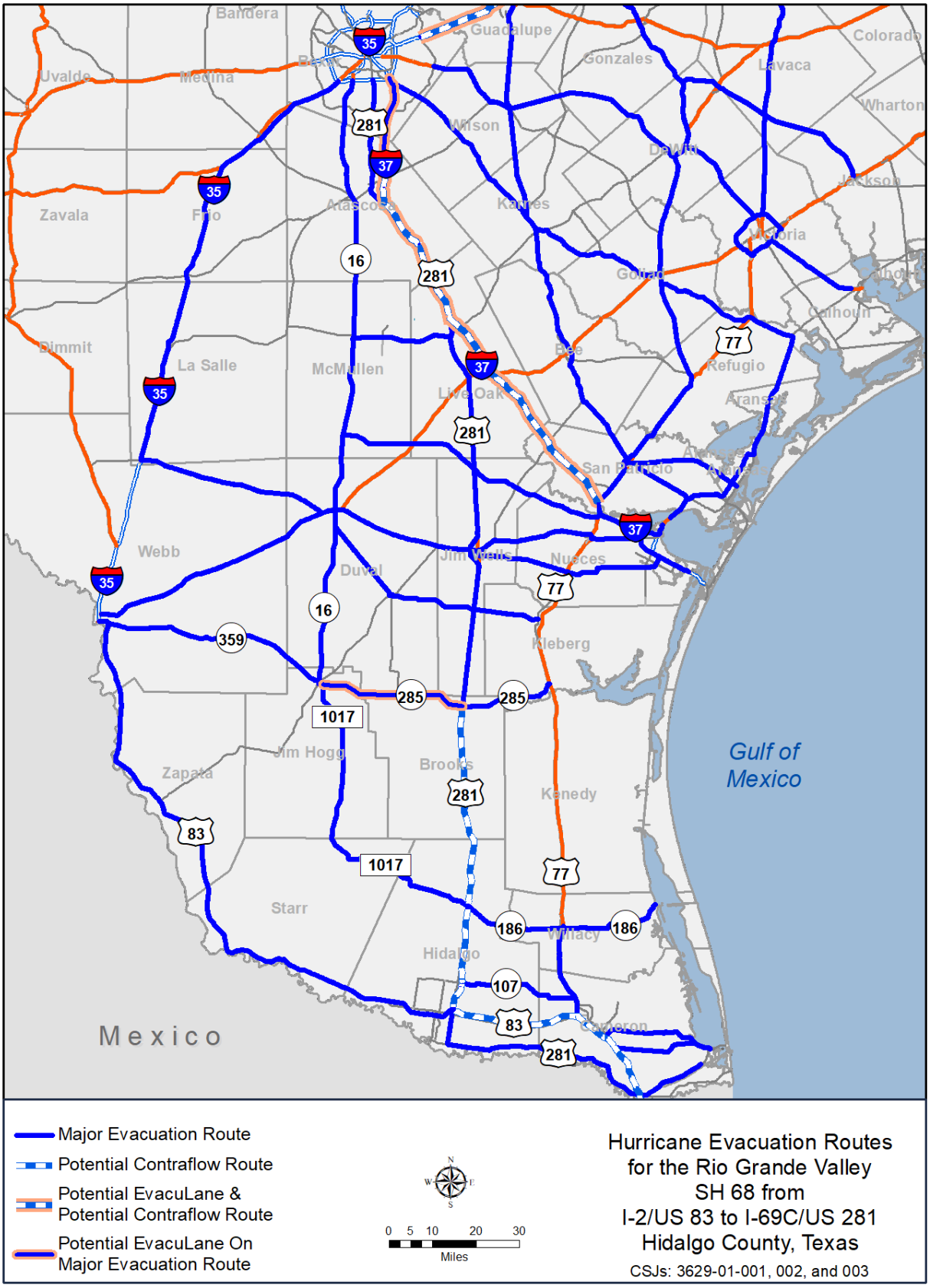

Figure 2-1. Hurricane Evacuation Routes for the Rio Grande Valley

2.3 Purpose of the Proposed Project

The purpose of the project is to accommodate population growth and higher traffic volumes, while relieving the burden on the limited number of existing north-south roadways, and provide an alternate north-south evacuation route during emergency events.

The Draft Purpose and Need Statement for the project was available for comment at the March 2016 public and agency scoping meetings. The Environmental Protection Agency (EPA) provided scoping comments regarding preparation of the DEIS, including the recommendation that the DEIS provide a clear objective statement of the rationale for the proposed project. TxDOT did not modify the purpose or need of the project based on these comments but made minor revisions to the language in order to present the information more clearly to the public. No public comments were received from the scoping meeting that required modification of the Purpose and Need Statement. The Purpose and Need Statement was finalized and used to evaluate the project study corridors, preliminary alternatives, and reasonable alternatives. The *Public Scoping Meeting Summary Report* and *Documentation of Agency Scoping Meeting* are available on the TxDOT website and on file at TxDOT (2016c and 2016a).

2.3.1 Minute Order Consistency

On February 28, 2013, the TTC approved Minute Order 113515 officially designating SH 68 along a new location from I-69C/US 281 north of FM 2812 in the City of Edinburg east and south to I-2/US 83 approximately 0.6 mile east of FM 1423/Val Verde Road (TTC 2013). The Purpose and Need Statement of the SH 68 project is consistent with goals of the Minute Order, where the Commission designated SH 68 for the purpose of facilitating the flow of traffic, promoting public safety, maintaining the continuity of the state highway system and necessary for the proper development and operation of the system. A copy of the minute order is included in **Appendix B.**

3.0 ALTERNATIVES

3.1 Alternatives Analysis

The alternatives evaluation process for the DEIS began by reconsidering a full range of alternatives that could possibly meet the project's purpose and need. This full range of alternatives included modal alternatives besides roadways and the development of roadway study corridors in order to identify preliminary roadway alternatives. The modal alternatives, study corridors, and preliminary alternatives were screened against a) the purpose and need for the project, b) identified critical issues, and c) project goal-based criteria in order to determine the reasonable alternatives for analysis in the DEIS. Once identified, each reasonable alternative was analyzed to determine potential impacts to the affected environment and environmental consequences. The following sections provide a summary of the preliminary alternatives analysis, reasonable alternatives analysis, and identification of the recommended preferred alternative. Full details of the analysis of the preliminary alternatives can be found in the technical report titled: *DEIS Alternatives Analysis Technical Report* available on the TxDOT website and on file at TxDOT (TxDOT 2018).

3.1.1 Preliminary Alternatives Development

The initial task in determining the full range of alternatives included the evaluation of various transportation modes. The modal alternatives evaluated and considered included: transit, rail, truck only, highway expansion, new highway, and bicycle/pedestrian. In addition, Transportation System Management (TSM), Travel Demand Management (TDM), Intelligent Transportation Systems (ITS), and modal connectivity were analyzed. A modal alternatives conference was held with local and state technical experts and stakeholders for the project on January 22, 2016. The participants were asked to comment on the project and provide feedback on the identification of the appropriate transportation mode to be carried forward for study in the alternatives analysis as well as to provide input on potential system management strategies. The majority of recommendations from the participants were in agreement with the TxDOT's eventual determination that the appropriate mode of transportation for SH 68 should be an expressway facility with frontage roads in order to meet the project's purpose and need. A copy of the *Modal Alternatives Conference Report* is available for review on the TxDOT website and on file at TxDOT (TxDOT 2016).

With the determination of an expressway facility with frontage roads as the appropriate mode of transportation for SH 68, study corridors were developed. The process began with the development of six study corridors, which expanded to 12 study corridors during public involvement and throughout the alternatives analysis process. Considerations in the development of the corridors came from: previous work by HCRMA, input from the public,

known environmental constraints, and engineering design considerations. The overall 12 study corridors are listed below and shown on **Exhibit 3-1** in **Appendix A**.

- I-69C/US 281 PSM Study Corridor
- FM 907 Modified Study Corridor
- FM 907 PSM Study Corridor
- Tower Road Study Corridor
- 2014 Modified 2 Study Corridor
- 2014 Modified PSM Study Corridor
- 2014 PSM Study Corridor
- FM 1423 PSM Study Corridor
- FM 1423 Modified (Golie Road) Study Corridor
- FM 493 PSM Study Corridor
- FM 493 Modified 2 Study Corridor
- FM 493 Modified Study Corridor

3.1.2 Preliminary Alternatives Screening

The initial screening step for the full range of alternatives was to screen various transportation modes against the project's purpose and need. Transit, rail, truck only, and bicycle/pedestrian modal alternatives were determined to not meet the project need for improved north-south mobility and increased travel capacity for local and regional traffic. Similar to the other modes of transportation, the TSM/TDM and ITS strategies would not increase travel capacity for local and regional traffic or provide an alternate north-south evacuation route during emergency events. The result of the screening of the modal alternatives was consistent with the modal conference recommendation that the other modes did not meet the purpose and need for the project and a roadway alternative would best meet the project need.

The study corridors were also screened against the project's purpose and need. The I-69C/US 281 Study Corridor is currently designated as a Major Evacuation Route with provisions for contraflow lane reversal. Based on this information, the I-69C/US 281 Study Corridor was eliminated from further evaluation because it would not provide an alternate north-south evacuation route during emergency events. Additionally, improvements to the existing I-69C/US 281 would not be expected to handle the forecasted 67 percent increase in traffic just north of I-2 by the year 2035 (TxDOT 2015b). All the remaining study corridors besides the No-Build Alternative and the I-69C/US 281 Study Corridor met the purpose and need of the project and were advanced to the subsequent screening process, which evaluated the study corridors against identified critical issues. The No-Build Alternative was carried forward throughout the process to provide a comparison with baseline information.

Critical issues used in the next step of the screening process consisted of: airports; public parks; National Register of Historic Places (NRHP) properties; cemeteries; places of worship; hazardous materials, including landfills; jail complexes; federal wildlife refuges; public facilities, including schools; state antiquities landmarks (SALs); and engineering design criteria. These items were considered critical issues based on potential regulatory requirements, and community and/or project constraints. The *DEIS Alternatives Analysis Technical Report* provides detailed descriptions of the critical issues, the applicable regulatory requirements, and project constraints. Based on critical issues, two additional study corridors were eliminated, FM 907 PSM and FM 493 PSM Study Corridor.

The FM 907 PSM Study Corridor was removed from consideration because it bisected the United States Fish & Wildlife Service (USFWS) Lower Rio Grande Valley National Wildlife Refuge (LRGV-NWR) Goodfields Tract. This was when the modified version of the FM 907 PSM Study Corridor, called the FM 907 Modified Study Corridor was introduced in order to avoid the wildlife refuge and was carried through the alternatives analysis process.

The FM 493 PSM Study Corridor was also removed from consideration because it would impact an existing place of worship, the Salón del Reino de los Testigos de Jehová. This was the point when the additional version of the FM 493 PSM Study Corridor, called the FM 493 Modified 2 Study Corridor, was developed to avoid the critical issue represented by the church. Another modified version of the FM 493 PSM study corridor, called the FM 493 Modified Study Corridor, was also developed in response to a public comment to parallel FM 493/La Blanca Road/Salinas Boulevard to the east. The two new alternatives were then carried through the alternatives analysis process.

As a result of the purpose and need screening, and critical issue screening, the overall study corridors were reduced to nine study corridors plus the No-Build Alternative, shown on **Exhibit 3-2** in **Appendix A**. The remaining nine 600-foot wide study corridors were reanalyzed to develop 350-400-foot wide preliminary alternatives using environmental constraints obtained between March 2016 and January 2017. The environmental constraints used in the development of the corridors widths included land use and land cover, hydrology, colonias, prime farmland soils, hazardous materials, mapped cultural resources, utilities, and oil/gas wells and pipelines, while maintaining a 70 miles per hour (mph) design speed.

The preliminary alternatives were developed to accommodate a 350-foot wide typical ROW, with additional width up to 400 feet to accommodate interchanges where existing facilities connect to a preliminary alternative. In some cases, a preliminary alternative was adjusted to avoid or minimize constraints, or to meet engineering design criteria. Because the mode of transportation identified for SH 68 was an expressway facility with frontage roads, all of the preliminary alternatives developed for the project included the same typical section (i.e. expressway facility with frontage roads) except for the No-Build Alternative.

The SH 68 preliminary alternatives have the same names as the study corridors from which they were developed. The preliminary alternatives and the No-Build Alternative are listed below, and are shown on **Exhibit 3-3** in **Appendix A**.

- FM 907 Modified Preliminary Alternative
- Tower Road Preliminary Alternative
- 2014 Modified 2 Preliminary Alternative
- 2014 Modified PSM Preliminary Alternative
- 2014 PSM Preliminary Alternative
- FM 1423 PSM Preliminary Alternative
- FM 1423 Modified (Golie Road) Preliminary Alternative
- FM 493 Modified 2 Preliminary Alternative
- FM 493 Modified Preliminary Alternative
- No-Build Alternative

These preliminary alternatives were then screened against criteria established for each of the project goals. The project goals established for the SH 68 project include improvements in the areas of safety, mobility, community/environment, feasibility/design, cost effectiveness, and economic factors. An evaluation matrix was created and used as a visual tool to compare the preliminary alternatives. The criteria used in the matrix were measured in qualitative and quantitative values. Qualitative assessment criteria were associated with the safety, mobility, and feasibility/design goals while quantitative assessment criteria were associated with the community/environment, cost effectiveness, and economic factors goals. The individual criteria, the qualitative and quantitative measures used, and the evaluation matrix can be found in the *DEIS Alternatives Analysis Technical Report* (TxDOT 2018).

The result of the goal-based criteria screening was the elimination of six of the nine remaining preliminary alternatives, leaving three reasonable alternatives for analysis in the DEIS. **Section 3.2** provides a summary of the preliminary alternatives eliminated from further consideration including the individual criteria that was used in the determination. **Section 3.3** summarizes the reasonable alternatives and provides justification for their selection.

3.2 Preliminary Alternatives Eliminated from Further Consideration

3.2.1 FM 907 Modified Preliminary Alternative

The FM 907 Modified Preliminary Alternative was eliminated based on the high number of residential parcel/property impacts (343 estimated), high number of residential structure impacts (390 estimated), impacts to two places of worship, high impacts to commercial

parcels/properties (63 estimated), high impacts to commercial structures (69 estimated), the highest number of impacts to potential historic age resources (40), one oil/gas well impact, impacts to three colonias, high number of potential noise impacts (312 estimated), and high impacts to National Wetland Inventory (NWI) features (estimated 0.9 acre). Additionally, the estimated high ROW acquisition and relocation cost would give the FM 907 Modified Preliminary Alternative a relatively high total project cost (estimated at $812 million). The FM 907 Preliminary Alternative is also expected to have one of the longest durations to initiate construction based on the significantly larger number of parcels needed and anticipated utility adjustments.

3.2.2 Tower Road Preliminary Alternative

The Tower Road Preliminary Alternative was eliminated based on having the highest number of residential parcel/property impacts (413 estimated), highest number of residential structure impacts (450 estimated), impacts to two places of worship, high impacts to commercial properties (50 estimated), high impacts to commercial structures (57 estimated), impacts to one civic center (Palazzio Event Center), high number of impacts to potential historic age resources (33), one oil/gas well impact, highest number of potential noise impacts (353 estimated), impacts to eight colonias, and high impacts to NWI features (estimated at 0.9 acre). Similar to the FM 907 Preliminary Alternative, the estimated high ROW acquisition and relocation cost would give the Tower Road Preliminary Alternative a relatively high total project cost (estimated at $808 million). Additionally, the Tower Road Preliminary Alternative is located less than 1 mile to an adjacent state route interchange along I-2/US 83, which was the least desirable of the safety goal criteria to minimize safety impacts along I-2/US 83. The Tower Road Preliminary Alternative is also expected to have one of the longest durations to initiate construction based on the significantly larger number of parcels needed and anticipated utility adjustments.

3.2.3 2014 Modified PSM Preliminary Alternative

The 2014 Modified PSM Preliminary Alternative was eliminated based on its similarity to the 2014 PSM Preliminary Alternative. Because of the similarity, certain criteria were evaluated to determine the more reasonable of the two alternatives. Of the two alternatives, the 2014 Modified PSM Preliminary Alternative would potentially impact a church and has a higher impact to croplands/orchards (estimated 491 acres). Additionally, the 2014 Modified PSM Preliminary Alternative has the highest number of oil and gas pipeline crossings (estimated at 34) of all the preliminary alternatives and is very close to a major electrical substation, with as little as 8 feet of clearance to avoid this constraint. The 2014 Modified PSM Preliminary Alternative would also impact a gas gathering station.

3.2.4 FM 1423 Modified (Golie Road) Preliminary Alternative

The FM 1423 Modified (Golie Road) Preliminary Alternative was eliminated based on its similarity to the FM 1423 PSM Preliminary Alternative. Because of the similarity, certain criteria were evaluated to determine the more reasonable of the two alternatives. Of the two alternatives, the FM 1423 Modified (Golie Road) Preliminary Alternative would potentially impact two churches, had a higher number of impacts to residential parcels/properties (204 estimated) and structures (175 estimated), and had a higher impact to croplands/orchards (473 estimated acres). Additionally, the FM 1423 Modified (Golie Road) Preliminary Alternative had the highest amount of impacts to NWI features (1.1 acres). Feasibility and design criteria with regards to constructability was also an issue since the preliminary alternative is adjacent to a major transmission line and in the vicinity of the North Alamo Water Supply Corporation wastewater treatment plant, which is under construction near Golie Road and Minnesota Road.

3.2.5 FM 493 Modified 2 Preliminary Alternative

The FM 493 Modified 2 Preliminary Alternative was eliminated based on high residential structure impacts (317 estimated), impacts to one oil/gas well, 22 irrigation canal crossings, impacts to 11 colonias, high number of impacts to potential historic age resources (33), and the highest number of crossings of a historical canal (19). Additionally, the alternative had the second highest cost at an estimated $914 million. The FM 493 Modified 2 Preliminary Alternative is also expected to have one of the longest durations to initiate construction based on the significantly larger number of parcels needed and anticipated utility adjustments.

3.2.6 FM 493 Modified Preliminary Alternative

The FM 493 Modified Preliminary Alternative was eliminated based on impacts to croplands/orchards (estimated 505 acres), 15 irrigation canal crossings, impacts to three colonias, the highest impact to mapped floodplains (350 estimated acres), the highest impact to prime farmland soils (1,185 acres), increased construction complexity based on adjacent irrigation canals, and the highest total project cost of all alternatives (estimated at $918 million).

3.3 Identification of Reasonable Alternatives and Descriptions

Based on the overall preliminary alternatives analysis, the proposed reasonable alternatives for the SH 68 project were identified as:

- 2014 Modified 2 Alternative,
- 2014 PSM Alternative,

- FM 1423 PSM Alternative.

Figure 3-1 provides the location of these alternatives. The No-Build Alternative is carried through for analysis in the DEIS for comparative purposes.

3.3.1 2014 Modified 2 Alternative

The 2014 Modified 2 Alternative was identified as a reasonable alternative because it would result in a lower number of residential structure impacts (estimated at 145), lower number of impacts to commercial structures (estimated at 16), lower number of impacts to commercial parcels/properties (estimated at 13), impact fewer potential historic age resources (18), would not impact existing oil/gas well facilities, would not impact any faith-based facilities, and would not impact colonias. The alternative also had the least amount of potential impacts to floodplains (estimated at 140 acres) and equaled the lowest amount of NWI feature impacts (0.3 acre). Furthermore, this alternative would have the lowest estimated total project cost of all preliminary alternatives (estimated at $723 million).

The 2014 Modified 2 Alternative (light purple route, see **Figure 3-1**) is approximately 21.7 miles in length and would require an estimated 1,057 acres of ROW. The 2014 Modified 2 Alternative is the shortest alternative, requires the least ROW and is almost entirely on new location. This alternative would require 26 bridge class structures to be constructed over irrigation canal crossings. Bridge class structures are defined as structures that are 20 feet in length or longer.

This reasonable alternative connects to I-2/US 83 approximately seven miles east of I-69C/US 281, between the FM 1423/Val Verde Road overpass and the North Hutto Road overpass, near the existing intersection of the I-2/US 83 westbound frontage road and Valley View Road. From I-2/US 83, the 2014 Modified 2 Alternative would travel northwest on new location for approximately three miles to near Minnesota Road before turning generally northward for approximately seven miles through the communities of Muniz and San Carlos to north of SH 107.

Approximately one mile north of SH 107, near Mile 17 ½ Road, the 2014 Modified 2 Alternative would curve to the west for approximately two miles, crossing FM 1925/Monte Cristo Road and Davis Road. North of Davis Road, the 2014 Modified 2 route would run parallel to the west side of Brushline Road for approximately five miles. The proposed roadway would then curve to the northwest for approximately two miles before running along the north side of the existing FM 490 for approximately three miles and connect to I-69C/US 281 near the South Texas International Airport at Edinburg.

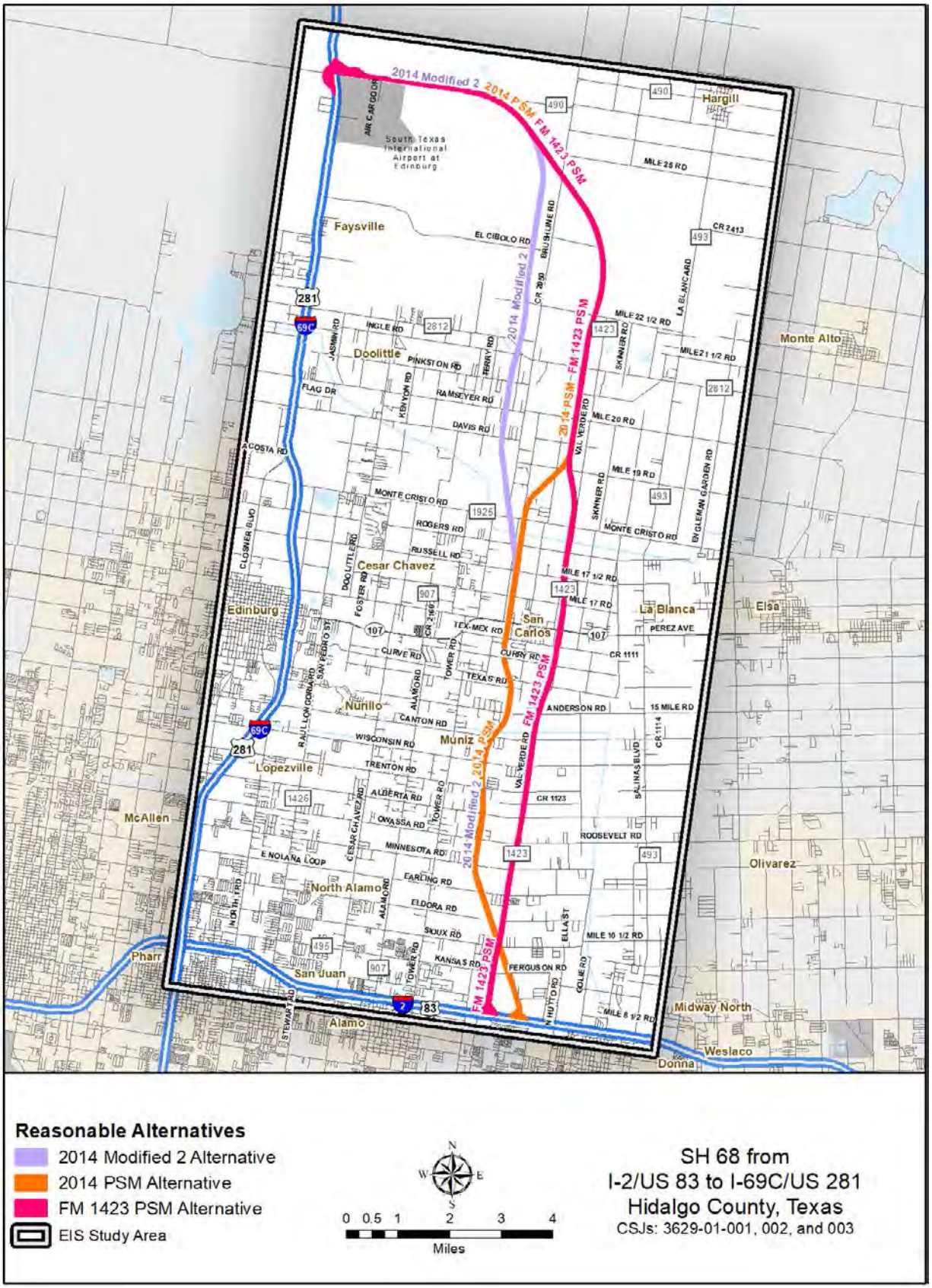

Figure 3-1. SH 68 Reasonable Alternatives

For this alternative, it is anticipated that future mainlane overpasses would be located at Ferguson Road, Sioux Road, East Nolana Loop/Earling Road, Owassa Road, Alberta Road, Trenton Road, Wisconsin Road, Canton Road, SH 107, FM 1925/Monte Cristo Road, FM 2812, CR 2050/Brushline Road and Air Cargo Drive.

3.3.2 2014 PSM Alternative

The 2014 PSM Alternative is very similar to the 2014 Modified 2 Alternative as the southern portions of these alternatives are the same (approximately eight miles). The 2014 PSM Alternative was identified as a reasonable alternative because it would result in a lower number of residential parcel/property impacts (estimated at 177), lower number of residential structure impacts (estimated at 143), lower number of impacts to commercial structures (estimated at 16), lower number of impacts to commercial parcels/properties (estimated at 13), the lowest number of potential historic age resource impacts (estimated at 14), and would not impact any faith-based facilities or colonias. The alternative also equaled the lowest amount of NWI feature impacts (0.3 acre). Furthermore, this alternative had a total project cost estimated at $753 million, which was the third lowest estimated total project cost for all preliminary alternatives. Regarding the mobility goals, the 2014 PSM Alternative would provide a more desirable connectivity to existing and planned infrastructure improvements.

Like the 2014 Modified 2 Alternative, the 2014 PSM Alternative (orange route, see **Figure 3-1**) is almost entirely on new location. The 2014 PSM Alternative is approximately 22.4 miles in length and would require an estimated 1,076 acres of ROW. The alternative would require 63 bridge class structures to be constructed over irrigation canal crossings. The 2014 PSM Alternative follows the same new location route as the 2014 Modified 2 Alternative from its intersection with I-2/US 83 to SH 107, a distance of approximately eight miles, and continues generally northward for another two miles to cross FM 1925/Monte Cristo Road.

North of FM 1925/Monte Cristo Road, the 2014 PSM corridor would curve to the east for approximately one mile, approaching Mile 19 N Road, where it would then run parallel to the west side of FM 1423/Val Verde Road for approximately four miles. The corridor would then curve to the northwest for approximately four miles before running along the north side of the existing FM 490 for approximately three miles and connect to I-69C/US 281 near the South Texas International Airport at Edinburg.

This alternative would also pass through the communities of Muniz and San Carlos. For this alternative it is anticipated that overpasses would be located at Ferguson Road, Sioux Road, East Nolana Loop/Earling Road, Owassa Road, Alberta Road, Trenton Road, Wisconsin Road, Canton Road, SH 107, FM 1925/Monte Cristo Road, FM 2812, CR 2050/Brushline Road, and Air Cargo Drive.

3.3.3 FM 1423 PSM Alternative

Based on input received during public involvement efforts, an existing roadway alternative was requested to be included as an alternative for the project. Based on this request and the lower impacts identified of all the preliminary alternatives that follow existing roadways, the FM 1423 PSM Alternative was identified as a reasonable alternative. In analyzing the goal-based criteria, the alternative had relatively lower impacts to brushland (estimated at 83 acres), lowest impacts to croplands/orchards (estimated at 342 acres), lower impacts to pipeline crossings (estimated at 18), no impacts to oil/gas wells, and equaled the lowest amount of NWI feature impacts (0.3 acre). Additionally, this alternative had the lowest number of impacts to residential parcels/properties of all the alternatives that follow existing roadways (estimated at 173). Furthermore, this alternative had a total project cost estimated at $795 million, which was the second lowest estimated total project cost for all preliminary alternatives that follow existing roadways.

The FM 1423 PSM Alternative (dark pink route, see **Figure 3-1**) is approximately 21.6 miles in length and includes an area of approximately 1,061 acres. The alternative would require 85 bridge class structures to be constructed over irrigation canal crossings. This alternative would connect to I-2/US 83 approximately six miles east of I-69C/US 281 and would generally follow FM 1423/Val Verde Road northward for approximately 7.5 miles from the intersection with I-2/US 83 to SH 107 in the community of San Carlos. From SH 107, the alternative would continue northward along Val Verde Road approximately two miles to FM 1925/Monte Cristo Road. Approximately 1.5 miles north of FM 1925/ Monte Cristo Road, between Mile 19 Road and Davis Road, the route would then follow the 2014 PSM Alternative route for approximately 11 miles north and west to I-69C/US 281 near the South Texas International Airport at Edinburg.

This alternative would pass through the City of Donna and the community of San Carlos. For this alternative it is anticipated that mainlane overpasses would be located at FM 495/Kansas Road, Sioux Road, East Nolana Loop/Earling Road, Roosevelt Road, Alberta Road, Trenton Road, Wisconsin Road, Canton Road, SH 107, FM 1925/Monte Cristo Road, FM 2812, CR 2050/Brushline Road, and Air Cargo Drive.

3.4 Reasonable Alternatives Analysis

The three reasonable alternatives under consideration (including the No-Build Alternative) have been developed to a comparable level of detail so that their comparative merits may be evaluated (40 CFR 1502.14(b) and (d)). The evaluation process included a rigorous exploration and objective evaluation of the potential impacts by the three reasonable alternatives. The evaluation is summarized in **Section 4.0** with the analysis of the affected environment and environmental consequences of each reasonable alternative. The section

includes the probable beneficial and adverse social, economic, and environmental effects of the reasonable alternatives under consideration and describes the possible measures to mitigate potential adverse impacts. It must be noted that quantitative totals displayed in the alternatives analysis and in the *DEIS Alternatives Analysis Technical Report* may vary from the totals identified in **Section 4.0** of this DEIS. This is based on updated data and information since the time of the preliminary alternatives analysis, as well as refinement of the footprint on the reasonable alternatives. The resources and topics being evaluated in **Section 4.0** include:

- right-of-way/displacements
- land use
- prime farmlands
- community impacts – such as:
  - socioeconomics
  - community cohesion
  - access and travel patterns
  - environmental justice populations
- utilities and emergency services
- cultural resources
- section 4(f), Section 6(f) and Chapter 26 properties
- visual and aesthetic qualities
- water resources – such as:
  - surface water
  - groundwater
  - floodplains
  - wetlands and other waters of the US
- ecological resources – such as:
  - vegetation
  - wildlife
  - threatened and endangered species
- air quality
- greenhouse gas and climate analysis
- hazardous/regulated materials
- traffic noise
- energy
- construction phase impacts
- indirect effects
- cumulative effects

In an effort to reduce paperwork and eliminate extraneous background material, the discussions in **Section 4.0** are limited to data, information, issues, and values that will have a bearing on possible impacts, mitigation measures, and on the selection of the recommended preferred alternative. The data and analysis presented is commensurate with the importance of the potential impact. The background material such as details on the methods of the analysis, in depth discussion of resource in regard to the existing study area, and supporting data on the analysis are provided in individual technical reports for their respective subject area. These supporting technical reports are listed in the **Section 4.0** and are available for review on the TxDOT website and on file at TxDOT (TxDOT 2018).

3.5 Identification of the Recommended Preferred Alternative

Based on the analysis documented in **Section 4.0**, each of the three reasonable alternatives would involve the following: the acquisition of new right-of-way (ROW); residential and commercial displacements; community impacts, including impacts to minority and low-income communities; access changes; conversion of existing undeveloped land to transportation use; potential impacts to floodplains, wetlands/waters of the U.S., historic properties, vegetation, protected species, and hazardous materials sites; and traffic noise impacts. All reasonable alternatives, with the exception of the No-Build Alternative, would potentially require ROW from resources eligible or potentially eligible for the NRHP; therefore, the recommended preferred alternative would require a Section 4(f) and Chapter 26 evaluations with concurrence from the official with jurisdiction, anticipated to be the Texas Historical Commission (THC).

In determining the recommended preferred alternative, the scale and magnitude of potential impacts associated with each alternative was analyzed. The analysis determined that for the size and length of the proposed project, the variance in potential impacts was minimal; however, some key potential impacts by the FM 1423 PSM Alternative, when compared to the 2014 PSM Alternative and 2014 Modified 2 Alternative, were deemed less desirable such that the FM 1423 PSM Alternative was eliminated from consideration as the recommended preferred alternative. These potential impacts included: a higher number of residential displacements (119 compared to 90 and 102); higher commercial displacements (33 compared to 5 and 8); higher impact to 100-year floodplains (161 acres compared to 149 and 140 acres), and greater potential to Section 4(f) property impacts. The potential Section 4(f) impacts was based on the finding that the alternative may adversely affect the assumed NRHP-eligible Donna Irrigation District (ID) because of the possible relocation of approximately 3.25 miles of this irrigation feature. This relocation may require the preparation of an individual Section 4(f) document and may require additional mitigation measures to address those impacts. Additionally, the design of this alternative would require the construction of approximately 85 bridge class structures because of a high number of irrigation canal

crossings. Efforts would be made to span crossings; however, with the increased number of crossings there is a higher risk of impacting waters of the U.S and/or a historic irrigation feature which may result in additional Section 4(f) impacts. Lastly, this alternative would be the most expensive with an estimated total cost of $842 million. For the reasons discussed above, FM 1423 PSM Alternative was eliminated from further consideration.

The 2014 PSM Alternative and 2014 Modified 2 Alternative share approximately 65 percent of the same route and would result in the same impacts within the congruent portions regardless of which alternative advances. Both alternatives follow the same alignment for approximately eight miles from the intersection of I-2/US 83 north to SH 107 before diverging for approximately eight miles. Both alternatives are again congruent and follow the same alignments along FM 490 for approximately five miles. The length of the 2014 Modified 2 Alternative is slightly shorter at 21.7 miles compared to the 2014 PSM Alternative at 22.4 miles. Overall the scale and magnitude of impacts from the two alternatives were relatively similar based on the same general alignment. Variations in potential impacts include the 2014 PSM Alternative having a slightly higher impact to: 100-year floodplain acreage (149 compared to 140), prime farmland (723 acres compared to 636 acres), NWI mapped features (4.8 acres compared to 4.2 acres) and slightly lower for "undeveloped" land (416.5 acres compared to 435.3 acres). Comparatively, the 2014 Modified 2 Alternative would have slightly higher residential and commercial displacements (102 residential/8 commercial compared to 90 residential/5 commercial), and intersect a slightly higher number of potential historic-age parcels (31 parcels compared to 29 parcels).

Because the 2014 PSM Alternative and 2014 Modified 2 Alternative share the same alignment and have similar impacts, the total project cost became a factor in the determination of a preferred alignment. The estimated total project cost of the 2014 PSM Alternative is $797 million compared to the 2014 Modified 2 Alternative at $768 million. Additionally, the design of the 2014 PSM Alternative would require the construction of approximately 63 bridge class structures over assumed eligible and/or potentially eligible historic irrigation canal crossings or potential waters of the U.S. In comparison, the 2014 Modified 2 Alternative would require the construction of approximately 26 bridge class structures. The variation in number of bridge class structures is based on the variation in alignment and angle, and the number of crossings in the area where the two alignments diverge. Although efforts would be made to span crossings during final design; the increased number of crossings along the 2014 PSM Alternative introduces a higher risk of impacting waters of the U.S. and/or a historic irrigation feature that may result in additional Section 4(f) impacts. Therefore, based on the lower estimated total cost of $768 million and the lower risk of waters of the U.S. and/or Section 4(f) impacts to historic irrigation features, the 2014 Modified 2 Alternative is TxDOT's recommended preferred alternative (see **Exhibits 3-4** and **3-5** through **3-5.13**). The analysis in **Section 4.0** is provided for justification on the determination of the recommended preferred alternative.

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4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The following sections summarize the existing conditions and the environmental consequences for the three reasonable alternatives and the No-Build Alternative. **Exhibits 4-1** through **4-3** in **Appendix A** provide the locations of the reasonable alternatives on county, topographic and aerial based maps. As required by NEPA, environmental consequences are discussed in terms of anticipated direct impacts (impacts are synonymous with effects), encroachment alteration effects, induced growth impacts, and cumulative impacts. Definitions of these types of impacts are described below.

- Direct impacts are caused by the action and occur at the same time and place.
- Encroachment alteration effects are more closely related to direct impacts and result from changes to existing conditions but occur later in time or outside of the footprint of the project.
- Induced growth impacts include potential changes or shifts in development as a result of transportation project influence, including improved travel time and accessibility.
- Cumulative impacts are the impacts on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Direct impacts are discussed in **Sections 4.1** through **4.14**. Encroachment alteration effects are included in the direct impacts discussion for each resource if applicable. Induced growth and cumulative impacts are discussed in **Sections 4.16** and **4.17**, respectively.

To assess potential environmental consequences, existing databases from federal, state, county, city data sources, and 2017 aerial imagery were used. Specific study areas were developed and used in the analysis where necessary to provide meaningful context regarding potential impacts. Specific study areas are defined where applicable. **Exhibit 4-4** in **Appendix A** provides the data sources used in the assessment. Detailed assessments of impacts are provided in the following technical reports:

- *DEIS Reasonable Alternatives Community Impact Assessment Technical Report*
- *DEIS Reasonable Alternatives Biological Resources Technical Report*
- *DEIS Reasonable Alternatives Visual Impacts Assessment Technical Report*
- *DEIS Reasonable Alternatives Archeological Resources Technical Report*
- *DEIS Reasonable Alternatives Historic Resources Technical Report*
- *DEIS Reasonable Alternatives Water Resources Technical Report*

- *DEIS Reasonable Alternatives Air Quality Technical Report*
- *DEIS Reasonable Alternatives Hazardous Materials Technical Report*
- *DEIS Reasonable Alternatives Noise Technical Report*

These technical reports are available for review on the TxDOT website, the SH 68 project office, and on file at TxDOT. Additionally, the reports will be available at the SH 68 public hearing.

4.1 Right-of-Way/Displacements

In accordance with TxDOT's *Environmental Handbook: Community Impacts, Environmental Justice, Limited English Proficiency, and Title VI Compliance* (2015), an assessment for potential community impacts was performed for the three reasonable alternatives, including potential ROW and displacements. To assess potential ROW and displacements for each of the three reasonable alternatives, a review of 2015 and 2017 aerial imagery were conducted to identify buildings located within the proposed ROW of the three reasonable alternatives. Identified buildings were categorized as residences, commercial businesses, industrial facilities, public facilities, or waste management facilities. In addition to identifying primary buildings, any associated buildings located within the parcel, including barns, sheds, detached garages, carports, or other detached buildings, were identified and classified as outbuildings.

The approximately 179 square-mile EIS study area includes a diverse set of community characteristics within Hidalgo County. Since the three reasonable alternatives are primarily located in the eastern portions of the study area, the focus of this assessment is a subset of the study area and is hereafter referred to as the community study area (see **Figure 4-1**). The community study area encompasses approximately 110 square miles and represents the area in which the local population is anticipated to be most affected by the three reasonable alternatives.

The community study area is generally defined by I-2/US 83 to the south, FM 490 to the north, FM 493/La Blanca Road to the east, and a combination of Alamo Road, Doolittle Road, and I-69C/US 281 to the west. The boundaries of the community study area represent the existing major east/west and north/south roadway facilities, generally consisting of the local travel shed potentially impacted by the three reasonable alternatives.

Census data was used to identify current conditions within the community study to assess the potential impacts of ROW acquisition and displacements. The decennial census is used to provide counts of people for the purposes of congressional apportionment, while the purpose

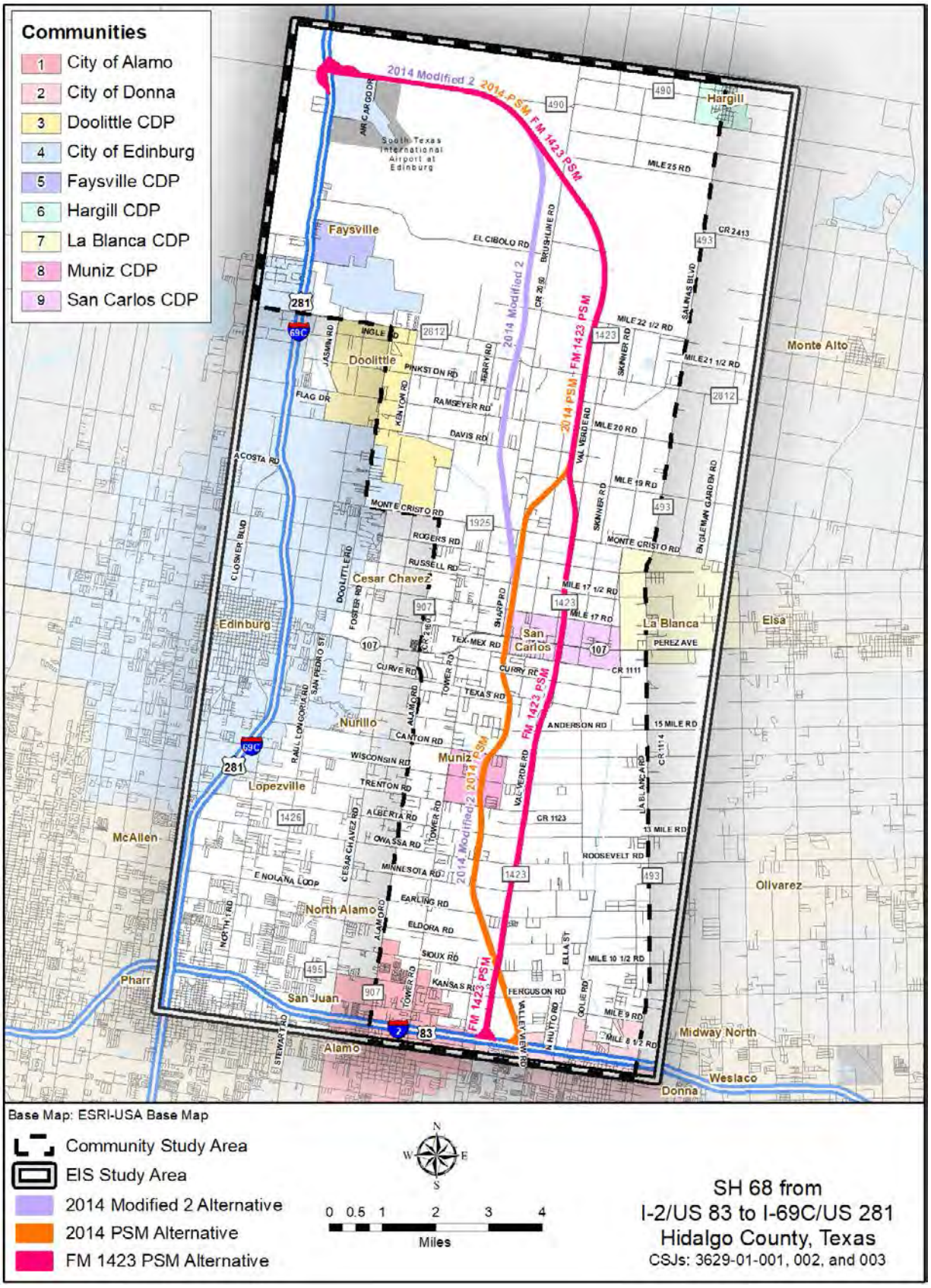


Figure 4-1. Communities

of the American Community Survey (ACS) is to measure the changing social and economic characteristics of the U.S. population between decennial census (i.e., every 10 years). It is important to note that both the decennial census and the ACS provide the same types of data (i.e., population, race, income, housing, etc.). While the decennial census provides population characteristics on a specific date, the ACS averages population characteristics over a period of time. While there is a small increase in the sampling error with the ACS data over the decennial census, the sampling error is not considered to be significant. Since the year 2010 decennial census data is now eight years old, and the ACS data is updated yearly, the ACS 2012-2016 five-year estimate data was used in this analysis as it is the most recently approved data from the U.S. Census Bureau.

4.1.1 Existing Conditions

Within the community study area, residential development is largely concentrated between I-2/US 83 and SH 107. North of SH 107, residential development generally consists of rural, large-lot subdivisions. Commercial development is typically concentrated along I-2/US 83 and along the principal arterials and major collector roads, including FM 1925, SH 107, and FM 1423.

4.1.2 Environmental Effects

The estimated ROW requirements for each of the three reasonable alternatives are identified in **Table 4-1**.

Table 4-1. Estimated Potential ROW Requirements

2014 Modified 2 Alternative (acres)	2014 PSM Alternative (acres)	FM 1423 PSM Alternative (acres)
1,056.6	1,075.6	1,060.6

Potential displacements are identified in **Table 4-2**. **Exhibits 4-5** through **4-5.13** in **Appendix A** provide the location of the potential displacements for the three reasonable alternatives.

Table 4-2. Estimated Potential Displacements

Building Type	2014 Modified 2 Alternative	2014 PSM Alternative	FM 1423 PSM Alternative
Residential Structures			
Primary Residential	102	90	119
Residential Outbuildings	178*	158*	156*
Commercial Structures			
Primary Commercial	8	5	29
Commercial Outbuildings	15*	10*	35*

*Associated buildings located within the parcel, including barns, sheds, detached garages, carports, or other detached buildings

As shown in **Table 4-2**, the 2014 Modified 2 Alternative would potentially displace an estimated 102 residences and eight businesses, the 2014 PSM Alternative would potentially displace an estimated 90 residences and five businesses, and the FM 1423 PSM Alternative would potentially displace an estimated 119 residences and 29 businesses. Because sections of proposed ROW for the three reasonable alternatives overlap in some areas, potential displacements shared among them include:

- 68 primary residential structures and five primary commercial structures between the 2014 Modified 2 Alternative and 2014 PSM Alternative;
- 11 primary residential structures between the 2014 PSM Alternative and FM 1423 PSM Alternative; and
- One primary commercial structure among all three reasonable alternatives.

Residential displacements consist of single-family dwellings. No multi-family residential units are anticipated to be displaced by any of the three reasonable alternatives. Potential displacements occur throughout the 2014 Modified 2 Alternative. For the 2014 PSM Alternative, potential displacements are generally concentrated between I-2/US 83 and FM 2812. The majority of potential displacements for the FM 1423 PSM Alternative occur between I-2/US 83 and SH 107, along the existing FM 1423 facility.

In accordance with 23 U.S.C. 139, specific mitigation measures for potentially displaced residences and businesses would be developed for the preferred alternative and presented in the FEIS. TxDOT would confirm if any of the potential building displacements qualify as U.S. Department of Housing and Urban Development Section 8 low-income housing for the preferred alternative and presented in the FEIS. Hidalgo County Appraisal District (HCAD) data would be collected to determine relative cost impacts of potential ROW acquisition and potential building displacements. Additionally, available internet data for comparable homes or businesses for sale would be conducted to determine the relative cost impacts of the potential building displacements.

To ensure that decent, safe, and sanitary housing would be available to all displaced persons, TxDOT's Relocation Assistance Program would be made available to all eligible individuals and families impacted. For those identified properties and/or buildings, TxDOT would negotiate with the owner on a case-by-case basis to reach an agreed compensation. The acquisition of properties and/or buildings would be conducted in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (49 CFR Part 24), as amended, and Texas Administrative Code (TAC), Title 10 Subtitle E Chapter 2206 – Subchapter A to ensure that each property and/or building owner is treated fairly, consistently, and equitably. Relocation resources would be made available to all eligible displaced persons without discrimination, and consistent with the requirements of the Civil Rights Act of 1964

and the Housing and Urban Development Act of 1974 (12 U.S.C. 1706e). TxDOT staff would conduct individual interviews with residents to be displaced during the ROW acquisition phase to determine if any special accommodations would need to be made to facilitate relocation.

Tenants renting dwelling for a minimum of 90 days are entitled to rental assistance payments for monthly rent and the estimated average monthly cost of utilities. Rental assistance for low-income tenants is provided for those who qualify for the U.S. Department of Housing and Urban Development's Annual Survey of Income Limits for the Public Housing and Section 8 Programs (HUD 2005). Considerations for renters receiving a Section 8 Existing Housing Certificate or a Housing Voucher are offered through TxDOT Rental Assistance Program. Displaced tenants would have the opportunity to discuss program eligibility options with a TxDOT relocation counselor.

According to U.S. Census Bureau 2012-2016 ACS five-year estimate data, 12 census tracts and 16 block groups within the community study area have a percentage of vacant housing units above 10 percent (see Table 4-3 in the *DEIS Reasonable Alternatives Community Impact Assessment Technical Report* on the TxDOT website and on file at TxDOT [TxDOT 2018]). The percentage of vacant housing units for the community study area (13.8 percent) is slightly higher in comparison to the State of Texas (11.0 percent) and Hidalgo County (13.0 percent). Many of the vacant housing units found within the community study area could be used to accommodate displaced residents or be re-purposed for business uses.

No-Build Alternative

Under the No-Build Alternative, the proposed SH 68 facility would not be constructed. Impacts regarding potential ROW and displacements would not occur. The vacant housing units found within the community study area would likely remain vacant or be occupied by other residents moving into the community study area.

4.2 Land Use

Consideration of land use changes is undertaken to establish how a project can directly result in the conversion of existing land uses to transportation uses and how that may impact human and natural resources. The following information provides a summary of land use within the reasonable alternatives, including existing and proposed land uses. This section also describes potential land use changes. The *DEIS Reasonable Alternatives Biological Resources Technical Report* (TxDOT 2017) on the TxDOT website and on file at TxDOT provides more detailed information on the discussion of land use within the study area and for the reasonable alternatives.

4.2.1 Existing Conditions

Land use within the three reasonable alternatives generally consists of agriculture and ranching operations, with scattered clusters of residential, commercial, industrial, utility, and civic use developments. Agricultural operations include the production of sorghum, cotton, fruit and vegetables, and livestock ranching. Within the southern portions of the reasonable alternatives, there are agricultural properties consisting of smaller, segmented parcels. North of FM 2812, larger, intact agricultural parcels can be found. Commercial and industrial land uses are generally concentrated along major transportation corridors.

4.2.2 Environmental Effects

Potential impacts to land use resulting from each of the three reasonable alternatives were evaluated. Land use was determined using aerial imagery, site reconnaissance, and land use data from local planning documents. See **Exhibits 4-5** through **4-5.13** in **Appendix A** for land use within the three reasonable alternatives**. Table 4-3** summarizes the potential effects to land use associated with each alternative.

Table 4-3. Land Use/Land Cover Data Mapped Within the Three Reasonable Alternatives

LU/LC Type	Acres Within 2014 Modified 2 Alternative	Acres Within 2014 PSM Alternative	Acres Within FM 1423 PSM Alternative
Brush	117.5*	87.9*	81.1*
Commercial	20.8	19.6	49.9
Cropland Cultivated	367.8	386.8	294.1
Cropland Orchard	85.2	74.8	31.7
Drainage Canal	3.4	3.6	2.4
Extra Large Trees	17.4*	17.5*	19.1*
Grass	203.6*	259.1*	333.7*
Irrigation Canal	0.6	0.6	0.5
Mixed Residential/Commercial	13.7	11.4	12.7
Open Water	1.7	0.4	0.6
Residential	124.7	122.8	154.0
Shrubland	78.0*	70.8*	24.8*
Transportation	22.2	20.3	56.0
Total	22.2	20.3	56
Total Undeveloped	416.5	435.3	458.7
*=Undeveloped			

As seen in **Table 4-3**, the impacts to land use categories across all three alternatives were relatively similar. However, the 2014 Modified 2 alternative would result in the lowest acreage of impacts to undeveloped land uses.

Impacts to land use could include a change in the rural nature of the community. For example, properties that would be bisected may experience a long-term shift in land uses because of interrupted agricultural production. See **Section 4.3** for a more detailed discussion of impacts to bisected agricultural land and **Sections 4.16** and **4.17** for further discussion on indirect and cumulative impacts to land use.

No-Build Alternative

The No-Build Alternative would not include construction and, therefore, would not result in direct impacts to land use. According to the HCMPO, future growth and development is still predicted to occur within the southern half of Hidalgo County. Other local plans were reviewed for future development patterns, including *Hidalgo County 2015-2040 Metropolitan Transportation Plan (MTP)*, *Hidalgo County Draft Comprehensive Economic Development Strategy for Hidalgo County 2011-2015*, and the *Edinburg Gateway Plan*. Based on the documents reviewed, development within the three reasonable alternatives is anticipated to occur regardless if SH 68 was constructed or not.

4.3 Prime Farmland

The three reasonable alternatives were evaluated to assess potential impacts to prime and unique farmlands as required by the Farmland Protection Policy Act (FPPA). The Agriculture and Food Act of 1981 contained the FPPA in subtitle I of Title XV, Section 1539-1549, and final rules were published in the Federal Register on June 17, 1994. The purpose of the FPPA is to protect prime or unique farmland or land of statewide or local importance from being unnecessarily converted to nonagricultural uses by federal programs. The FPPA ensures that federal actions are compatible with state, local government, and private programs or policies to protect farmland. More detailed information is provided in the report titled *DEIS Reasonable Alternatives Biological Resources Technical Report* (TxDOT 2018).

4.3.1 Existing Conditions

The soils of the Lower Rio Grande Valley (LRGV) region are comprised primarily of sandy clays and sandy loams. Soils in study area are primarily mapped as Hidalgo sandy clay loam, Hidalgo fine sandy loam, Willacy fine sandy loam, and Hargill fine sandy loam, which are all classified as prime farmland (USDA 2017).

4.3.2 Environmental Effects

The majority of all three reasonable alternatives contain areas mapped as prime farmland soils by the Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2017) (**Table 4-4**); however, the reasonable alternatives contain multiple land uses. (see **Table 4-3**) The FM 1423 PSM Alternative contains the most prime farmland of the three reasonable

alternatives. The NRCS also classifies areas as prime farmland if drained or if irrigated, but these classifications are based only on soils and not on actual land use. The 2014 Modified 2 Alternative contains the most prime farmland if irrigated, and all three reasonable alternatives contain very small areas classified as prime farmland if drained.

Table 4-4. Acres of Prime Farmland Soils

Alternative	2014 Modified 2	2014 PSM	FM 1423 PSM	No-Build Alternative
Prime Farmland Within Alternative (Acres)	636	723	763	0
Prime Farmland if Drained Within Alternative (Acres)	5	9	9	0
Prime Farmland if Irrigated Within Alternative (Acres)	392	322	267	0
Total Prime Farmland and Potential Prime Farmland	1,033	1,054	1,039	0

Source: USDA 2017.

All three reasonable alternatives would require coordination with NRCS. During coordination, the NRCS determines whether there would be an adverse impact from a project. If the effect of farmland conversion is adverse, the NRCS provides recommendations of ways to minimize the adverse impact. TxDOT will consider the NRCS recommendations for minimizing the adverse effects and alternative actions to lessen adverse effects to protected farmland and any decisions made will be documented and retained in the project file.

Some areas of the three reasonable alternatives on new location or within new ROW and surrounding areas are classified as agricultural land use. Many of these areas are currently undeveloped pastures for grazing, but some are cultivated croplands. Potential adverse effects to some of the areas mapped as prime farmland soils are possible. Some tracts could no longer be viable as farmland because of direct ROW impacts, or because access may be altered to portions of the tract. All three reasonable alternatives would result in comparable encroachment-alteration effects.

No-Build Alternative

The No-Build Alternative would not include construction and therefore, would not result in impacts to prime and unique farmlands.

4.4 Community Impacts Assessment

In accordance with TxDOT's *Environmental Handbook: Community Impacts, Environmental Justice, Limited English Proficiency, and Title VI Compliance* (2015), an assessment for

potential community impacts was performed for the three reasonable alternatives, including potential displacements, environmental justice (EJ) areas, impacts to community cohesion, and impacts to existing access and travel patterns. Information is also presented on cities, neighborhoods, colonias, and community facilities; persons with limited English proficiency (LEP); as well as social and economic data. Publicly available data sources were used to frame the analysis.

NEPA and its implementing regulations require agencies to evaluate the potential effect on communities as an important part of the project development process. In addition to the TxDOT handbook mentioned above, FHWA's *Community Impact Assessment: A Quick Reference for* Transportation provides another framework for conducting such an assessment (FHWA 2018). The study of potential effects on communities provides a mechanism to ensure compliance with related federal regulations, statutes, policies, technical advisories, and Executive Orders (EOs), such as the following:

- Title VI of the Civil Rights Act of 1964 – prohibits discrimination on the basis of race, color, or national origin in any program or activity that receives federal funds or other federal financial assistance.
- Federal-Aid Highway Act of 1970 – provided funding for existing interstates and new urban and rural primary and secondary roads in the U.S.
- Uniform Relocation Assistance and Real Property Acquisition Policies Act (1970, amended in 1987) – intended to ensure fair compensation and assistance for those whose property was acquired for public use under eminent domain law.
- FHWA Environmental Impact and Related Procedures (1987) – regulation that prescribes the policies and procedures for implementing NEPA.
- FHWA Guidance for Preparing and Processing Environmental and Section 4(f) Documents (1987) – technical advisory that provides guidance on the preparation and processing of environmental and Section 4(f) documents.
- FHWA Environmental Policy Statements (1990 and 1994) – policy that provides guidance on beginning the preparation of a NEPA document to establish continuity between planning efforts and project development efforts.
- Intermodal Surface Transportations Efficiency Act of 1991 – represented a major change to transportation planning and policy by adopting an overall multimodal approach.
- EO 12898 on Environmental Justice (1994) – requires federal agencies to assess disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

- Proposed U.S. Department of Transportation Order on Environmental Justice (1997) – policy that provides guidance on implementing EO 12898.
- Recommendations of the President's Council on Sustainable Development (1999) – policy that provides guidance on sustainable development for new approaches to achieve economic, environmental, and equity goals.

It is TxDOT policy to conduct a thorough and complete community impact assessment to address the community impacts of transportation projects. The focus of the following discussion is directed towards the community study area as defined in **Section 4.1** Right-of-Way/Displacements (see **Figure 4-1**).

The following sections summarize the community impacts assessment and is structured to provide the regulatory background, description of existing conditions per community issue discussed, and the anticipated impacts. Additional detail regarding the community impacts assessment can be found in the *DEIS Reasonable Alternatives Community Impact Assessment Technical Report* on file at TxDOT (TxDOT 2018).

As discussed in **Section 4.1**, the census data used in this analysis includes American Community Survey (ACS) 2012-2016 five-year estimate data. Since the 2010 decennial census data is approximately eight years old, the ACS represents the most recently approved data from the U.S. Census Bureau.

Cities, Neighborhoods, Colonias, and Community Facilities

The U.S. Census Bureau's OnTheMap application was used to identify the communities in the community study area. The communities consist of incorporated cities and Census Designated Places (CDPs). CDPs are defined as a concentration of population by the U.S. Census Bureau for statistical purposes and generally consists of unincorporated small communities and the immediate surrounding area, but does not have an official legal status. CDPs serve as an important tool in assessing community impacts in areas where no incorporated cities exist, but a concentrated population lives.

Residential neighborhoods were identified based on a review of 2017 HCAD data and 2015 and 2017 aerial imagery. These neighborhoods consisted of subdivided tracts of land that included low-density single-family residences with demonstrated unifying characteristics, including similar housing styles, lot size, and shared access along a dedicated local street within the subdivision.

Colonias are unregulated settlements typically located in semi-rural areas, and almost exclusively in the U.S.–Mexico border region. Section 916 of the National Affordable Housing Act of 1990 (Public Law 101-625, as amended) generally defines a colonia as any identifiable

community lacking basic living necessities, including potable water, adequate sewage systems, electricity, paved roadways, sanitary housing, or other generally determined objective criteria. The location of each colonia was verified using 2015 and 2017 HCAD data, 2016 Texas Secretary of State colonia data, and a review of historic aerial photography (1980 to 2017).

Community facilities and public resources found within the communities include, but are not limited to schools, early childhood day care centers, parks, places of worship, cemeteries, and public buildings (i.e., federal, state, county, and city buildings). Their names and locations were identified via a desktop survey, and a review of historic aerial photography (1980 to 2017).

Community Cohesion

Cohesion is typically measured by the ability of individuals, or group of individuals, to interact with others and be recognized as one common group. Community facilities, such as schools, hospitals, places of worship, public parks, and activity centers, are common resources that help to develop and sustain community cohesion. An assessment of the potential impacts to community cohesion was based on a review of demographic data, property data, and field observations within the community study area to identify concentrations of unique populations, established neighborhoods, the location of public and community facilities, local businesses, typical pedestrian activity, and accessibility to local community facilities and services.

Access and Travel Patterns

An assessment of the potential impacts to existing mobility was performed to evaluate how the three reasonable alternatives would enhance or impede existing access and travel patterns within the community study area. Factors considered include potential changes in travel patterns, accessibility, and travel times. Direct impacts to mobility may include restricted access to community facilities and local businesses, increased travel times, and restricted or limited access to individual properties. Beneficial impacts to local mobility may include improved connectivity, improved access to services, congestion relief, and reduced travel times. The bicycle and sidewalk components of the transportation system within the community study area were identified via a desktop survey, and a review of 2015 and 2017 aerial imagery.

Economic and Employment

U.S. Census Bureau 2012-2016 ACS census data regarding employment, earnings, industry distribution, and demographics were used to analyze the economic characteristics present in

the community study area. Additional data from the U.S. Census Bureau's OnTheMap application and its Longitudinal Employer-Household Dynamics program were used. Also, the *Draft Comprehensive Economic Development Strategy for Hidalgo County 2011-2015* was reviewed to determine the major employers in and around the community study area (Hidalgo County 2010).

Population

Data for racial and ethnicity distribution, income/poverty status, housing, language and limited English proficiency (LEP), age, and disability status was obtained from the ACS year 2012-2016 five-year estimates. A total of 14 census tracts and 29 census block groups were identified and analyzed for the community study area developed for assessment of the three reasonable alternatives (see **Figure 4-2**). Some census tracts and census block groups have land areas that do not fall completely within the community study area boundary. In those cases, the most conservative approach was used and the entire census tract/census block group was analyzed.

Environmental Justice

EJ is "the fair treatment and meaningful involvement of all people, regardless of race, ethnicity, culture, income, or education level with respect to development, implementation, and enforcement of environmental laws, regulations, and policies" (USEPA 1998). EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (1994) requires federal agencies to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." EO 12898 supplements Title VI of the Civil Rights Act of 1964 (Public Law 88-352).

Minority populations were identified based on the federal Council on Environmental Quality's (CEQ) guidance document *Environmental Justice: Guidance Under the National Environmental Policy Act* (CEQ 1997). The guidance states that "Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis…". Minority populations were also identified based on FHWA guidance document *Order 6640.23A Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (FHWA 2012). For this analysis, the measure used to identify minority populations was the racial and ethnic categories for the block groups within the community study area.

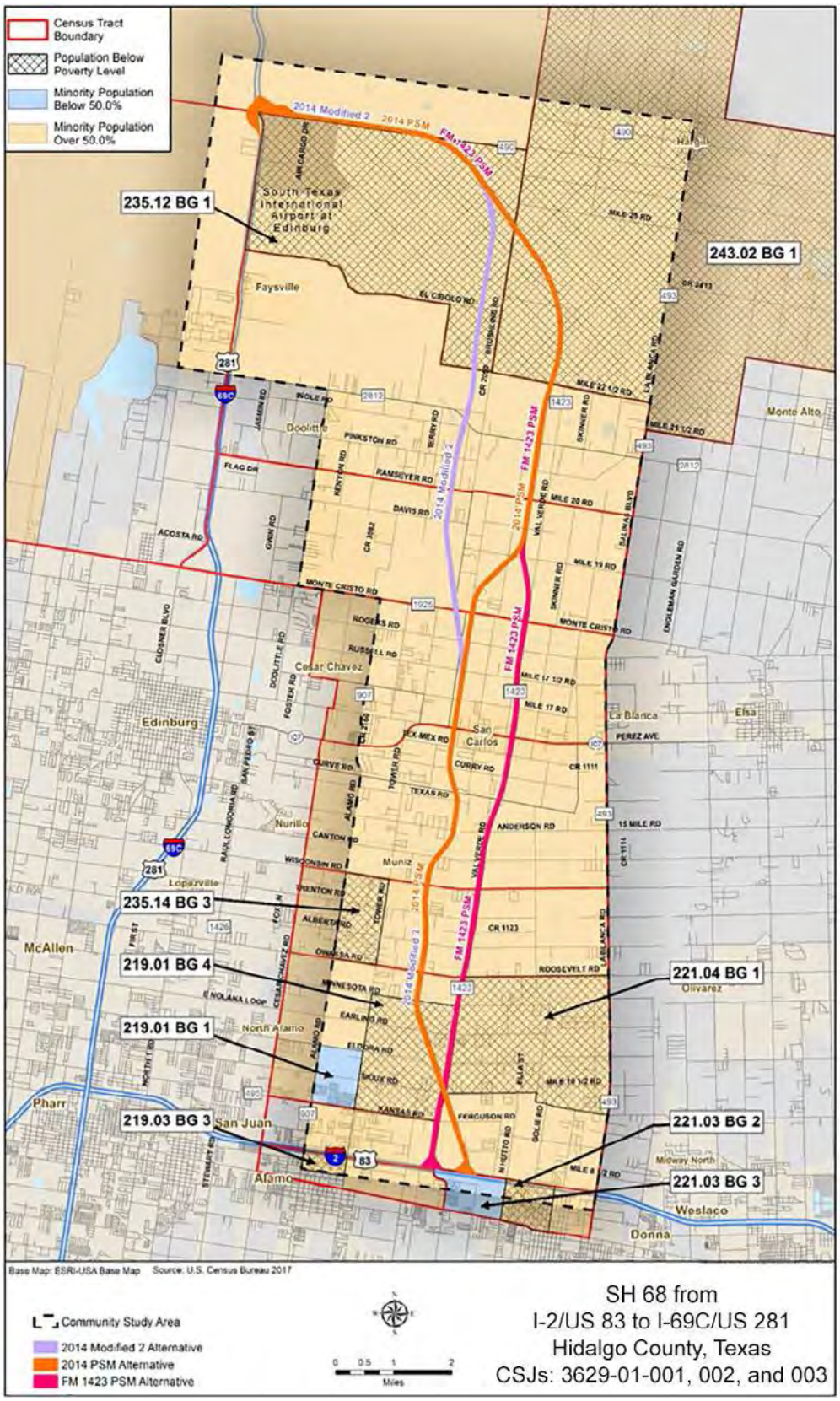


Figure 4-2. Race/Ethnicity and Low-Income Populations

Low-income populations were identified based on FHWA guidance document *Order 6640.23A Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (FHWA 2012). The guidance states that low-income populations consist of "a person whose median household income is at or below the Department of Health and Human Services (DHHS) poverty guidelines." For this analysis, the measure used to identify low-income populations was the median household income for the block groups within the community study area. A family composed of four persons making less than $24,600 annually in year 2017 would be considered below the poverty level, thus being low-income.

Language and Limited English Proficiency

EO 13166, *Improving Access to Services for Persons with Limited English Proficiency* (2000) requires federal agencies to "examine the services they provide and develop and implement a system by which persons with LEP can meaningfully access those services." EO 13166 also supplements Title VI of the Civil Rights Act of 1964 (Public Law 88-352). U.S. Census Bureau 2012-2016 ACS data was collected for the community study area to determine those persons who speak English less than very well. In compliance with EO 13166, identified LEP populations were ensured access to proposed project information and provided meaningful opportunities to provide input regarding the three reasonable alternatives and the No-Build Alternative.

4.4.1 Existing Conditions

Cities and Census Designated Places

The community study area resides fully within Hidalgo County and encompasses portions of the City of Edinburg, City of Alamo, City of Donna, La Blanca CDP, Hargill CDP, Doolittle CDP, Faysville CDP, San Carlos CDP, and Muniz CDP (see **Figure 4-1**). Residential development consisting of dense residential neighborhoods and rural, large-lot subdivisions occur throughout the community study area. Business are largely concentrated in the southern part of the community study area near the main thoroughfare of I-2/US 83, with smaller pockets of local businesses located along SH 107, FM 1925/Monte Cristo Road, and FM 2812 in the central part of the community study area. Agricultural operations, including the production of sorghum, cotton, fruit and vegetables, and livestock ranching. Within the southern part of the community study area, agricultural properties consisting of smaller, segmented parcels, with larger, intact parcels north of FM 2812.

Neighborhoods and Colonias

Within the community study area, a total of 21 neighborhoods were identified near the three reasonable alternatives based on their unifying characteristics, including similar housing

styles, lot size, and shared access along a dedicated local street within the subdivision. Within the community study area, residential communities include 76 documented colonias. Documented neighborhoods and colonias within the community study area are identified in Table 3-1 and Table 3-2, respectively, in the *DEIS Reasonable Alternatives Community Impact Assessment Technical Report* on the TxDOT website and on file at TxDOT (TxDOT 2018) (see **Exhibit 4-6** in **Appendix A**).

Community Facilities

Public community facilities identified within the community study area includes schools, early childhood daycare centers, public parks, places of worship, and various federal, state, and local government buildings. **Exhibit 4-7** in **Appendix A** identifies community facilities located within the community study area. Table 3-3 through Table 3-6 in the *DEIS Reasonable Alternatives Community Impact Assessment Technical Report* on the TxDOT website and on file at TxDOT (TxDOT 2018) provides a detailed list of community facilities located within the community study area.

The community study area encompasses parts of three school districts, including Pharr-San Juan-Alamo Independent School District (ISD), Edinburg Consolidated ISD, and Donna ISD. In addition, two charter schools and a high school operated by the Texas Juvenile Justice Department are located within the community study area. Edinburg Consolidated ISD serves the majority of students within the community study area.

Six public parks were identified within the community study area, including two within the City of Edinburg, two within the City of Alamo, and two in Hidalgo County within the Hargill CDP and San Carlos CDP.

Twenty places of worship were identified within the community study area. Places of worship are concentrated in the more densely populated areas of the community study area, from south of FM 1925 to I-2/US 83.

Various government buildings, consisting of U.S. post offices, Texas correctional institutions, and local county and city offices and service facilities, are located within the community study area.

Access and Travel

Roadway Facilities and Travel Patterns

The predominant mode of transportation within the community study area is the private automobile. The majority of the local roadway infrastructure is concentrated south of SH 107 and east of FM 1423, which is the more densely populated section of the community study

area. Within the community study area, collector and local roads provide access to the larger roadways. While households and jobs are distributed throughout the community study area, they are generally clustered near the major roadways. Based on the distribution of households and the location of the highest concentration of full-time jobs, residents within the community study area tend to travel west and south towards the cities of Alamo, Edinburg, Pharr, and San Juan.

Bicycle and Pedestrian Facilities

While there are bicycle trails in Hidalgo County, nearly all are located outside of the community study area to the south of the I-2/US 83 and west of the I-69C/US 281 corridors. A dedicated bike lane is provided along FM 495/Kansas Road between FM 907/Alamo Road and FM 1423/Val Verde Road. Otherwise, bicycle facilities within the community study area consist of striped shoulders along FM 907/Alamo Road, FM 1423/Val Verde Road, FM 493/La Blanca Road, SH 107, FM 1925/Monte Cristo Road, and FM 2812. Similarly, sidewalks are limited to a small stretch along FM 495/Kansas Road from FM 907/Alamo Road to Tower Road, and to two neighborhood subdivisions within the community study area.

Economic and Employment

According to the U.S. Census Bureau's OnTheMap application, there are approximately 3,900 full-time jobs located within the community study area. The largest industry employers include:

- Health Care and Social Assistance (16.3 percent)
- Retail Trade (15.3 percent)
- Construction (10.6 percent)
- Wholesale Trade (9.2 percent)
- Agriculture, Forestry, Fishing, and Hunting (9.1 percent)

The highest concentration of employers is found along the I-2/US 83 corridor, which coincides with the area of higher population and income. According to the *Draft Comprehensive Economic Development Strategy for Hidalgo County 2011-2015* (published in 2010), major employers in and around the community study area include schools, hospitals/medical centers, public agencies, and private companies. Employment opportunities within the region also benefit from its close proximity to Reynosa, Mexico and the Port of Harlingen, Port Mansfield, Port Isabel/San Benito, and Port of Brownsville (Hidalgo County 2010).

Table 3-15 in the *DEIS Reasonable Alternatives Community Impact Assessment Technical Report* provides the employment breakdown for the census tracts located within the community study area based on U.S. Census Bureau 2012-2016 ACS data (TxDOT 2018). The Hidalgo County unemployment rate is at 9 percent, which is higher than the 6.4 percent

unemployment rate for Texas. Three of the 14 census tracts within the community study area had a higher unemployment rate than Hidalgo County (Census Tract 243.02 at 34.8 percent, Census Tract 235.07 at 10.1 percent, and Census Tract 235.14 at 12.6 percent), while the remaining census tracts had a lower unemployment rate. Census Tract 219.04 had the lowest unemployment rate at 2.4 percent.

Population Trends

The population of Hidalgo County outpaced the growth experienced by the State of Texas between the years 1990 and 2010 according to the U.S. Census Bureau. In addition, projected growth for the years 2020 to 2050 would continue to outpace the growth projected for the State of Texas according to the Texas Demographic Center, although by a closer margin.

Race and Ethnicity

According to U.S. Census Bureau 2012-2016 ACS data, the community study area captures either entirely or parts of 14 census tracts and 29 census block groups. All 14 census tracts and 27 of 29 census block groups identify a minority population exceeding 50 percent (see **Figure 4-2**). Although the minority population percentage for the community study area is higher than the minority population percentage for the State of Texas, minority populations within the community study area are comparable to the minority population identified for Hidalgo County. **Table 4-5** identifies the racial and ethnic composition of the population within the community study area. Census block groups where the minority population is less than 50 percent include Census Tract 219.01, Block Group 1; and Census Tract 221.03, Block Group 3.

Table 4-5. Racial and Ethnic Distribution in the Community Study Area

		Not Hispanic or Latino Percentage (percent)							Hispanic/ Latino Percentage (percent)	
Census Geography	Total Population	Caucasian/ White	Black/ African American	American Indian/ Alaskan Native	Asian	Native Hawaiian/ Pacific Islander	Other Race	Two or More Races		Total Minority Population (percent)
Texas	26,956,435	43.4%	11.6%	0.2%	4.3%	<0.1%	0.1%	1.6%	38.6%	56.6%
Hidalgo County	828,334	6.9%	0.4%	<0.1%	0.9%	<0.1%	<0.1%	0.2%	91.5%	93.1%
Community Study Area	88,360	6.1%	1.0%	<0.1%	0.0%	0.0%	<0.1%	0.0%	92.7%	93.9%
CT 219.01	9,579	9.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	90.5%	90.6%
BG 1	866	61.7%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	36.8%	**38.3**%
BG 2	1,988	10.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	89.9%	89.9%
BG 3	3,562	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	99.3%	99.3%
BG 4	3,163	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	95.7%	95.7%
CT 219.03	4,575	3.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	96.0%	96.3%
BG 1	1,313	9.9%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	89.0%	90.1%
BG 3	1,521	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	99.3%	99.3%
CT 219.04	4,904	14.2%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	85.3%	85.8%
BG 1	1,662	33.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	66.1%	66.1%
BG 2	2,278	2.1%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	96.8%	97.9%
CT 221.03	5,860	14.9%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	84.6%	85.1%
BG 1	1,424	15.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	84.3%	84.3%
BG 2	3,863	5.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	94.7%	94.7%
BG 3	573	77.7%	0.0%	0.0%	0.0%	0.0%	4.9%	0.0%	17.5%	**22.3**%
CT 221.04	11,504	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	98.2%	98.2%
BG 1	8,254	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	98.3%	98.3%
BG 2	3,250	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	98.0%	98.0%
CT 235.03	8,795	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	98.9%	98.9%
BG 1	3,091	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	98.1%	98.1%
CT 235.07	9,036	3.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	96.1%	96.9%
BG 1	3,063	5.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	94.2%	94.2%
BG 2	2,545	4.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	95.9%	95.9%

Table 4-5. Racial and Ethnic Distribution in the Community Study Area

		Not Hispanic or Latino Percentage (percent)							Hispanic/ Latino Percentage (percent)	
Census Geography	Total Population	Caucasian/ White	Black/ African American	American Indian/ Alaskan Native	Asian	Native Hawaiian/ Pacific Islander	Other Race	Two or More Races		Total Minority Population (percent)
BG 3	3,428	0.0%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	98.1%	100%
CT 235.11	10,570	1.9%	0.0%	0.0%	0.3%	0.0%	0.0%	0.2%	97.6%	98.1%
BG 1	5,771	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	99.0%	99.0%
BG 2	3,537	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	98.4%	78.4%
CT 235.12	5,148	15.0%	15.1%	0.2%	0.5%	0.0%	0.9%	0.0%	68.4%	85.0%
BG 1	5,148	15.0%	15.1%	0.2%	0.5%	0.0%	0.9%	0.0%	68.4%	85.0%
CT 235.13	8,907	4.0%	0.4%	0.3%	0.7%	0.0%	0.0%	0.0%	94.7%	96.0%
BG 1	2,327	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	98.6%	98.6%
BG 3	2,835	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	98.1%	99.0%
CT 235.14	8,257	6.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	93.4%	93.4%
BG 1	4,644	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	98.8%	98.8%
BG 2	1,140	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%	100%
BG 3	2,473	19.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	80.3%	80.3%
CT 235.15	12,502	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	95.5%	95.5%
BG 1	4,057	6.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	93.8%	93.8%
BG 2	8,445	3.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	96.4%	96.4%
CT 243.01	1,137	19.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	80.3%	80.3%
BG 1	1,137	19.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	80.3%	80.3%
CT 243.02	1,002	5.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	94.9%	94.9%
BG 1	1,002	5.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	94.9%	94.9%

Source: U.S. Census Bureau, ACS, 2012-2016, Table B02003.
Notes:
(1) Community study area is based on all included census block groups
(2) Census block groups that are bold are below 50 percent.
Abbreviations: CT, Census Tract; BG, Block Group

Income and Poverty

The 2017 national poverty level, as defined by the *2017 DHHS Poverty Guidelines* is $24,600 for a family of four (DHHS 2017). **Table 4-6** shows median household income and poverty characteristics within the community study area. According to U.S. Census Bureau 2012-2016 ACS data, median household income for the State of Texas ($54,727) is significantly higher than median household income in Hidalgo County ($36,094) and the community study area ($29,844). Within the community study area, low-income populations are largely concentrated in the southern and norther sections, but occur throughout (see **Figure 4-2**).

Table 4-6. Median Household Income and Poverty Characteristics in the Community Study Area

Census Geography	Median Household Income[1,3]	Population for Those Whose Poverty Status is Determined[2]	Persons below Poverty[2]	Percentage of Population below Poverty Level[2]
Texas	$54,727	26,334,005	4,397,307	16.7%
Hidalgo County	$36,094	817,554	267,812	32.8%
Community Study Area [a, b]	$29,844	83,547	35,059	42.0%
CT 219.01	$29,592	9,579	4,029	42.1%
BG 1	$36,250	866	53	6.1%
BG 2	$31,422	1,988	489	24.6%
BG 3	$29,719	3,562	2,191	**61.5%**
BG 4	**$20,872**	3,163	1,296	41.0%
CT 219.03	$27,212	4,542	1,577	34.7%
BG 1	$33,594	1,284	376	29.3%
BG 3	**$14,330**	1,521	942	**61.9%**
CT 219.04	$36,747	4,904	1,533	31.3%
BG 1	$39,033	1,662	197	11.9%
BG 2	$33,491	2,278	788	34.6%
CT 221.03	$25,673	5,860	1,994	34.0%
BG 1	--	1,424	310	21.8%
BG 2	**$19,444**	3,863	1,594	41.3%
BG 3	$28,438	573	90	15.7%
CT 221.04	$27,579	11,504	6,512	**56.6%**
BG 1	**$22,522**	8,254	5,319	**64.4%**
BG 2	$41,667	3,250	1,193	36.7%
CT 235.03	$40,909	8,795	1,977	22.5%
BG 1	$36,875	3,091	663	21.4%
CT 235.07	$25,613	9,036	3,532	39.1%
BG 1	$28,917	3,063	814	26.6%
BG 2	--	2,545	1,175	46.2%

Table 4-6. Median Household Income and Poverty Characteristics in the Community Study Area

Census Geography	Median Household Income[1,3]	Population for Those Whose Poverty Status is Determined[2]	Persons below Poverty[2]	Percentage of Population below Poverty Level[2]
BG 3	--	3,428	1,543	45.0%
CT 235.11	$28,993	10,551	5,272	**50.0%**
BG 1	$25,768	5,752	2,934	**51.0%**
BG 2	$27,393	3,537	1,825	**51.6%**
CT 235.12	**$23,906**	383	131	34.2%
BG 1	**$23,906**	383	131	34.2%
CT 235.13	$29,786	8,907	3,930	44.1%
BG 1	$30,357	2,327	1,015	43.6%
BG 3	--	2,835	1,169	41.2%
CT 235.14	$26,478	8,257	4,111	49.8%
BG 1	$27,434	4,644	2,605	**56.1%**
BG 2	$33,500	1,140	299	26.2%
BG 3	**$23,582**	2,473	1,207	48.8%
CT 235.15	$37,422	12,502	4,062	32.5%
BG 1	$38,750	4,057	984	24.3%
BG 2	$37,123	8,445	3,078	36.4%
CT 243.01	$47,679	1,137	197	17.3%
BG 1	$47,679	1,137	197	17.3%
CT 243.02	**$21,033**	1,002	582	**58.1%**
BG 1	**$21,033**	1,002	582	**58.1%**

Sources:
(1) U.S. Census Bureau, ACS, 2012-2016, Table B19013.
(2) U.S. Census Bureau, ACS, 2012-2016, Table B17021.
(3) U.S. Census Bureau, ACS, 2012-2016, Table B11016.

Notes:
a) Community study area median household income based on the weighted average of median household incomes of included census block groups with the median household income calculated by median household income and total households.
b) Community study area is based on all included census block groups.
c) Bold median household income data are those census geographies below $24,600.
d) Bold percentage of population below poverty level are those census geographies above 50 percent.
e) "—" denotes that no medium household income is calculated by the U.S. Census Bureau

Abbreviations: CT, Census Tract; BG, Block Group

Limited English Proficiency

Table 3-12 in the *DEIS Reasonable Alternatives Community Impact Assessment Technical Report* shows the percentage of the population 5 years and older that speaks English less than "very well." According to U.S. Census Bureau 2012-2016 ACS data, LEP populations within the community study area range from 0 to 45.1 percent, with all census tracts exhibiting

LEP populations greater than 5 percent (TxDOT 2018). Access to information and participation regarding the development of the three reasonable alternatives have been conducted to help inform LEP populations since 2008 in compliance with EO 13166.

4.4.2 Environmental Effects

Community Cohesion

There can be many barriers to community cohesion, including wide roadways, railroad tracks, airports, rivers, mountains, etc. The most common barrier to community cohesion within the community study area are roadways, such as I-2/US 83, I-69C/US 281, FM 1925/Monte Cristo Road, SH 107, FM 3461/Earling Road, and SH 495/ Kansas Road. The second most common barrier to community cohesion within the community study area are the irrigation canals/drainage ways that convey water throughout Hidalgo County.

Traditional residential neighborhoods and colonias occur throughout the community study area. Most residential development consists of subdivided large-acre lots fronting along the local roadway network, including collector and arterial roadways. Using HCAD data and historic aerial photography (1980 to 2017), traditional residential neighborhoods, including colonias, were identified as subdivided tracts of land consisting of low-density single-family residences with demonstrated unifying characteristics, including similar housing styles, lot size, and shared access along a dedicated local street within the subdivision. Identified neighborhoods and colonias crossed by the three reasonable alternatives are identified in Table 4-3 in the *DEIS Reasonable Alternatives Community Impact Assessment Technical Report* on the TxDOT website and on file at TxDOT (TxDOT 2018). The locations of potentially impacted neighborhoods/colonias are depicted on **Exhibit 4-6** in **Appendix A**.

The 2014 Modified 2 Alternative would bisect five of the 10 neighborhoods crossed, and clip the remaining five. No colonias would be affected by the 2014 Modified 2 Alternative. The 2014 PSM Alternative would bisect six of the 10 neighborhoods crossed, and clip the remaining four. No colonias would be affected by the 2014 PSM Alternative. The FM 1423 PSM Alternative would bisect two of the 11 neighborhoods crossed and clip the remaining nine, including two colonias. The FM 1423 PSM Alternative would clip the Val Verde North and Ebony Acres colonias. Those neighborhoods that are bisected by any of the three reasonable alternatives would likely result in impacts to cohesion since access across residential areas would be severed. However, those neighborhoods that are clipped by any of the three reasonable alternatives, including two colonias clipped by the FM 1423 PSM Alternative, would be minimized regarding community cohesion since access across residential areas would be preserved. As a part of the public involvement/outreach efforts conducted, local residents expressed concerns regarding property access and building displacements, which are related to community cohesion (see **Section 6.0** for additional detail).

Community Facilities

Implementation of any of the three reasonable alternatives would not require the relocation of any community facilities. Existing access to these facilities would be maintained and the three reasonable alternatives would provide additional access by providing an alternative route to existing roadways.

Access and Travel Patterns

Roadway Access and Travel Patterns

The *SH 68 Traffic Forecasting Technical Memo* anticipates increased traffic volumes on nearly all of the north/south parallel facilities and east/west cross street facilities in the community study area by year 2035. AAGRs range from -0.5 to 5.9 percent, with an average growth rate of 2.4 percent, for the north/south parallel facilities. AAGRs range from -1.2 to 6.8 percent, with an average growth rate of 2.5 percent, for the east/west cross street facilities (TxDOT 2015b).

An analysis of the three reasonable alternatives was performed to identify potential impacts to existing access and travel patterns within the community study area (see Table 4-4 in the *DEIS Reasonable Alternatives Community Impact Assessment Technical Report* on file at TxDOT [TxDOT 2018]). For each of the three reasonable alternatives, access across the principal arterials and major collectors would be maintained with the exception of Sioux Road, which would be severed by the 2014 Modified 2 Alternative and 2014 PSM Alternative because of the proposed roadway geometry at the Sioux Road crossing. Otherwise, the 2014 Modified 2 Alternative could potentially sever existing access along 17 roadways, the 2014 PSM Alternative could potentially sever existing access along 15 roadways, and the FM 1423 PSM Alternative could potentially sever existing access along 14 roadways. Generally, the affected roadways do not impact through access within the community study area, as most of the affected roadways are local streets or minor collectors currently severed by existing irrigation/drainage canals, or otherwise do not traverse the entire community study area. The difference in impacts across the three reasonable alternatives is largely a result of geography, as the local transportation network is more developed closer to I-69C/US 281 (western part of the community study area), becoming less developed moving east.

In the more densely populated area south of Canton Road, crossings along the east/west arterials and collectors would be spaced approximately 0.5 mile to 1 mile apart. North of Canton Road and SH 107, where the population begins to transition to a less dense, more rural environment, the distance between the existing principal east/west connectors widens to approximately 2 miles to 3 miles apart. With the exception of SH 107, FM 1925/Monte Cristo Road, and FM 2812, the existing east/west facilities north of Canton Road are generally narrow two-lane discontinuous roadways serving various pockets of residential subdivisions

and large-acre parcels. Typically, these facilities do not provide direct access to local community resources or to the resources located within the larger communities to the west, including the cities of Edinburg, McAllen, and Pharr. Although the FM 1423 PSM Alternative would use a majority of the existing FM 1423/Val Verde Road facility between I-2/US 83 and FM 1925/Monte Cristo Road, existing north/south facilities within the community study area would remain largely unaffected by the three reasonable alternatives.

Apart from FM 493/La Blanca Road, no major north/south collectors exist within the community study area north of FM 1925/Monte Cristo Road. For local traffic in this more rural area, the three reasonable alternatives are anticipated to provide more direct access to local resources and the major east/west arterials and collectors.

Although each of the three reasonable alternatives would cause minor changes to existing travel patterns and access within the community study area, these changes are not anticipated to reduce mobility or restrict access to community facilities and services, such as local government services, churches, and schools. The three reasonable alternatives are anticipated to enhance mobility and decrease travel time within the community study area by providing more direct access to destinations both north and south, as well as to destinations east and west by reducing trip times between the major east/west collectors.

Bicycle and Pedestrian Access

The existing bicycle facility on FM 495/Kansas Road between FM 907/Alamo Road and FM 1423/Val Verde Road would be unaffected by any of the three reasonable alternatives, as access would continue as it does today. Similarly, the striped shoulders along Alamo Road, FM 1423/Val Verde Road, FM 493/La Blanca Road, SH 107, FM 1925/Monte Cristo Road, and FM 2812 would remain under the three reasonable alternatives. The existing sidewalk facilities found in the community study area would be unaffected by any of the three reasonable alternatives, as access would continue as it does today.

Agricultural Access

Within agricultural areas of the community study area, the three reasonable alternatives would cut through fields, pastures and orchards. In some cases, this would segment or divide agricultural operations, impacting access. The 2014 Modified 2 Alternative and 2014 PSM Alternative would divide agricultural operations on approximately 22 parcels and 25 parcels, respectively. The FM 1423 PSM Alternative would divide agricultural operations on approximately 12 parcels, mostly north of SH 107. In some instances, travel across a formerly undivided parcel may be hampered by restricting access for farm equipment and livestock. Suitable nearby roadway connections are available throughout the community study area to provide connections to divided parcels, with most connections being a total of 0.5 mile to 1 mile away in the southern portion of the community study area and a total of 2 miles to 3

miles away in the northern portion of the community study area. In accordance with 23 U.S.C. 139, during the preparation of the FEIS, work may be performed on the preferred alternative to a higher level of detail to help facilitate the development of mitigation measures or to facilitate concurrent compliance with other applicable environmental laws.

Economic and Employment

In accordance with the guidelines established in FHWA's *Guidance for Preparing and Processing Environmental and Section 4(f) Documents Technical Advisory 6640.8A* (1987), foreseeable economic impacts as a result of the three reasonable alternatives were assessed. The following economic and employment impacts were considered and discussed below:

- Impacts related to transportation infrastructure improvements and the relationship of an alignment's location relative to established business districts;
- Impacts related to business displacements and employment opportunities;
- Impacts related to tax revenue loss; and
- Regional economic effects from construction of transportation infrastructure.

Transportation Infrastructure Improvements and Alignment Location

Implementation of any of the three reasonable alternatives would serve to reduce congestion and improve travel-time reliability, which are both benefits to local business activity. Reduced congestion and improved travel time reliability represents increased efficiency and revenue opportunities for transportation-dependent industries, including freight trucking and tourism-related businesses, such as hotels/motels, restaurants, and service stations. Based on an analysis of similar new location controlled-access facilities, beneficial impacts to local transportation-depending industries are anticipated as a result of the three reasonable alternatives.

Business Displacements and Employment Opportunities

As discussed in **Section 4.1**, each of the three reasonable alternatives would displace businesses. The 2014 Modified 2 Alternative would potentially displace an estimated eight businesses within the proposed ROW. The 2014 PSM Alternative would potentially displace an estimated five businesses within the proposed ROW. The FM 1423 PSM Alternative would potentially displace an estimated 29 businesses within the proposed ROW. None of these businesses would be classified as major regional employers. None of these businesses appear to require special zoning or access. A refined potential business displacement analysis would be conducted for the preferred alternative and reported in the FEIS. Using HCAD data and historic aerial photography (1980 to 2017), it was determined that none of the identified

businesses are unique within the community study area. These businesses equally serve both minority/low-income populations as well as non- minority/low-income populations.

Tax Revenues Loss

Implementation of any of the three reasonable alternatives would require the acquisition of new ROW for a public transportation use, impacting current property tax revenue from taxable properties. The potential tax revenue loss is not expected to vary across the three reasonable alternatives, and the projected amount would be calculated for the preferred alternative and reported in the FEIS. Public entities, such as Hidalgo County, City of Donna, City of Edinburg, Edinburg Consolidated ISD, and Donna ISD, would lose projected tax revenue from these properties and/or buildings. Given the large amount of acreage to potentially be acquired and high number of potential building displacements, an impact is anticipated regarding the loss of projected tax revenue under any of the three reasonable alternatives.

Construction

Implementation of any of the three reasonable alternatives would generate new construction jobs within the community study area, which would benefit the local economy through increased sales tax revenue and increased purchases of local goods and services. The number of new construction jobs and increased sales tax revenue is not expected to vary across the three reasonable alternatives. Construction cost estimates would be calculated for the preferred alternative and reported in the FEIS. Once construction costs have been calculated, the anticipated number of new construction jobs and projected increases in sales tax revenue would be estimated.

Community Impacts Assessment

The three reasonable alternatives would likely result in adverse community impacts regarding the potential building displacements, community cohesion, and access and travel patterns. Each of the three reasonable alternatives would result in displacements and neighborhoods being bisected.

Consideration of Impacts to EJ Populations

As seen in **Table 4-5**, all census tracts within the community study area contain a minority population exceeding 50 percent, with 27 of 29 block groups containing a minority population exceeding 50 percent. As seen in **Table 4-6**, two of 14 census tracts within the community study area contain a low-income population, while six of 29 block groups contain a low-income population when compared against the 2017 DHHS Poverty Guidelines (see **Figure 4-2**). Regardless of the location of the three reasonable alternatives, impacts to EJ populations with regards to race would occur. Since minority populations are present throughout the

community study area, and low-income populations are located in the southern and northern portions of the community study area, any of the three reasonable alternatives would result in impacts to the EJ community.

It is important to note that the three reasonable alternatives have been purposely designed to avoid as many building and property impacts as feasible. Based on the number of potential building displacements, it is anticipated that minority and low-income populations would be affected. Similarly, impacts to community cohesion would affect minority and low-income populations. The impacts of the three reasonable alternatives are not directed at any one particular group, and are dispersed over the entire length of the community study area.

The three reasonable alternatives would potentially increase traffic noise, which would impact noise-sensitive receivers along the proposed ROW. However, traffic noise impacts would occur along the entire length of the proposed ROW and would not disproportionately impact minority and low-income populations as compared to non-EJ populations within the community study area.

Short-term, localized effects to air quality (i.e., increase in dust) and noise levels (i.e., generated by construction equipment and activities) may occur in the immediate area adjacent to the three reasonable alternatives during construction. However, short-term impacts would occur along the entire length of the proposed ROW and would not disproportionately impact minority and low-income populations as compared to non-EJ populations within the community study area.

The three reasonable alternatives would provide benefits to the community study area in the form of increased mobility, improved travel times, and improved system connectivity. EJ travelers and non-EJ travelers alike would benefit from the improved connectivity and mobility to the area's transportation network.

Therefore, the three reasonable alternatives would not cause disproportionately high and adverse effects on minority and low-income populations and is consistent with EO 12898.

Access to Information and Participation for LEP Populations

Proactive efforts to ensure meaningful opportunities for public participation in the SH 68 decision-making process have been pursued since the initial public meetings conducted by the HCRMA in 2008 and 2009. On September 25, 2014, TxDOT held their first public meeting to solicit input from the public for the SH 68 project. On March 15, 2016, TxDOT conducted a public scoping meeting to solicit public input on the full range of nine proposed alternatives being evaluated. On January 3, 2017, TxDOT held a public meeting to solicit further public input on the three reasonable alternatives. The meetings were advertised throughout the

study in both English and Spanish, and invitations were sent to stakeholders, including minority and low-income residents.

Since the initial public meeting in September 2014, the SH 68 project team continued to engage the public through small stakeholder meetings in the community. TxDOT has maintained a project office at 4711 South Alamo Road in Edinburg to further facilitate communication with local residents.

Public involvement materials were provided in both English and Spanish, and translators were provided to accommodate LEP populations. Public involvement materials were also made available for review on the TxDOT website and on file at TxDOT. Additional detail regarding the public involvement/outreach efforts is found in **Section 6.0**.

No-Build Alternative

Under the No-Build Alternative, the proposed SH 68 facility would not be constructed. Neighborhoods/colonias would not be bisected and property access would remain unaffected. The No-Build Alternative would not affect access to existing community facilities. Additionally, impacts to access and travel patterns would not occur. Bicycle facilities and sidewalks would not be affected by the No-Build Alternative. However, as the population of the community study area increases mobility would likely be reduced and traffic congestion would increase on regional and local roadways under the No-Build Alternative.

Since no construction would occur under the No-Build Alternative, economic and employment conditions would not change. The likelihood for increased efficiency and revenue opportunities for transportation-dependent industries that are related to congestion and travel time reliability would not be realized under the No-Build Alternative. Also, business displacements would not occur, meaning that existing employees would not need to relocate. Additionally, the anticipated tax revenue losses associated with property acquisition and building displacements would not occur, meaning that public entities such as Hidalgo County, Pharr-San Juan-Alamo ISD, Edinburg Consolidated ISD, and Donna ISD would not lose the tax revenue from these properties and/or buildings. Since there would be no construction under the No-Build Alternative, the community study area would not benefit from increased sales tax revenue and the purchase of local goods and services. Therefore, no adverse impacts are anticipated regarding economic and employment impacts under the No-Build Alternative.

Environmental Justice impacts regarding the identified minority and low-income populations within the community study area would not occur under the No-Build Alternative. Also, the short-term, localized effects to air quality and noise levels during construction would not occur. The mobility, improved travel times, and improved system connectivity benefits described for the three reasonable alternatives would not be realized under the No-Build Alternative.

Therefore, it is anticipated the No-Build Alternative would not cause disproportionately high and adverse effects on minority or low-income populations and is consistent with EO 12898 regarding EJ.

4.5 Utilities/Emergency Services

Highway projects typically necessitate the adjustment of utility facilities to accommodate the design and construction of proposed transportation facilities. An assessment of potential impacts to utilities and emergency services within the community study area was conducted for the three reasonable alternatives and No-Build Alternative.

4.5.1 Existing Conditions

Utilities

Utilities currently serving the community study area include water lines, sewer lines, electrical transmission lines, natural gas lines, telephone cables, and television cables. Within the community study area, major utility service providers include:

- Water and Sewer – North Alamo Water Supply Corporation, City of Edinburg, City of Alamo, and City of Donna.
- Electric Transmission – Magic Valley Electric Cooperative and American Electric Power.
- Natural Gas – Texas Gas Service and Atmos Energy.
- Telephone and Television – Charter Cable and AT&T.

Utility service lines are typically located within public ROW, adjacent to existing roadways, or within utility easements maintained by the individual utility service provider. Water lines, sewer lines, and natural gas lines are generally located below ground, whereas electric transmission lines, telephone cables, and television cables are generally located aboveground.

The North Alamo Water Supply Corporation is the largest service provider of drinking water and wastewater utilities within the community study area. The North Alamo Water Service Corporation's water distribution system consists of pipelines of varying sizes, and includes one elevated water storage tower near the J. Economedes High School at North Alamo Road and Mile 17 ½ Road. No water treatment or pumping facilities are located within the community study area.

Electric utility service is provided by Magic Valley Electric Cooperative and American Electric Power within the community study area. In addition to numerous above ground transmission lines servicing local residences and businesses, a portion of the 95-mile long North Edinburg-Loma Alta 345-kilovolt (kV) transmission line crosses the community study area near the

FM 1423/North Val Verde Road and Mile 17 Road North intersection, and again near the FM 1925/East Monte Christo Road and Tower Road intersection.

Small-diameter natural gas lines operated by Texas Gas Service and Atmos Energy serve local residences and businesses throughout the community study area. Details on the larger-diameter natural gas lines are provided in **Section 4.13** Hazardous Materials.

Emergency Services

Currently, one emergency service response facility is located within the community study area, the City of Alamo Fire Station No. 2 near the intersection of North Tower Road and East Duranta Avenue. Nearby emergency response facilities outside the community study area include the Donna Fire and Police Departments, Elsa City Fire and Police Department, Edcouch Volunteer Fire Department, and Edinburg Fire and Police Departments. No hospital facilities are located within the community study area, but are located in the nearby cities of Edinburg and McAllen.

4.5.2 Environmental Effects

Utilities

Each of the three reasonable alternatives would impact existing water, sewer, electric, gas, telephone, and television utility services within the community study area. At this stage, the locations of utility service lines potentially requiring modification have not been identified. The exact location of all aboveground and below ground utility service lines would be determined for the recommended preferred alternative. For each of the three reasonable alternatives, utility modifications would be accomplished with the minimum practicable disruption in service to customers. Prior to construction, TxDOT would coordinate utility conflicts with utility operators in accordance with the procedures outlined in TxDOT's ROW Utility Manual (2016) to protect or relocate utility lines. None of the three reasonable alternatives would impact existing water treatment, storage, or pumping facilities within the community study area. Potential impacts to existing oil and gas facilities for each of the three reasonable alternatives are discussed in **Section 4.13** Hazardous Materials.

Each of the three reasonable alternatives would cross the existing North Edinburg-Loma Alta 345-kV transmission line. No impacts to the transmission facility are anticipated for the FM 1423 PSM Alternative. However, one support tower structure is currently located within the proposed ROW for the 2014 Modified 2 Alternative and 2014 PSM Alternative, and could be impacted.

Emergency Services

Existing emergency service providers are generally located along major arterial roadways within the community study area, which afford access throughout. Each of the three reasonable alternatives would maintain existing access along these major roadway facilities. Although each of the three reasonable alternatives would cause minor changes to existing access and travel patterns within the community study area (see Table 4-4 in the *DEIS Reasonable Alternatives Community Impact Assessment Technical Report* [TxDOT 2018]), the changes are not anticipated to restrict emergency service access or otherwise impede emergency response by local police, fire, ambulance, etc. personnel. Each of the three reasonable alternatives are anticipated to enhance response time and provide more direct access to the community study area. Negative impacts to emergency services within the community study area are not anticipated.

No-Build Alternative

Under the No-Build Alternative, the proposed SH 68 facility would not be constructed. No activities with the potential to affect existing utilities would occur. However, under the No-Build Alternative, access by emergency services personnel to the more rural areas of the community study area would continue to utilize the existing roadway network which may impact response time. In addition, increasing population and the resulting traffic congestion within the community study area could impede access by emergency services personnel over time.

4.6 Cultural Resources

The proposed project is subject to compliance with both federal and state laws that require consideration of historic and archeological resources and cemeteries during project planning. At the federal level, the proposed project is subject to provisions of the National Historic Preservation Act (NHPA) of 1966. Section 106 of the NHPA and associated regulations outlined in 36 CFR 800 require that federal agencies consider the effects of their undertakings on historic properties listed in, or eligible for listing in, the NRHP. Historic and archeological resources each have their own areas of potential effects (APE) and study areas, which are outlined in their respective discussions below. Furthermore, it requires that federal agencies afford the Advisory Council on Historic Preservation (ACHP), respective State Historic Preservation Officer (SHPO), and other consulting parties the opportunity to comment on the proposed federal undertaking(s). The NHPA also provides for consultation with American Indian tribes when proposed projects might affect cultural or traditional places or resources that have value to an Indian tribe; this value is derived from the role the property plays in the community's historically rooted beliefs, customs, and practices (NHPA Section 101[d]). Procedures for compliance with the NHPA are outlined in the First Amended Programmatic

Agreement (PA) among the FHWA, TxDOT, THC/SHPO, and the ACHP Regarding the Implementation of Transportation Undertakings (Section 106 PA).

At the state level, the proposed project is subject to provisions of the Antiquities Code of Texas (ACT) of 1969, as amended (Texas Natural Resources Code Title 9, Chapter 191 [Section 191.001-191.174]), and associated regulations outlined in 13 TAC 26. The ACT serves to locate, protect, and preserve SALs, including sites, objects, buildings, structures and historic shipwrecks, and locations of historical, archeological, educational, or scientific interest related to the inhabitants, prehistory, history, government, or culture of Texas, located in, on, or under lands owned or controlled by the state of Texas or a political subdivision thereof. The ACT requires notice be provided to the THC prior to breaking ground at a project location on state or local public land to ensure that the project effects to SALs, whether or not they have currently been identified, are appropriately considered and further coordination with the THC may be necessary. Procedures for compliance with the ACT are outlined in the Memorandum of Understanding (MOU) between TxDOT and the THC (13 TAC 26.25).

This project is also required to comply with 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). 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, and includes provisions for discovery, removal, and reburial of cemeteries, particularly those considered unknown, abandoned, or otherwise non-perpetual care, within public or private property. Cases where newly discovered previously unknown or abandoned cemeteries may be impacted by proposed construction are prohibited from further disturbance of the cemetery unless and until the human remains are removed in accordance with provisions of Section 711 and its associated regulations. TxDOT responsibilities for coordination with THC for projects with the potential to impact cemeteries are also outlined in the MOU between TxDOT and the THC (13 TAC 26.25).

4.6.1 Archeological Resources

Archeological cultural resources include artifacts, ruins, structural remnants, other human-made feature remains, and cemeteries. In accordance with TxDOT's Section 106 PA, TxDOT archeologists determined that a detailed desktop analysis for assessing each of the reasonable alternative's potential impacts to archeological historic properties was appropriate at the DEIS level of analysis. TxDOT archeologists determined that the archeological APE corresponds with the existing and proposed ROW for each reasonable alternative. The APE is the geographic area within which the proposed project may cause changes in the character or use of archeological historic properties. The archeological study area is defined as 1 kilometer (km) (0.6 mile) beyond the archeological APE in all directions.

The study area is the geographic area for which background data is gathered to inform expectations of location, type, and integrity of archeological sites within the archeological APE.

4.6.1.1 *Existing Conditions*

The detailed desktop archeological analysis consisted of a review of data extracted from area topographic, soils, and geology maps. Also, previous archeological surveys and locations of recorded archeological sites within 1 km (0.6 mile) of the archeological APE for each reasonable alternative were reviewed by consulting the THC's restricted-access Online Archeological Sites Atlas (Atlas). In addition to identifying recorded archeological sites, the review included the following types of information on the Atlas: NRHP properties, SALs, Official Texas Historical Markers, Recorded Texas Historic Landmarks, and cemeteries. A combination of 1914, 1916, 1932, 1949, and 1965 U.S. Geological Survey (USGS) 7.5-minute topographical quadrangle maps and 1953 and 1961 aerial photographs of the archeological APE were consulted for the possible locations of historic-era archeological sites (National Environmental Title Research [NETR] 2017). This review was prepared in a report titled *DEIS Reasonable Alternatives Archeological Resources Technical Report* on file at TxDOT (TxDOT 2018).

According to the Atlas (THC 2017), portions of the archeological APE of for all three reasonable alternatives have been previously surveyed for archeological resources and additional surveys have been conducted within a 1-km radius. In addition, five recorded archeological sites and one cemetery are located within the 2014 Modified 2 Alternative 1-km archeological study area. Two recorded archeological sites are located within the 2014 PSM Alternative 1-km archeological study area, and two archeological sites are located within the FM 1423 PSM Alternative 1-km archeological study area. The archeological APE of each reasonable alternative also crosses the Donna and Engleman Irrigation Districts (IDs), which have been recommended by TxDOT as eligible for listing in the NRHP, and is within 1 km of the Louisiana-Rio Grande Canal Company Irrigation System NRHP-listed District.

4.6.1.2 *Environmental Effects*

Based on the detailed desktop archeological analysis, portions of the archeological APE of the 2014 Modified 2 Alternative have been previously surveyed for archeological resources and one identified archeological resource is within the archeological APE. This prehistoric archeological site is not listed on the NRHP or designated as an SAL, and appears formally unevaluated for either (THC 2017). Furthermore, the archeological APE of the 2014 Modified 2 Alternative has the potential to contain prehistoric archeological deposits, including surficial or near surficial lithic scatters, and historic archeological deposits associated with nineteenth and twentieth-century habitations. Archeological deposits within this setting may retain some integrity below the plow zone or otherwise beyond modern

disturbances unless associated with Holocene sand dunes, which may lack stratigraphic integrity because of the natural processes of deflation.

Portions of the archeological APE of the 2014 PSM Alternative have been previously surveyed for archeological resources and there are no previously identified archeological resources within the archeological APE (THC 2017). Furthermore, the archeological APE of the 2014 PSM Alternative has the potential to contain prehistoric archeological deposits, including surficial or near surficial lithic scatters, and historic archeological deposits associated with nineteenth- and twentieth-century habitations. Archeological deposits within this setting may retain some integrity below the plow zone or otherwise beyond modern disturbances unless associated with Holocene sand dunes, which may lack stratigraphic integrity because of the natural processes of deflation.

Portions of the archeological APE of the FM 1423 PSM Alternative have been previously surveyed for archeological resources and there are no previously identified archeological resources within the archeological APE (THC 2017). Furthermore, the archeological APE of the FM 1423 PSM Alternative has the potential to contain prehistoric archeological deposits, including surficial or near surficial lithic scatters, and historical archeological deposits associated with nineteenth- and twentieth-century habitations. Archeological deposits within this setting may retain some integrity below the plow zone or otherwise beyond modern disturbances unless associated with Holocene sand dunes, which may lack stratigraphic integrity because of the natural processes of deflation.

Although the background review revealed one previously documented archeological site within the archeological APE of the 2014 Modified 2 Alternative and no previously documented archeological sites or cemeteries within the archeological APE of the 2014 PSM Alternative and FM 1423 PSM Alternative, all three of the reasonable alternatives have the potential to impact as yet unidentified archeological historic properties eligible for inclusion in the NRHP (36 CFR 60) or archeological sites warranting SAL designation (13 TAC 26).

No-Build Alternative

The No-Build Alternative would not include construction and, therefore, would have no potential to impact archeological historic properties.

4.6.2 Historic Resources

Non-archeological cultural resources include structures, buildings, districts, cemeteries, and objects. Federal and state laws require consideration of cultural resources during project planning. In accordance with the Section 106 of the NHPA and TxDOT Section 106 PA, TxDOT historians determined that a detailed desktop analysis for assessing each of the reasonable

alternative's potential impacts to historic properties was appropriate at the DEIS level of analysis. TxDOT historians determined that the historic APE is any parcel within or partially within 300 feet from the ROW of the reasonable alternatives and the historic study area is 0.25-mile from the ROW of the reasonable alternatives. To account for an anticipated 2020 letting, TxDOT determined that historic-age resources are those resources built in or before 1975.

4.6.2.1 *Existing Conditions*

The THC's *Historic Sites Atlas* was reviewed to identify the previously identified historic resources listed on the NRHP, designated as National Historic Landmarks (NHLs), Recorded Texas Historic Landmarks (RTHLs) or standing structure SALs. No NHL, RTHL, or SAL resources are located within the 0.25-mile historic study area. In reviewing the *Historic Sites Atlas*, several resources were found to be mapped incorrectly and/or not recorded on the website's online mapping tool.

Results of the *Historic Sites Atlas* search revealed that one NRHP-listed property, the Louisiana – Rio Grande Canal Company System (also known as the HCID #2), is located within the historic APE of the reasonable alternatives.

The *Historic Sites Atlas* also revealed that there are three cemeteries within the historic APE and 0.25-mile study of the three reasonable alternatives. These property types must meet special criteria in accordance with the National Park Service (NPS) guidance in order to be considered NRHP-eligible.

Review of TxDOT's list of previously determined NRHP-eligible and assumed NRHP-eligible IDs revealed that the Engleman and Donna IDs are assumed NRHP-eligible until intensive-level historic resources surveys are completed on them. Therefore, for the purposes of this analysis, both the Engleman and Donna IDs are treated as NRHP-eligible properties, and they are located within the historic APE of the reasonable alternatives as discussed below.

The three reasonable alternatives also pass through the Delta Lake ID and the HCID #1, which have both been previously determined not eligible for the NRHP. See **Figure 4-3** for IDs in relation to the reasonable alternatives.

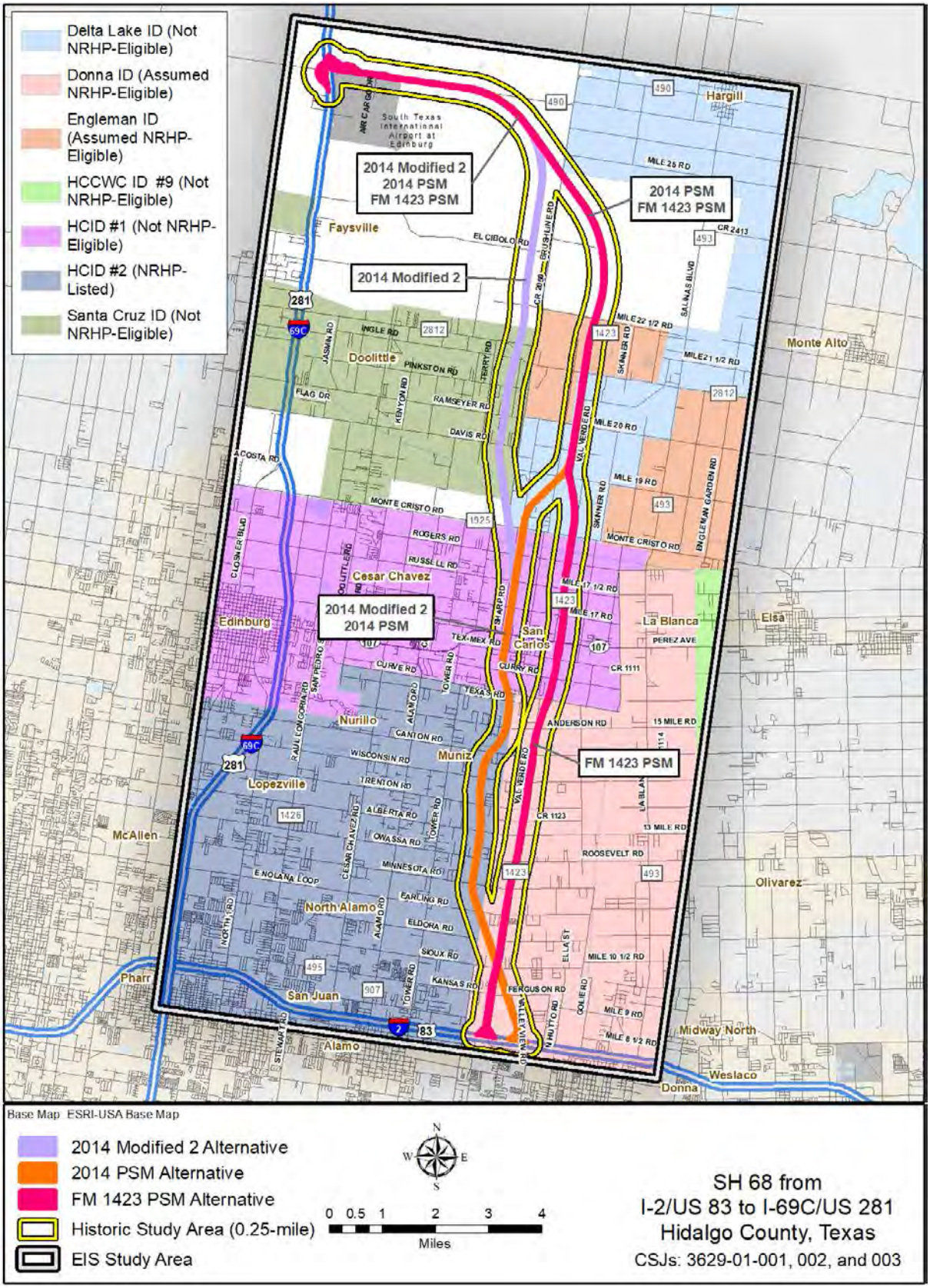


Figure 4-3. Irrigation Districts

TxDOT Environmental Affairs Division's online database of properties previously determined NRHP-eligible was also consulted. Other than the previously mentioned IDs, there are no other properties that TxDOT previously determined NRHP-eligible within the historic APE of the reasonable alternatives. Finally, the TxDOT Google Earth layer of historic-age bridges was reviewed. There is one historic-age bridge located on the FM 1423 PSM Alternative. The CR 934/Ferguson Road bridge over the Donna East Main Canal National Bridge Inventory Number 211090AA0934001) is located near the southern terminus of the alternative. The concrete slab bridge was built in 1962 and was previously determined not eligible for the NRHP as part of a statewide study of post-war (constructed between 1945 and 1965) bridges in Texas.

To help identify potential historic-age resources within the reasonable alternatives, TxDOT also completed a desktop analysis utilizing the dates of construction listed in the Hidalgo CAD as a general foundation. The CAD data was filtered by date and color-coded parcels were used to determine the historic-age resources that predate and post-date the end of World War II in 1945. The years 1900 to 1944 were selected to illustrate the initial wave of migration to the region following the establishment of the irrigation systems in the early 1900s. The second time period, from 1945 to 1975, illustrates an intense period of building in the area, particularly of residential resources and outbuildings. In addition to gathering and reviewing the CAD data, current and historic aerial photographs, topographic maps, Google Streetview, and video footage of the project area taken in 2016 were used to confirm and verify the accuracy of the CAD data.

A report titled *DEIS Reasonable Alternatives Historic Resources Technical Report* was prepared (TxDOT 2018) and is on the TxDOT website and on file at TxDOT. Based on the desktop analysis, the NRHP-listed, assumed NRHP-eligible, and historic-age resource parcels (1900-1944 and 1945-1975) anticipated within the reasonable alternatives and historic APE were outlined within the technical report.

4.6.2.2 *Environmental Effects*

For the purposes of assessing possible direct effects to historic resources for this DEIS, direct effects are considered as those only occurring within the footprint of the reasonable alternatives, not within the larger 300-foot historic APE. As a result, direct effects to historic resources are determined as those parcels that are within or partially within the reasonable alternatives.

For the purposes of assessing possible indirect and encroachment-alteration effects to historic resources for this DEIS, these effects are considered as those only occurring within the 300-foot APE and outside the footprint of the reasonable alternatives. As a result, encroachment-alteration effects to historic resources are determined as those parcels that

are within or partially within the historic APE only. The type of encroachment-alteration effects that this alternative may pose to historic resources include effects associated with visual intrusions and altered access particularly for businesses and publicly accessible historic resources. **Exhibits 4-8** through **4-8.13** in **Appendix A** show which historic-age resources' parcels are located within or partially within the APE of the three reasonable alternatives.

2014 Modified 2 Alternative

The preliminary desktop review and aerial analysis determined there are 31 historic-age parcels within the footprint of the 2014 Modified 2 Alternative. This includes three properties likely constructed between 1900-1944 and 28 properties likely constructed between 1945-1975.

The 2014 Modified 2 Alternative crosses the NRHP-Listed HCID #2 and the assumed NRHP-eligible Donna ID. According to preliminary data, this alternative corridor would cross eight irrigation features associated with the HCID #2 and 11 irrigation features associated with the Donna ID.

It should be noted that desktop analysis of the historic-age parcels in the footprint of this reasonable alternative corridor suggests that the properties do not appear to have high potential for NRHP eligibility, with the exception of the Donna ID. Within the footprint of 2014 Modified 2 Alternative, it is anticipated that the Donna ID crossings and the NRHP-listed HCID #2 crossings would all be bridged and completely spanned. Therefore, it is anticipated that the direct effects associated with the irrigation crossings would not pose an adverse effect under Section 106 of the NHPA; however, further studies would be required to verify this alternative's effects.

According to preliminary desktop review and aerial analysis outlined in the *DEIS Reasonable Alternatives Historic Resources Technical Report,* there are a total of 60 historic-age parcels within the historic APE (and outside the footprint) of the 2014 Modified 2 Alternative (TxDOT 2018). This includes two properties likely constructed between 1900-1944 and 58 properties likely constructed between 1945-1975. Additionally, there is one cemetery, the Cavazos Cemetery (also known as the El Carmen Cemetery), within the historic APE of the 2014 Modified 2 Alternative. NPS guidelines require that cemeteries meet special requirements to be considered eligible for the NRHP; therefore, it is possible that TxDOT may not determine the Cavazos Cemetery NRHP eligible. The only indirect and encroachment-alteration effects identified for this analysis would be possible alterations to access to/from the Cavazos Cemetery. Further studies and detailed engineering schematics would be required to determine other potential indirect and encroachment-alteration effects.

2014 PSM Alternative

The preliminary desktop review and aerial analysis determined there are 29 historic-age parcels within the footprint of the 2014 PSM Alternative. This includes three properties likely constructed between 1900-1944 and 26 properties likely constructed between 1945-1975.

The 2014 PSM Alternative crosses the NRHP-listed HCID #2 and the assumed NRHP-eligible Donna and Engleman IDs. According to preliminary data, this alternative corridor would cross eight irrigation features associated with the HCID #2, 11 irrigation features associated with the Donna ID, and three irrigation features associated with Engleman ID.

Desktop analysis of the historic-age parcels in the footprint of this reasonable alternative corridor suggests that the properties do not appear to have high potential for NRHP eligibility, with the exception of the Donna and Engleman IDs. Within the footprint of the 2014 PSM Alternative, the Donna and Engleman ID crossings and the NRHP-listed HCID #2 crossings would all be bridged and completely spanned. Therefore, it is anticipated that the direct effects associated with the irrigation crossings would not pose an adverse effect under Section 106 of the NHPA; however, further studies would be required to verify this alternative's direct effects.

According to preliminary desktop review and aerial analysis outlined in the *DEIS Reasonable Alternatives Historic Resources Technical Report*, there are a total of 51 historic-age parcels within the historic APE (and outside the footprint) of the 2014 PSM Alternative (TxDOT 2018). This includes three properties likely constructed between 1900-1944 and 48 properties likely constructed between 1945-1975. Further studies and detailed engineering schematics would be required to determine other potential indirect and encroachment-alteration effects.

FM 1423 PSM Alternative

The preliminary desktop review and aerial analysis determined there are 35 historic-age parcels within the footprint of the FM 1423 PSM Alternative, all of which were likely constructed between 1945-1975.

The FM 1423 PSM Alternative crosses the assumed NRHP-eligible Donna and Engleman IDs. According to preliminary data, this alternative corridor would cross 26 irrigation features associated with the Donna ID and three irrigation features associated with Engleman ID.

Desktop analysis of the historic-age parcels in the footprint of this reasonable alternative corridor suggests that the properties do not appear to have high potential for NRHP eligibility, with the exception of the Donna and Engleman IDs. It should be noted that this reasonable alternative includes potential direct impacts to the most historic-age parcels and the most

irrigation crossings. Additionally, within the footprint of the FM 1423 PSM Alternative, there is a Donna ID feature that is entirely within the footprint of the FM 1423 PSM Alternative for approximately 3.25 miles. It is anticipated that the 3.25-mile segment of the Donna ID feature may need to be relocated or piped. If the Donna ID is determined NRHP eligible, it is anticipated that FM 1423 PM Alternative may pose an adverse effect to this irrigation resource under Section 106 of the NHPA. Further studies and more detailed engineering analysis would be required to verify this alternative's direct effects.

According to preliminary desktop review and aerial analysis outlined in the *DEIS Reasonable Alternatives Historic Resources Technical Report,* there are a total of 27 historic-age parcels within the historic APE (and outside the footprint) of the 2014 FM 1423 PSM Alternative (TxDOT 2018). This includes four properties likely constructed between 1900-1944 and 23 properties likely constructed between 1945-1975. Additionally, there is one cemetery, the Val Verde Memorial Gardens, within the historic APE of the FM 1423 PSM Alternative. As noted above, NPS guidelines require that cemeteries meet special requirements to be considered eligible for the NRHP; therefore, it is possible that TxDOT may not determine the Val Verde Memorial Gardens as NRHP eligible. The only indirect and encroachment-alteration effects identified for this analysis would be possible alterations to access to/from the Val Verde Memorial Gardens. Further studies and detailed engineering schematics would be required to determine other potential indirect and encroachment-alteration effects.

No-Build Alternative

The No-Build Alternative would not include the construction and, therefore, would not result in impacts to historic resources.

4.7 Section 4(f), Section 6(f) and Chapter 26

Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966 (49 U.S.C. 303), as amended, protects publicly owned park and recreation areas that are open to the general public, publicly owned wildlife and waterfowl refuges, and public or privately owned historic sites of national, state, or local significance from acquisition and conversion to transportation use. The term "historic sites" includes prehistoric and historic districts, sites, buildings, structures or objects listed in, or eligible for, the NRHP. This may also include places of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

Under Section 4(f), TxDOT must determine that there is no feasible or prudent alternative to the use or acquisition of properties subject to Section 4(f). Additionally, the proposed project must include all possible planning to minimize harm to the property from such use or acquisition, or TxDOT must determine that the use or acquisition has a *de minimis* impact to

Section 4(f) properties. *De minimis* impacts include those that are generally minor in nature, and that results in no adverse effect to the activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f). For historic properties, a *de minimis* impact is one that results in a Section 106 determination of "no adverse effect" or "no historic properties affected." If TxDOT determines that the use or acquisition has a *de minimis* impact, they must coordinate with the officials with jurisdiction over the Section 4(f) property. For parks, recreation areas, and refuges, typically officials with jurisdiction are property owners, and for historic properties, the official with jurisdiction is the SHPO.

Section 6(f) of the Land and Water Conservation Fund (L&WCF) of 1965 preserves, develops, and assures the quality and quantity of outdoor recreation resources through purchase and improvement of recreation lands, wildlife and waterfowl refuges, and similar resources. The Act provides funding for the federal acquisition of park and recreation lands and matching grants for state and local governments. Once a property is purchased using these funds, these lands are protected from conversion to land uses other than public outdoor recreation uses. According to the U.S. Department of the Interior NPS's L&CWF Summary report Project List by County (https://waso-lwcf.ncrc.nps.gov/public/index.cfm), no Section 6(f) properties were identified within the ROW of the reasonable alternatives. As a result, a discussion of direct effects and encroachment-alteration effects to Section 6(f) properties was not included in this section.

Title 3, Chapter 26, Sections 26.001-26.004 of the Texas Parks and Wildlife Code (TPWC), is commonly referenced as Chapter 26. This state law is applicable when TxDOT proposes to use or acquire publicly owned land designated and used as a park, recreation area, scientific area, wildlife refuge, or historic property. Chapter 26 is similar to the federal law Section 4(f) of the USDOT Act of 1966 (49 U.S.C. 303); however, the two laws differ with regards to the applicability to historic properties. Section 4(f) is applicable to all NRHP-eligible and designated historic properties (regardless of ownership), whereas Chapter 26 is only applicable to designated and publicly owned historic properties. Additionally, Chapter 26 is only applicable to the acquisition of land. Indirect effects or uses, such as constructive use under Section 4(f), are not applicable under Chapter 26.

Under Chapter 26, TxDOT must determine that there is no feasible or prudent alternative to the use or acquisition of properties subject to Chapter 26. TxDOT's compliance under Chapter 26 has specific requirements, including (but not limited to) conducting a public hearing and disclosure of the applicability of the law at the public hearing. The NRHP-listed Louisiana – Rio Grande Canal Company System (also known as the HCID #2) is the only Chapter 26 property within the ROW of the reasonable alternatives.

The discussion of impacts below reflects a high-level analysis for the Section 4(f) and Chapter 26 properties identified within the ROW of the reasonable alternatives during this DEIS level review.

4.7.1 Existing Conditions

According to the THC's *Historic Sites Atlas* there is one NRHP-listed property located within the ROW of the reasonable alternatives, the HCID #2. This NRHP-listed irrigation district is a Section 4(f) property and it is subject to Chapter 26. The NRHP-listed irrigation system is located within the 2014 Modified 2 Alternative and the 2014 PSM Alternative.

Additionally, according to TxDOT's April 2014 list of NRHP-listed and previously determined NRHP-eligible IDs, there are also two assumed NRHP-eligible IDs, the Engleman and Donna IDs, that are also crossed by the reasonable alternatives. For the purposes of this DEIS, these two assumed NRHP-eligible IDs are considered Section 4(f) properties. See **Figure 4-3** for a map of the NRHP-eligible and NRHP-listed IDs in relation to the reasonable alternatives.

Review of aerial imagery, topographic maps, and field visits did not reveal the presence of any publicly owned parks or publicly owned wildlife and waterfowl refuges within the corridors of any of the three reasonable alternatives. Therefore, there are no other known properties that are subject to Section 4(f) and Chapter 26 within the ROW of the reasonable alternatives.

4.7.2 Environmental Effects

For Section 4(f) properties, the direct effects are defined as a permanent use or temporary use. In accordance with the 23 CFR 774.17, a permanent use refers to the permanent incorporation of Section 4(f) land into a transportation facility, through acquisition of new ROW or permanent easements. Temporary use refers to the temporary occupancy of the Section 4(f) property that is considered adverse in terms of the statute's preservation purpose. At this DEIS level of analysis, only the permanent uses can be discussed since the locations of any temporary uses, including potential easements and construction-related facilities such as equipment staging areas, access roads, and utilities are not known and cannot be quantified at this stage of project development. Possible temporary uses under Section 4(f) will be identified during FEIS-level analysis.

Indirect effects can occur under Section 4(f), and such effects are considered constructive use, as defined in Title 23, §774.15. Constructive use under Section 4(f) is very rare, and only applies when proximity impacts result in substantial impairment of the activities, features, or attributes of the property that qualify it as a Section 4(f) property. With relation to the NRHP-eligible and NRHP-listed IDs, constructive use is not anticipated in relation to irrigation features under Section 4(f).

For Chapter 26 properties, direct effects are defined as a change in the use or acquisition of land from publicly owned land designated and used as a park, recreation area, scientific area, wildlife refuge, or historic property. Indirect or encroachment impacts are not applicable under Chapter 26.

2014 Modified 2 Alternative

The 2014 Modified 2 Alternative includes two known Section 4(f) properties, the NRHP-listed HCID #2 and the assumed NRHP-eligible Donna ID. According to preliminary data, this alternative corridor would cross eight irrigation features associated with the HCID #2 and 11 irrigation features associated with the Donna ID. It is anticipated that the Donna ID crossings and the NRHP-listed HCID #2 crossings would all be bridged and completely spanned. Therefore, in accordance with 36 CFR 800.5, such construction activities would likely pose no direct adverse effects to the NRHP-listed and assumed NRHP-eligible IDs under Section 106 of the NHPA. As such, the proposed project would likely only pose *de minimis* impacts to the IDs under Section 4(f).

HCID #2 is only one Chapter 26 property located within the 2014 Modified 2 Alternative corridor. It is anticipated that there may be change in use or acquisition of land associated with the HCID #2. Therefore, Chapter 26 would apply, and TxDOT must prove that there is no prudent and feasible alternative to such use or acquisition. TxDOT must also conduct a public hearing and discuss the Chapter 26 applicability for this alternative.

There are no Section 6(f) properties within or partially within the 2014 Modified 2 Alternative.

2014 PSM Alternative

The 2014 PSM Alternative includes three known Section 4(f) properties, the NRHP-listed HCID #2 and the assumed NRHP-eligible Donna and Engleman IDs. According to preliminary data, this alternative corridor would cross eight irrigation features associated with the HCID #2, 11 irrigation features associated with the Donna ID, and three irrigation features associated with the Engleman ID. It is anticipated that the Donna and Engleman ID crossings and the NRHP-listed HCID #2 crossings would all be bridged and completely spanned. Therefore, in accordance with 36 CFR 800.5, such construction activities would likely pose no adverse effect to the NRHP-listed and assumed NRHP-eligible IDs under Section 106 of the NHPA. As such, the 2014 PSM Alternative would likely only pose *de minimis* impacts to the IDs under Section 4(f).

HCID #2 is the only Chapter 26 property located within the 2014 PSM Alternative corridor. It is anticipated that there may be change in use or acquisition of land associated with the HCID #2. Therefore, Chapter 26 would apply, and TxDOT must prove that there is no prudent

and feasible alternative to such use or acquisition. TxDOT must also conduct a public hearing and discuss the Chapter 26 applicability for this alternative.

There are no Section 6(f) properties within or partially within the corridor for the 2014 PSM Alternative.

FM 1423 PSM Alternative

The FM 1423 PSM Alternative includes two known Section 4(f) properties, the assumed NRHP-eligible Donna and Engleman IDs. According to preliminary data, this alternative corridor would cross 26 irrigation features associated with the Donna ID and three irrigation features associated with Engleman ID.

It is anticipated that the Engleman ID crossings would be bridged and completely spanned. Therefore, in accordance with 36 CFR 800.5, such construction activities would likely pose no adverse effect to the Engleman ID under Section 106 of the NHPA. As such, FM 1423 PSM Alternative would likely only pose *de minimis* impacts to the Engleman ID under Section 4(f).

With the Donna ID, there is an irrigation feature that is entirely within the footprint of the FM 1423 PSM Alternative for approximately 3.25 miles. It is anticipated that the 3.25-mile segment of the Donna ID feature may need to be relocated or piped. If the Donna ID is determined NRHP eligible, it is anticipated that the FM 1423 PSM Alternative may pose an adverse effect to this irrigation resource under 36 CFR 800.5. If so, this alternative may require an individual Section 4(f) evaluation. Further studies and more detailed engineering analysis would be required to verify this alternative's effects.

There are no Section 6(f) or Chapter 26 properties within or partially within the corridor for the FM 1423 PSM Alternative.

No-Build Alternative

Because the No-Build Alternative would not include the construction, alteration, or improvement to transportation facilities in relation to the construction of the three reasonable alternatives, it would have no potential direct or indirect impact on Section 4(f), Section 6(f) or Chapter 26 properties.

4.8 Visual/Aesthetics

A visual quality assessment was performed to determine if the three reasonable alternatives would be compatible with the visual character of the setting into which they would be introduced. A report titled *DEIS Reasonable Alternatives Visual Impacts Assessment*

Technical Report was prepared and is on the TxDOT website and on file at TxDOT (TxDOT 2018). The following information summarizes the content of the report.

Visual impacts are discussed in terms of the effect that the new physical elements would have on landform quality (i.e., the existing natural or man-made landform) and visual resources (i.e., the physical resources, including native vegetation, introduced landscaping, and the built environment that make up the character of the area). The aesthetic qualities of a community or area are defined by a combination of visual resources and other qualities that define the character of the community and site. Aesthetic effects can be either positive or negative and evaluated based on the context of the project area.

Federal and state regulations require that visual impacts assessment consider resources such as Section 106 and Section 4(f) properties; iconic cultural resources such as scientific or natural areas, scenic byways, routes, and vistas; and, vegetation, wildlife, ecological communities, and protected landscapes (FHWA 2015).

4.8.1 Existing Conditions

The existing visual character described in this section provides the basis to determine whether any visual impacts would occur. As described in **Section 1.2,** the study area is relatively flat in topography. Cropland and pastures dominate the landscape followed by residential and commercial development. Other notable landscapes include shrub and brush rangeland and orchards, groves, and nurseries.

Cropland and pastures occur primarily in the northern portions of the study area, bordering FM 490 to the north and along FM 1423 to the east. Residential development consists of dense neighborhoods and rural, large-lot subdivisions. Residential development is concentrated along I-2/US 83 north to FM 2812 and along I-69C/US 281 eastward to Tower Road. Commercial/businesses are largely concentrated in the southern study area near I-2/US 83, with smaller pockets located along SH 107, FM 1925/Monte Cristo Road and FM 2812 in the central study area. Agricultural operations occur throughout the study area; agricultural properties in the southern study area consist of smaller, segmented parcels, while larger intact parcels are located north of FM 2812.

The visual character of the study area is varied; some landscape components rate high under the vividness criterion. These components would include the LRGV-NWR, Edinburg Scenic Wetlands Unit of the World Birding Center and Valley Land Fund (VLF) conservation easement as they are an example of the South Texas landscape. However, these are not a dominant feature within the study area; therefore, the study area possesses a low degree of vividness.

There are no officially designated national parks and scenic rivers in the study area. Overall, the visual character of the study area possesses a low degree of visual quality based on the level of visual relationships:

- **Vividness:** there are no dominant landscape components that combined to form striking and distinctive visual patterns and as such the study area possesses a low degree of vividness.
- **Intactness:** the mix of small pockets of croplands and development remind the viewer that the man-made developments have encroached on the south Texas landscape, and as such the study area possesses a low degree of visual intactness.
- **Unity:** while planned residential and/or commercial development may possess cohesion within a confined proximity, empty lots scattered throughout the study area add to the lack of unity. Since the elements of landscape does not combine to form a cohesive unit, the study area possesses a low to moderate degree of visual unity.

4.8.2 Visual Effects

Illumination near wildlife refuges and conservation easements may have a negative impact for wildlife. Mitigation measures would be evaluated during final design and may include the use of low impact and downward directional lighting to minimize impacts.

Characteristics of the proposed eight-lane controlled access freeway that could have a visual/aesthetic impact include elevated structures/bridges and other vertical elements such as roadway signs and light standards. However, because of the relatively flat nature of the study area, other than the grade separated locations, potential views of the proposed facility would be limited to adjacent properties.

All reasonable alternatives would include direct connector ramps at the I-2/US 83 and I-69C/US 281 termini as well as connections to existing frontage roads. The interchanges and frontage roads would incorporate safety lighting, which could be considered as a negative effect for visual and aesthetic qualities, especially near residential areas.

Where reasonable and feasible, mitigation measures that would result in beneficial visual and aesthetic impacts may be programmed. These measures may include aesthetic enhancements, such as landscaping, lighting, and/or decorative details. Aesthetics treatments will be developed during final design and incorporated into the project design as appropriate.

The three reasonable alternatives would have an effect on the overall visual and aesthetic qualities along the corridor because of the rural setting of the proposed improvements. However, these impacts would not be considered intrusive. Since the FM 1423 PSM

Alternative is located partly on an existing roadway, the visual impacts would be considered the least intrusive of the three reasonable alternatives.

4.9 Water Resources

The water resource analysis was conducted by reviewing numerous published data sources, including natural color and infrared aerial photography (National Agriculture Imagery Program 2017), U.S. Geological Survey (USGS) 7.5 minute topographic quadrangle maps (Donna, Hargill, and La Blanca, Texas), U.S. Department of Agriculture (USDA) soil maps (USDA 2017), USFWS NWI maps (USFWS 2016b), Federal Emergency Management Agency (FEMA) 100-year floodplain maps (FEMA 1981, FEMA 1982, FEMA 2000), watershed data from the USGS (Hydrologic Unit Code 12110208) (https://cfpub.epa.gov/ surf/county.cfm?fips_code=48215), the National Hydrography Dataset (http://viewer.nationalmap.gov/basic/) (USGS 2016), historic aerial photographs on Google Earth, precipitation data from the National Oceanic and Atmospheric Administration's (NOAA's) National Climatic Data Center (http://www.usclimatedata.com/climate/edinburg/texas/united-states/ustx2428) (NOAA 2017), drainage and irrigation canal data from Hidalgo County Drainage District (HCDD) #1, aquatic habitats from TPWD's Ecological Mapping System of Texas (EMST), and water well data from the (TWDB 2017).

For this DEIS, water resources were evaluated in three major categories because of similarities in resource impact assessments and permitting. These include water quality, floodplains, and waters of the U.S. The following sections provide descriptions of applicable regulatory requirements, existing conditions, impact assessments, and expected permitting for these categories. More detailed information on the water resources analysis is provided in the technical report titled *DEIS Reasonable Alternatives Water Resources Technical Report* (TxDOT 2018). This report is available on the TxDOT website and on file at TxDOT.

4.9.1 Water Quality

The Clean Water Act (CWA) is an amendment to the Federal Water Pollution Control Act of 1972 (33 United States Code [U.S.C.] Section 251 et seq.) and sets the basic structure for regulating discharges of pollutants and other materials to waters of the U.S. The CWA is under the jurisdiction of the EPA, but critical portions of the law are administered by the U.S. Army Corps of Engineers (USACE).

Section 404 of the CWA regulates the discharge of dredged and fill materials into waters of the U.S. Under Section 404 of the CWA, regulated waters of the U.S. are broadly categorized to include the territorial seas, tidal waters, and non-tidal waters of the U.S., and include all tidally-influenced and navigable waters, as well as numerous additional inland features such

as lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, and natural ponds (33 CFR §323 and 328).

If a proposed action will result in the discharge of dredged or fill material into a water of the U.S., Section 404 of the CWA requires that the project sponsor be authorized by a permit before the discharge occurs, unless the activity is exempt from regulation. Types of Section 404 permits issued by the USACE include Individual Permits, General Permits, and Letters of Permission. Nationwide Permits (NWPs) are general permits designed to regulate, with little (if any) delay or paperwork, certain activities having minimal impacts. The NWPs are periodically proposed, issued, modified, reissued (extended), and revoked. The NWP most frequently used to authorize impacts to waters of the U.S. for new transportation projects is NWP 14 for Linear Transportation Projects.

In Texas, the EPA has delegated authority to regulate Section 401 (State Water Quality Certification) of the CWA to the Texas Commission on Environmental Quality (TCEQ). Crossings of waters of the U.S. that are authorized by a USACE Section 404 permit are required to meet standards and/or review to insure water quality is not diminished. At crossings of waters of the U.S. that are authorized by a NWP permit, including NWP 14 Linear Transportation Projects, compliance with Section 401 requires the use of at least one Best Management Practice (BMP) from each of three categories (erosion control, sedimentation control, and post-construction total suspended solids [TSS] control) identified in the TCEQ's *401 Water Quality Certification Best Management Practices (BMPs) for Nationwide Permits* (TCEQ 2016).

All reasonable alternatives may require a permit from the USACE under Section 404 of the CWA for potential discharges of dredge or fill materials into potential waters of the U.S. Those crossings may also require compliance with TCEQ Water Quality Certification Program, established under Section 401 of the CWA. The purpose of this program is for TCEQ to determine that a proposed discharge will comply with state water quality standards. See **Section 4.9.3** for more details.

In addition, Section 303 of the CWA requires TxDOT coordinate with TCEQ if the project is located within five miles of and within the watershed of an impaired assessment unit under Section 303(d) of the CWA. See **Section 4.9.1.2** for more details.

Section 402 of the CWA sets forth the National Pollutant Discharge Elimination System (NPDES) program, which, in Texas, is administered by TCEQ under the Texas Pollutant Discharge Elimination System (TPDES) program. It is anticipated that the project will require authorization under the TPDES Construction General Permit (CGP). In general, coverage under the CGP requires that a Storm Water Pollution Prevention Plan (SWPPP) be prepared and implemented prior to and during construction to minimize the discharge of sediment and other pollutants from the construction site. In addition, if the proposed construction activities

disturb greater than 5 acres of land, a NOI must be submitted to the TCEQ. The current CGP TXR150000 expires on March 5, 2018 (TCEQ 2017a). The construction contractor is generally responsible for obtaining the appropriate TPDES permit and complying with Section 402 of the CWA. See **Section 4.9.1.2** for more details.

The use and production of groundwater resources in Texas are managed by Groundwater Management Areas (GMA) and Groundwater Conservation Districts (GCD) (TCEQ 2017a). The study area is within GMA 16, which includes all or portions of 16 south Texas counties from the coastal bend to the LRGV. The LRGV is part of four GCDs, but the study area is not within a GCD (TWDB 2017). Therefore, the project is subject to the rule of capture, which means that landowners own the water beneath their property and once the water has been captured and brought to the surface by a well and produced, it belongs to the landowner. Limits to rule of capture include common law exceptions related to contaminated wells, wanton waste, causing subsidence, and harming neighbors.

4.9.1.1 *Existing Conditions*

Water Quality

Water quality in the LRGV is complex because of intensive agricultural and urban land use practices, unique diversion of Rio Grande water for irrigation, and complex drainage and floodway structures. According to the 2014 Texas Integrated Report of Surface Water Quality for CWA, Sections 305(b) and 303(d) list, some large water features in the region such as the Rio Grande and Arroyo Colorado are listed as impaired for multiple constituents of concern. For example, TCEQ's Segment 2302, Rio Grande below Falcon Reservoir to Brownsville, has been determined to be impaired starting in 1996 because of high bacteria levels, elevated levels of ammonia, sulfates, and chlorophyll A, and depressed levels of dissolved oxygen (International Boundary and Water Commission 2017). However, the smaller drainage and irrigation canals in the study area are not listed as impaired or threatened. A 2016 study of water quality in canal segments in the vicinity of Edinburg found that, with the exception of elevated levels of Total Dissolved Solids (TDS), water quality parameters in general meet or exceed state and federal water quality standards, and Dissolved Oxygen supported high aquatic use (Dirrigl and Huston 2016). Runoff from the three reasonable alternatives would not discharge directly into a Section 303(d) listed threatened or impaired water, or within 5 miles upstream of a Section 303(d) listed threatened or impaired water (TCEQ 2017b).

According to The Groundwater Atlas of the United States (Ryder 1996), the study area is underlain by the Evangeline and Chiqot Aquifers, which are both part of the Gulf Coast Aquifer, a major aquifer that underlies most of the LRGV. The Gulf Coast Aquifer is an important source of groundwater for agricultural, municipal, and domestic uses. However, groundwater in many areas of the LRGV does not meet drinking water or irrigation water quality standards because

of high salinity. There are 462 registered water wells ranging from 8 to 2,500 feet deep, scattered throughout the study area (TWDB 2017). Of these, all were avoided by the three reasonable alternatives except one water well. The potential effects to the well are discussed below.

4.9.1.2 *Environmental Effects*

Water Quality

The three reasonable alternatives are generally similar with respect to potential impacts to water quality. Runoff from the three reasonable alternatives would not discharge directly into a Section 303(d) listed threatened or impaired water, or into a stream within 5 miles upstream of a Section 303(d) listed threatened or impaired water (TCEQ 2017b). The 2014 Texas Integrated Report of Surface Water Quality for CWA, Sections 305(b) and 303(d) list was utilized in this assessment.

TxDOT will implement BMPs to minimize potential impacts to receiving streams and other aquatic features and would coordinate with TCEQ for this project in accordance with the TxDOT-TCEQ MOU (see **Section 7.0**). To date, TCEQ has not identified [through either a total maximum daily load (TMDL) or the review of projects under the TCEQ MOU] a need to implement control measures beyond those required by the CGP on road construction projects. Therefore, compliance with a project's CGP, along with coordination under the TCEQ MOU collectively meets the need to address impaired waters. The project would be implemented, operated, and maintained using BMPs to control the discharge of pollutants from the project site.

The project would be subject to Section 401 of the CWA if the discharge of dredge or fill material would occur in waters of the U.S. (Section 404 of the CWA). Most potential waters of the U.S. would be spanned by proposed bridges. Therefore, the crossings would either not require a Section 404 permit or would be authorized by NWP 14 which covers minor impacts for transportation projects assuming certain conditions are met. The Tier I 401 Water Quality Certification requirements for NWP 14 would be met by implementing approved BMPs from each of the three categories listed in TCEQ's *Water Quality Certification Best Management Practices for Nationwide Permits* (TCEQ 2016). Additional BMPs would be outlined in the Stormwater Pollution Prevention Plan (SW3P) prepared for the project and would be implemented during and after construction. With the implementation of temporary and permanent BMPs, the project is expected to be in compliance with Section 401 of the CWA.

Compliance with Section 402 of the CWA is ensured by the policies and procedures that govern the design and construction phases of the project. With these measures, the project is expected to be in compliance with Section 402 of the CWA.

The three reasonable alternatives are generally similar with respect to potential impacts to surface water resources and associated permitting. Water resources in the study area include man-made irrigation and drainage canals, relatively small excavated ponds and lakes, and temporarily flooded natural depressions. While the three reasonable alternatives cross drainage and irrigation canals and ditches, it is expected they would span the majority of larger features, and it is required by TxDOT design standards and other applicable regulations that minimal flows and existing hydraulics are maintained (TxDOT 2018). In addition, the majority of the excavated ponds and lakes and natural depressions were avoided during earlier planning stages.

Encroachment-alteration effects to surface and ground water quality occur primarily because of the increased area of impervious cover. The increase in impervious surface area would result in more runoff and decreased water quality downstream. Construction of the any of the three reasonable alternatives and associated infrastructure would directly contribute to increases in impervious cover and may indirectly contribute to increases in impervious cover through induced development that may result from the proposed project. The increase in impermeable surfaces may indirectly lead to non-point source pollution (i.e., vehicle residues) because of runoff during rain events and flooding. This non-point source pollution would decrease the water quality of any jurisdictional streams that traverse the study area. Areas in the study area where vegetation is cleared during construction could accelerate off-site erosion from runoff. Use of BMPs within the study area would minimize water quality effects downstream, and although impermeable surfaces would be increased, it is not anticipated that non-point source pollution or erosion would be a substantial indirect impact. Therefore, none of the three reasonable alternatives are expected to have significant encroachment-alteration effects on water quality.

One registered water well located in the northern portion of the study area (State Well Number 8740401) could potentially be affected by all three reasonable alternatives. It is mapped on the very edge of the proposed ROW and it is not clear whether the well would be impacted by the project. If avoidance is not possible, the water well would be properly plugged and abandoned. The Texas Groundwater Protection Committee provides the applicable guidance (TCEQ 2017a, TCEQ 2017d).

No-Build Alternative

The No-Build Alternative would not impact water quality. This alternative would not impact Section 303(d) listed impaired waters, nor would it require a Section 404 Permit or Section 401 Certification. No construction would occur; therefore, a CGP would not be required. Additionally, the No-Build Alternative would not impact any water wells. The No-Build

Alternative would have no impacts to water quality and would not cause any encroachment-alteration effects.

4.9.2 Floodplains

Executive Order 11988, Floodplain Management requires federal agencies to avoid, to the extent possible, long and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

The National Flood Insurance Program (NFIP) is regulated by floodplain management regulations in 44 CFR 44. Community ordinances are covered in Parts 59 and 60 (https://www.fema.gov/pdf/floodplain/nfip_sg_unit_5.pdf). It requires development projects that could impact the 100-year floodplain coordinate with the local (county) NFIP coordinator and potentially obtain a county permit.

4.9.2.1 *Existing Conditions*

The study area is situated in a relatively flat region where the Coastal Plain converges with the Rio Grande Valley. Although much of the basin is arid, periodic monsoon flood events in the vast basin affect the physiography of the LRGV where distributary channels and frequent river overflows formed the flat deltaic terrain of the study area.

The study area is relatively flat, but portions are lower and poorly drained. Several mapped 100-year floodplains are scattered throughout the study area, especially in the northern portion of the study area (**Exhibits 4-9** through **4-9.7** in **Appendix A)** (TxDOT 2018, FEMA 1981, FEMA 1982, FEMA 2000). Since Hidalgo County is a participant in the NFIP, coordination with the local NFIP County and City coordinators would be required for any construction or modification of the 100-year floodplains in Hidalgo County (FEMA 2017).

4.9.2.2 *Environmental Effects*

The three reasonable alternatives would cross 100-year floodplains and since Hidalgo County is a participant in the NFIP, coordination with the local NFIP coordinator would be required for any construction or modification of the 100-year floodplains. TxDOT will coordinate with the Hidalgo County and City NFIP coordinators. TxDOT would also implement applicable design policies to avoid and minimize impacts to the 100-year floodplain (Section 8).

There are no significant differences between the three reasonable alternatives for potential impacts to 100-year floodplains. All three reasonable alternatives would cross similar amounts of FEMA 100-year floodplains ranging from 140 to 161 acres. The 2014 Mod 2 Alternative would cross the least amount of mapped floodplain, but since some areas of

mapped floodplains are expected to be spanned and the final design of SH 68 has not been completed, the specific impacts to floodplains are not known. The hydraulic design for this project would be in accordance with current FHWA and TxDOT design policies. The proposed facility would be designed to permit the conveyance of a 100-year flood to an acceptable inundation of the roadway without causing significant damage to the highway, drainage facilities, or other property. Any of the reasonable alternatives would not increase the base flood elevation to a level that would violate acceptable floodplain regulations and ordinances and would be designed to minimize potential impacts from flood events. Any of the three reasonable alternatives would also be designed so that it would not practically support incompatible 100-year floodplain development. None of the three reasonable alternatives are expected to have significant encroachment-alteration effects on floodplains.

No-Build Alternative

The No-Build Alternative would have no impact on 100-year floodplains and would not require county and local NFIP coordination.

4.9.3 Wetlands and Other Waters of the U.S.

Section 404 of the CWA regulates the discharge of dredged and fill materials into waters of the U.S. It is under the jurisdiction of the EPA and USACE. Regulated waters of the U.S. are broadly categorized to include the territorial seas, tidal waters, non-tidal waters of the U.S. including all tidally-influenced navigable waters, as well as numerous additional inland features such as lakes, rivers, streams. Mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, and natural ponds are special aquatic sites (33 CFR §323 and 328). The discharge of dredged or fill material into waters of the U.S., including wetlands, requires that the project sponsor be authorized by a USACE permit before the discharge occurs, unless the activity is exempt from regulation.

The Rivers and Harbors Act (RHA) of 1899 regulates work in “navigable” waters of the U.S., as those waters that are subject to the ebb and flow of the tides and/or are presently used or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce (33 U.S.C. 401 et seq. §329.4). Section 10 of the RHA, which is administered by the USACE, prohibits the construction of any structure, excavation/dredging, fill, or other work that may alter a navigable water of the U.S. without a permit (33 U.S.C. 403).

Executive Order 11990, Protection of Wetlands prohibits new construction in wetlands unless (1) there is no practicable alternative to such construction, and (2) the project includes all practicable measures to minimize harm to wetlands.

The majority of the drainage canals and ditches in the project are under the jurisdiction of the HCDD #1. The HCDD administers the construction and maintenance of these drainages and other facilities to control runoff and manage flooding. A drainage easement is necessary to construct new road crossings or improve existing crossings over these features. A permit is required for construction projects crossing the features under their jurisdiction (HCDD #1 2017).

The study area encompasses portions of eight Irrigation Districts (IDs) (TxDOT 2016). They are generally political subdivisions of the State of Texas that develop, maintain, and regulate irrigation facilities. Permits or easements may be required to cross ID facilities.

4.9.3.1 *Existing Conditions*

Runoff from the entire study area drains into the Lower Laguna Madre via three sub-basins: 1) Donna Main Canal and East and West Main Drains; 2) Upper Pilot Channel (North Floodway); and 3) Arroyo Colorado area (TxDOT 2018). Potential waters of the U.S. in the study area include the larger perennial drainage canals and associated wetlands scattered throughout the three sub-basins. The primary drainages crossed by the three reasonable alternatives are the Donna Main Canal and the Santa Cruz Canal.

The USFWS NWI is a publicly available resource that provides detailed information on the abundance, characteristics, and distribution of US wetlands. The majority of NWI features mapped within the three reasonable alternatives are classified as riverine. Riverine systems may include wetlands and deepwater habitats contained within a channel. All NWI features mapped within the three reasonable alternatives are also classified as being excavated by humans. NWI wetland features mapped in the study area are mostly small isolated features, but a few larger impoundments also occur in the study area. The NWI features in the study area range from 0.23 acre to 110.9 acres. Many of the aquatic features in the study area would not be considered waters of the U.S. because they are isolated and not connected to other waters of the U.S. The larger perennial drainage canals would likely be considered waters of the U.S., but small ephemeral and intermittent drainage canals/ditches and elevated irrigation canals/ditches would not likely be subject to Section 404 of the CWA. The drainage features are shown relative to irrigation canals/ditches in **Exhibits 4-9** through **4-9.7** in **Appendix A** (TxDOT 2018).

4.9.3.2 *Environmental Effects*

The three reasonable alternatives are generally similar with respect to potential impacts to water resources and associated permitting. Water resources in the study area include man-made irrigation and drainage canals, relatively small excavated ponds and lakes, and temporarily flooded natural depressions. While the three reasonable alternatives cross

drainage and irrigation canals and ditches, it is expected they would span the majority of larger features, and it is required by TxDOT design standards and other applicable regulations that minimal flows and existing hydraulics are maintained (TxDOT 2018). In addition, the majority of the excavated ponds and lakes and natural depressions were avoided during earlier planning stages.

Because the potential waters of the U.S. in the study area would be spanned by proposed bridges, the crossings would require minimal permitting for Section 404 of the CWA, and would likely be authorized by NWP 14 for Linear Transportation Projects because the permanent impacts are expected to be less than 0.5 acre at each individual crossing of a potential water of the U.S. There are potential impacts to wetlands as mapped by the NWI; however, the total impacts to mapped features are less than 5 acres, and it is anticipated all impacts to individual wetland features would fall below the 0.5-acre threshold for a NWP 14. It is expected all three reasonable alternatives would require Section 404 permits for minor impacts to waters of the U.S., but there are no significant differences in terms of potential impacts to waters of the U.S. Once more detailed studies are conducted, the USACE will be requested to review the Section 404 jurisdictions of aquatic features potentially impacted to determine permitting requirements under Section 404 of the CWA. The construction activities would likely meet the requirements of all general and regional conditions applicable to NWP 14. Since the final design has not been completed, it is impossible to determine specific impacts to water resources and whether any of the alternatives would require a Pre-construction Notification (PCN) to the USACE. The number of crossings of drainage and irrigation canals and ditches, acres of mapped aquatic habitats and floodplains, field-verified aquatic land cover types, and numbers of water wells were used to determine the water resources that could be potentially impacted by the three reasonable alternatives (**Table 4-7**).

None of the reasonable alternatives would require permitting under Section 10 of the RHA, or require an easement from the General Land Office (GLO) for crossing a state-owned streambed. The three reasonable alternatives would all likely require minor permitting under the CWA Section 404, but permanent impacts at each crossing would be less than 0.5 acre and would likely be covered by NWPs. The three reasonable alternatives would all likely require minor permitting from county irrigation and drainage districts. It is expected that each of the three reasonable alternatives would span the majority of drainage or irrigation canals or ditches or other water features, and TxDOT design standards and other applicable regulations require that minimal flows and existing hydraulics are maintained. Additionally, the majority of the excavated ponds and lakes and natural depressions were avoided during earlier planning stages. Therefore, none of the three reasonable alternatives are expected to have significant encroachment-alteration effects on wetlands and other waters of the U.S.

Table 4-7. Water Resources Within the Three Reasonable Alternatives

	2014 Modified 2 Alternative	2014 PSM Alternative	FM 1423 PSM Alternative	No-Build Alternative
Number of Proposed Drainage Canal/Ditch Crossings with less than 0.5 acre of Potential Impacts	11	11	6	0
Number of Proposed Irrigation Canal/Ditch Crossings with less than 0.5 acre of Potential Impacts	15	21	35	0
Mapped Drainage Canal Area (acres)	2.61	2.49	1.37	0
Mapped Irrigation Canal Area (acres)	1.99	2.61	1.76	0
Mapped 100-Year Floodplains (acres)	140.2	148.7	161.2	0
Mapped NWI Features (acres)	4.17	4.81	4.59	0
EMST Marsh Habitat (acres)	0	1.71	2.25	0
TPWD's Ecological Mapping System of Texas (EMST) Mapped Open Water Habitat (acres)	1.03	0	0	0
Field-verified LU/LC Open Water Habitat (acres)	1.70	0.44	0.60	0
Number of Water Wells	1	1	1	0
Source: TxDOT 2018.				

No-Build Alternative

The No-Build Alternative would not include construction, and therefore, would not result in impacts to wetlands and other waters of the U.S.

4.10 Ecological Resources

This section describes the ecological resources within the three reasonable alternatives and applicable regulatory resources that must be addressed. Investigations to classify the affected environment included a review of pertinent background information including USGS 7.5 minute topographic quadrangles, the Hidalgo County soil survey (USDA 2017), 2017 aerial photography (https://tnris.org/texas-imagery-service/), Texas Parks and Wildlife Department (TPWD) Ecological Mapping Systems of Texas (EMST), Texas Natural Diversity Database

(TXNDD) element occurrence records (TXNDD 2017), USFWS National Wetland Inventory (NWI) maps, the Vegetation Types of Texas (McMahan, et al. 1984), various project maps, and reconnaissance-level field investigations to verify ecological conditions.

For the DEIS, ecological resources were evaluated in two major categories to identify potential impacts. These categories are 1) vegetation and wildlife, and 2) threatened and endangered species. The following sections provide descriptions of applicable regulatory requirements, existing conditions, and impact assessments for these categories. More detailed information on the ecological resources analysis is provided in the technical report titled *DEIS Reasonable Alternatives Biological Technical Report* on file at TxDOT (TxDOT 2018).

4.10.1 Vegetation and Wildlife

Provision (4)(A)(i) of the 2017 MOU between TxDOT and TPWD requires that the vegetation and habitat be characterized and the impact to vegetation described. In accordance with the 2017 TxDOT-TPWD MOU, there are various triggers for coordination with TPWD that must be considered. TxDOT defines the type and amount of habitat that could be impacted by the proposed project by using information from the Texas Conservation Action Plan (TCAP); EMST; and 2017 aerial photography.

EO 13112 on Invasive Species, effective February 3, 1999, directs federal agencies to prevent the introduction and control the spread of invasive species. Invasive species are defined by the EO as “an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.” The EO directs federal agencies avoid and/or minimize the potential spread of invasive species.

The Federal Memorandum on Environmentally Beneficial Landscaping, effective April 26, 1994, directs federal agencies to incorporate beneficial landscaping into their projects and facilities, where practical.

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. §§ 703–712) prohibits the taking, killing, possession, transportation, import, and export of migratory birds, their eggs, parts, and nests without a permit from the USFWS or other regulatory authorization. Protections extend to migratory bird nests determined to contain eggs or young.

The Fish and Wildlife Coordination Act (FWCA) of 1934 and subsequent amendments, as codified in 16 U.S.C. 661-666(c), were enacted to protect wildlife when federal actions result in the control or modification of a natural stream or body of water. The act requires federal agencies to consider the effect that water-related projects have on fish and wildlife resources; act to prevent loss or damage to these resources; and provide for the development and improvement of these resources.

The Bald and Golden Eagle Protection Act (BGEPA) of 1940 and expanded in 1962 (16 U.S.C. §§ 668-668d) prohibits the take of bald and golden eagles unless pursuant to regulations. The BGEPA defines the take of an eagle to include a broad range of actions, including to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. The USFWS has regulatory authority over this act.

The Magnuson Stevens Fisheries Conservation Management Act (MSFCA), first enacted in 1976 then reauthorized in 2006 and administered by the National Marine Fisheries Service (NMFS), protects critical habitat for marine species. The MSFCA applies to projects that are federally funded, located within a county with tidally-influenced waters, and affect essential fish habitat (EFH).

The Marine Mammal Protection Act (MMPA) was enacted in 1972 and amended in 1994 to protect populations of marine mammals from declining beyond that required to maintain sustainable populations. The MMPA is codified at 16 U.S.C. Chapter 1361-1423h and is administered by the USFWS over the management of sea otters, walrus, polar bears, dugong and manatees, and by the NMFS over the management of cetaceans (whales and porpoises) and pinnipeds (seals) other than the walrus.

More detailed information about pertinent regulations is provided in the technical report titled *DEIS Reasonable Alternatives Biological Technical Report* on file at TxDOT (TxDOT 2018).

4.10.1.1 *Existing Conditions*

The three reasonable alternatives are located within the LRGV sub-region of the Western Gulf Coastal Plain Ecoregion, also known as the Gulf Coast Prairies and Marshes (ftp://newftp.epa.gov/EPADataCommons/ORD/Ecoregions/tx/tx_front.pdf). This ecoregion is a slowly drained, relatively level floodplain that slopes gently toward the Gulf of Mexico. Historically, the Western Gulf Coastal Plain was dominated by tallgrass prairies and oak savannas. From a physiographic perspective, the study area is on the boundary of the flat and wetter Coastal Prairies to the east and the small ridges and valleys of the uplands of the Interior Coastal Plains to the north and west (http://www.beg.utexas.edu/UTopia/images/pagesizemaps/physiography.pdf). The Interior Coastal Plains historically supported the South Texas Plains, which were dominated by mesquite (*Prosopis glandulosa*) brushlands and chaparral.

Vegetation

The native vegetation of much of south Texas is mesquite-grassland or thorny brush, which is characteristic of the Tamaulipan biotic province (Blair 1950). Blair differentiated the LRGV as a distinct biotic district called the Matamoran within the Tamaulipan Biotic Province. Honey

mesquite dominates the majority of the Tamaulipan Biotic Province, but the Matamoran Biotic District is characterized by thorny brush with greater species diversity. Prominent species of the Matamoran Biotic District that decrease in abundance from south to north include retama (*Parkinsonia aculata*), Texas ebony (*Pithecellobium flexicaule*), anaqua (*Ehretia anacua*), and anacahuita (*Cordia boissieri*).

The USFWS describes the region surrounding the three reasonable alternatives (Hidalgo County north of the Rio Grande floodplain) as the Mid-Delta Thorn Forest Community (https://www.fws.gov/refuge/Lower_Rio_Grande_Valley/wildlife_habitat.html). This community was once extensive, but less than 5 percent of it remains on small scattered remnant tracts (most restricted to 100 acres or less) (Jahrsdoerfer and Leslie 1988). According to *The Vegetation Types of Texas* (McMahan et al. 1984), the region surrounding the three reasonable alternatives includes three mapped vegetation types: Crops, Urban, and Mesquite-Granjeno Parks. EMST data shows 18 vegetation types within the three reasonable alternatives. Vegetation types mapped within the three reasonable alternatives by EMST and converted to TPWD-TxDOT MOU vegetation include six types: Agriculture; Disturbed Prairie; Riparian; Scrub, Thornscrub, Shrubland; Tallgrass Prairie, Grassland; and Urban. More detailed information about vegetation is provided in a separate technical report titled *DEIS Reasonable Alternatives Biological Technical Report* on file at TxDOT (TxDOT 2018).

Wildlife

The LRGV is located in the subtropical Tamaulipan Biotic Province, which is characterized by thorny brush and shrublands with a high level of biodiversity (Blair 1950). The study area is in a biological transition zone between the wetter coastal prairies to the east and the drier south Texas plains to the west. This transition zone provides numerous habitat types resulting in increased species diversity. The diverse wildlife includes species characteristic of subtropical, southwestern desert, eastern forest, prairie, and coastal marsh habitats. Many neotropical species such as the ocelot (*Leopardus pardalis*), Gulf Coast jaguarundi (*Herpailurus yaguarondi*), white-nosed coati (*Nasua narica*), northern beardless-tyrannulet (*Camptostoma imberbe*), rose-throated becard (*Pachyramphus aglaiae*), tropical parula (*Parula pitiayumi*), black-striped snake (*Coniophanes imperialis*), and speckled racer (*Drymobius margaritiferus*) reach the northern limits of their distribution in the LRGV. Many temperate species such as wintering migratory birds reach the southern extent of their ranges in south Texas. Both the Central and Mississippi Flyways funnel through the region, and the LRGV is one of the premier birding locations in the world. Numerous protected or rare species are restricted to remnant thorn-scrub habitats that occur in small patches throughout the region.

Terrestrial habitats in the study area include primarily grasslands, cultivated croplands, and brush and shrubland patches. These habitats support a diverse assemblage of vertebrates

and invertebrates. According to Blair (1950) and Dixon (2000), there are at least 22 lizard and 36 snake species, and 61 mammalian species that occur or have recently occurred in the Matamoran District of the Tamaulipan Biotic Province. The study area also contains abundant and diverse avifauna, and is the most productive area for recreational birding in the country. Over 515 avian species have been recorded in the LRGV. The region also provides significant habitat for hundreds of terrestrial invertebrates. The biodiversity of the region is because of its subtropical environment and unique deltaic physiography. Brush and shrubland habitats provide crucial wildlife habitat for numerous species including several threatened and endangered species or species of greatest conservation need (SGCN) such as Audubon's oriole (*Icterus graduacauda audubonii*), plains spotted skunk (*Spilogale putorius interrupta*), black-striped snake, reticulate collared lizard (*Crotaphytus reticulatus*), Texas tortoise (*Gopherus berlandieri*), spot-tailed earless lizard (*Holbrookia lacerata*), Texas horned lizard (*Phrynosoma cornutum*), and Texas indigo snake (*Drymarchon corais*). Numerous insects and other arthropods also help characterize the region.

With the exception of the Rio Grande and its associated resacas and wetlands, the majority of the LRGV region is relatively flat coastal plain that drains gradually eastward to the Laguna Madre and the Gulf of Mexico. The region surrounding the three reasonable alternatives drains into one natural water feature, the Arroyo Colorado, but there are also numerous manmade canals and ditches, ponds, wetlands, and impoundments scattered throughout the area. The largest area of wetland habitat within the region is located at the man-made Edinburg Scenic Wetlands World Birding Center. The primary drainages in the study area are the Donna Main Canal and the Santa Cruz Canal. There are between 4.2 and 4.8 acres of NWI features mapped within each of the three reasonable alternatives (**Exhibits 4-9** through **4-9.7** in **Appendix A**).

Aquatic features in the study area are relatively rare, but important for aquatic wildlife. According to Blair (1950) and Dixon (2000), there are 23 species of amphibians in the Tamaulipan Biotic Province, including three species of salamanders and 20 anuran species (frogs and toads). Salamander species that could occur in the study area are black-spotted newt, south Texas siren (*Siren* sp. 1), and barred tiger salamander (*Ambystoma tigrinum*). Anuran species in the region represent multiple genera including chorus frogs (*Pseudacris* spp.), spadefoot toads (*Scaphiopus* spp.), true frogs (*Rana* spp.), and true toads (*Bufo* spp.). Four aquatic species of turtles have been recorded in the region including red-eared slider (*Thrachemys scripta elegans*), Rio Grande river cooter (*Pseudemys gorzugi*), Texas spiny softshell turtle (*Apalone spinifera emoryi*), and yellow mud turtle (*Kinosternon flavescens flavescens*). Aquatic features in the study area also support populations of water snakes (*Nerodia* spp.), water birds of various species, and numerous major groups including *Insecta* (primarily larval forms), *Mollusca* such as mussels and snails, and *Crustacea* such as crawfish or shrimp. Common fish species that could potentially occur in the study area include

Tamaulipas shiner (*Notropis braytoni*), red shiner (*N. lutrensis*), inland silverside (*Menidia beryllina*), sheepshead minnow (*Gambusia affinis*), catfish (*Ictaluridae* spp.), and carp (*Cyprinus carpio*).

In order to protect the high species diversity and the abundance of federal or state protected species in the LRGV, the USFWS established three National Wildlife Refuges (NWRs) in the region. The LRGV-NWR consists of numerous tracts of remnant native vegetation located throughout the region. One tract of the LRGV-NWR, the Goodfields tract, is located immediately west of the three reasonable alternatives. In addition, a conservation easement to the Valley Land Fund (VLF) is located near the three reasonable alternatives.

4.10.1.2 *Environmental Effects*

Most of TxDOT-TPWD MOU BMP's triggers cannot be evaluated at this preliminary stage of the design of the three reasonable alternatives. However, it is anticipated that all reasonable alternatives would exceed impact thresholds defined in the MOU for Agriculture; Disturbed Prairie; Scrub, Thornscrub, Shrubland; and Tallgrass Prairie, Grassland vegetation types. Therefore, coordination with TPWD would be required.

To comply with the EO 13112 on Invasive Species and Environmentally and Economically Beneficial Landscaping, the TxDOT implements appropriate measures on a programmatic basis through its Roadside Vegetation Management Manual and Landscape and Aesthetics Design Manual.

To ensure the project complies with the MBTA, TxDOT will implement bird BMPs, where applicable. See **Section 7.0** for the BMPs.

Any of the three reasonable alternatives may require one or more Section 404 CWA permits, compliance with the terms of a Section 404 CWA Nationwide Permit (NWP) typically satisfies FWCA coordination requirements.

Any of the three reasonable alternatives are not within the breeding or wintering range and/or suitable habitat for Bald or Golden Eagles. Therefore, no BGEPA impacts are expected.

None of the three reasonable alternatives are located within a county with tidally-influenced waters, and none will impact EFH.

None of the three reasonable alternatives are in an area that supports populations of marine mammals.

The three reasonable alternatives identified within the study area are roughly the same size, and each would result in comparable direct effects on vegetation and wildlife. The 2014

Modified 2 Alternative, 2014 PSM Alternative, and FM 1423 PSM Alternative would require approximately 1,057 acres, 1,076 acres, and 1,061 acres of right-of-way (ROW), respectively.

The three reasonable alternatives are generally similar to one another in vegetation cover and land use and would result in similar impacts from clearing or otherwise altering vegetation and wildlife habitat within the proposed ROW. Based on analysis of aerial imagery 13 LU/LC types were identified within the three reasonable alternatives. The acreages of these LU/LC types by alternatives are summarized in **Table 4-3** (**Exhibits 4-5.1** through **4-5.13** in **Appendix A**). More detailed analysis of land use and habitat is provided in the technical report titled *DEIS Reasonable Alternatives Biological Technical Report* on file at TxDOT (TxDOT 2018).

On a relative scale, the various alternatives are similar with respect to impacts to natural habitats. Remnant patches of native brush and shrubland habitat are important in the region because of their rarity, unique characteristics, and potential for supporting wildlife. Remnant native brush patches are included in the Brush and Shrubland LU/LC types. The 2014 Modified 2 Alternative would potentially impact the greatest area of Brush and Shrubland LU/LC types (as shown in **Table 4-3**). Areas between these brush and shrub patches, as well as patches of other natural habitats in the area, form wildlife corridors which are essential for wildlife conservation. They allow wildlife to move between natural areas, allow for the exchange of genetic materials among populations of wildlife, and they are important dispersal routes for numerous species of wildlife. These habitat patches could be fragmented and degraded by induced growth. To mitigate for potential impacts to natural wildlife corridors, TxDOT proposes to construct one or more wildlife crossings associated with the proposed roadway. One relatively large patch of brush located west of Brushline Road and south of FM 490 would be impacted by all three reasonable alternatives. This area could be considered for a potential location for a wildlife crossing in the design of the roadway to mitigate for potential impacts to wildlife. The 2014 Modified 2 Alternative would go through the corridor between the Goodfields Tract of the LRGV-NWR west of Brushline Road and properties under conservation easement to the VLF east of Brushline Road (TxDOT 2018). This area would also be considered for a potential location for a wildlife crossing. Specific locations of wildlife crossings would be determined by TxDOT with input from agencies such as USFWS and TPWD. See **Section 7.0** for more detailed information about environmental permits, issues, and commitments (EPIC) sheets.

Initial impacts to wildlife would occur primarily because of habitat loss, degradation, and fragmentation and the resulting displacement of wildlife from habitat and disturbance impacts during and after construction. Birds, mammals, and most reptiles are mobile and would likely avoid construction related impacts, but would be impacted by the temporary disturbance of habitats during construction and the permanent loss of a relatively minor amount of suitable habitat.

Any of the three reasonable alternatives are not expected to adversely affect the regional populations of wildlife species. Some immobile species could be directly harmed or killed by the project, primarily during initial land-clearing activities. In addition, birds and egg laying reptiles could be directly impacted during the general nesting season from February 15 through October 1. Land-clearing activities should be scheduled outside the nesting period to avoid impacts to nesting animals. If land-clearing does not occur outside of the nesting season, appropriate BMPs will be implemented. See **Section 7.0** for more detailed information. Construction activities are likely to result in mortality of individuals of some wildlife species that are fossorial, slow-moving, or prone to seek cover in debris or other shelter rather than flee a disturbance activity, or that may be hibernating or are otherwise dormant at the time of construction. This could include species such as amphibians, burrowing mammals, lizards, and snakes. After construction is complete, automobile traffic may result in further wildlife mortality. Noise from construction and elevated noise levels from traffic during the operation of the roadway could cause further displacement of individuals of species.

Encroachment-alteration effects of the three reasonable alternatives could result in additional loss and fragmentation of vegetation communities on undeveloped lands within the study area. 2017 Aerial imagery analyzed to map LU/LC for the three reasonable alternatives (Exhibits 5.1 through 5.13 in TxDOT 2018) show that the absence of SH 68 has not precluded development from occurring throughout much of the region, especially in the southern portion of the three reasonable alternatives. Nonetheless, if development does occur within the study area in response to the presence of SH 68, it would have potentially greater impacts to vegetation communities in the northern portions of the three reasonable alternatives since land in the central and southern portions already contains large areas of residential and commercial development and agriculture. Additionally, because of access from FM 490 and the existing network of county roads, future development in the northern portions of the three reasonable alternatives could occur regardless of whether SH 68 is built.

Encroachment-alteration effects could reduce usable habitat for some species of birds and other wildlife that avoid edge habitat as habitat may be fragmented by development. This may promote generalist species while limiting the ability of other, less generalist species to thrive. Much of the northern portions of the three reasonable alternatives, which is the area where the most development could occur in response to the presence of SH 68, is used for agriculture or as rangeland for cattle grazing. There are also a few relatively large areas of brush or shrubland, but they are patchily distributed. Consequently, wildlife occurring in the northern portions of the three reasonable alternatives is likely composed predominantly of species that will utilize relatively open habitats and edge habitats. As a result, encroachment effects to wildlife as a result of the habitat losses associated with the proposed project are likely to be minor. Automobile traffic may result in increased wildlife mortality from collisions

with vehicles. Traffic noise may drive away species that are sensitive to increased ambient sounds.

No-Build Alternative

The No-Build Alternative would not include construction and therefore, would not impact vegetation or wildlife.

4.10.2 Threatened and Endangered Species

Provision (4)(A)(i) of the 2017 MOU between TxDOT and TPWD requires that the impact of the proposed action to threatened, endangered and other rare species be described, and mitigated, where practical, in accordance with Provision (4)(A)(ii) of the TxDOT-TPWD MOU. There are various TPWD triggers that require coordination with TPWD. TxDOT defines the type and amount of habitat that could be impacted by using information from the TCAP; EMST; TXNDD; TPWD county list of Rare and Protected Species of Texas; USFWS county list of endangered, threatened, and candidate species; and current aerial photography.

The Endangered Species Act (ESA) of 1973 (16 U.S.C. §§1531 et seq.) directs the USFWS (for terrestrial and freshwater species) and the NMFS (for marine species) to identify and protect endangered and threatened species and their critical habitat. Section 9 of the ESA prohibits the unauthorized "take" of listed species. Under the ESA, the term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect a listed species, or to attempt to engage in such conduct. "Harm" includes significant habitat modification or degradation that actually kills or injures wildlife by significantly impairing essential behavior patterns, such as breeding, feeding, or sheltering. Section 7 of the ESA requires federal agencies to consult with USFWS and/or NMFS to ensure that any federal action authorized, funded, or carried out is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of designated critical habitat.

Endangered species legislation was passed in Texas in 1973 and amended in 1981, 1985, and 1987 (TPWD 1991), and the ensuing TPWD regulations are found in Title 31 of the TAC, Sections 65.171–65.177 (for animals) and 69.1-69.9 (for plants) (Chapters 67, 68, and 88 of the TPWD Code, respectively). These sections regulate the taking, possessing, transporting, exporting, processing, selling/offering for sale, or shipping of endangered or threatened species of fish, wildlife, and plants. State regulations do not protect state-threatened species from incidental or indirect impacts, indirect take, or habitat destruction. The TXNDD, which is part of the TPWD's Texas Wildlife Science Research and Diversity Program, catalogs, monitors, and provides information on rare species and communities of concern whether federally or state listed.

4.10.2.1 *Existing Conditions*

The list of federally protected species for Hidalgo County was obtained from the USFWS Information for Planning and Conservation (IPaC) system, and the official list of Rare, Threatened, and Endangered Species of Texas by County for Hidalgo County was obtained from TPWD (USFWS 2017, TPWD 2017). Element occurrence data was obtained from the TXNDD (TXNDD 2017). According to USFWS, there is no critical habitat designated for any species within the three reasonable alternatives (http://ecos.fws.gov/ecp0/profile/speciesProfile?spcode= B07N#crithab).

There are 11 federal listed threatened and endangered species, one federal candidate for listing, and one federal proposed threatened species of potential occurrence in Hidalgo County. These include the interior least tern (*Sterna antillarum athalassos*)-endangered, northern aplomado falcon (*Falco femoralis septentrionalis*)-endangered, piping plover (*Charadrius melodus*)-threatened, red knot (*Calidris canutus rufa*)-threatened, red-crowned parrot (*Amazona viridigenalis*)-candidate, gulf coast jaguarundi-endangered, ocelot-endangered, jaguar (*Panthera onca*)-endangered, Rio Grande silvery minnow (*Hybognathus amarus*)-endangered, Texas hornshell (*Popenaias popeii*)-proposed endangered, Texas ayenia (*Ayenia limitaris*)-endangered, Walker's manioc (*Manihot walkerae*)-endangered, and star cactus (*Astrophytum asterias*)-endangered, (USFWS 2017, TPWD 2017, TxDOT 2018).

In addition to the federal-listed species (which also have status at the state level), there are 31 additional state threatened species and 46 SGCN that are not federal listed of potential occurrence in Hidalgo County (TPWD 2017, TxDOT 2018). The additional state threatened species include five amphibians, 13 birds, one fish, three mammals, two mussels, and seven reptiles. The additional SGCNs include nine birds, two fishes, nine insects, three mammals, one reptile and 22 plants (TPWD 2017, TxDOT 2018).

4.10.2.2 *Environmental Effects*

An analysis of habitat present within the three reasonable alternatives was conducted, and it was determined that only four of the 13 federally protected species, 18 of the 31 state-listed species, and 30 of the 46 SGCN could be impacted by the alternatives. Due to similarities among the variety and amounts of habitats within each of the three reasonable alternatives, determinations of effects/impacts to individual species apply to all three reasonable alternatives, as summarized below.

Suitable habitat for three federally listed endangered species (ocelot, Texas ayenia, and Walker's manioc) and one federal candidate species (red-crowned parrot) was identified in or adjacent to the three reasonable alternatives. No breeding populations of the ocelot are known from the region surrounding the three reasonable alternatives, but remnant brush and

shrubland patches, grasslands, and canals and drainages could be used by ocelots as travel/dispersal corridors. Suitable habitat for Texas ayenia, and Walker's manioc is limited to brush and shrubland patches. Suitable habitat for the red-crowned parrot includes palms and other large trees that occur primarily in urban and suburban areas. No designated critical habitat for any federally listed species within or adjacent to the three reasonable alternatives would be affected.

There are 18 state-threatened species that could potentially be impacted by all three reasonable alternatives including the black-spotted newt (*Notophthalmus meridionalis*), Mexican treefrog (*Smilisca baudinii*), sheep frog (*Hypopachus variolosus*), south Texas siren (*Siren* sp. 1), white-lipped frog (*Leptodactylus fragilis*), gray hawk (*Asturina nitida*), northern beardless-tyrannulet, tropical parula, white-tailed hawk (*Buteo albicaudatus*), zone-tailed hawk (*Buteo albonotatus*), Coues' rice rat (*Oryzomys couesi*), southern yellow bat (*Lasiurus ega*), black-striped snake, northern cat-eyed snake (*Leptodeira septentrionalis*), reticulate collared lizard, Texas horned lizard, Texas indigo snake, and Texas tortoise.

There are 30 SGCN that could potentially be impacted by all three reasonable alternatives including Audubon's oriole, Brownsville common yellowthroat (*Geothlypis trichas insperata*), Sennett's hooded oriole (*Icterus cucullatus sennetti*), western burrowing owl (*Athene cunicularia hypugaea*), cave myotis bat (*Lasiurus ega*), Mexican long-tongued bat (*Choeronycteris mexicana*), plains spotted skunk, spot-tailed earless lizard, Amelia's abronia (*Abronia ameliae*), arrowleaf milkvine (*Matelea sagittifolia*), Bailey's ballmoss (*Tillandsia baileyi*), Chihuahua balloon-vine (*Cardiospermum dissectum*), Cory's croton (*Croton coryi*), Falfurrias milkvine (*Matelea radiata*), Jones' nailwort (*Paronychia jonesii*), large selenia (*Selenia grandis*), Mexican mud-plantain (*Heteranthera mexicana*), Runyon's cory cactus (*Coryphantha macromeris v. runyonii*), Runyon's water-willow (*Justicia runyonii*), sand brazos mint (*Brazoria arenaria*), sand sheet leaf-flower (*Phyllanthus abnormis var. riograndensis*), shortcrown milkvine (*Matelea brevicoronata*), Siler's huaco (*Manfreda sileri*), small-leaved yellow velvet-leaf (*Thelypodiopsis shinnersii*), St. Joseph's staff (*Manfreda longiflora*), stinking rushpea (*Pomaria austrotexana*), Texas peachbush (*Prunus texana*), Vasey's adelia (*Adelia vaseyi*), Wright's trichocoronis (*Trichocoronis wrightii var. wrightii*), and yellow-flowered alicoche (*Echinocereus papillosus*). More detailed discussion of the anticipated impacts on protected species is provided in the threatened and endangered species section of the *DEIS Reasonable Alternatives Biological Resources Technical Report* (TxDOT 2018).

Most of the rare species triggers under the TxDOT-TPWD MOU cannot be evaluated at this preliminary stage of the design of the three reasonable alternatives. However, as described above, all three reasonable alternatives for SH 68 would potentially impact threatened and endangered species and SGCN. Therefore, coordination with TPWD would be required and BMPs would be implemented. See **Section 7.0** for more detailed information about EPICs.

All three reasonable alternatives would affect habitats suitable for many of the state threatened species and SGCN. In addition, many of these species are documented near the three reasonable alternatives (TXNDD 2017). The birds, mammals, and most of the reptiles are highly mobile and would likely avoid construction related impacts, but would be impacted by the temporary disturbance of habitats during construction and the permanent loss of a relatively minor amount of suitable habitat. In addition, habitats in the vicinity of the roadway could be degraded by noise, lighting, and pollution related to the operation and maintenance of the facility. Any of the three reasonable alternatives could also result in additional development and secondary growth adjacent to the new roadway. Secondary growth could further impact state listed threatened and endangered species, but it is difficult to predict the degree of indirect impact. It is anticipated that all three reasonable alternatives would result in relatively similar impacts from induced growth and other indirect effects. See **Sections 4.16** and **4.17** for further analysis of Induced Growth and Cumulative Effects, respectively.

The listed amphibians and the Texas tortoise are not mobile and individuals could be directly harmed or killed, primarily during initial land-clearing activities, but any of the three reasonable alternatives are not expected to adversely affect the regional populations of rare species. In addition, the rare birds listed above could be directly impacted during the nesting season from February 15 through October 1. Land-clearing activities would be scheduled outside the nesting period to avoid impacts to nesting birds, including the rare birds listed above.

Encroachment-alteration effects to federally listed threatened or endangered species are expected to be minimal. The closest known extant ocelot population is approximately 20 miles northeast of the three reasonable alternatives, and most patches of dense brush in the study corridor are either too small or lack the horizontal cover in the lowermost stratum to be considered suitable habitat for the species. Therefore, the species would be expected to use the study area only as a potential travel/dispersal corridor.

Because of access from FM 490 and the existing network of county roads, future development in the northern portions of the three reasonable alternatives could occur regardless of whether SH 68 is built or not. Presence of Texas ayenia or Walker's manioc in the three reasonable alternatives is currently unknown, but encroachment-alteration effects would likely be similar to effects resulting from construction, regardless of whether SH 68 is built or not.

Possible encroachment-alteration effects to state-listed species and SGCNs would be generally similar to those expected as a result of construction. Development could reduce habitat availability for, and fragment habitats used by, any of the state-listed or SGCN species of birds, mammals, or reptiles present in the area surrounding the Three reasonable

alternatives. Increased development could also result in increased potential for mammals, snakes, and lizards to suffer vehicle collision mortality, if present in the study area. Comparable encroachment-alteration effects would be expected from each of the reasonable alternatives.

Species specific and/or general BMPs to avoid and/or minimize potential impacts of the project to rare species are available and would be implemented for many of the state listed species and SGCNs. However, there are no species specific BMPs for plants. Presence/absence surveys for SGCN plants will be conducted on the recommended preferred alternative, and if any of the species are found TxDOT will coordinate with TPWD and try to avoid, collect seed from, or relocate the individuals in the project area.

No-Build Alternative

The No-Build Alternative would have no effect/impact on any federal or state-listed threatened or endangered species or SGCN. The No-Build Alternative would also result in no encroachment-alteration effects to federally protected species or state protected species.

4.11 Air Quality

An assessment of the potential effects on the region's air quality was conducted in accordance with the rules and procedures established by TxDOT in their *Environmental Handbook for Air Quality* (2017b), *Standard Operating Procedure for Preparing Air Quality Statements* (2017c), and other general guidance provided through TxDOT's online Air Quality Toolkit. Using projected traffic data and current air quality conditions, the three reasonable alternatives and No-Build Alternative were evaluated for compliance with the following air quality regulatory and analysis requirements:

- Transportation Conformity
- Hot-spot Analysis
- Carbon Monoxide Traffic Air Quality Analysis
- Congestion Management Process Analysis
- Mobile Source Air Toxics Analysis
- Construction-related Emissions

National Ambient Air Quality Standards

In compliance with the requirements of the Clean Air Act (CAA) and the Clean Air Act Amendments (CAAA), the EPA promulgated and adopted the National Ambient Air Quality Standards (NAAQS) to protect public health, safety, and welfare from known or anticipated

effects of six criteria air pollutants, with a reasonable margin of safety (40 CFR Part 50). The six criteria air pollutants are ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulphur dioxide (SO_2), particulate matter with a diameter less than or equal to 10 micrometers (PM_{10}), particulate matter with a diameter less than or equal to 2.5 micrometers ($PM_{2.5}$), and lead (Pb). The NAAQS define the allowable concentrations of air pollutants that may not be exceeded during a given period of time. The primary standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. The CAA and CAAA requires that all states attain compliance through adherence to the NAAQS, as demonstrated by the comparison of locally-measured pollutant concentrations with the NAAQS. Transportation conformity is the mechanism by which the NAAQS are addressed at the project level under the CAA (EPQ 2017).

Mobile Source Air Toxics

Controlling air toxic emissions became a national priority with the passage of the CAAA, whereby Congress mandated that the EPA regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the *Control of Hazardous Air Pollutants from Mobile Sources* (2007) and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System. In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors in their *2011 National Air Toxics Assessment* (EPA 2015). These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority Mobile Source Air Toxics (MSAT), the list is subject to change and may be adjusted in consideration of future EPA rules. Added capacity projects with FHWA involvement and an average annual daily traffic (AADT) exceeding 140,000 vehicles per day (VPD) require a quantitative MSAT analysis.

4.11.1 Existing Conditions

Transportation Conformity

All three reasonable alternatives are located in Hidalgo County, which the EPA has designated as an area in attainment or unclassifiable for all NAAQS (TxDOT 2016). Therefore, the transportation conformity rules do not apply, and a transportation conformity analysis is not required for the three reasonable alternatives or No-Build Alternative.

Hot-spot Analysis

All three reasonable alternatives are not located within a CO or PM nonattainment or maintenance area, as designated by the EPA. Therefore, a project level hot-spot analysis is not required for the three reasonable alternatives or No-Build Alternative.

Carbon Monoxide Traffic Air Quality Analysis

Anticipated AADT for the design year 2035 is 48,700 VPD (TxDOT 2015). A prior TxDOT modeling study and previous TxDOT analyses of similar projects demonstrated that it is unlikely that the CO standard would ever be exceeded as a result of any transportation action with an AADT below 140,000 VPD. Since the anticipated AADT does not exceed 140,000 VPD, a CO Traffic Air Quality Analysis is not required for the three reasonable alternatives or No-Build Alternative.

Congestion Management Process Analysis

All three reasonable alternatives are located within an area in attainment or unclassifiable for O_3 and CO, as designated by the EPA. Therefore, a project level Congestion Management Process Analysis is not required for the three reasonable alternatives or No-Build Alternative.

4.11.2 Environmental Effects

Mobile Source Air Toxics

Added capacity projects with FHWA involvement and an AADT exceeding 140,000 VPD require a quantitative MSAT analysis. While all three reasonable alternatives are identified as added capacity with FHWA involvement, the projected AADT for the 2035 design year is substantially less than 140,000 VPD. In accordance with TxDOT's *Standard Operating Procedure for Complying with MSAT Analysis Requirements* (2017d), air quality analysis details were coordinated with the TxDOT–Environmental Affairs Division and TxDOT–Pharr District representatives on February 22, 2017. Based on TxDOT's review of the available project data, a qualitative MSAT analysis was identified as the appropriate methodology for addressing MSATs in accordance with FHWA's latest interim MSAT guidance (TxDOT 2017e; FHWA 2016).

A qualitative MSAT analysis was performed for the three reasonable alternatives and included as part of the *DEIS Reasonable Alternatives Air Quality Analysis Technical Report* (TxDOT 2018). Based on the qualitative MSAT analysis, it is possible that localized increases and decreases in MSAT emissions may occur. The localized increases in MSAT emissions would likely be most pronounced along the new-location sections of the proposed SH 68 facility, with localized decreases occurring along existing north-south corridors. However, because of the limitations in the methodologies for forecasting these health impacts for transportation

projects, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainities associated with predicting impacts. As a result of this uncertainty, the health effects from these emissions cannot be accurately estimated. However, even if localized increases in MSAT emissions do occur, they would be substantially reduced in the future because of the implementation of EPA's vehicle and fuel regulations.

Under the No-Build Alternative, MSAT emissions would continue to be emitted in the same locations as they are today. Since the AAGRs for the north/south parallel facilities and the east/west crossing facilities are less than 6.8 percent for the 2035 design year, it is anticipated that there would be no appreciable difference among any of the three reasonable alternatives and No-Build Alternative regarding VPD within the study area (TxDOT 2015). In any event, MSAT emissions are likely to be lower than present-day levels in the 2035 design year because of the implementation of EPA's vehicle and fuel regulations.

Construction-Related Emissions

During the construction phase of any of the three reasonable alternatives, temporary increases in PM and MSAT emissions may occur from construction activities. The primary construction-related emissions of PM would be fugitive dust from site preparation. The primary construction-related emissions of MSAT would be diesel PM from diesel-powered construction equipment and vehicles.

The potential impacts of these PM emissions would be minimized by using fugitive dust control measures contained in standard specifications, as appropriate. The Texas Emissions Reduction Plan (TERP) provides financial incentives to reduce emissions from vehicles and equipment (TCEQ 2017). TxDOT encourages construction contractors to use this and other local and federal incentive programs to the fullest extent possible to minimize diesel emissions. Information about the TCEQ's TERP program can be found at: https://www.tceq.texas.gov/airquality/terp.

However, considering the temporary and transient nature of construction-related emissions, the use of fugitive dust control measures, the encouragement of the use of TERP, and compliance with applicable regulatory requirements, it is anticipated that emissions from construction of any of the three reasonable alternatives would not have any significant impact on air quality in the study area.

No-Build Alternative

Under the No-Build Alternative, construction-related emissions associated to the three reasonable alternatives would not occur. Therefore, temporary increases in PM and MSAT emissions as a result of construction activities would not occur.

4.12 Greenhouse Gas and Climate Analysis

The Earth has gone through many natural changes in climate over time. Since the industrial revolution began in the 1700s, atmospheric concentration of greenhouse gas (GHG) emissions have continued to climb, primarily due to humans burning fossil fuel (e.g., coal, natural gas, gasoline, oil and/or diesel) to generate electricity, heat and cool buildings, and power vehicles. According to the Intergovernmental Panel on Climate Change (IPCC), this increase in GHG emissions is projected to contribute to future changes in climate (Solomon 2007, Stocker 2013).

Unlike air pollutants evaluated in federal NEPA reviews, sources for GHG emissions are typically evaluated globally or per broad-scale sector (e.g., transportation, industrial, etc.) and are not assessed at the local or project-specific level, since the impacts are global and not localized or regional. In addition, from a quantitative perspective and in terms of both absolute numbers and emission source types, global climate change is the cumulative result of numerous and varied natural and human emission sources. Each source makes a relatively small addition to global atmospheric GHG concentrations. **Table 4-8** shows the potential climate stressor baseline data and future projections for the state of Texas.

Table 4-8. Summary of Projected Climate Change Stressors for the State of Texas

Climate Variable	Source	Indicator	Existing and Projected Changes
Temperature	NCA[1]	Projected	For RCP4.5, 0.74 to 6.08 days change and for RCP8.5 18.72 to 33.74 days in number of hottest days per year
		Existing	93.1 to 104.4 °F Temperature range of historical "7 hottest days" per year
	USGS[2]	Existing	70.6 to 85.9 °F annual mean maximum temperature
		Projected	3.08 to 4.5 °F (RCP4.5) to 4.64 to 6.25 °F (RCP8.5) change in annual mean maximum temperature
Drought	NCA[1]	Existing	18.18 to 55.19 days for the number/range of consecutive dry days
		Projected	0.74 to 6.91 days predicted increase in the number of consecutive dry days
	USGS[2]	Existing	0.056 to 4.602 inches existing mean soil storage
		Projected	0.045 to 0.008 inches (RCP4.5), 0.071 to 0.008 inches (RCP8.5) predicted change in annual mean soil storage
	USGS[2]	Existing	0.419 to 3.069 inches in monthly evaporative deficit
		Projected	0.196 to 0.419 inches (RCP4.5), -0.6228 to 0.629 inches (RCP8.5) predicted change in annual mean evaporative deficit per month
Wet	NCA[1]	Projected	Less than 1 day decrease or increase (ranging from -0.077 to 0.7029 day) in the number of wet days per year between RCP4.5 and RCP8.5
Monthly Runoff	USGS[2]	Existing	0.036 to 1.24 inches (0.91 to 31.47 mm)
		Projected	-0.094 to 0.65 inches (RCP4.5), 0.221 to 0.035 inches (RCP8.5)
Wildfire Potential	TxWRAP[3]	Existing	TxWRAP provides current wildfire potential across Texas.
Sea Level Rise	IPCC[4]	Existing	From 1901 to 2010, historical global mean sea level rise was between 6.69 to 8.27 inches (0.17 to 0.21 meters) change. Maximum global mean sea level during the last interglacial period (129,000 to 116,000 years ago) was, for several thousand years, at least 16 feet (5 meters) higher than present and high confidence it did not exceed 32 feet (10 meters) above present.

Table 4-8. Summary of Projected Climate Change Stressors for the State of Texas

Climate Variable	Source	Indicator	Existing and Projected Changes
		Projected	In the range 2081-2100, the likely range of global sea level rise relative to reference period of 1986 to 2005 is 1.05 to 2.07 feet (0.32 to 0.63 meters) for RCP4.5 and 1.48 to 2.69 feet (0.45 to 0.82 meters) for RCP8.5.
	NOAA[5]	Existing	Over the past 30 years global mean sea level rise has averaged approximately 0.12 inches/year (3 mm/year), based upon global tidal gauge data, or 3.54 inches over 30 years (90 mm per 30 years).
		Projected	By year 2100, 0.98 to 8.20 feet (0.3 to 2.5 meters) global sea level rise with intermediate scenario of 3.28 foot (1.0 meter). The intermediate option is slightly higher than the IPCC "likely range" scenario.
	USACE[6]	Projected	By year 2100, 0.6 to 4.9 feet (0.2 to 1.5 meters) global sea level rise.
	NCA[1]	Existing	The past century had a global average sea level rise of 8 inches.
		Projected	1–4 feet mean global average sea level is projected by the year 2100 with a plausible high of 3 to 4 feet. The study suggests decision-makers may wish to use a broader range of scenarios for risk based analysis within the range of 8 inches to as much as 6.6 feet.

Sources and Notes:
Future Climate Scenarios are based upon RCP4.5 and RCP8.5. RCP4.5 = ~650 ppm CO_2E in 2100 representing a high degree of CO_2 emission controls and RCP8.5 = ~1370 ppm CO_2E in 2100 representing business as usual with little to no CO_2 control measures implemented worldwide. [1] (USCGRP, 2014) It projects climate data for the years 2041–2070. [2] (USGS, 2016) The climate projections used was 2050-2074 compared to 1950–2005. [3] (Texas A&M Forest Service, 2017) The Wildfire Risk Assessment Portal provides current fire intensity scale ranges from 1 (very low) to 5 (very high). The Portal does not project future year scenarios. [4] (Stocker, 2013) [5] (NOAA 2017) The local sea level rise projections from the NOAA report are available for all six global sea level rise scenarios as well as low, median, and high sub-scenarios. [6] (USACE, 2014)
Abbreviations: NCA = National Climate Assessment; RCP = Representative Concentration Pathways; TXWRAP Texas A&M Wildfire Risk Assessment Portal

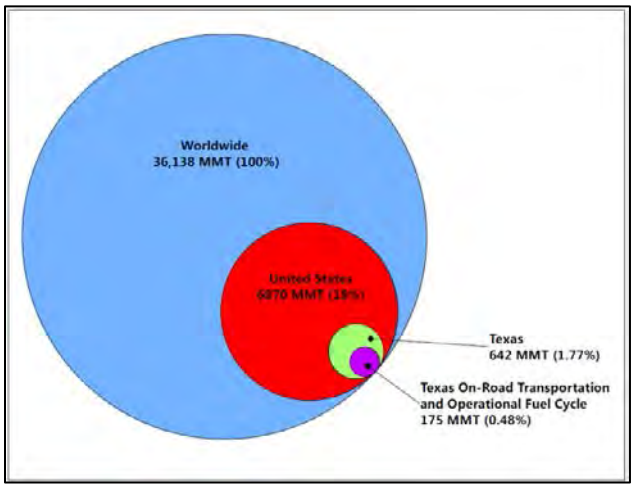
4.12.1 Statewide On-Road GHG

EPA's Motor Vehicle Emissions Simulator (MOVES2014 version) emissions model was used to estimate emissions. MOVES2014 does not account for the heavy-duty diesel Corporate Average Fuel Economy (CAFE) standards for model years 2018–2029, which should further reduce the estimated emission projections. In the base year 2010, Texas on-road and fuel-cycle carbon dioxide equivalent (CO_2E) emissions are estimated to be 171 million metric tons (MMT) per year; by 2040, emissions are estimated to be 168 MMT. Emissions are estimated to peak in 2017 at 176.6 MMT and reach a minimum in 2032 at 161.1 MMT. Changes to future regulations, market penetration for new vehicle and/or fuel technological advances, economics and personal decisions regarding travel options could substantially lower future emissions.

In 2014, approximately 36,138 MMT of carbon dioxide (CO_2) emissions were emitted worldwide, of which 175 MMT CO_2E (0.49 percent of total global emissions) were due to Texas on-road and fuel-cycle emissions (World Bank 2017). **Figure 4-4** provides a comparison of 2014 Texas (on-road transportation and fuel cycle CO_2E and Texas CO_2 emissions) and U.S. CO_2E emissions to worldwide CO_2 emissions. For the given year, the purple circle represents all vehicles traveling on existing roadways in Texas as well as vehicles traveling on newly

constructed roadways. New construction roadways are a small percentage of total roadways in Texas. For example, the average annual lane addition in the current Unified Transportation Program (UTP) is 121 miles/year, versus our existing system which is 677,577 miles.

Increasing congestion is a nationwide and worldwide challenge. Congested travel delays caused U.S. drivers to waste more than 3 billion gallons of fuel in 2014 (versus 0.5 billion gallons of fuel in 1982) and cost the U.S. $160 billion in 2014. Less congestion equals reduced emissions. Reducing congestion while meeting the demands of population growth and economic expansion requires a multi-pronged approach that includes a mix of strategies, including new funding streams, new roadway construction, increased transit, better operations, flexible work schedules and personal travel decisions.



Source: TxDOT 2017a

Figure 4-4. Comparison of 2014 Texas, U.S., and Worldwide CO_2 Emissions

4.12.2 Mitigation Measures

Strategies that reduce on-road GHG operational emissions fall under four major categories:

- Federal engine and fuel controls under the Clean Air Act implemented jointly by EPA and U.S. Department of Transportation (USDOT), which includes CAFE standards;
- "Cash for clunker" programs which remove older, higher-emitting vehicles from roads;
- Traffic system management (TSM) which improves the operational characteristics of the transportation network (e.g., traffic light timing, pre-staged wrecker service to clear accidents faster, or traveler information systems); and
- Travel demand management (TDM) which provides reductions in vehicle miles traveled (VMT) (e.g., transit, rideshare, and bicycle and pedestrian facilities).

The majority of on-road emission reductions has been achieved through federal engine and fuel controls. Lesser reductions have been achieved through the other three options.

4.13 Hazardous Materials

An assessment of the three reasonable alternatives and the No-Build Alternative was conducted in accordance with TxDOT policy and guidance, including the *Statement of Work (SOW) for Hazardous Materials Processes Related to the National Environmental Policy Act (NEPA)* (2017b), and *Environmental Handbook for Hazardous Materials* (2014a) to identify known or potential hazardous material concerns for the proposed project. Hazardous material concerns include potential impacts to regulated hazardous materials sites and oil and gas facilities occurring as a result of the three reasonable alternatives.

Following evaluation, the potential for an identified hazardous material concern to affect any of the three reasonable alternatives or No-Build Alternative was categorized in accordance with TxDOT's *SOW for Hazardous Materials Processes Related to NEPA* (2017b), as follows:

- Low Potential or No Potential Project Impacts: The hazardous material concern has a low potential to affect the proposed project and no further investigations are required.
- Possible Project Impacts: Not enough information is currently known about the proposed project and/or hazardous material concern to determine potential impacts. Further investigation, and/or additional proposed project design/ROW information, is required.
- Anticipated Project Impacts: The hazardous material concern has a high potential to impact the proposed project and further investigations, coordination, or contingencies may be required.

4.13.1 Hazardous Materials Sites

A database search for regulated hazardous materials sites with the potential to be to be affected by the proposed project was provided by Environmental Data Resources, Inc. (EDR) in August 2016, which was conducted in accordance with the American Society for Testing and Materials (ASTM) E1527-13 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (2014). In addition, a search of non-ASTM standard federal, state, tribal, and EDR proprietary databases was also provided. A complete copy of the EDR regulatory database search report is included as Attachment B in the *DEIS Reasonable Alternatives Hazardous Materials Technical Report* on file at TxDOT (TxDOT 2018).

Each of the three reasonable alternatives were evaluated to identify regulated hazardous materials sites with the potential to be affected within the proposed 350- to 400-foot wide ROW. Hazardous materials sites located within the recommended search distance, per ASTM standards, of the three reasonable alternatives were assessed for potential impacts. Table 2-1 in the *DEIS Reasonable Alternatives Hazardous Materials Technical Report* on file

at TxDOT identifies the standard regulatory databases, including the recommended minimum search distance for each, that were reviewed for completion of the hazardous materials assessment (TxDOT 2017a).

4.13.1.1 *Existing Conditions*

The EDR report (2016) identified individual regulatory database listings, and corresponding regulatory database records within 1 mile of the of the three reasonable alternatives (see Table 3-1 in *the DEIS Reasonable Alternatives Hazardous Materials Technical Report* on file at TxDOT) (TxDOT 2017a). Using current and historic aerial photography, Hidalgo CAD data, internet-based research, and a windshield survey, the highest concentration of hazardous materials sites is found in the southwest quadrant of the study area, generally located along the I-2/US 83, SH 107, and FM 1423 corridors. Note that a single listing may contain multiple entries across the various regulatory databases. A total of nine hazardous materials sites were identified within 1 mile of the of the three reasonable alternatives.

As identified in Table 3-2 in the *DEIS Reasonable Alternatives Hazardous Materials Technical Report* on file at TxDOT, no high-risk sites were identified within 1 mile of the three reasonable alternatives.

Current and former landfill/waste management facilities are identified in Table 3-3 in the *DEIS Reasonable Alternatives Hazardous Materials Technical Report* on file at TxDOT (TxDOT 2017). Only one landfill/waste management facility was identified within 1 mile of the of the three reasonable alternatives.

General observations recorded during the windshield survey include:

- Aboveground storage tanks (ASTs)
- Electrical and transformer equipment
- Stockpiling of materials
- Minor surface dumping of domestic debris
- Properties containing automotive salvage, with the potential of automobile batteries
- Security fencing and warning signs associated with industrial and commercial properties

4.13.1.2 *Environmental Effects*

The hazardous materials sites analysis focused on those areas within the ASTM search distance of 1 mile based on the recommended minimum search distance used for certain federal, state, and local regulatory databases as explained in Table 2-1 in the *DEIS*

Reasonable Alternatives Hazardous Materials Technical Report on file at TxDOT (TxDOT 2017a).

As identified in **Table 4-9**, two sites could be directly impacted by the 2014 Modified 2 Alternative and 2014 PSM Alternative, while one site located within 0.5 mile of the proposed ROW could be indirectly impacted. As identified in **Table 4-9**, seven sites located within the proposed ROW could be directly impacted by the 1423 PSM Alternative, with one site located outside of the proposed ROW that could be indirectly impacted. The location of these potentially impacted sites relative to the 2014 Modified 2 Alternative, 2014 PSM Alternative, and FM 1423 PSM Alternative is depicted on **Exhibit 4-10** in **Appendix A**. The potential for these sites to represent a hazardous materials concern are identified below.

Table 4-9. Potentially Affected Hazardous Materials Sites

Regulatory Database	Unique Site ID[1]	EDR Reference Number	Site Name/Address	2014 Modified 2 Alternative	2014 PSM Alternative	FM 1423 PSM Alternative
TIER 2	2	S113678377 S108873611	Integrity Industries, Inc. 1003 FM 490	Within Proposed ROW	Within Proposed ROW	Within Proposed ROW
TIER 2	3	S111051441	TxDOT-Pharr-Mission Maintenance-Remote #12 Stockpile(s) 0.15 mile northeast of FM 490/US 281	Within Proposed ROW	Within Proposed ROW	Within Proposed ROW
RCRA-NONGEN / NLR	562	1004786046 1016258983	National Advertising Company EXPY 83 and FM 1423	--	--	Within Proposed ROW
UST	579	U001283786	Val Verde Drive In 6218 Browning Street (Currently Stripes/Valero Service Station)	--	--	Within Proposed ROW
TSCA	596	1007088179	Alamo/Trenton Auto Sales, Inc. 4.5 miles east of US 281 and Trenton Road	Within Defined Search Distance[2]	Within Defined Search Distance[2]	--
SPILLS, and AIRS	605	S116556100 S117320259	All Valley Metal Recycling 16100 N. Val Verde Road	--	--	Within Proposed ROW
UST	623	U003583260	Stripes #2214 9224 E. SH 107	--	--	Within Proposed ROW
SWF/LF, SWRCY, and AST	626	S116753765 A100362049	Terra Firma Materials 9312 E. Curve Road	--	--	Within Defined Search Distance[2]
FINDS/ ECHO	664	1012130268	Tricon Precast, LTD. 911 Val Verde Road	--	--	Within Proposed ROW

Source: EDR 2016

Notes:

(1) Unique site ID assigned by Halff Associates, Inc. (Halff) to represent a site and associated regulatory database records.

(2) See defined recommended search distances located in Table 2.1-1 in the *DEIS Reasonable Alternatives Hazardous Materials Technical Report* on file with TxDOT (TxDOT 2017).

(3) "—" – Site located outside the defined search distance from the alternative.

Abbreviations: TIER 2, Chemical Inventory Reports; TSCA, Toxic Substances Control Act; RCRA-NONGEN/NLR, Resource Conservation Recovery Act-Non-Generators / No Longer Regulated; UST, Underground Storage Tank; AIRS, Current Emission Inventory Data; SWF/LF, Permitted Solid Waste Facilities; SWRCY, Recycling Facility Listing; AST, Aboveground Storage Tank; FINDS, Facility Index System/Facility Registry System; ECHO, Enforcement & Compliance History Information.

Integrity Industries, Inc. (ID 2)

The site is located within the proposed ROW for the 2014 Modified 2 Alternative, 2014 PSM Alternative, and FM 1423 PSM Alternative, and contains two TIER 2 regulatory database entries. The facility stores diesel fuel, oil-based drilling fluid, calcium chloride liquid, safevert fla (a specially treated lignite compound for fluid loss control), and lime. There are no reported releases for the facility. However, because the site is located within the proposed ROW, the site represents a Possible Project Impact for the 2014 Modified 2 Alternative, 2014 PSM Alternative, and FM 1423 PSM Alternative.

TxDOT-Pharr-Mission Maintenance-Remote #12 Stockpile(s) (ID 3)

The site is located within the proposed ROW for the 2014 Modified 2 Alternative, 2014 PSM Alternative, and FM 1423 PSM Alternative, and contains one TIER 2 regulatory database entry. Roadway materials, including traprock, limestone rock asphalt, asphalt bitumen, quartz, aggregate concrete, etc. are stockpiled at the facility. There are no reported releases for the facility. However, because the site is located within the proposed ROW, the site represents a Possible Project Impact to the 2014 Modified 2 Alternative, 2014 PSM Alternative, and FM 1423 PSM Alternative.

National Advertising Company (ID 562)

The site is located within the proposed ROW for the FM 1423 PSM Alternative and contains one RCRA NONGEN/NLR regulatory database entry. The facility was previously classified as a conditionally exempt small-quantity generator of ignitable waste, but was classified as not a generator of waste in February 2001. There are no reported violations for the facility. However, because of the location of the site within the proposed ROW, the site represents a Possible Project Impact for the FM 1423 PSM Alternative.

Val Verde Drive In (ID 579)

The site is located within the proposed ROW for the FM 1423 PSM Alternative and contains one UST regulatory database entry. The facility is an inactive UST site that once contained two USTs for storing gasoline. The USTs were removed from the ground in April 1999, and there are no reported releases for the facility. However, because of the location of the site within the proposed ROW, the site represents a Possible Project Impact to the FM 1423 PSM Alternative.

Alamo/Trenton Auto Sales, Inc. (ID 596)

The site is located within 0.5 mile of the proposed ROW for the 2014 Modified 2 Alternative and 2014 PSM Alternative and 2014 PSM Alternative, and contains one TSCA regulatory

database record. The facility manufactures or imports toxic chemicals on the TSCA list. The distillate of coal tar is produced at the facility by high temperature carbonization of bituminous coal and consists primarily of aromatic hydrocarbons, tar acids, and tar bases. There are no reported releases for the facility. Based on a review of the regulatory information and distance from the proposed ROW, the site represents a Low Potential Project Impact for the 2014 Modified 2 Alternative and 2014 PSM Alternative.

All Valley Metal Recycling (ID 605)

The site is located within the proposed ROW for the FM 1423 PSM Alternative and contains one SPILLS regulatory database entry. On April 7, 2014, an emergency response occurred at the facility for a fire which ignited stored piles of shredded materials. TCEQ Emergency Response was contacted by the Edinburg Fire Department dispatch. No other violations or releases are reported for the facility. Based on a review of the regulatory information, and because of the location of the site within the proposed ROW, the site represents a Possible Project Impact to the FM 1423 PSM Alternative.

Stripes #2214 (ID 623)

The site is located within the proposed ROW for the FM 1423 PSM Alternative and contains one UST regulatory database entry. The facility is an active UST site containing two USTs for storing gasoline and diesel. There are no reported releases for the facility. However, because of the location of the site within the proposed ROW, the site represents a Possible Project Impact to the FM 1423 PSM Alternative.

Terra Firma Materials (ID 626)

The site is located approximately 143 feet east of the proposed ROW for the FM 1423 PSM Alternative and contains one SWF/LF and one SWRCY regulatory database entry. The site is an active recycling and recovery facility. There are no reported releases or violations for the facility. However, because of the location of the site and the regulatory information hazardous materials concerns to the site is considered a Low Potential for Project Impact to the FM 1423 PSM Alternative.

Tricon Precast (ID 664)

The site is located within the proposed ROW for the FM 1423 PSM Alternative and contains one FINDS/ECHO regulatory database entry. The facility manufactures precast concrete structures and is identified in the regulatory database as Donna Plant but is operated by Tricon Precast, LTD. There are no reported releases or violations for the site. However, because of

the location of the site within the proposed ROW, the site represents a Possible Project Impact to the FM 1423 PSM Alternative.

Synopsis

TxDOT may conduct an Environmental Site Assessment (Phase I and/or Phase II) for Possible Project Impacts to the following seven directly-impacted sites: Integrity Industries, Inc., TxDOT-Pharr-Mission Maintenance-Remote #12 Stockpile(s), National Advertising Company, Val Verde Drive In, All Valley Metal Recycling, Stripes #2214, and Tricon Precast. In accordance with Section 5.2 of TxDOT's *Environmental Handbook for Hazardous Materials* (2014a), the Environmental Site Assessment would be prepared to determine whether known or possible contamination might be encountered during construction, and if necessary, to develop cost-effective preventive action plans or specifications to handle discovered contamination.

No-Build Alternative

Under the No-Build Alternative, the proposed SH 68 facility would not be constructed. Existing hazardous materials sites would remain undisturbed and would pose no greater risk than which is already present. Existing hazardous materials sites would continue to be remediated in accordance with federal, state, and local standards, where required. However, hazardous materials could still occur under the No-Build Alternative, as new developments would continue because of natural growth in the study area. The impacts of these new developments are anticipated to be evaluated on a case by case basis and are outside of the scope of this analysis.

4.13.2 Oil and Gas Facilities

The Railroad Commission of Texas (RRC) regulates activities for the oil and gas industry and maintains a database of current and past oil and gas facilities, including pipeline and well data. RRC records for oil and gas facilities in Hidalgo County were obtained in January 2017.

As identified by RRC, pipeline facilities were mapped as individual segments of varying length. For purposes of this analysis, the individually mapped segments were grouped into a single pipeline facility based on a segment's continuity with respect to operator and diameter, then assigned a unique pipeline identification number. Oil and gas pipelines identified in the RRC data ranged in diameter from approximately 2 inches to 30 inches, and included both in-service and abandoned pipelines. The RRC data categorized oil and gas wells as bottom wells, surface wells, cancelled wells, dry holes, plugged wells, shut-in wells, sidetrack wells, and/or surface/bottom lines.

Each of the three reasonable alternatives and No-Build Alternative were evaluated to identify both pipeline and well facilities with the potential to be affected.

4.13.2.1 *Existing Conditions*

Each of the three reasonable alternatives cross the La Blanca and San Salvador oilfields in Hidalgo County. As seen in Table 3.4 in the *DEIS Reasonable Alternatives Hazardous Materials Technical Report* on file at TxDOT, numerous pipelines cross the southern portion of Hidalgo County, many of which are abandoned (TxDOT 2017a). Currently active pipelines primarily transport natural gas. However, three pipelines are used to transport refined petroleum products.

As seen in Table 3-5 in the *DEIS Reasonable Alternatives Hazardous Materials Technical Report* on file at TxDOT, numerous oil and gas wells are documented in the southern portion of Hidalgo County (TxDOT 2017a), with multiple well types occurring at the same location.

4.13.2.2 *Environmental Effects*

Table 4-10 identifies pipeline facilities with the potential to be affected by the 2014 Modified 2 Alternative, 2014 PSM Alternative, and FM 1423 PSM Alternative. Sixteen pipeline facilities cross the proposed ROW for the 2014 Modified 2 Alternative. Twenty-one pipeline facilities cross the proposed ROW for the 2014 PSM Alternative. Twenty-one pipeline facilities cross the proposed ROW for the FM 1423 PSM Alternative.

Underground pipeline exploration/validation would need to be performed to verify exact locations and depths prior to construction activities. Pipeline facilities located within the proposed ROW represent a Possible Project Impact for the 2014 Modified 2 Alternative, 2014 PSM Alternative, and FM 1423 PSM Alternative. Where the reasonable alternative interacts with underground oil and gas pipelines, relocation or protection would be required. TxDOT would address conflicts with existing pipeline facilities during the ROW negotiation and acquisition process, prior to construction. TxDOT would coordinate with pipeline operators regarding arrangements to potentially relocate or measures to protect-in-place the pipeline facility. The final pipeline crossing decisions would be determined on a case-by-case basis during the final engineering phase for the preferred alternative.

Table 4-10. Potentially Affected Pipeline Facilities

Pipeline Operator	Unique Pipeline ID[1]	Diameter (Inches)	Product	2014 Modified 2 Alternative (within ROW)	2014 PSM Alternative (within ROW)	FM 1423 PSM Alternative (within ROW)
Petroleum Fuels Company, Inc.	1	10.75	Natural Gas	Yes	Yes	Yes
DCP Midstream, LP	6	12.75	Natural Gas	Yes	Yes	Yes
	48	10.75	Natural Gas	Yes	Yes	Yes
Texas Eastern Transmission, LP	7	30.00	Natural Gas	Yes	Yes	Yes
	11	3.50	Natural Gas	Yes	--	--
	13	6.63	Natural Gas	--	--	Yes
NuStar Logistics, LP	8	10.75	Refined Product	Yes	Yes	Yes
Enterprise Products Operating, LLC	12	12.75	Natural Gas	Yes	Yes	Yes
	51	24.00	Natural Gas	Yes	Yes	--
Tennessee Gas Pipeline Company, LLC	15	16.00	Natural Gas	Yes	Yes	Yes
	16	26.00	Natural Gas	Yes	Yes	Yes
	18	30.00	Natural Gas	Yes	--	--
Texas Gas Service Company	26	12.75	Natural Gas	Yes	Yes	Yes
	29	10.75	Natural Gas	Yes	Yes	Yes
Energy Transfer Company	33	8.63	Natural Gas	--	Yes	Yes
Brownsville Public Utilities Board	47	24.00	Natural Gas	--	Yes	Yes
Faulconer, Vernon E., Inc.	64	6.63	Natural Gas	Yes	--	--
	66	4.50	Natural Gas	--	Yes	Yes
	68	6.63	Natural Gas	Yes	--	--
	71	2.88	Natural Gas	Yes	--	--
Contract Energy, LLC	72	4.50	Natural Gas	--	Yes	Yes
	73	2.38	Natural Gas	--	Yes	Yes
	74	2.38	Natural Gas	--	Yes	Yes
	75	2.88	Natural Gas	--	Yes	Yes
	76	2.88	Natural Gas	--	Yes	Yes
	77	2.88	Natural Gas	--	Yes	Yes
	72	4.50	Natural Gas	--	Yes	Yes
TOTAL				16	21	21

Source: RRC 2017a, RRC 2017b, RRC 2017c, RRC 2017d
Note: Unique pipeline ID assigned by Halff to represent a pipeline.

Table 4-11 identifies well facilities potentially affected by the three reasonable alternatives. Of the eight potentially affected well facilities, no active oil/gas wellheads are located with the proposed ROW. The wellhead surface locations for the identified directional wells (ID 33589, ID 33598, and ID 33402) are located outside of the proposed ROW. The wellbore/sidetrack crosses the proposed ROW of the three reasonable alternatives at an unknown depth according to the RRC data, and represents an Anticipated Project Impact. Plugged gas wells, dry holes, and cancelled locations are inactive and/or non-producing well facilities, and are not anticipated to pose a hazardous materials concern. While the permitted well does not represent a hazardous materials concern at this time, it does represent a potential economic concern for the land owner because of potential lost revenue.

TxDOT would address conflicts with existing well facilities prior to construction during the ROW negotiation and acquisition process. In accordance with the standard procedures identified in *TxDOT's Hazardous Materials Project Development: Scheduling Considerations, Internal/External Coordination, and Recommended Practices for Resolving Hazmat Issues* (2008), TxDOT would coordinate with well operators to negotiate a plugging and abandonment or indemnification agreement, as appropriate.

Table 4-11. Potentially Affected Well Facilities

Well ID	Wells	2014 Modified 2 Alternative (within ROW)	2014 PSM Alternative (within ROW)	FM 1423 PSM Alternative (within ROW)
01840	Plugged Gas Well	1	--	--
31968	Dry Hole	1	--	--
33339	Cancelled Location	1	1	--
33559	Dry Hole	1	1	--
33589	Directional Well	1	--	--
33598	Directional Well	--	1	--
--	Permitted Location	--	--	1
334 02	Directional Well	--	--	1
TOTAL		5	3	2

Source: RRC 2017b, 2017c, 2017d
Note: Well ID is from the RRC.

No-Build Alternative

Under the No-Build Alternative, the proposed SH 68 facility would not be constructed. Existing pipeline and oil and gas facilities would continue to operate as they do today. However, pipeline and oil and gas facility impacts could still occur under the No-Build Alternative, as new developments would continue because of natural growth in the study area. The impacts

of these new developments are anticipated to be evaluated on a case by case basis and are outside of the scope of this analysis.

4.13.3 Other Hazardous Materials Concerns

Other potential hazardous materials not listed in the regulatory databases discussed above include asbestos and lead-based paint. Each of the three reasonable alternatives would require the acquisition of additional ROW, which would include the acquisition and demolition of buildings. In accordance with the standard procedures identified in TxDOT's guidance: *Hazardous Materials Project Development: Scheduling Considerations, Internal/External Coordination, and Recommended Practices for Resolving Hazmat Issues* (2008), buildings being demolished or renovated must be assessed and mitigated for asbestos and lead-based paint.

Hazardous materials concerns associated with building demolitions includes the risk of exposure to lead-based paint and asbestos containing materials (ACM) and represents a Possible Project Impact for the 2014 Modified 2 Alternative, 2014 PSM Alternative, and FM 1423 PSM Alternative. Estimates of lead-based paint or ACM were not available as of this writing as the buildings have not been investigated. TxDOT would address lead-based paint and asbestos issues during the ROW negotiation and acquisition process, prior to construction. Buildings potentially being displaced through the acquisition process are assessed and mitigated for asbestos, as needed, within the ROW process according to *TxDOT ROW Manual Volume 6 Miscellaneous – Chapter 1, Section 5* (2010). Surveys would be performed by licensed inspectors, and final construction plans would indicate locations, or elements, where lead-based paint and ACM is present. An assessment identifying the estimated number of buildings potentially displaced as a result of ROW acquisitions was performed for each reasonable alternative in **Section 4.1.1** of the DEIS.

Under the No-Build Alternative, the proposed SH 68 facility would not be constructed. The potential building displacements would not occur, and the need to address concerns regarding lead-based paint or ACM would not be needed.

4.14 Traffic Noise

A traffic noise analysis is required to comply with the sections of NEPA that address the avoidance and mitigation of traffic noise impacts and the Federal Highway Aid Act, which mandated FHWA to develop 23 CFR 772, the *Procedures for Abatement of Highway Traffic Noise and Construction Noise*. Compliance with the FHWA procedures is a prerequisite for granting federal-aid highway funds or FHWA approvals for construction or reconstruction of a roadway. Under the MOU between FHWA and TXDOT, TxDOT has assumed FHWA's NEPA responsibility and, in turn, compliance with the abatement, or noise reduction, procedures.

The FHWA regulations for mitigation of highway traffic noise in the planning and design of federally aided highways contained in 23 CFR 772 require the following during the planning and design of a highway project:

- Identification of traffic noise impacts; examination of potential mitigation measures;
- The incorporation of reasonable and feasible noise mitigation measures into the highway project; and
- Coordination with local officials to provide helpful information on compatible land use planning and control.

Since the current stage of engineering design is in the preliminary phase, the noise analysis for the three reasonable alternatives was limited to the first item above by identifying potential impacted noise receivers for each of the three reasonable alternatives and examining potential mitigation measure to reduce those impacts. An updated noise analysis on the recommended preferred alternative will be conducted when more specific details regarding horizontal and vertical profiles are available and documented in the FEIS. The refined analysis for the recommended preferred alternative could possibly identify more or less impacted receivers than identified in the noise analysis results summarized in the following section and will provide more details on potential mitigation and abatement measures. The noise analysis for the DEIS provides a comparable analysis of potential impacts between the three reasonable alternatives. The noise analysis for the DEIS is documented in the *DEIS Reasonable Alternatives Noise Technical Report*, available on the TxDOT website and on file at TxDOT (TxDOT 2018). The technical report provides a detailed discussion on the analysis abatement criteria, the abatement measures analyzed, and the methodology used in the analysis. A summary of the analysis is provided below.

The traffic noise analysis conducted on the three reasonable alternatives was prepared in accordance with TxDOT's (and FHWA-approved) *Guidelines for Analysis and Abatement of Roadway Traffic Noise* (2011). This traffic noise analysis was performed using existing ambient sound level measurements and the latest available FHWA-approved Traffic Noise Model (TNM) version 2.5. Existing ambient sound levels were collected in proximity to the reasonable alternatives at representative receiver locations. Due to right-of-entry restrictions, ambient sound levels could not be collected at each receiver location analyzed; therefore, ambient sound level measurements collected in close proximity to a receiver location were used to extrapolate the existing noise level for receiver locations. These ambient noise levels were then compared with the predicted future modeled noise levels for the three reasonable alternatives based on projected 2035 traffic volumes and vehicle makeup. The data assumptions and calculations used to determine the traffic data parameters displayed in the

DEIS analysis are documented in *SH 68 DEIS Traffic Data Parameters for Noise Analysis Memo* (TxDOT 2017).

Sound is commonly measured in decibels and is expressed as "dB." Because sound occurs over a wide range of frequencies and not all frequencies are detectable by the human ear, an adjustment is made to the high and low frequencies to approximate the way an average person hears traffic sounds. This adjustment is called A-weighting and is expressed as "dB(A)." In addition, because sounds are never constant as vehicles change speed, a single value is used to represent the average sound level and is represented as "Leq".

FHWA regulations established seven noise abatement criteria (NAC) categories for land use activity areas that are used to determine when a traffic noise impact could occur. The activity categories are identified as A through G and the corresponding dB(A) Leq levels are provided below in **Table 4-12**.

Table 4-12. FHWA Noise Abatement Criteria

Activity Category	dB(A) Leq	Description of Land Use Activity Area
A	57 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	Residential.
C	67 (exterior)	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F.
F	--	Agricultural, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, ship yards, utilities (e.g., water resources, water treatment, electrical), and warehousing.
G	--	Undeveloped lands that are not permitted.

Source: FHWA 2011
Abbreviations: dB(A), A-weighted decibel; Leq, average/equivalent sound level

How a Traffic Noise Impact is Determined

FHWA regulations require highway agencies make every reasonable and feasible effort to provide noise mitigation when the NACs are approached, equaled or exceeded. Approach is defined as 1 dB(A) below the NAC. For example, the NAC level for residential properties (Category B) is 67 dB(A). If a predicted noise level result for a Category B location is 66 dB(A), it would be identified as a noise impact.

In addition, a noise impact occurs if there is a substantial increase in noise from the existing noise level at a receiver location. A substantial increase is defined as an increase of more than 10 dB(A) from the existing level. For example, an impact would occur if an existing noise level was found to be 54 dB(A) and the predicted noise level modeled to be 65 dB(A) (an 11 dB(A) increase).

How a Traffic Noise Impact is Mitigated

When a traffic noise impact occurs, noise abatement measures must be considered. A noise abatement measure is any positive action taken to reduce the impact of traffic noise on an activity area and/or receiver. Noise barriers are the most commonly used noise abatement measure. Before any noise abatement measure can be proposed for incorporation, it must be both feasible and reasonable. In order to be "feasible," the abatement measure must be able to reduce the noise level for more than 50 percent of the impacted, first row receivers by at least 5 dB(A); and the abatement measure must be able to reduce the noise level of at least one impacted, first row receiver by at least 7 dB(A). For an abatement measure to be "reasonable," it must not exceed the TxDOT cost-effectiveness criterion of $25,000 for each receiver that would benefit by a reduction of at least 5 dB(A).

4.14.1 Existing Conditions

Existing traffic noise is generated from I-2/US 83 as well as other major roadways, including FM 1925, SH 107, SH 495, Veterans Boulevard, FM 1426, FM 907, FM 1423, and FM 493. Other noise generators include the South Texas International Airport at Edinburg. Agricultural and undeveloped/vacant lands contain no known noise generators other than the intermittent sounds created by typical farm and ranch activities.

Ambient sound measurements were taken in public ROW in areas that represent the land use relative to the three reasonable alternatives. The majority of these ambient sound readings were predominately representative locations for residential properties (Category B); however, ambient measurements were also taken at three schools, two churches and one cemetery (Category C). Based on the existing land uses, the study area can be categorized mostly under NAC Activity Categories "B," "F," and "G."

Site visits were conducted in October 2016 and February 2017 to collect existing ambient noise levels at 129 locations. Forty-eight of these locations were determined to be too far away from the three reasonable alternatives to provide meaningful input and therefore, were not used in the analysis. The remaining 81 sites are in close proximity to the three reasonable alternatives and were used in the determination of existing noise levels for representative receivers. Ambient noise measurement sites are shown in **Exhibits 4-11**, **4-11.1**, **4-11.2**, and **4-11.3** in **Appendix A**.

4.14.2 Environmental Effects

As stated previously, an updated noise analysis on the recommended preferred alternative will be conducted when more specific details regarding horizontal and vertical profiles are available and documented in the FEIS. The following information provides the results of the noise analysis based on the preliminary stage of design.

Predicted year 2035 noise levels were modeled for first and second row receiver locations using TNM 2.5 for the three reasonable alternatives. **Exhibits 4-12** through **4-14.7** in **Appendix A** provide locations of modeled noise receivers in relation to the three reasonable alternatives. Red dots on the map provide locations of impacted receivers. **Exhibits 4-15.1** through **4-15.5** in **Appendix A** provide a table showing the results of the noise models by alternative. Bolded receiver numbers in the table indicate potential noise impacts.

2014 Modified 2 Alternative Noise Impacts

The traffic noise model prepared for the 2014 Modified 2 Alternative found that predicted noise levels at 42 of the 152 representative receivers would result in traffic noise impacts. All impacted receivers identified for this alternative were residences. These representative receivers were predominantly found south of FM 2812. Six of these representative receivers are located north of FM 2812. Neighborhoods where modeled representative receivers were impacted included: Valverde Heights, Aztec, San Pablo, Iowa Gardens Estates, Holly Estates (No. 2), Magnolia Village, San Carlos Estates (Unit 2), Davis Heights, Cardinal Point, and Santa Cruz Ranches. In addition, one colonia known as Owassa Road/Tower Road was modeled and found to be impacted. Noise barriers analyzed failed to achieve the minimum feasible reduction of 5 dB(A), design goal of 7 dB(A) and/or exceeds the reasonable cost-effectiveness criterion of $25,000 per benefitted receiver.

2014 PSM Alternative Noise Impacts

The traffic noise model prepared for the 2014 PSM Alternative found that predicted noise readings at 46 of the 152 representative receivers would result in traffic noise impacts. All impacted receivers identified for this alternative were residences. These representative

receivers were predominantly found south of FM 2812. One of these representative receivers is located north of FM 2812. Neighborhoods where modeled representative receivers were impacted included: Valverde Heights, Aztec, San Pablo, Iowa Gardens Estates, Holly Estates (No. 2), Magnolia Village, San Carlos Estates (Unit 2), Ricon de Encinos (No. 2), and Cardinal Reef. In addition, one colonia known as Owassa Road/Tower Road was modeled and found to be impacted. Noise barriers analyzed failed to achieve the minimum feasible reduction of 5 dB(A), design goal of 7 dB(A) and/or exceeds the reasonable cost-effectiveness criterion of $25,000 per benefitted receiver.

FM 1423 PSM Alternative Noise Impacts

The traffic noise model prepared for the FM 1423 PSM Alternative found that predicted noise readings at 47 of the 152 representative receivers would result in traffic noise impacts. All impacted receivers except one were residential land uses. Only one impacted residential receiver was located north of FM 2812. All other impacted representative receivers were located south of FM 2812. Neighborhoods where modeled representative receivers were impacted included: Pastos Verdes, Valverde Heights, Overland Park (Phase 1), Alve, Palmito Estates (Units 1 and 2), Val Verde Terrace, and one colonia known as Ebony Acres. In addition, one church, the Iglesia Cristiana, was found to be impacted by this alternative. Traffic noise barriers were modeled for impacted receivers but failed to achieve the minimum feasible reduction of 5 dB(A), design goal of 7 dB(A) and/or exceeds the reasonable cost-effectiveness criterion of $25,000 per benefitted receiver at most of the locations. However, the barrier analysis modeled for residences represented by receivers R102 and R130 would be feasible and reasonable for the FM 1423 PSM Alternative.

Table 4-13 provides the location and limits where proposed noise barriers were determined to be reasonable and feasible. It is important to note that these noise barriers are presented as preliminary information in order to provide a comparison of potential noise impacts resulting from the three reasonable alternatives. The proposed noise barriers are summarized in **Table 4-13** and the locations are shown in **Figure 4-5**.

Table 4-13. Proposed Noise Barriers

Barrier	Location/Limits	Receiver Number - Type	Number of Benefited Receivers	Length (feet)	Height (feet)	Total Cost	Cost/ Benefited Receiver
1	Adjacent to FM 1423 PSM Alternative southbound frontage road ROW, south of E. Curve Road.	R102 - Residential	8	608	12	$131,328	$16,416
2	Adjacent to FM 1423 PSM Alternative northbound frontage road ROW, north of Roosevelt Road.	R130 - Residential	4	435	12	$93,960	$23,490

Note: Total cost was estimated using $18 per square foot in accordance with TxDOT's 2011 *Guidelines for Analysis and Abatement of Roadway Traffic Noise*.

R102: This receiver represents eight single-family residences located approximately 45-95 feet from the FM 1423 PSM Alternative's southbound frontage road (see **Figure 4-5**). A traffic noise barrier placed along the proposed ROW was analyzed. Results indicated that a traffic noise barrier (Barrier 1) along the proposed ROW would be both feasible and reasonable. A traffic noise barrier 608 feet long and 12 feet high would reduce noise levels by at least 5 dB(A) for eight first and second row impacted receivers, as well as achieve the 7 dB(A) noise reduction goal for six first row impacted receivers. Total cost of the noise barrier would be $131,328, or $16,416 for each benefited receiver. Therefore, Barrier 1 is considered acoustically feasible and cost effective.

R130: This receiver represents four single-family residences located approximately 60-125 feet from the FM 1423 PSM Alternative's northbound frontage road (see **Figure 4-5**). A traffic noise barrier placed along the proposed ROW was analyzed. Results indicated that a traffic noise barrier (Barrier 2) along the proposed ROW would be both feasible and reasonable. A traffic noise barrier 435 feet long and 12 feet high would reduce noise levels by at least 5 dB(A) for four first row impacted receivers, as well as achieve the 7 dB(A) noise reduction goal for three first row impacted receivers. Total cost of the noise barrier would be $93,960, or $23,490 for each benefited receiver. Therefore, Barrier 2 is considered acoustically feasible and cost effective.

Implementation of noise barriers near receivers R102 and R130 would reduce potential traffic noise impacts for these portions of the FM 1423 PSM Alternative. A refined noise analysis will be conducted on the recommended preferred alternative during the preparation of the FEIS. The final decision to construct a noise barrier would be made post-environmental clearance at the design or construction stage in concert with a utility evaluation and polling of adjacent property owners.

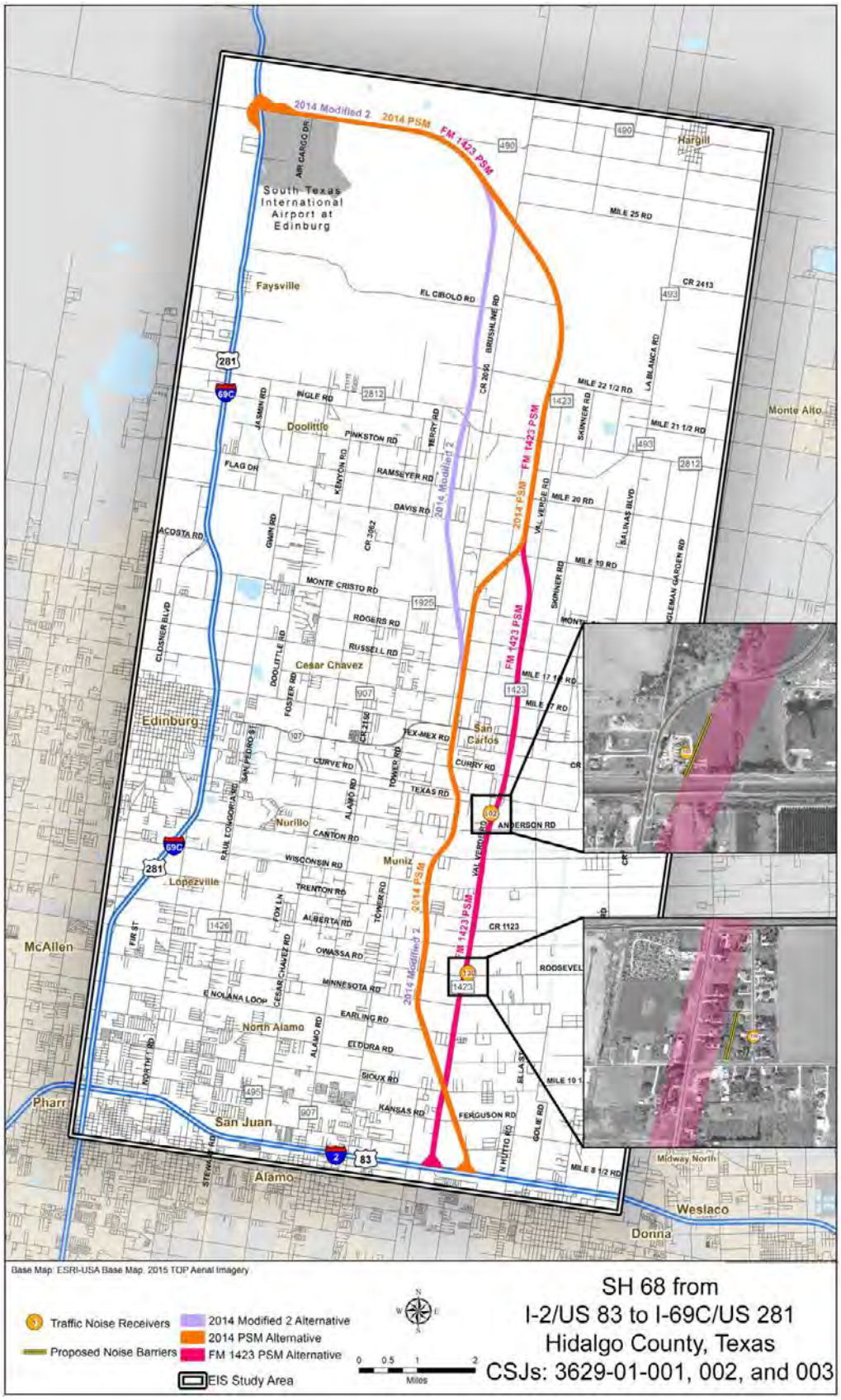


Figure 4-5. Proposed Noise Barriers

4.14.2.1 *Construction Noise of the 2014 Modified 2 Alternative, 2014 PSM Alternative, and FM 1423 PSM Alternative*

Noise associated with construction of the 2014 Modified 2 Alternative, 2014 PSM Alternative, and FM 1423 PSM Alternative is difficult to predict, and would be limited to the temporary construction period. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. However, construction normally occurs during daylight hours, when occasional loud noises are more tolerable. None of the receivers are expected to be exposed to construction noise for a long duration. Therefore, any extended disruption of normal activities is not expected. Provisions would be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures, such as work-hour controls and proper maintenance of muffler systems.

4.14.2.2 *Traffic Noise Contours of the 2014 Modified 2 Alternative, 2014 PSM Alternative, and FM 1423 PSM Alternative*

Noise impact contours will be updated and finalized for the recommended preferred alternative after detailed design information becomes available. The following information includes preliminary information and is provided for comparison purposed regarding the three reasonable alternatives.

To avoid noise impacts that may result from future development of properties adjacent to the three reasonable alternatives, local officials responsible for land use control programs should ensure, to the maximum extent possible, that no new activities are planned or constructed along or within the predicted (2035) noise impact contours for the three reasonable alternatives. Noise impact contours represent the distance from the three reasonable alternatives where traffic levels are 66 dB(A) or 71 dB(A) or greater. For the three reasonable alternatives, the future 66 dB(A) noise impact contour varies from 70 to 175 feet from the edge of the proposed ROW. The future 71 dB(A) noise impact contour varies from 0 to 50 feet from the edge of the proposed ROW. The future 66 dB(A) and 71 dB(A) noise impact contours for predicted traffic volumes are shown in **Table 4-14**.

Table 4-14. Traffic Noise Contours

Corridor Segment	NAC Category	Impact Contour dB(A) Leq	Distance from Edge of ROW (feet)
I-2/US 83 to SH 107 (all three Reasonable Alternatives)	B and C E	66 71	175 50
SH 107 to FM 1925 (all three Reasonable Alternatives)	B and C E	66 71	125 30
FM 1925 to I-69C/US 281 (all three Reasonable Alternatives)	B and C E	66 71	70 0

Note: Since all three reasonable alternatives use the same traffic volumes for each corridor segment, and there is no elevation changes in the modeled alternatives, the noise contour information will be the same for each alternative
Abbreviations: NAC, Noise Abatement Criteria; dB(A), A-weighted decibel; Leq, average/equivalent sound level

No-Build Alternative

Under the No-Build Alternative, the proposed SH 68 facility would not be constructed. It is reasonable to assume that if the new highway facility (i.e., SH 68) is not constructed, the current and projected traffic on study area roadways such as I-2/US 83, SH 107, FM 1925, I-69C/US 281, and FM 1423 would continue to contribute to traffic noise levels in the study area. Under the No-Build Alternative, sources of traffic noise would continue to exist in the same locations as they are today. No project-related encroachment-alteration noise impacts are anticipated as a result of the Build Alternatives or No-Build Alternative.

4.15 Energy

Energy consumption was qualitatively assessed based on the potential short-term construction activities, future traffic operations, and the likely long-term maintenance requirements of the proposed project.

4.15.1 Existing Conditions

Energy consumption associated with current operational activities includes the energy used by automobiles on the transportation system in the study area. There are several major roadways that service the study area, including I-69C/US 281, US 281 Business, I-2/US 83, US 83 Business, FM 490, FM 493, FM 2812, SH 495, and SH 107. The study area also contains numerous collector and local roads that provide access to the resident population. The predominant mode of transportation within the study area is the private automobile. Congestion within the study area is a major concern, most notably on I-2/US 83 and I-69C/US 281 during the morning and evening peak travel hours.

Energy consumption associated with current maintenance activities includes the energy used to patch and re-surface the study area roadways to provide a safe surface for local residents and visitors.

4.15.2 Environmental Effects

Each of the three reasonable alternatives would require the short-term consumption of energy, including the fuel used by construction vehicles and the power required to produce construction materials. Construction vehicles are assumed to include dump trucks, bull dozers, backhoes, graders, etc. and automobiles used by workers to get to/from construction sites. Some construction activities are likely to be intensive (i.e., earthwork and paving), while other construction activities are expected to be modest (i.e., inspection). Typical construction materials needed for roadway projects include gravel, concrete, and asphalt. The production and delivery of these construction materials is anticipated to occur from businesses throughout the LRGV area. Additionally, roadway detours are anticipated to temporarily increase travel times for local residents during construction activities, but would cease once construction ends. These construction-related effects are anticipated to be nearly the same for the three reasonable alternatives, since construction of the proposed project would require similar levels of short-term energy consumption. It is assumed there is sufficient construction vehicles and materials available to implement the proposed project. Several mitigation strategies have been contemplated that could reduce the amount of construction energy consumed, including but not limited to the following:

- Maximize the use of on-site and/or local materials to reduce haulage of materials.
- Use of repetitive design dimensions to allow for the re-use of forms.
- Turn off construction equipment when they are not in use.
- Locate construction staging areas and access road to reduce the distances traveled.
- Plan construction phasing and detour routes such that they minimize congestion for local residents and visitors.

With the implementation of these mitigation strategies, each of the three reasonable alternatives is not anticipated to result in adverse impacts regarding construction energy consumption.

Future traffic operations of the three reasonable alternatives would include the use of private automobiles on the new roadway facility. Operational-related energy consumption is dependent on congestion in the study area. The *SH 68 Traffic Forecasting Technical Memo* only provides design year 2035 AAGRs for the north/south parallel facilities and the east/west crossing facilities. AAGRs range from -0.5 to 5.9 percent, with an average growth rate of 2.4 percent, for the north/south parallel facilities. AAGRs range from -1.2 to 6.8 percent, with an

average growth rate of 2.5 percent, for the east/west cross street facilities (TxDOT 2015). Since the AAGRs for the north/south parallel facilities and the east/west crossing facilities are less than 6.8 percent for the 2035 design year, it is anticipated that there would be no appreciable difference regarding vehicles per day in the study area among any of the three reasonable alternatives that would result in congestion that is not experienced today. Implementation of any of the three reasonable alternatives would reduce congestion and fuel consumption by roadway users, resulting in reduced operational-related energy consumption in the future. Other future operational-related energy impacts that would occur under the proposed project would include the use of roadway lighting and traffic signals, for which the energy requirements would be negligible.

Maintenance of the proposed project for any of the three reasonable alternatives would include the use of fuel used by maintenance vehicles and the power required to produce maintenance materials. Maintenance vehicles are assumed to include dump trucks, smaller pickup trucks, and landscaping equipment. Maintenance activities are expected to be modest (i.e., pothole repair, crack sealing, guardrail replacement, grass cutting, etc.). The production and delivery of these maintenance materials is anticipated to occur from businesses throughout the LRGV area. Additionally, roadway detours are anticipated to temporarily increase travel times for local residents during maintenance activities, but would cease once maintenance ends. These maintenance-related effects are anticipated to be nearly the same for either of the three reasonable alternatives, since maintenance of the proposed project would require similar levels of energy consumption. Since maintenance activities are typically infrequent on new roadways, no adverse impacts are anticipated regarding maintenance energy consumption.

No-Build Alternative

Under the No-Build Alternative, the proposed SH 68 facility would not be constructed. While the No-Build Alternative would not consume short-term energy resources associated with construction, it would likely require more energy as a result of increasing congestion and fuel consumption by roadway users. It is expected that roadway users, that would otherwise use the SH 68 facility, would use parallel corridors instead. Additionally, as study area roadways age and deteriorate, it is expected that the need for on-going maintenance will increase, thus increasing maintenance energy consumption.

4.16 Induced Growth

The CEQ defines indirect impacts in 40 CFR 1508.8 as impacts that “are caused by the action and are later in time and farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include growth-inducing effects and other effects related to induced

changes in the pattern of land use, population density or growth rate and related effects on air and water and other natural systems, including ecosystems."

Indirect impacts are generally categorized as either *induced growth impacts* or *encroachment alteration effects*. Induced growth impacts include potential changes or shifts in development as a result of transportation project influence, including improved travel time and accessibility. Encroachment alteration effects are more closely related to direct impacts and result from changes to existing conditions but occur later in time or outside of the footprint of the project. This analysis will address induced growth impacts, while encroachment alteration effects will be discussed for each resource if applicable within the context of the direct impacts analysis.

This induced growth analysis was developed using TxDOT's *Guidance on Indirect Impacts Analysis* (2016b). The six steps outlined in the guidance include:

1. Define the methodology
2. Define the area of influence (AOI) and study timeframe
3. Identify areas subject to induced growth in the AOI
4. Determine if growth is likely to occur in the induced growth areas
5. Identify resources subject to induced growth impacts
6. Identify mitigation if applicable

The following sections will provide detail and analysis of each of these steps.

4.16.1 Define the Methodology

TxDOT's 2016 *Guidance on Indirect Impacts Analysis* outlines various methods for analyzing potential indirect impacts, including:

- *Planning Judgment*: uses experience, professional literature, data collected from knowledgeable persons, and assessment of local trends to make judgements about impacts.
- *Collaborative Judgment*: uses group processes, diverse inputs, and outreach to gather a wide range of information on actions and resources.
- *Cartographic Techniques*: uses a wide range of techniques based on a variety of maps, generally overlaying opportunity and constraints maps to identify areas likely to undergo land use change.
- *Elasticities*: measures the effect a change in one variable has on the amount of change in another variable to account for induced travel effects and traffic demand model adjustments.

- *Comparative Case Analysis*: uses case studies of similar past projects to forecast likely outcomes.
- *Trend Extrapolation*: uses time series data to develop future projections.

Based on the availability of data and the project context, this analysis of induced growth impacts primarily relied on the planning judgement and cartographic methods, as well as the collaborative judgment method. Because of the size and rural nature of much of the AOI, land use planning and development information was not consistently available. Therefore, TxDOT contacted planners and officials with jurisdiction throughout the AOI in order to obtain information and insight into development patterns and trends. Questionnaires were sent to 34 individuals, requesting input on any known proposed land development within their jurisdiction, what impact the proposed project may have on development, any planned capital improvement projects, factors that may limit growth in the area, and how the project may impact traffic patterns, among other questions. In addition to the questionnaire, a link to an interactive map and survey was provided in order to obtain as much detailed information as possible. See **Appendix C** for copies of the questionnaire and emails to planners. A number of responses to these requests indicated that planning information was not available within portions of the AOI; however, some information was received. To supplement information received from planning officials, planning documents were also consulted. These included the City of Edinburg's Zoning and Future Land Use Maps (http://www.cityofedinburg.com/pzmaps.php) (Edinburg 2017), the City of Pharr zoning maps (http://pharr-tx.gov/online-services/gis/) (Pharr 2017), and the Hidalgo County Comprehensive Economic Development Strategy (https://www.hidalgocounty.us/DocumentCenter/Home/View/4158) (Hidalgo County 2010). In addition to the information received from planners and planning and zoning maps within portions of the AOI, cartographic analysis was used in order to evaluate land use shifts and development patterns, as well as natural and man-made constraints on development.

Collaborative judgement was also used in this analysis by considering input from the public and stakeholders during the scoping process. TxDOT conducted the scoping efforts described in **Table 4-15** in order to obtain input from the public, stakeholders, and agencies on the purpose and need for the proposed project and potential concerns or constraints. Summary reports for TxDOT's public involvement and scoping efforts are available for review on the TxDOT website and on file at TxDOT.

Table 4-15. SH 68 Scoping Efforts

Date	Meeting	Input Received (Pertinent to Indirect Impacts and Key Resources)
1/22/16	**Modal Alternatives Conference** (attended by TxDOT, representatives from municipalities, local trade and transportation entities)	General agreement on Purpose and Need Consider modal connectivity (airport and rail) New location roadway best meets need and purpose
3/15/16	**Public Scoping Meeting** (attended by 463 members of the public, two elected officials, five media outlets)	General agreement on Purpose and Need Minimize impact to residential properties Cost effectiveness
3/29/16	**Agency Scoping Meeting** (attended by TxDOT and agencies including USFWS, USACE, EPA, HUD, and TPWD)	Consider HUD-assisted properties Consider impacts to wildlife corridors General reminder to avoid and minimize impacts to human and natural environment where possible

During scoping, members of the public and agencies expressed a desire to minimize the direct and indirect impacts to residences and businesses, as well as notable features within the project AOI, including agricultural properties, native vegetation, and wildlife refuges. The input received during scoping assisted in development and refinement of the reasonable range of alternatives, as well as identifying sensitive features and resources to consider as the proposed project progressed into the environmental analysis phase.

4.16.2 Define the AOI and Study Timeframe

The AOI is the study area for induced growth impacts and should be reflective of where these indirect effects associated with a proposed project are most likely to occur. In the case of SH 68, the AOI was established using the travel shed because of the regional nature of the project. As a result, the AOI is very similar to the overall project study area. The physical boundaries of the Indirect Impacts AOI are defined as FM 490 to the north, FM 493 to the east, I-2/US 83 to the south, and I-69/US 281 to the west (see **Exhibit 4-16** in **Appendix A**). These boundaries were selected because they represent the primary travelshed for this portion of Hidalgo County and capture the communities most likely to be served by the proposed project, therefore are areas most likely to experience any indirect impacts. The boundaries also include areas most likely to experience any potential changes in land use or development associated with the proposed project. The AOI, encompassing approximately 86,615 acres, is located within southeastern Hidalgo County and includes portions or all of the following communities (as defined by the U.S. Census Bureau): City of Alamo, Cesar Chavez Census-Designated Place (CDP), City of Donna, Doolittle CDP, City of Edinburg, Faysville CDP, Hargill CDP, La Blanca CDP, Lopezville CDP, Muniz CDP, Nurillo CDP, North

Alamo CDP, City of Pharr, San Carlos CDP, and City of San Juan. Planning officials contacted as part of the indirect impacts analysis did not report any concerns or revisions regarding the AOI boundaries.

The timeframe for the analysis, or the temporal boundary, extends to the year 2050 in order to capture long-range population and growth projections within the AOI.

4.16.3 Identify Areas Subject to Induced Growth in the AOI

The purpose of this step is to determine areas within the AOI that would be most likely to experience induced growth if SH 68 was constructed. Utilizing cartographic techniques and geographic information systems (GIS) layers gathered for land use, floodplains, prime farmland soils, parks, schools, churches, and other features of the area, constraints were identified that may limit development within the AOI and categorized as areas that are less likely to be developed.

As shown in **Table 4-16**, approximately 26,354 acres of developed land uses and 60,261 acres of undeveloped land uses were identified within the AOI. Approximately 105 acres of the undeveloped land are parks and recreational areas, which are scattered throughout the AOI although primarily concentrated in the more populated and developed southern portion. In addition, approximately 13,868 acres of undeveloped land are located within the 100-year floodplain. Floodplains are generally concentrated in the center of the AOI, north of the concentrated population centers. The LRGV-NWR and Conservation Easement is located in the center of the AOI (**Exhibit 4-17** in **Appendix A**), and was identified as a constraint for future development. Review of available zoning maps within the AOI, including zoning within the Cities of Pharr and Edinburg, and future land use maps reflect a pattern of mixed-use, industrial, and residential/commercial development along existing roadway corridors (particularly I-69/US 281), with suburban development and agricultural/open land becoming more prevalent in the eastern and northern portions of the AOI. Notable exceptions to the rural or undeveloped land use patterns in the northern portions of the study area are the South Texas International Airport located in the northwest corner of the AOI, the Reynoldo V. Lopez State Jail located along I-69/US 281 and El Cibolo Road, and the Edinburg Landfill located along I-69/US 281 and FM 2812 (**Exhibit 4-17**). These current land uses and areas directly adjacent were identified as areas not likely to be subject to induced growth. In addition to these constraints, schools and cemeteries were identified as areas where induced growth would not likely occur.

Table 4-16. Land Use and Constraints

Current Land Use and Potential Constraints	Acres	Percentage of AOI
Total Area of AOI	86, 615	n/a
Developed Land Use within AOI	26,354	30.4%
Undeveloped Land Use within AOI	60,261	69.6%
Parks and Recreation Areas	105	0.1%
Undeveloped Land within 100-year Floodplain	13,868	16.0%
Total Area of Developable Land within AOI	**46,288**	**53.4%**

As outlined in the National Cooperative Highway Research Program Report 466 *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects* (2002), transportation improvements often reduce the time-cost of travel, enhancing the attractiveness of surrounding land to developers and consumers. This can result in complimentary development, such as highway-oriented businesses like gas stations, at intersections and interchanges. If conditions for development are generally favorable in a region (i.e., undergoing urbanization), transportation projects can be major factors that influence where development occurs. The proposed SH 68 is expected to improve regional mobility and may therefore influence development throughout the AOI. Factors that can influence the likelihood of individual development include:

- The extent and maturity of existing transportation infrastructure
- Land availability
- State of the regional economy
- Regulatory conditions

Because the proposed SH 68 is a new location roadway in a growing area with available developable land and a local planning emphasis on growth, it is likely that induced growth would occur in some portion of the 46,288 acres of undeveloped land identified within the AOI, depending on the availability of infrastructure or presence of unidentified natural or man-made constraints on development (**Exhibit 4-18** in **Appendix A**).

4.16.4 Determine if Growth is Likely to Occur in the Induced Growth Areas

The purpose of this step is to analyze the likelihood of induced growth occurring as a result of the proposed project. Factors that were considered include information from planning professionals, land use and zoning maps, and population/economic data.

Input received from planning professionals at Hidalgo County identified planned housing subdivisions within the AOI near or adjacent to the SH 68 reasonable alternatives: the Border Town Subdivision No. 2 located along FM 2812; the TVM Properties Subdivision located along Curve Road; and the Presidio Estates Unit located along Minnesota Road (see **Appendix C** for

a map received from the Hidalgo County Planning Department). These developments were platted prior to or concurrent with the development of the SH 68 reasonable alternatives, although Hidalgo County did not indicate that these subdivisions were developed as a result of the proposed SH 68 project. They are, however, indicative of overall growth trends within the AOI. In an interview with the City of San Juan, planning officials indicated that regardless of which of the SH 68 alternatives is carried forward, they expect commercial and residential development to continue in the region. They cited the influence of international trade, the trucking industry, real estate prices, and infrastructure projects (such as sewer lines) as influencing factors on growth and development trends (see response from City of San Juan in **Appendix C**). In addition, the Hidalgo County Comprehensive Economic Development Strategy cites growth of Hidalgo County's economy as a primary goal of the region, through facilitating cross-border commerce and cooperation, as well as increasing access to capital for business expansion and creation, among many other strategies. This emphasis on growth appears to be reflective of the overall trend in the region.

Population growth within Hidalgo County has rapidly increased over the last 30 years, growing from approximately 383,545 in 1990 to approximately 774,769 in 2010, and projected to grow to 1,553,142 in 2050. **Table 4-17** depicts these population trends in comparison to the State of Texas over the same time frames.

Table 4-17. Population Growth

Year	Hidalgo County		State of Texas	
	Population	Percent Change by Decade	Population	Percent Change by Decade
1990[1]	383,545	--	16,986,510	--
2000[2]	569,463	48.5	20,851,820	22.8
2010[3]	774,769	36.1	25,145,561	20.6
2020[4]	948,305	22.4	28,813,282	14.6
2030[4]	1,145,413	20.8	32,680,217	13.4
2040[4]	1,345,740	17.5	36,550,595	11.8
2050[4]	1,553,142	15.4	40,502,749	10.8

Sources: (1) U.S. Census Bureau 1990. Table CP-1-45; (2) U.S. Census Bureau 2000. Table DP-1; (3) U.S. Census Bureau 2010. Table P9; (4) Texas Demographic Center 2017.
Note: The 2020-2050 population projections assume a population change because of migration at a rate of 1/2 of the 2000-2010 migration rate and also reflects changes because of natural increase (births and deaths). The 0.5 scenario is typically used for long range projections depending on the characteristics of the area being reviewed.

According to the U.S. Census Bureau's County Business Patterns dataset, the number of employees in Hidalgo County across all economic sectors grew from 146,741 in 2005 to 187,842 in 2015. Notable increases in employment occurred in the health care and social assistance sectors and the accommodation and food services sectors (see **Table 4-18**).

Table 4-18. Employment

Employment Sector	Number of Establishments	Number of Employees	Number of Establishments	Number of Employees
	2005		2015	
Total for all sectors	9,704	146,741	11,866	187,842
Agriculture, forestry, fishing and hunting	33	172	30	834
Mining, quarrying, and oil and gas extraction	52	1,173	84	1,037
Utilities	17	723	27	634
Construction	722	7,038	592	5,398
Manufacturing	279	6,794	253	6,659
Wholesale trade	672	8,281	954	8,385
Retail trade	1,888	27,750	2,220	38,679
Transportation and warehousing	463	5,191	539	7,981
Information	137	2,619	135	3,081
Finance and insurance	640	5,729	923	6,527
Real estate and rental and leasing	460	2,303	538	2,497
Professional, scientific, and technical services	734	5,955	983	5,818
Management of companies and enterprises	42	676	53	751
Administrative and support and waste management and remediation services	320	11,243	369	10,023
Educational services	91	1,403	117	3,806
Health care and social assistance	1,483	37,523	2,122	57,630
Arts, entertainment, and recreation	76	1,361	94	1,389
Accommodation and food services	780	15,942	1,013	21,283
Other services (except public administration)	780	4,832	797	5,402
Industries not classified	35	33	23	28

Source: U.S. Census Bureau 2015.

In addition to population and employment growth, data from the U.S. Census indicate an increase in housing units between 2010 and 2016 in Hidalgo County. The number of housing units increased by approximately 8.0 percent between 2010 and 2016, as compared to an increase of approximately 7.6 percent over the same time period across the State of Texas (**Table 4-19**).

Table 4-19. Housing Units

Geography	2010	2011	2012	2013	2014	2015	2016	Percent Change from 2010 to 2016
Texas	9,995,408	10,069,903	10,156,890	10,283,321	10,424,276	10,586,416	10,753,629	7.6%
Hidalgo County	248,964	251,973	254,721	257,951	261,135	264,565	268,765	8.0%
Source: U.S. Census Bureau 2016								

Based on input received from planners, reviews of planning documents and land use maps, and analysis of population and economic data, the growth trend within the AOI is expected to continue. Therefore, there is potential for land use changes and growth in areas identified in **Section 4.16.3**. The potential for the proposed SH 68 project to result in induced growth impacts to sensitive resources will be addressed in **Section 4.16.6**.

4.16.5 Identify Resources Subject to Induced Growth Impacts

The purpose of this step is to identify resources that could be impacted by induced growth. **Table 4-20** provides a summary of potential included growth impacts to sensitive resources. The following section includes quantification of these potential impacts where possible.

Table 4-20. Summary of Sensitive Resources and Potential Indirect Impacts

Resource	Are Indirect Impacts Anticipated?
Land Use/Farmland	Potential. Induced growth impacts to land use and conversion of farmland may result from the proposed project.
Businesses and Residences	Potential. Induced growth impacts to businesses and residences may result from the proposed project.
Neighborhoods/Community Cohesion and Community Character	Potential. Induced growth impacts to neighborhoods and community character may result from the proposed project.
Environmental Justice (EJ)	Potential. Induced growth impacts to EJ populations may result from the proposed project.
Archeological Resources	Potential. Induced growth impacts to unidentified archeological historic properties may result from the proposed project.
Historic Resources	Potential. Induced growth to historic resources may result from the proposed project.
Water Resources	Potential. Inducted growth impacts to water resources may result from the proposed project.
Ecological Resources	Potential. Induced growth impacts to threatened and endangered species habitat may result from the proposed project.
Air Quality	Not anticipated.
Traffic Noise	Not anticipated. Induced growth impacts to noise as a resource are not measurable. However, impacts to potential noise receivers would be considered as part of the analysis of potential indirect impacts to businesses and residences.

Land Use/Farmland

Potential induced growth impacts to land use may result from the three reasonable alternatives. A total of approximately 46,288 acres of potentially developable land was identified within the AOI. Transportation projects can increase the attractiveness of adjacent land for development by reducing travel time and improving access. The nature of adjacent development induced by the proposed project would likely consist of transportation-related business and services, such as gas stations and restaurants. However, the overall improvement in regional mobility and access may result in new development or redevelopment and shifts in land use in the AOI.

According to data obtained from the USDA, the AOI contains approximately 27,664 acres of mapped prime farmland soils in areas identified as potentially developable (in undeveloped land uses outside of the 100-year floodplain). These areas represent less than half of the total amount of prime farmland soils within the AOI. Approximately 38,866 acres of cropland and pasture was also identified within the AOI. This represents nearly 84 percent of the total developable land identified in the AOI and could potentially be converted to non-agricultural uses as land use trends in the area shift from agricultural uses to commercial or residential uses. An analysis of potential induced growth impacts to the agricultural community is presented in this section under "Neighborhoods/Community Cohesion."

Businesses and Residences

As previously stated, development may occur adjacent to the reasonable alternatives and in other developable areas of the AOI, resulting in a conversion of existing land uses to transportation-related businesses or services, high density development, or other uses. This may result in the conversion of residential land uses to commercial uses, or may result in a shift in the nature of commercial development, particularly along the SH 68 corridor and at intersections. Additionally, conversion of undeveloped land to developed land uses may result in an increase in traffic and noise in adjacent residential or commercial areas.

Neighborhoods/Community Cohesion and Community Character

The analysis of direct impacts determined that the project would result in impacts to community cohesion. The 2014 Modified 2 Alternative would bisect five of the 10 neighborhoods crossed, and clip the remaining five. No colonias would be affected by the 2014 Modified 2 Alternative. The 2014 PSM Alternative would bisect six of the 10 neighborhoods crossed, and clip the remaining four. No colonias would be affected by the 2014 PSM Alternative. The FM 1423 PSM Alternative would bisect two of the 11 neighborhoods crossed and clip the remaining nine, including two colonias. The FM 1423 PSM Alternative would clip the Val Verde North and Ebony Acres colonias. Those neighborhoods that are bisected by any of the three reasonable alternatives would likely result

in impacts to cohesion since access across residential areas would be severed. However, community cohesion impacts to those neighborhoods that are clipped by any of the three reasonable alternatives, including two colonias clipped by the FM 1423 PSM Alternative, would be minimized since access across residential areas would be preserved. In addition, each of the reasonable alternatives would cut through numerous agricultural fields and pastures, in some cases segmenting or dividing agricultural operations and impacting the ability to farm or ranch the land.

The project may influence the location, density, and type of new development within the AOI, because of increased mobility in the area. Many of the areas identified as available for development are located in non-residential areas. However, potential changes in the location, density, type of development could result in impacts to adjacent neighborhoods and colonias. As population growth continues and regional development patterns change, the rural nature of the study area and local communities will likely change as well. Although the proposed project is not expected to induce development that would substantially isolate neighborhoods or disrupt community cohesion, induced growth impacts associated with land use changes may result in impacts to neighborhood composition and a shift in the rural and agricultural character of portions of the AOI.

EJ Populations

As outlined in the direct impacts analysis, minority and low-income populations are found throughout the AOI. Because of the high percentage of EJ residents, it is assumed that any potential induced development that may occur may impact minority and/or low-income populations, including colonias. However, although the project may influence the location and type of new development within the AOI, many of the areas identified as available for development are located in non-residential areas. Potential induced development would not be concentrated in or isolated to areas with minority or low-income populations, and would be dispersed throughout the AOI. In addition, any benefits of potential improved mobility and new businesses or services would be expected to be experienced equally by all area residents. Therefore, substantial disproportionately high or adverse induced growth impacts to EJ populations are not anticipated.

Archeological Resources

As detailed in the direct impacts analysis, portions of the AOI have been surveyed for archeological resources. The AOI contains recorded archeological sites, cemeteries, and NRHP-eligible and NRHP-listed irrigation districts. The AOI has potential to contain prehistoric archeological deposits, including surficial or near surficial lithic scatters, and historic archeological deposits associated with nineteenth- and twentieth-century habitations. Archeological deposits within this setting may retain some integrity below the plow zone or

otherwise beyond modern disturbances unless associated with Holocene sand dunes, which may lack stratigraphic integrity because of the natural processes of deflation. Because of this potential for archeological deposits within the AOI, induced development could result in impacts to archeological resources.

Historic Resources

Based on evaluation of potential direct effects associated with the three reasonable alternatives, the AOI is expected to contain historic-age resources as well as NRHP-eligible and NRHP-listed properties. CAD data and aerial imagery were used to identify historic-age resources within the reasonable alternatives. While a total of 95 historic-age parcels were identified within the footprint of the three alternatives, most of parcels do not appear to have high potential for NRHP eligibility. It is expected that the remainder of the AOI would contain historic-age properties of a similar type and integrity because of regional development patterns. The AOI does contain one NRHP-listed resource and two NRHP-eligible resources. Approximately 8,327 acres of developable land is within the NRHP-listed HDIC #2. In addition, 9,781 acres and 1,642 acres of developable land are within the NRHP-eligible Donna ID and Englemen ID, respectively. It should be noted that these areas reflect jurisdictional boundaries of the irrigation districts and that the potential for impacts is limited to the actual irrigation features (such as canals, laterals, pump houses, etc.) These irrigation districts do however represent sensitive historic resources in the region and induced growth in these areas may result in impacts to these resources.

Water Resources

Potential induced growth impacts to water resources may occur within the AOI. According to the USFWS NWI database, there are approximately 423 acres of mapped NWI features within developable land in the AOI consisting of:

- Freshwater Emergent Wetland (47 acres)
- Freshwater Forested/Shrub Wetland (49 acres)
- Freshwater Pond (64 acres)
- Lake (44 acres)
- Riverine (219 acres)

In addition to NWI features, the TPWD EMST identifies approximately 157 acres of marsh and 85 acres of open water in developable land within the AOI. The AOI also contains man-made irrigation and drainage canals. There are approximately 107 linear miles of irrigation canals and 31 linear miles of drainage canals within developable land in the AOI. Any induced growth in these areas may result in impacts to any of these water resources, including impacts to water quality as a result of increased impervious cover and run-off.

Ecological Resources

Because habitat is present within the AOI, potential induced growth impacts to threatened and endangered species may result from the proposed three reasonable alternatives. Potential impacts to wildlife and plants from induced growth could include loss of habitat, habitat fragmentation, and general habitat disturbances caused be development. Within the three reasonable alternatives, potential habitat exists for three federally-listed endangered species- the ocelot, Texas ayenia, and Walker's manioc. Of the 46,288 acres of developable land within the AOI, 3,748 acres of potential habitat was identified.

The current ocelot populations in Cameron and Willacy Counties and the existing suitable ocelot habitat are located outside of the AOI for this project and indirect impacts to suitable habitat or known populations are not anticipated. Because of the limited amount of potential habitat for the Texas ayenia and Walker's manioc that exists in developable portions of the AOI, the induced growth impact to habitat associated with the project is expected to be relatively small. However, this scarcity of potential habitat can also mean that potential impacts may be considered substantial.

Development along drainage or irrigation ditches that might provide travel corridors to ocelots or be used by the two endangered plant species could result in impacts to these species. The removal of brush habitat would remove potential patches of land that could be occupied by ocelots that are attempting to disperse and the two endangered plant species that are associated with edges of or openings within brush habitat. Any potential impact to threatened or endangered species would require coordination with TPWD and/or USFWS and most likely development of avoidance, minimization, and/or mitigation measures.

Summary

Through a combination of planner questionnaires, cartographic analysis of GIS data and layers, and research, this indirect impacts analysis has identified the potential for some induced growth impacts within the AOI. Planning input and research also indicated an ongoing trend of rapid growth and development in the region, regardless of the proposed project. This is demonstrated by increases in population, employment, housing, and by development that is already underway.

The proposed project may influence the location, density, and type of development in the AOI because of the anticipated improved travel time and regional mobility and the types of development that may attract. These land use changes may result in a shift in the agricultural or rural nature of the project area and may result in impacts to sensitive resources. The pace and nature of development in the AOI will also likely be tied to economic trends and localized infrastructure projects that will facilitate or accommodate continued growth in the region.

4.16.6 Identify Mitigation if Applicable

According to TxDOT's 2016 *Guidance on Indirect Impacts Analysis*, mitigation for indirect impacts is considered for indirect impacts that:

- Conflict with the study area goals;
- Could worsen the condition of a sensitive or vulnerable resource;
- Could delay or interfere with planned improvement of a resource; and/or
- Are inconsistent with an applicable law.

The pace, scale, and location of future development within the AOI is not anticipated to conflict with the study area goals, based on research of planning documents and cartographic analysis of land use patterns. Planning documents consulted include the City of Edinburg's Zoning and Future Land Use Maps (Edinburg 2017), the City of Pharr zoning maps (Pharr 2017), and the Hidalgo County Comprehensive Economic Development Strategy (Hidalgo County 2010). Development would largely be regulated by local planning entities and regional development initiatives. Private development would be required to obtain permits and comply with zoning regulations laid out by municipalities with jurisdiction in those areas. In addition, transportation and public infrastructure would be developed and implemented through cooperation amongst TxDOT, HCMPO, and local governments and in compliance with local, state, and federal regulations. The magnitude of potential induced growth impacts associated with the proposed SH 68 project is not expected to worsen the condition of sensitive or vulnerable resources or delay planned improvement of a resource if mitigation measures are followed.

State and federal regulations are in place to protect state and federally-listed species from actions undertaken by both public and private entities. Endangered species legislation was passed in Texas in 1973 and amended in 1981, 1985, and 1987 (TPWD 1991). The ensuing TPWD regulations are found in Title 31 of the Texas Administrative Code, Sections 65.171–65.177 (for animals) and 69.1-69.9 (for plants) (Chapters 67, 68, and 88 of the TPWD Code, respectively). These sections regulate the taking, possessing, transporting, exporting, processing, selling/offering for sale, or shipping of endangered or threatened species of fish, wildlife, and plants. The definition of "take" under state regulations differs from that of the federal ESA. For state-listed vertebrates "take" is defined as, "to collect, hook, hunt, net, shoot, or snare, by any means or device, and includes an attempt to take or to pursue in order to take" (Parks and Wildlife Code, Chapter 1, §1.101). For state-listed plants, "take" is defined as "to collect, pick, cut, dig up, or remove" (Parks and Wildlife Code, Chapter 88, §88.001). State of Texas endangered species regulations differentiate between those species listed by the state as "Endangered" and those species listed by the state as "Threatened." The state's lists of "Endangered" animals and plants are found at 31 TAC §65.176 and §69.8(a)

respectively; all state-listed endangered species are also listed and protected by the ESA. The state's list of "Threatened" animals and plants are found at 31 TAC §61.175 and §69.8(b), respectively. State regulations do not protect state-threatened species from incidental or indirect impacts, indirect take, or habitat destruction.

Under the ESA, the USFWS protects endangered and threatened species and their habitats by prohibiting the “take” of listed animals, except under federal permit. It is unlawful for a person to take a listed animal without a permit. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. Through regulations, the term "harm" is defined as an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.

Both the ESA and TPWD regulations apply to public and private entities; however, the procedures for compliance can differ. For example, private or state-funded projects would receive a Section 10 permit for incidental take under the ESA, while federal actions would require Section 7 consultation and result in a take statement. Any action undertaken that would potentially result in a taking or harming threatened or endangered species, regardless of entity, would require coordination with TPWD and/or USFWS and most likely development of mitigation or minimization measures.

4.16.7 Summary of Induced Growth

The potential induced growth identified in this analysis does not conflict with the study area goals; are not expected to substantially worsen the condition of a sensitive or vulnerable resource; would not delay or interfere with planned improvement of potential habitat or communities within the AOI; and is not inconsistent with applicable laws.

Based on the preceding analysis, the proposed project may result in impacts associated with induced growth. Input from planning officials as well as historic land use changes and growth trends within the AOI indicate that development will continue to occur in the area regardless of whether the SH 68 project is implemented. However, the project may influence the location, density, and type of development by making the AOI more attractive to development through the anticipated improved mobility and travel time in the region.

4.17 Cumulative Effects

The CEQ defines cumulative impacts as those which result from “the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions

taking place over a period of time. In accordance with TxDOT's *Cumulative Impacts Analysis Guidelines* (2016a), the analysis of cumulative effects follows these five steps:

1. Resource study corridor, Conditions, and Trends
2. Direct and Indirect Effects on Each Resource from the Proposed Project
3. Other Actions - Past, Present, and Reasonably Foreseeable - and their Effect on Each Resource
4. The Overall Effects of the Proposed Project Combined with other Actions
5. Mitigation of Cumulative Effects

4.17.1 Resource Study Area, Conditions, and Trends

The proposed project's cumulative effects were narrowed down by carrying forward the direct and indirect impacts that may contribute to a cumulative effect. The cumulative effects analysis focused on resources substantially impacted by the proposed project and resources in poor or declining health or at risk that are directly or indirectly impacted by the proposed project. Most of the resources which were evaluated for direct and indirect effects are listed in **Table 4-21**, excluding only those resources where substantial direct impacts were not identified or for which cumulative effects are not measurable. The table summarizes the potential direct and indirect effects anticipated for each resource and identifies whether or not the resource is carried forward for cumulative effects analysis.

Although the analysis of potential direct impacts associated with the three reasonable alternatives is based on desktop analysis, it was determined that enough information exists in order to preliminary identify resources that would likely require further analysis to identify potential cumulative effects. Detailed field investigations will be conducted for the preferred alternative and the preliminary conclusions presented in this DEIS will be updated. As a result, there may be additional resources identified as requiring further analysis for potential cumulative impacts. However, based on currently available information (as shown in **Table 4-21**), neighborhoods/communities and ecological resources were identified as resources to be carried forward into the cumulative effects analysis.

4.17.1.1 *Resource Study Area*

Cumulative effects are considered within a spatial geographic area known as a Resource Study Area (RSA). The RSA is defined based on resource characteristics and trends that may affect the health of the resource. RSAs also include a temporal boundary, intended to capture past and future conditions that provide context for the current condition of resources as well as reasonable foreseeable development. The following RSAs are based on currently available information regarding potential impacts to resources. As more refined direct impacts data is obtained in the FEIS, these RSAs may be adjusted.

Neighborhoods/Communities

The RSA for neighborhoods and communities has been defined as the community study area identified in the community impact assessment (see **Figure 4-1**). This RSA represents the area in which the local population is anticipated to be most directly, indirectly, and cumulatively affected by the three reasonable alternatives, and encompasses approximately 70,400 acres. The past temporal boundary of the neighborhood/community RSA has been established as 1970 in order to capture the development of colonias in the region, while the future boundary has been set as 2040 in order to capture the long-range planning horizon of the HCMPO 2015-2040 MTP (2017).

Table 4-21. Resources to Be Evaluated for Cumulative Effects

Resource	Direct Effects*	Indirect Effects	Carried Forward for Cumulative Effects Analysis?
Land Use/Farmland	All three reasonable alternatives would result in the conversion of existing developed and undeveloped land uses (including farmland) into transportation land use. The acreage of land use impacts will be updated and assessed further in the FEIS for the preferred alignment.	The nature of adjacent development induced by the proposed project would likely consist of transportation-related businesses and services. However, the overall improvement in regional mobility and access may result in new development or redevelopment and shifts in land use within the AOI.	No. Cumulative impacts to land use and farmland would not be evaluated as a stand-alone resource. However, potential cumulative impacts to the agricultural community as a result of land use changes would be addressed as part of the analysis of impacts to neighborhoods and communities. See Neighborhoods/Community Cohesion and Community Character.
Businesses and Residences	All three reasonable alternatives would result in direct impacts to residential and commercial properties. The acreage of business and residential impacts will be updated and assessed further in the FEIS for the preferred alignment.	The proposed project may result in the conversion of residential land uses to commercial uses, or may result in a shift in the nature of commercial development; however, it is not anticipated to induce development at a large scale resulting in widespread displacements of businesses and homes and/or substantial increases in traffic and noise as a result of this development. Therefore, it is not anticipated that the proposed project would result in substantial induced growth impacts to commercial or residential properties.	No. Cumulative impacts to businesses and residences would not be evaluated as a stand-alone resource. However, potential cumulative impacts to residences and businesses as part of overall impacts to neighborhoods and communities would be evaluated. See Neighborhoods/Community Cohesion and Community Character.

Table 4-21. Resources to Be Evaluated for Cumulative Effects

Resource	Direct Effects*	Indirect Effects	Carried Forward for Cumulative Effects Analysis?
Neighborhoods/Community Cohesion and Community Character	All three reasonable alternatives were determined to result in potential direct impacts to community cohesion. The 2014 Modified 2 Alternative would bisect five of the 10 neighborhoods and clip the remaining five of 10 neighborhoods colonias crossed. No colonias would be crossed by this alternative. The 2014 PSM Alternative would bisect six of the 10 neighborhoods crossed and clip the remaining four of the 10 neighborhoods. No colonias would be impacted by this alternative. The FM 1423 PSM Alternative would bisect two of the 11 neighborhoods crossed and clip the remaining nine of 11 neighborhoods crossed. Two of these are colonias. Those neighborhoods/colonias that are bisected by any of the three alternatives would likely result in community cohesion impacts since access across residential areas would be severed. A more detailed assessment of impacts to neighborhoods, community cohesion, and community character will be undertaken in the FEIS for the preferred alternative.	Each of the proposed reasonable alternatives would divide neighborhoods and agricultural operations in various locations. Potential changes in the location, density, type of development within the AOI could result in impacts to neighborhoods and colonias. Some agricultural properties may be converted to commercial or residential uses as their agricultural functionality diminishes. Therefore, land use changes associated with induced growth may result in impacts to neighborhood composition and a shift in the rural and agricultural character of portions of the AOI.	Yes.
Environmental Justice (EJ)	All three reasonable alternatives were determined to result in direct impacts to EJ populations. However, those impacts were determined to not be disproportionately high or adverse because impacts are not directed at any one particular group and are dispersed	Potential induced development would not be concentrated in or isolated to areas with minority or low-income populations, and would be dispersed throughout the alternatives. In addition, any benefits of potential improved mobility and new businesses or services	No. Cumulative impacts to EJ populations would not be evaluated as a stand-alone resource. However, potential cumulative impacts to these populations as part of overall impacts to neighborhoods

Table 4-21. Resources to Be Evaluated for Cumulative Effects

Resource	Direct Effects*	Indirect Effects	Carried Forward for Cumulative Effects Analysis?
	over the entire length of each of the alternatives.	would be expected to be experienced equally by all area residents. Therefore, substantial disproportionately high or adverse induced growth impacts to EJ populations are not anticipated.	and communities would be evaluated. See Neighborhoods/Community Cohesion and Community Character.
Archeological Resources	Background review revealed one previously documented archeological site within the archeology APE of the 2014 Modified 2 Alternative, and no previously documented sites or cemeteries within the APE of the 2014 PSM Alternative and FM 1423 PSM Alternative. All three reasonable alternatives have the potential to impact as yet unidentified archeological historic properties eligible for inclusion in the NRHP or archeological sites warranting SAL designation.	Not anticipated. Would require further analysis in the FEIS.	No.
Historic Resources	Historic-age resources are located within the historic APE for all three reasonable alternatives. However, preliminary desktop analysis did not reveal any historic-age resources that have a high potential for NRHP-eligibility, with the exception of the Donna and Englemen IDs and the HCID # 2. It is anticipated that these features would be spanned. A full analysis of NRHP-eligibility and potential impacts would be conducted on the recommended preferred alternative.	Not anticipated. Would require further analysis in the FEIS.	No.
Water Resources	The three reasonable alternatives cross drainage and irrigation canals and ditches; however, it is expected they will be spanned.	Not anticipated. Would require further analysis in the FEIS.	No.

Table 4-21. Resources to Be Evaluated for Cumulative Effects

Resource	Direct Effects*	Indirect Effects	Carried Forward for Cumulative Effects Analysis?
	The majority of the excavated ponds and lakes and natural depressions were avoided during earlier planning stages of the proposed project. A field assessment would be conducted on the recommended preferred alternative to identify, characterize, and document aquatic habitats and waters of the U.S. within and adjacent to the proposed ROW.		
Ecological Resources	The three reasonable alternatives are generally similar in vegetation and land use. They would all have similar potential effects/ impacts to brushland and federal and state-listed endangered or threatened species. Desktop analysis identified potential habitat for three federally-listed species (the ocelot, Texas ayenia, and Walker's manioc.) Field habitat assessments in and adjacent to the recommended preferred alternative would be conducted and direct impacts would be more accurately assessed.	Because of the limited amount of potential habitat that exists adjacent to the proposed alternatives, the induced growth impact to habitat associated with the project is expected to be relatively small. However, this scarcity of potential habitat can also mean that any impact may be considered substantial. Development along drainage or irrigation ditches that might provide travel corridors to ocelots or be used by the two endangered plant species could result in impacts to these species. The removal of brush habitat would remove potential patches of land that could be occupied by ocelots that are attempting to disperse and the two endangered plant species that are associated with edges of or openings within brush habitat.	Yes.
Air Quality	The current attainment status combined with the projected traffic volumes for the proposed	Not anticipated.	No.

Table 4-21. Resources to Be Evaluated for Cumulative Effects

Resource	Direct Effects*	Indirect Effects	Carried Forward for Cumulative Effects Analysis?
	project result in a determination the adverse impacts to air quality are not anticipated with respect to criteria pollutants. Although there may be some locations exposed to higher MSAT under the build alternatives, information is incomplete and unavailable to evaluate local MSAT concentrations and impacts; however, even if increases do occur, they too would be substantially reduced in the future because of the implementation of EPA's vehicle and fuel regulations.		
Traffic Noise	Noise impacts are anticipated to occur as a result of the three reasonable alternatives. No proposed noise barriers were proposed for the 2014 Modified 2 or 2014 PSM Alternatives. However, two barriers were proposed for the FM 1423 PSM Alternative. A detailed analysis of traffic noise will be conducted in the FEIS for the preferred alternative.	Not anticipated. Induced growth impacts to noise as a resource are not measurable. However, impacts to potential noise receivers would be considered as part of the analysis of potential indirect impacts to businesses and residences.	No.

*= Note that the estimated direct effects presented in this table are based on detailed desktop evaluations and will be refined and updated for the recommended preferred alternative and detailed field work is conducted.

Ecological Resources

The federally endangered ocelot is a wild cat known to inhabit areas in Kenedy, Willacy and Cameron Counties, and less recently Hidalgo and Jim Wells Counties. The known range of the Texas ayenia (a thornless shrub) includes Cameron, Hidalgo, and Willacy Counties, and the known range of the Walker's manioc (a flowering plant) includes Duval, Hidalgo, and Starr Counties. See **Exhibit 4-19** in **Appendix A** for a depiction of the species' range. The RSA for potential cumulative impacts to the ocelot, Texas ayenia, and Walker's manioc has been defined as potential habitat within Hidalgo County. The three alternatives are located completely within the central portion of Hidalgo County and, although Hidalgo County is a geographic boundary that does not necessarily pertain to ranges or movements of these species, it is a useful boundary in which to concentrate analysis of future development and changes in land use. In addition, indirect or cumulative impacts would not be likely to affect the species in more distant portions of their ranges in other counties. The ocelot and Texas ayenia both prefer areas of dense brush or woodland, and the Walker's Manioc prefers openings in or edges of dense brush or woodland. Therefore, areas classified as the Brush or Shrubland LU/LC types within the AOI are considered potential habitat for these three species. **Table 4-22** provides a summary of potential habitat for each species identified within Hidalgo County.

Table 4-22. Ecological Resources RSA- Potential Habitat within Hidalgo County

	Acres of Potential Habitat within Hidalgo County		
	Ocelot/Texas ayenia	Walker's manioc	
		High Potential	Low Potential
Habitat	204,393	96,347	13,160

The RSA for each of the three endangered species is depicted in **Exhibits 4-20**, **4-21**, and **4-22** in **Appendix A**. The past temporal boundary of the ecological resources RSA has been established as 1960 in order to capture the onset of notable development shifts within the RSA, while the future boundary has been set as 2040 in order to capture the long-range planning horizon of the HCMPO 2015-2040 MTP (2017).

4.17.1.2 *Conditions and Trends*

Neighborhoods/Communities

The RSA encompasses portions of the City of Edinburg, City of Alamo, City of Donna, La Blanca CDP, Hargill CDP, Doolittle CDP, Faysville CDP, San Carlos CDP, and Muniz CDP. Residential development consisting of dense residential neighborhoods and rural, large-lot subdivisions occur throughout the community study area. A total of 21 neighborhoods were identified within the RSA and near the three reasonable alternatives, based on their unifying

characteristics such as similar housing styles, lot sizes, and shared access along local streets. **Exhibit 4-6** in **Appendix A** identifies the location of the neighborhoods and colonias within the RSA. (See the *DEIS Reasonable Alternatives Community Impact Assessment Technical Report* (TxDOT 2017) for additional details regarding the name and size of each of these neighborhoods and colonias.)

Historically the area was known for cattle ranching, but after the arrival of the railroad and the development of irrigation systems, shipping fruit and vegetables became easier and the economy shifted from ranching to farming. Farmers were encouraged to move to the area, which led to newly established towns, such as Edinburg (1908), Pharr (1909), and San Juan (1909). Citrus fruit production became the predominant agricultural good of the area. As the population of Hidalgo County has steadily grown, the conversion of agricultural land uses to residential and commercial development has also increased. This is evidenced by a review of historic areal imagery, which shows a shift from large cultivated tracts of land into smaller, subdivided residential developments and commercial areas (Google, 2017).

The current characteristics of the population within the RSA generally include:

- over 50 percent Hispanic or Latino residents, comparable to the minority percentages throughout Hidalgo County
- over 20 percent of the population who are LEP, meaning they speak English less than "very well"
- low-income populations, with notable concentrations in the northern and southern portions of the RSA

In addition to the aforementioned neighborhoods and communities, 76 documented colonias were identified within the RSA. Colonias are unregulated settlements typically located in semi-rural areas, and almost exclusively in the U.S.–Mexico border region. Section 916 of the National Affordable Housing Act of 1990 (Public Law 101-625, as amended) generally defines a colonia as any identifiable community lacking basic living necessities, including potable water, adequate sewage systems, electricity, paved roadways, sanitary housing, or other generally determined objective criteria. Immigrants moving to the area were often sold unusable land by real estate agents, or told that municipal utilities such as water, electricity, and sewage would be provided. The arrival of these municipal utility services took decades, if they were even provided at all. As a result, numerous colonias and unincorporated immigrant settlements developed outside municipal boundaries. In 1986, an estimated 52,000 people in Hidalgo County lived in colonias. The problems of inadequate water supply and substandard housing were rife among colonia residents, many of whom were migrant farmworkers (Handbook of Texas Online, 2017.) In 2001, the 77th Legislature passed Senate Bill 1296 which granted $175 million in bond revenues to provide financial assistance to counties for

roadway projects serving border colonias. According to Hidalgo County, unpaved and deteriorated roads in many of the state's border colonia communities cause transportation and drainage problems (Hidalgo County, 2017.)

Ecological Resources

Ocelot

The ocelot was designated as an endangered species in 1972 under the Endangered Species Conservation Act of 1969, but it was included on a list for foreign wildlife and not on the native wildlife list. The ocelot was first listed as endangered in the U.S. under the authority of the ESA on July 21, 1982. The first recovery plan was published in 1990, which also included the jaguarundi and the margay. The focus of the 1990 recovery plan was primarily ocelots in Texas. The species once ranged through South, Central, and East Texas and into Louisiana and Arkansas, and in Mexico from the foothills of the Sierra Madre Oriental in Coahuila through Nuevo Leon and Tamaulipas to the Gulf Coast. Ocelots historically occurred in Texas along the Gulf Coast up to Jasper County and along the Rio Grande as far west as Brewster County. One isolated record occurred in the panhandle and historic occurrences have been documented in Falls and McLennan Counties, located near Waco. These historic occurrences occurred from 1890-1990. Since 1980, the ocelot has been documented in Cameron, Willacy, Kenedy, Hidalgo, and Jim Wells Counties, Texas (USFWS 2016a).

According to the 2010 final recovery plan, it is estimated that fewer than 100 ocelots remain in Texas. The species has a recovery priority of 5C, a low potential for recovery with a relatively high degree of conflict with development projects. Texas breeding populations are known in three separate locations east of US 77. Two of the populations are located in Willacy and Kenedy Counties, primarily on private ranches. There are an estimated 12 ocelots on Nature Conservancy and USFWS easements on the Yturria Ranch in Willacy County, and an estimated 22 ocelots in a newly-discovered population on the East El Sauz Ranch in Willacy County. As of 2015, the total population of ocelots in portions of Willacy and Kenedy Counties was estimated to be 39. The third population is in Cameron County, primarily on the 45,000-acre LANWR, and includes 14 identified ocelots. The Cameron County population is separated from the two northern populations by approximately 20 miles. No ocelots have been documented west of Cameron and Willacy Counties since 1996. Ocelots have not been documented since 1996 within the RSA. In much of the RSA, the ocelot's preferred habitat has been altered or removed in recent decades through urbanization and agricultural practices. The removal of preferred habitat has caused the decline of the species within the RSA. Studies suggest that ocelots use narrow brush corridors, ranging in width from 15 to 325 feet, along resacas and drainage ditches during dispersal. The species could possibly use these habitats within the RSA for dispersal.

Texas ayenia

The Texas ayenia was first discovered in 1888 in woodlands in Hidalgo County and was first listed as endangered in the U.S. in 1994. It was historically known from nine locations in Cameron, Hidalgo, and Willacy Counties, including one site where propagated individuals had been planted. Seven of the eight historic wild populations have either been extirpated or cannot be relocated.

The only remaining historic population is located at a site known as the Methodist Camp Thicket, which is now part of Estero Llano Grande State Park in southern Hidalgo County (USFWS 2016b). This population has increased from 28 individuals in 1994 to 147 individuals in 2007. In 2010, the entire site was acquired by TPWD and incorporated into Estero Llano Grande State Park. Since it was listed in 1994, four additional populations have been discovered, but none in the RSA. Two of these recently discovered populations are in Cameron County and two are in northwest Willacy County. The two Cameron County populations are located at C.B. Wood Municipal Park in Harlingen and on private property near the Arroyo Colorado north of Rio Hondo. The two Willacy County populations are located on the Rudman Tract of the LRGV-NWR and on private property approximately 4 miles northeast of the Rudman Tract population. In addition to these documented populations, there have been several credible reports of other small populations in Cameron and Willacy Counties along the Arroyo Colorado and near Brownsville and Olmito. There is no designated critical habitat for the species.

Walker's manioc

The Walker's manioc was first collected in 1853 near Rio Grande City in Starr County. However, it was misidentified until it was discovered again in 1940 near the Rio Grande near La Joya in Hidalgo County and described as a new species in 1942. Attempts to relocate plants at the locations near Rio Grande City and La Joya have been unsuccessful. It was thought to have been extirpated from Texas until a single individual was discovered in 1990, and it was subsequently listed as endangered in 1991. Since its rediscovery, several additional individuals have been discovered on USFWS tracts.

There is one documented extant population of the Walker's manioc in the RSA near La Joya, although several additional occurrences have been found on USFWS tracts in the area. The documented population consists of a single, mature individual growing in an opening within the surrounding brush approximately two meters from a dirt road. The surrounding brush is a small, isolated fragment of brush habitat surrounded by agriculture (USFWS 1993). There is no designated critical habitat for the species.

4.17.2 Direct and Indirect Effects on Each Resource from the Proposed Project

The following section provides a summary of the potential direct and indirect effects on neighborhoods/communities and ecological resources based on desktop analysis of the three reasonable alternatives.

Neighborhoods/Communities

Based on a desktop evaluation of the reasonable alternatives, adverse impacts are anticipated regarding potential ROW acquisition, building displacements, community cohesion, roadway access and travel patterns, business displacements and employment opportunities, and tax revenues loss under the proposed project. No adverse impacts are anticipated regarding community facilities, bicycle/pedestrian access and travel, emergency services access and travel, under the proposed project. Beneficial impacts are anticipated regarding transportation infrastructure improvements. **Table 4-23** provides a summary of direct impacts neighborhoods and communities.

The proposed project may influence the location and type of new development within the AOI, most likely concentrated at proposed access points, existing cross-streets, and along the reasonable alternatives. Many of the areas identified as available for development are located in non-residential areas. However, potential changes in the location, density, type of development along the reasonable alternatives could impact adjacent neighborhoods and communities. As population growth continues and regional development patterns change, the rural nature of the study area and local communities will likely change as well. The 2014 Modified 2, 2014 PSM Alternative, and FM 1423 PSM Alternatives would divide agricultural operations on approximately 22, 25, and 12 parcels, respectively. Access would be restored to all affected parties; however, in some instances, the functionality of formerly undivided parcels may be limited by access restrictions on agricultural equipment and livestock. As a result, these areas may be converted to commercial or residential uses as their agricultural functionality diminishes. Based on current trends in population and employment, it is projected that growth will continue regardless of the project. The project may, however, influence the rate and location of new development. Although the proposed project is not expected to induce development that would substantially isolate neighborhoods or disrupt community cohesion, induced growth impacts associated with these changes in development patterns may result in impacts to neighborhood composition and shift the rural and agricultural character of portions of the AOI.

Table 4-23. Direct Impacts to Neighborhoods and Communities

	2014 Modified 2 Alternative	2014 PSM Alternative	FM 1423 PSM Alternative
Community Impacts			
Potential ROW Acquisition	1,056.6 acres Adverse impact	1,075.6 acres Adverse impact	1,060.6 acres Adverse impact
Potential Displacements	102 within ROW 8 Primary Commercial within ROW Adverse impact	90 Primary Residential within ROW 5 Primary Commercial within ROW	119 Primary Residential within ROW 29 Commercial within ROW Adverse impact
Community Cohesion	5 of 10 neighborhoods are bisected Adverse impact 5 of 10 neighborhoods are clipped- No adverse impact	6 of 10 neighborhoods are bisected Adverse impact 4 of 10 neighborhoods are clipped- No adverse impact	2 of 11 neighborhoods/colonias are bisected Adverse impact 9 of 11 neighborhoods/colonias are clipped- No adverse impact
Community Facilities	No adverse impact community facilities	No adverse impact community facilities	No adverse impact community facilities
Roadway Access and Travel	Adverse impact to 17 of 34 roadways as access is severed	Adverse impact to 15 of 34 roadways as access is severed	Adverse impact to 14 of 34 roadways as access is severed
Bicycle/Pedestrian Access and Travel	No adverse impact to bicycle and pedestrian access	No adverse impact to bicycle and pedestrian access	No adverse impact to bicycle and pedestrian access
Emergency Services Access and Travel	No adverse impact to emergency service access	No adverse impact to emergency service access	No adverse impact to emergency service access
Socioeconomic Impacts			
Environmental Justice (EJ)	Minority populations present Low-income populations present No disproportionate high and adverse effects	Minority populations present Low-income populations present No disproportionate high and adverse effects	Minority populations present Low-income populations present No disproportionate high and adverse effects
Transportation Infrastructure Improvements and Alternative Location	Beneficial impacts	Beneficial impacts	Beneficial impacts
Business Displacements and Employment Opportunities	8 within ROW 4 within 50 feet of ROW Adverse impact	5 within ROW 3 within 50 feet of ROW Adverse impact	29 within ROW 5 within 50 feet of ROW Adverse impact
Tax Revenues Loss	Adverse impacts because of high ROW and building displacement	Adverse impacts because of high ROW and building displacement	Adverse impacts because of high ROW and building displacement

Ecological Resources

All of the three reasonable alternatives would impact some patches of remnant native brush habitat that could be used by dispersing or traveling ocelots. The proposed project would also result in an increase in the amount and speed of vehicular traffic, which could potentially cause ocelot mortalities from vehicle collisions. The conversion of brush or riparian habitats to transportation or maintained ROW could also remove potential habitat for the Texas ayenia and Walker's manioc. Texas ayenia could potentially occur in areas of dense brush or woodland within the study area, and presence/absence surveys for the species will be conducted on the preferred alternative. Walker's manioc could potentially occur along edges of or in openings within areas of dense brush or woodland, and presence/absence surveys for the species will be conducted on the recommended preferred alternative.

The current ocelot populations in Cameron and Willacy Counties and the existing suitable ocelot habitat are located outside of the AOI for this project and indirect impacts to suitable habitat or known populations are not anticipated. Because of the limited amount of potential habitat for the Texas ayenia and Walker's manioc that exists adjacent to the reasonable alternatives, the induced growth impact to habitat associated with the project is expected to be relatively small. However, this scarcity of potential habitat for each of these species can also mean that potential impacts may be considered substantial. Future development along drainage or irrigation ditches that might provide travel corridors to ocelots or be used by the two endangered plant species could result in impacts to these species. The removal of brush habitat associated with development would remove potential patches of land that could be occupied by ocelots that are attempting to disperse and the two endangered plant species that are associated with edges of or openings within brush habitat.

4.17.3 Other Actions - Past, Present, and Reasonably Foreseeable - and Their Effect on Each Resource

In order to assess cumulative effects, the analysis must consider other past, present, and future (reasonably foreseeable) actions that have impacted or may impact the subject resources. The following summary of other actions is based on currently available data. Additional research and interviews with planners will be conducted in order to obtain more details regarding reasonably foreseeable actions and how the project may influence development in the area for the recommended preferred alternative and documented in the FEIS. These types of actions could include other major transportation projects, residential subdivisions, industrial facilities, and commercial development, among others.

In addition, RSAs may be adjusted based on refined data and determination if resources are directly impacted by the recommended preferred alternative. This will allow for a more accurate quantification of potential effects to the subject resources than is possible now. For

the purposes of this DEIS, the following general summary of future transportation projects and development trends is intended to provide an overview of possible actions that may contribute to a cumulative effect.

Exhibit 4-23 in **Appendix A** provides a depiction of projects planned in the 2015-2040 HCMPO MTP. The MTP functions as the MPO's 25 year long-range transportation planning document that "identifies the needs of the community, establishes priorities for funding those needs, and creates a course for meeting those needs" (HCMPO 2017). In the 2015-2040 MTP Table included in **Appendix C**, new location roadways have been broken out because of the higher probability of impacts resulting from these projects. However, the remaining projects may require additional ROW and result in direct impacts to resources as a result of an increased roadway footprint or change in project design.

A detailed calculation of potential effects associated with present and reasonably foreseeable transportation plans will be provided in the FEIS as direct impacts associated with a recommended preferred alternative are refined and RSAs updated as necessary.

In addition to reasonably foreseeable transportation projects, general land use trends in the area indicate continued growth and development within the RSAs. Hidalgo County is currently developing a Capital Improvement Plan that will guide the County's decisions on public infrastructure priorities and capital needs. In the absence of official or approved strategic development plans, historic aerial imagery was reviewed in order to establish past development trends and evaluate potential future growth. Historic imagery dating from 1950 through 2016 indicates a notable increase in development in the southern portion of Hidalgo County, with instances of land use conversion from agricultural to residential and commercial uses visible generally in the center of the county. Based on future population projections and input from planning officials (see **Section 4.17.2**), growth is expected to continue within the RSAs. In addition to continued density in the southern portion of Hidalgo County, the trend of converting agricultural properties to developed land uses is also expected to continue.

Future transportation projects and other reasonably foreseeable actions could result in effects to neighborhoods and communities. As previously outlined, the neighborhoods and communities within the RSA contain minority, low-income, and LEP populations; therefore, any undertaking in these areas would likely result in some impact to elements of these groups. In addition, the addition of linear projects (such as roadways) could result in impacts to neighborhood and community cohesion by creating new barriers between residents and community features and changing travel patterns and connectivity. The conversion of agricultural land use to residential and commercial uses as a result of future development could also contribute to a shift in the community character from rural to suburban, changing the economic and employment characteristics of the area as well as how members of the

community interact with and perceive one another. While this "urbanization" can often be seen as a threat to traditional agricultural practices, population growth in certain areas can also represent a new customer base or market for agricultural goods and services. Direct impacts are refined, a more detailed analysis of the cumulative effect of the SH 68 project and other actions on neighborhoods and communities would be conducted on the recommended preferred alternative if warranted.

Over the last several decades, much of the native brush habitat and riparian habitat within the RSA has been impacted by urbanization. Patches of native brush remain unaltered primarily in the northern portion of the RSA. Vegetation changes are driven by land use change. As development occurs, brushy habitat, riparian areas, and native prairie habitats are eliminated through construction of housing, business centers, commercial developments, and associated infrastructure. The impacts this development as well as new and expanded transportation facilities in the RSA could result in the loss of potential travel corridors for dispersing ocelots or potential habitat for the Texas ayenia and Walker's manioc. Direct impacts will be refined and more detailed analysis of the cumulative effect of the SH 68 project and other actions on ecological resources would be conducted on the recommended preferred alternative if warranted.

4.17.4 The Overall Effects of the Proposed Project Combined with Other Actions

Because the direct impacts associated with the proposed project will be adjusted and refined for the recommended preferred alternative, it is not possible to comprehensively quantify direct and cumulative impacts at this point in project development. It may be possible to minimize direct impacts to a point where they are no longer substantial. In addition, as further analysis of potential direct impacts is conducted, RSAs may require adjustments. As part of the FEIS, the current analysis of cumulative effects would be updated and expanded with additional information regarding quantified impacts, resources, and reasonably foreseeable development. At that point, potential cumulative effects can be identified and evaluated. In addition, appropriate mitigation and minimization efforts can be identified, if required.

4.18 Construction Phase Impacts

Funding has only been secured for Phase I of the project which extends from I-2/US 83 to FM 1925. Phase I includes the construction of frontage roads resulting in a four-lane divided facility. Funding for future phases has not been determined; subsequently, SH 68 would be constructed in several phases, as funding becomes available. If the No-Build Alternative were implemented, construction phase impacts would not occur. The following information discusses potential construction phase impacts.

Prior to construction, utilities would be located and adjusted as appropriate in a manner that would avoid and/or minimize disruptions. Traffic patterns could be affected by the proposed construction including the need for temporary road closures and detours. The contractor would be required to use necessary barricades, signs, and flags to alert motorists of construction areas. Changes in travel patterns would be displayed on roadway message signs as necessary. TxDOT would also notify emergency services prior to making any changes that would affect current travel patterns.

4.18.1 Water Resources

Each of the three reasonable alternatives have the potential to impact water resources; however, any anticipated impacts are expected to be minor. The construction would be authorized under the TPDES CGP and require a SW3P. The SW3P would provide mitigative measure during the construction phase of the project to address potential construction related erosion and sedimentation. The SW3P may include temporary vegetation, blankets/matting and/or sod for erosion control, vegetative filter strips for post-construction TSS controls and silt fencing for sediment control.

4.18.2 Ecological Resources

Each of the three reasonable alternatives have the potential to impact wildlife during the construction phase. These impacts may occur because of habitat loss. A variety of BMPs would be implemented during construction to mitigate for potential impacts (see **Section 7.0**). The proposed project would incorporate wildlife crossings into the design, particularly in areas that bisect wildlife travel corridors.

Vegetation impacted by the project would be restored and stabilized as soon as the construction schedule permits. To comply with the federal EO 13112 on Invasive Species and the Executive Memorandum for Environmentally and Economically Beneficial Landscaping, the department implements appropriate measures on a programmatic basis through its Roadside Vegetation Management Manual and Landscape and Aesthetics Design Manual. Permanent soil erosion control features would be implemented as soon as feasible during the early stages of construction through proper sodding and/or seeding techniques. Disturbed areas would be restored and stabilized as soon as the construction schedule permits. Seeding and replanting with TxDOT approved rural seeding specifications would be performed where possible, and only non-invasive species would be planted within the ROW.

4.18.3 Air

During the construction phase of the proposed project, temporary increases in PM and MSAT emissions may occur from construction activities. The primary construction-related emissions

of PM would be fugitive dust from site preparation. The primary construction-related emissions of MSAT would diesel PM from diesel-powered construction equipment and vehicles.

The potential impacts of these PM emissions would be minimized by using fugitive dust control measures contained in standard specifications, as appropriate. Fugitive dust control measures include the application of water during construction to control dust, provide compaction and aid in revegetating the area. The TERP provides financial incentives to reduce emissions from vehicles and equipment (TCEQ 2017). TxDOT encourages construction contractors to use this and other local and federal incentive programs to the fullest extent possible to minimize diesel emissions. Information about the TCEQ's TERP program can be found at: https://www.tceq.texas.gov/airquality/terp.

However, considering the temporary and transient nature of construction-related emissions, the use of fugitive dust control measures, the encouragement of the use of TERP, and compliance with applicable regulatory requirements, it is anticipated that emissions from construction of the proposed project would not have any significant impact on air quality in the study area.

4.18.4 Hazardous Materials

Further evaluation would take place during the FEIS phase of the project to determine if hazardous materials construction phase mitigative measures are necessary. If additional measures are necessary, they would be included in the development of the Plans, Specifications, and Estimates (PS&E) for the project.

4.18.5 Noise

Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. However, construction normally occurs during daylight hours, when occasional loud noises are more tolerable. None of the receivers modeled for the three reasonable alternatives are expected to be exposed to construction noise for a long duration. Therefore, any extended disruption of normal activities is not expected. Provisions would be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures, such as work-hour controls and proper maintenance of muffler systems.

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5.0 AGENCY COORDINATION

Coordination with various agencies was integrated into the development of the SH 68 project to provide agencies with jurisdiction or legal responsibility opportunities for review of the DEIS and to provide meaningful input during development of the project. Agency involvement activities for the SH 68 project are discussed below.

Participating Agencies are federal, state, tribal, regional, and local government agencies that may have an interest in the project and participate in the scoping process and the NEPA process with regard to development of the Purpose and Need Statement, development of the alternatives, and provide early input on issues of concern regarding the project's potential environmental or socioeconomic impacts. Participating Agencies identified for the SH 68 project included the USACE, HUD, Federal Transit Administration (FTA), EPA, TPWD, SHPO/THC, and the TCEQ.

Cooperating Agencies are federal participating agencies which have either jurisdiction by law regarding aspect(s) of the proposed project or special expertise pertaining to the proposed project. TxDOT, as the lead agency, invited potential cooperating agencies to participate during the development of the SH 68 project. The USFWS accepted TxDOT's invitation to be a Cooperating Agency and has the identified role of providing input on potential threatened and endangered species within the project area.

Agencies with roles established under MOU between that agency and TxDOT included the THC, the TCEQ, and the TPWD. These agencies are also included as participating agencies as discussed below.

Agency Scoping Meeting

Agency coordination began with an Agency Scoping Meeting, which was held on March 29, 2016, to gather input on the Draft Project Coordination Plan, input on the project Purpose and Need Statement, review study corridors, and identify potential resource issues or constraints. Those agencies invited to the meeting included the NRCS, Region 6 of the EPA, USFWS, USACE, HUD, FTA, Secretary of State's office, TPWD, SHPO, RRC, and TCEQ. The agencies that participated in the meeting included the USFWS, USACE, HUD, TPWD, and EPA.

Several agencies provided input either at the meeting or following the meeting. The TPWD provided a list of items to consider including impacts to potential wildlife corridors, impacts to rare and threatened species and their habitats, impacts to remnant vegetation and impacts to land used for wildlife habitat conservation. The HUD provided a list of HUD-assisted properties to consider during project development. The USACE requested a copy of the study corridors being considered for the project and inquired about the status of wetland

delineations and permitting for the project. The EPA provided a list of issues and recommendations covering the following topics: Purpose and Need Statement, alternatives analysis, groundwater, direct impacts, indirect impacts, and cumulative Impacts, stormwater considerations, impacts to waters of the U.S., biological resources, invasive species, air quality, climate change, hazardous materials, consultation and coordination with Tribal Governments, NHPA and EO 13007, EJ, coordination with land use planning activities, visual and aesthetic resources, additional ROW, and noise. In addition, EPA provided recommendations on certain measures for fugitive dust sources, mobile and stationary sources, and administrative controls. A copy of the Agency Scoping Meeting report titled *Documentation of Agency Scoping Meeting* is on file at TxDOT (TxDOT 2016).

Additional Coordination

Once the DEIS is completed, reviewed by TxDOT, and approved as satisfactory for further processing, a public hearing would be held and the document made available for public and agency comments. Once the public hearing process is completed, field surveys of the recommended preferred alternative would be conducted as applicable. Upon completion of those surveys, coordination and/or permitting would be undertaken with the USACE, USFWS, THC, and TCEQ as warranted by either regulation or through TxDOT's MOUs with these agencies.

6.0 PUBLIC INVOLVEMENT

All public involvement activities were conducted in English and Spanish and have been integrated throughout the development of the SH 68 project to provide opportunities for the public and agencies to provide meaningful input during project development. To help guide the public involvement process, TxDOT developed a Project Coordination Plan, which included a Public Involvement Plan (PIP), held agency and public scoping meetings, a public meeting, opened a SH 68 project office located in the study area, created a project telephone hotline, and conducted numerous stakeholder meetings. In addition, information was placed on the SH 68 project page on the TxDOT website and social media announcements were made throughout the development of the project. The following sections provide a summary of public involvement activities for the SH 68 project.

6.1 Project Coordination Plan

A Project Coordination Plan was created for the project to establish the milestones and meetings in which the agencies, and the public would be involved as part of the EIS. The Project Coordination Plan established a schedule and process for coordinating public and agency participation and comment periods during the environmental review process. The Project Coordination Plan described the role of TxDOT as the lead agency as well as cooperating and participating agencies.

6.2 Public Involvement Plan

A PIP was developed using transparent interaction with Potential Affected Parties (PAPs) as part of the development of the EIS. The process assisted in developing an effective, efficient, and responsible approach throughout the development of SH 68. The PIP adhered to the following guiding principles:

- No preconceived notions about the ultimate outcome of the process;
- Transparent and honest interaction with all PAPs;
- Listen to and value the input of all PAPs;
- Engage in meaningful, constructive, and open dialogue with all PAPs; and
- Collaborate with all PAPs.

Additionally, the PIP established the following goals for public involvement:

- Establish and maintain interactive communication with all PAPs;
- Ensure public access to information on the environmental study process;
- Ensure information and messages for the public are consistent;

- Ensure all PAPs are identified and have the opportunity to participate;
- Sincerely consider all reasonable input from PAPs;
- Ensure all PAPs have the opportunity to be fully engaged and informed at all stages of development of the EIS; and
- Achieve informed consent with all PAPs.

With the guiding principles and goals established in the PIP, the execution of these items was achieved through the establishment of a project database for property owners and interested parties, public information materials, the PSM, the public meeting, media relations, TxDOT project webpage, use of social media, face-to-face involvement, individual stakeholder meetings, establishment of a project office, and a project hotline. The PIP is included as an attachment to the *Project Coordination Plan* and can be found at: http://www.txdot.gov/inside-txdot/projects/studies/pharr/sh68.html (TxDOT 2017a).

6.3 Modal Alternatives Conference

A Modal Alternatives Conference was held as part of the Project Coordination Plan for the project on January 22, 2016. Local and state technical experts representing various modes of transportation attended the meeting. Attendees included technical experts and stakeholders from the HCMPO, the HCRMA, municipalities, state agencies, representation from two international bridges, as well as the Pharr Economic Development Corporation. At the conference, the SH 68 Project Team, technical experts, and stakeholders discussed and screened various modes of transportation. The comments received from the stakeholders indicated that a roadway facility would best address the draft Purpose and Need Statement for the proposed project. For a list of attendees and a summary of the conference, please refer to the *Modal Alternatives Conference Summary Report* on file with TxDOT (TxDOT 2016c).

6.4 Public Scoping Meeting

A PSM was held on March 15, 2016 to gather input on the draft Project Coordination Plan and Purpose and Need Statement, review study corridors, and identify potential resource issues or constraints. A total of 463 members of the public, media, and elected officials attended the meeting.

A variety of outreach efforts were undertaken for the PSM by TxDOT, including postcards mailed to individuals in the study area, newspaper meeting notices, display ads, a media day at the SH 68 Project Office, continued outreach and extended hours at the SH 68 Project Office, flyer distribution, use of changeable message signs, calling individuals in the study area, Facebook advertisements, and providing flyers to parents through school districts and

businesses. Extended project office hours were two weeks prior and two weeks after the PSM. The extended hours were Monday through Friday, 9:00 a.m. to 6:00 p.m. and until 8:00 p.m. on Tuesdays and Wednesdays.

An English notice for the meeting was published in *The Monitor* on February 21, 2016 and March 6, 2016. A Spanish notice was also published in *El Periódico* on February 24, 2016.

On March 8, 2016, approximately 3,500 bilingual SH 68 PSM postcards were mailed to property owners located within the study corridors inviting them to the upcoming PSM.

Bilingual flyers were provided to school administration to distribute to parents in the SH 68 Project study area, announcing the SH 68 PSM and highlighting the SH 68 Project Office contact information and hours of operation from March 7, 2016 to March 11, 2016. Below is a list of schools and the number of flyers distributed:

- Daniel Singleterry Elementary School (650)
- Veterans Middle School (600)
- E. G. Salazar Elementary School (550)
- P. S. Garza Elementary School (600)
- San Carlos Elementary School (600)
- J. S. Adame Elementary School (500)

Additional outreach efforts included handing out approximately 1,000 flyers to residential properties and businesses/organizations within the study area by block walking. Flyers were also provided to individuals that visited the SH 68 Project Office prior to the March 15, 2016 PSM.

Summary of the PSM

Public comments were captured at the public meeting via comment card or court reporter. Comments could also be mailed to the TxDOT Pharr District Office or the SH 68 Project Office. Additionally, comments could be made at the SH 68 Project Office. A total of 238 comments were received as a result of the PSM. The majority of comments received concerned impacts to personal property and cost associated with the project. Other comments received were over a preferred corridor identified by the commenters, opposition to a tolled facility, preference for a different location as opposed to the corridors presented at the meeting, concerns for native brushland impacts, bicycle accommodations, and impacts to businesses and farms. The PSM summary report can be found at: http://www.txdot.gov/inside-txdot/projects/studies/pharr/sh68.html (TxDOT 2016b).

6.5 Agency Scoping Meeting

An Agency Scoping Meeting was held on March 29, 2016 to gather input on the draft Project Coordination Plan and Purpose and Need Statement, review study corridors, and identify potential resource issues or constraints. Agencies invited to the meeting included the NRCS, Region 6 of the EPA, USFWS, USACE, HUD, FTA, Secretary of State's office, TPWD, SHPO, RRC, and TCEQ. The agencies that participated in the meeting included the USFWS, USACE, HUD, TPWD, and EPA. A summary of Agency Scoping meeting coordination is presented in **Section 5.0** of the DEIS.

6.6 Public Meeting January 3, 2017

A Public Meeting was held on January 3, 2017 to update the public and solicit comments on the project's EIS process, alternatives analysis methodology, status and next steps, including the presentation of the three reasonable alternatives being advanced for further evaluation. The public meeting was attended by 382 members of the public, 11 media representatives and one elected official.

A variety of outreach efforts were undertaken for the public meeting by TxDOT, including postcards mailed to individuals in the study area, newspaper meeting notices, display ads, a media video package, continued outreach and extended hours at the SH 68 Project Office, flyer distribution, use of changeable message signs, calling individuals in the study area, and Facebook and Twitter advertisements. Extended project office hours were two weeks prior and two weeks after the PSM. The extended hours were Monday through Friday, 9:00 a.m. to 6:00 p.m. and until 8:00 p.m. on Tuesdays and Wednesdays.

Public comments were gathered at the public meetings via comment card or court reporter. Comments could also be mailed to the TxDOT Pharr District Office or the SH 68 Project Office. Additionally, comments could be made at the SH 68 Project Office.

An English notice was published in *The Monitor* on 11/27/16 and 12/18/16. A Spanish notice was published in *El Periódico* on 11/30/16 and 12/21/16.

Summary of the Public Meeting

A total of 109 comments were received as a result of the public meeting. Of the comments received, the public generally stated preference for a particular route over another, expressed interest or concern over their personal property, increased traffic, noise and air pollution, schools, churches, cemeteries, and costs. Other concerns included negative impacts to businesses and farms, brushland, and drainage/flooding. The January 3, 2017 public meeting summary report can be found at: http://www.txdot.gov/inside-txdot/projects/studies/pharr/sh68.html (TxDOT 2017b).

6.7 Additional Public Involvement Opportunities

The following information includes a summary of additional public involvement activities that gave the public more chances to engage and give input in the project's process.

6.7.1 Project Office and Project Hotline

The SH 68 Project Office was established in the Spring of 2016 and has been utilized throughout the development of the project as a convenient method for the public to access information regarding the study. The office is centrally located within the SH 68 Study Area at 4711 S. Alamo Road, Edinburg, Texas, and houses the latest project information, exhibits, and handouts, as well as information developed since the inception of the project. The project office is open from 11:00 a.m. to 8:00 p.m. Tuesday and Wednesday and at other times by appointment to accommodate the public who are interested in the project. The SH 68 Project Office is also available by contacting the project office hotline at (956) 460-9299. The number is managed by bilingual staff. The office and hotline number will be open through the Summer of 2018. The project office has been visited by approximately 400 individuals and the hotline has received and made over 700 phone calls since the Spring of 2016. Calls received from the public generally regarded the status of the project or for information regarding the PSM or public meeting.

6.7.2 Project Webpage

TxDOT established a project webpage in the Summer of 2015 that provides information regarding the project. The project webpage includes information from the PSM, public meeting, and other information to keep the public informed on the project's status and upcoming public involvement. Additionally, it provides ways in which the public can contact TxDOT project office and hotline. The SH 68 Project webpage is located at: http://www.txdot.gov/inside-txdot/projects/studies/pharr/sh68.html.

6.7.3 Social Media

Twitter and Facebook were utilized to promote the public involvement activities. A Facebook advertisement was run within the two weeks prior to the SH 68 PSM, and TxDOT sent an E-Blast on March 3, 2016 to the SH 68 Project Database. The database list included emails obtained from previous SH 68 Public Meetings and emails gathered from those that visited the SH 68 Project Office. TxDOT Pharr District's twitter (@TxDOTPharr) also shared the PSM details on March 3, March 11, March 13 and March 15, 2016. The January 3, 2017 Public Meeting details were shared on Twitter on January 2 and 3, 2017.

6.7.4 Face-to-Face Involvement

Members of the public were proactively approached to discuss the project's status and next steps. Part of the outreach included individual stakeholder meetings/(briefings) and presentations to stakeholders (see **Table 6-1** for a list of stakeholders). All materials were tailored to their respective audience, generally consisting of how SH 68 impacts a particular resource or interest, and an overview of the project.

Table 6-1. Stakeholder Meetings

Date of Meeting	Stakeholder Visited	Discussion Topic
04/30/2014	Dannenbaum	Discuss project status/NEPA
05/01/2014	Hidalgo County RMA	Discuss project status/NEPA
05/07/2014	Drain District No. 1	Discuss project status/NEPA
08/18/2014	City of Edinburg, Dannenbaum	Discuss project status/NEPA
09/16/2014	Fike Family	Discuss project status/NEPA
09/25/2014	Fike Family	Discuss project status/NEPA
10/01/2014	Fike Family	Discuss project status/NEPA
10/6/2014	Fike Family	Discuss project status/NEPA
11/17/2014	CornMaze Events	Discuss project status/NEPA
11/17/2014	Templo Biblico El Rey Ya Viene	Discuss project status/NEPA
11/18/2014	Paramount Citrus	Discuss project status/NEPA
11/18/2014	Tex-Mex Rd. Area Residents	Discuss project status/NEPA
11/19/2014	Donna Irrigation District	Discuss project status/NEPA
11/19/2014	Alberta Rd. Area Residents	Discuss project status/NEPA
11/20/2014	Faires Plumbing	Discuss project status/NEPA
11/20/2014	Hidalgo County Irrigation District 2	Discuss project status/NEPA
12/2/2014	Hidalgo County Planning Department	Discuss project status/NEPA
12/2/2014	Baldomero Gonzalez	Discuss project status/NEPA
12/3/2014	Platinum Heights	Discuss project status/NEPA
12/3/2014	Cactus Flat, LLC	Discuss project status/NEPA
12/4/2014	Hidalgo County Appraisal District	Discuss project status/NEPA
01/13/2015	Mr. and Mrs. Jenkins	Discuss project status/NEPA
02/06/2015	HCRMA	Discuss project status
02/11/2015	Hidalgo, Delta, and Engleman Irrigation Districts	Discuss project status/NEPA
02/26/2015	Rotary International Club	Discuss project status/NEPA
03/09/2015	Edinburg Lions Club	Discuss project status/NEPA
03/11/2015	City of Edinburg	Discuss project status/NEPA
03/29/2016	Mr. and Mrs. Ruiz	Discuss project status/NEPA
04/19/2016	City of Edinburg	Discuss project status/NEPA
04/20/2016	Donna ISD	Discuss project status/NEPA
04/21/2016	HCPCC	Discuss project status/NEPA
04/27/2016	HCRMA	Discuss project status
04/27/2016	HC Planning	Discuss project status/NEPA
04/28/2016	LUPE	Discuss project status/NEPA
04/28/2016	ECISD Transportation Dept.	Discuss project status/NEPA
04/28/2016	PSJA ISD	Discuss project status/NEPA
05/02/2016	ECISD Facilities Committee	Discuss project status/NEPA
05/05/2016	HCMPO TAC Meeting	Discuss project status

Table 6-1. Stakeholder Meetings

Date of Meeting	Stakeholder Visited	Discussion Topic
05/16/2016	Pharr EDC	Discuss project status/NEPA
05/16/2016	City of McAllen	Discuss project status
05/16/2016	Valley Metro	Discuss project status
05/17/2016	City of Alamo	Discuss project status
05/18/2016	City of Edinburg	Discuss project status
05/19/2016	HCMPO TPC Meeting.	Discuss project status
05/24/2016	McAllen Metro	Discuss project status
05/24/2016	HCRMA Board Meeting	Discuss project status
12/15/2015	HC Drainage District	Discuss project status
12/29/2016	Philip Rivera	Discuss project status/NEPA
01/12/2017	HCRMA	Discuss project status
01/31/2017	Kiwanis	Discuss project status
02/09/2017	HC Drainage District	Discuss project status

6.7.5 Media Relations

Media relations were established and maintained with the public and news agencies. TxDOT invited the media to the SH 68 Project Office on March 10, 2016 where four news organizations were present: Telemundo, KRGV TV. Univision, and *The Monitor*. At the media day event, the project's history, status, and meeting information for the upcoming March 13, 2016 PSM were provided. KRGV TV and KGBT TV posted news stories about the upcoming meeting on their respective websites. Media relations were also part of the January 3, 2017 public meeting, with press coverage leading up to and after the public meeting. See **Table 6-2** for a list of news articles.

Table 6-2. News Articles

Date of Publication	News Agency	Title of Article
11/1/2014	*The Monitor*	"Family memories, futures stand along path of proposed Hidalgo County expressway"
01/28/2015	KGBT-TV	"Worried residents attempt to put stop to new highway"
03/11/2016	KGBT-TV	"Department of Transportation plans public meeting about State Highway 68"
03/14/2016	KGBT-TV	"Public meeting about State Highway 68 set for Tuesday"
01/02/2017	KGBT-TV	"Texas Department of Transportation will hold public meeting about State Highway 68 project"
01/03/2017	KRGV	"TxDOT Narrows Top 3 Route Choices for Highway 68"
01/04/2017	*RGV Proud*	"TxDOT and Valley Residents Debate New Highway"

6.7.6 Stakeholder Meetings

Stakeholder meetings were conducted to gather information for EIS preparation, to address concerns with stakeholders, or to provide project updates. A total of 47 stakeholder meetings were held as part of the public involvement outreach. The topics included NEPA-related information needed to aide in the evaluation of study corridors/preliminary

alternatives/reasonable alternatives. and project updates status. **Table 6-1** summarizes the stakeholder meetings. Concerns from stakeholders regarding the project included the status of the project, when the project will be constructed, and how the corridors and alternatives were going to be evaluated.

6.7.7 Meetings with Elected Officials

Meetings with elected officials occurred on the following dates, either to represent regional efforts or their own jurisdiction (**Table 6-3**). Hyperlinks provided below provide each governing body's make-up. Concerns from elected officials regarding the project included the status of the project, when the project will be constructed, and how the corridors and alternatives were going to be evaluated.

Table 6-3. Elected Officials Meetings

Date of Meeting	Type of Meeting	Entity's Website	Discussion Topic
05/05/2016	HCMPO Technical Advisory Committee Meeting	http://www.hcmpo.org/committees/technical_advisory_committee/members.htm	Discuss project status/ Resolution of Support
05/25/2016	Hidalgo County Commissioner's Court	https://www.hidalgocounty.us/79/Commissioners-Court	Discuss project status
06/07/2016	City of Alamo City Council Meeting	http://www.alamotexas.org/index.asp?Type=B_DIR&SEC={38952D00-BE26-4FA3-BF6E-36C34631086C}	Discuss project status/ Resolution of Support
06/07/2016	City of Edinburg Council Meeting	http://www.cityofedinburg.com/meet.php	Discuss project status/ Resolution of Support
06/08/2016	HC Commissioner Joseph Palacios	https://www.hidalgocounty.us/359/Commissioner-Pct-4	Discuss project status/NEPA
06/06/2017	Presentation to Donna ISD School Board	http://donna.schooldesk.net/Portals/Donna/District/docs/revised%20board%20members%202017%202.pdf	Discuss project status

6.7.8 Resolutions Pertaining to the Project

The following entities passed resolutions of support:

- City of Alamo
- City of Alton
- City of Granjeno
- City of Hidalgo
- City of La Joya

- City of Mercedes
- City of Mission
- City of Penitas
- City of San Juan
- City of Weslaco
- HCRMA
- HCMPO

The City of Edinburg and Hidalgo County tabled resolutions of support for the project seeking additional information regarding the project.

6.8 Public Hearing

A Public Hearing is anticipated to take place in the Spring of 2018. The public as well as agencies will have an opportunity to provide comments during the formal comment period regarding the findings in the DEIS and project development process.

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7.0 ENVIRONMENTAL PERMITS, ISSUES, AND COMMITMENTS

The following information provides environmental permits, issues, and commitments that are anticipated for the SH 68 project.

ROW/Displacements

TxDOT would negotiate with the owner on a case-by-case basis to reach an agreed compensation. The acquisition of properties and/or buildings would be conducted in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (49 CFR Part 24), as amended, and TAC Title 10 Subtitle E Chapter 2206 – Subchapter A to ensure that each property and/or building owner is treated fairly, consistently, and equitably. Relocation resources would be made available to all eligible displaced persons without discrimination, and consistent with the requirements of the Civil Rights Act of 1964 and the Housing and Urban Development Act of 1974 (12 U.S.C. 1706e).

Owners or tenants renting a dwelling for a minimum of 90 days are entitled to rental assistance payments for monthly rent and the estimated average monthly cost of utilities. Rental assistance for low-income tenants is provided for those who qualify for the HUD's Annual Survey of Income Limits for the Public Housing and Section 8 Programs (HUD 2005). Considerations for renters receiving a Section 8 Existing Housing Certificate or a Housing Voucher are offered through TxDOT Rental Assistance Program. Displaced tenants would have the opportunity to discuss program eligibility options with a TxDOT relocation counselor.

Waters of the U.S.

CWA Section 303d

TxDOT will coordinate with TCEQ for this project in accordance with the TxDOT-TCEQ MOU. The project will be implemented, operated, and maintained using BMPs to control the discharge of pollutants from the project site.

CWA Section 401

It is assumed that the project would require one or more section 404 NWP 14s. The Tier I 401 Water Quality Certification requirements for Section 404 NWP 14 would be met by implementing approved BMP from each of the three categories listed in TCEQ's *Water Quality Certification Best Management Practices for Nationwide Permits* (TCEQ 2016), including temporary vegetation, blankets/matting and/or sod for erosion control, vegetative filter strips for post-construction TSS controls and silt fencing for sediment control.

CWA Section 402

BMPs would be outlined in the SW3P prepared for the project and would be implemented during and after construction. A SWP3 is included in the plans of all projects where soil disturbing activities occur. Appropriate CGP authorization documents (notice of intent or site notice) would be completed, posted, and submitted, when required by the CGP, to TCEQ and the municipal separate storm sewer system (MS4) operator (TCEQ 2017). The project construction would be inspected to ensure compliance with the CGP.

The TxDOT PS&E Preparation Manual requires that all projects include Standard Specification Item 506 (Temporary Erosion, Sedimentation, and Environmental Controls), and the "Required Specification Checklists" require Special Provision 506-003 on all projects that need authorization under the CGP. These documents require the project contractor to comply with the CGP and SWP3, and to complete the appropriate authorization documents.

EO 11988, Floodplain Management and 44 CFR Parts 59 and 60

TxDOT would coordinate with the FEMA and the local NFIP coordinator to determine whether a permit is required. TxDOT uses Title 23 CFR Part 650 Subpart A, which prescribes FHWA's policies and procedures for the location and hydraulic design of highway encroachments on floodplains. In addition, TxDOT follows guidance procedures which ensure compliance with all applicable federal regulation that apply to any federally approved highway construction, reconstruction, rehabilitation, repair, or improvement project which affects the base floodplain.

CWA Section 404

Detailed studies will be conducted on the preferred alternative to determine whether the project would impact potential waters of the U.S. including wetlands. The USACE will be requested to review the potential waters of the U.S. in the project area and provide a jurisdictional determination of aquatic features potentially impacted to determine permitting requirements under Section 404 of the CWA. Impact calculations to potential waters of the U.S. would be determined during the detailed studies and would be used in determining the level of permitting.

Ecological

TxDOT-TPWD MOU

Most of the Tier I Site Assessment triggers for the TxDOT-TPWD MOU cannot be evaluated at this preliminary stage of the design of the three reasonable alternatives. However, it is anticipated that all reasonable alternatives would exceed impact thresholds defined in the

TxDOT-TPDW MOU for Agriculture; Disturbed Prairie; Scrub, Thornscrub, Shrubland; and Tallgrass Prairie, Grassland vegetation types. Therefore, coordination with TPWD will be conducted.

EO 13112 on Invasive Species and the Memorandum on Environmentally Beneficial Landscaping

To comply with EO 13112 on Invasive Species and the Memorandum on Environmentally Beneficial Landscaping, TxDOT will implement appropriate measures in its Roadside Vegetation Management Manual and Landscape and Aesthetics Design Manual. In addition, the standard rural seed mix, which consists of native herbaceous species, will be used to restore disturbed areas to ensure the project does not increase the spread of invasive species.

Migratory Bird Treaty Act

To ensure the project complies with the MBTA, TxDOT will implement bird BMPs, where applicable. Construction or demolition activities should be scheduled outside the typical nesting season (February 15 to October 1). TxDOT will adhere to the following commitments where practicable:

- No active migratory bird nests (nests containing eggs and/or young) will be removed or destroyed at any time of the year;
- No colonial nests (swallows, for example) on or in structures will be removed until all nests in the colony become inactive;
- Measures, to the extent practicable, will be used to prevent or discourage migratory birds from building nests within portions of the project area planned for construction;
- Inactive nests will be removed from the project area to minimize the potential for reuse by migratory birds; and
- Construction or demolition activities will be scheduled outside the typical nesting season (February 15 to October 1), and will comply with the previously listed prohibitive provisions of the MBTA, which apply year-round.

Attachment B of the *DEIS Reasonable Alternatives Biological Resources Technical Report* provides a list of bird BMPs and is accessible on the TxDOT website and on file at TxDOT.

General Wildlife Measure

To ensure the project minimizes impacts to wildlife, the design of the roadway will incorporate wildlife crossings, particularly in areas that bisect wildlife travel corridors or seasonal routes.

The location and design of these crossings will be determined during the preparation of the FEIS.

Endangered Species Act

It was determined that any of the three reasonable alternatives may affect, but is not likely to adversely affect the ocelot, Texas ayenia, and Walker's manioc, and may impact state species. To comply with Section 7 of the ESA, TxDOT will conduct informal consultation with the USFWS to meet their regulatory obligations under the ESA and to receive input from the USFWS. Once right of entry is obtained for the SH 68 project, a more thorough habitat assessment for the ocelot, Texas ayenia, and Walker's manioc would be conducted. The results of future field investigations of the preferred alternative could result in presence/absence surveys for these endangered plants and/or a change to effect/impact determinations.

State Threatened and Endangered Species Regulations and the MOU between TxDOT and TPWD

Since it was determined that all three reasonable alternatives for SH 68 would potentially impact state-listed threatened and endangered species and SGCN, coordination with TPWD would be required and BMPs would be implemented in accordance with the TxDOT-TPWD MOU. BMPs for rare species include the Bird BMPs provided above under the MBTA and other BMPs provided below:

Amphibian BMPs

Unless absence of the species can be demonstrated, assume presence in suitable habitat and implement the following BMPs. Absence can only be demonstrated using TPWD-approved survey efforts (contact TPWD for minimum survey protocols for species and project site conditions). In addition to the general amphibian BMPs, contractors will be advised to minimize disturbance to burrows or downed woody debris for the sheep frog, and contractors will be advised to minimize impacts to warm, shallow waters with vegetative cover such as ponds and ditches for the south Texas siren.

1. For projects within one mile of a known occupied location or observation of the species recorded from 1980 until the current year and suitable habitat is present, coordinate with TPWD.

2. For new location roadway projects, coordinate with TPWD.

3. For projects within existing ROW when work is in water or will permanently impact a water feature and potential habitat exists for the target species complete the following:

a) Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.

b) Minimize impacts to wetland, temporary and permanent open water features, including depressions, and riverine habitats.

c) Maintain hydrologic regime and connections between wetlands and other aquatic features.

d) Use barrier fencing to direct animal movements away from construction activities and areas of potential wildlife-vehicle collisions in construction areas directly adjacent, or that may directly impact, potential habitat for the target species.

e) Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible because of site conditions, using erosion control blankets or mats that contain no netting, or only contain loosely woven natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.

f) Project specific locations (PSLs) proposed within state-owned ROW should be located in uplands away from aquatic features.

g) When work is directly adjacent to the water, minimize impacts to shoreline basking sites (i.e., downed trees, sand bars, exposed bedrock) and overwinter sites (i.e., brush and debris piles, crayfish burrows) where feasible.

h) Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter, which may be refugia for terrestrial amphibians, where feasible.

i) If gutters and curbs are part of the roadway design, where feasible install gutters that do not include the side box inlet and include sloped (i.e. mountable) curbs to allow small animals to leave roadway. If this modification to the entire curb system is not possible, install sections of sloped curb on either side of the stormwater drain for several feet to allow small animals to leave the roadway. Priority areas for these design recommendations are those with nearby wetlands or other aquatic features.

4. For projects that require acquisition of additional ROW and work within that new ROW is in water or will permanently impact a water feature, implement a -i above plus j -l below, where applicable:

j) For sections of roadway adjacent to wetlands or other aquatic features, install wildlife barriers that prevent climbing. Barriers should terminate at culvert openings in order to funnel animals under the road. The barriers should be of the same length as the adjacent feature or 80 feet long in each direction, or whichever is the lesser of the two.

k) For culvert extensions and culvert replacement/installation, incorporate measures to funnel animals toward culverts such as concrete wingwalls and barrier walls with overhangs.

l) When riprap or other bank stabilization devices are necessary, their placement should not impede the movement of terrestrial or aquatic wildlife through the water feature. Where feasible, biotechnical streambank stabilization methods using live native vegetation or a combination of vegetative and structural materials should be used.

Bat BMPs

To determine the appropriate BMP to avoid or minimize impacts to bats, review the habitat description for the species of interest on the TPWD Rare, Threatened, and Endangered Species of Texas by County List or other trusted resources. All bat surveys and other activities that include direct contact with bats shall comply with TPWD-recommended white-nose syndrome protocols located on the TPWD Wildlife Habitat Assessment Program website under "Project Design and Construction".

The following survey and exclusion protocols should be followed prior to commencement of construction activities. For the purposes of this document, structures are defined as bridges, culverts (concrete or metal), wells, and buildings. In addition to general Bat BMPs, contractors will be advised to avoid unnecessary impacts to cacti and agave species for the Mexican long-tongued bat.

- For activities that have the potential to impact structures, cliffs or caves, or trees; a qualified biologist will perform a habitat assessment and occupancy survey of the feature(s) with roost potential as early in the planning process as possible or within one year before project letting.
- For roosts where occupancy is strongly suspected but unconfirmed during the initial survey, revisit feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats.
- If bats are present or recent signs of occupation (i.e., piles of guano, distinct musky odor, or staining and rub marks at potential entry points) are observed, take

appropriate measures to ensure that bats are not harmed, such as implementing non-lethal exclusion activities or timing or phasing of construction.

- Exclusion devices can be installed by a qualified individual between September I and March 31. Exclusion devices should be used for a minimum of seven days when minimum nighttime temperatures are above 50°F AND minimum daytime temperatures are above 70°F. Prior to exclusion, ensure that alternate roosting habitat is available in the immediate area. If no suitable roosting habitat is available, installation of alternate roosts is recommended to replace the loss of an occupied roost. If alternate roost sites are not provided, bats may seek shelter in other inappropriate sites, such as buildings, in the surrounding area.
- If feature(s) used by bats are removed as a result of construction, replacement structures should incorporate bat-friendly design or artificial roosts should be constructed to replace these features, as practicable.
- Conversion of property containing cave or cliff features to transportation purposes should be avoided where feasible.
- Avoid unnecessary removal of dead fronds on native and ornamental palm trees in south Texas (Cameron, Hidalgo, Willacy, Kenedy, Brooks, Kleberg, Nueces, and San Patricio counties) from April I through October 31. If removal of dead fronds is necessary at other times of the year, limit frond removal to extended warms periods (nighttime temperatures 55°F for at least two consecutive nights), so bats can move away from the disturbance and find new roosts.
- Large hollow trees, snags (dead standing trees), and trees with shaggy bark should be surveyed for colonies and, if found, should not be disturbed until the bats are no longer occupying these features. Post-occupancy surveys should be conducted by a qualified biologist prior to tree removal from the landscape.
- Retain mature, large diameter hardwood forest species and native/ornamental palm trees where feasible.
- In all instances, avoid harm or death to bats. Bats should only be handled as a last resort and after communication with TPWD.

Terrestrial Reptile BMPs

- Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible because of site conditions, utilize erosion control blankets or mats that contain no netting or contain loosely woven, natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.

- For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling.
- Inform contractors that if reptiles are found on project site allow species to safely leave the project area.
- Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible.
- Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.

In addition to general Terrestrial Reptile BMPs, contractors would be advised to avoid harvester ant mounds in the selection of PSLs where feasible for the Texas horned lizard. For the Texas tortoise, contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered, and utility trenches should be covered overnight or visually inspected before filling to avoid burial of the species. If Texas Tortoises are present in a project area they should be removed from the area. After removal of the tortoises, the area that will be disturbed during active construction and PSLs should be fenced off to exclude tortoises and other reptiles. The exclusion fence should be constructed and maintained as follows:

a. The exclusion fence should be constructed with metal flashing or drift fence material.

b. Rolled erosion control mesh material should not be used.

c. The exclusion fence should be buried at least 6 inches deep and be at least 24 inches high.

d. The exclusion fence should be maintained for the life of the project and only removed after the construction is completed and the disturbed site has been revegetated.

Cultural

During the preparation of the FEIS detailed analysis would be completed on the preferred alternative. Should Environmental Permits, Issues, and Commitments (EPIC) be deemed necessary for cultural resources (archeological and historic) measures would be included in the engineering plans, specifications and estimates.

In the event that unanticipated archeological deposits are encountered during construction work in the immediate area would cease and TxDOT archeological staff would be contacted to initiate post review discovery procedures under the provision of TxDOT's Section 106 PA.

Visual/Aesthetics

Aesthetics treatments will be developed during final design and incorporated into the project design as appropriate.

Air Quality

During the construction, temporary increases in PM and MSAT emissions may occur from construction activities. Potential impacts of PM emissions would be minimized by using fugitive dust control measures which include the application of water during construction to control dust, provide compaction and aid in revegetating the area.

Hazardous Materials or Contamination Issues

For possible hazardous materials impacts, TxDOT may conduct an Environmental Site Assessment (Phase I and/or Phase II), as necessary. In accordance with Section 5.2 of TxDOT's *Environmental Handbook for Hazardous Materials* (2014a), the Environmental Site Assessment would be prepared to determine whether known or possible contamination might be encountered during construction, and if necessary, to develop cost-effective preventive action plans or specifications to handle discovered contamination. TxDOT would address conflicts with existing pipeline facilities during the ROW negotiation and acquisition process, prior to construction. TxDOT would coordinate with pipeline operators regarding arrangements to potentially relocate or measures to protect-in-place the pipeline facility. TxDOT would address conflicts with existing well facilities prior to construction during the ROW negotiation and acquisition process. In accordance with the standard procedures identified in TxDOT's *Hazardous Materials Project Development: Scheduling Considerations, Internal/External Coordination, and Recommended Practices for Resolving Hazmat Issues* (2008), TxDOT would coordinate with well operators to negotiate a plugging and abandonment or indemnification agreement, as appropriate. TxDOT would address lead-based paint and asbestos issues during the ROW negotiation and acquisition process, prior to construction. Buildings potentially being displaced through the acquisition process would be assessed and mitigated for asbestos, as needed, in accordance with TxDOT's *ROW Manual Volume 6 Miscellaneous – Chapter 1, Section 5* (2010). Surveys would be performed by licensed inspectors, and final construction plans would indicate locations, or elements, where lead-based paint and ACM is present.

Construction Noise

Provisions would be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures, such as work-hour controls and proper maintenance of muffler systems. TxDOT contractors and developers shall comply local construction noise ordinances.

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8.0 CONCLUSION

The TxDOT has prepared this DEIS to determine the potential environmental, social, and economic impacts of the proposed SH 68 improvements, a new highway facility from I-2/US 83 to I-69C/US 281, located in eastern Hidalgo County. The proposed project would begin at I-2/US 83 and travel north then west to connect to I-69C/US 281. The proposed project is described in the 2015–2040 MTP and the 2017-2020 STIP, as a proposed four-lane divided rural highway. Funding has been secured for Phase I of the project which extends from I-2/US 83 to FM 1925/Monte Cristo Road. Funding for future phases has not been determined; subsequently, SH 68 would be constructed in several phases, as funding becomes available.

SH 68 is needed because there are limited current north-south roadways in the area and population is projected to increase substantially in the future, which will substantially increase traffic volume on current north-south roadways in the area. SH 68 is also needed to improve the emergency evacuation capacity of the state highway system in the south Texas region. The purpose of the project is to accommodate population growth and higher traffic volumes, while relieving the burden on the limited number of existing north-south roadways, and provide an alternate north-south evacuation route during emergency events.

Three reasonable alternatives and the No-Build Alternative were evaluated to an equal level of detail, and each of the three reasonable alternatives would involve the following: the acquisition of new ROW; residential and commercial displacements; community impacts, including impacts to minority and low-income communities; access changes; conversion of existing land use to transportation use; potential impacts to floodplains, wetlands/waters of the U.S., historic properties, vegetation, protected species, and hazardous materials sites; and traffic noise impacts. All reasonable alternatives with the exception of the No-Build Alternative would potentially require ROW from resources eligible or potentially eligible for the National Register of Historic Places; therefore, the proposed project may require a Section 4(f) and Chapter 26 evaluation.

A Public Hearing is anticipated to take place in Spring of 2018 to present and solicit comments on the 2014 Modified 2 Recommended Preferred Alternative (see **Exhibits 3-4** and **3-5** through **3-5.13**) and the DEIS. The public as well as agencies will have an opportunity to provide comments during the formal comment period regarding the findings in the DEIS and project development process. The 2014 Modified 2 recommended preferred alternative will be evaluated to a higher level of detail, as appropriate, in the FEIS following the public hearing. The FEIS incorporates the DEIS with revisions made as appropriate throughout the document. The revisions will reflect any modifications to the project, updated information on the affected environment, changes in the assessment of impacts, the identification of mitigation measures, the results of coordination, comments received on the DEIS and responses to these comments. TxDOT will issue a combined FEIS and Record of Decision document

pursuant to Pub. L. 112-141, 126 Stat. 405, Section 1319(b) unless TxDOT determines statutory criteria or practicability considerations preclude issuance of the combined document pursuant to Section 1319.

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Marin Cepeda Mayor City of Hidalgo 704 E. Texano Drive Hidalgo, TX 78557	X
Jose A. Salinas Mayor City of La Joya PO Drawer H La Joya, TX 78560	X
Hector Elizondo Mayor City of La Villa 916 S. Mike Chapa PO Box 60 La Villa, TX 78562	X
James Darling Mayor City of McAllen PO Box 220 McAllen, TX 78505	X
Henry Hinojosa Mayor City of Mercedes PO Drawer 837 Mercedes, TX 78570-0837	X
Noberto Salinas Mayor City of Mission 1201 E. 8th Street Mission, TX 78572	X

Name and Address	Letter with Hyperlink and Notice of Availability
Ramiro J. Rodriguez Mayor City of Palmhurst 4417 N. Shary Road Palmhurst, TX 78573	X
Rodrigo Lopez Mayor City of Penitas PO Box 58 Penitas, TX 78576	X
Ambrosio Hernandez Mayor City of Pharr 118 S. Cage Boulevard Pharr, TX 78577-1729	X
Arturo Aleman Mayor City of Progreso 300 N. FM 1015 Progreso, TX 78579	X
O.D. Emery Mayor City of Progreso Lakes PO Box 760 Progreso Lakes, TX 78579	X
San Juanita Sanchez Mayor City of San Juan 709 S. Nebraska Avenue San Juan, TX 78589	X
Rosendo Benavides Mayor City of Sullivan City PO Box 249 Sullivan City, TX 78595-0249	X
David Suarez Mayor City of Weslaco 255 South Kansas Avenue Weslaco, TX 78596	X
Andrew Canon Director Hidalgo County Metropolitan Planning Organization 510 S. Pleasantview Drive Weslaco, TX 78596	X

Name and Address	Letter with Hyperlink and Notice of Availability
Flor Koll Program Administrator Hidalgo County Regional Mobility Authority 118 S. Cage Blvd., 4th Floor Pharr, TX 78577	X
Nora Zapata Donna Irrigation District 101 N.D. Salinas Boulevard Donna, TX 78537	X
Troy Allen Delta Lake Irrigation District 10370 Charles Green Road Edcouch, TX 78538	X
Xavier Garcia Engelmann Irrigation District PO Box 307 Elsa, TX 78543	X
Rusty McDaniel Hidalgo County Irrigation District No.1 1904 N. Expressway 281 Edinburg, TX 78542	X
Sonny Hinojosa Hidalgo County Irrigation District No. 2 326 E. 4th Street Edinburg, TX 78589	X
La Feria Irrigation District 402 N. Main Street La Feria, TX 78559	X
United Irrigation District 1006 W. Mile 2 Road Mission, TX 78574	X
Adella Ortega President Hidalgo County Historical Commission 1310 N. Francisco Avenue Mission, TX 78572	X
Jennie Galvan Director Rio Grande Delta Archeological Society 8801 Boca Chica Brownsville, TX 78521	X

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Appendix A

Exhibits

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HIDALGO COUNTY METROPOLITAN PLANNING ORGANIZATION METROPOLITAN TRANSPORTATION PLAN PROJECT DATA

Line Number	System Sort	Roadway	From	To	MTP#	CSJ #	Project Length (mi)	Proposed Project Data: Type of Improvement	Jurisdiction	Total Project Cost: Current Construction Cost Estimate	Letting Year Construction dollars	ROW cost (12% 2011 cost cost)	Preliminary Engineering (4.0% 2011 cost cost)	C.E Cost (<$2 M 7.5%, $2-$10 M 4.5%, >$10 M 4.0% 2011 cost cost)	Contingencies (<$2M 7%, $2-$5 M 6.5%, $25-$50 M 6%, >$50M 7% of 2011 cost cost)	Total Project Cost	Year of Expenditure Dollars (YOE)	Funding Categories: Cat 1 Funding	Cat 2 Funding	Cat 3 - TMF	Cat 4 - Statewide Connectivity	Cat 7 Funding (CE & Contingencies)	Cat 9 Funding	Cat 11 Funding	Cat 12 Funding	CBI - Eligible	Earmark Funding	Other Funds (Local, Bond, etc)	TRENDS Innovative Financing	TOTAL
REHABILITATION & MAINTENANCE																														
	LS	LUMP SUM						Maintenance / Rehabilitation	Various								$ 295,161,902													$ 295.16
BRIDGE																														
	LS	Lump Sum						Bridge Replacement	Various								$ 4,296,855													$ 4.30
SAFETY																														
	LS	Lump Sum						Safety Improvements	Various								$ 45,937,229													$ 45.94
DISTRICT DISCRETIONARY																														
	LS	Lump Sum						District Discretionary	Various								$ 22,797,701													$ 22.80
MOBILITY																														
		FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015		
214	Off	Liberty Blvd (Phase II) PE	Mile 3 Rd	FM 2221	HC-284b	0921-02-322	3.8	Construct 2 lanes with shoulders	County 3	$ 8,596,629	$ 14,817,350	$ 2,030,000	$ 372,400	$ 644,281	$ 932,474	$ 19,081,088	$ 372,400											$ 0.37		$ 0.37
82	Off	Mile 1 East PE	Bus 83	Mile 8 North	HC-269	0921-02-254	1	Reconstruct & widen to urban 2 lanes & shoulders	Mercedes	$ 6,880,000	$ 9,053,611	$ 502,000	$ 778,050	$ 756,000	$ 588,485	$ 12,240,270	$ 778,050									$ 0.78				$ 0.78
40	On	FM 676 (Mile 5 N) PE	SH 364 (La Homa Rd)	SH 107 (Conway)	HC-117b	1064-01-027	2.39	Widen to 4 Lane Divided	Alton / County 3	$ 10,000,000	$ 10,000,000	$ 1,200,000	$ 423,987	$ 450,000	$ 650,000	$ 13,343,987	$ 423,987											$ 0.42		$ 0.42
223	Off	Jackson Road - PE	Spur 115 (23rd St)	FM 2061 (Jackson Rd)	HC-291	0921-02-312	2.56	Widen to 4 lane with continuous left turn	County 2 / McAllen	$ 14,032,311	$ 18,288,827	$ 600,000	$ 1,270,000	$ 635,000	$ 825,500	$ 21,398,727	$ 1,270,000											$ 1.27		$ 1.27
70	On	FM 1925 - PE	FM 907 (Alamo Rd)	FM 493 (La Blanca)	HC-12	1802-02-035	4.1	Widen to 4 Lane Divided	County 4	$ 14,226,519	$ 14,226,519	$ 1,900,000	$ 697,099	$ 640,193	$ 924,724	$ 19,270,530	$ 697,099											$ 0.70		$ 0.70
224	On	FM 494 - PE	FM 676 (Mile 5)	SH 107	HC-292a	0864-01-068	2	Widen to 4 lane	County 3	$ 8,000,000	$ 8,000,000	$ 2,957,145	$ 392,000	$ -	$ 657,966	$ 12,503,111	$ 392,000											$ 0.39		$ 0.39
224	On	FM 494 - PE	FM 1924 (Mile 3)	FM 676 (Mile 5)	HC-292b	0864-01-069	2	Widen to 4 lane	County 3	$ 8,000,000	$ 13,320,580	$ 500,000	$ 392,000	$ 599,426	$ 865,838	$ 16,503,729	$ 392,000											$ 0.39		$ 0.39
216	Off	Mile 3 N (Phase I) - PE	Tom Gill Road	FM 492 (Guyman Road)	HC-286a	0921-02-321	3.8	Widen to 4 Lane Divided - Curb & Gutter Section	County 3	$ 12,300,302	$ 14,359,614	$ 1,136,754	$ 414,231	$ 994,481	$ 642,825	$ 18,241,061	$ 414,231											$ 0.41		$ 0.41
216	Off	Mile 3 N (Phase II) - PE	Tom Gill Road	FM 2221	HC-286b	0921-02-332	2.5	New location 2 lane rural roadway	County 3	$ 5,931,402	$ 7,805,320	$ 790,000	$ 200,900	$ 269,766	$ 350,696	$ 9,900,612	$ 200,900											$ 0.20		$ 0.20
229	On	SH 68 PE	US 83	FM 1925	HC-295a	3629-01-001	10	Construct new 4 lane divided rural highway facility	TxDOT	$ 55,000,000	$ 55,000,000	$ 23,500,000	$ 6,500,000	$ 2,475,000	$ 3,850,000	$ 94,735,000	$ 6,500,000								$ 6.50					$ 6.50
229	On	SH 68 ROW	US 83	FM 1925	HC-295b	3629-01-001	10	Construct new 4 lane divided rural highway facility	TxDOT	$ 55,000,000	$ 55,000,000	$ 23,500,000	$ 6,500,000	$ 2,475,000	$ 3,850,000	$ 94,735,000	$ 10,000,000								$ 10.00					$ 10.00
47	Off	Owassa - PE & ROW	Jackson Rd	US 281	HC-109	0921-02-140	1.41	Widen to 6 Lane Divided	Pharr	$ 6,136,119	$ 6,136,119	$ 377,936	$ 500,678	$ 299,800	$ 356,843	$ 7,909,311	$ 670,600					$ 0.34						$ 0.38		$ 0.68
203a	On	SH 365 (Phase I) PE	US 281 Military Highway	FM 396 (Anzalduas Highway)	RMA-1aa	3627-01-001	12.5	A toll improvement being a 4 lane controlled access facility	HCRMA	$ 158,041,156	$ 158,041,156	$ 51,596,891	$ 10,860,670	$ 6,887,077	$ -	$ 235,441,761	$ 10,860,670											$ 10.86		$ 10.86
203a	On	SH 365 (Phase I) ROW	US 281 Military Highway	FM 396 (Anzalduas Highway)	RMA-1aa	3627-01-001	12.5	A toll improvement being a 4 lane controlled access facility	HCRMA	$ 158,041,156	$ 158,041,156	$ 51,596,891	$ 10,860,670	$ 6,887,077	$ -	$ 235,441,761	$ 51,596,891											$ 51.60		$ 51.60
203b	On	SH 365 (Phase II) PE	FM 396 (Anzalduas Highway)	FM 1016 (Conway Rd)	RMA-1b	3627-01-002		Toll improvement being a 4 lane controlled access facility	HCRMA	$ 37,620,524	$ 53,486,285	$ 3,406,143	$ 3,215,286	$ 1,388,765	$ -	$ 62,259,241	$ 3,215,286											$ 3.22		$ 3.22
203b	On	SH 365 (Phase II) ROW	FM 396 (Anzalduas Highway)	FM 1016 (Conway Rd)	RMA-1b	3627-01-002		Toll improvement being a 4 lane controlled access facility	HCRMA	$ 37,620,524	$ 53,486,285	$ 3,406,143	$ 3,215,286	$ 1,388,765	$ -	$ 62,259,241	$ 3,406,143											$ 3.41		$ 3.41
																	$ 93,198,265					$ 377,936								
		FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016			
237	On	Nolana - PE	FM 1426 (Red Longoria)	FM 88	HC-152	0921-02-169	10	Reconstruct & Widen to 2 lanes with shoulders	County 1-2 / San Juan	$ 16,000,000	$ 16,000,000	$ 2,573,563	$ 230,275	$ 720,000	$ 1,040,000	$ 21,555,778	$ 230,275											$ 0.23		$ 0.23
287	Off	Edinburg Pedestrian and Bicycle Master Plan - TAP	Edinburg City Limits	Edinburg City Limits	HC-338	0921-02-345		Planning and Design for City of Edinburg Pedestrian & Bicycle Master Plan	Edinburg	$ 150,000	$ 150,000	$ -	$ -	$ -	$ -	$ 150,000	$ 150,000						$ 0.12					$ 0.03		$ 0.15
74	Off	Mile 6 W Rd - PE	Mile 9 N	Mile 11 N	HC-148b	0921-02-168	2	ROW & PE for Widen to 4 Lane	Weslaco / County 4	$ 11,414,075	$ 14,443,634	$ 1,800,000	$ 458,400	$ 514,000	$ 795,000	$ 18,000,034	$ 916,400											$ 0.46		$ 0.46
229	On	SH 68 ROW	US 83	FM 1925	HC-295b	3629-01-001	10	Construct new 4 lane divided rural highway facility	TxDOT	$ 55,000,000	$ 55,000,000	$ 23,500,000	$ 6,500,000	$ 2,475,000	$ 3,850,000	$ 94,735,000	$ 13,500,000											13.50		$ 13.50
269	On	Hidalgo County Illumination Project	Along I-2/US 83 and I-69C/US 281		HC-334	0921-02-393		Construct illumination along I-2/US 83 and I-69C/US 281	TxDOT	$ 2,000,000	$ 2,000,000	$ -	$ -	$ -	$ -	$ 2,000,000	$ 2,000,000		$ 2.00											$ 2.00
																	$ 17,059,078					$ -								
		FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017	FY 2017			
74a	Off	Mile 6 W Rd - ROW	Mile 9 N	Mile 11 N	HC-148b	0921-02-168	2	ROW & PE for Widen to 4 Lane	Weslaco / County 4	$ 10,800,000	$ 10,800,000	$ 1,800,000	$ 1,614,806	$ 1,080,000	$ -	$ 16,122,806	$ 1,900,000										$ 1.90			$ 1.90
47	On	FM 2220 (Ware Rd)	FM 1924 (Mile 3 N)	Mile 5 N (Auburn Ave)	HC-198	2094-01-033	2	Widen to 6 Lane Divided	McAllen	$ 9,750,000	$ 9,750,000	$ 1,145,000	$ 477,750	$ 487,500	$ 633,750	$ 13,113,023	$ 11,528,750	$ 2.40				$ 2.05			$ 0.41	$ 3.53		$ 2.15		$ 11.53
203a	Off	365 Tollway	US 281 Military Highway	FM 396 (Anzalduas Highway)	RMA-1aa	0921-02-386	12.5	A toll improvement being a 4 lane controlled access facility	HCRMA	$ 174,178,586	$ 174,178,586	$ 36,242,588	$ 16,757,371	$ 8,925,296	$ -	$ 245,073,954	$ 192,072,995								$ 126.44			$ 65.62		$ 192.07
269	Off	N Alamo Road Extension	FM 1925	0.5m North	HC-289	0921-02-311	0.5	New location 2 lane rural roadway	County 4	$ 703,040	$ 703,040	$ 200,000	$ 34,649	$ 52,728	$ 49,213	$ 1,039,018	$ 804,981					$ 0.80								$ 0.80
270	Off	McIntyre Railroad Pedestrian Crossing	6th Ave	5th Ave	HC-333	0921-02-354	0.2	McIntyre Railroad Pedestrian Crossing Improvements	Edinburg	$ 500,000	$ 500,000	$ -	$ 24,500	$ 37,500	$ 35,000	$ 618,000	$ 500,000					$ 0.50								$ 0.50
287	Off	Anzalduas Int'l Port of Entry	Anzalduas Int'l Port of Entry		HC-277	0921-02-303		Construction of South-bound Inspection Station	Anzalduas Int'l Bridge Board	$ 7,241,012	$ 7,241,012	$ -	$ -	$ -	$ -	$ 7,241,012	$ 7,241,012								$ 0.10		$ 7.14			$ 7.24
288	Off	Anzalduas Int'l Port of Entry (NB)	Anzalduas Int'l Port of Entry		HC-351	0921-02-369		Construction of two additional northbound passenger lanes	Anzalduas Int'l Bridge Board	$ 2,700,000	$ 2,700,000	$ -	$ 162,500	$ 79,193	$ -	$ 3,020,886	$ 2,700,000								$ 2.70					$ 2.70
289	Off	Anzalduas Int'l Port of Entry (NB)	Anzalduas Land Port of Entry NB Empties		HC-352	0921-02-379		Inbound commercial inspection pre-primary inspection pre-cleared cargo	Anzalduas Int'l Bridge Board	$ 4,666,185	$ 4,666,185	$ -	$ 212,070	$ 163,336	$ 163,336	$ 5,375,413	$ 4,666,185								$ 4.20		$ 0.47			$ 4.67
266	Off	Regional Hike & Bike Trail Project (Frontage 2) - TAP	S San Antonio Ave (San Juan)	S 2nd St (McAllen)	HC-329	0921-02-346	7.74	Proposed location of Hike & Bike Trail Connectivity	County 2 / San Juan / Pharr / McAllen	$ 5,600,000	$ 5,600,000	$ -	$ -	$ 840,000	$ -	$ 6,440,000	$ 6,440,000					$ 0.80	$ 4.52					$ 1.12		$ 6.44
235	On	FM 676 (Mile 5 N) ROW	SH 107 (Conway)	Taylor Rd	HC-117c	1064-01-027	3	ROW Acquisition services	Alton / County 3	$ 7,656,456	$ 10,075,374	$ 918,775	$ 493,681	$ 453,392	$ 654,899	$ 13,226,806	$ 500,758										$ 0.50			$ 0.50
192	Off	10th st	SH 107	FM 1925 (Monte Cristo)	HC-79	0921-02-380	2.5	Construct new 4 Lane	Edinburg / County 4	$ 10,075,000	$ 10,075,000	$ 2,000,000	$ 493,675	$ 453,375	$ 654,875	$ 14,301,575	$ 13,183,250					$ 12.78			$ 0.40					$ 13.18

2015 - 2040 MTP Amendment #8 - 7-27-2017 - FINAL Project List - Amendment - Administrative 1 7/27/2017

2 Exhibit 1-1.1 Pages from Hidalgo County MPO's 2015-2040 MTP, Amendment #8

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HIDALGO COUNTY METROPOLITAN PLANNING ORGANIZATION METROPOLITAN TRANSPORTATION PLAN PROJECT DATA

Line Number	System Sort	Roadway	From	To	MTP#	CSJ #	Project Length (mi)	Proposed Project Data: Type of Improvement	Jurisdiction	Total Project Cost: Current Construction Cost Estimate	Letting Year Construction dollars	ROW cost (12% 2011 cost cost)	Preliminary Engineering (4.0% 2011 cost cost)	C.E Cost (<$2 M 7.5%, $2-$10 M 4.5%, >$10 M 4.0% 2011 cost cost)	Contingencies (<$2M 7%, $2-$5 M 0.5%, $25-$50 M 0.5%, >$50 M 1% of 2011 cost cost)	Total Project Cost	Year of Expenditure Dollars (YOE)	Funding Categories: Cat 1 Funding	Cat 2 Funding	Cat 3 - TMF	Cat 4 - Statewide Connectivity	Cat 7 Funding (CE & Contingencies)	Cat 9 Funding	Cat 11 Funding	Cat 12 Funding	CBI - Eligible	Earmark Funding	Other Funds (Local, Bond, etc)	TRENDS Innovative Financing	TOTAL
158	On	Veterans Blvd (Future SH 495) - ROW	IH-2/US 83	SH 364 (La Homa Rd)	HC-50	0865-01-108	2.3	4 lanes divided urban from Abram Rd to SH 364 and overlay Abram Rd from IH-2 to Veterans Blvd	Palmview / County 3	$ 11,360,000	$ 11,360,000	$ 2,699,360	$ 556,640	$ 511,200	$ 738,400	$ 16,569,920	$ 2,699,360					$ 2.70								$ 2.70
244	Off	Donna Int'l Bridge	@ Donna Int'l Bridge		HC-309	0921-02-333		Federal commercial vehicles inspection facilities at Donna Int'l	Donna / Pharr	$ 9,000,000	$ 9,000,000	$ -	$ 441,000	$ 450,000	$ 638,000	$ 11,079,000	$ 9,000,000									9.00				$ 9.00
37	On	FM 907 (Alamo Rd)	Nolana	US 83	HC-119	1586-01-069	2.34	Widen to 4 Lane Divided	Alamo / County 2-4	$ 11,538,000	$ 11,538,000	$ 327,300	$ 560,740	$ 567,606	$ 655,722	$ 13,649,368	$ 11,538,000	$ 0.46	$ 6.36					$ 4.70						$ 11.54
180	Off	Bicentennial Blvd - PE & ROW	Trenton Rd	SH 107	HC-91	0921-02-352	2.3	Construct New 4 Lane Urban Rdway	McAllen	$ 14,679,967	$ 14,679,967	$ 200,000	$ 1,444,700	$ 660,599	$ 1,415,033	$ 18,767,298	$ 14,679,967											$ 1.64		$ 1.64
																	$ 266,422,971					$ 21,444,593								
		FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018	FY 2018		
247	On	FM 1926 (23rd st)	FM 1926 (23rd st) & Hackberry Ave		HC-310	1804-01-068	1	Addition of North and South bound center turn lanes	McAllen	$ 81,000	$ 81,000	$ 16,000	$ 3,969	$ 4,050	$ 5,265	$ 115,306	$ 86,265					$ 0.09								$ 0.09
248	On	FM 1926 (23rd st)	SH 1926 (23rd st) & Kendlewood Ave		HC-311	1804-01-069	1	Addition of North and South bound center turn lanes	McAllen	$ 89,000	$ 89,000	$ 16,000	$ 4,361	$ 4,450	$ 5,785	$ 125,114	$ 94,785					$ 0.09								$ 0.09
249	On	SH 336	Intersection Business US 83	135ft S Intersection US Business 83	HC-312	0821-01-106	0.025	Addition of north bound right turn lane	McAllen	$ 73,200	$ 73,200	$ 11,000	$ 3,587	$ 3,660	$ 4,758	$ 101,743	$ 77,958					$ 0.08								$ 0.08
250	On	FM 1926 (23rd st)	FM 1926 (23rd st) & Ebony Ave		HC-313	1804-01-071	2	Addition of east, north and south bound center turn lanes	McAllen	$ 132,600	$ 132,600	$ 21,000	$ 6,497	$ 6,630	$ 8,619	$ 183,567	$ 141,219					$ 0.14								$ 0.14
251	On	FM 1926 (23rd st)	FM 1926 (23rd st) & Jackson Ave		HC-314	1804-01-072	1	Addition of North and South bound center turn lanes	McAllen	$ 109,500	$ 109,500	$ 31,000	$ 5,366	$ 5,475	$ 7,118	$ 165,248	$ 116,618					$ 0.12								$ 0.12
252	Off	Dove Ave	41st Street	Bentsen Rd	HC-315	0921-02-341	0.25	4 lane undivided	McAllen	$ 1,404,225	$ 1,404,225	$ -	$ 68,807	$ 70,211	$ 91,275	$ 1,721,580	$ 1,495,500					$ 1.50								$ 1.50
245	Off	International Bridge Trade Corridor (IBTC) - PE	Interchange to SH 365 to I-2	Valley View Interchange to FM 493	RMA-3	0921-02-142		4 lane divided - at grade - non toll facility	HCRMA	$ 59,105,226	$ 71,419,122	$ 35,688,406	$ 9,654,264	$ -	$ -	$ 116,761,792	$ 9,654,264										$ 9.65			$ 9.65
214	Off	Liberty Blvd (Phase I) - PE	US 83	Mile 3 Rd	HC-284a	0921-02-194	2.4	Widen to 4 lanes with dedicated left turn lane	Penitas	$ 8,400,000	$ 9,448,858	$ 484,210	$ 1,200,000	$ 472,443	$ 614,176	$ 12,805,915	$ 1,200,000									$ 0.70	$ 0.50			$ 1.20
218	Off	Thomas Road - PE & ROW	FM 2061	FM 2557 (Stewart Road)	HC-304	0921-02-302	3.6	Construct 4 lane urban roadway	County 3	$ 11,600,000	$ 11,600,000	$ 1,392,000	$ 368,400	$ 522,000	$ 754,000	$ 15,555,600	$ 1,960,400									$ 0.86	$ 1.10			$ 1.96
220	Off	N Alamo Road Extension - ROW	FM 1925 0.5m North		HC-289	0921-02-311	0.5	Road Realignment	County 4	$ 703,040	$ 703,040	$ 200,000	$ 34,449	$ 52,728	$ 49,213	$ 1,083,018	$ 200,000					$ 0.20								$ 0.20
49a	Off	Nolana Loop (S1) - ROW	FM 1426 (Rural Longoria)	0.25m E of FM 907	HC-152ar	0921-02-341	2.25	Widen to 4 Lane Divided	County 2 / McAllen	$ 10,792,787	$ 10,792,787	$ 2,000,000	$ 236,275	$ 1,200,000	$ 704,531	$ 15,593,746	$ 2,000,000									$ 2.00				$ 2.00
74b	Off	Mile 6 W Rd - PE & ROW	Mile 11 N	SH 107	HC-148bb	0921-02-286	5.5	ROW & PE for Widen to 4 Lane	County 1	$ 20,240,241	$ 33,701,489	$ 2,430,000	$ 992,000	$ 911,000	$ 1,316,000	$ 40,605,489	$ 3,422,000									$ 1.75	$ 1.68			$ 3.42
172	Off	Taylor Rd - ROW	Bus 83	I-2 (US 83)	HC-256r	0921-02-327	1	Widen 4 lanes with left turn lane	Mission / McAllen	$ 4,500,000	$ 4,500,000	$ 1,192,488	$ 275,192	$ 500,000	$ 385,050	$ 7,180,932	$ 1,192,488					$ 1.19								$ 1.19
173	Off	Taylor Rd - ROW	Bus 83	Mile 2 N	HC-257	0921-02-328	2	4 Lane Divided Urban Section with 1 Bridge Widening and 1 Bridge	Mission / McAllen	$ 8,000,000	$ 7,600,000	$ 2,011,852	$ 283,992	$ 832,802	$ 376,725	$ 11,519,708	$ 2,011,852					$ 2.01								$ 2.01
171	Off	Taylor Rd	Bus 83	I-2 (US 83)	HC-258	0921-02-327	1	Widen 4 lanes with left turn lane	Mission / McAllen	$ 4,500,000	$ 4,500,000	$ 1,192,488	$ 275,192	$ 500,000	$ 385,050	$ 7,180,932	$ 5,000,000					$ 5.00								$ 5.00
271	Off	Cesar Chavez - ROW	Nolana Rd	Owassa Rd	HC-334	0921-02-373	1	Construct a 4 lane urban roadway	County 2			$ 800,000				$ 800,000	$ 800,000					$ 0.80								$ 0.80
272	Off	Owassa Rd - ROW	I Rd	Cesar Chavez Rd	HC-335	0921-02-374	2	Construct a 4 lane urban roadway	County 2 - 4			$ 800,000				$ 800,000	$ 800,000					$ 0.80								$ 0.80
49	Off	Nolana Loop (S 2-4) - ROW	0.25m E FM 907	FM 88	HC-152r	0921-02-169	7.65	Widen to 4 Lane Divided	County 1-2	$ 9,752,330	$ 13,346,737	$ 3,500,000	$ 690,825	$ 667,337	$ 867,538	$ 19,898,935	$ 3,500,000					$ 3.50								$ 3.50
229	On	SH 68	US 83	FM 1925	HC-295c	3629-01-001	10	Construct new 4 lane divided rural highway facility	TxDOT	$ 55,000,000	$ 55,000,000	$ 23,500,000	$ 8,500,000	$ 2,475,000	$ 3,850,000	$ 94,735,000	$ 55,000,000								$ 55.00					$ 55.00
224	On	FM 494	FM 676 (Mile 5)	SH 107	HC-292a	0864-01-068	2	Widen to 4 lane	County 3	$ 8,000,000	$ 8,000,000	$ 2,957,145	$ 392,000	$ -	$ 657,966	$ 12,503,111	$ 11,615,111		$ 9.57					$ 2.05						$ 11.62
180	Off	Bicentennial Blvd (Hoehn Rd)	Trenton Rd	SH 107	HC-91	0921-02-352	2.3	Construct New 4 Lane Urban Rdway	McAllen	$ 14,679,967	$ 14,679,967	$ 200,000	$ 1,444,700	$ 660,599	$ 1,415,033	$ 18,767,298	$ 14,679,967					$ 7.25					$ 0.60	$ 6.83		$ 14.68
46	On	SH 107	US 281	FM 493 (La Blanca)	HC-227	0542-01-074		Overpass @ Schunior Rd	Edinburg / County 4	$ 5,600,000	$ 5,600,000	$ -	$ 168,000	$ 200,000	$ 260,000	$ 6,476,000	$ 5,600,000		$ 4.00			$ 1.60								$ 5.60
40	On	FM 676 (Mile 5 N)	SH 364 (La Homa Rd)	SH 107 (Conway)	HC-117b	1064-01-032	2.39	Widen to 4 Lane Divided	Alton / County 3	$ 15,000,000	$ 15,000,000	$ 1,200,000	$ 423,987	$ 450,000	$ 650,000	$ 18,343,987	$ 15,000,000		$ 10.00					$ 5.00						$ 15.00
293	Off	Vision Zero Planning Study - TAP	McAllen City Limits		HC-356	0921-02-390		Vision Zero Planning Study	McAllen	$ 150,000	$ 150,000	$ -	$ -	$ -	$ -	$ 150,000	$ 150,000						$ 0.12				$ 0.03			$ 0.15
294	Off	Pharr Comprehensive Pedestrian Safety Wellness Plan - TAP	City of Pharr		HC-357	0921-02-389	12	Planning study for new construction pedestrian safety improvements	Pharr	$ 254,000	$ 254,000	$ -	$ -	$ -	$ -	$ 254,000	$ 254,000						$ 0.13				$ 0.12			$ 0.25
295	Off	PSJA Tri-City Pedestrian Safety Improvements - TAP	City of Pharr	City of Alamo	HC-358	0921-02-391	9.5	New construction pedestrian safety improvements	Alamo / San Juan / Pharr	$ 2,286,000	$ 2,286,000	$ -	$ -	$ -	$ -	$ 2,286,000	$ 2,286,000						$ 1.58				$ 0.71			$ 2.29
296	Off	Cano Hike & Bike Trail Lighting Project - TAP	Cano St	Freddy Gonzalez	HC-359	0921-02-392	1	Installation of solar powered lighting along the Cano walking trail	Edinburg	$ 534,400	$ 534,400	$ -	$ -	$ -	$ -	$ 534,400	$ 534,400						$ 0.42				$ 0.11			$ 0.53
297	Off	Donna Sidewalk Project - TAP	S. International Blvd.		HC-360	0921-02-393	4.9	Rehabilitation of deteriorated sidewalks and construction of new	Donna	$ 340,741	$ 340,741	$ -	$ -	$ -	$ -	$ 340,741	$ 340,741						$ 0.27				$ 0.07			$ 0.34
298	Off	Donna Int'l Bridge	@ Donna Int'l Bridge		HC-361	0921-02-394	1.2	Construction commercial facilities northbound loaded / empty and southbound loaded trucks	Donna	$ 43,500,000	$ 43,500,000	$ -	$ 4,545,234	$ 1,500,000	$ 5,089,808	$ 55,987,892	$ 49,545,234										$ 49.55			$ 49.55
																	$ 188,758,827					$ 24,363,130								
		FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019	FY 2019		
291	Off	Pharr Int'l Bridge Northbound lanes	@ Pharr Int'l Bridge		HC-354	0921-02-385		Construction additional northbound lane and related canopies and booths into the Pharr POE inspection area	Pharr	$ 2,564,250	$ 2,564,250	$ -	$ 165,000	$ 128,212	$ 256,425	$ 3,272,871	$ 2,692,462								$ 2.69					$ 2.69
292	Off	Pharr Int'l Bridge 2nd BSIF East	@ Pharr Int'l Bridge		HC-355	0921-02-383		Construction of additional exit lane and related canopies and booths out of Pharr POE BSIF	Pharr	$ 2,500,370	$ 2,500,370	$ -	$ 255,000	$ 215,000	$ 164,000	$ 3,289,393	$ 2,715,370								$ 2.72					$ 2.72
214	Off	Liberty Blvd (Phase I)	US 83	Mile 3 Rd	HC-284a	0921-02-194	2.4	Widen to 4 lanes with dedicated left turn lane	Penitas	$ 8,400,000	$ 9,448,858	$ 484,210	$ 1,200,000	$ 1,066,619	$ -	$ 12,805,516	$ 11,019,687					$ 10.47			$ 0.40		$ 0.15			$ 11.02

2015 - 2040 MTP Amendment #8 - 7-27-2017 - FINAL Project Let - Amendment - Administrative 2 7/27/2017

2 Exhibit 1-1.2 Pages from Hidalgo County MPO's 2015-2040 MTP, Amendment #8

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HIDALGO COUNTY METROPOLITAN PLANNING ORGANIZATION METROPOLITAN TRANSPORTATION PLAN PROJECT DATA

								Proposed Project Data		Total Project Cost									Funding Categories											
Line Number	System Sort	Roadway	From	To	MTP#	CSJ #	Project Length (mi)	Type of Improvement	Jurisdiction	Current Construction Cost Estimate	Letting Year Construction (dollars)	ROW cost (12% 2011 cost cost)	Preliminary Engineering (4.0% 2011 cost cost)	C.E Cost ($5 M 7.5%, $2-$10 M 5.0%, >$10 M 4.0% 2011 cost cost)	Contingencies (<$5M 7%, $2-$5 M 6.5%, $5-$10 M 6.0%, >$10 M 5% of 2011 cost cost)	Total Project Cost	Year of Expenditure (YOE)	Cat 1 Funding	Cat 2 Funding	Cat 3 - TMF	Cat 4 - Statewide Connectivity	Cat 7 Funding (CE & Contingencies)	Cat 9 Funding	Cat 10 Funding	Cat 12 Funding	CBI - Eligible	Earmark Funding	Other Funds (Local, Bond, etc)	TRENDS Innovative Financing	TOTAL
29	Off	6th St (Weslaco)	Westgate Drive	Bus 83	HC-83		2.3	Widen to 4 Lane	Weslaco	$ 5,140,500	$ 7,035,129	$ 616,860	$ 344,721	$ 351,756	$ 457,283	$ 9,241,928	$ 7,035,129												$ 7.04	$ 7.04
68	Off	Airport Drive (Weslaco)	Bus 83	US 83	HC-85		0.9	Widen to 4 Lane	Weslaco	$ 2,011,500	$ 2,752,877	$ 241,380	$ 134,891	$ 137,644	$ 178,937	$ 3,616,407	$ 2,752,877												$ 2.75	$ 2.75
84	Off	Sugar Rd	SH 107	Schunior Ave	HC-171		0.5	Widen to 4 Lane	Edinburg	$ 1,117,500	$ 1,529,376	$ 223,284	$ 74,939	$ 114,703	$ 107,656	$ 2,144,182	$ 1,529,376												$ 1.53	$ 1.53
88	On	FM 2062 (Bentsen Palm)	US 83 S	Bus 83	HC-18		0.85	Widen to 4 Lane Divided	McAllen	$ 1,899,750	$ 2,599,939	$ 227,970	$ 127,397	$ 129,997	$ 168,996	$ 3,415,495	$ 2,599,939												$ 2.60	$ 2.60
45	On	SP 115 (S 23rd St)	US 83	FM 1016 (Military Hwy)	HC-31a	1804-01-057	3.9	Widen to 6 Lane Divided Urb	McAllen/Hidalgo County 2	$ 13,461,532	$ 18,423,044	$ 1,615,385	$ 902,729	$ 829,027	$ 1,197,492	$ 24,109,803	$ 18,423,044												$ 18.42	$ 18.42
76b	On	FM 1925	3rd Street	FM 493 (La Blanca)	HC-126	1803-02-001	2.1	Widen to 4 Lane Divided	County 4	$ 6,395,566	$ 8,752,774	$ -	$ 428,086	$ 437,639	$ 568,930	$ 10,730,901	$ 8,752,774												$ 8.75	$ 8.75
251	Off	Oakland Ave	E Center	Jackson Rd	HC-316		0.2	Add 4 lanes	McAllen	$ 271,519	$ 371,592	$ 262,794	$ 18,206	$ 27,889	$ 36,011	$ 729,514	$ 371,592												$ 0.37	$ 0.37
264	On	FM 2220 (Ware) & FM 495 (Tacon)	350 E W Intersection FM 2220	350 E E Intersection FM 2220	HC-317		0.16	Addition of East & West bound. Quickstop Lanes on FM 495	McAllen	$ 183,000	$ 250,448	$ -	$ 12,272	$ 18,784	$ 17,531	$ 314,563	$ 250,448												$ 0.25	$ 0.25
264	On	SH 68 - Phase II	FM 1925	IH 69C / US 281	HC-327	3629-01-002	12.38	Divided Rural Highway	TxDOT	$ 68,360,000	$ 93,629,094	$ 37,401,813	$ 3,339,440	$ 3,428,000	$ 4,456,400	$ 148,284,151	$ 135,687,307										$ 135.69		$ 135.69
746	On	SH 68 - Phase III	IH 2 / US 83	IH 69C / US 281	HC-328	3629-01-003	20.	Main Lanes with Overpasses	TxDOT	$ 383,730,000	$ 525,161,002	$ -	$ 18,802,770	$ 19,186,500	$ 24,942,450	$ 620,652,704	$ 550,103,452										$ 550.10		$ 550.10
20 2b	On	SH 365 (Phase II)	FM 396 (Anzalduas Highway)	FM 1016 (Conway Rd)	RMA-1b	3627-01-002		Toll improvement being a 4 lane controlled access facility	HCRMA	$ 37,620,529	$ 51,416,285	$ 5,406,143	$ 2,215,286	$ 1,380,765	$ -	$ 62,259,241	$ 53,637,812										$ 53.64		$ 53.64
226	On	SH 365 (Ultimate Construction) PE	IH 281 Military Highway	FM 1016 (Conway Rd)	RMA-1c			Expansion from a 4-lane to 6-lane controlled access toll facility (constructing an additional 2 lanes)	HCRMA	$ 75,371,557	$ 103,151,180	$ -	$ 3,841,693	$ 4,899,151	$ -	$ 113,032,597	$ 3,841,693										$ 3.84		$ 3.84
																						$ 40,225,092								$ 130,382,377

		FY 2031 - FY 2035	FY 2031 - FY 2035	FY 2031 - FY 2035			FY 2031 - FY 2035	FY 2031 - FY 2035																			
57	Off	Mile 10 North	Westgate (Mile 6 W)	FM 1015	HC-264		3	Widen to 4 lanes - Urban	Weslaco / County 1	$ 13,793,011	$ 22,946,277	$ 2,200,000	$ 1,060,082	$ 1,579,775	$ -	$ 29,147,362	$ 24,546,152					$ 24.01					$ 0.51		$ 24.55
213	Off	Liberty Blvd (Phase II)	Mile 3 Rd	FM 2321	HC-224b	0921-02-122	3.8	Construct 3 lanes with shoulders	County 3	$ 8,593,639	$ 14,317,350	$ 2,030,000	$ 772,460	$ 1,576,755	$ -	$ 18,081,088	$ 15,894,105					$ 15.89							$ 15.89
259	Off	Eldora Rd	FM 3362 (Jackson Rd)	Veterans Blvd (1 Rd)	HC-322		2.3	Divided Urban Section	Pharr/San Juan/County 2	$ 9,645,111	$ 13,200,000	$ 1,200,000	$ 677,185	$ 1,518,417	$ -	$ 17,452,449	$ 14,718,417					$ 14.72							$ 14.72
94b	Off	Mile 6 W Rd	Mile 11 N	SH 107	HC-140bb	0921-02-286	5.6	Widen to 4 Lane	County 1	$ 20,246,241	$ 33,701,489	$ 2,430,000	$ 992,809	$ 911,000	$ 1,316,808	$ 40,605,489	$ 27,208,283					$ 27.21							$ 27.21
87	Off	Border Ave	S 18th St (Mile 6 N)	Bus 83	HC-92		1.4	Widen to 4 Lane	Weslaco	$ 3,129,000	$ 5,210,015	$ 697,160	$ 255,291	$ 260,501	$ 338,651	$ 7,084,578	$ 5,809,167										$ 5.81		$ 5.81
34	Off	Sonoz Rd	I Rd	FM 1426 (Raul Longoria)	HC-187		0.8	Widen to 4 Lane	San Juan	$ 1,780,000	$ 2,977,151	$ 214,560	$ 145,880	$ 148,858	$ 193,515	$ 3,864,543	$ 2,977,151										$ 2.98		$ 2.98
162	Off	Pueblo del Norte	Bus 83	2nd St	HC-242		0.3	Widen to 4 Lane Divided	Weslaco	$ 670,500	$ 1,116,432	$ 80,460	$ 54,705	$ 33,732	$ 78,150	$ 1,482,698	$ 1,116,432										$ 1.12		$ 1.12
255	Off	Erie Ave	Ware Road (FM 2220)	Bentsen Rd	HC-318		0.5	2 lane divided with bike lanes	McAllen	$ 2,139,377	$ 3,562,220	$ 1,404,000	$ 174,549	$ 178,111	$ 231,544	$ 5,771,202	$ 3,562,220										$ 3.56		$ 3.56
75	Off	Schunior Ave	Sugar Rd	4th St	HC-166		0.52	Widen to 4 Lane	Edinburg	$ 1,162,200	$ 1,935,148	$ 190,866	$ 94,832	$ 145,136	$ 135,469	$ 2,621,412	$ 1,935,148										$ 1.94		$ 1.94
90	Off	Jackson Ave	S Bicentennial Ave	S 2nd St	HC-130		0.85	Widen to 4 Lane	McAllen	$ 1,899,750	$ 3,163,223	$ 227,970	$ 154,898	$ 158,161	$ 205,610	$ 4,106,082	$ 3,163,223										$ 3.16		$ 3.16
76b	On	SH 364 (La Homa)	FM 676	FM 2221	HC-182ab	2966-01-011	2	Construct 4 Lane Divided Urban - Rev 5/07 2966-01-011	County 3	$ 4,470,000	$ 7,442,079	$ 536,400	$ 364,701	$ 372,144	$ 483,787	$ 9,661,369	$ 7,442,079										$ 7.44		$ 7.44
104	On	FM 676 (Mile 5 N)	FM 492 (Duffing)	SH 364 (La Homa Rd)	HC-117a		1.5	Widen to 4 Lane Rev TIP 05/08 Revised Estimate	County 3	$ 3,352,500	$ 5,582,159	$ 669,859	$ 273,526	$ 279,108	$ 362,640	$ 7,511,588	$ 5,582,159										$ 5.58		$ 5.58
258	Off	Westgate	Business 83	Mile 5 N	HC-321		2.5	Widen to 4 lane divided	Weslaco	$ 12,507,079	$ 20,825,206	$ 1,500,849	$ 1,020,436	$ 937,134	$ 1,353,638	$ 26,928,425	$ 20,825,206										$ 20.83		$ 20.83
101	Off	Mile 6 N (18th St)	FM 88	Mile 2 W	HC-146		3.2	Widen to 4 Lane	Weslaco/Mercedes County 1	$ 7,152,000	$ 11,908,606	$ 858,240	$ 583,522	$ 533,887	$ 774,059	$ 15,396,648	$ 11,908,606										$ 11.91		$ 11.91
226	On	SH 365 (Ultimate Construction)	US 281 Military Highway	FM 1016 (Conway Rd)	RMA-1c			Expansion from a 4 lane to 6 lane controlled access toll facility (constructing an additional 2 lanes)	HCRMA	$ 75,371,557	$ 75,371,557	$ -	$ 3,841,693	$ 4,899,151	$ -	$ 85,242,974	$ 81,401,281									$ 81.40			$ 81.40
228	On	US 83 La Joya Relief Route (Phase III)	1.0m E FM 886	0.5m W Showers Rd	HC-294		8.9	Construct main lanes and ramps/construct direct connectors	TxDOT	$ 56,600,000	$ 56,600,000	$ -	$ 2,260,000	$ 2,830,000	$ -	$ 65,850,000	$ 56,600,000									$ 56.60			$ 56.60
																						$ 81,054,309								$ 64,322,101

		FY 2036 - FY 2040	FY 2036 - FY 2040	FY 2036 - FY 2040			FY 2036 - FY 2040	FY 2036 - FY 2040																			
243	Off	Cesar Chavez Rd	Nolana Loop	Business 83	HC-326		2.8	Divided Urban Section	San Juan / Alamo / County 1-3	$ 10,064,345	$ 36,595,840	$ 4,570,000	$ 1,584,512	$ 2,567,723	$ -	$ 47,322,175	$ 43,737,771					$ 42.07							$ 42.07
240	Off	Sonoz Rd	Cesar Chavez Rd	1 Road (Veterans Blvd)	HC-306		2.1	Divided Urban Section	San Juan	$ 12,600,000	$ 25,525,288	$ 3,000,000	$ 1,250,739	$ 1,148,638	$ 2,297,276	$ 34,804,508	$ 25,525,288										$ 25.53		$ 25.53
260	Off	East Eldora Rd (Segment II)	FM 907 (Alamo Rd)	I Rd	HC-323		2.6	Divided Urban Section	San Juan/ County 2	$ 5,400,000	$ 10,939,409	$ 1,300,000	$ 536,031	$ 493,271	$ 711,660	$ 14,657,018	$ 10,939,409										$ 10.94		$ 10.94
106b	On	FM 88	SH 107	0.2m N of FM 1925	HC-19ch	0698-02-041	1.65	Widen to 4 Lane Divided	Elsa / County 1	$ 6,865,000	$ 13,907,230	$ 823,800	$ 681,454	$ 625,825	$ 903,970	$ 17,804,528	$ 13,907,230										$ 13.91		$ 13.91
84	Off	Alberta Rd	McColl Rd	US 281	HC-87		2.07	Widen to 4 Lane	Edinburg	$ 4,626,450	$ 9,372,339	$ 759,794	$ 459,245	$ 468,617	$ 609,202	$ 12,250,381	$ 9,372,339										$ 9.37		$ 9.37
1294	Off	Abram Rd	Bus 83	US Expressway 83	HC-84b		1	4 Lane Divided Urban Section	Palmview / County 3	$ 4,500,000	$ 9,116,174	$ 1,060,000	$ 446,693	$ 455,809	$ 592,551	$ 12,236,410	$ 9,116,174										$ 9.12		$ 9.12
108	On	FM 3072 (Dicker Rd)	S Cage Blvd	FM 907 (Alamo Rd)	HC-26		4	Widen to 4 Lane Divided	San Juan / Pharr	$ 8,940,000	$ 18,110,800	$ 1,072,800	$ 887,429	$ 814,986	$ 1,177,202	$ 23,186,026	$ 18,110,800										$ 18.11		$ 18.11
122	On	FM 1015	SH 107	FM 1925	HC-3		1.5	Widen to 4 Lane Divided	Edcouch / County 1	$ 3,116,500	$ 6,313,457	$ 373,980	$ 152,709	$ 155,825	$ 202,573	$ 4,194,809	$ 6,313,457										$ 6.31		$ 6.31
485	Off	International Bridge Trade Corridor (IBTC) Phase II ultimate	Interchange to SH 365 to I-2	Valley View Interchange to FM 493	RMA-3	0921-02-142		6 lane controlled-controlled access facility with 4 lane access roads	HCRMA	$ 118,363,281	$ 213,281,606	$ 18,063,400	$ 9,854,084	$ -	$ -	$ 219,624,358	$ 214,281,606									$ 214.28			$ 214.28
																						$ 42,077,144								$ 93,294,608

$ 5.40	$ 387.50	$ -	$ 7.10	$ 372.34	$ 7.17	$ 52.10	$ 272.02	$ 24.93	$ 9.08	$ 1,038.82	$ 206.43							

2015 - 2040 MTP Amendment #8 - 7-27-2017 - FINAL Project List - Amendment - Administrative 7/27/2017

2 Exhibit 1-1.3 Pages from Hidalgo County MPO's 2015-2040 MTP, Amendment #8

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TUESDAY, SEPTEMBER 19, 2017
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STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM
HIDALGO COUNTY MPO - HIGHWAY PROJECTS
FY 2018

PAGE: 453 OF 995

2017-2020 STIP — **07/2016 Revision: Approved 12/19/2016**

DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST
PHARR	HIDALGO COUNTY	HIDALGO	0864-01-068	FM 494	C,R,ACQ,UTL	HIDALGO COUNTY	$ 11,615,111

LIMITS FROM FM 676
LIMITS TO SH 107
PROJECT DESCR WIDEN TO 4 LANE
REMARKS P7
PROJECT SPONSOR TXDOT
REVISION DATE 07/2016
MPO PROJ NUM HC-292a
FUNDING CAT(S)
PROJECT HISTORY AMENDMENT TO UPDATE FUNDING SOURCES - REMOVING PROP 1 AND ADDING CAT 7 AND LOCAL FUNDING UNTIL NEW SOURCES OF FUNDING BECOME AVAILABLE.

TOTAL PROJECT COST INFORMATION

PREL ENG	$ 392,000
ROW PURCH	$ 2,957,145
CONSTR	$ 8,000,000
CONST ENG	$ 0
CONTING	$ 657,966
INDIRECT	$ 496,000
BOND FIN	$ 0
PT CHG ORD	$ 0
TOTAL CST	$ 12,603,111

COST OF APPROVED PHASES $ 11,615,111

AUTHORIZED FUNDING BY CATEGORY/SHARE

CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
3LC	$ 0	$ 0	$ 0	$ 0	$ 8,565,111	$ 8,565,111
11	$ 1,640,000	$ 410,000	$ 0	$ 0	$ 0	$ 2,050,000
7	$ 800,000	$ 200,000	$ 0	$ 0	$ 0	$ 1,000,000
TOTAL	$ 2,440,000	$ 610,000	$ 0	$ 0	$ 8,565,111	$ 11,615,111

2017-2020 STIP — **07/2016 Revision: Approved 12/19/2016**

DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST
PHARR	HIDALGO COUNTY	HIDALGO	3629-01-001	SH 68	C	HIDALGO COUNTY	$ 55,000,000

LIMITS FROM US 83
LIMITS TO FM 1925
PROJECT DESCR CONSTRUCT NEW 4 LANE DIVIDED RURAL HIGHWAY FACILITY
REMARKS P7
PROJECT SPONSOR TXDOT
REVISION DATE 07/2016
MPO PROJ NUM HC-295c
FUNDING CAT(S)
PROJECT HISTORY

TOTAL PROJECT COST INFORMATION

PREL ENG	$ 6,500,000
ROW PURCH	$ 23,500,000
CONSTR	$ 55,000,000
CONST ENG	$ 2,475,000
CONTING	$ 3,850,000
INDIRECT	$ 3,410,000
BOND FIN	$ 0
PT CHG ORD	$ 0
TOTAL CST	$ 94,735,000

COST OF APPROVED PHASES $ 55,000,000

AUTHORIZED FUNDING BY CATEGORY/SHARE

CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
12	$ 44,000,000	$ 11,000,000	$ 0	$ 0	$ 0	$ 55,000,000
TOTAL	$ 44,000,000	$ 11,000,000	$ 0	$ 0	$ 0	$ 55,000,000

2017-2020 STIP — **07/2016 Revision: Approved 12/19/2016**

DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST
PHARR	HIDALGO COUNTY	HIDALGO	0921-02-140	OWASSA	C,E	PHARR	$ 6,841,773

LIMITS FROM JACKSON RD
LIMITS TO US 281
PROJECT DESCR WIDEN TO 4 LANE DIVIDED
REMARKS P7
PROJECT SPONSOR TXDOT
REVISION DATE 07/2016
MPO PROJ NUM HC-100
FUNDING CAT(S)
PROJECT HISTORY

TOTAL PROJECT COST INFORMATION

PREL ENG	$ 300,670
ROW PURCH	$ 377,936
CONSTR	$ 6,136,119
CONST ENG	$ 306,806
CONTING	$ 398,848
INDIRECT	$ 380,439
BOND FIN	$ 0
PT CHG ORD	$ 0
TOTAL CST	$ 7,900,818

COST OF APPROVED PHASES $ 6,841,773

AUTHORIZED FUNDING BY CATEGORY/SHARE

CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
7	$ 5,153,418	$ 0	$ 0	$ 1,288,355	$ 0	$ 6,441,773
12S	$ 320,000	$ 0	$ 0	$ 0	$ 80,000	$ 400,000
TOTAL	$ 5,473,418	$ 0	$ 0	$ 1,288,355	$ 80,000	$ 6,841,773

PHASE: C = CONSTRUCTION, E = ENGINEERING, R = ROW, T = TRANSFER

2 Exhibit 1-2 Page from Statewide Transportation Improvement Program 2017-2020

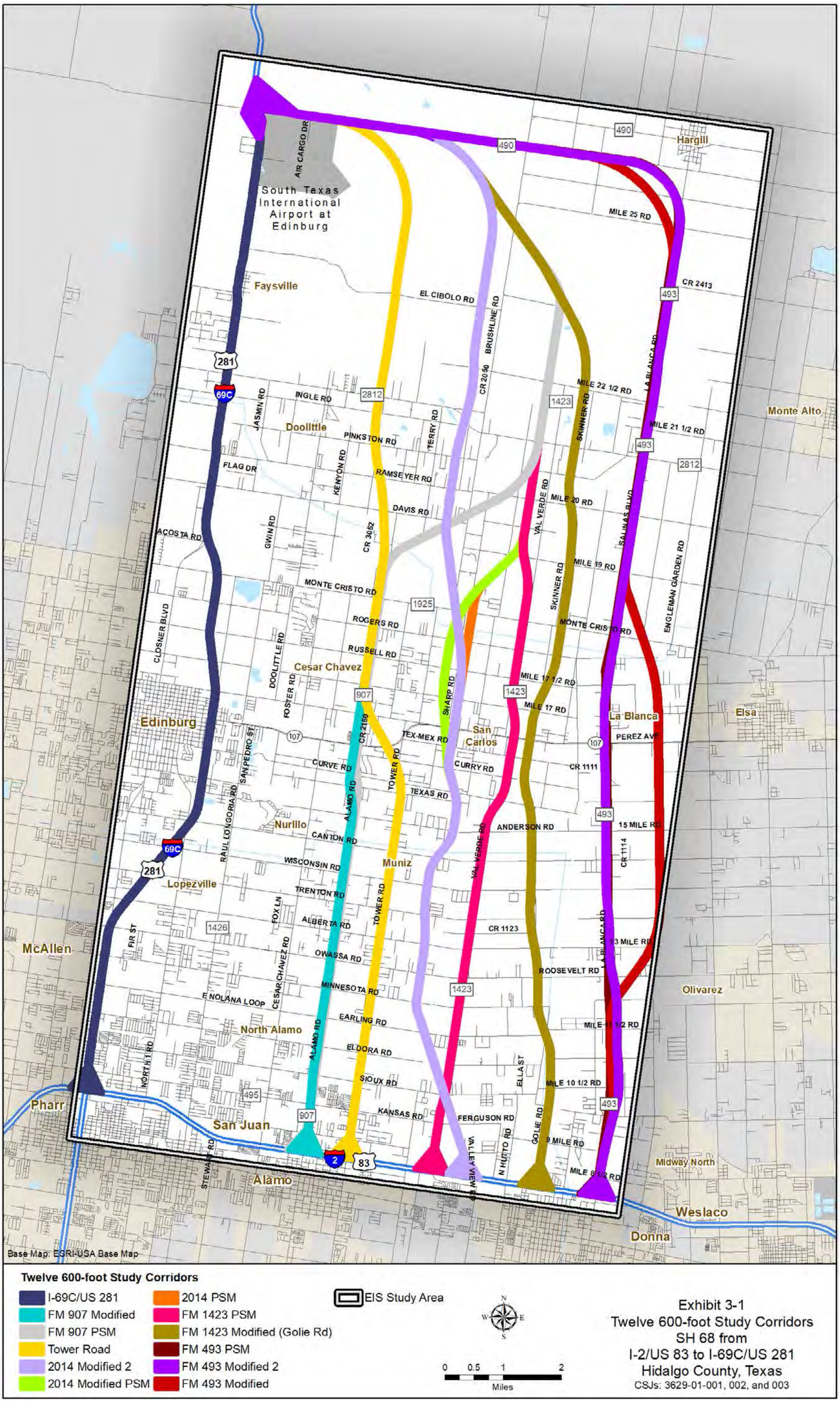


Exhibit 3-1
Twelve 600-foot Study Corridors
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

1

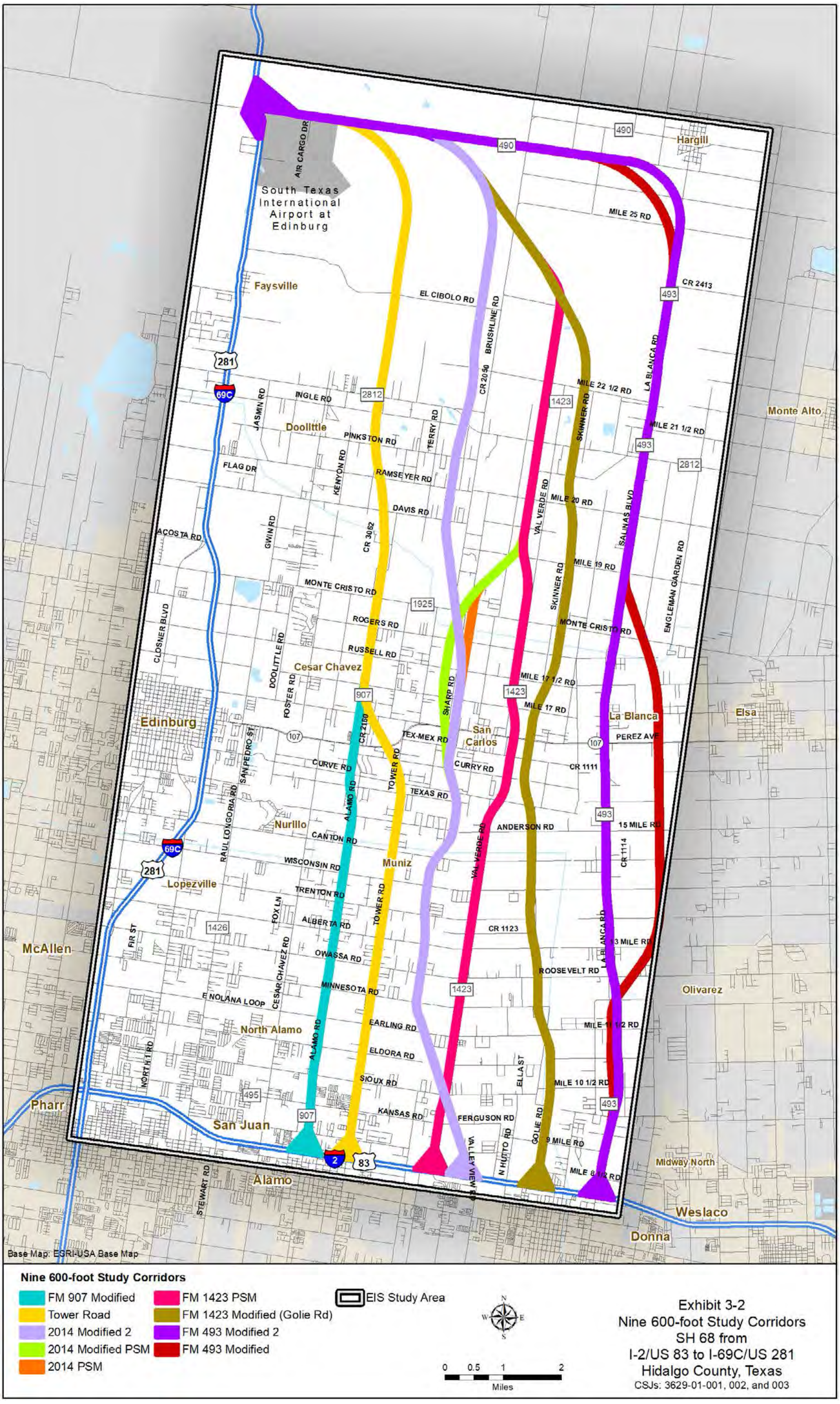


Exhibit 3-2
Nine 600-foot Study Corridors
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

1

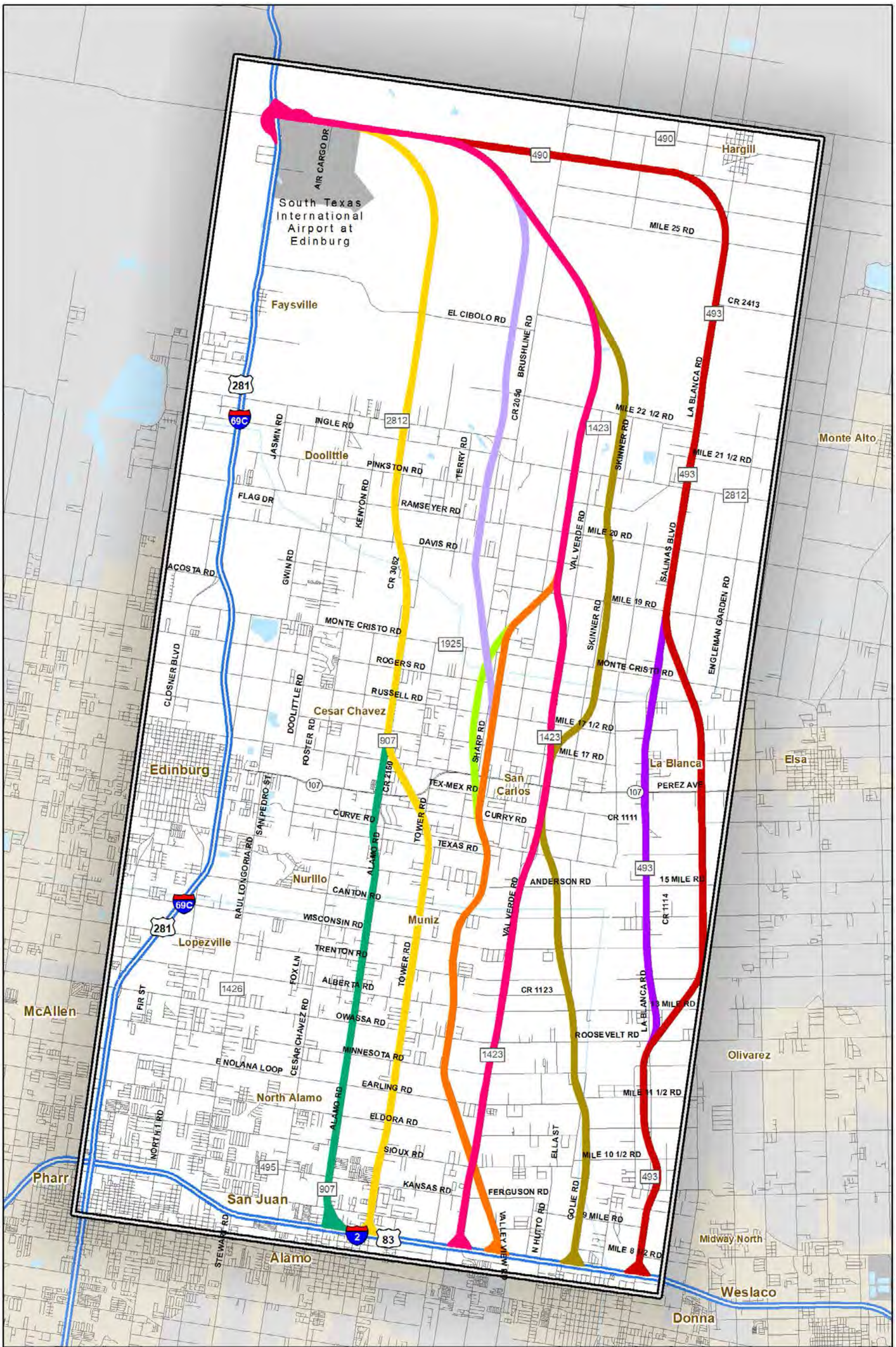
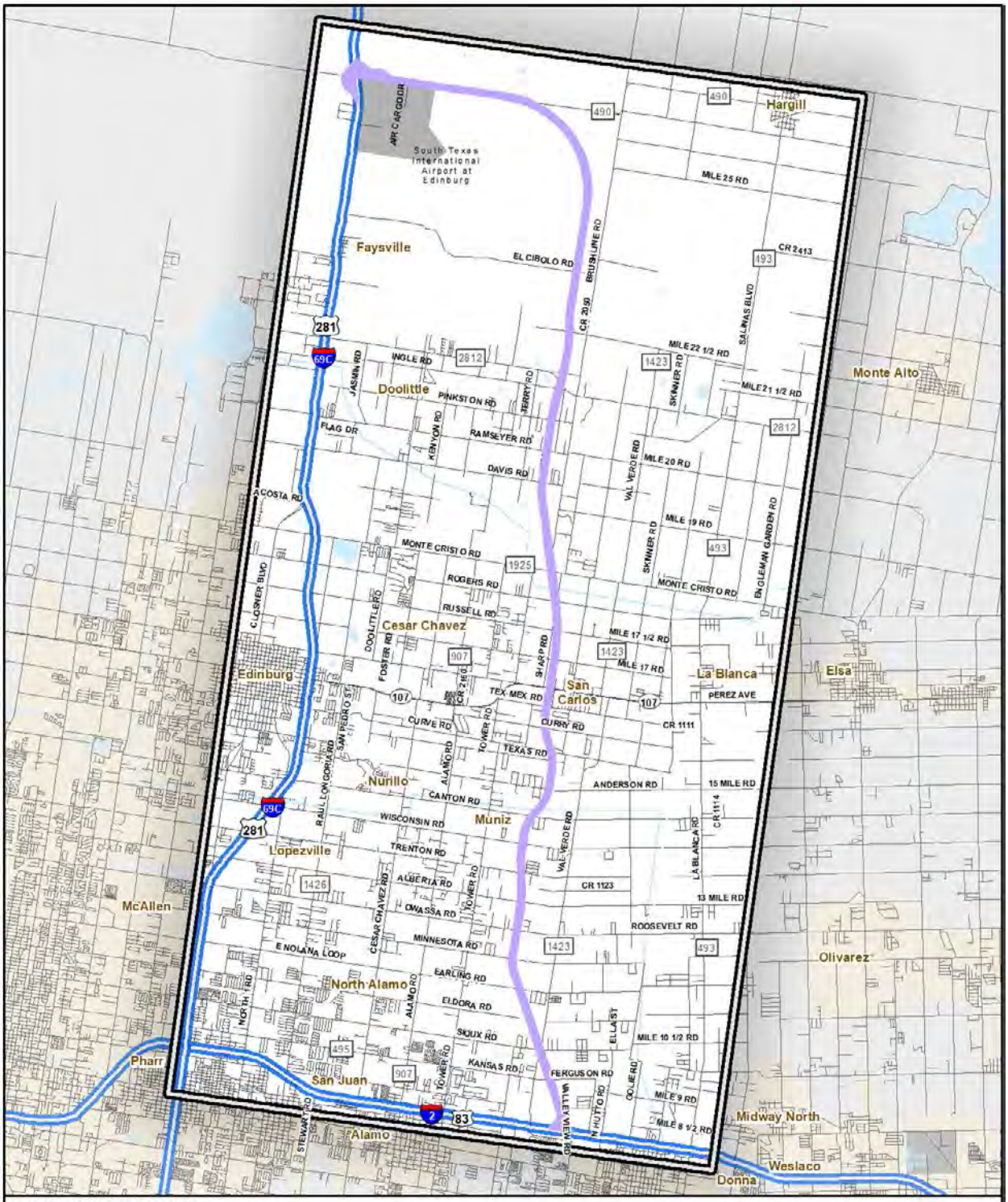


Exhibit 3-3
350 to 400-foot Preliminary Alternatives
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003



Base Map: ESRI-USA Base Map

Recommended Preferred Alternative 2014 Modified 2 (Apprx. 22 miles)

EIS Study Area

N W E S

0 0.5 1 2 3 4
Miles

Exhibit 3-4
Recommended Preferred Alternative
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

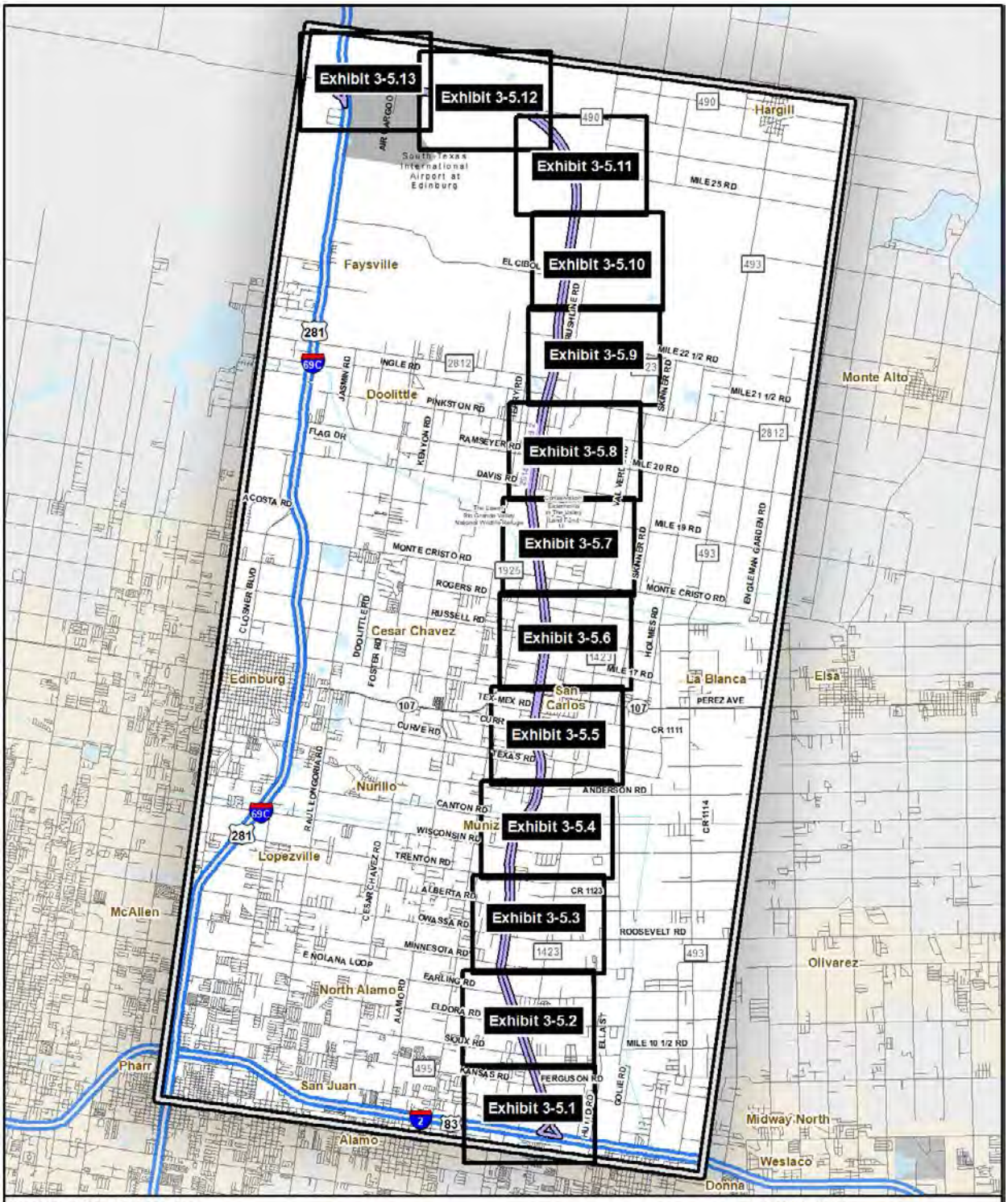


Exhibit 3-5.13
Exhibit 3-5.12
Exhibit 3-5.11
Exhibit 3-5.10
Exhibit 3-5.9
Exhibit 3-5.8
Exhibit 3-5.7
Exhibit 3-5.6
Exhibit 3-5.5
Exhibit 3-5.4
Exhibit 3-5.3
Exhibit 3-5.2
Exhibit 3-5.1
South Texas International Airport at Edinburg
Hargill
Faysville
Doolittle
Monte Alto
Cesar Chavez
Edinburg
San Carlos
La Blanca
Elsa
Nurillo
Muniz
Lopezville
McAllen
Olivarez
North Alamo
Pharr
San Juan
Alamo
Midway North
Weslaco
Donna
281
69C
2
83
490
493
2812
1925
1423
107
495
MILE 25 RD
EL CIBOL
INGLE RD
PINKSTON RD
RAMSEYER RD
DAVIS RD
MILE 22 1/2 RD
MILE 21 1/2 RD
MILE 20 RD
MILE 19 RD
MONTE CRISTO RD
ROGERS RD
RUSSELL RD
MILE 17 RD
TEX-MEX RD
CURVE RD
TEXAS RD
ANDERSON RD
CANTON RD
WISCONSIN RD
TRENTON RD
ALBERTA RD
OWASSA RD
MINNESOTA RD
ROOSEVELT RD
E NOLANA LOOP
EARLING RD
ELDORA RD
SIOUX RD
KANSAS RD
FERGUSON RD
MILE 10 1/2 RD
PEREZ AVE
CR 1111
CR 1123
CR 1114
Base Map: ESRI-USA Base Map
Recommended Preferred Alternative 2014 Modified 2 (Apprx. 22 miles)
EIS Study Area
0 0.5 1 2
Miles
Exhibit 3-5
Recommended Preferred Alternative
2014 Modified 2 Index
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

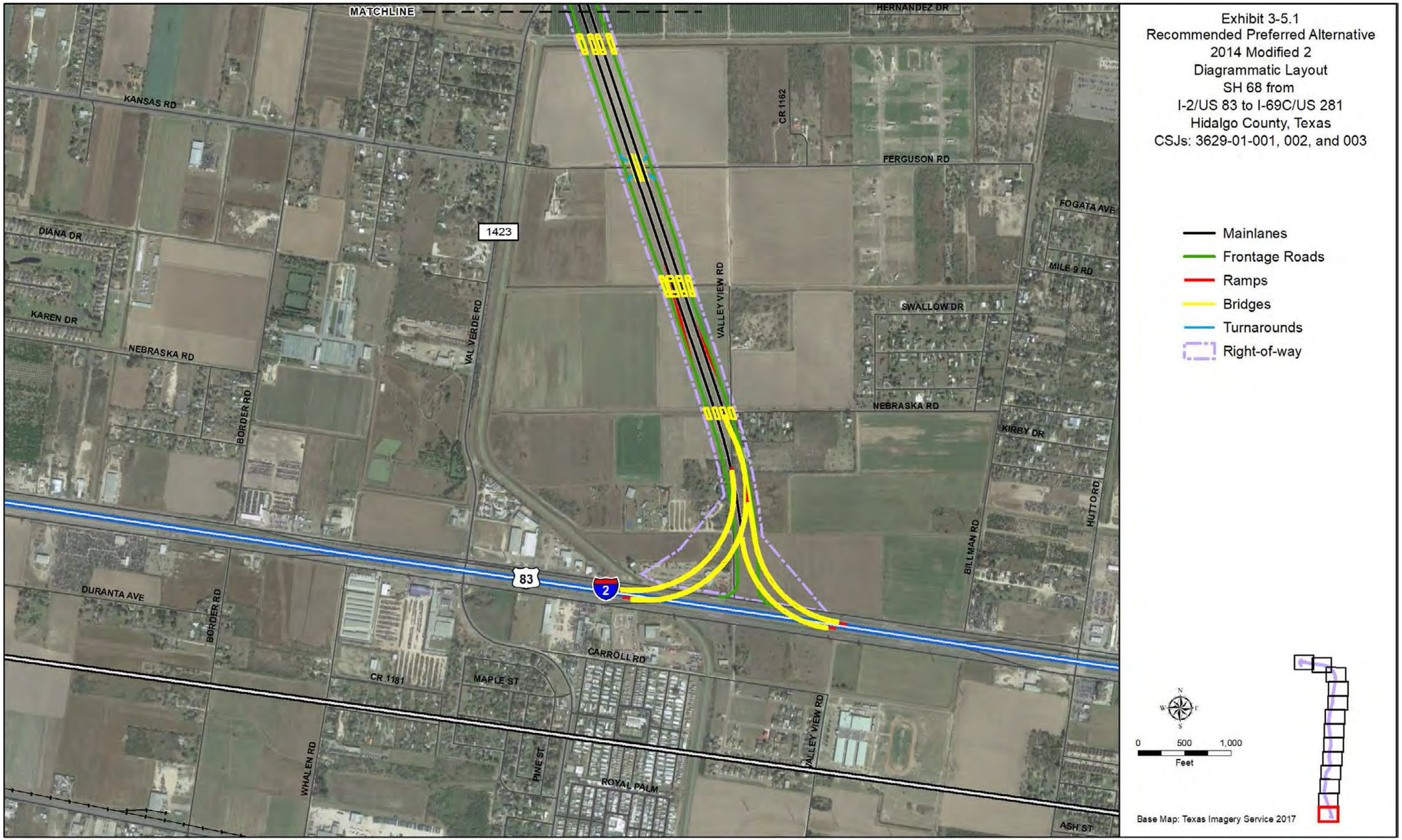


Exhibit 3-5.1
Recommended Preferred Alternative
2014 Modified 2
Diagrammatic Layout
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Mainlanes
Frontage Roads
Ramps
Bridges
Turnarounds
Right-of-way
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
HERNANDEZ DR
KANSAS RD
CR 1162
FERGUSON RD
FOGATA AVE
MILE 9 RD
DIANA DR
KAREN DR
1423
VALLEY VIEW RD
SWALLOW DR
NEBRASKA RD
VAL VERDE RD
BORDER RD
KIRBY DR
HUTTO RD
BILLMAN RD
83
2
DURANTA AVE
CARROLL RD
CR 1181
MAPLE ST
PINE ST
ROYAL PALM
WHALEN RD
ASH ST

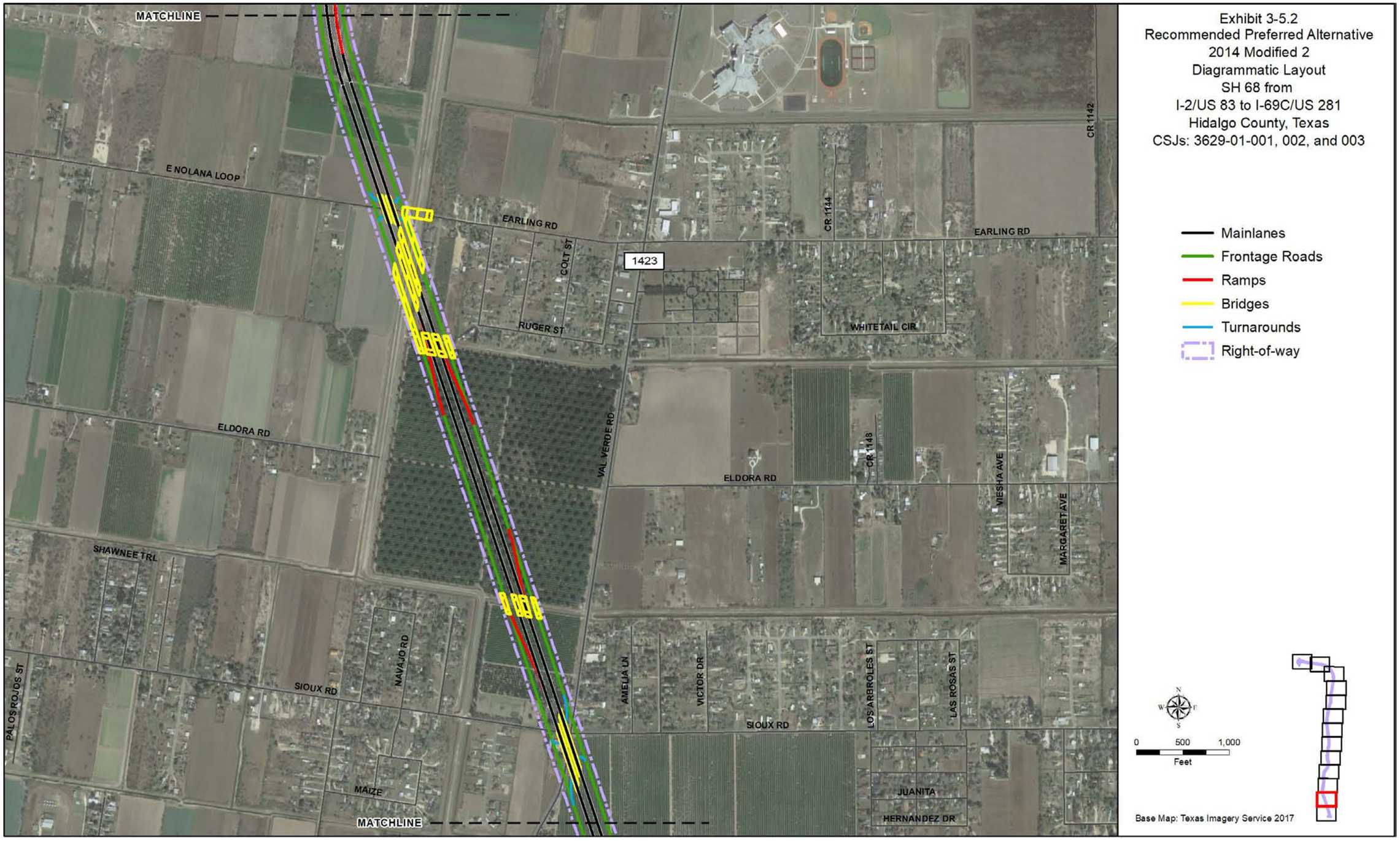


Exhibit 3-5.2
Recommended Preferred Alternative
2014 Modified 2
Diagrammatic Layout
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Mainlanes
Frontage Roads
Ramps
Bridges
Turnarounds
Right-of-way
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
E NOLANA LOOP
EARLING RD
COLT ST
RUGER ST
1423
CR 1144
CR 1142
WHITETAIL CIR
ELDORA RD
VAL VERDE RD
CR 1148
VIESHA AVE
MARGARET AVE
SHAWNEE TRL
PALOS ROJOS ST
SIOUX RD
NAVAJO RD
AMELIA LN
VICTOR DR
LOS ARBOLES ST
LAS ROSAS ST
MAIZE
JUANITA
HERNANDEZ DR

1

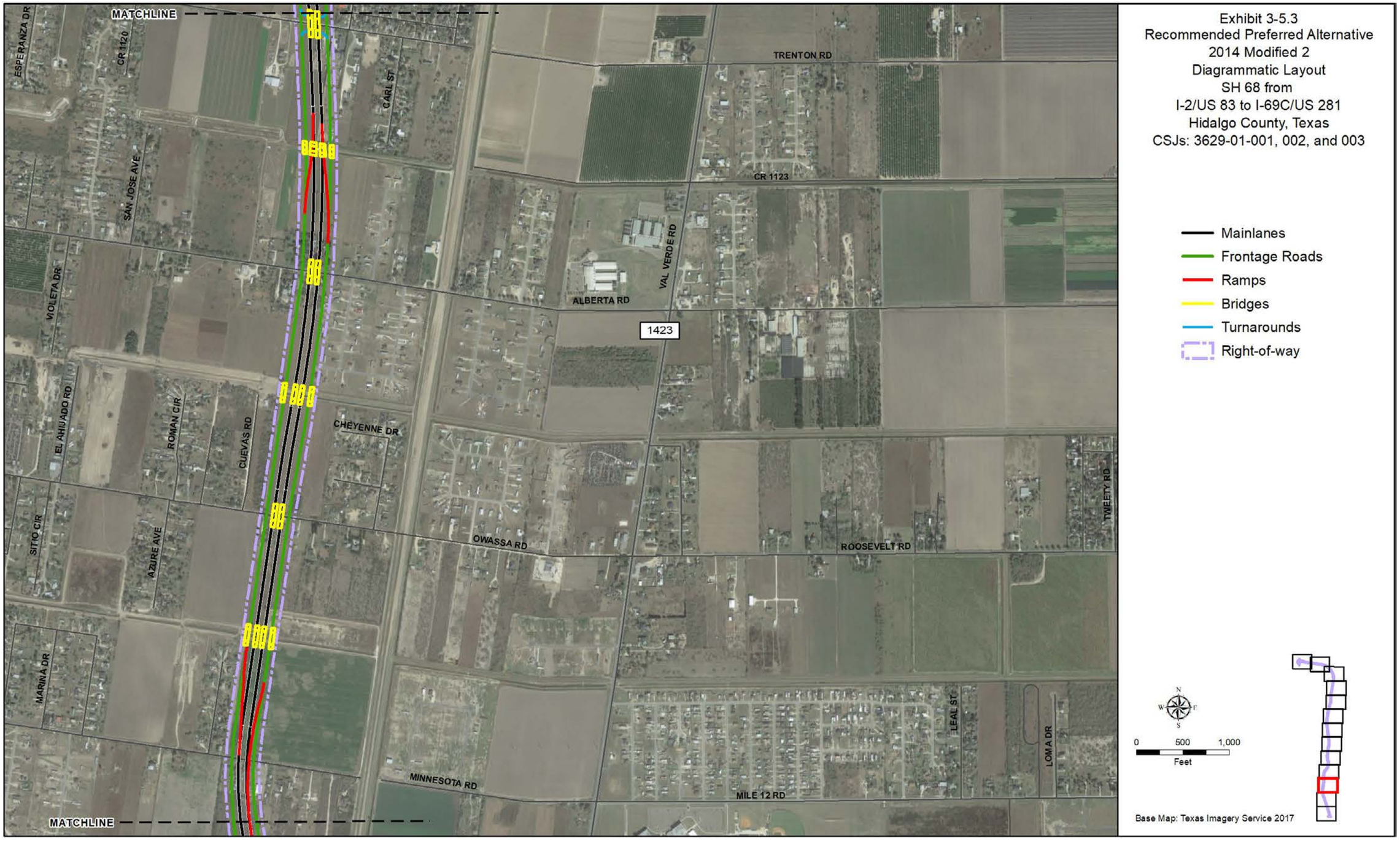


Exhibit 3-5.3
Recommended Preferred Alternative
2014 Modified 2
Diagrammatic Layout
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Mainlanes
Frontage Roads
Ramps
Bridges
Turnarounds
Right-of-way
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
MATCHLINE
ESPERANZA DR
CR 1120
GARL ST
SAN JOSE AVE
VIOLETA DR
EL AHUADO RD
ROMAN CIR
CUEVAS RD
SITIO CIR
AZURE AVE
MARINA DR
TRENTON RD
CR 1123
VAL VERDE RD
ALBERTA RD
1423
CHEYENNE DR
OWASSA RD
ROOSEVELT RD
TWEETY RD
LEAL ST
LOMA DR
MINNESOTA RD
MILE 12 RD

Exhibit 3-5.4
Recommended Preferred Alternative
2014 Modified 2
Diagrammatic Layout
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Mainlanes
Frontage Roads
Ramps
Bridges
Turnarounds
Right-of-way
MATCHLINE
E IOWA RD
E VERBINA ST
PRIMOS CIR
ORCHID ST
SEVILLA DR
ARCOLA DR
LUXURY LN
CHAMPAGNE DR
WISCONSIN RD
JAM SQ
TRENTON RD
MATCHLINE
VAL VERDE VISTA ST
MILE 15 RD
N VAL VERDE RD
1423
CANTON RD
WISCONSIN RD
BONANZA DR
SKYHAWK DR
VERDE CIR
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017

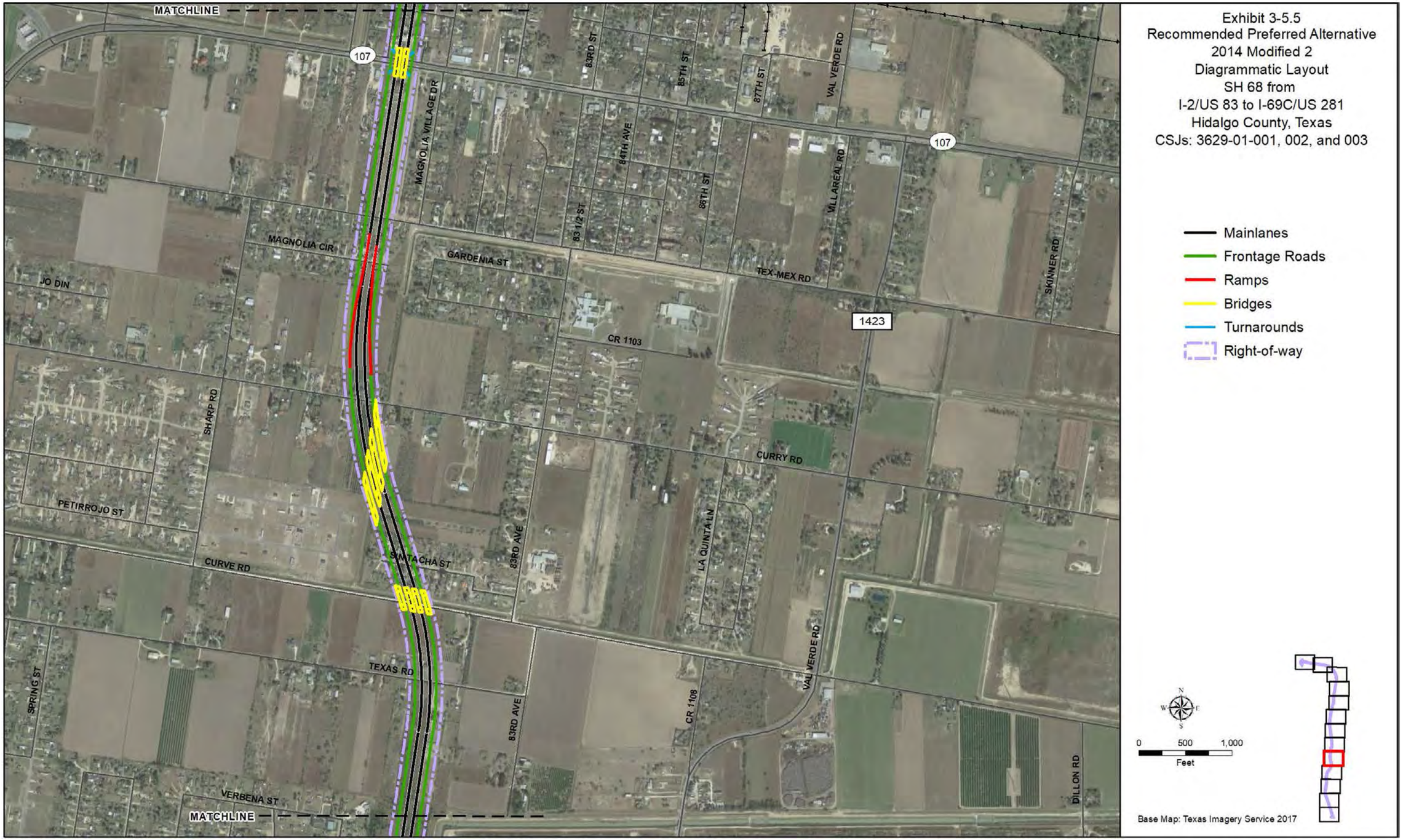


Exhibit 3-5.5
Recommended Preferred Alternative
2014 Modified 2
Diagrammatic Layout
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Mainlanes
Frontage Roads
Ramps
Bridges
Turnarounds
Right-of-way
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
107
MAGNOLIA VILLAGE DR
83RD ST
85TH ST
87TH ST
VAL VERDE RD
84TH AVE
86TH ST
VILLAREAL RD
83 1/2 ST
MAGNOLIA CIR
GARDENIA ST
TEX-MEX RD
SKINNER RD
JO DIN
1423
CR 1103
SHARP RD
CURRY RD
PETIRROJO ST
LA QUINTA LN
SANTACHA ST
CURVE RD
TEXAS RD
SPRING ST
CR 1108
DILLON RD
VERBENA ST

1

Exhibit 3-5.6
Recommended Preferred Alternative
2014 Modified 2
Diagrammatic Layout
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Mainlanes
Frontage Roads
Ramps
Bridges
Turnarounds
Right-of-way
MATCHLINE
RAMBO RD
ROGERS RD
BANDERA LN
1423
SHARP RD
MILE 17 1/2 RD
83RD ST
EVA AVE
TOWER RD
VAL VERDE RD
SKINNER RD
ESCONDIDO LN
MILE 17 RD
SAN FRANCISCO
SAN CARLOS CIR
HUMPHREY AVE
MATCHLINE
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017

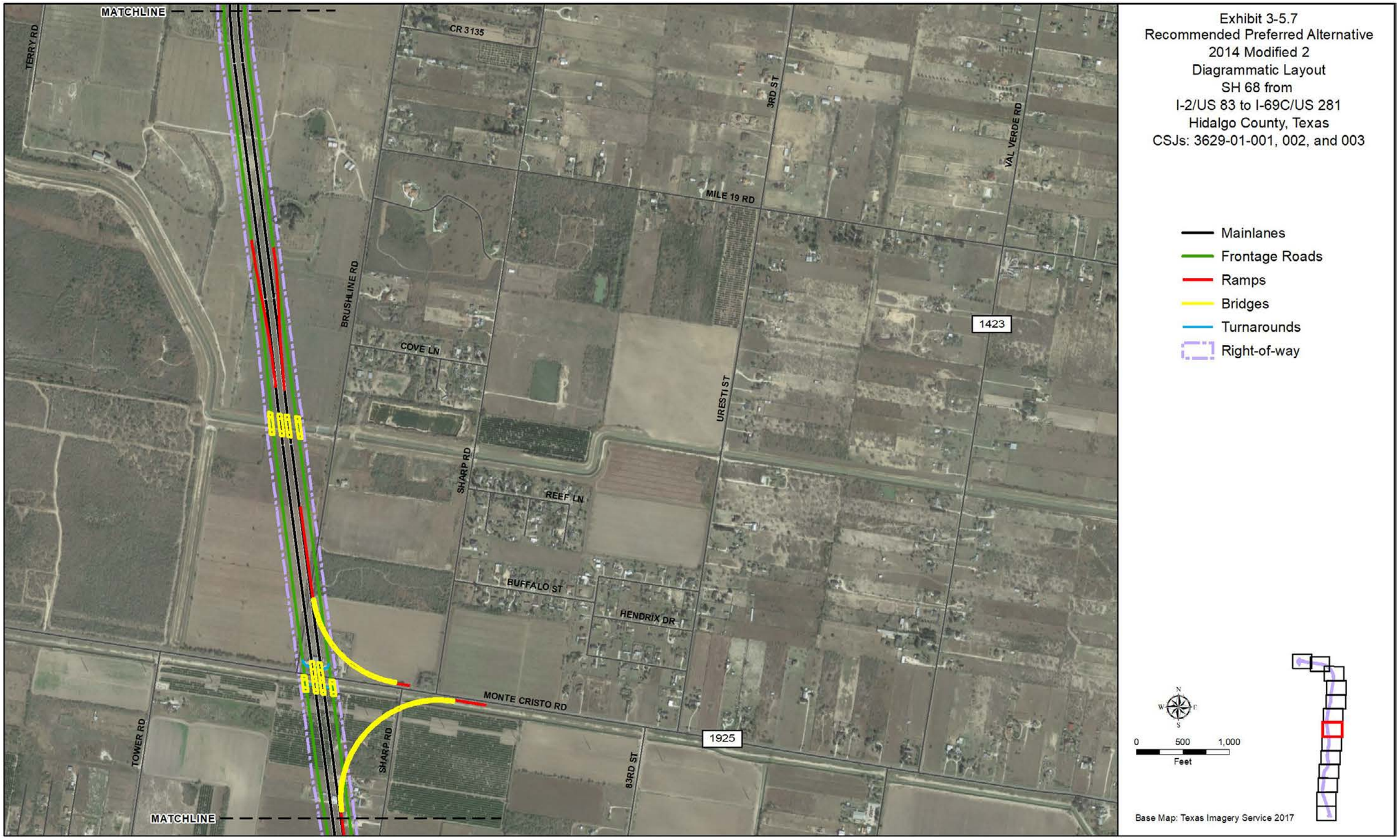


Exhibit 3-5.7
Recommended Preferred Alternative
2014 Modified 2
Diagrammatic Layout
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Mainlanes
Frontage Roads
Ramps
Bridges
Turnarounds
Right-of-way
MATCHLINE
TERRY RD
CR 3135
3RD ST
VAL VERDE RD
MILE 19 RD
BRUSHLINE RD
COVE LN
1423
URESTI ST
SHARP RD
REEF LN
BUFFALO ST
HENDRIX DR
MONTE CRISTO RD
1925
TOWER RD
SHARP RD
83RD ST
MATCHLINE
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017

Exhibit 3-5.8
Recommended Preferred Alternative
2014 Modified 2
Diagrammatic Layout
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Mainlanes
Frontage Roads
Ramps
Bridges
Turnarounds
Right-of-way
MATCHLINE
2812
1423
VISTA DEL CIELO
PINKSTON RD
BARBARA LN
CR 3120
TOWER RD
CALLE DE AMANDA
BRUSHLINE RD
MILE 20 1/2 RD
CR 3050
RAMSEYER RD
RAM CIR
VAL VERDE RD
MILE 20 RD
REDBIRD ST
TERRY RD
PRAIRIE LN
TOWER RD
MOUNTAIN VIEW LN
DAVIS RD
3RD ST
SHARP RD
MILE 19 1/2 RD
MATCHLINE
N
W
E
S
0
500
1,000
Feet
Base Map: Texas Imagery Service 2017

Exhibit 3-5.9
Recommended Preferred Alternative
2014 Modified 2
Diagrammatic Layout
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

MATCHLINE
BRUSHLINE RD
CACTUS FLATS
EL CIBOLO RD
MATCHLINE
Exhibit 3-5.10
Recommended Preferred Alternative
2014 Modified 2
Diagrammatic Layout
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Mainlanes
Frontage Roads
Ramps
Bridges
Turnarounds
Right-of-way
N
W
E
S
0
500
1,000
Feet
Base Map: Texas Imagery Service 2017

MATCHLINE
490
11TH ST
12TH ST
13TH ST
BRUSHLINE RD
MATCHLINE
Exhibit 3-5.11
Recommended Preferred Alternative
2014 Modified 2
Diagrammatic Layout
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Mainlanes
Frontage Roads
Ramps
Bridges
Turnarounds
Right-of-way
N
W
E
S
0
500
1,000
Feet
Base Map: Texas Imagery Service 2017

Exhibit 3-5.12
Recommended Preferred Alternative
2014 Modified 2
Diagrammatic Layout
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Mainlanes
Frontage Roads
Ramps
Bridges
Turnarounds
Right-of-way
490
MATCHLINE
MATCHLINE
N
W
E
S
0
500
1,000
Feet
Base Map: Texas Imagery Service 2017

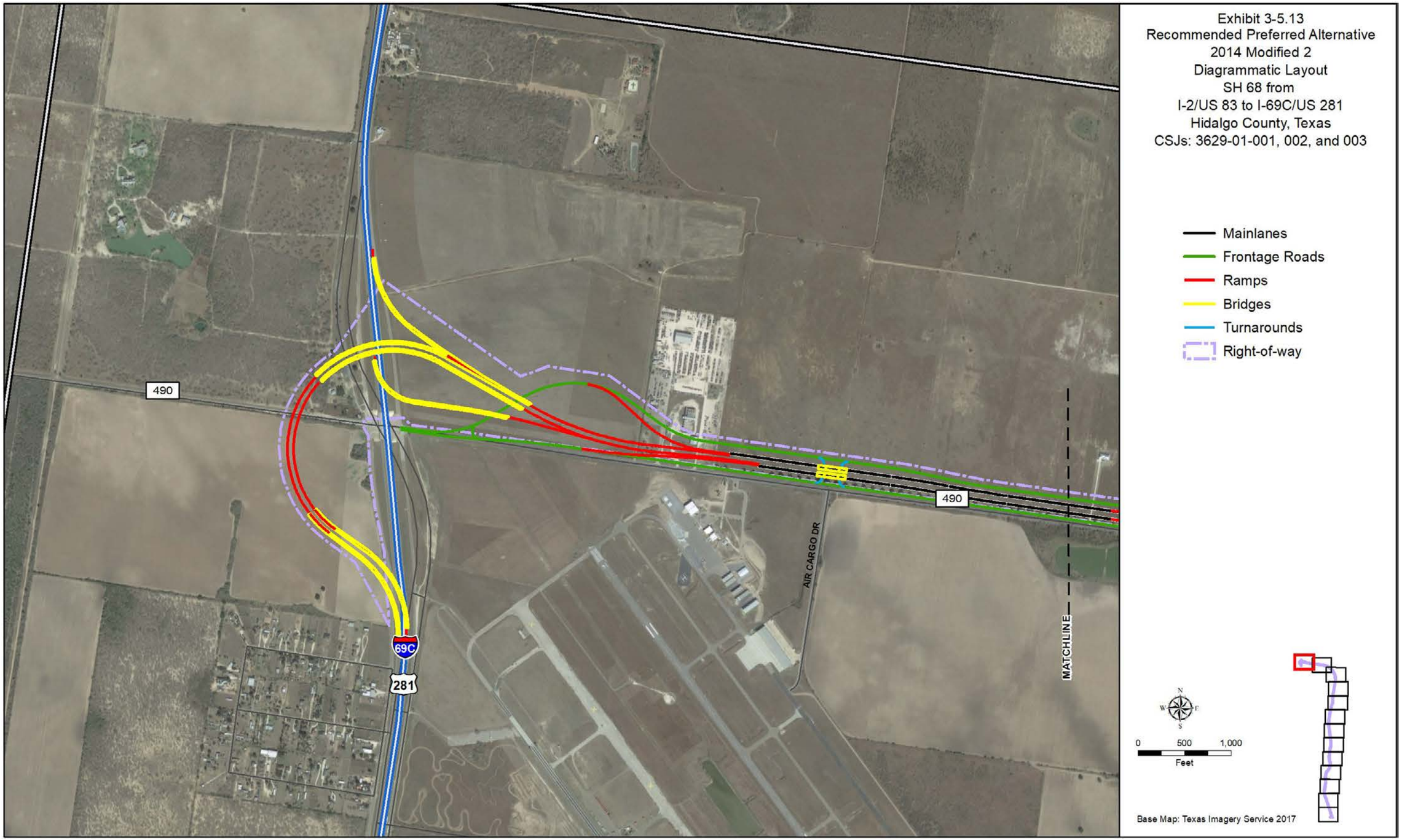


Exhibit 3-5.13
Recommended Preferred Alternative
2014 Modified 2
Diagrammatic Layout
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Mainlanes
Frontage Roads
Ramps
Bridges
Turnarounds
Right-of-way
490
490
69C
281
AIR CARGO DR
MATCHLINE
0
500
1,000
Feet
Base Map: Texas Imagery Service 2017

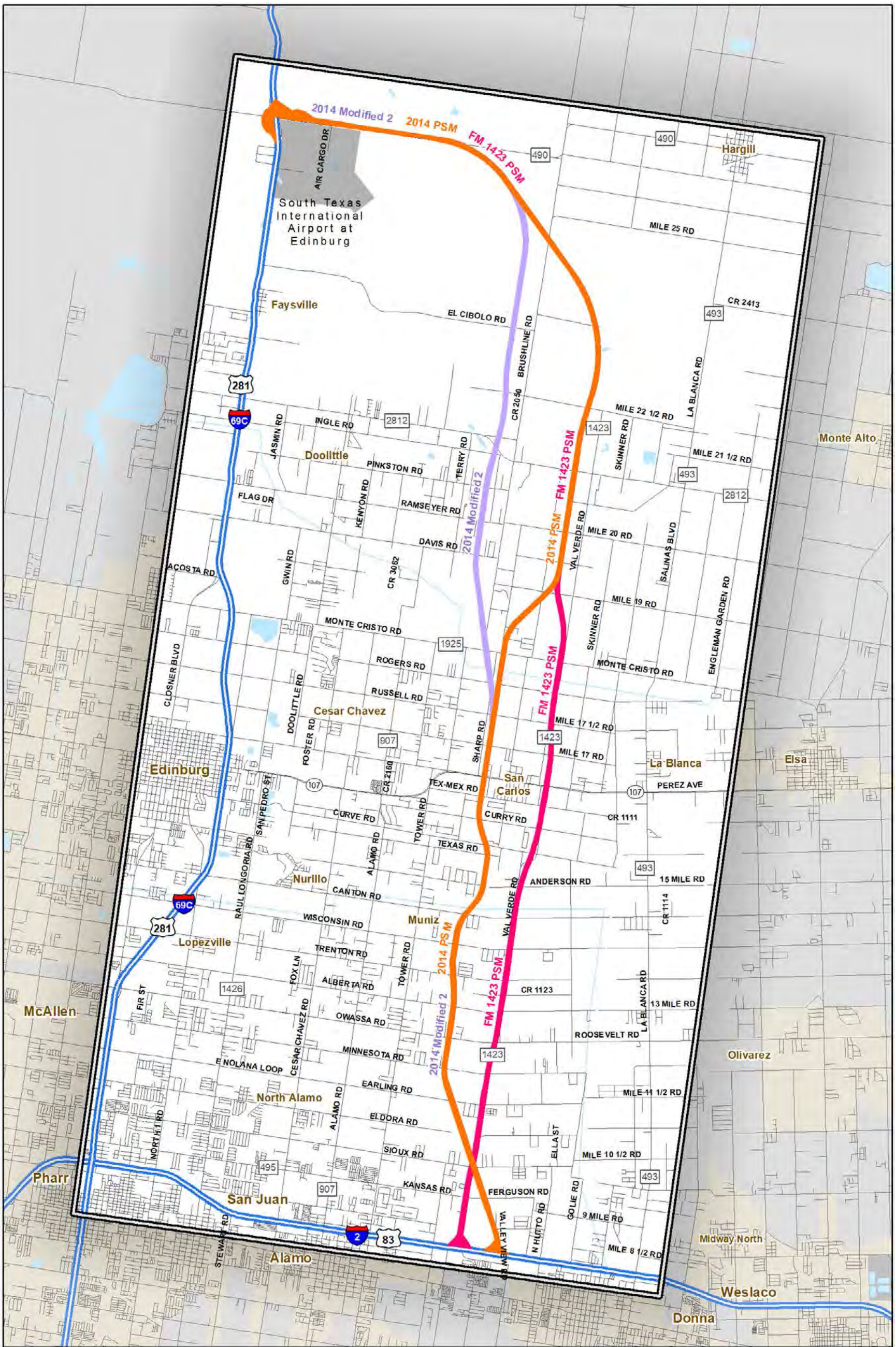
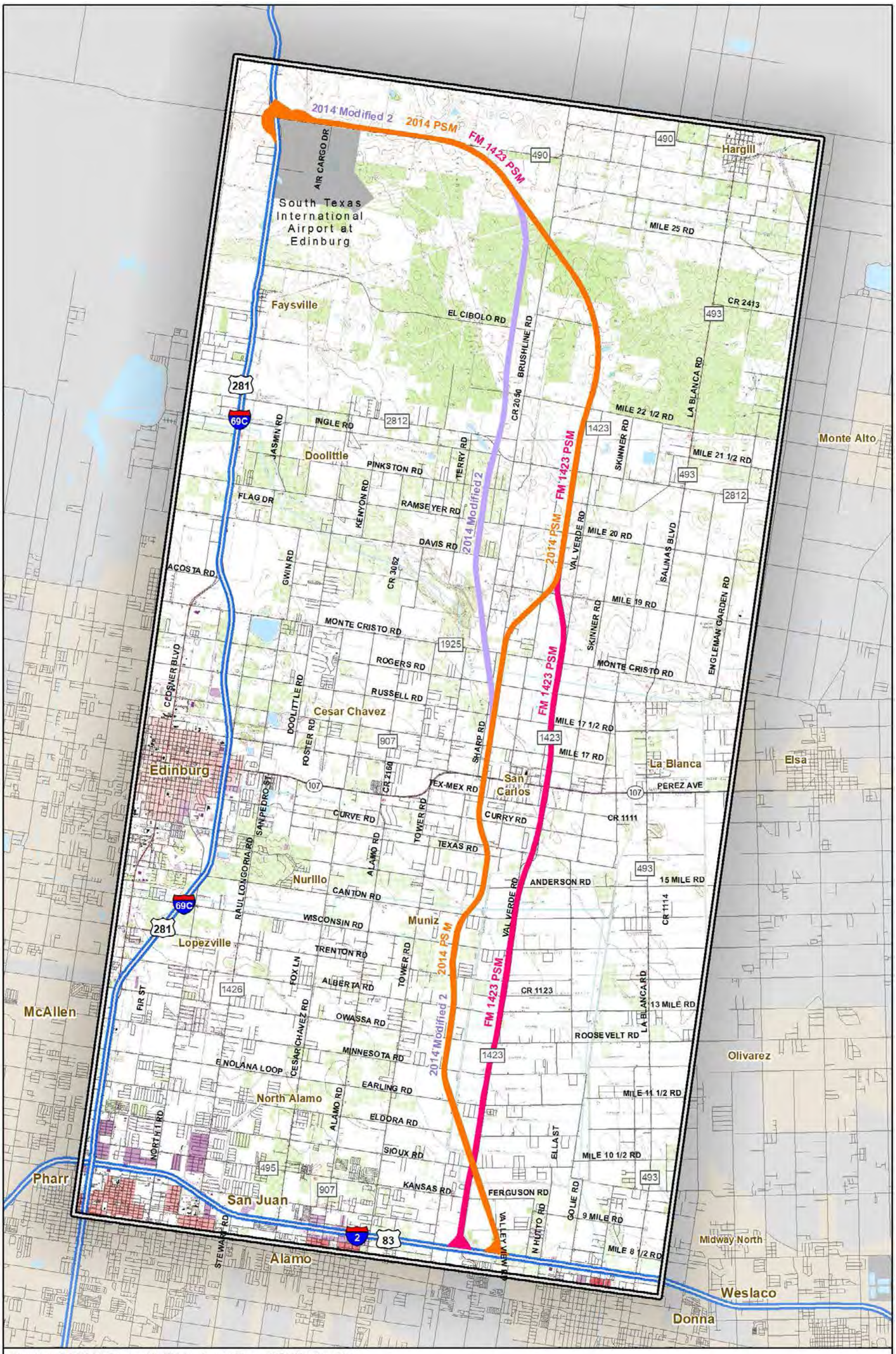
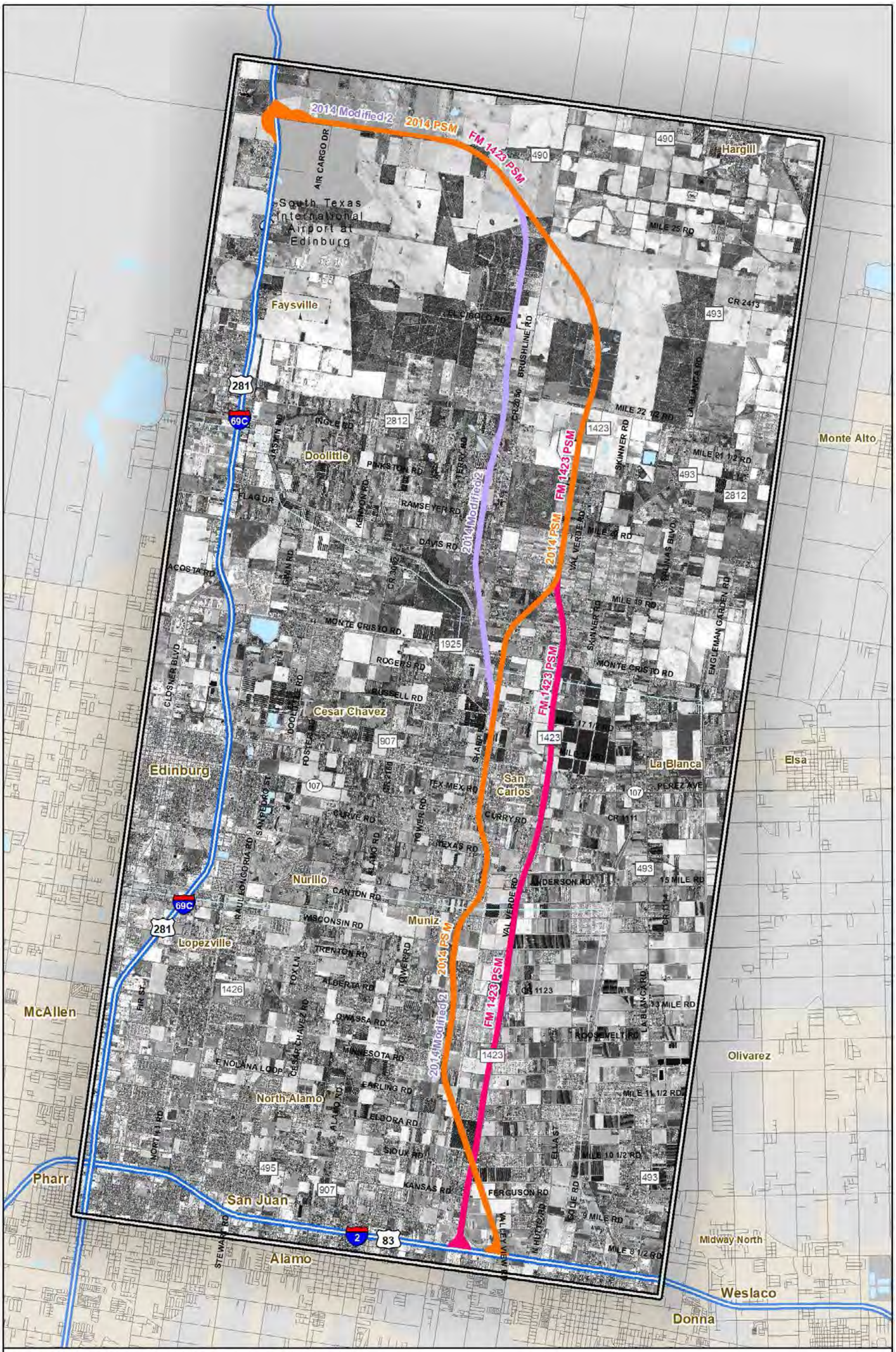


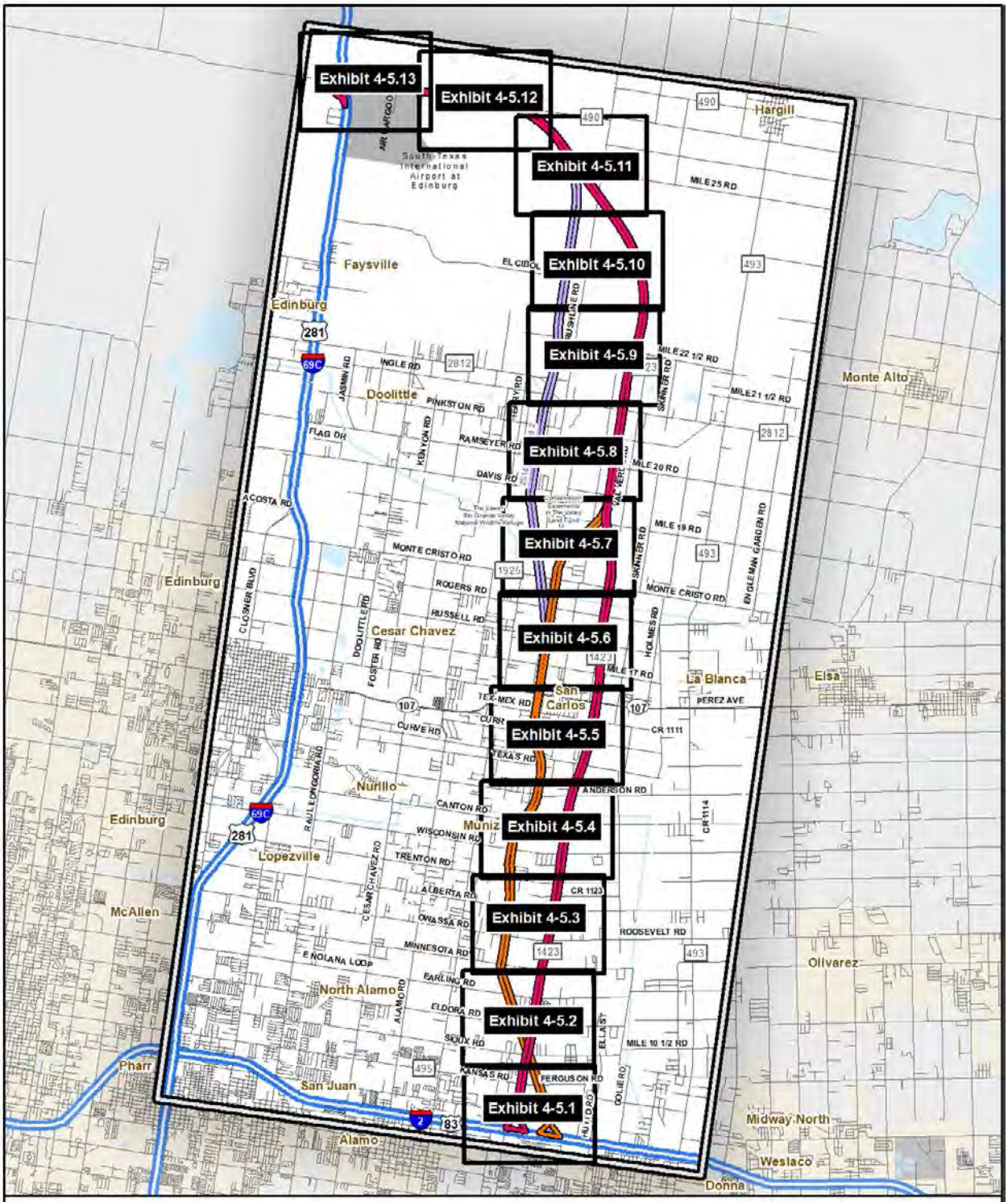
Exhibit 4-1
SH 68 Reasonable Alternatives on County Base Map
SH 68 from I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003


2014 Modified 2
2014 PSM
FM 1423 PSM
South Texas International Airport at Edinburg
Faysville
Hargill
Monte Alto
Doolittle
Cesar Chavez
Edinburg
San Carlos
La Blanca
Elsa
Nurillo
Muniz
Lopezville
McAllen
North Alamo
Olivarez
Pharr
San Juan
Alamo
Midway North
Weslaco
Donna
MILE 25 RD
EL CIBOLO RD
BRUSHLINE RD
CR 2413
MILE 22 1/2 RD
LA BLANCA RD
INGLE RD
PINKSTON RD
MILE 21 1/2 RD
FLAG DR
RAMSEYER RD
DAVIS RD
MILE 20 RD
ACOSTA RD
MILE 19 RD
MONTE CRISTO RD
ROGERS RD
RUSSELL RD
MILE 17 1/2 RD
MILE 17 RD
TEX-MEX RD
PEREZ AVE
CURVE RD
CURRY RD
CR 1111
TEXAS RD
ANDERSON RD
15 MILE RD
CANTON RD
WISCONSIN RD
TRENTON RD
ALBERTA RD
CR 1123
13 MILE RD
OWASSA RD
ROOSEVELT RD
MINNESOTA RD
E NOLANA LOOP
EARLING RD
MILE 11 1/2 RD
ELDORA RD
SIOUX RD
MILE 10 1/2 RD
KANSAS RD
FERGUSON RD
9 MILE RD
MILE 8 1/2 RD
Base Map: 7.5' USGS Topographic, Hidalgo County, Texas ESRI-USA Base Map
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
EIS Study Area
0 0.5 1 2
Miles
Exhibit 4-2
Reasonable Alternatives on
7.5' USGS Topographic
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003


2014 Modified 2
2014 PSM
FM 1423 PSM
South Texas International Airport at Edinburg
Faysville
Hargill
Doolittle
Cesar Chavez
Edinburg
San Carlos
La Blanca
Nurillo
Muniz
Lopezville
McAllen
North Alamo
San Juan
Alamo
Pharr
Monte Alto
Elsa
Olivarez
Midway North
Weslaco
Donna
281
69C
2
83
490
493
907
1925
1423
2812
1426
495
Base Map: NAIP Aerial Imagery, 2016, Hidalgo County, TexasESRI-USA Base Map
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
EIS Study Area
0 0.5 1 2
Miles
Exhibit 4-3
Reasonable Alternatives on Aerial Imagery
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

Layer Name	Description	Raw Source	Source Date
Additional 600 foot Study Corridors	4 additional 600-foot wide study corridors	RJR Engineering	2016
Airports	Location of airports	TNRIS	2014
Alternate Hurricane Evacuation Routes for Rio Grande Valley	Alternative evacuation routes per TxDOT	TxDOT	2017
Canals	USGS NHD, and irrigation and drainage data compiled from RJR.	USGS and RJR Engineering	2016
Cemetery	Hidalgo & Willacy County cemeteries compiled from ESRI, Texascemeteries.org, THC Polygons & desktop analysis	ESRI, Texascemeteries.org and THC	2016
Colonias	Colonias within study area	Office of Attorney General	2016
Commercial Properties	Desktop analysis using 2017 parcel data by Hidalgo County Appraisal District and Texas Imagery Service 2017	Blanton & Associates	2017
Communities	Communities within study area	Office of Attorney General	2017
Community Resources and Public Resources	Health and education as well as churches, parks, and government facilities	ESRI, Halff & Associates and Blanton & Associates	2017
Conservation Easement	Boundary of Valley Land Fund conservation easements (parcels) known as the Martin Refuge and the Hills Subdivision.	Valley Land Fund	2014
Critical Habitat for Threatened and Endangered Species	Federal and State listed and tracked threatened, endangered, and rare species	TxNDD	2017
Croplands/Orchards	Desktop analysis using 2017 parcel data by Hidalgo County Appraisal District and Texas Imagery Service 2017, and land use land cover data developed by project team	Blanton & Associates	2017
Diagrammatic 2014 Mod 2	Layout of mainlanes, bridges, frontage roads, ramps, turnarounds, and right-of way	RJR Engineering	2017
Floodplains	FEMA data for 100-year floodplain	FEMA	2016
Hazardous Material Site	Locations of Biological, chemical, radiological, and or physical item or agent that has the potential to cause harm to the environment compiled by Halff	EDR	2016
Hidalgo County	County boundary	ESRI	2007
Imagery	Aerial imagery 2017	Texas Imagery Service 2017	2017
Imagery	NAIP Aerial Imagery	TNRIS	2016
Land Use/Land Cover	Vegetation and land use	Blanton & Associates	2016
Landfill	Boundary showing areas dedicated to the collection and burial of refuse and solid waste with soil	EDR	2016
Low-income Areas	Boundaries of low-income areas as provided by Halff & Assoc.	US Census Bureau	2010
Minor Highways Presentation Layer	Minor Highways provided by ESRI	ESRI	2014
Minority Areas	Census Black Groups located within the community study area symbolized by minority population above and below 50%	US Census Bureau	2010
National Wetland Inventory Features	USFWS boundaries of national wetland inventory feature		
Nine 350 400 foot Alternatives	9 350-400-foot Alternatives	RJR Engineering	2016
Noise Barriers	Barrier location	Halff & Associates	2016
Noise Receivers	Point data as provided by Halff & Assoc.	Halff & Associates	2016
NRHP-Listed Irrigation District	Boundaries of irrigation districts	Texas Historical Commission's Historic Sites Atlas	2016
NRHP-Listed sites (Non-Irrigation Districts)	Boundary of eligible historic place or district	Texas Historical Commission's Historic Sites Atlas	2016
Oil and Gas Pipelines	Line data for oil and gas pipelines	Railroad Commission	2014
Oil and Gas Wells	Point data for oil and gas wells	Railroad Commission	2014
Original 600-foot Study Corridors	6 600-foot wide study corridors	RJR Engineering	2016
Parcel Data	Desktop analysis using 2017 parcel data by Hidalgo County Appraisal District and Texas Imagery Service 2017	Hidalgo CAD	2017
Parks and Recreational Facilities	Texas City, County, State, & National Parks, Recreational Areas, Preserves & Greenbelts	TNRIS and TxDOT	2016
Place of Worship	Point locations of churches and other places of religious affiliation.	ESRI and Blanton & Associates	2016
Places-Polygon	Municipal boundaries	ESRI	2010
Potential Building Displacements	Potential building, structures to be displaced	Halff & Associates	2017
Potential Historic-age Resources	Structures	HCAD and Blanton & Associates	2016
Previously Recorded Archeological Sites	Boundary and or point from TARL dataset	TARL	2016
Prime Farmlands	Soil descriptions and boundaries	SSURGO	2017
Public Facility	Point locations of libraries, museums, government offices, Fire Department and Police stations taken from ESRI, desktop analysis	ESRI and Blanton & Associates	2016
Rivers	Rivers, streams, ditches, canals as derived from NHD	USGS NHD	2017
Roads	Hidalgo county road layer by Hidalgo County Appraisal District	Hidalgo CAD	2015
SA Critical Issues	Point locations of churches, schools, government offices, museums, fire and police stations, and libraries taken form ESRI, and Desktop analysis	Blanton & Associates	2016
SA Irrigation Districts LRGV	Boundaries showing irrigation districts	HCID2	2011
Schools	Point location of schools and education facilities	TEA and Blanton & Associates	2016
SH68 Neighborhoods 20171024	Impacted neighborhoods	Office of Attorney General	2017
State Antiquities Landmarks (SAL)	Boundaries and or points of recorded archeological site, building, monument, archeological collection, ruin, cultural landscape or other object that is designated or eligible to be designated as a landmark	THC	2016
Structures	Desktop analysis using Texas Imagery Service 2017	Blanton & Associates	2017
Study Area 20150515	Boundary of study area	RJR Engineering	2015
Study Area EA 2014	2014 EA study area	RJR Engineering	2014
Superfund Sites	Federally funded sites containing hazardous materials.		
Texas Hurricane Evacuation Routes	TxDOT Pharr District Hurricane evacuation routes	TxDOT	2017
Three Preferred Alternatives	Reasonable Alternatives	RJR Engineering	2016
Twelves 600 foot Study Corridors	12 600-foot study corridors	RJR Engineering	2016
TxDOT Railroads Q3 2014	Railroad alignments	ESRI	2014
Utility Infrastructure	Desktop analysis using 2017 parcel data by Hidalgo County Appraisal District and Texas Imagery Service 2017	Blanton & Associates	2016
Waterbodies	Lakes, ponds, tanks, reservoirs derived from NHD	USGS NHD	2017
Wildlife Refuge	Boundaries showing USFWS acquired, interest layer, & special designation boundaries	USFWS	2015

Exhibit 4-4 Data Sources



EIS Study Area

2014 Modified 2 Alternative

2014 PSM Alternative

FM 1423 PSM Alternative

0 0.5 1 2
Miles

Exhibit 4-5
Land Use/Land Cover and
Potential Building Displacements Index
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

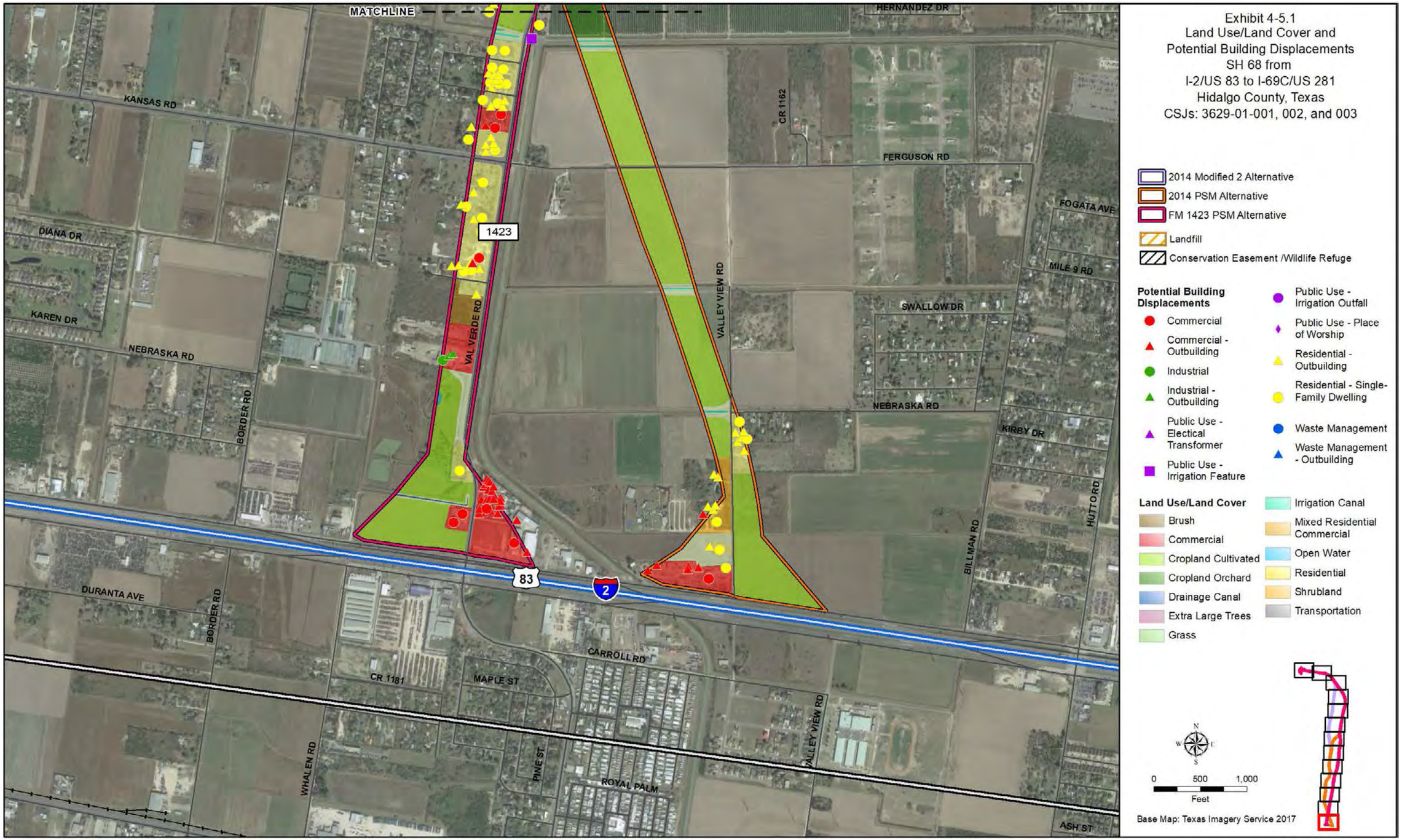


Exhibit 4-5.1
Land Use/Land Cover and
Potential Building Displacements
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Landfill
Conservation Easement /Wildlife Refuge
Potential Building Displacements
Commercial
Commercial - Outbuilding
Industrial
Industrial - Outbuilding
Public Use - Electical Transformer
Public Use - Irrigation Feature
Public Use - Irrigation Outfall
Public Use - Place of Worship
Residential - Outbuilding
Residential - Single-Family Dwelling
Waste Management
Waste Management - Outbuilding
Land Use/Land Cover
Brush
Commercial
Cropland Cultivated
Cropland Orchard
Drainage Canal
Extra Large Trees
Grass
Irrigation Canal
Mixed Residential Commercial
Open Water
Residential
Shrubland
Transportation
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
HERNANDEZ DR
KANSAS RD
CR 1162
FERGUSON RD
FOGATA AVE
MILE 9 RD
DIANA DR
1423
KAREN DR
NEBRASKA RD
VAL VERDE RD
VALLEY VIEW RD
SWALLOW DR
NEBRASKA RD
KIRBY DR
BORDER RD
HUTTO RD
BILLMAN RD
83
2
DURANTA AVE
BORDER RD
CARROLL RD
CR 1181
MAPLE ST
VALLEY VIEW RD
WHALEN RD
PINE ST
ROYAL PALM
ASH ST

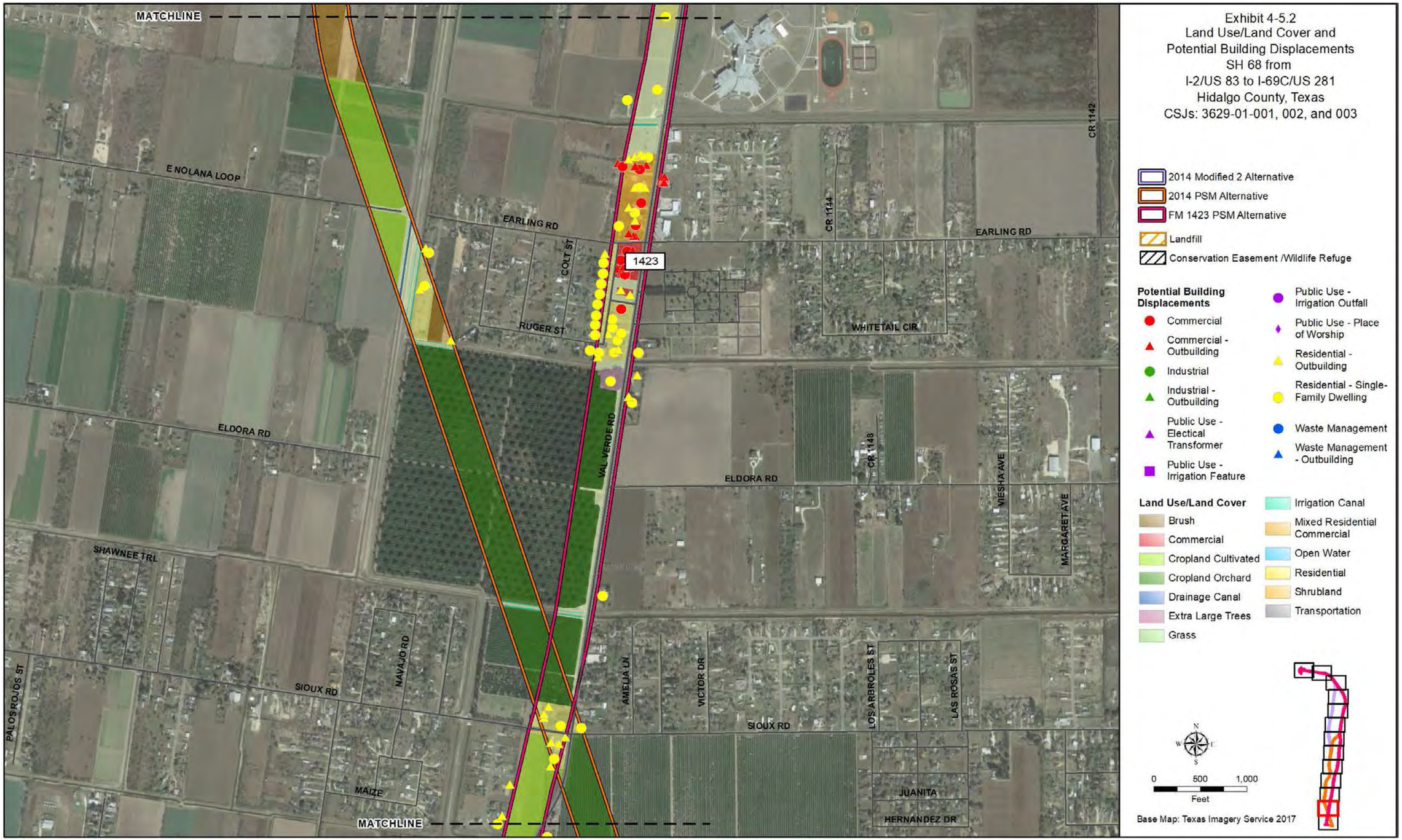
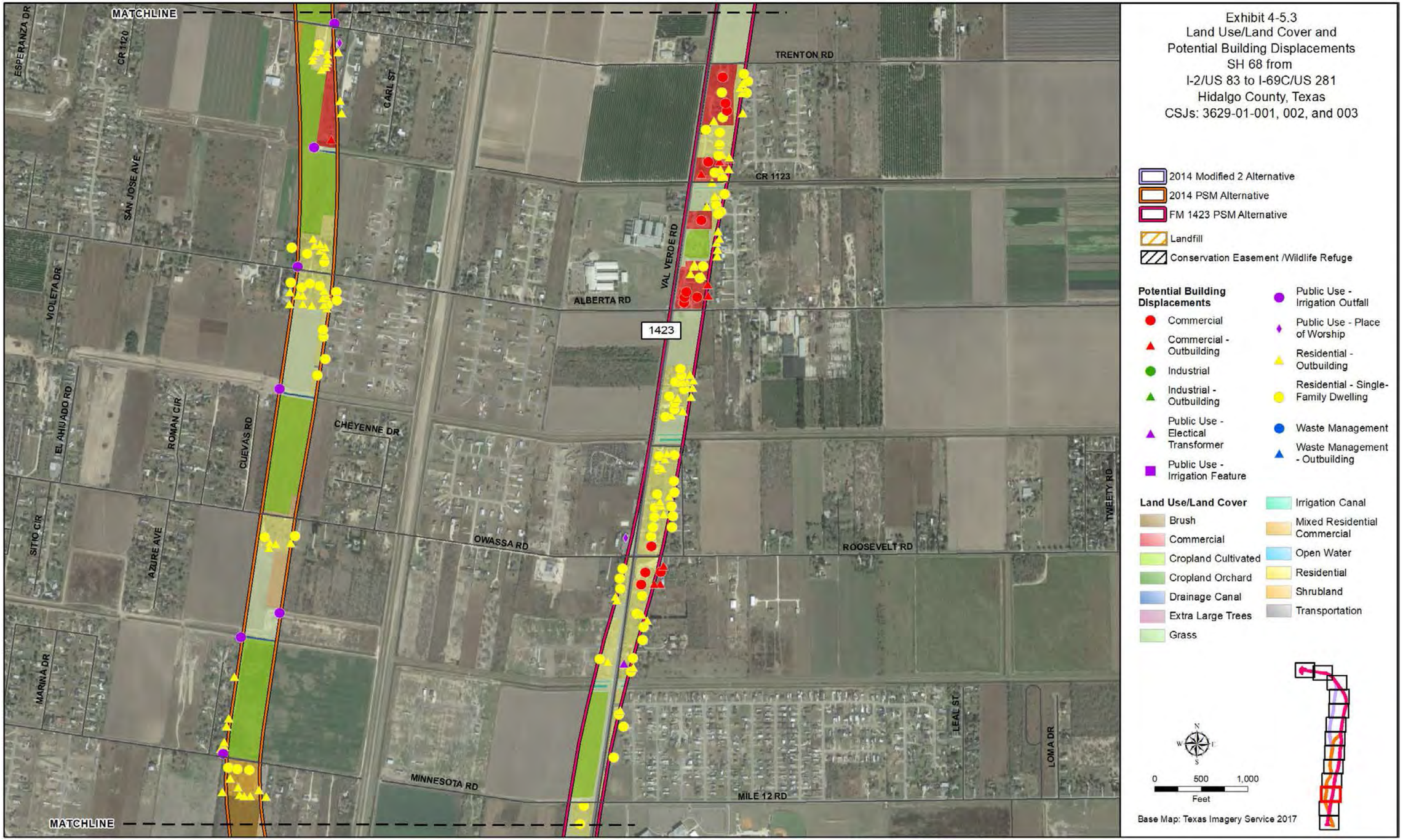


Exhibit 4-5.2
Land Use/Land Cover and
Potential Building Displacements
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Landfill
Conservation Easement /Wildlife Refuge
Potential Building Displacements
Commercial
Commercial - Outbuilding
Industrial
Industrial - Outbuilding
Public Use - Electical Transformer
Public Use - Irrigation Feature
Public Use - Irrigation Outfall
Public Use - Place of Worship
Residential - Outbuilding
Residential - Single-Family Dwelling
Waste Management
Waste Management - Outbuilding
Land Use/Land Cover
Brush
Commercial
Cropland Cultivated
Cropland Orchard
Drainage Canal
Extra Large Trees
Grass
Irrigation Canal
Mixed Residential Commercial
Open Water
Residential
Shrubland
Transportation
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
E NOLANA LOOP
EARLING RD
COLT ST
1423
RUGER ST
CR 1144
CR 1142
WHITETAIL CIR
ELDORA RD
VAL VERDE RD
CR 1148
WESHA AVE
MARGARET AVE
SHAWNEE TRL
PALOS ROJOS ST
SIOUX RD
NAVAJO RD
AMELIA LN
VICTOR DR
LOS ARBOLES ST
LAS ROSAS ST
MAIZE
JUANITA
HERNANDEZ DR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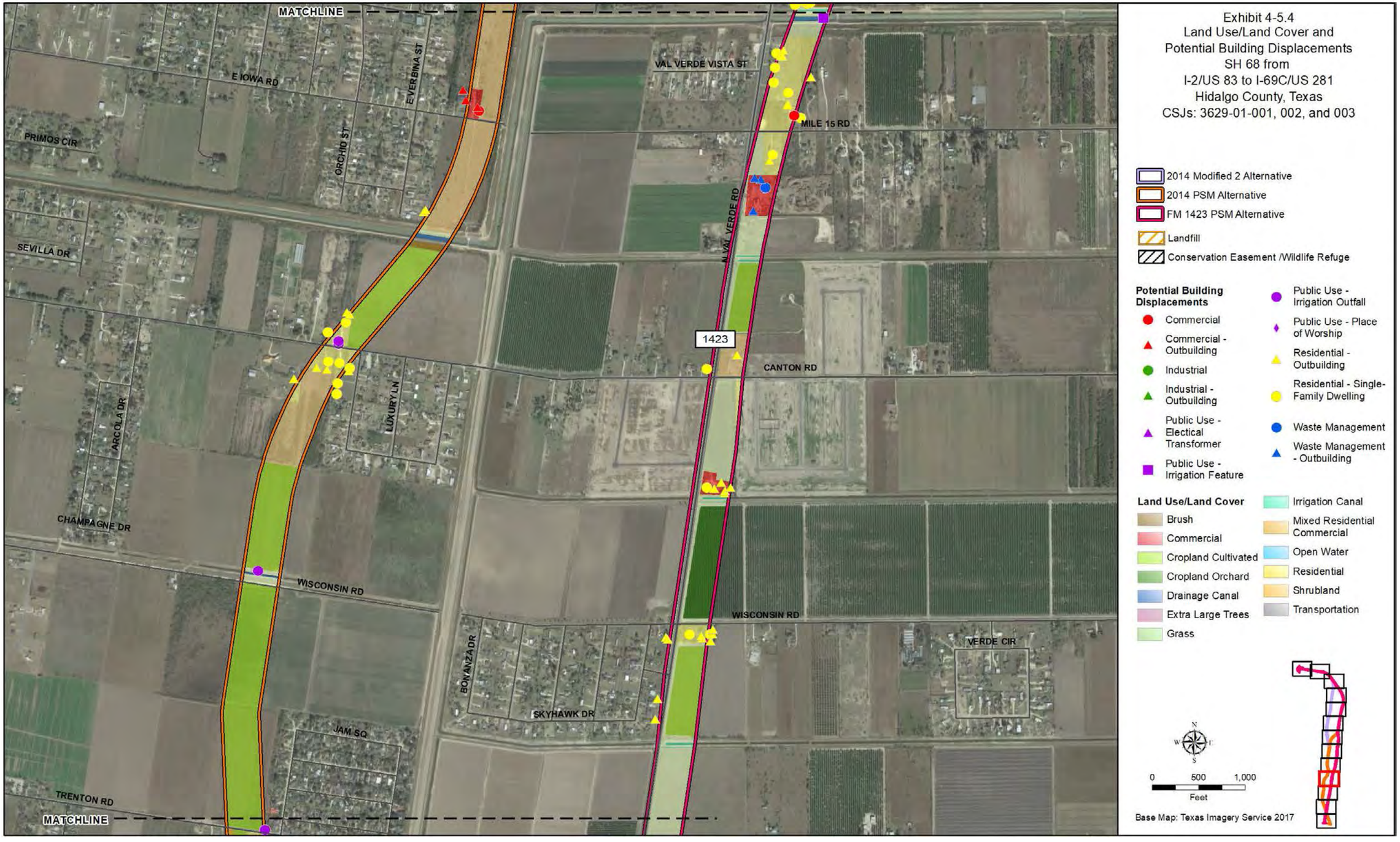
Land Use/Land Cover and
Potential Building Displacements
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Landfill
Conservation Easement /Wildlife Refuge
Potential Building Displacements
Commercial
Commercial - Outbuilding
Industrial
Industrial - Outbuilding
Public Use - Electical Transformer
Public Use - Irrigation Feature
Public Use - Irrigation Outfall
Public Use - Place of Worship
Residential - Outbuilding
Residential - Single-Family Dwelling
Waste Management
Waste Management - Outbuilding
Land Use/Land Cover
Brush
Commercial
Cropland Cultivated
Cropland Orchard
Drainage Canal
Extra Large Trees
Grass
Irrigation Canal
Mixed Residential Commercial
Open Water
Residential
Shrubland
Transportation
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
MATCHLINE
ESPERANZA DR
CR 1120
GARL ST
SAN JOSE AVE
VIOLETA DR
EL AHUADO RD
ROMAN CIR
CUEVAS RD
SITIO CIR
AZURE AVE
MARINA DR
CHEYENNE DR
OWASSA RD
MINNESOTA RD
TRENTON RD
CR 1123
VAL VERDE RD
ALBERTA RD
1423
ROOSEVELT RD
MILE 12 RD
LEAL ST
LOMA DR
TWEETY RD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Land Use/Land Cover and
Potential Building Displacements
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Landfill
Conservation Easement /Wildlife Refuge
Potential Building Displacements
Commercial
Commercial - Outbuilding
Industrial
Industrial - Outbuilding
Public Use - Electical Transformer
Public Use - Irrigation Feature
Public Use - Irrigation Outfall
Public Use - Place of Worship
Residential - Outbuilding
Residential - Single-Family Dwelling
Waste Management
Waste Management - Outbuilding
Land Use/Land Cover
Brush
Commercial
Cropland Cultivated
Cropland Orchard
Drainage Canal
Extra Large Trees
Grass
Irrigation Canal
Mixed Residential Commercial
Open Water
Residential
Shrubland
Transportation
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
E IOWA RD
E VERBINA ST
PRIMOS CIR
ORCHID ST
SEVILLA DR
ARCOLA DR
LUXURY LN
CHAMPAGNE DR
WISCONSIN RD
TRENTON RD
JAM SQ
BONANZA DR
SKYHAWK DR
VAL VERDE VISTA ST
MILE 15 RD
N VAL VERDE RD
1423
CANTON RD
VERDE CIR

Exhibit 4-5.5
Land Use/Land Cover and
Potential Building Displacements
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Landfill
Conservation Easement /Wildlife Refuge
Potential Building Displacements
Commercial
Commercial - Outbuilding
Industrial
Industrial - Outbuilding
Public Use - Electical Transformer
Public Use - Irrigation Feature
Public Use - Irrigation Outfall
Public Use - Place of Worship
Residential - Outbuilding
Residential - Single-Family Dwelling
Waste Management
Waste Management - Outbuilding
Land Use/Land Cover
Brush
Commercial
Cropland Cultivated
Cropland Orchard
Drainage Canal
Extra Large Trees
Grass
Irrigation Canal
Mixed Residential Commercial
Open Water
Residential
Shrubland
Transportation
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
107
1423
MAGNOLIA VILLAGE DR
MAGNOLIA CIR
JO DIN
GARDENIA ST
TEX-MEX RD
CR 1103
SHARP RD
PETIRROJO ST
CURVE RD
SIN TACHA ST
CURRY RD
LA QUINTA LN
TEXAS RD
SPRING ST
VERBENA ST
CR 1108
VAL VERDE RD
VILLAREAL RD
SKINNER RD
DILLON RD
83RD ST
84TH AVE
85TH ST
86TH ST
87TH ST
83 1/2 ST
83RD AVE

Exhibit 4-5.6
Land Use/Land Cover and
Potential Building Displacements
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Landfill
Conservation Easement /Wildlife Refuge
Potential Building Displacements
Commercial
Commercial - Outbuilding
Industrial
Industrial - Outbuilding
Public Use - Electical Transformer
Public Use - Irrigation Feature
Public Use - Irrigation Outfall
Public Use - Place of Worship
Residential - Outbuilding
Residential - Single-Family Dwelling
Waste Management
Waste Management - Outbuilding
Land Use/Land Cover
Brush
Commercial
Cropland Cultivated
Cropland Orchard
Drainage Canal
Extra Large Trees
Grass
Irrigation Canal
Mixed Residential Commercial
Open Water
Residential
Shrubland
Transportation
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
RAMBO RD
ROGERS RD
BANDERA LN
SHARP RD
MILE 17 1/2 RD
83RD ST
EVA AVE
1423
TOWER RD
VAL VERDE RD
SKINNER RD
ESCONDIDO LN
MILE 17 RD
SAN FRANCISO
SAN CARLOS CIR
HUMPHREY AVE
MATCHLINE

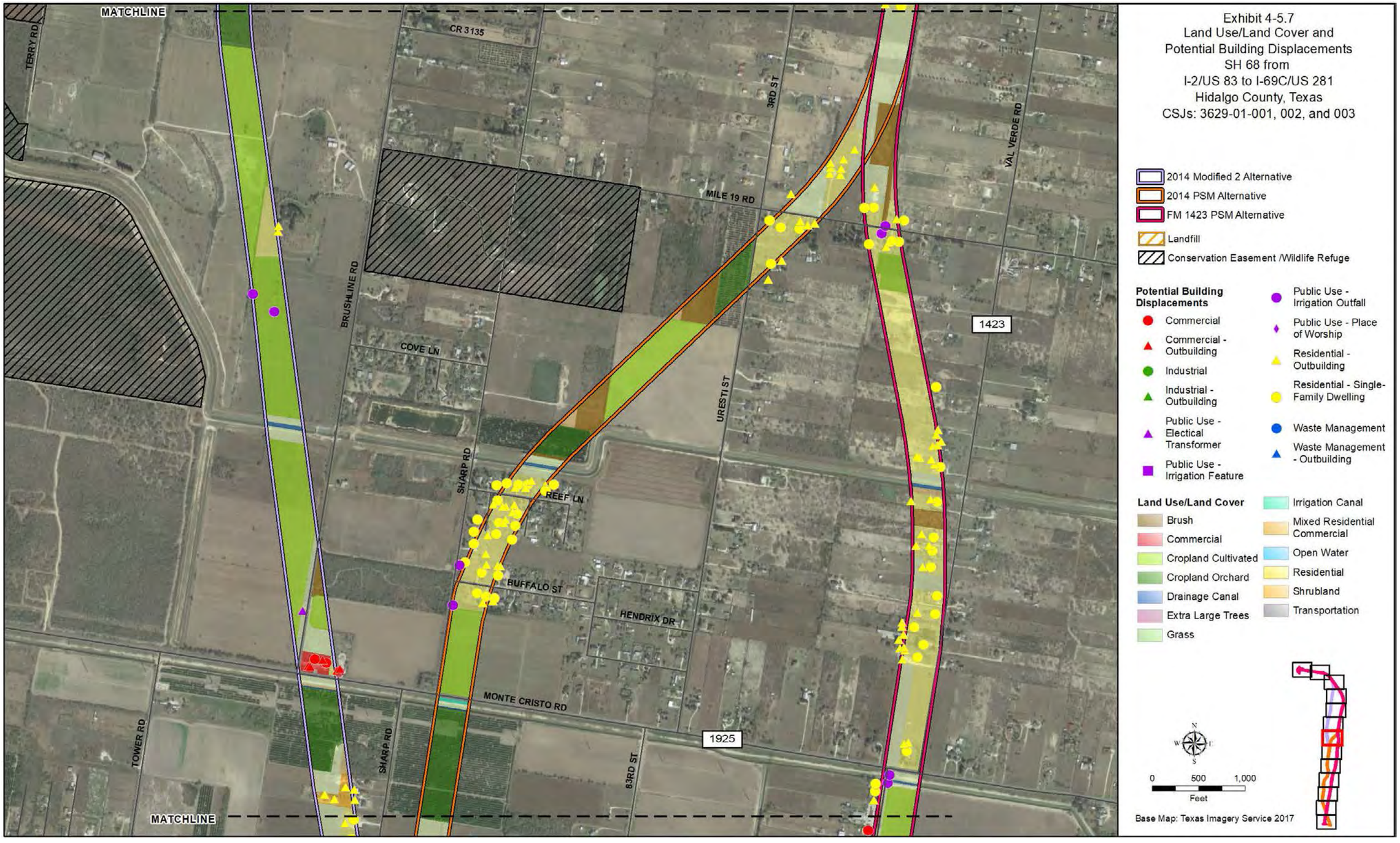


Exhibit 4-5.7
Land Use/Land Cover and
Potential Building Displacements
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Landfill
Conservation Easement /Wildlife Refuge
Potential Building Displacements
Commercial
Commercial - Outbuilding
Industrial
Industrial - Outbuilding
Public Use - Electical Transformer
Public Use - Irrigation Feature
Public Use - Irrigation Outfall
Public Use - Place of Worship
Residential - Outbuilding
Residential - Single-Family Dwelling
Waste Management
Waste Management - Outbuilding
Land Use/Land Cover
Brush
Commercial
Cropland Cultivated
Cropland Orchard
Drainage Canal
Extra Large Trees
Grass
Irrigation Canal
Mixed Residential Commercial
Open Water
Residential
Shrubland
Transportation
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
TERRY RD
CR 3135
3RD ST
VAL VERDE RD
MILE 19 RD
BRUSHLINE RD
COVE LN
1423
URESTI ST
SHARP RD
REEF LN
BUFFALO ST
HENDRIX DR
MONTE CRISTO RD
1925
TOWER RD
83RD ST
MATCHLINE

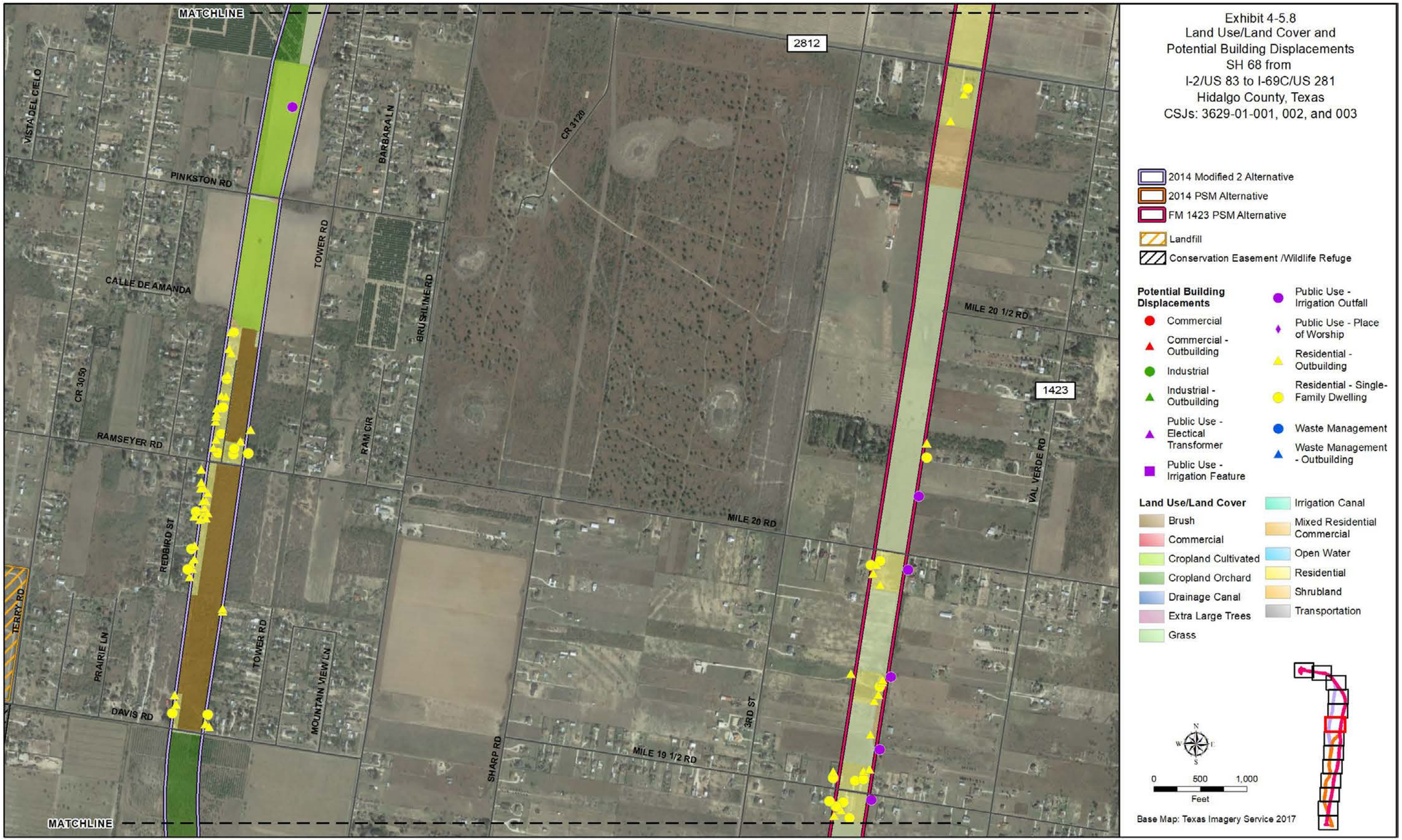


Exhibit 4-5.8
Land Use/Land Cover and
Potential Building Displacements
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Landfill
Conservation Easement /Wildlife Refuge
Potential Building Displacements
Commercial
Commercial - Outbuilding
Industrial
Industrial - Outbuilding
Public Use - Electical Transformer
Public Use - Irrigation Feature
Public Use - Irrigation Outfall
Public Use - Place of Worship
Residential - Outbuilding
Residential - Single-Family Dwelling
Waste Management
Waste Management - Outbuilding
Land Use/Land Cover
Brush
Commercial
Cropland Cultivated
Cropland Orchard
Drainage Canal
Extra Large Trees
Grass
Irrigation Canal
Mixed Residential Commercial
Open Water
Residential
Shrubland
Transportation
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
2812
1423
CR 3120
VISTA DEL CIELO
PINKSTON RD
BARBARA LN
TOWER RD
CALLE DE AMANDA
BRUSHLINE RD
MILE 20 1/2 RD
CR 3050
RAMSEYER RD
RAM CIR
VAL VERDE RD
MILE 20 RD
REDBIRD ST
TERRY RD
PRAIRIE LN
TOWER RD
MOUNTAIN VIEW LN
DAVIS RD
SHARP RD
3RD ST
MILE 19 1/2 RD
MATCHLINE

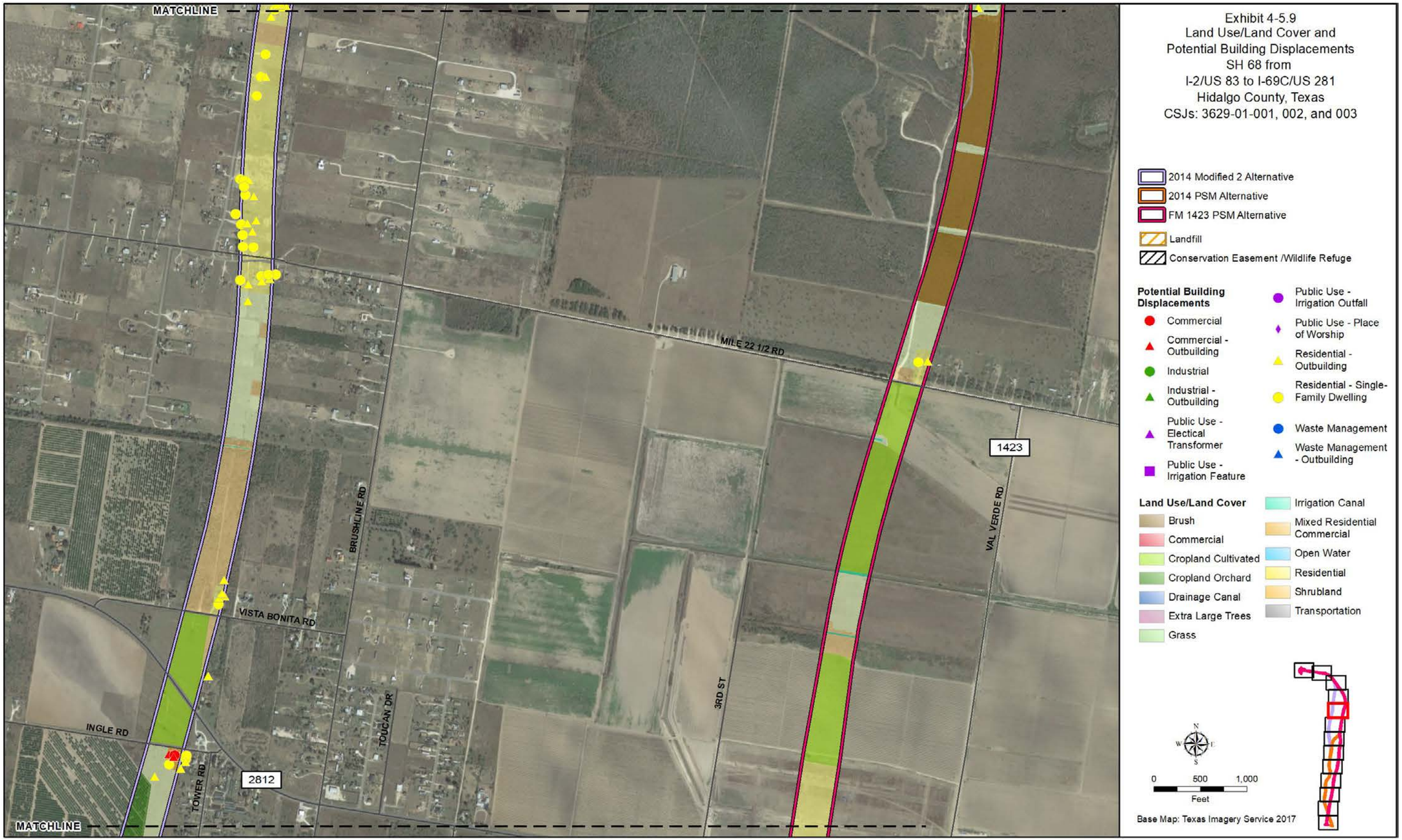


Exhibit 4-5.9
Land Use/Land Cover and
Potential Building Displacements
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Landfill
Conservation Easement /Wildlife Refuge
Potential Building Displacements
Commercial
Commercial - Outbuilding
Industrial
Industrial - Outbuilding
Public Use - Electical Transformer
Public Use - Irrigation Feature
Public Use - Irrigation Outfall
Public Use - Place of Worship
Residential - Outbuilding
Residential - Single-Family Dwelling
Waste Management
Waste Management - Outbuilding
Land Use/Land Cover
Brush
Commercial
Cropland Cultivated
Cropland Orchard
Drainage Canal
Extra Large Trees
Grass
Irrigation Canal
Mixed Residential Commercial
Open Water
Residential
Shrubland
Transportation
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
MILE 22 1/2 RD
1423
VAL VERDE RD
BRUSHLINE RD
VISTA BONITA RD
TOUCAN DR
3RD ST
INGLE RD
TOWER RD
2812
MATCHLINE

MATCHLINE
BRUSHLINE RD
CACTUS FLATS
EL CIBOLO RD
MATCHLINE
Exhibit 4-5.10
Land Use/Land Cover and
Potential Building Displacements
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Landfill
Conservation Easement /Wildlife Refuge
Potential Building Displacements
Commercial
Commercial - Outbuilding
Industrial
Industrial - Outbuilding
Public Use - Electical Transformer
Public Use - Irrigation Feature
Public Use - Irrigation Outfall
Public Use - Place of Worship
Residential - Outbuilding
Residential - Single-Family Dwelling
Waste Management
Waste Management - Outbuilding
Land Use/Land Cover
Brush
Commercial
Cropland Cultivated
Cropland Orchard
Drainage Canal
Extra Large Trees
Grass
Irrigation Canal
Mixed Residential Commercial
Open Water
Residential
Shrubland
Transportation
N
W
E
S
0
500
1,000
Feet
Base Map: Texas Imagery Service 2017

MATCHLINE
490
11TH ST
12TH ST
13TH ST
BRUSHLINE RD
MATCHLINE
Exhibit 4-5.11
Land Use/Land Cover and
Potential Building Displacements
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Landfill
Conservation Easement /Wildlife Refuge
Potential Building Displacements
Commercial
Commercial - Outbuilding
Industrial
Industrial - Outbuilding
Public Use - Electical Transformer
Public Use - Irrigation Feature
Public Use - Irrigation Outfall
Public Use - Place of Worship
Residential - Outbuilding
Residential - Single-Family Dwelling
Waste Management
Waste Management - Outbuilding
Land Use/Land Cover
Brush
Commercial
Cropland Cultivated
Cropland Orchard
Drainage Canal
Extra Large Trees
Grass
Irrigation Canal
Mixed Residential Commercial
Open Water
Residential
Shrubland
Transportation
N
W
E
S
0
500
1,000
Feet
Base Map: Texas Imagery Service 2017

Exhibit 4-5.12
Land Use/Land Cover and
Potential Building Displacements
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Landfill
Conservation Easement /Wildlife Refuge
Potential Building Displacements
Commercial
Commercial - Outbuilding
Industrial
Industrial - Outbuilding
Public Use - Electical Transformer
Public Use - Irrigation Feature
Public Use - Irrigation Outfall
Public Use - Place of Worship
Residential - Outbuilding
Residential - Single-Family Dwelling
Waste Management
Waste Management - Outbuilding
Land Use/Land Cover
Brush
Commercial
Cropland Cultivated
Cropland Orchard
Drainage Canal
Extra Large Trees
Grass
Irrigation Canal
Mixed Residential Commercial
Open Water
Residential
Shrubland
Transportation
490
MATCHLINE
MATCHLINE
N
W
E
S
0
500
1,000
Feet
Base Map: Texas Imagery Service 2017

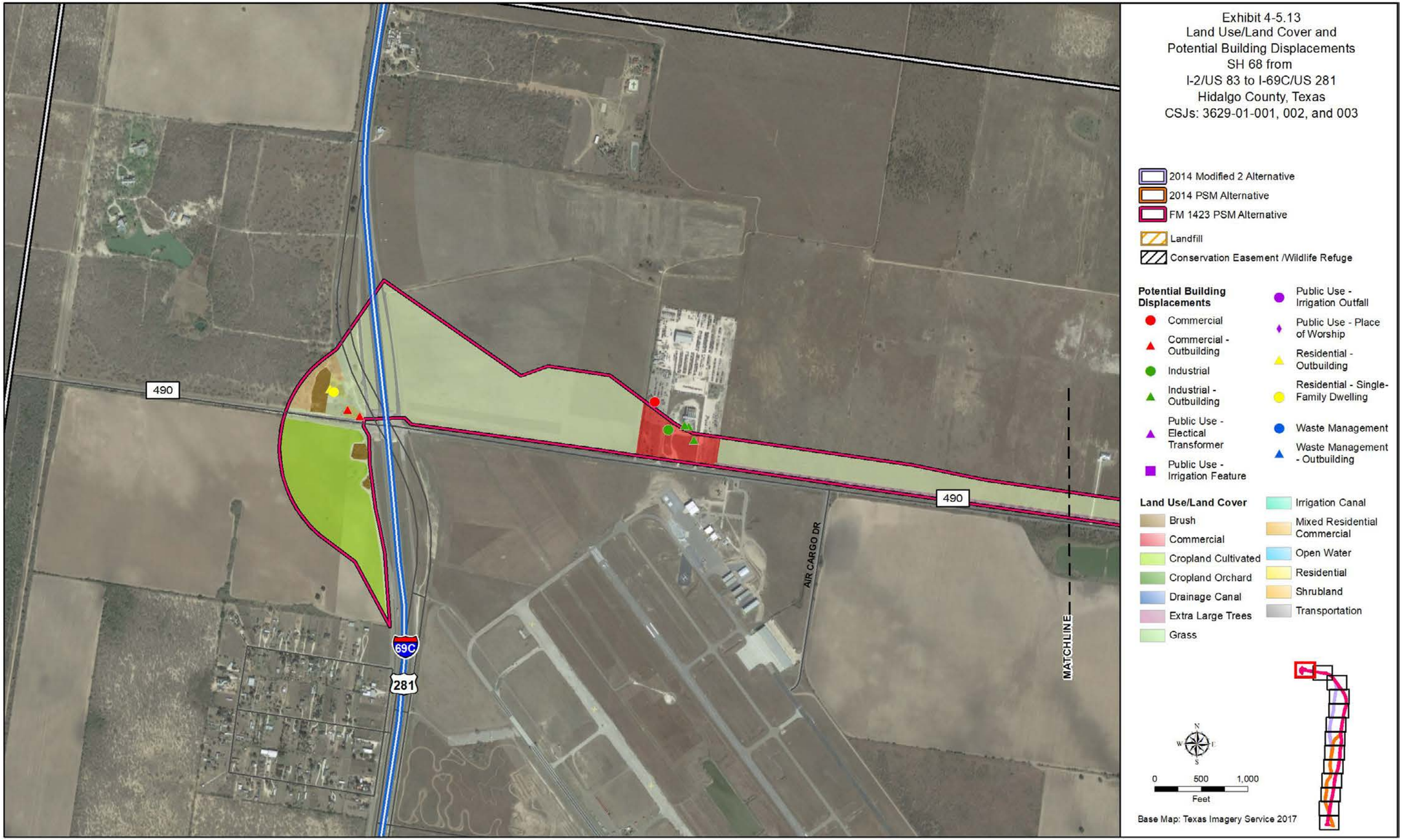


Exhibit 4-5.13
Land Use/Land Cover and
Potential Building Displacements
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Landfill
Conservation Easement /Wildlife Refuge
Potential Building Displacements
Commercial
Commercial - Outbuilding
Industrial
Industrial - Outbuilding
Public Use - Electical Transformer
Public Use - Irrigation Feature
Public Use - Irrigation Outfall
Public Use - Place of Worship
Residential - Outbuilding
Residential - Single-Family Dwelling
Waste Management
Waste Management - Outbuilding
Land Use/Land Cover
Brush
Commercial
Cropland Cultivated
Cropland Orchard
Drainage Canal
Extra Large Trees
Grass
Irrigation Canal
Mixed Residential Commercial
Open Water
Residential
Shrubland
Transportation
490
490
69C
281
AIR CARGO DR
MATCHLINE
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017

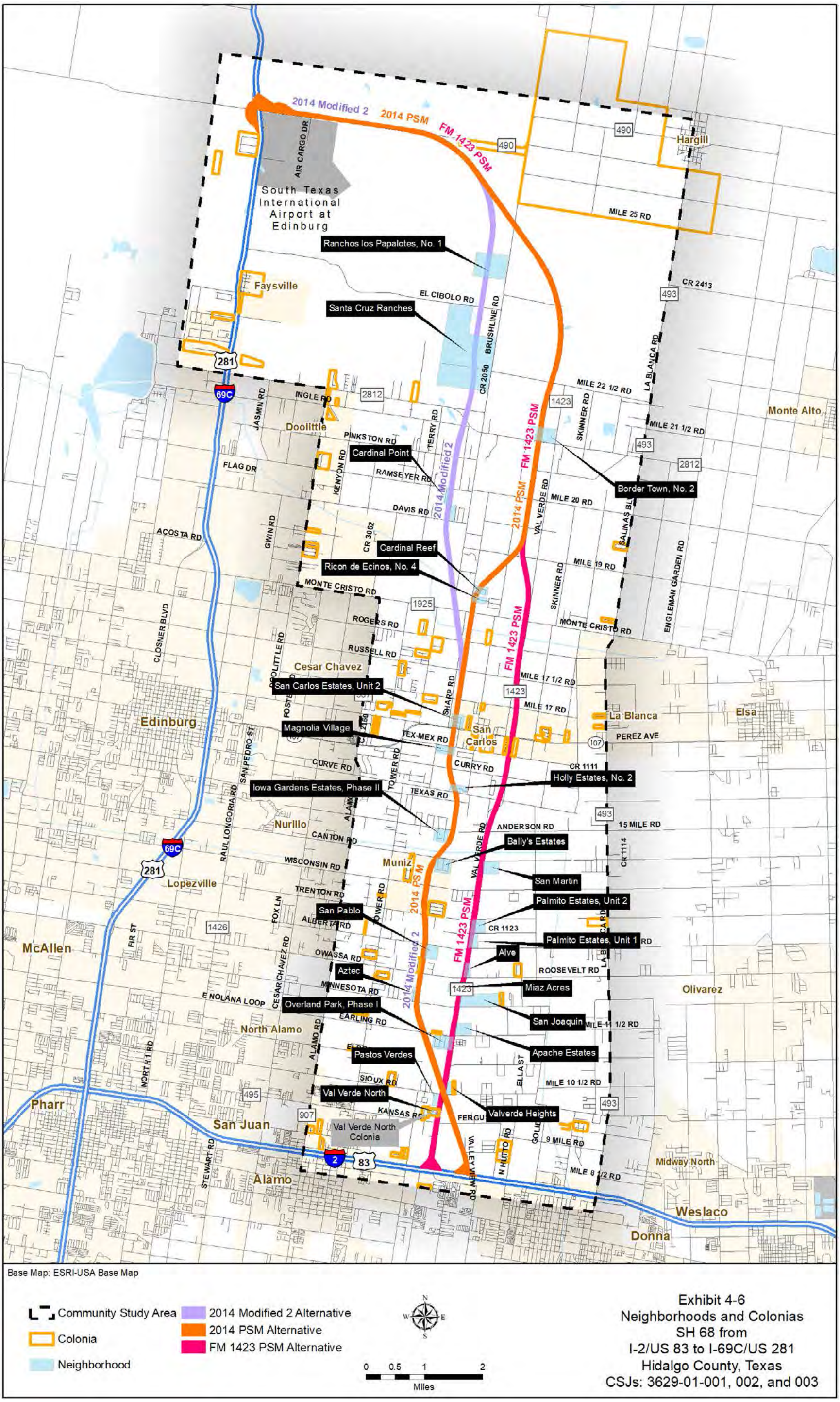


Exhibit 4-6
Neighborhoods and Colonias
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

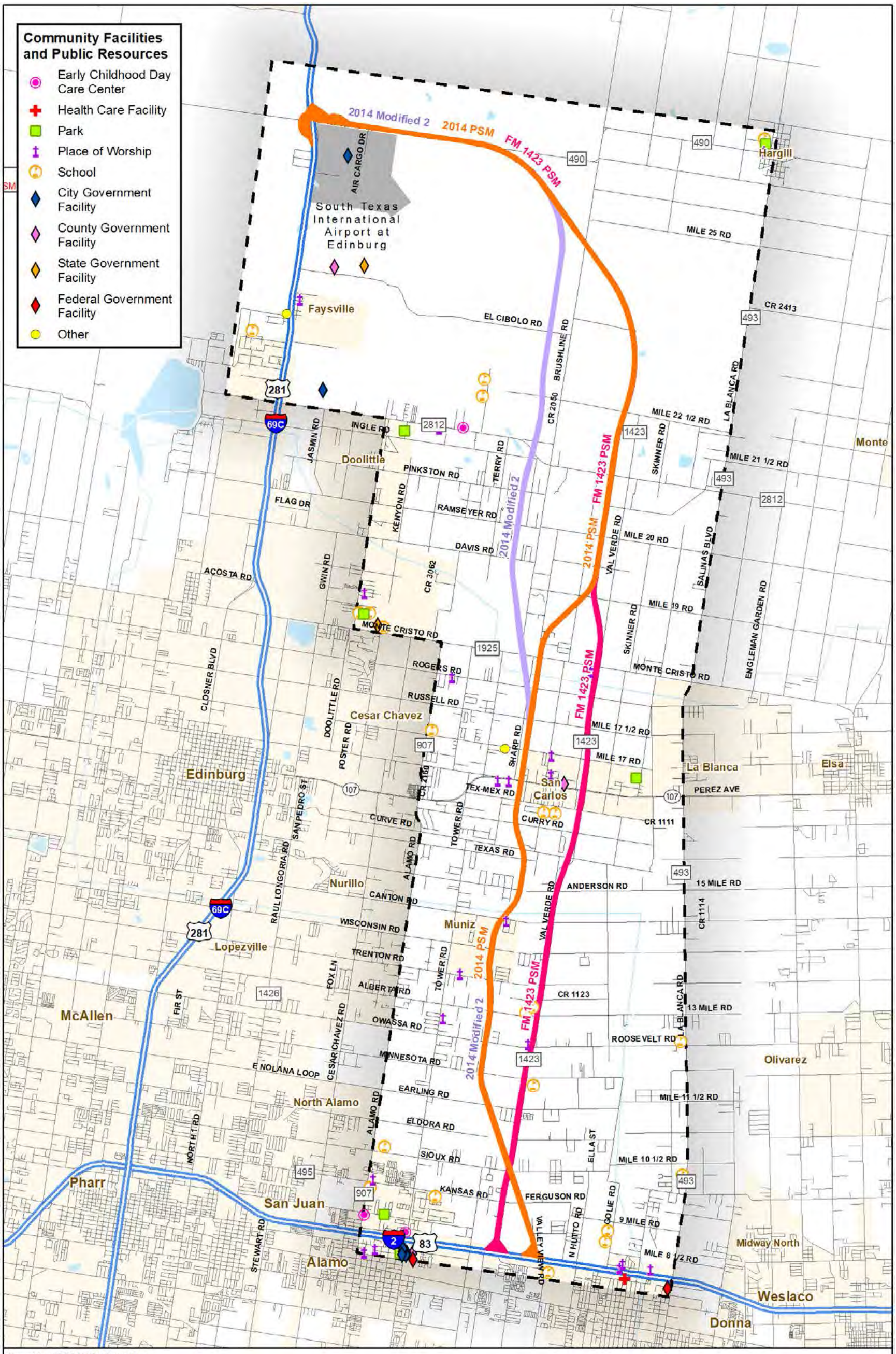


Exhibit 4-7
Community Facilities and Public Resources
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

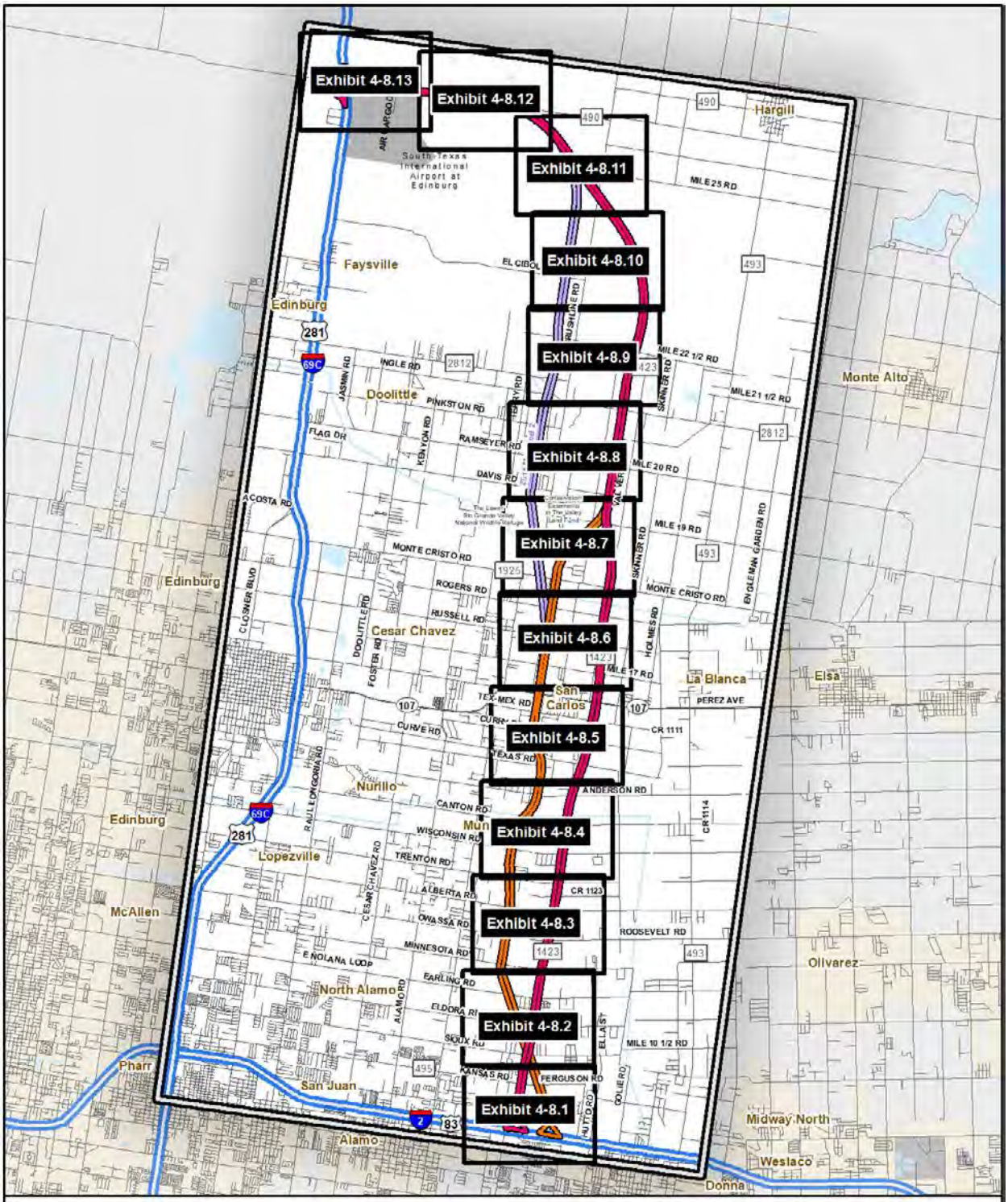


Exhibit 4-8
Historic Area of Potential Effect Index
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

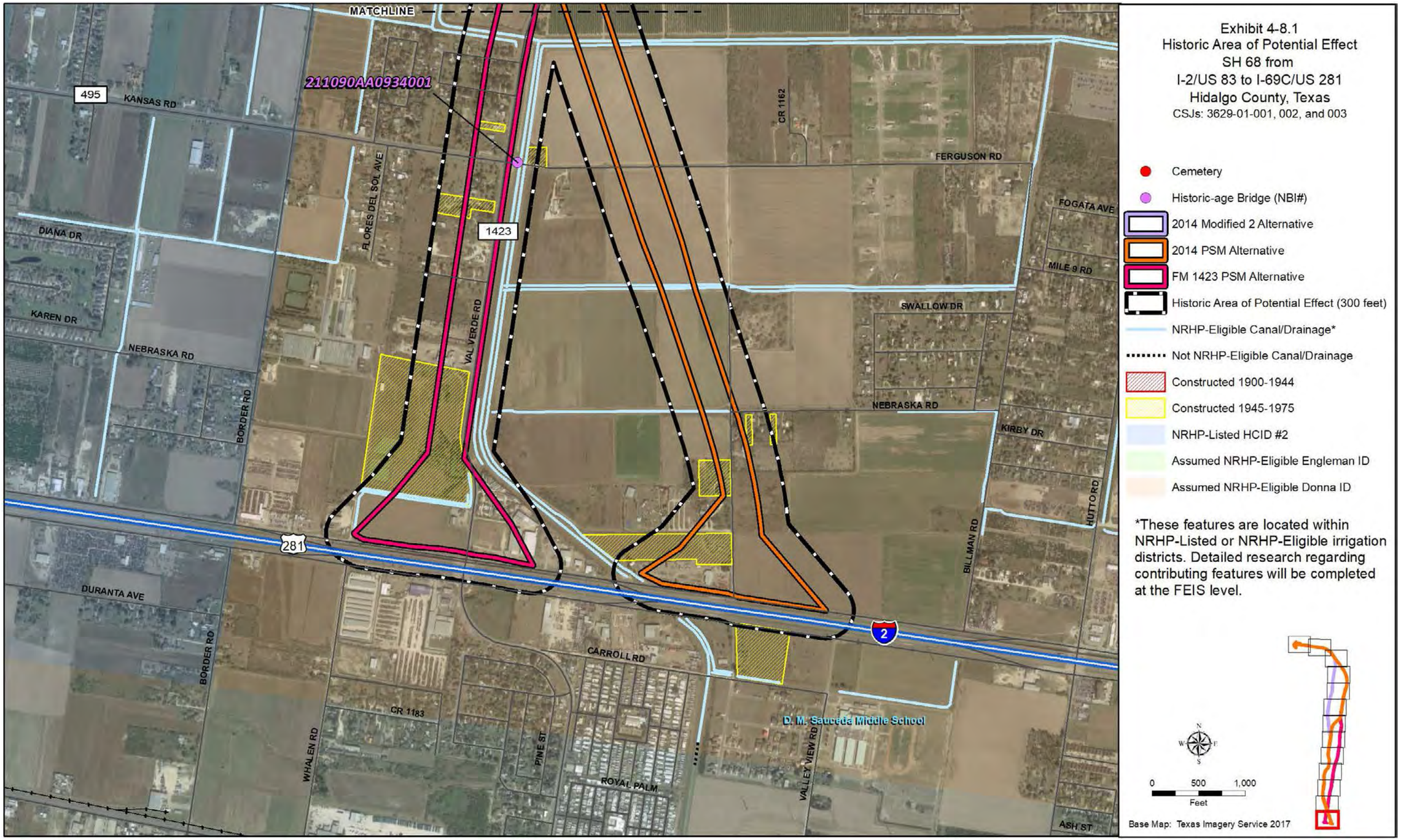


Exhibit 4-8.1
Historic Area of Potential Effect
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Cemetery
Historic-age Bridge (NBI#)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Historic Area of Potential Effect (300 feet)
NRHP-Eligible Canal/Drainage*
Not NRHP-Eligible Canal/Drainage
Constructed 1900-1944
Constructed 1945-1975
NRHP-Listed HCID #2
Assumed NRHP-Eligible Engleman ID
Assumed NRHP-Eligible Donna ID
*These features are located within NRHP-Listed or NRHP-Eligible irrigation districts. Detailed research regarding contributing features will be completed at the FEIS level.
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
211090AA0934001
495
KANSAS RD
DIANA DR
KAREN DR
NEBRASKA RD
BORDER RD
FLORES DEL SOL AVE
1423
VAL VERDE RD
CR 1162
FERGUSON RD
FOGATA AVE
MILE 9 RD
SWALLOW DR
NEBRASKA RD
KIRBY DR
HUTTO RD
BILLMAN RD
281
2
DURANTA AVE
BORDER RD
CARROLL RD
CR 1183
WHALEN RD
PINE ST
ROYAL PALM
D. M. Saucedá Middle School
VALLEY VIEW RD
ASH ST

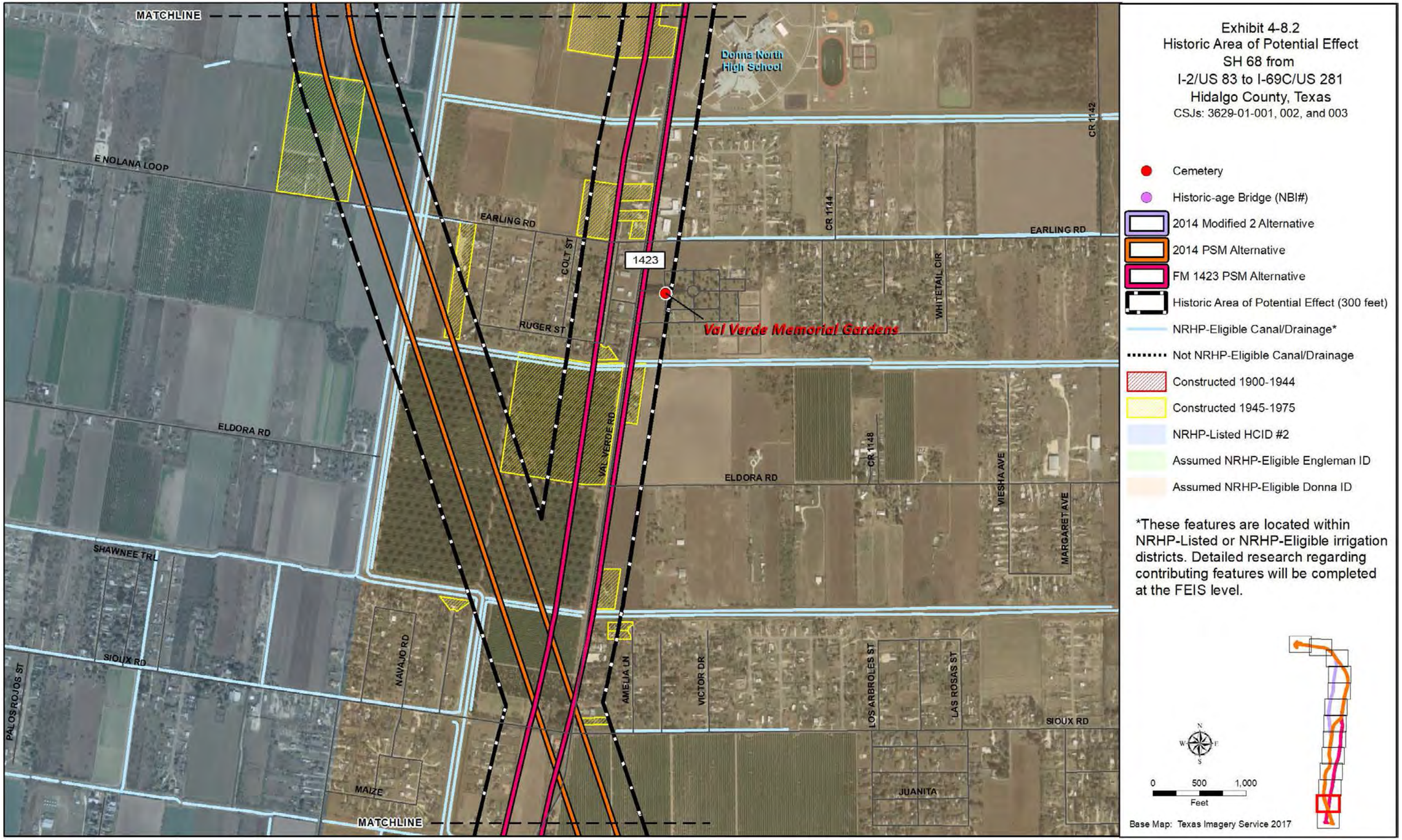


Exhibit 4-8.2
Historic Area of Potential Effect
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Cemetery
Historic-age Bridge (NBI#)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Historic Area of Potential Effect (300 feet)
NRHP-Eligible Canal/Drainage*
Not NRHP-Eligible Canal/Drainage
Constructed 1900-1944
Constructed 1945-1975
NRHP-Listed HCID #2
Assumed NRHP-Eligible Engleman ID
Assumed NRHP-Eligible Donna ID
*These features are located within NRHP-Listed or NRHP-Eligible irrigation districts. Detailed research regarding contributing features will be completed at the FEIS level.
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
Donna North High School
E NOLANA LOOP
EARLING RD
COLT ST
RUGER ST
1423
Val Verde Memorial Gardens
CR 1144
CR 1142
WHITETAIL CIR
VAL VERDE RD
ELDORA RD
CR 1148
VIESHA AVE
MARGARET AVE
SHAWNEE TRL
SIOUX RD
PALOS ROJOS ST
NAVAJO RD
AMELIA LN
VICTOR DR
LOS ARBOLES ST
LAS ROSAS ST
MAIZE
JUANITA

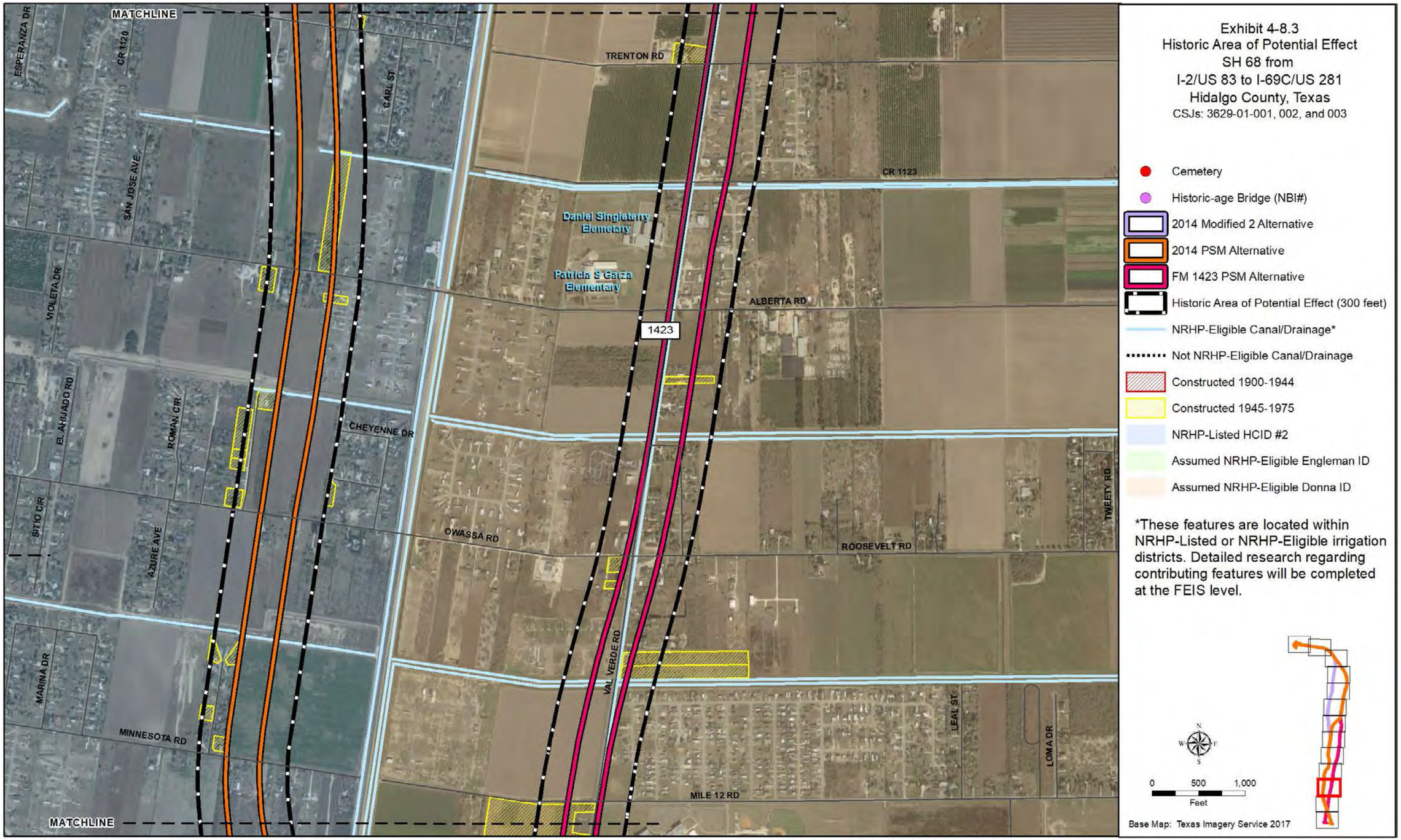


Exhibit 4-8.3
Historic Area of Potential Effect
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Cemetery
Historic-age Bridge (NBI#)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Historic Area of Potential Effect (300 feet)
NRHP-Eligible Canal/Drainage*
Not NRHP-Eligible Canal/Drainage
Constructed 1900-1944
Constructed 1945-1975
NRHP-Listed HCID #2
Assumed NRHP-Eligible Engleman ID
Assumed NRHP-Eligible Donna ID
*These features are located within NRHP-Listed or NRHP-Eligible irrigation districts. Detailed research regarding contributing features will be completed at the FEIS level.
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
MATCHLINE
TRENTON RD
CR 1123
ALBERTA RD
1423
OWASSA RD
ROOSEVELT RD
MILE 12 RD
MINNESOTA RD
VAL VERDE RD
CHEYENNE DR
GARL ST
ESPERANZA DR
CR 1120
SAN JOSE AVE
VIOLETA DR
EL AHUADO RD
ROMAN CIR
SITIO CIR
AZURE AVE
MARINA DR
LEAL ST
LOMA DR
TWEETY RD
Daniel Singleterry Elemetary
Patricia S Garza Elementary

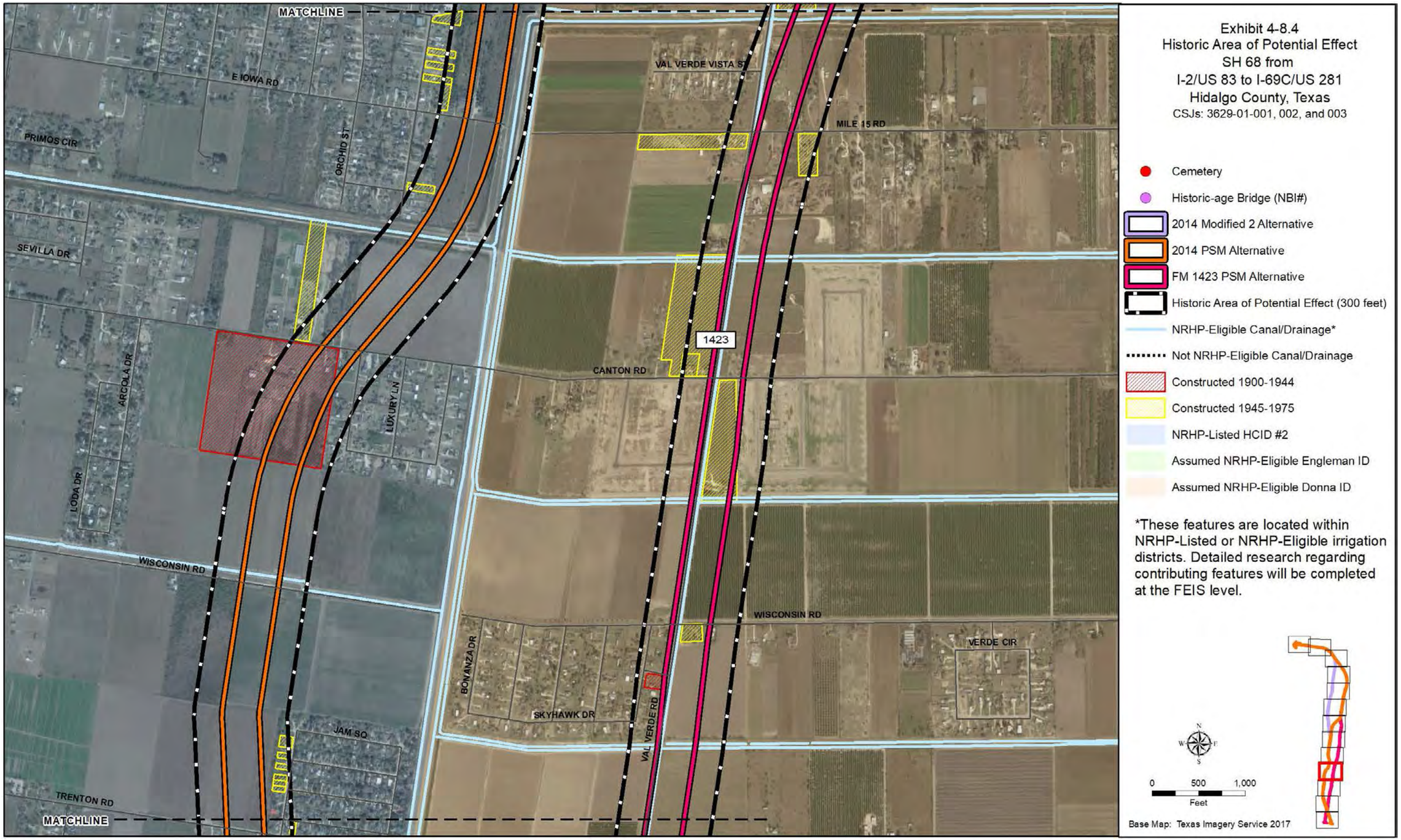


Exhibit 4-8.4
Historic Area of Potential Effect
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Cemetery
Historic-age Bridge (NBI#)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Historic Area of Potential Effect (300 feet)
NRHP-Eligible Canal/Drainage*
Not NRHP-Eligible Canal/Drainage
Constructed 1900-1944
Constructed 1945-1975
NRHP-Listed HCID #2
Assumed NRHP-Eligible Engleman ID
Assumed NRHP-Eligible Donna ID
*These features are located within NRHP-Listed or NRHP-Eligible irrigation districts. Detailed research regarding contributing features will be completed at the FEIS level.
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
E IOWA RD
PRIMOS CIR
ORCHID ST
SEVILLA DR
ARCOLA DR
LUXURY LN
LODA DR
WISCONSIN RD
TRENTON RD
JAM SQ
VAL VERDE VISTA ST
MILE 15 RD
1423
CANTON RD
BONANZA DR
SKYHAWK DR
VAL VERDE RD
VERDE CIR

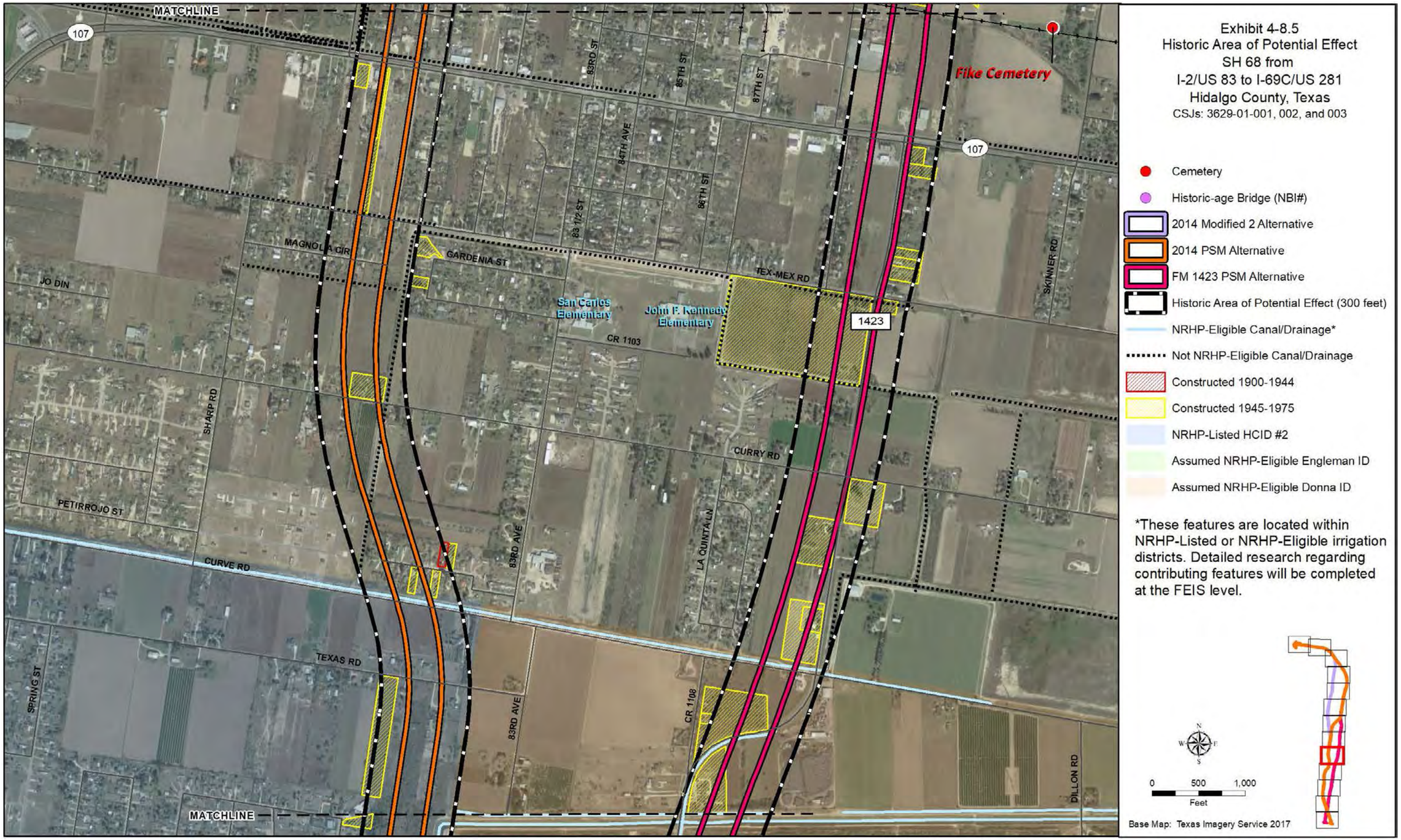


Exhibit 4-8.5
Historic Area of Potential Effect
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Cemetery
Historic-age Bridge (NBI#)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Historic Area of Potential Effect (300 feet)
NRHP-Eligible Canal/Drainage*
Not NRHP-Eligible Canal/Drainage
Constructed 1900-1944
Constructed 1945-1975
NRHP-Listed HCID #2
Assumed NRHP-Eligible Engleman ID
Assumed NRHP-Eligible Donna ID
*These features are located within NRHP-Listed or NRHP-Eligible irrigation districts. Detailed research regarding contributing features will be completed at the FEIS level.
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
107
Fike Cemetery
93RD ST
85TH ST
87TH ST
84TH AVE
86TH ST
83 1/2 ST
MAGNOLIA CIR
GARDENIA ST
JO DIN
TEX-MEX RD
SKINNER RD
San Carlos Elementary
John F. Kennedy Elementary
CR 1103
1423
SHARP RD
CURRY RD
PETIRROJO ST
CURVE RD
83RD AVE
LA QUINTA LN
TEXAS RD
SPRING ST
CR 1108
DILLON RD

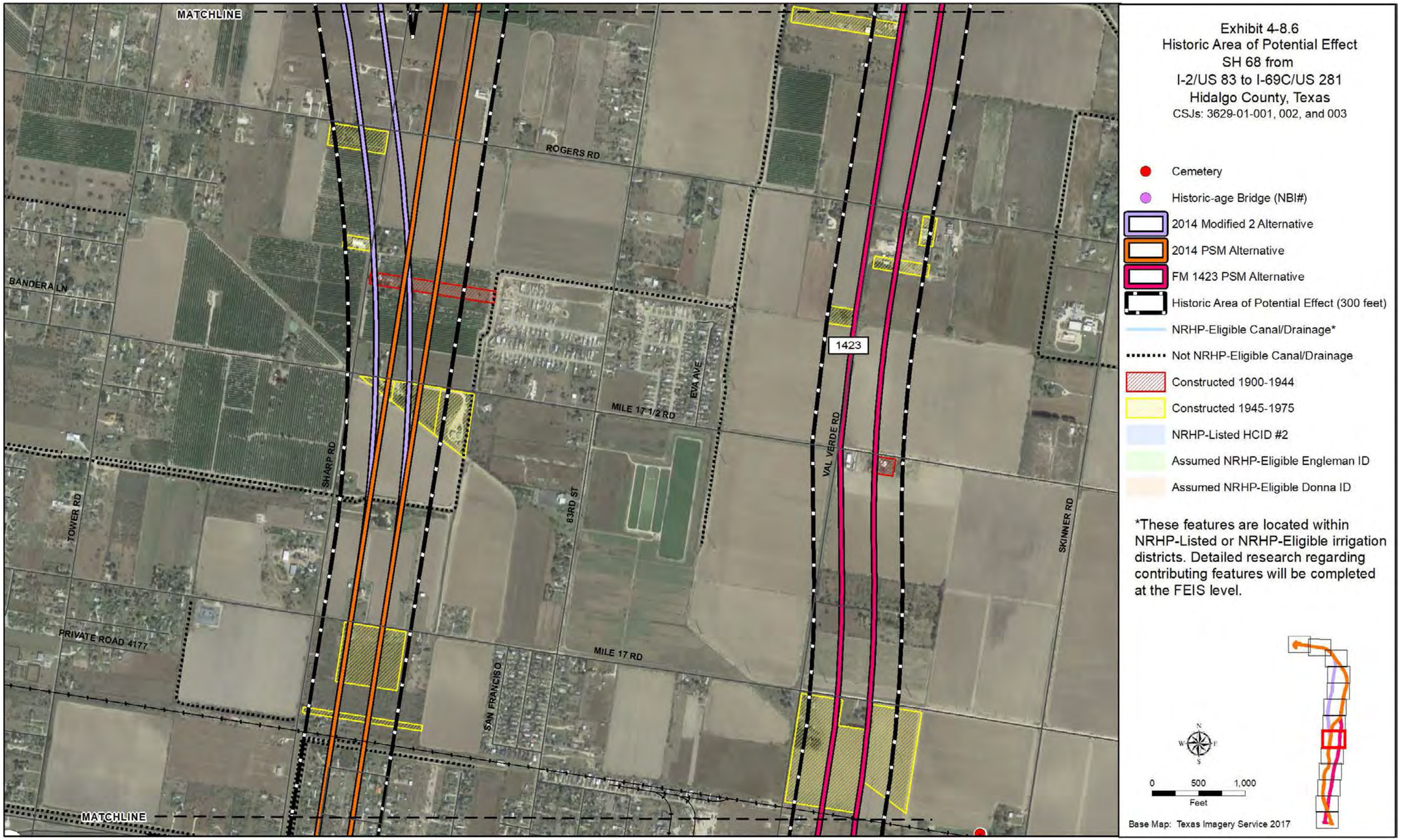


Exhibit 4-8.6
Historic Area of Potential Effect
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Cemetery
Historic-age Bridge (NBI#)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Historic Area of Potential Effect (300 feet)
NRHP-Eligible Canal/Drainage*
Not NRHP-Eligible Canal/Drainage
Constructed 1900-1944
Constructed 1945-1975
NRHP-Listed HCID #2
Assumed NRHP-Eligible Engleman ID
Assumed NRHP-Eligible Donna ID
*These features are located within NRHP-Listed or NRHP-Eligible irrigation districts. Detailed research regarding contributing features will be completed at the FEIS level.
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
ROGERS RD
BANDERA LN
1423
MILE 17 1/2 RD
EVA AVE
VAL VERDE RD
SHARP RD
83RD ST
TOWER RD
SKINNER RD
PRIVATE ROAD 4177
MILE 17 RD
SAN FRANCISO
MATCHLINE

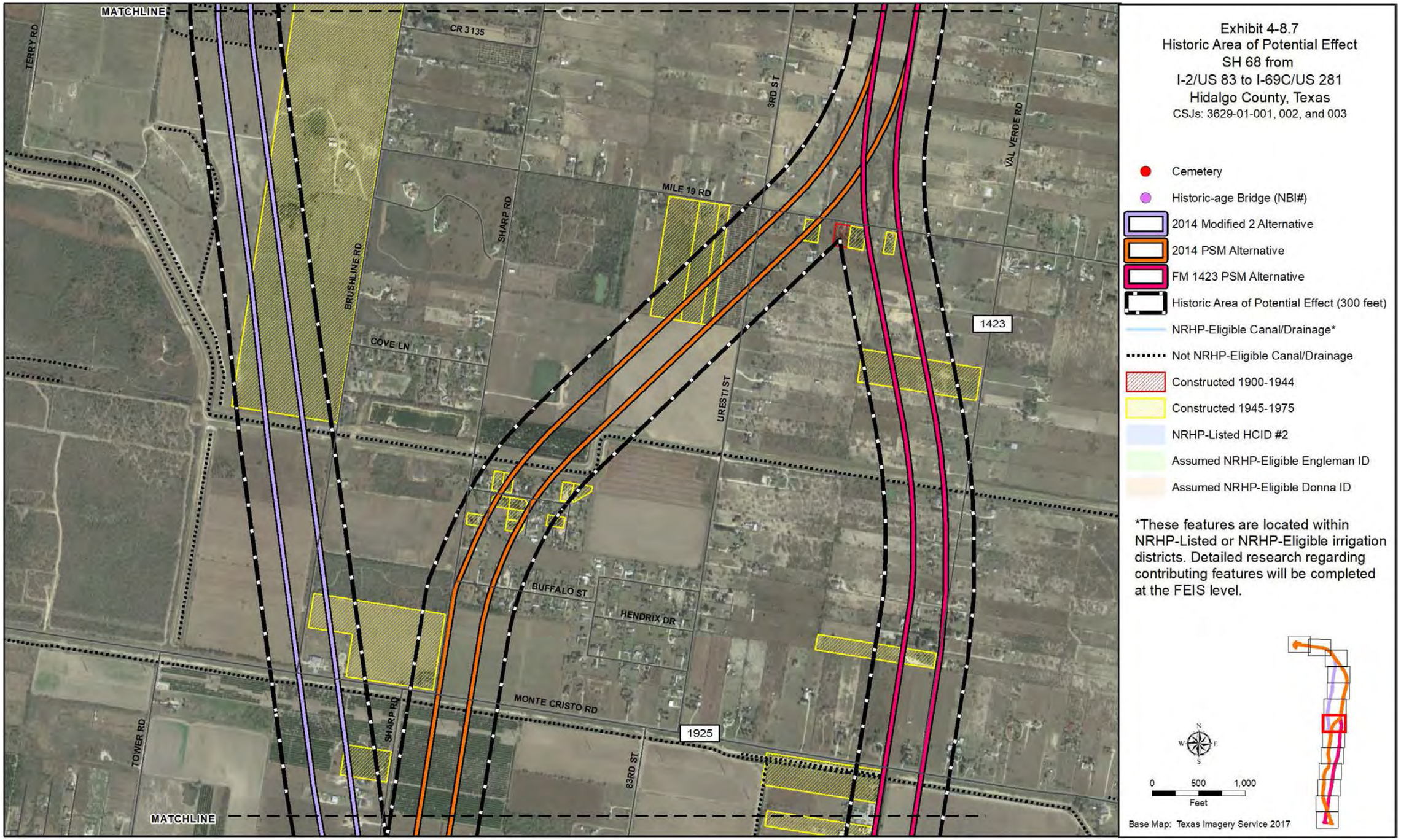


Exhibit 4-8.7
Historic Area of Potential Effect
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Cemetery
Historic-age Bridge (NBI#)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Historic Area of Potential Effect (300 feet)
NRHP-Eligible Canal/Drainage*
Not NRHP-Eligible Canal/Drainage
Constructed 1900-1944
Constructed 1945-1975
NRHP-Listed HCID #2
Assumed NRHP-Eligible Engleman ID
Assumed NRHP-Eligible Donna ID
*These features are located within NRHP-Listed or NRHP-Eligible irrigation districts. Detailed research regarding contributing features will be completed at the FEIS level.
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
TERRY RD
CR 3135
3RD ST
VAL VERDE RD
MILE 19 RD
SHARP RD
BRUSHLINE RD
COVE LN
1423
URESTI ST
BUFFALO ST
HENDRIX DR
MONTE CRISTO RD
1925
TOWER RD
83RD ST
MATCHLINE

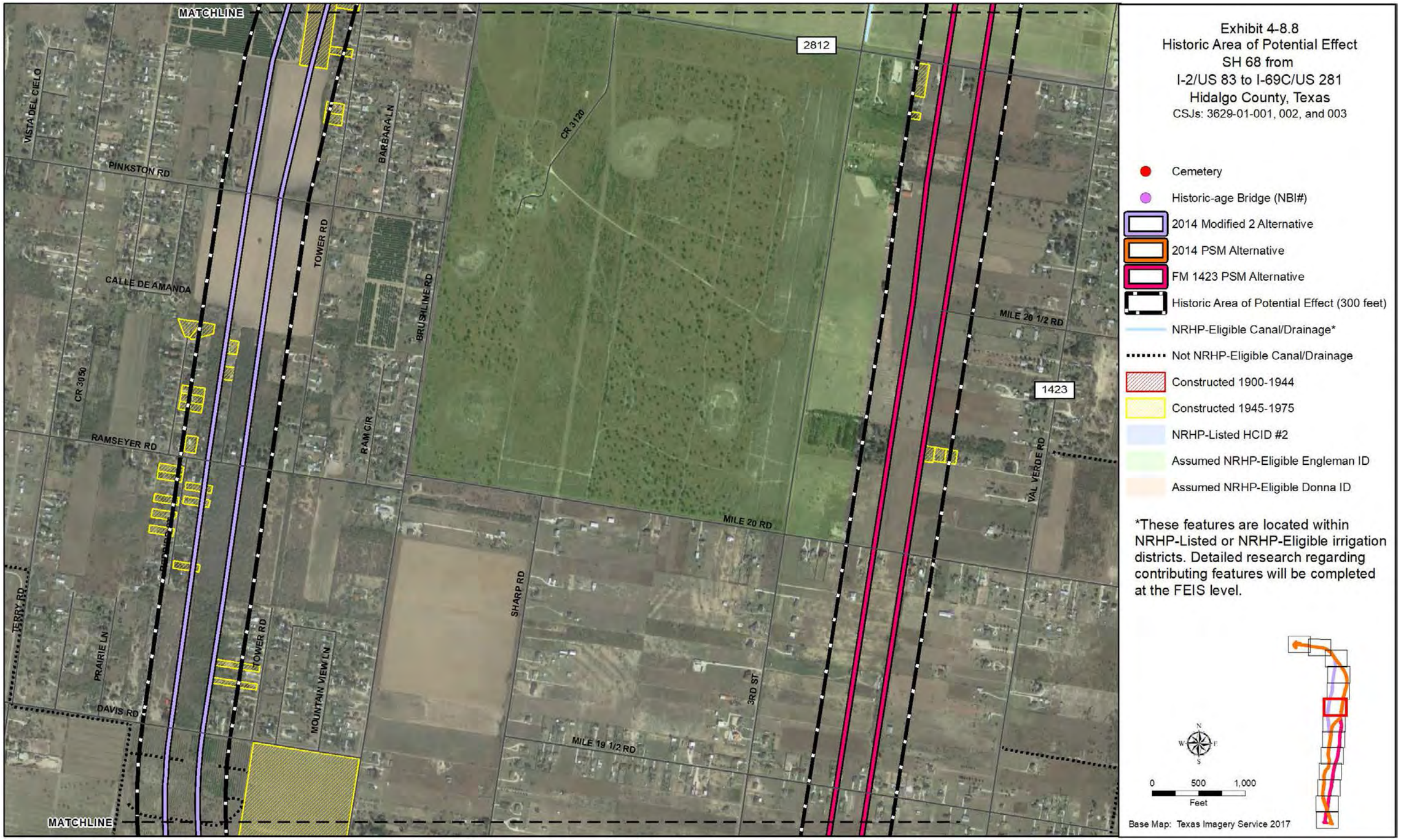


Exhibit 4-8.8
Historic Area of Potential Effect
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Cemetery
Historic-age Bridge (NBI#)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Historic Area of Potential Effect (300 feet)
NRHP-Eligible Canal/Drainage*
Not NRHP-Eligible Canal/Drainage
Constructed 1900-1944
Constructed 1945-1975
NRHP-Listed HCID #2
Assumed NRHP-Eligible Engleman ID
Assumed NRHP-Eligible Donna ID
*These features are located within NRHP-Listed or NRHP-Eligible irrigation districts. Detailed research regarding contributing features will be completed at the FEIS level.
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
MATCHLINE
MATCHLINE
2812
1423
VISTA DEL CIELO
PINKSTON RD
BARBARA LN
CR 3120
TOWER RD
CALLE DE AMANDA
BRUSHLINE RD
MILE 20 1/2 RD
CR 3050
RAMSEYER RD
RAM CIR
VAL VERDE RD
MILE 20 RD
SHARP RD
TERRY RD
PRAIRIE LN
TOWER RD
MOUNTAIN VIEW LN
3RD ST
DAVIS RD
MILE 19 1/2 RD

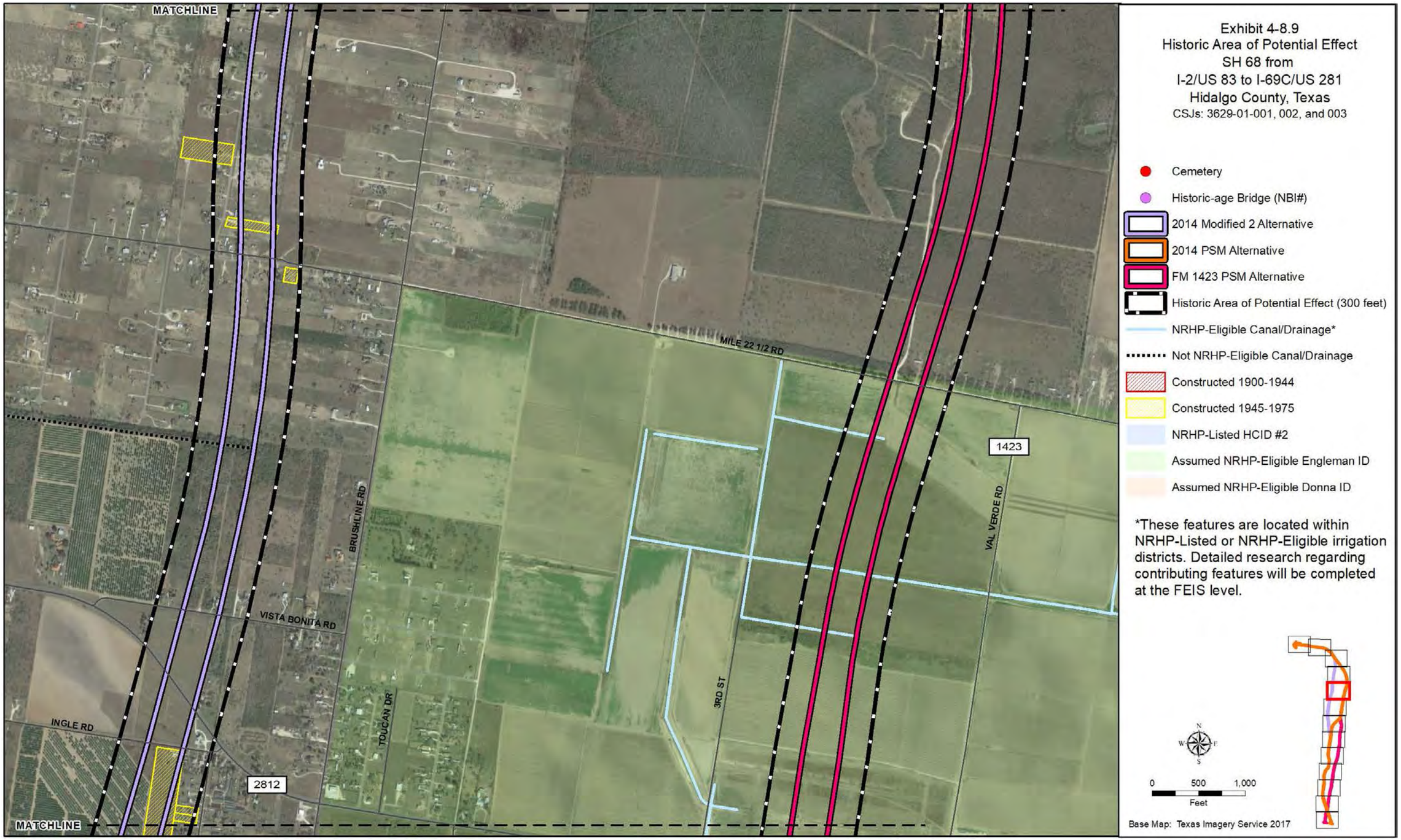


Exhibit 4-8.9
Historic Area of Potential Effect
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Cemetery
Historic-age Bridge (NBI#)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Historic Area of Potential Effect (300 feet)
NRHP-Eligible Canal/Drainage*
Not NRHP-Eligible Canal/Drainage
Constructed 1900-1944
Constructed 1945-1975
NRHP-Listed HCID #2
Assumed NRHP-Eligible Engleman ID
Assumed NRHP-Eligible Donna ID
*These features are located within NRHP-Listed or NRHP-Eligible irrigation districts. Detailed research regarding contributing features will be completed at the FEIS level.
MATCHLINE
MILE 22 1/2 RD
1423
VAL VERDE RD
BRUSHLINE RD
VISTA BONITA RD
TOUCAN DR
3RD ST
INGLE RD
2812
MATCHLINE
N
W
E
S
0
500
1,000
Feet
Base Map: Texas Imagery Service 2017

MATCHLINE
BRUSHLINE RD
CACTHIGHWAY FLATS
Cavazos Cemetery
EL CIBOLO RD
MATCHLINE
Exhibit 4-8.10
Historic Area of Potential Effect
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Cemetery
Historic-age Bridge (NBI#)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Historic Area of Potential Effect (300 feet)
NRHP-Eligible Canal/Drainage*
Not NRHP-Eligible Canal/Drainage
Constructed 1900-1944
Constructed 1945-1975
NRHP-Listed HCID #2
Assumed NRHP-Eligible Engleman ID
Assumed NRHP-Eligible Donna ID
*These features are located within NRHP-Listed or NRHP-Eligible irrigation districts. Detailed research regarding contributing features will be completed at the FEIS level.
N
W
E
S
0
500
1,000
Feet
Base Map: Texas Imagery Service 2017

MATCHLINE
490
11TH ST
12TH ST
13TH ST
BRUSHLINE RD
MATCHLINE
Exhibit 4-8.11
Historic Area of Potential Effect
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Cemetery
Historic-age Bridge (NBI#)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Historic Area of Potential Effect (300 feet)
NRHP-Eligible Canal/Drainage*
Not NRHP-Eligible Canal/Drainage
Constructed 1900-1944
Constructed 1945-1975
NRHP-Listed HCID #2
Assumed NRHP-Eligible Engleman ID
Assumed NRHP-Eligible Donna ID
*These features are located within NRHP-Listed or NRHP-Eligible irrigation districts. Detailed research regarding contributing features will be completed at the FEIS level.
N
W
E
S
0
500
1,000
Feet
Base Map: Texas Imagery Service 2017

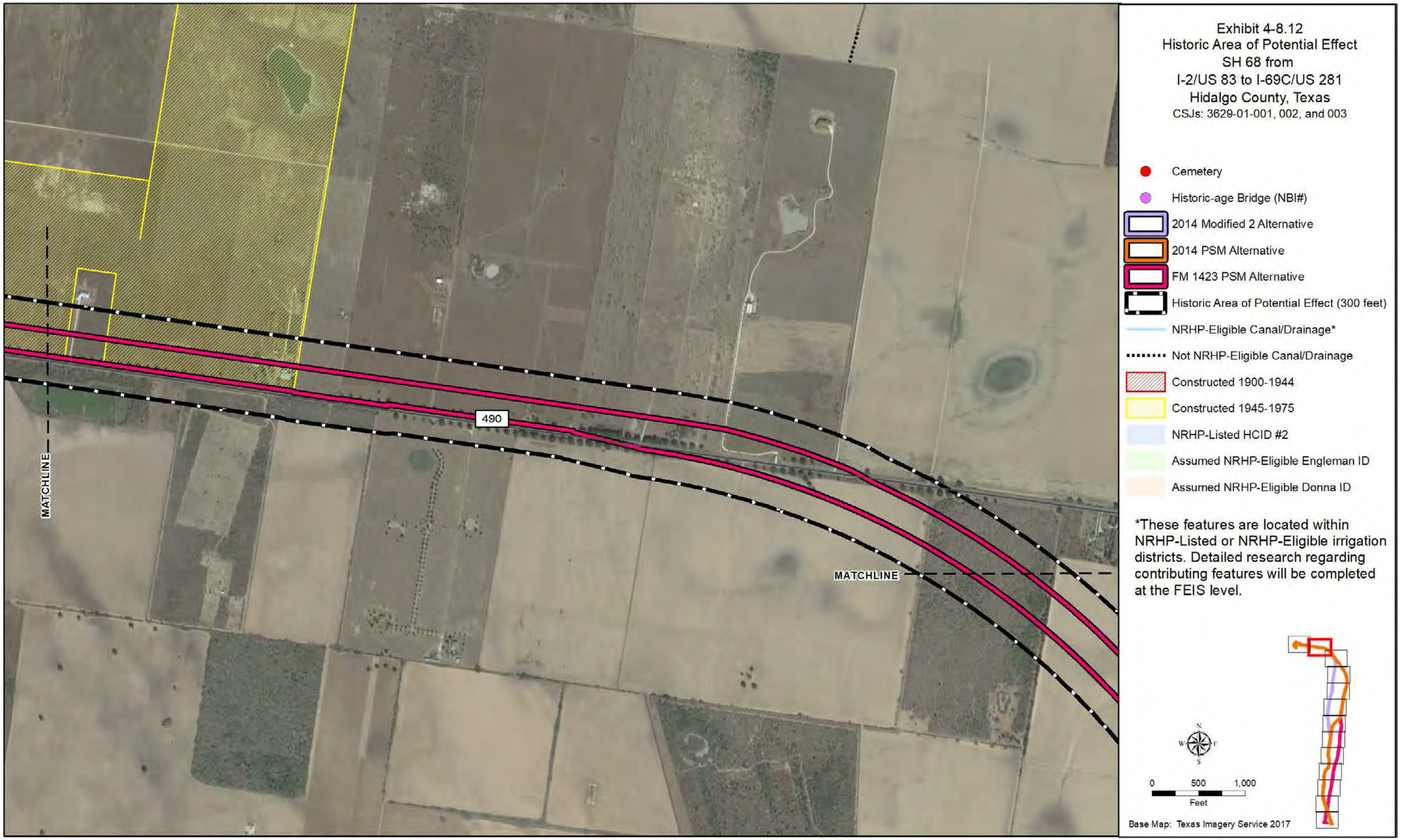


Exhibit 4-8.12
Historic Area of Potential Effect
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Cemetery
Historic-age Bridge (NBI#)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Historic Area of Potential Effect (300 feet)
NRHP-Eligible Canal/Drainage*
Not NRHP-Eligible Canal/Drainage
Constructed 1900-1944
Constructed 1945-1975
NRHP-Listed HCID #2
Assumed NRHP-Eligible Engleman ID
Assumed NRHP-Eligible Donna ID
*These features are located within NRHP-Listed or NRHP-Eligible irrigation districts. Detailed research regarding contributing features will be completed at the FEIS level.
490
MATCHLINE
MATCHLINE
N
W
E
S
0
500
1,000
Feet
Base Map: Texas Imagery Service 2017

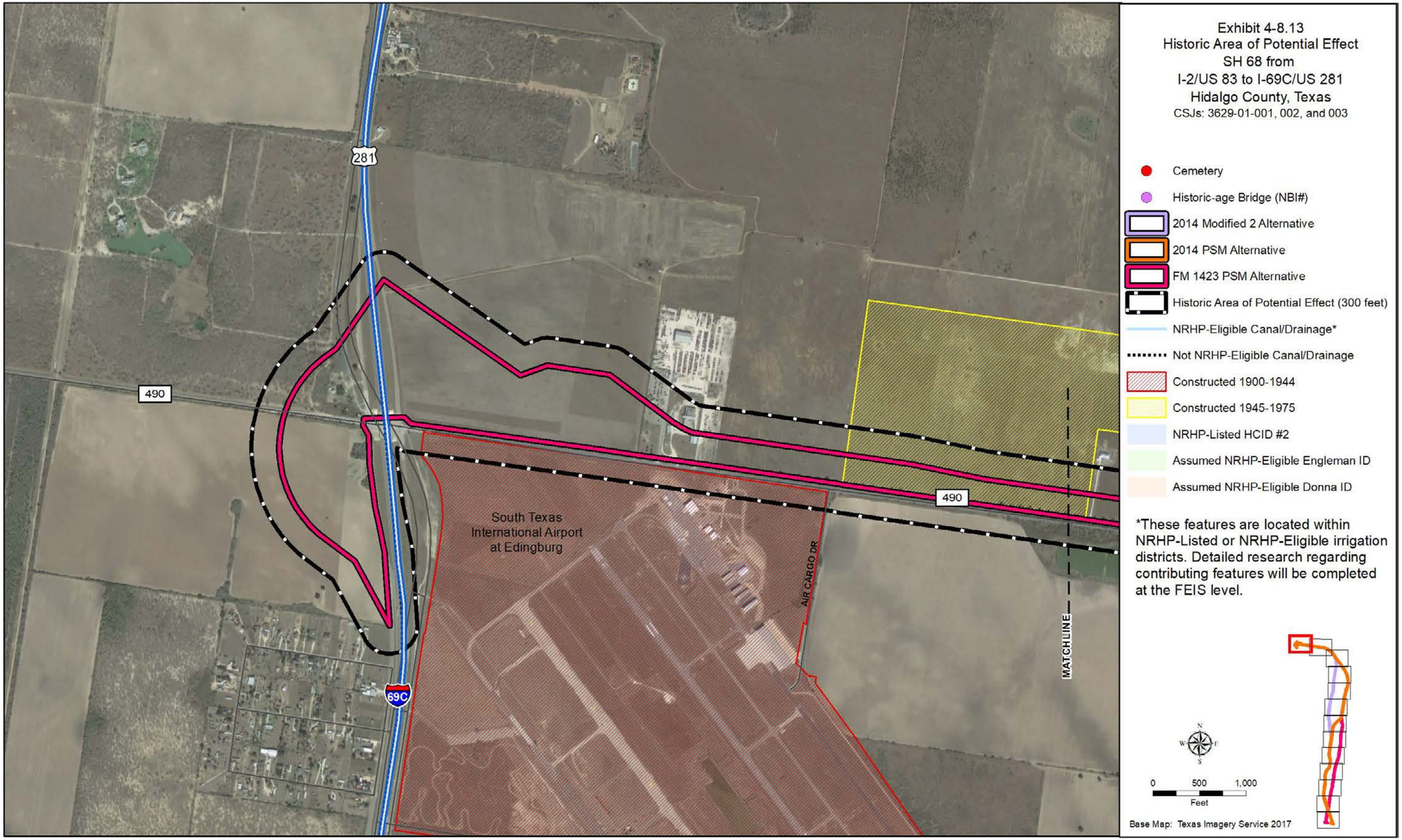


Exhibit 4-8.13
Historic Area of Potential Effect
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Cemetery
Historic-age Bridge (NBI#)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Historic Area of Potential Effect (300 feet)
NRHP-Eligible Canal/Drainage*
Not NRHP-Eligible Canal/Drainage
Constructed 1900-1944
Constructed 1945-1975
NRHP-Listed HCID #2
Assumed NRHP-Eligible Engleman ID
Assumed NRHP-Eligible Donna ID
*These features are located within NRHP-Listed or NRHP-Eligible irrigation districts. Detailed research regarding contributing features will be completed at the FEIS level.
0 500 1,000
Feet
Base Map: Texas Imagery Service 2017
281
490
490
69C
South Texas International Airport at Edingburg
AIR CARGO DR
MATCHLINE

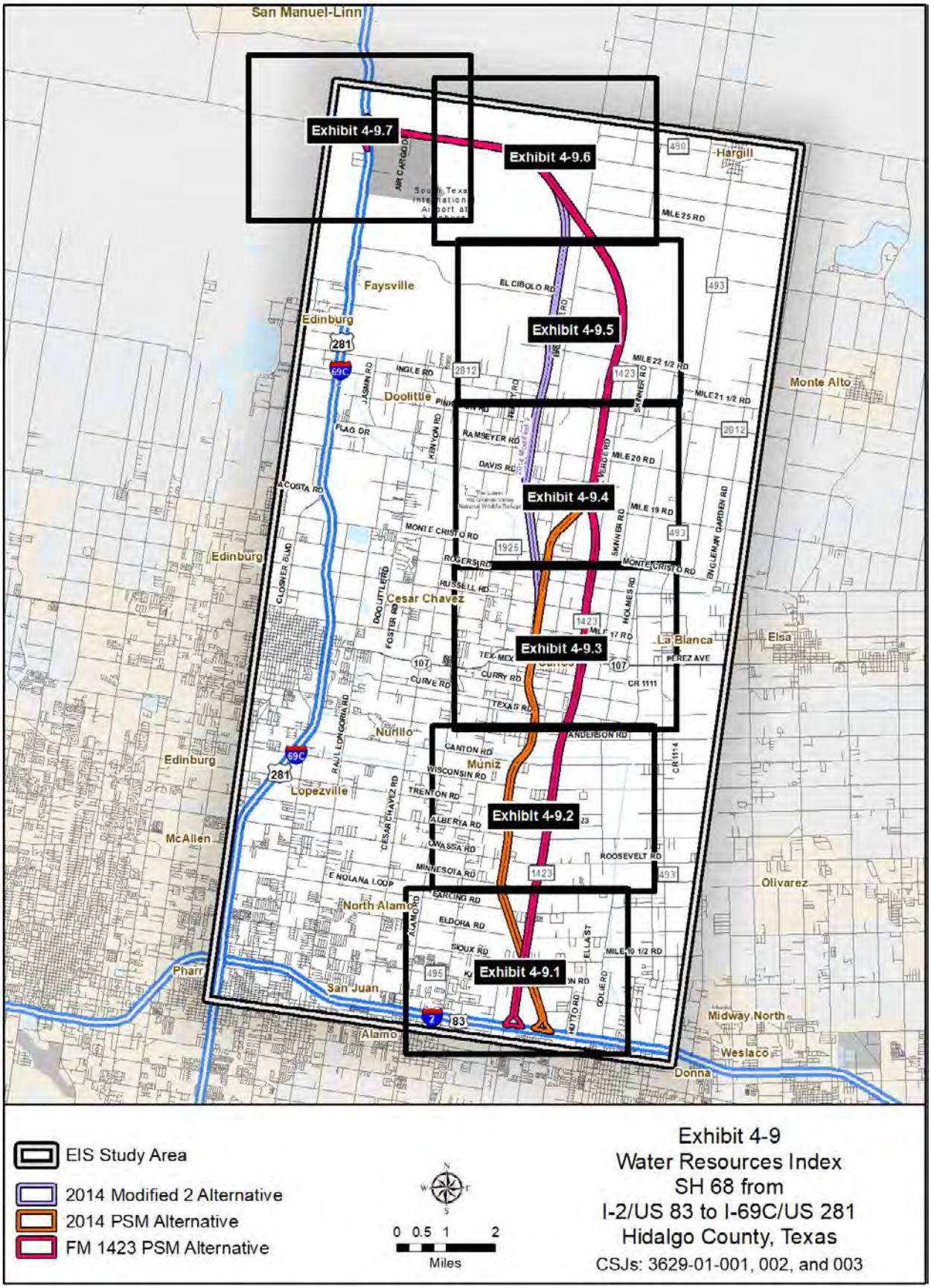


Exhibit 4-9.7
Exhibit 4-9.6
Exhibit 4-9.5
Exhibit 4-9.4
Exhibit 4-9.3
Exhibit 4-9.2
Exhibit 4-9.1
San Manuel-Linn
Hargill
Faysville
Edinburg
Doolittle
Monte Alto
Cesar Chavez
La Blanca
Elsa
Nunillo
Muniz
Lopezville
McAllen
Olivarez
North Alamo
Pharr
San Juan
Alamo
Midway North
Weslaco
Donna
EIS Study Area
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
0 0.5 1 2
Miles
Exhibit 4-9
Water Resources Index
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

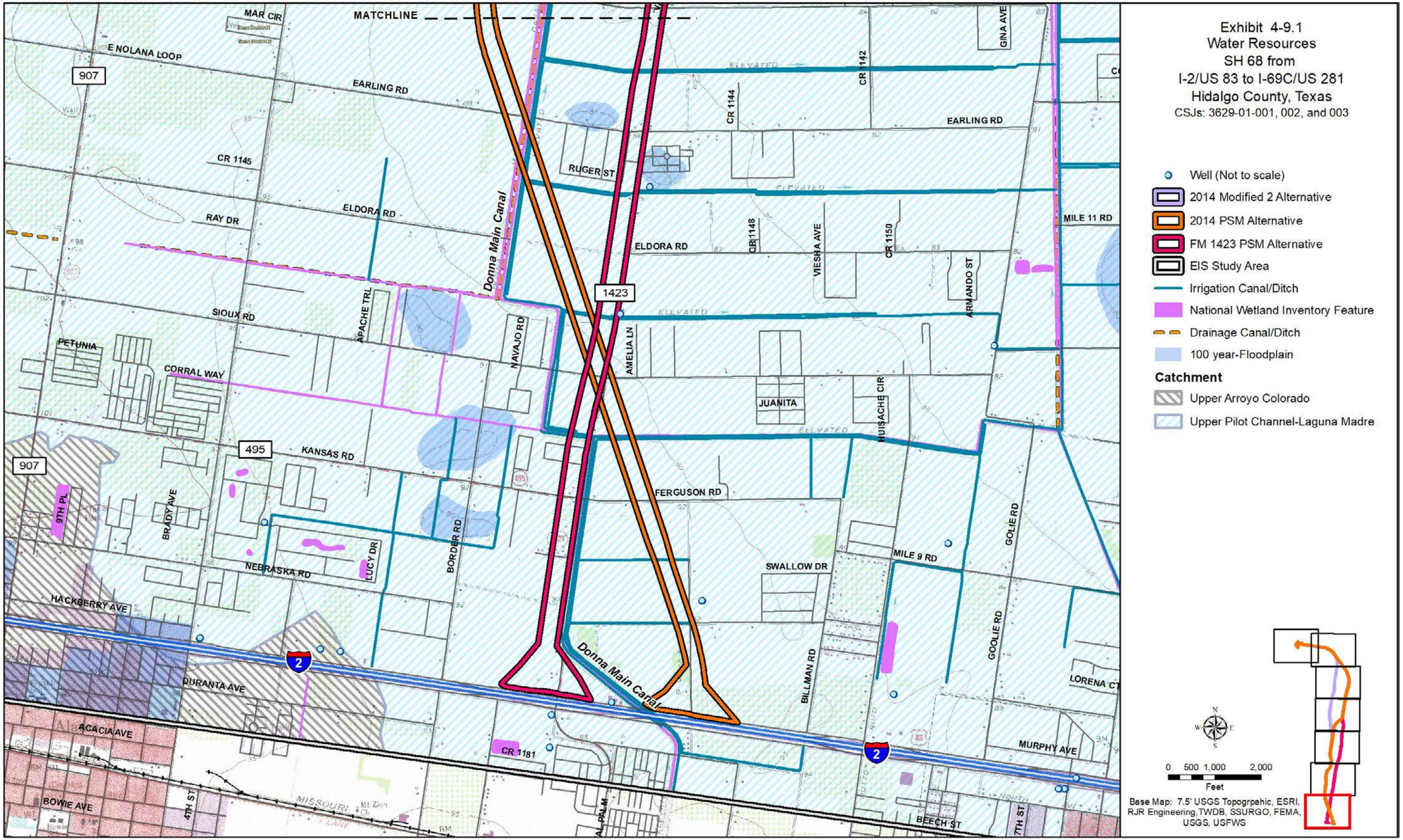


Exhibit 4-9.1
Water Resources
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Well (Not to scale)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
EIS Study Area
Irrigation Canal/Ditch
National Wetland Inventory Feature
Drainage Canal/Ditch
100 year-Floodplain
Catchment
Upper Arroyo Colorado
Upper Pilot Channel-Laguna Madre
0 500 1,000 2,000
Feet
Base Map: 7.5' USGS Topogrpahic, ESRI, RJR Engineering,TWDB, SSURGO, FEMA, USGS, USFWS
MATCHLINE
MAR CIR
E NOLANA LOOP
907
EARLING RD
CR 1145
RAY DR
ELDORA RD
Donna Main Canal
SIOUX RD
PETUNIA
CORRAL WAY
APACHE TRL
NAVAJO RD
1423
AMELIA LN
RUGER ST
CR 1144
CR 1142
GINA AVE
CR 1148
VIESHA AVE
CR 1150
ARMANDO ST
MILE 11 RD
JUANITA
HUISACHE CIR
495
KANSAS RD
FERGUSON RD
9TH PL
BRADY AVE
BORDER RD
LUCY DR
NEBRASKA RD
SWALLOW DR
MILE 9 RD
GOLIE RD
HACKBERRY AVE
2
DURANTA AVE
BILLMAN RD
LORENA CT
ACACIA AVE
CR 1181
MURPHY AVE
BOWIE AVE
4TH ST
MISSOURI
BEECH ST
7TH ST

Exhibit 4-9.2
Water Resources
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Well (Not to scale)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
EIS Study Area
Irrigation Canal/Ditch
National Wetland Inventory Feature
Drainage Canal/Ditch
100 year-Floodplain
Catchment
Upper Pilot Channel-Laguna Madre
0 500 1,000 2,000
Feet
Base Map: 7.5' USGS Topogrpahic, ESRI, RJR Engineering, TWDB, SSURGO, FEMA, USGS, USFWS
MATCHLINE
Donna Main Canal
E IOWA RD
CLAY ST
JASMINE ST
907
CANTON RD
LUXURY LN
TOWER RD
WISCONSIN RD
CESSNA AVE
CR 1029
JAM SQ
SKYHAWK DR
VERDE CIR
FE DR
CR 1120
CARL ST
1423
EL BOSQUE DR
PALMERAS CIR
VIOLETA DR
TEJANO DR
OWASSA RD
AZURE AVE
MINNESOTA RD
CORTEZ DR
MAR CIR
VAL VERDE RD
MILE 15 RD
DILLON RD
COUNTY ROAD 1106
ABEL DR
ATLANTA AV
EDINBURG EAST GAS FIELD
TRENTON RD
CR 1123
CR 1138
VIEJO DR
CR 1136
TWEETY RD
ROOSEVELT RD
MILE 12 RD
LEAL ST
ELEVATED
Oil Well
Gas Well
Trailer Park

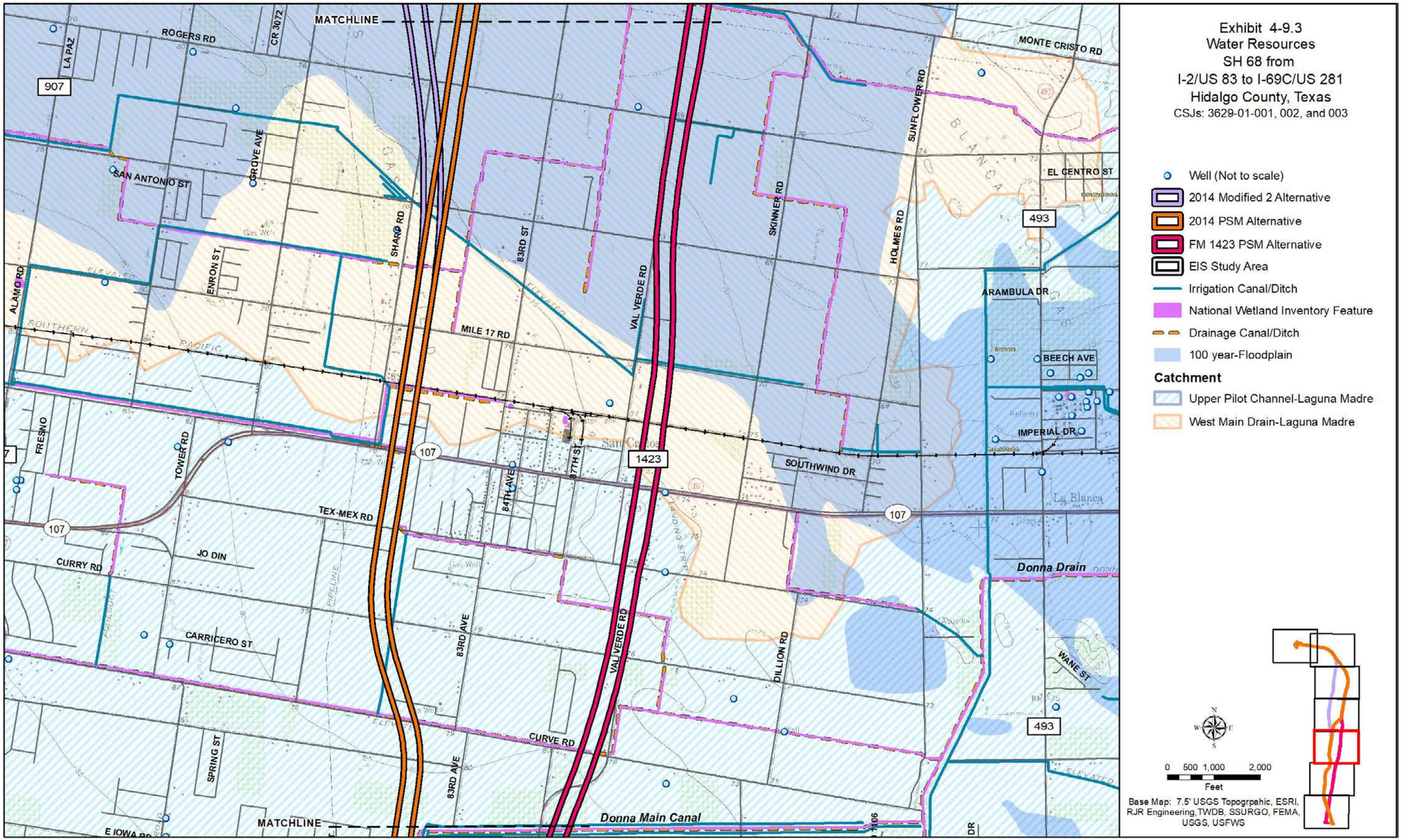


Exhibit 4-9.3
Water Resources
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Well (Not to scale)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
EIS Study Area
Irrigation Canal/Ditch
National Wetland Inventory Feature
Drainage Canal/Ditch
100 year-Floodplain
Catchment
Upper Pilot Channel-Laguna Madre
West Main Drain-Laguna Madre
0 500 1,000 2,000
Feet
Base Map: 7.5' USGS Topogrpahic, ESRI, RJR Engineering, TWDB, SSURGO, FEMA, USGS, USFWS
MATCHLINE
ROGERS RD
LA PAZ
CR 3072
907
SAN ANTONIO ST
GROVE AVE
ENRON ST
ALAMO RD
SHARP RD
83RD ST
MILE 17 RD
VAL VERDE RD
SKINNER RD
SUNFLOWER RD
HOLMES RD
MONTE CRISTO RD
EL CENTRO ST
493
ARAMBULA DR
BEECH AVE
IMPERIAL DR
SOUTHWIND DR
107
1423
FRESNO
TOWER RD
TEX-MEX RD
84TH AVE
87TH ST
JO DIN
CURRY RD
CARRICERO ST
83RD AVE
DILLION RD
WANE ST
CURVE RD
SPRING ST
Donna Drain
Donna Main Canal
E IOWA RD
La Blanca

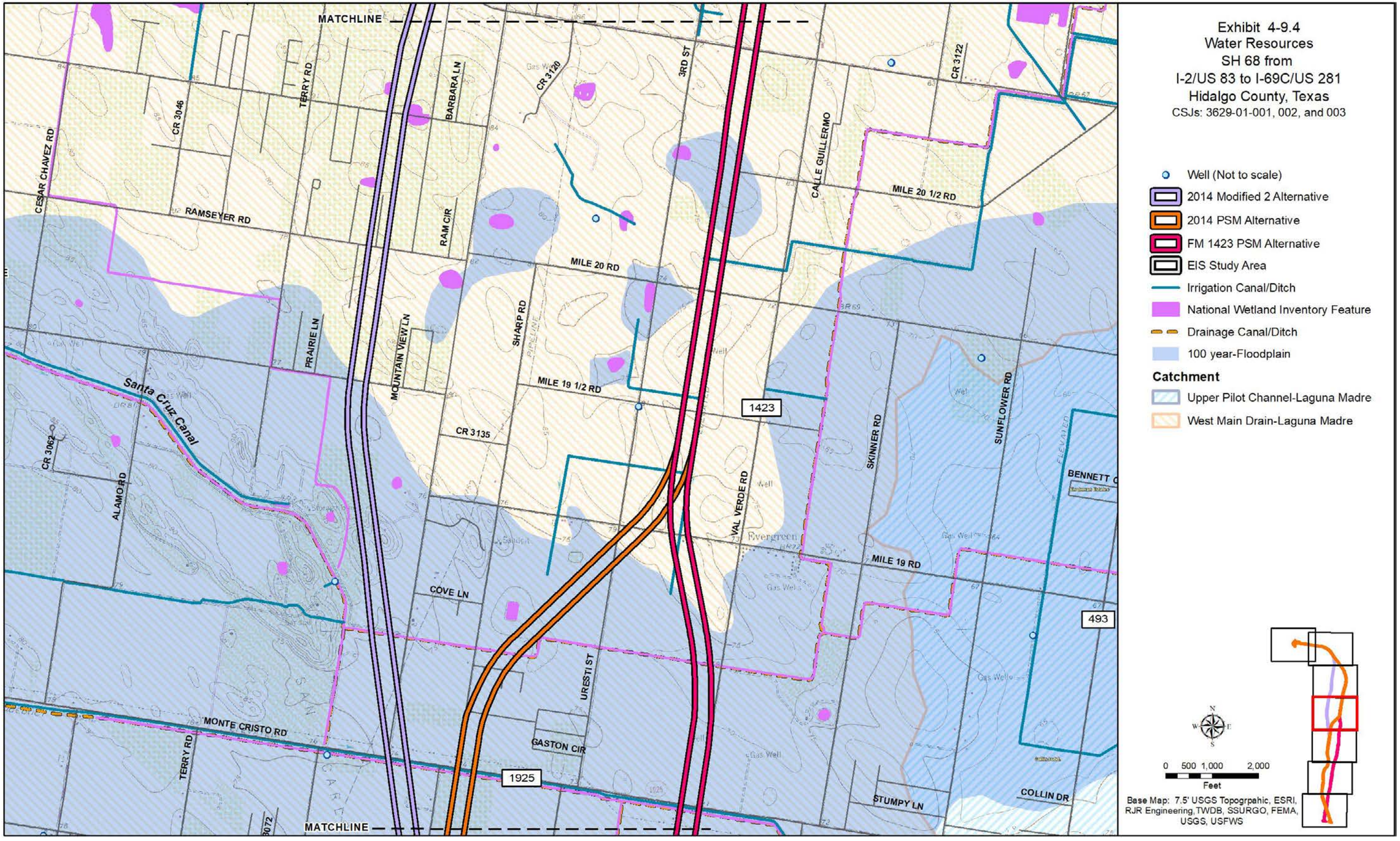


Exhibit 4-9.4
Water Resources
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Well (Not to scale)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
EIS Study Area
Irrigation Canal/Ditch
National Wetland Inventory Feature
Drainage Canal/Ditch
100 year-Floodplain
Catchment
Upper Pilot Channel-Laguna Madre
West Main Drain-Laguna Madre
0 500 1,000 2,000
Feet
Base Map: 7.5' USGS Topogrpahic, ESRI, RJR Engineering,TWDB, SSURGO, FEMA, USGS, USFWS
MATCHLINE
MATCHLINE
CESAR CHAVEZ RD
CR 3046
TERRY RD
BARBARA LN
CR 3120
3RD ST
CALLE GUILLERMO
CR 3122
RAMSEYER RD
RAM CIR
MILE 20 1/2 RD
MILE 20 RD
SHARP RD
PIPELINE
PRAIRIE LN
MOUNTAIN VIEW LN
MILE 19 1/2 RD
1423
Santa Cruz Canal
CR 3135
CR 3062
ALAMO RD
VAL VERDE RD
SKINNER RD
SUNFLOWER RD
ELEVATED
BENNETT
Evergreen
MILE 19 RD
COVE LN
493
URESTI ST
MONTE CRISTO RD
GASTON CIR
TERRY RD
1925
STUMPY LN
COLLIN DR

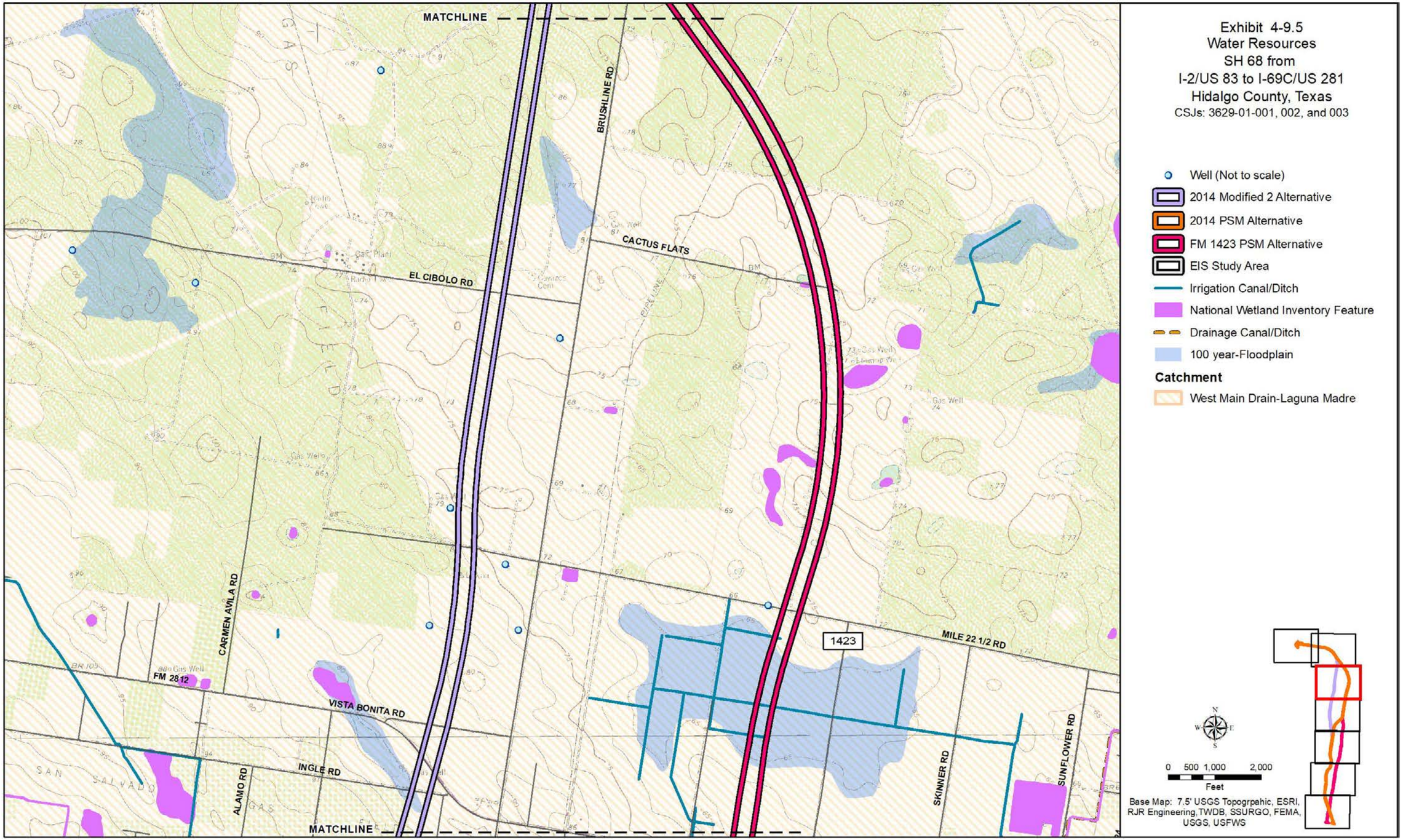


Exhibit 4-9.5
Water Resources
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Well (Not to scale)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
EIS Study Area
Irrigation Canal/Ditch
National Wetland Inventory Feature
Drainage Canal/Ditch
100 year-Floodplain
Catchment
West Main Drain-Laguna Madre
MATCHLINE
BRUSHLINE RD
CACTUS FLATS
EL CIBOLO RD
CARMEN AVILA RD
FM 2812
VISTA BONITA RD
INGLE RD
ALAMO RD
1423
MILE 22 1/2 RD
SKINNER RD
SUNFLOWER RD
0 500 1,000 2,000
Feet
Base Map: 7.5' USGS Topogrpahic, ESRI, RJR Engineering, TWDB, SSURGO, FEMA, USGS, USFWS

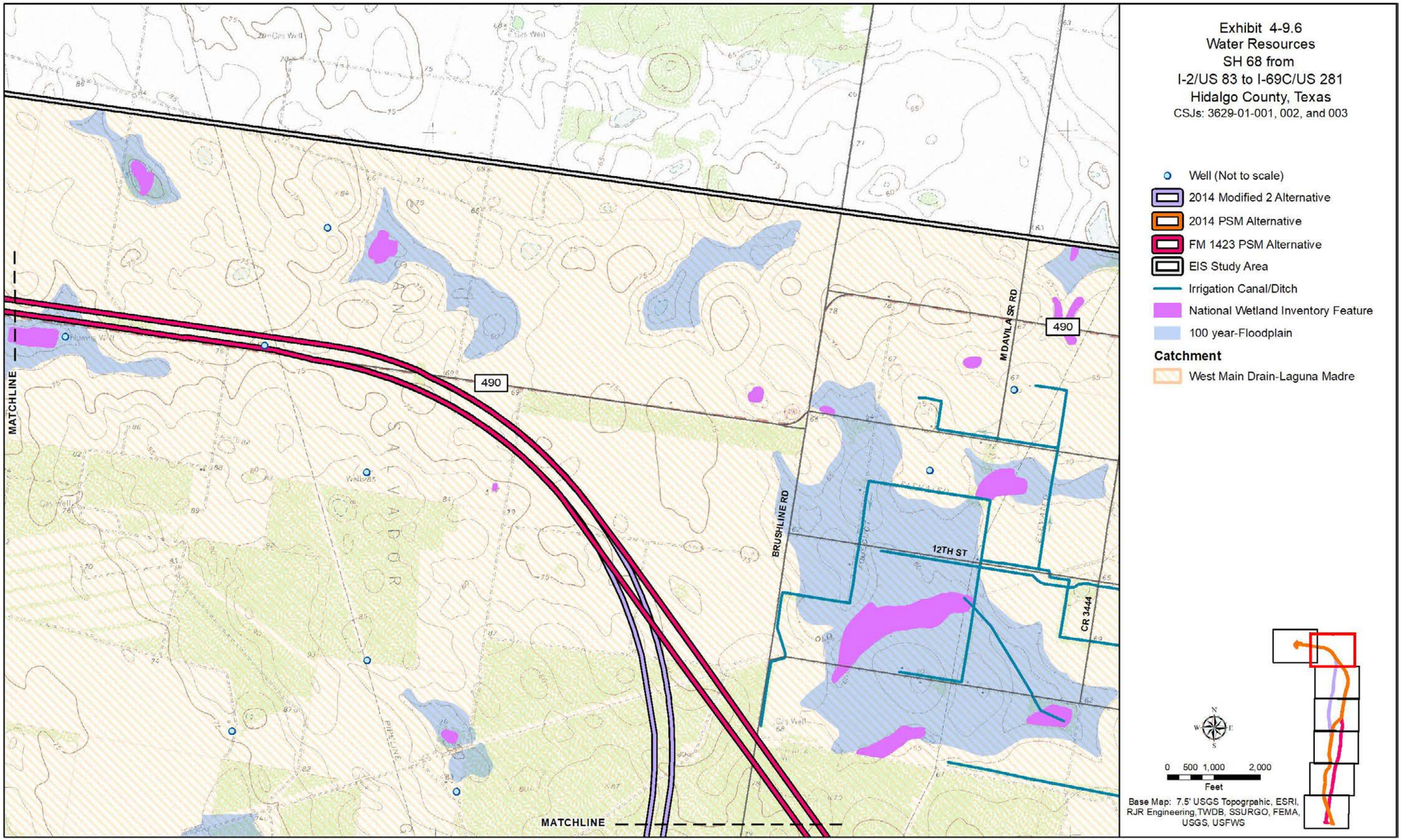


Exhibit 4-9.6
Water Resources
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Well (Not to scale)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
EIS Study Area
Irrigation Canal/Ditch
National Wetland Inventory Feature
100 year-Floodplain
Catchment
West Main Drain-Laguna Madre
MATCHLINE
490
M DAVILA SR RD
BRUSHLINE RD
12TH ST
CR 3444
0 500 1,000 2,000
Feet
Base Map: 7.5' USGS Topogrpahic, ESRI, RJR Engineering, TWDB, SSURGO, FEMA, USGS, USFWS

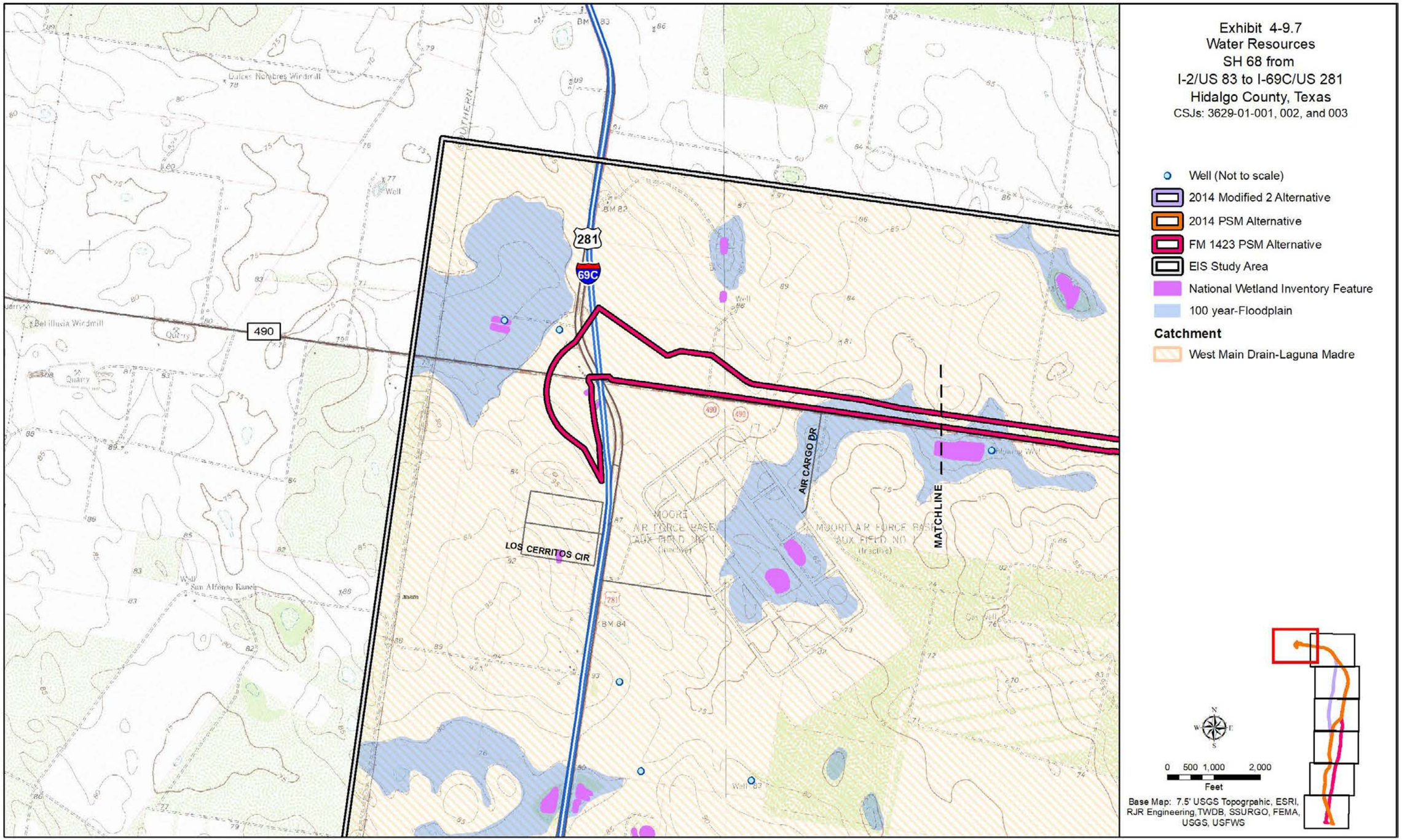


Exhibit 4-9.7
Water Resources
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Well (Not to scale)
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
EIS Study Area
National Wetland Inventory Feature
100 year-Floodplain
Catchment
West Main Drain-Laguna Madre
281
69C
490
LOS CERRITOS CIR
AIR CARGO DR
MATCHLINE
MOORE AIR FORCE BASE AUX FIELD NO 1 (Inactive)
0 500 1,000 2,000
Feet
Base Map: 7.5' USGS Topogrpahic, ESRI, RJR Engineering, TWDB, SSURGO, FEMA, USGS, USFWS

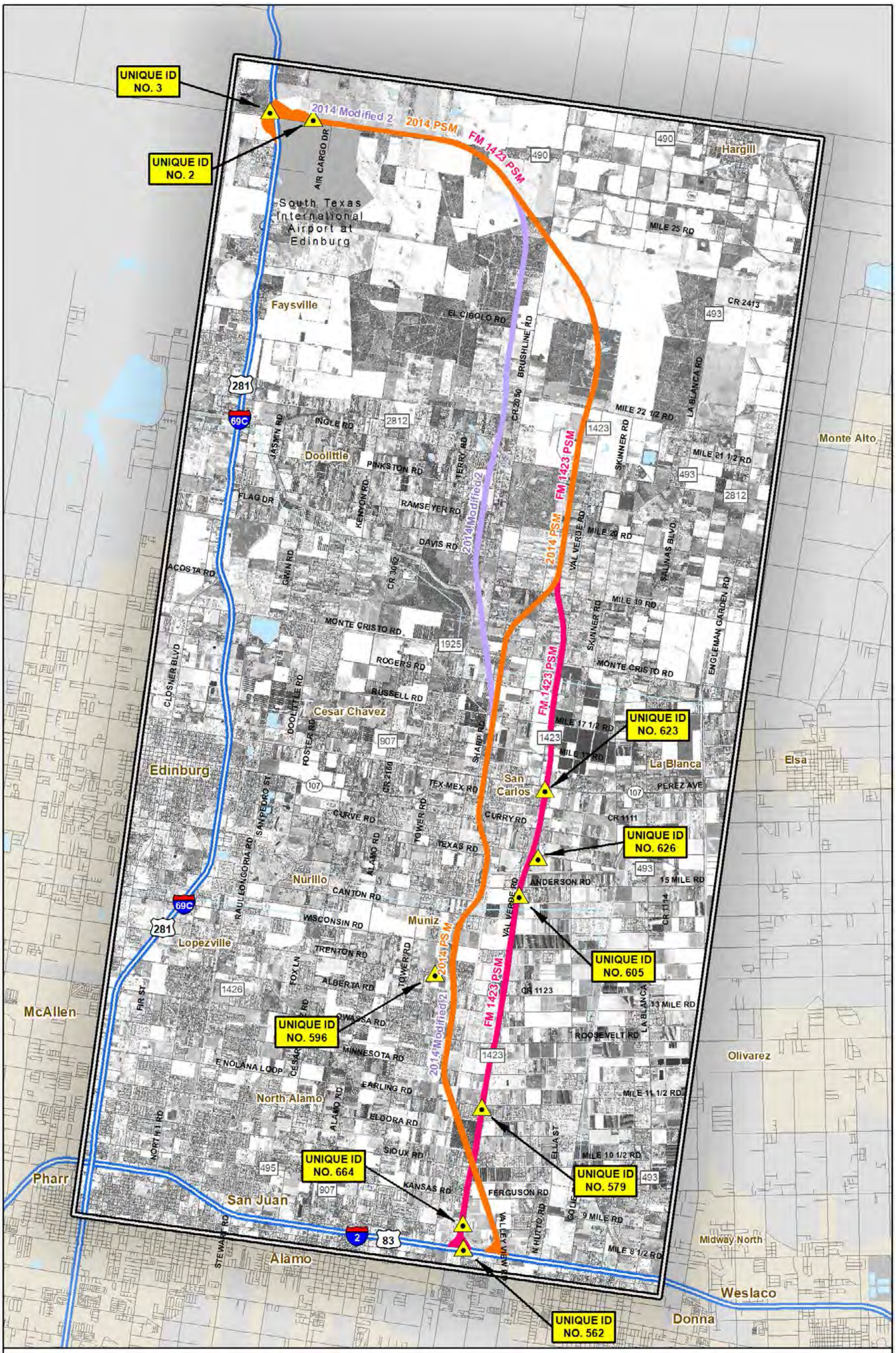
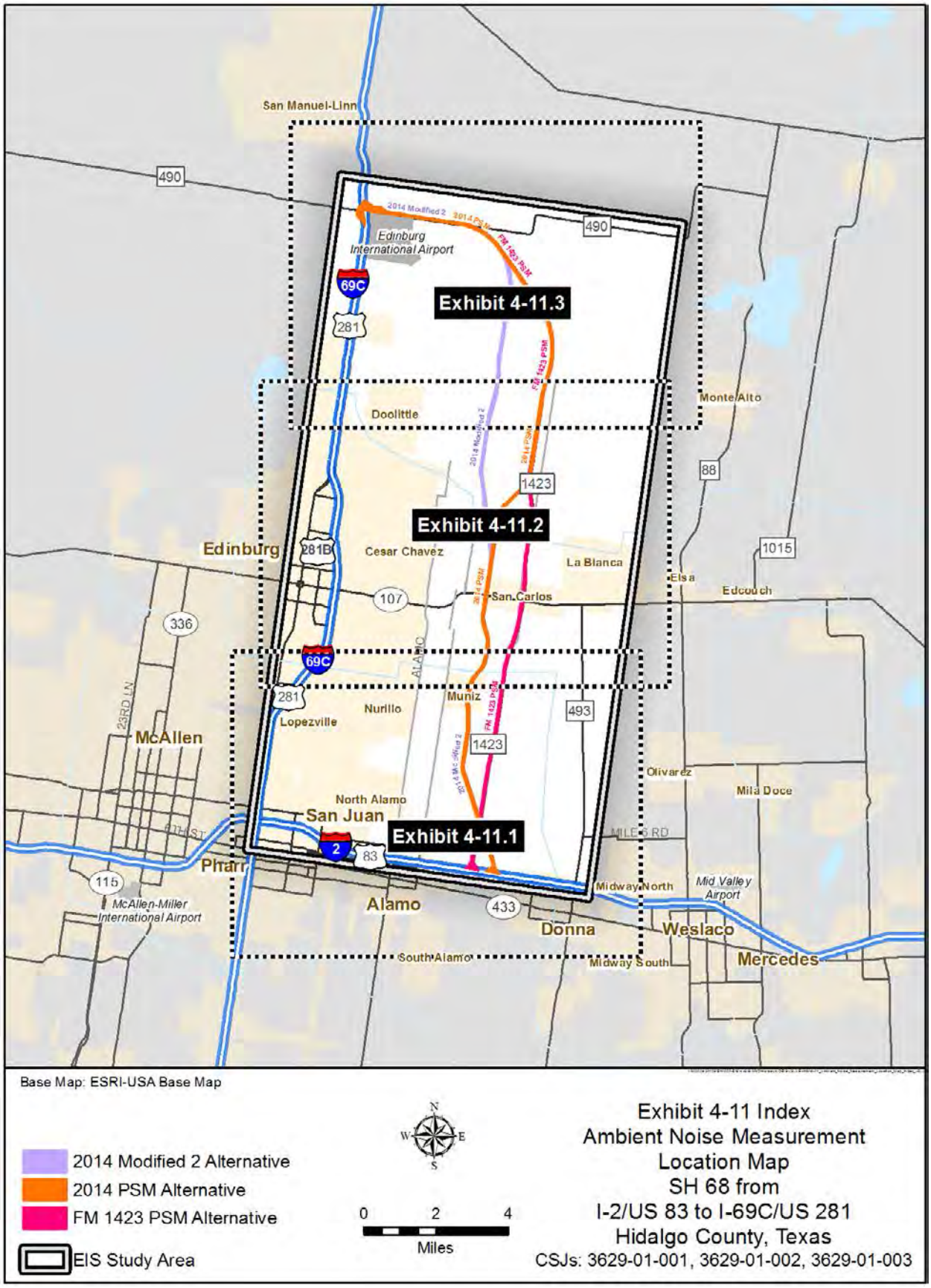


Exhibit 4-10
Hazardous Material Sites
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003


San Manuel-Linn
490
Edinburg International Airport
69C
281
Exhibit 4-11.3
Doolittle
Monte Alto
88
1423
Exhibit 4-11.2
Edinburg
281B
Cesar Chavez
La Blanca
1015
Elsa
Edcouch
107
San Carlos
336
69C
281
Nurillo
Muniz
493
Lopezville
McAllen
1423
Olivarez
Mila Doce
North Alamo
San Juan
Exhibit 4-11.1
2
83
Pharr
115
McAllen-Miller International Airport
Alamo
433
Donna
Weslaco
Mercedes
South Alamo
Midway South
Base Map: ESRI-USA Base Map
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
EIS Study Area
N
W
E
S
0 2 4
Miles
Exhibit 4-11 Index
Ambient Noise Measurement
Location Map
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 3629-01-002, 3629-01-003

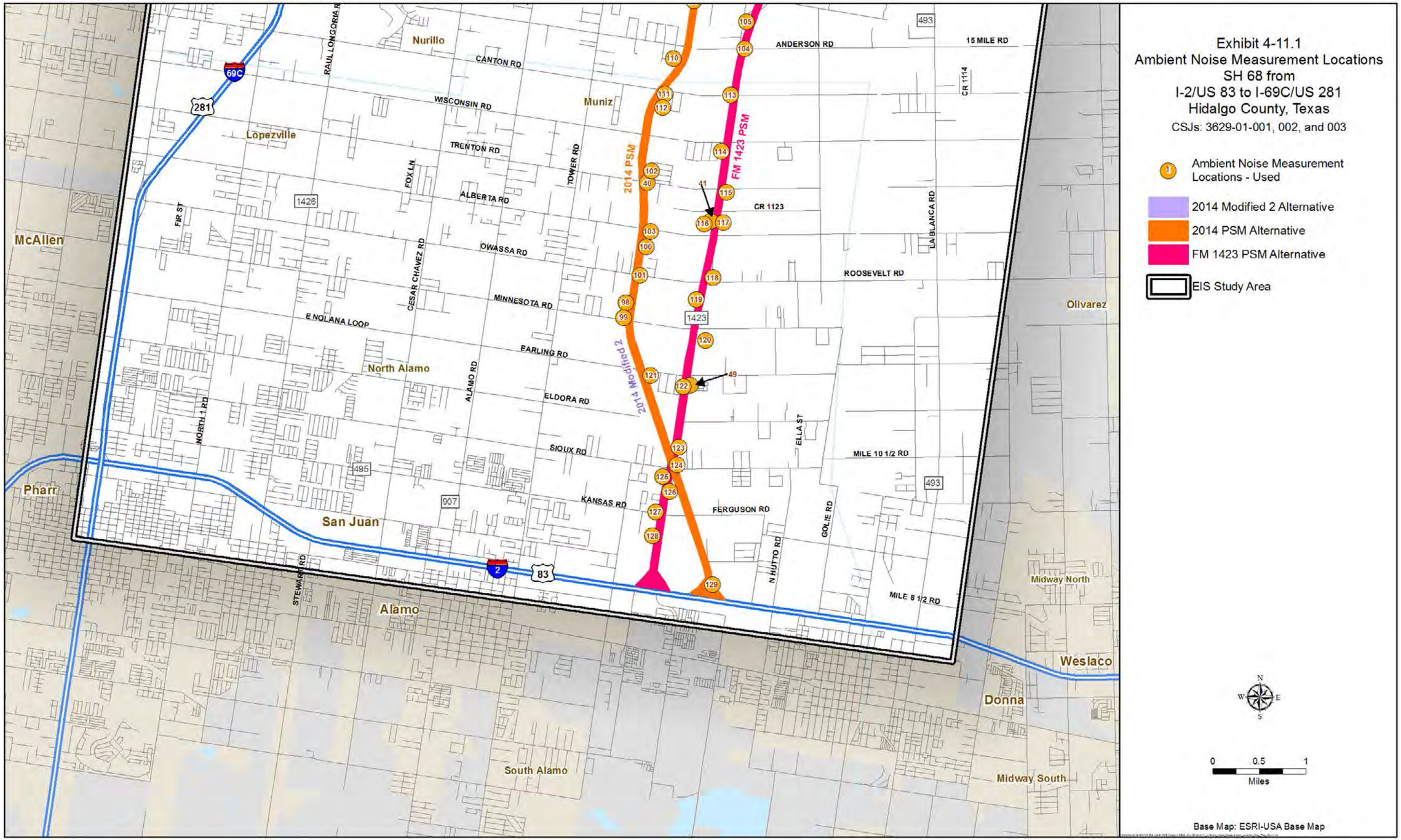


Exhibit 4-11.1
Ambient Noise Measurement Locations
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Ambient Noise Measurement Locations - Used
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
EIS Study Area
0 0.5 1
Miles
Base Map: ESRI-USA Base Map
2014 PSM
FM 1423 PSM
2014 Modified 2
McAllen
Pharr
San Juan
Alamo
South Alamo
Weslaco
Donna
Midway North
Midway South
Olivarez
Lopezville
Nurillo
Muniz
North Alamo
69C
281
2
83
1426
1423
495
907
493
RAUL LONGORIA RD
CANTON RD
WISCONSIN RD
TRENTON RD
ALBERTA RD
OWASSA RD
MINNESOTA RD
E NOLANA LOOP
EARLING RD
ELDORA RD
SIOUX RD
KANSAS RD
FERGUSON RD
MILE 10 1/2 RD
MILE 8 1/2 RD
ROOSEVELT RD
ANDERSON RD
15 MILE RD
CR 1123
CR 1114
FOX LN
TOWER RD
CESAR CHAVEZ RD
ALAMO RD
NORTH 1 RD
FIR ST
STEWART RD
ELLA ST
GOLIE RD
N HUTTO RD
LA BLANCA RD

1

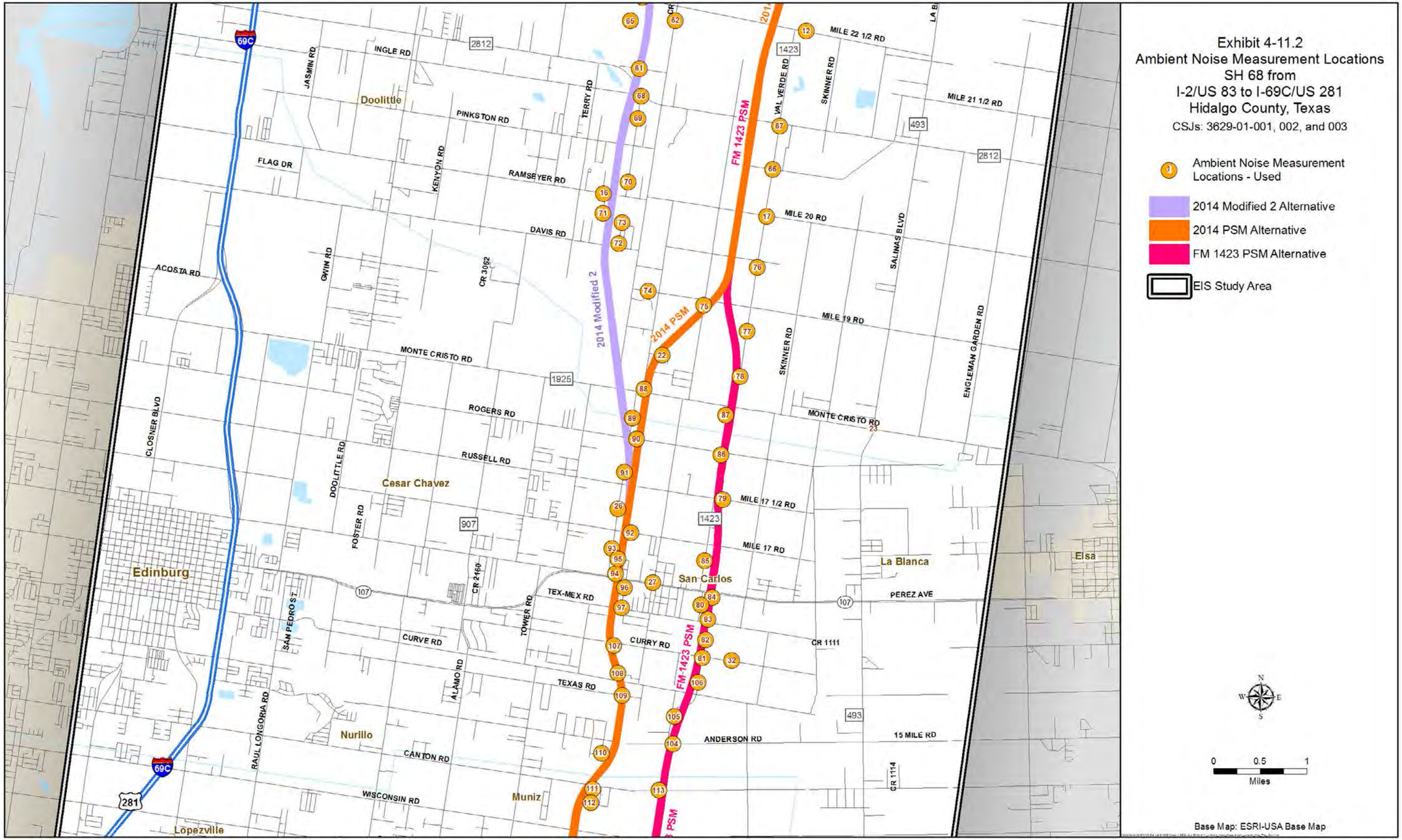


Exhibit 4-11.2
Ambient Noise Measurement Locations
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Ambient Noise Measurement Locations - Used
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
EIS Study Area
0 0.5 1
Miles
Base Map: ESRI-USA Base Map
Edinburg
Doolittle
Cesar Chavez
Nurillo
Muniz
Lopezville
San Carlos
La Blanca
Elsa
INGLE RD
PINKSTON RD
FLAG DR
RAMSEYER RD
DAVIS RD
ACOSTA RD
MONTE CRISTO RD
ROGERS RD
RUSSELL RD
TEX-MEX RD
CURVE RD
CURRY RD
TEXAS RD
CANTON RD
WISCONSIN RD
ANDERSON RD
15 MILE RD
PEREZ AVE
CR 1111
MILE 22 1/2 RD
MILE 21 1/2 RD
MILE 20 RD
MILE 19 RD
MILE 17 1/2 RD
MILE 17 RD
JASMIN RD
TERRY RD
KENYON RD
GWIN RD
CR 3062
VAL VERDE RD
SKINNER RD
SALINAS BLVD
ENGLEMAN GARDEN RD
CLOSNER BLVD
DOOLITTLE RD
FOSTER RD
CR 2160
TOWER RD
SAN PEDRO ST
ALAMO RD
RAUL LONGORIA RD
CR 1114
2014 Modified 2
2014 PSM
FM 1423 PSM
69C
281
107
493
1423
2812
1925
907

1

Exhibit 4-11.3
Ambient Noise Measurement Locations
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Ambient Noise Measurement Locations - Used
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
EIS Study Area
San Manuel-Linn
2014 Modified 2
2014 PSM
FM 1423 PSM
AIR CARGO DR
South Texas International Airport at Edinburg
Faysville
EL CIBOLO RD
BRUSHLINE RD
CR 2050
Hargill
MILE 25 RD
CR 2413
LA BLANCA RD
MILE 22 1/2 RD
MILE 21 1/2 RD
SKINNER RD
VAL VERDE RD
INGLE RD
JASMIN RD
TERRY RD
Doolittle
PINKSTON RD
FLAG DR
Monte Alto
281
69C
490
493
2812
1423
0 0.5 1
Miles
Base Map: ESRI-USA Base Map

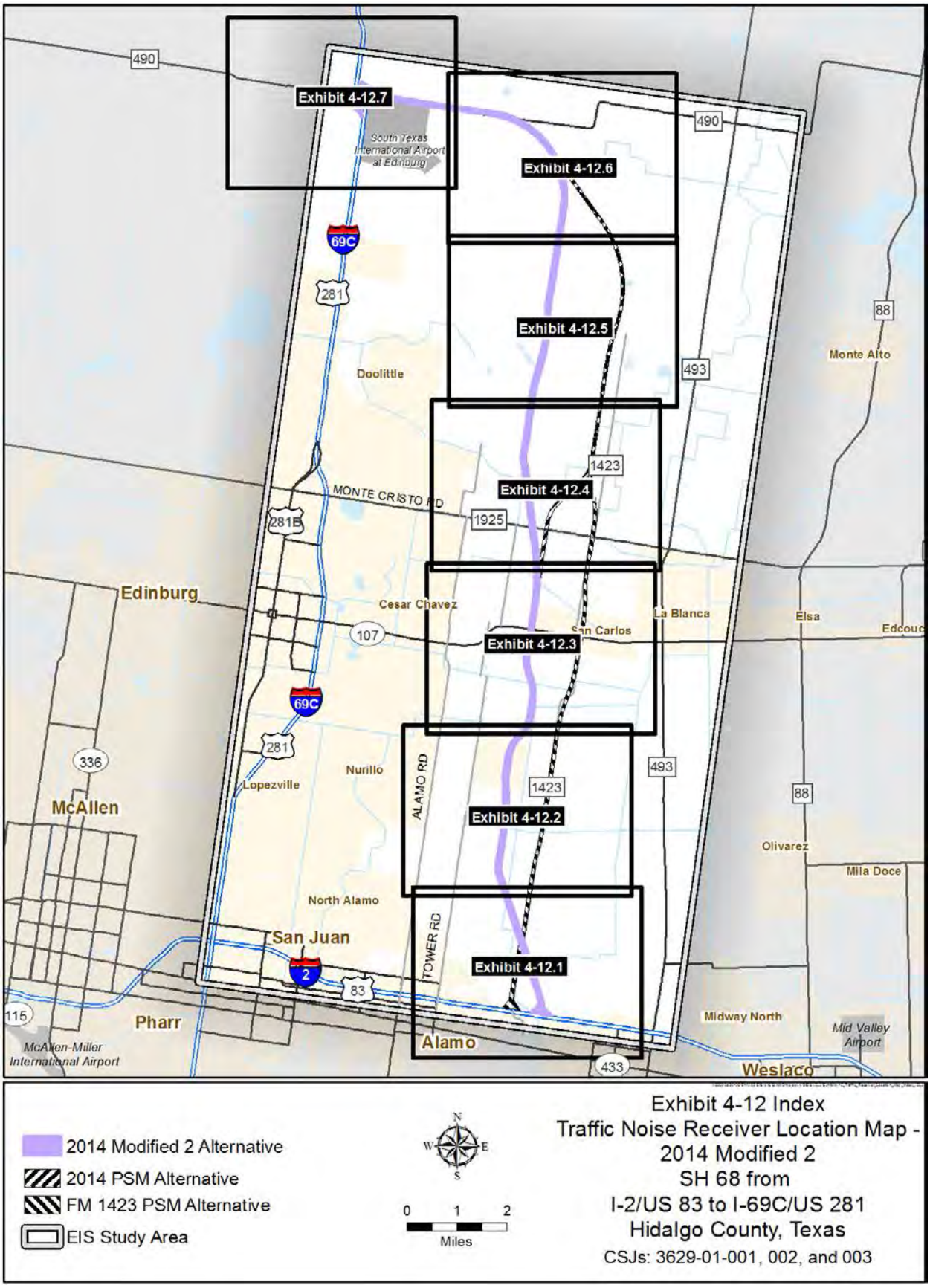


Exhibit 4-12.7
Exhibit 4-12.6
Exhibit 4-12.5
Exhibit 4-12.4
Exhibit 4-12.3
Exhibit 4-12.2
Exhibit 4-12.1
South Texas International Airport at Edinburg
Doolittle
MONTE CRISTO RD
Edinburg
Cesar Chavez
San Carlos
La Blanca
Elsa
Monte Alto
Nurillo
Lopezville
ALAMO RD
TOWER RD
McAllen
North Alamo
San Juan
Pharr
Alamo
Olivarez
Mila Doce
Midway North
Mid Valley Airport
Weslaco
McAllen-Miller International Airport
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
EIS Study Area
0 1 2
Miles
Exhibit 4-12 Index
Traffic Noise Receiver Location Map - 2014 Modified 2
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

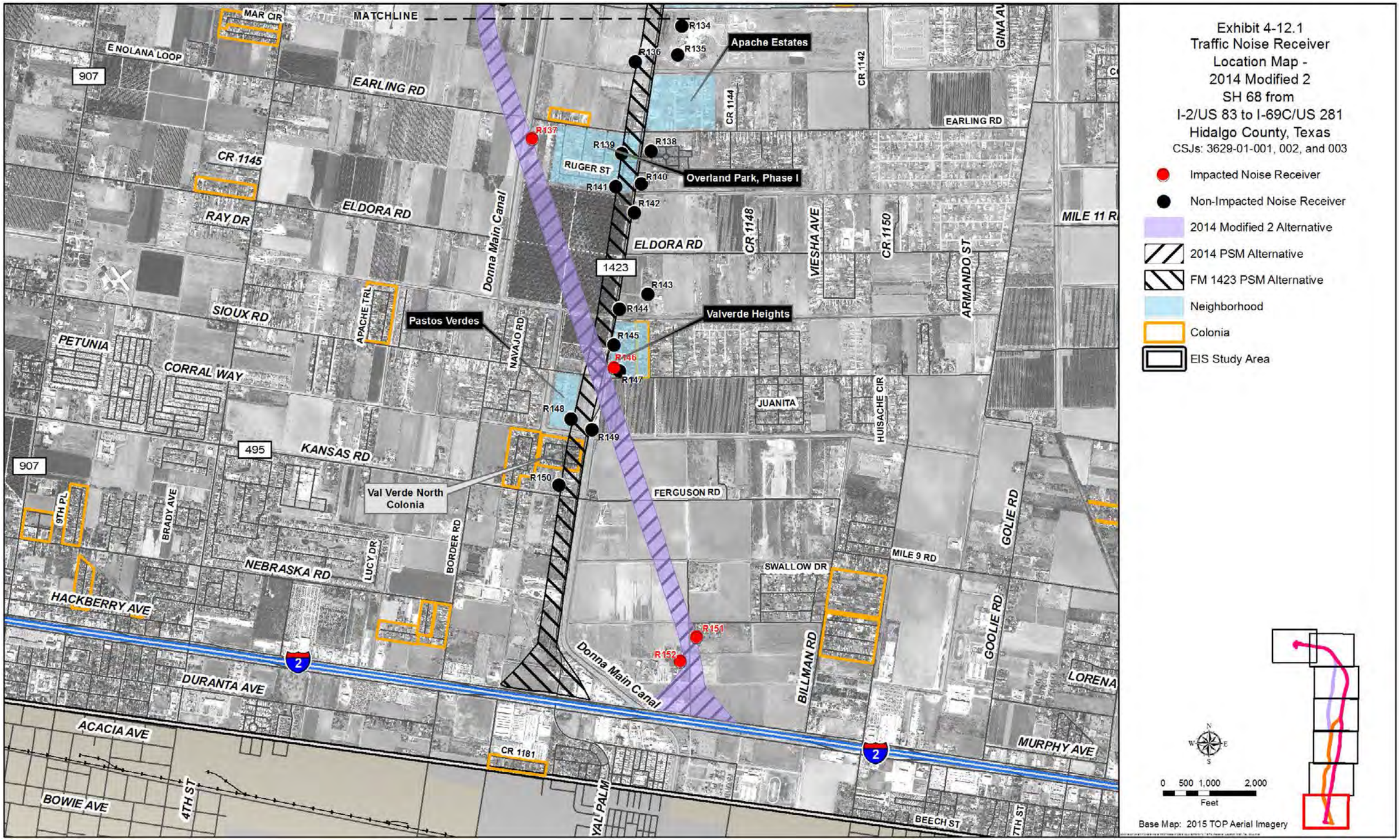


Exhibit 4-12.1
Traffic Noise Receiver
Location Map -
2014 Modified 2
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Neighborhood
Colonia
EIS Study Area
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery
MATCHLINE
MAR CIR
E NOLANA LOOP
907
EARLING RD
CR 1145
RAY DR
ELDORA RD
SIOUX RD
PETUNIA
CORRAL WAY
APACHE TRL
Pastos Verdes
NAVAJO RD
Donna Main Canal
Apache Estates
CR 1144
CR 1142
GINA AV
EARLING RD
R137
R139
R138
RUGER ST
R140
Overland Park, Phase I
R141
R142
ELDORA RD
CR 1148
VIESHA AVE
CR 1150
ARMANDO ST
MILE 11 R
1423
R143
R144
Valverde Heights
R145
R146
R147
JUANITA
HUISACHE CIR
R148
R149
495
KANSAS RD
907
R150
Val Verde North Colonia
FERGUSON RD
9TH PL
BRADY AVE
NEBRASKA RD
LUCY DR
BORDER RD
MILE 9 RD
SWALLOW DR
GOLIE RD
HACKBERRY AVE
R151
R152
Donna Main Canal
BILLMAN RD
GOOLIE RD
LORENA
DURANTA AVE
2
ACACIA AVE
CR 1181
MURPHY AVE
BOWIE AVE
4TH ST
YAL PALM
BEECH ST
7TH ST

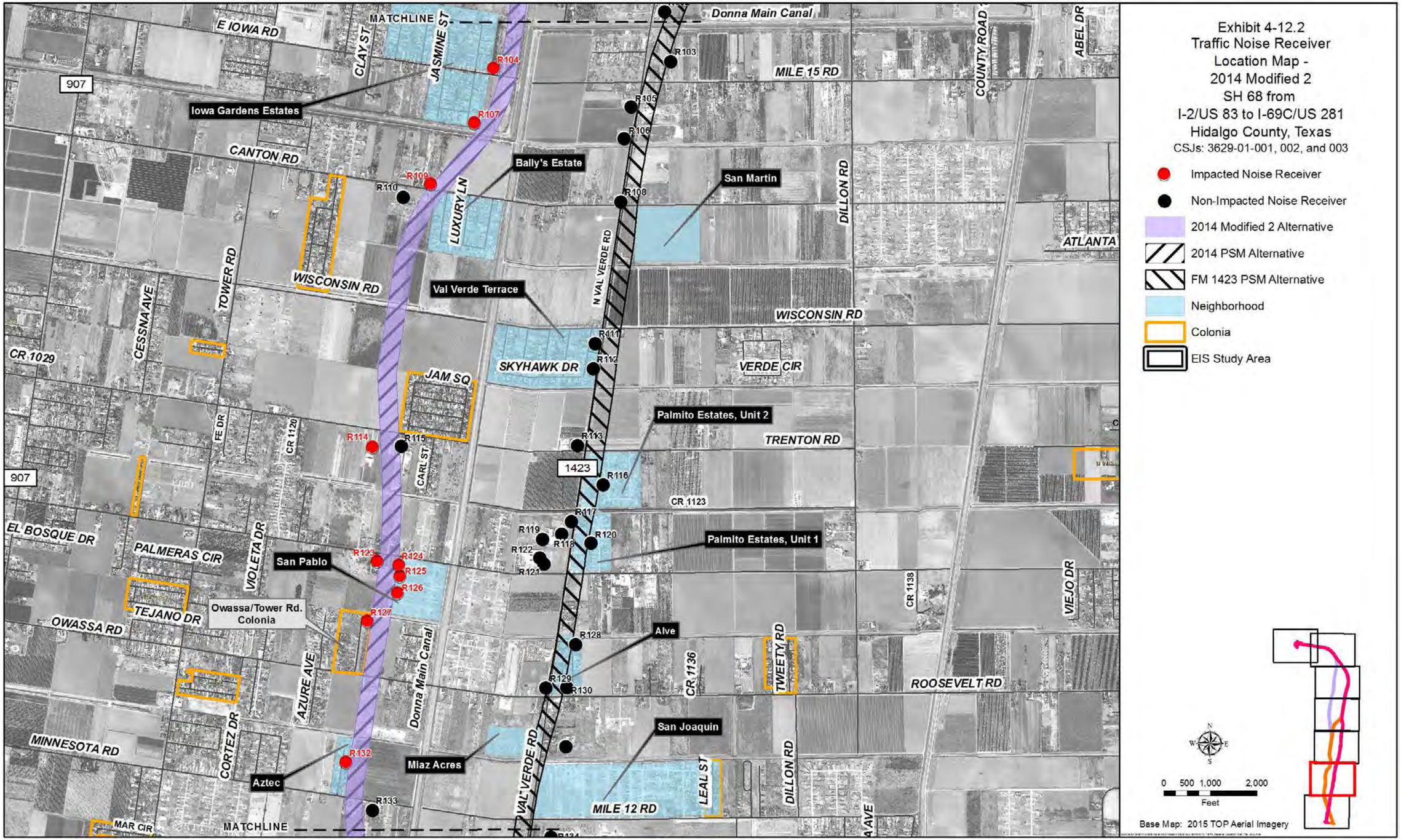


Exhibit 4-12.2
Traffic Noise Receiver
Location Map -
2014 Modified 2
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Neighborhood
Colonia
EIS Study Area
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery
MATCHLINE
E IOWA RD
CLAY ST
JASMINE ST
Donna Main Canal
MILE 15 RD
COUNTY ROAD
ABEL DR
907
Iowa Gardens Estates
CANTON RD
Bally's Estate
San Martin
LUXURY LN
DILLON RD
ATLANTA
TOWER RD
WISCONSIN RD
Val Verde Terrace
N VAL VERDE RD
CESSNA AVE
CR 1029
SKYHAWK DR
VERDE CIR
JAM SQ
Palmito Estates, Unit 2
TRENTON RD
FE DR
CR 1120
CARL ST
1423
CR 1123
EL BOSQUE DR
PALMERAS CIR
VIOLETA DR
Palmito Estates, Unit 1
San Pablo
TEJANO DR
Owassa/Tower Rd.
Colonia
OWASSA RD
CR 1138
VIEJO DR
Alve
AZURE AVE
CR 1136
TWEETY RD
ROOSEVELT RD
MINNESOTA RD
CORTEZ DR
San Joaquin
Aztec
Miaz Acres
VAL VERDE RD
MILE 12 RD
LEAL ST
MAR CIR
R103
R104
R105
R106
R107
R108
R109
R110
R111
R112
R113
R114
R115
R116
R117
R118
R119
R120
R121
R122
R123
R124
R125
R126
R127
R128
R129
R130
R132
R133

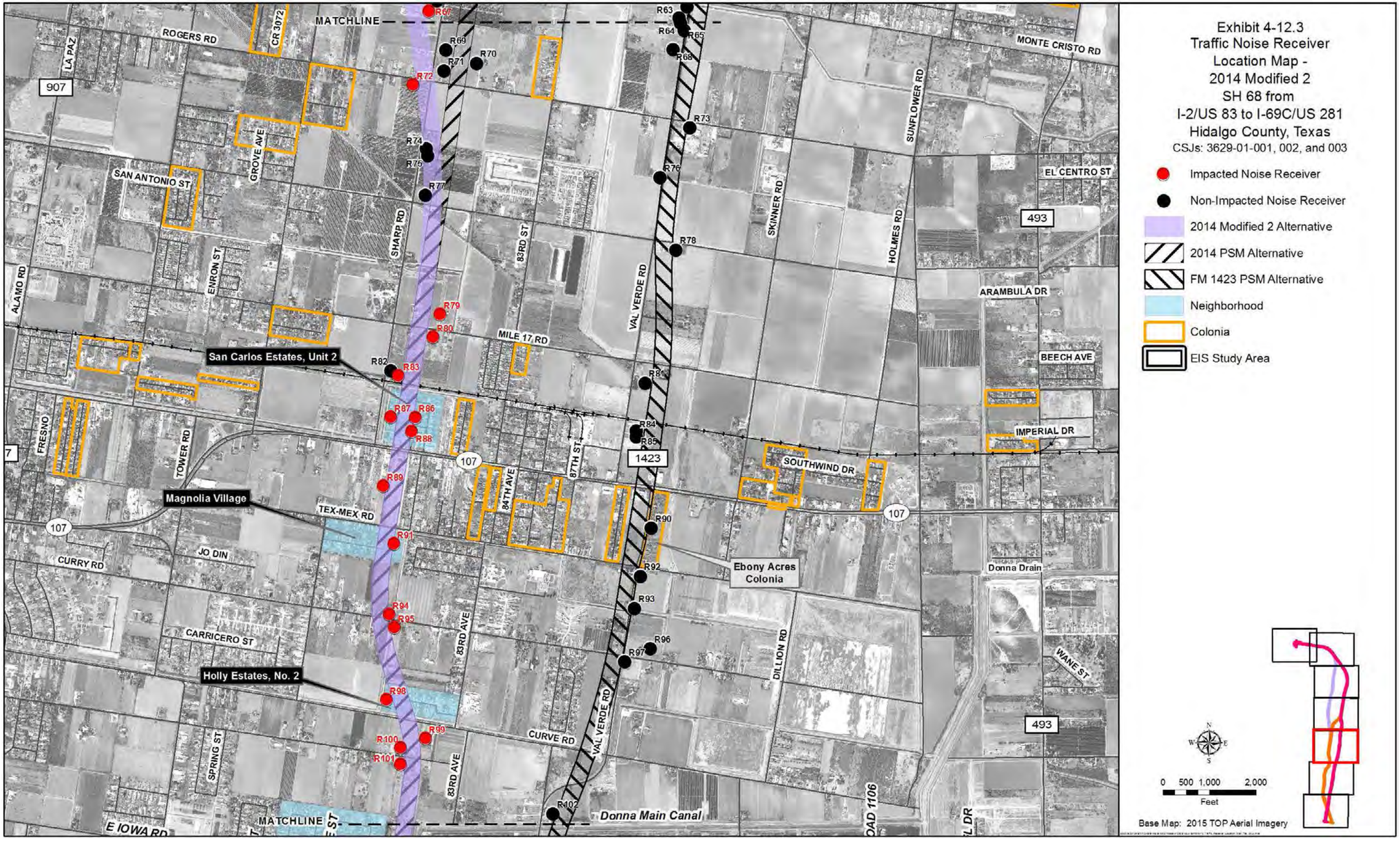


Exhibit 4-12.3
Traffic Noise Receiver
Location Map -
2014 Modified 2
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Neighborhood
Colonia
EIS Study Area
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery
MATCHLINE
ROGERS RD
LA PAZ
CR 3072
907
GROVE AVE
SAN ANTONIO ST
ENRON ST
ALAMO RD
SHARP RD
83RD ST
VAL VERDE RD
SKINNER RD
HOLMES RD
SUNFLOWER RD
MONTE CRISTO RD
EL CENTRO ST
493
ARAMBULA DR
BEECH AVE
IMPERIAL DR
MILE 17 RD
San Carlos Estates, Unit 2
FRESNO
TOWER RD
107
1423
SOUTHWIND DR
84TH AVE
87TH ST
Magnolia Village
TEX-MEX RD
JO DIN
CURRY RD
Ebony Acres Colonia
Donna Drain
CARRICERO ST
83RD AVE
DILLION RD
WANE ST
Holly Estates, No. 2
SPRING ST
CURVE RD
Donna Main Canal
E IOWA RD
ROAD 1106
R63
R64
R65
R66
R67
R68
R69
R70
R71
R72
R73
R74
R75
R76
R77
R78
R79
R80
R81
R82
R83
R84
R85
R86
R87
R88
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R93
R94
R95
R96
R97
R98
R99
R100
R101
R102

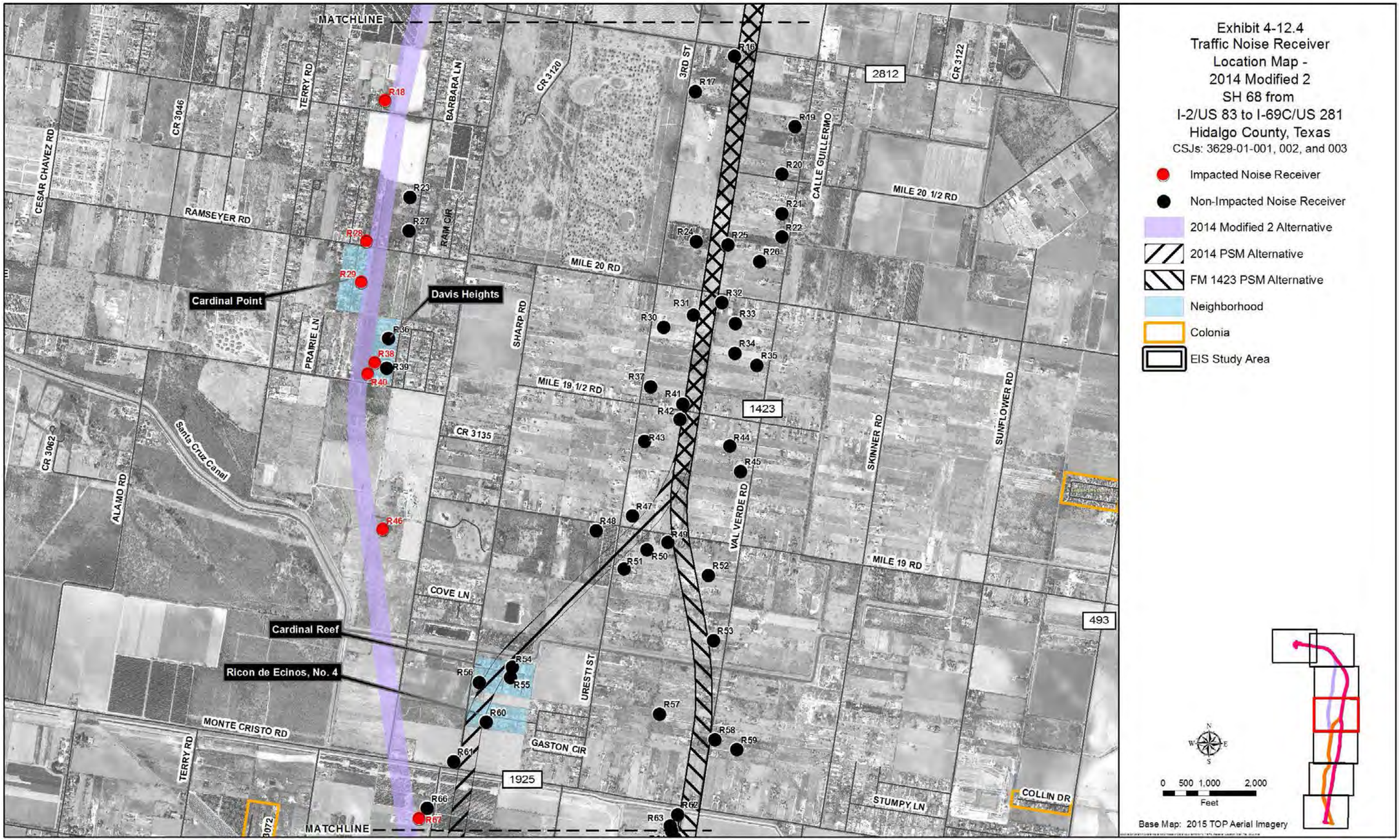
Exhibit 4-12.4
Traffic Noise Receiver
Location Map -
2014 Modified 2
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Neighborhood
Colonia
EIS Study Area
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery
MATCHLINE
Cardinal Point
Davis Heights
Cardinal Reef
Ricon de Ecinos, No. 4
Santa Cruz Canal
2812
1423
493
1925
CESAR CHAVEZ RD
CR 3046
TERRY RD
BARBARA LN
CR 3120
3RD ST
CR 3122
CALLE GUILLERMO
MILE 20 1/2 RD
RAMSEYER RD
RAM CIR
MILE 20 RD
PRAIRIE LN
SHARP RD
MILE 19 1/2 RD
CR 3135
SKINNER RD
SUNFLOWER RD
CR 3062
ALAMO RD
VAL VERDE RD
MILE 19 RD
COVE LN
URESTI ST
GASTON CIR
MONTE CRISTO RD
STUMPY LN
COLLIN DR
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R27
R28
R29
R30
R31
R32
R33
R34
R35
R36
R37
R38
R39
R40
R41
R42
R43
R44
R45
R46
R47
R48
R49
R50
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R61
R62
R63
R66
R67

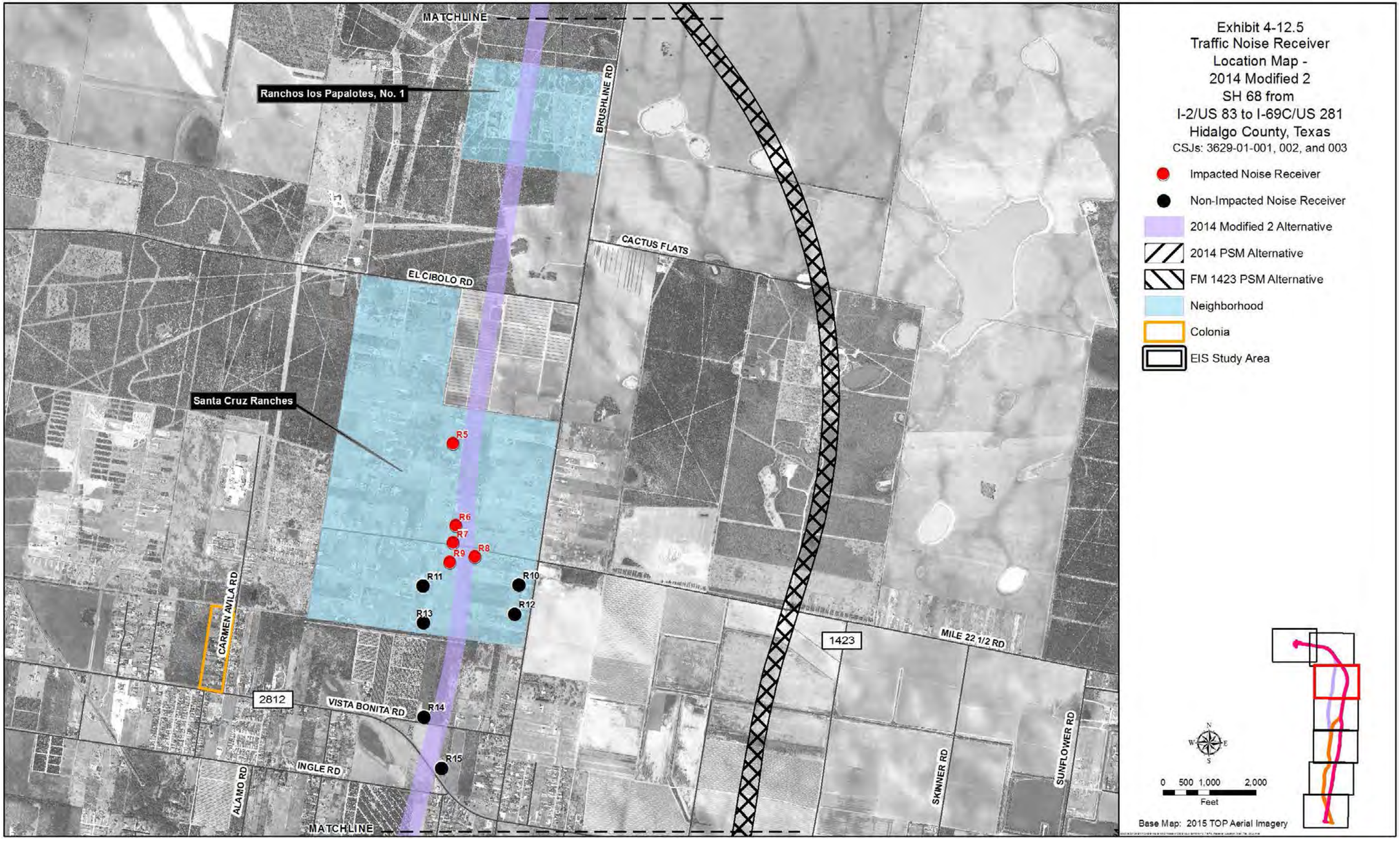


Exhibit 4-12.5
Traffic Noise Receiver
Location Map -
2014 Modified 2
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Neighborhood
Colonia
EIS Study Area
MATCHLINE
Ranchos los Papalotes, No. 1
BRUSHLINE RD
CACTUS FLATS
EL CIBOLO RD
Santa Cruz Ranches
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
CARMEN AVILA RD
2812
VISTA BONITA RD
INGLE RD
ALAMO RD
1423
MILE 22 1/2 RD
SKINNER RD
SUNFLOWER RD
MATCHLINE
N
W
E
S
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery

Exhibit 4-12.6
Traffic Noise Receiver
Location Map -
2014 Modified 2
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Neighborhood
Colonia
EIS Study Area
R1
R2
R3
R4
MATCHLINE
MATCHLINE
490
490
M DAVILA SR RD
BRUSHLINE RD
12TH ST
CR 3444
N
W
E
S
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery

Exhibit 4-12.7
Traffic Noise Receiver
Location Map -
2014 Modified 2
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
Neighborhood
Colonia
EIS Study Area
281
69C
490
R1
R2
AIR CARGO DR
MATCH LINE
LOS CERRITOS CIR
N
W
E
S
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery

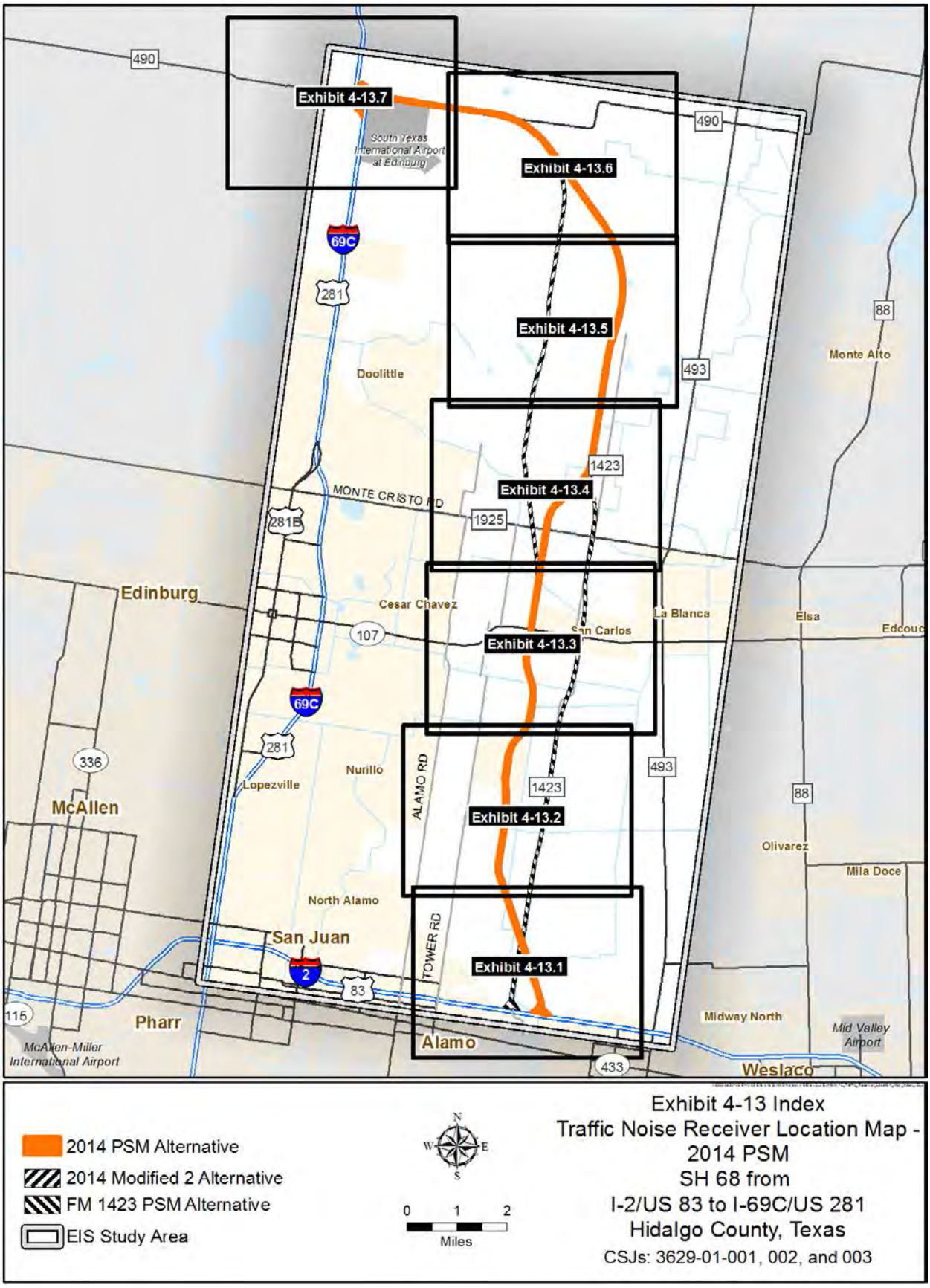


Exhibit 4-13.7
Exhibit 4-13.6
Exhibit 4-13.5
Exhibit 4-13.4
Exhibit 4-13.3
Exhibit 4-13.2
Exhibit 4-13.1
South Texas International Airport at Edinburg
Doolittle
MONTE CRISTO RD
Edinburg
Cesar Chavez
San Carlos
La Blanca
Elsa
Monte Alto
Nurillo
Lopezville
ALAMO RD
TOWER RD
McAllen
North Alamo
San Juan
Pharr
Alamo
Olivarez
Mila Doce
Midway North
Mid Valley Airport
Weslaco
McAllen-Miller International Airport
2014 PSM Alternative
2014 Modified 2 Alternative
FM 1423 PSM Alternative
EIS Study Area
N
W
E
S
0 1 2
Miles
Exhibit 4-13 Index
Traffic Noise Receiver Location Map - 2014 PSM
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

Exhibit 4-13.1
Traffic Noise Receiver
Location Map -
2014 PSM
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
2014 PSM Alternative
2014 Modified 2 Alternative
FM 1423 PSM Alternative
Neighborhood
Colonia
EIS Study Area
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery
MATCHLINE
MAR CIR
E NOLANA LOOP
907
EARLING RD
CR 1145
ELDORA RD
RAY DR
SIOUX RD
PETUNIA
CORRAL WAY
APACHE TRL
Pastos Verdes
NAVAJO RD
Donna Main Canal
Apache Estates
CR 1144
CR 1142
GINA AV
EARLING RD
R134
R135
R136
R137
R138
R139
R140
R141
R142
R143
R144
R145
R146
R147
R148
R149
R150
R151
R152
RUGER ST
Overland Park, Phase I
1423
CR 1148
VIESHA AVE
CR 1150
ARMANDO ST
MILE 11 R
Valverde Heights
JUANITA
HUISACHE CIR
495
KANSAS RD
Val Verde North Colonia
FERGUSON RD
9TH PL
BRADY AVE
NEBRASKA RD
LUCY DR
BORDER RD
HACKBERRY AVE
SWALLOW DR
MILE 9 RD
GOLIE RD
GOOLIE RD
BILLMAN RD
DURANTA AVE
LORENA
ACACIA AVE
CR 1181
MURPHY AVE
BOWIE AVE
4TH ST
YAL PALM
BEECH ST
7TH ST

Exhibit 4-13.2
Traffic Noise Receiver
Location Map -
2014 PSM
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
2014 PSM Alternative
2014 Modified 2 Alternative
FM 1423 PSM Alternative
Neighborhood
Colonia
EIS Study Area
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery
MATCHLINE
E IOWA RD
CLAY ST
JASMINE ST
907
Iowa Gardens Estates
CANTON RD
Bally's Estate
LUXURY LN
San Martin
Donna Main Canal
MILE 15 RD
COUNTY ROAD
ABEL DR
DILLON RD
ATLANTA
N VAL VERDE RD
WISCONSIN RD
TOWER RD
CESSNA AVE
Val Verde Terrace
CR 1029
SKYHAWK DR
VERDE CIR
JAM SQ
Palmito Estates, Unit 2
TRENTON RD
1423
CR 1123
CARL ST
FE DR
CR 1120
EL BOSQUE DR
PALMERAS CIR
VIOLETA DR
San Pablo
Palmito Estates, Unit 1
TEJANO DR
Owassa/Tower Rd.
Colonia
OWASSA RD
AZURE AVE
Alve
CR 1136
TWEETY RD
VIEJO DR
CR 1138
ROOSEVELT RD
MINNESOTA RD
CORTEZ DR
Aztec
Miaz Acres
San Joaquin
VAL VERDE RD
MILE 12 RD
LEAL ST
MAR CIR
R102
R103
R104
R105
R106
R107
R108
R109
R110
R111
R112
R113
R114
R115
R116
R117
R118
R119
R120
R121
R122
R123
R124
R125
R126
R127
R128
R129
R130
R131
R132
R133

1

Exhibit 4-13.3
Traffic Noise Receiver
Location Map -
2014 PSM
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
2014 PSM Alternative
2014 Modified 2 Alternative
FM 1423 PSM Alternative
Neighborhood
Colonia
EIS Study Area
MATCHLINE
ROGERS RD
LA PAZ
CR 3072
907
GROVE AVE
SAN ANTONIO ST
ENRON ST
ALAMO RD
SHARP RD
83RD ST
MILE 17 RD
VAL VERDE RD
SKINNER RD
HOLMES RD
SUNFLOWER RD
MONTE CRISTO RD
EL CENTRO ST
493
ARAMBULA DR
BEECH AVE
IMPERIAL DR
SOUTHWIND DR
1423
107
87TH ST
84TH AVE
83RD AVE
FRESNO
TOWER RD
TEX-MEX RD
JO DIN
CURRY RD
CARRICERO ST
SPRING ST
CURVE RD
DILLION RD
WANE ST
DAD 1106
San Carlos Estates, Unit 2
Magnolia Village
Holly Estates, No. 2
Ebony Acres Colonia
Donna Drain
Donna Main Canal
E IOWA RD
R63
R64
R65
R67
R68
R69
R70
R71
R72
R73
R74
R75
R76
R77
R78
R79
R80
R81
R82
R83
R84
R85
R86
R87
R88
R89
R90
R91
R92
R93
R94
R95
R96
R97
R98
R99
R100
R101
R102
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery

1

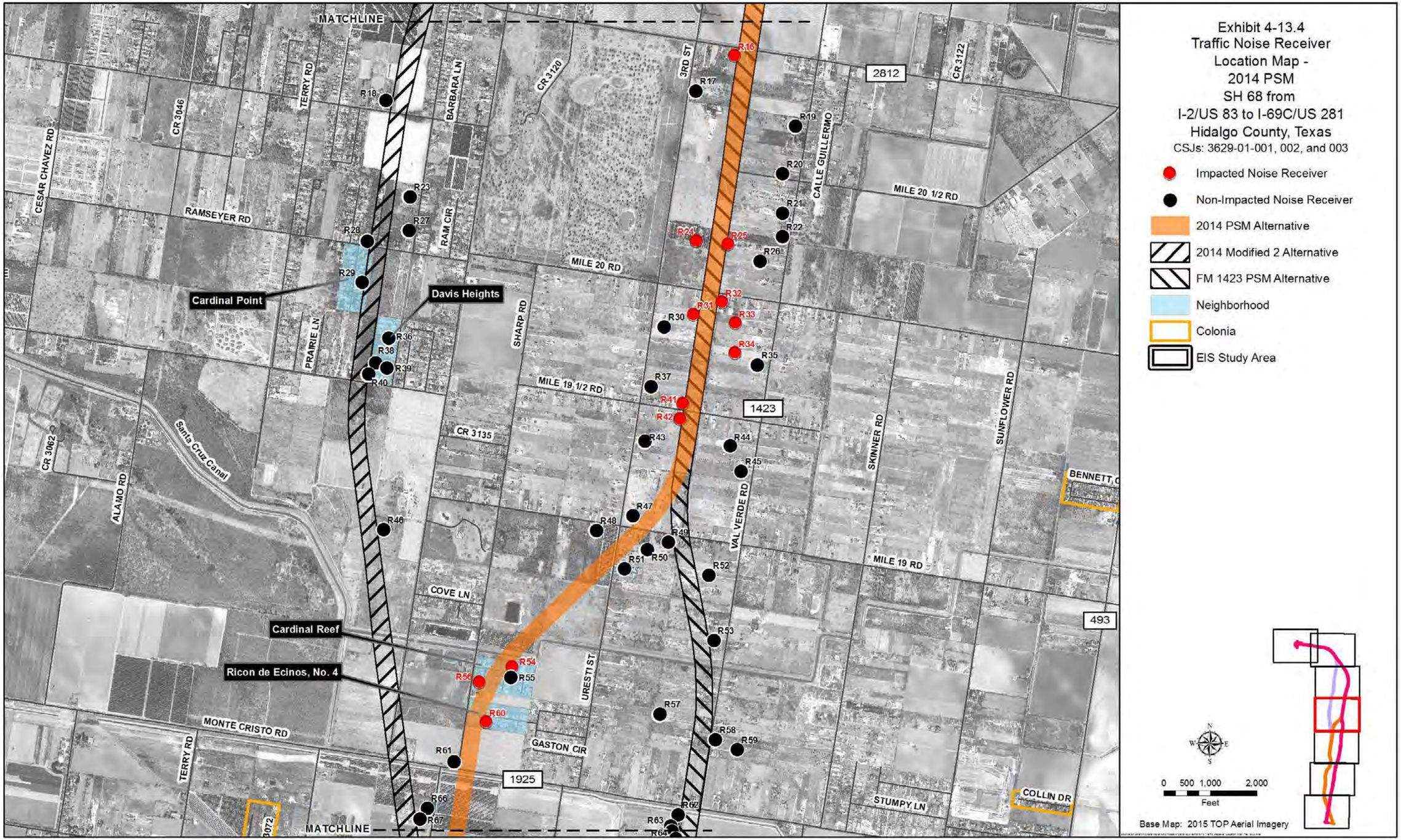


Exhibit 4-13.4
Traffic Noise Receiver
Location Map -
2014 PSM
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
2014 PSM Alternative
2014 Modified 2 Alternative
FM 1423 PSM Alternative
Neighborhood
Colonia
EIS Study Area
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery
MATCHLINE
Cardinal Point
Davis Heights
Cardinal Reef
Ricon de Ecinos, No. 4
2812
1423
493
1925
RAMSEYER RD
MILE 20 RD
MILE 20 1/2 RD
MILE 19 1/2 RD
MILE 19 RD
MONTE CRISTO RD
CESAR CHAVEZ RD
CR 3046
TERRY RD
BARBARA LN
CR 3120
3RD ST
CALLE GUILLERMO
CR 3122
RAM CIR
PRAIRIE LN
SHARP RD
CR 3135
Santa Cruz Canal
CR 3062
ALAMO RD
VAL VERDE RD
SKINNER RD
SUNFLOWER RD
COVE LN
URESTI ST
GASTON CIR
STUMPY LN
COLLIN DR
BENNETT C

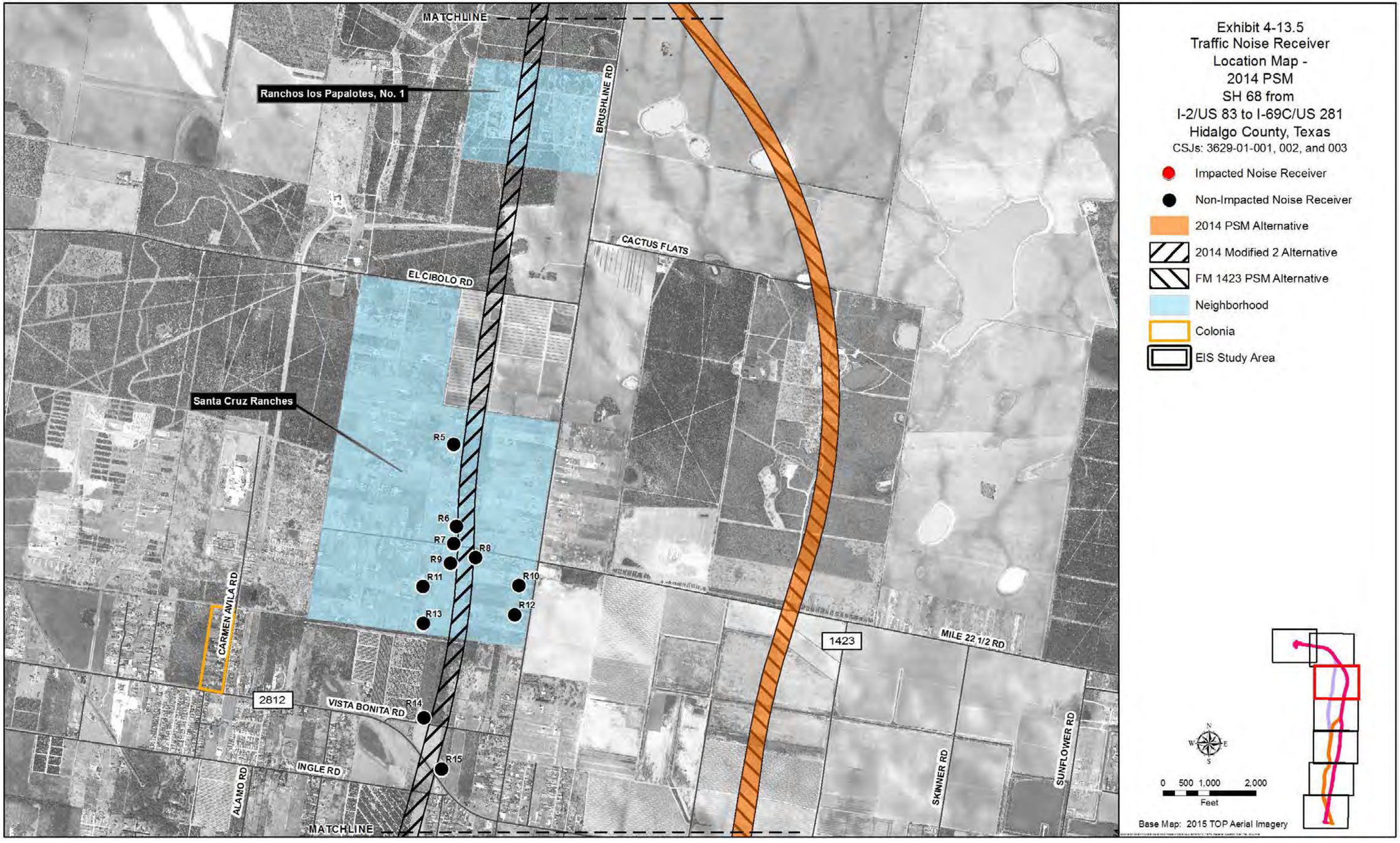
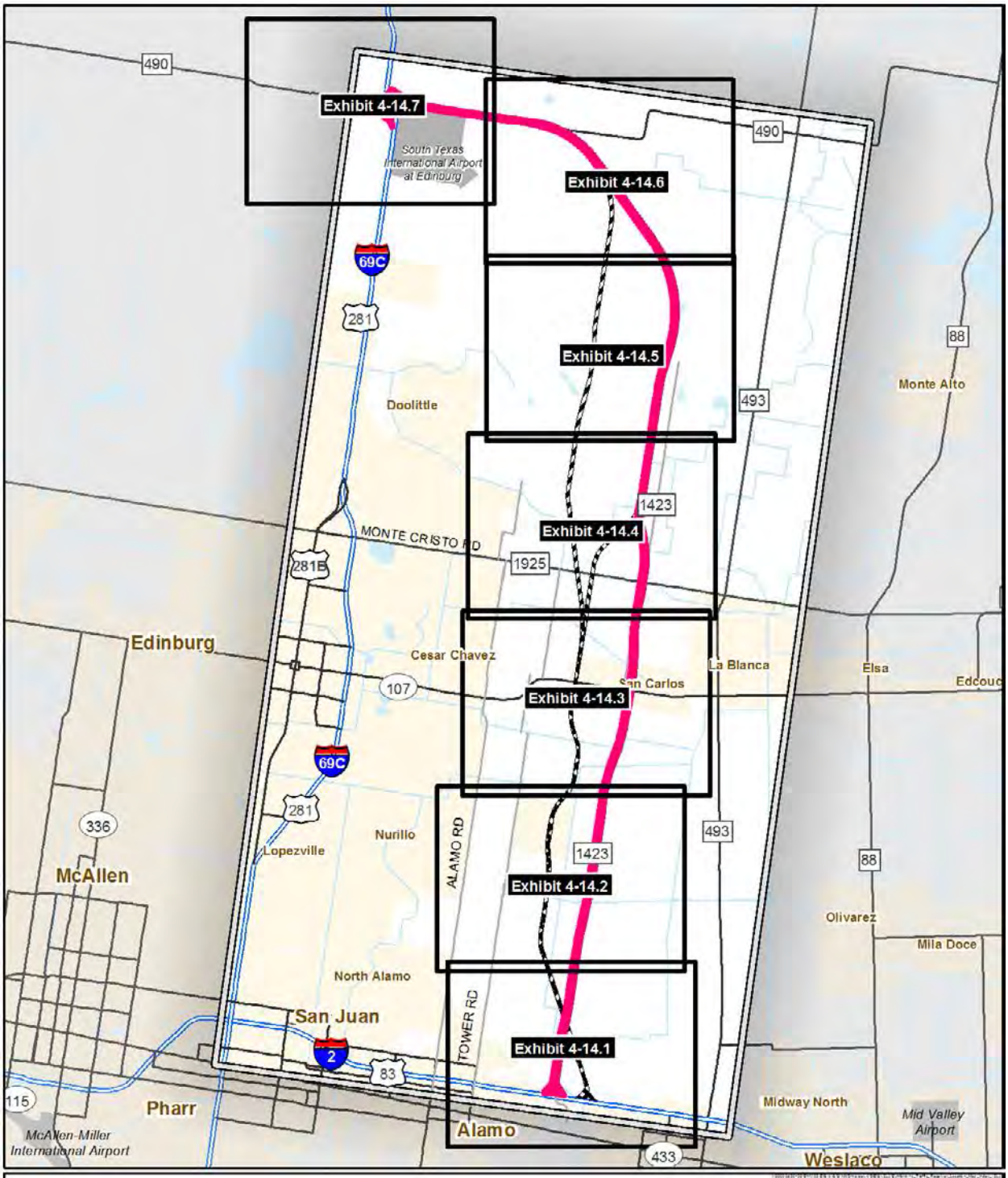


Exhibit 4-13.5
Traffic Noise Receiver
Location Map -
2014 PSM
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
2014 PSM Alternative
2014 Modified 2 Alternative
FM 1423 PSM Alternative
Neighborhood
Colonia
EIS Study Area
MATCHLINE
Ranchos los Papalotes, No. 1
BRUSHLINE RD
CACTUS FLATS
EL CIBOLO RD
Santa Cruz Ranches
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
CARMEN AVILA RD
2812
VISTA BONITA RD
INGLE RD
ALAMO RD
1423
MILE 22 1/2 RD
SKINNER RD
SUNFLOWER RD
N
W
E
S
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery

Exhibit 4-13.6
Traffic Noise Receiver
Location Map -
2014 PSM
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
2014 PSM Alternative
2014 Modified 2 Alternative
FM 1423 PSM Alternative
Neighborhood
Colonia
EIS Study Area
R1
R2
R3
R4
MATCHLINE
490
M DAVILA SR RD
BRUSHLINE RD
12TH ST
CR 3444
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery

Exhibit 4-13.7
Traffic Noise Receiver
Location Map -
2014 PSM
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
2014 PSM Alternative
2014 Modified 2 Alternative
FM 1423 PSM Alternative
Neighborhood
Colonia
EIS Study Area
281
69C
490
R1
R2
AIR CARGO DR
MATCH LINE
LOS CERRITOS CIR
N
W
E
S
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery



FM 1423 PSM Alternative
2014 Modified 2 Alternative
2014 PSM Alternative
EIS Study Area

N W E S

0 1 2
Miles

Exhibit 4-14 Index
Traffic Noise Receiver Location Map - FM 1423 PSM
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

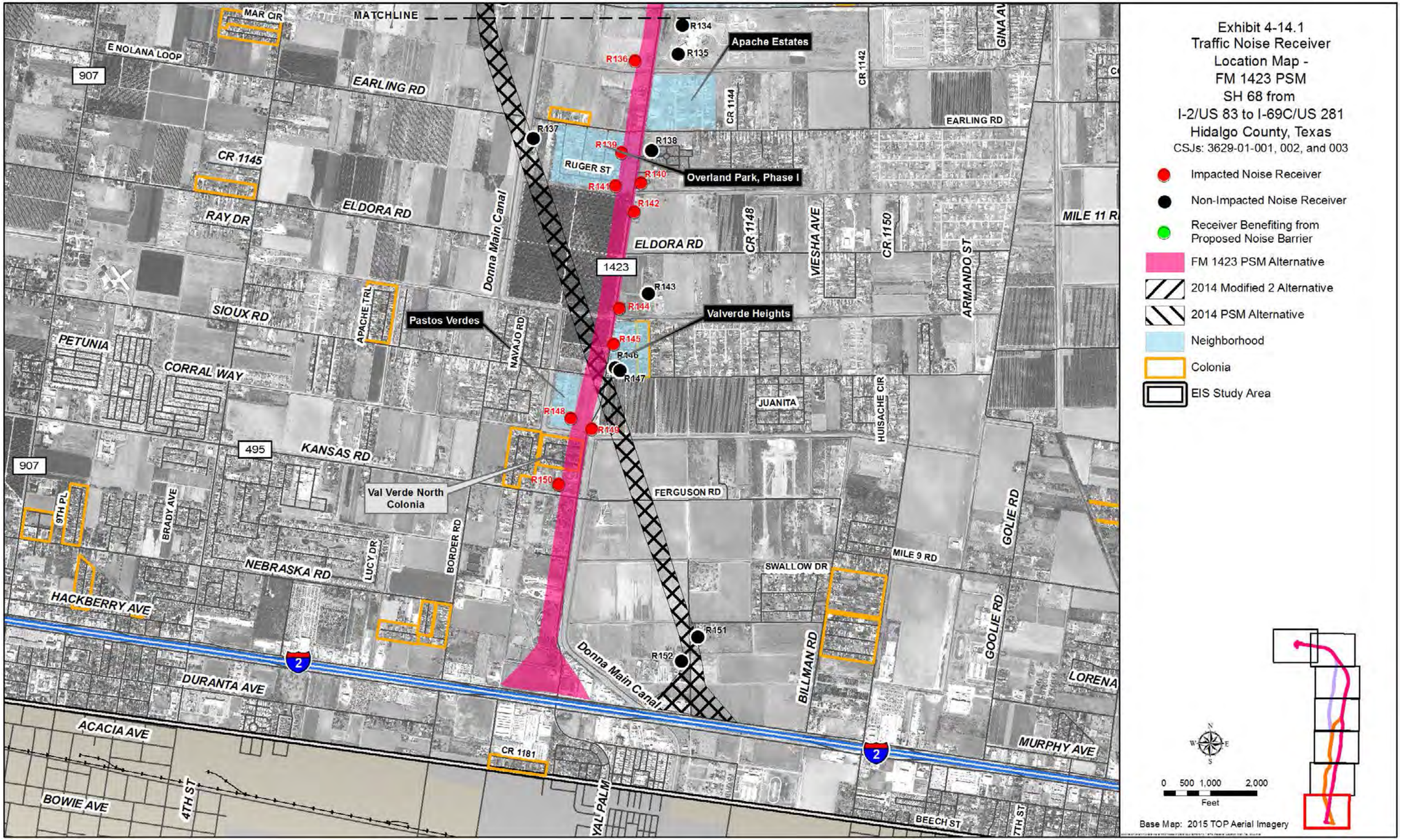


Exhibit 4-14.1
Traffic Noise Receiver
Location Map -
FM 1423 PSM
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
Receiver Benefiting from Proposed Noise Barrier
FM 1423 PSM Alternative
2014 Modified 2 Alternative
2014 PSM Alternative
Neighborhood
Colonia
EIS Study Area
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery
MATCHLINE
Apache Estates
Overland Park, Phase I
Pastos Verdes
Valverde Heights
Val Verde North Colonia
R134
R135
R136
R137
R138
R139
R140
R141
R142
R143
R144
R145
R146
R147
R148
R149
R150
R151
R152
MAR CIR
E NOLANA LOOP
907
EARLING RD
CR 1145
RAY DR
ELDORA RD
RUGER ST
Donna Main Canal
1423
SIOUX RD
APACHE TRL
PETUNIA
CORRAL WAY
NAVAJO RD
CR 1142
CR 1144
CR 1148
VIESHA AVE
CR 1150
ARMANDO ST
GINA AV
MILE 11 R
JUANITA
HUISACHE CIR
495
KANSAS RD
9TH PL
BRADY AVE
LUCY DR
BORDER RD
NEBRASKA RD
HACKBERRY AVE
FERGUSON RD
SWALLOW DR
MILE 9 RD
GOLIE RD
BILLMAN RD
DURANTA AVE
ACACIA AVE
CR 1181
BOWIE AVE
4TH ST
YAL PALM
BEECH ST
7TH ST
MURPHY AVE
LORENA
2

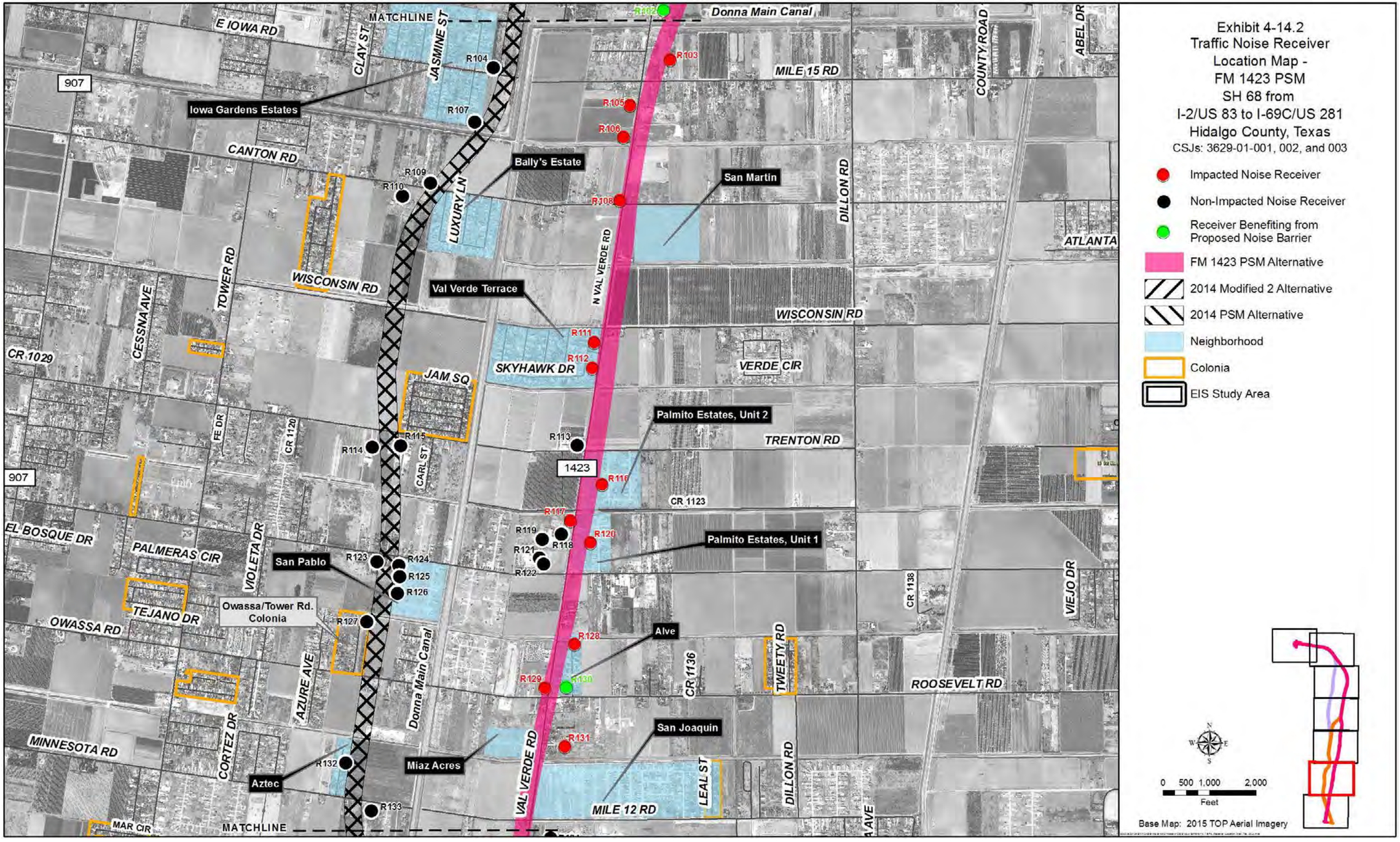


Exhibit 4-14.2
Traffic Noise Receiver
Location Map -
FM 1423 PSM
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
Receiver Benefiting from Proposed Noise Barrier
FM 1423 PSM Alternative
2014 Modified 2 Alternative
2014 PSM Alternative
Neighborhood
Colonia
EIS Study Area
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery
Donna Main Canal
MATCHLINE
E IOWA RD
CLAY ST
JASMINE ST
MILE 15 RD
COUNTY ROAD
ABEL DR
907
Iowa Gardens Estates
CANTON RD
Bally's Estate
San Martin
LUXURY LN
DILLON RD
ATLANTA
TOWER RD
WISCONSIN RD
Val Verde Terrace
N VAL VERDE RD
CESSNA AVE
CR 1029
SKYHAWK DR
VERDE CIR
JAM SQ
Palmito Estates, Unit 2
TRENTON RD
FE DR
CR 1120
CARL ST
1423
CR 1123
EL BOSQUE DR
PALMERAS CIR
VIOLETA DR
San Pablo
Palmito Estates, Unit 1
CR 1138
VIEJO DR
TEJANO DR
Owassa/Tower Rd. Colonia
OWASSA RD
Alve
TWEETY RD
CR 1136
ROOSEVELT RD
AZURE AVE
Donna Main Canal
CORTEZ DR
MINNESOTA RD
San Joaquin
Miaz Acres
Aztec
VAL VERDE RD
MILE 12 RD
LEAL ST
DILLON RD
MAR CIR
MATCHLINE

1

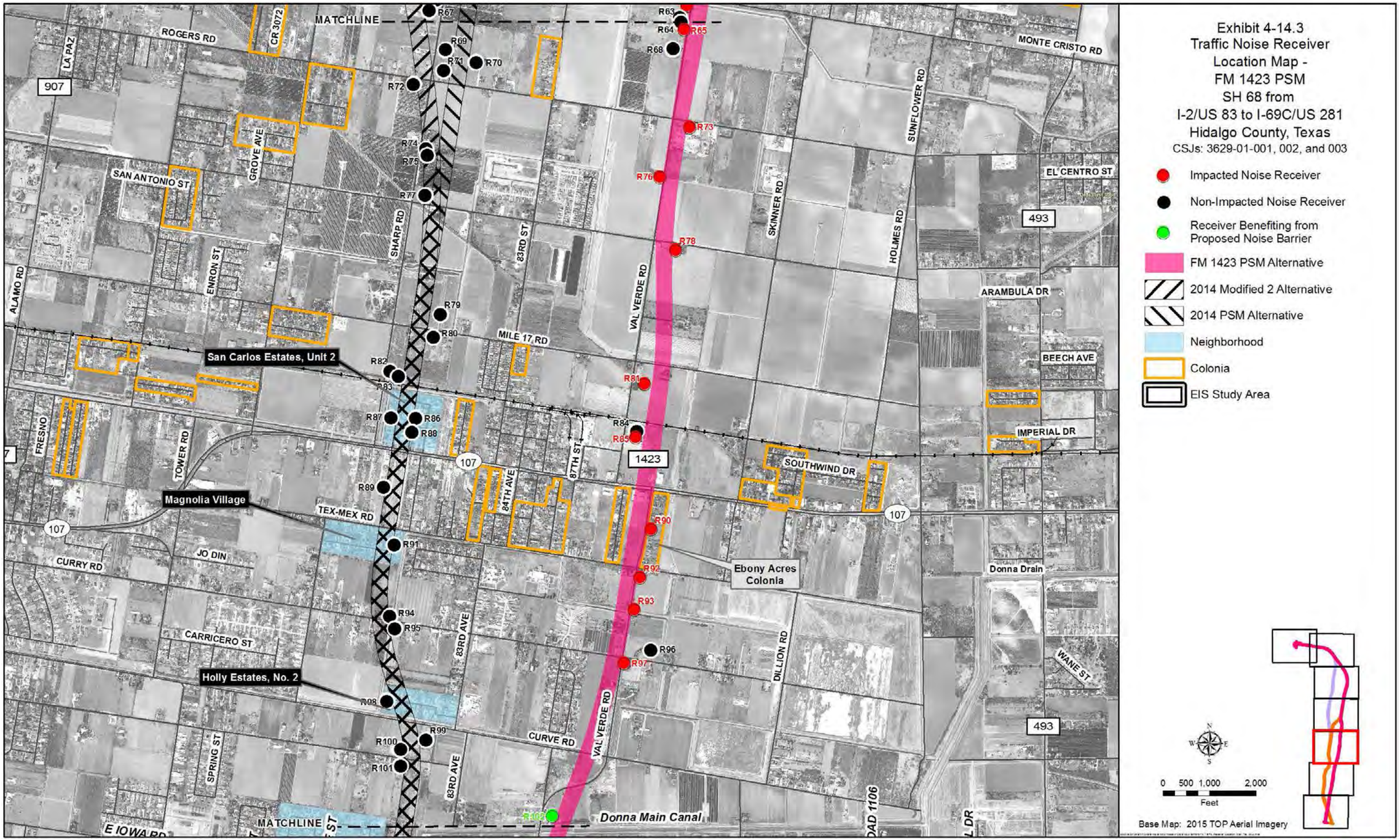


Exhibit 4-14.3
Traffic Noise Receiver
Location Map -
FM 1423 PSM
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
Receiver Benefiting from Proposed Noise Barrier
FM 1423 PSM Alternative
2014 Modified 2 Alternative
2014 PSM Alternative
Neighborhood
Colonia
EIS Study Area
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery
MATCHLINE
ROGERS RD
LA PAZ
CR 3072
907
GROVE AVE
SAN ANTONIO ST
ENRON ST
ALAMO RD
SHARP RD
83RD ST
MILE 17 RD
VAL VERDE RD
SKINNER RD
HOLMES RD
SUNFLOWER RD
MONTE CRISTO RD
EL CENTRO ST
493
ARAMBULA DR
BEECH AVE
IMPERIAL DR
SOUTHWIND DR
1423
107
87TH ST
84TH AVE
83RD AVE
TEX-MEX RD
JO DIN
CURRY RD
CARRICERO ST
CURVE RD
DILLION RD
WANE ST
Donna Drain
Donna Main Canal
FRESNO
TOWER RD
SPRING ST
E IOWA RD
San Carlos Estates, Unit 2
Magnolia Village
Holly Estates, No. 2
Ebony Acres Colonia
R63
R64
R65
R67
R68
R69
R70
R71
R72
R73
R74
R75
R76
R77
R78
R79
R80
R81
R82
R83
R84
R85
R86
R87
R88
R89
R90
R91
R92
R93
R94
R95
R96
R97
R98
R99
R100
R101
R102

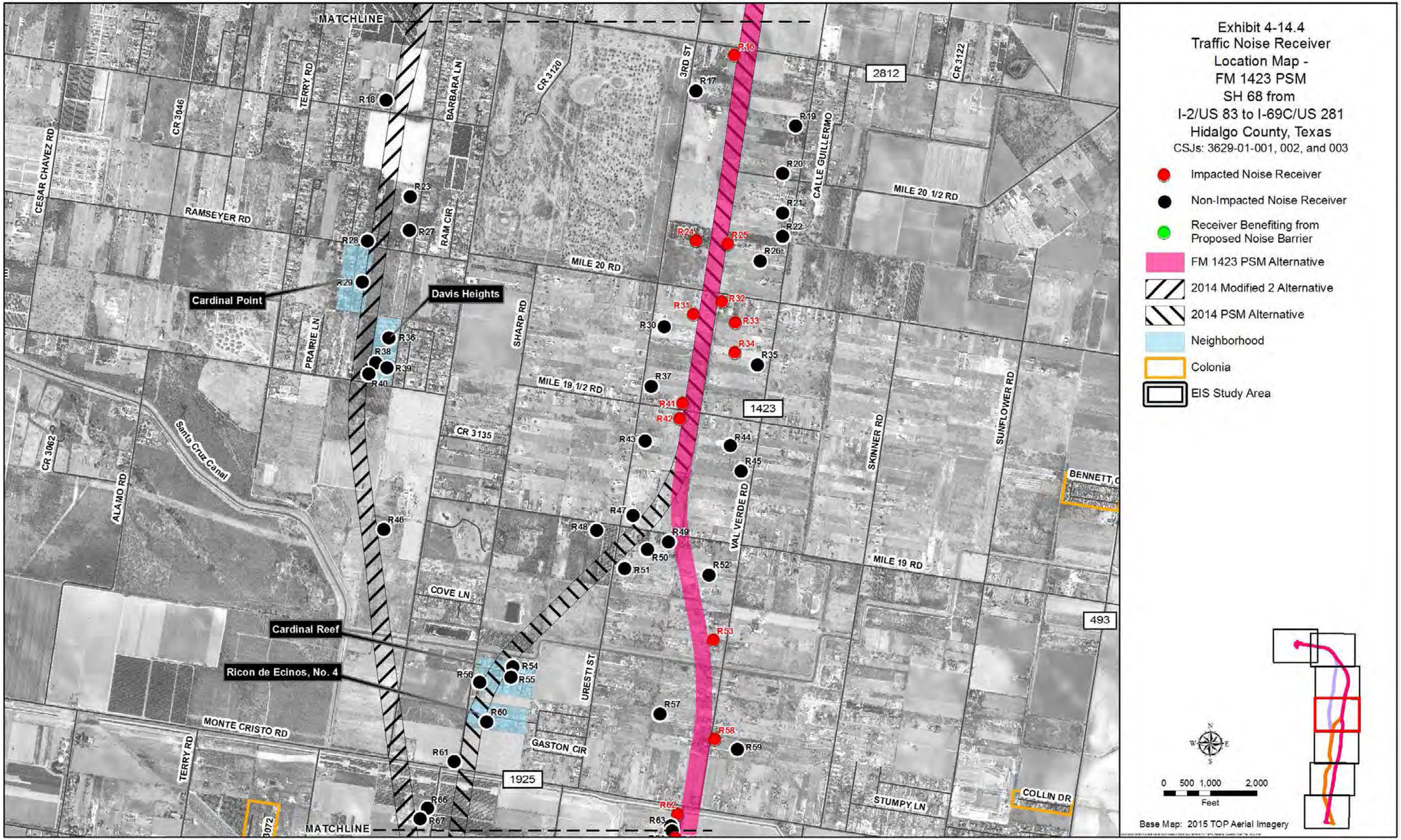


Exhibit 4-14.4
Traffic Noise Receiver
Location Map -
FM 1423 PSM
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
Receiver Benefiting from Proposed Noise Barrier
FM 1423 PSM Alternative
2014 Modified 2 Alternative
2014 PSM Alternative
Neighborhood
Colonia
EIS Study Area
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery
MATCHLINE
Cardinal Point
Davis Heights
Cardinal Reef
Ricon de Ecinos, No. 4
Santa Cruz Canal
2812
1423
493
1925
CESAR CHAVEZ RD
CR 3046
TERRY RD
BARBARA LN
CR 3120
3RD ST
CR 3122
CALLE GUILLERMO
RAMSEYER RD
RAM CIR
MILE 20 1/2 RD
MILE 20 RD
PRAIRIE LN
SHARP RD
MILE 19 1/2 RD
CR 3135
CR 3062
ALAMO RD
VAL VERDE RD
SKINNER RD
SUNFLOWER RD
MILE 19 RD
COVE LN
URESTI ST
GASTON CIR
MONTE CRISTO RD
STUMPY LN
COLLIN DR
BENNETT C

Exhibit 4-14.5
Traffic Noise Receiver
Location Map -
FM 1423 PSM
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
Receiver Benefiting from Proposed Noise Barrier
FM 1423 PSM Alternative
2014 Modified 2 Alternative
2014 PSM Alternative
Neighborhood
Colonia
EIS Study Area
MATCHLINE
Ranchos los Papalotes, No. 1
BRUSHLINE RD
CACTUS FLATS
EL CIBOLO RD
Santa Cruz Ranches
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
CARMEN AVILA RD
2812
VISTA BONITA RD
INGLE RD
ALAMO RD
1423
MILE 22 1/2 RD
SKINNER RD
SUNFLOWER RD
MATCHLINE
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery

Exhibit 4-14.6
Traffic Noise Receiver
Location Map -
FM 1423 PSM
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
Receiver Benefiting from Proposed Noise Barrier
FM 1423 PSM Alternative
2014 Modified 2 Alternative
2014 PSM Alternative
Neighborhood
Colonia
EIS Study Area
R1
R2
R3
R4
MATCHLINE
490
M DAVILA SR RD
BRUSHLINE RD
12TH ST
CR 3444
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery

Exhibit 4-14.7
Traffic Noise Receiver
Location Map -
FM 1423 PSM
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Impacted Noise Receiver
Non-Impacted Noise Receiver
Receiver Benefiting from Proposed Noise Barrier
FM 1423 PSM Alternative
2014 Modified 2 Alternative
2014 PSM Alternative
Neighborhood
Colonia
EIS Study Area
281
69C
490
R1
R2
AIR CARGO DR
MATCH LINE
LOS CERRITOS CIR
0 500 1,000 2,000
Feet
Base Map: 2015 TOP Aerial Imagery

SH 68 Existing and Predicted Traffic Noise Levels for the Three Reasonable Alternatives

Receiver Number -Type	NAC Category	NAC Level	Existing (2017) dB(A) Leq	2014 Modified 2 Alternative Predicted (2035) dB(A) Leq	Change (+/-)	Noise Impact	2014 PSM Alternative Predicted (2035) dB(A) Leq	Change (+/-)	Noise Impact	FM 1423 PSM Alternative Predicted (2035) dB(A) Leq	Change (+/-)	Noise Impact
R1 - Residential	**B**	**67**	**42**	**58**	**+16**	**Yes**	**58**	**+16**	**Yes**	**58**	**+16**	**Yes**
R2 - Residential	B	67	36	45	+9	No	45	+9	No	45	+9	No
R3 - Residential	B	67	36	44	+8	No	44	+8	No	44	+8	No
R4 - Residential	B	67	33	41	+8	No	41	+8	No	41	+8	No
R5 - Residential	**B**	**67**	**49**	**61**	**+12**	**Yes**	**49***	**0**	**No**	**49***	**0**	**No**
R6 - Residential	**B**	**67**	**51**	**68**	**+17**	**Yes**	**51***	**0**	**No**	**51***	**0**	**No**
R7 - Residential	**B**	**67**	**51**	**66**	**+15**	**Yes**	**51***	**0**	**No**	**51***	**0**	**No**
R8 - Residential	**B**	**67**	**52**	**68**	**+16**	**Yes**	**52***	**0**	**No**	**52***	**0**	**No**
R9 - Residential	**B**	**67**	**51**	**63**	**+12**	**Yes**	**51***	**0**	**No**	**51***	**0**	**No**
R10 - Residential	B	67	55	55*	0	No	55*	0	No	55*	0	No
R11 - Residential	B	67	47	55	+8	No	47*	0	No	47*	0	No
R12 - Residential	B	67	55	55*	0	No	55*	0	No	55*	0	No
R13 - Residential	B	67	49	56	+7	No	49*	0	No	49*	0	No
R14 - Residential	B	67	54	63	+9	No	54*	0	No	54*	0	No
R15 - Residential	B	67	62	63	+1	No	62*	0	No	62*	0	No
R16 - Residential	**B**	**67**	**60**	**60***	**0**	**No**	**66**	**6**	**Yes**	**66**	**+6**	**Yes**
R17 - Residential	B	67	53	53*	0	No	53	0	No	53	0	No
R18 - Residential	**B**	**67**	**52**	**64**	**+12**	**Yes**	**52***	**0**	**No**	**52***	**0**	**No**
R19 - Residential	B	67	51	51*	0	No	51	0	No	51	0	No
R20 - Residential	B	67	50	50*	0	No	52	2	No	52	+2	No
R21 - Residential	B	67	49	49*	0	No	51	2	No	51	+2	No
R22 - Residential	B	67	49	49*	0	No	51	2	No	51	+2	No
R23 - Residential	B	67	54	59	+5	No	54*	0	No	54*	0	No
R24 - Residential	**B**	**67**	**46**	**46***	**0**	**No**	**59**	**+13**	**Yes**	**59**	**+13**	**Yes**
R25 - Residential	**B**	**67**	**46**	**46***	**0**	**No**	**68**	**+22**	**Yes**	**68**	**+22**	**Yes**
R26 - Residential	B	67	48	48*	0	No	54	+6	No	54	+6	No
R27 - Residential	B	67	54	58	+4	No	54*	0	No	54*	0	No
R28 - Residential	**B**	**67**	**53**	**66**	**+13**	**Yes**	**53***	**0**	**No**	**53***	**0**	**No**
R29 - Residential	**B**	**67**	**49**	**66**	**+17**	**Yes**	**49***	**0**	**No**	**49***	**0**	**No**
R30 - Residential	B	67	48	48*	0	No	55	+7	No	55	+7	No
R31 - Residential	**B**	**67**	**47**	**47***	**0**	**No**	**64**	**+17**	**Yes**	**64**	**+17**	**Yes**
R32 - Residential	**B**	**67**	**49**	**49***	**0**	**No**	**65**	**+16**	**Yes**	**65**	**+16**	**Yes**
R33 - Residential	**B**	**67**	**46**	**46***	**0**	**No**	**57**	**+11**	**Yes**	**57**	**+11**	**Yes**

Exhibit 4-15.1. Existing and Predicted Traffic Noise Levels for the Three Reasonable Alternatives

SH 68 Existing and Predicted Traffic Noise Levels for the Three Reasonable Alternatives

Receiver Number -Type	NAC Category	NAC Level	Existing (2017) dB(A) Leq	2014 Modified 2 Alternative Predicted (2035) dB(A) Leq	Change (+/-)	Noise Impact	2014 PSM Alternative Predicted (2035) dB(A) Leq	Change (+/-)	Noise Impact	FM 1423 PSM Alternative Predicted (2035) dB(A) Leq	Change (+/-)	Noise Impact
R34 - Residential	**B**	**67**	**45**	**45***	**0**	**No**	**56**	**+11**	**Yes**	**56**	**+11**	**Yes**
R35 - Residential	B	67	48	48*	0	No	52	+4	No	52	+4	No
R36 - Residential	B	67	51	59	+8	No	51*	0	No	51*	0	No
R37 - Residential	B	67	49	49*	0	No	54	+5	No	54	+5	No
R38 - Residential	**B**	**67**	**52**	**64**	**+12**	**Yes**	**52***	**0**	**No**	**52***	**0**	**No**
R39 - Residential	B	67	52	58	+6	No	52*	0	No	52*	0	No
R40 - Residential	**B**	**67**	**53**	**70**	**+17**	**Yes**	**53***	**0**	**No**	**53***	**0**	**No**
R41 - Residential	**B**	**67**	**49**	**49***	**0**	**No**	**68**	**+19**	**Yes**	**68**	**+19**	**Yes**
R42 - Residential	**B**	**67**	**49**	**49***	**0**	**No**	**67**	**+18**	**Yes**	**67**	**+18**	**Yes**
R43 - Residential	B	67	48	48*	0	No	55	+7	No	54	+6	No
R44 - Residential	B	67	46	46*	0	No	54	+8	No	54	+8	No
R45 - Residential	B	67	48	48*	0	No	51	+3	No	52	+4	No
R46 - Residential	**B**	**67**	**48**	**63**	**+15**	**Yes**	**48***	**0**	**No**	**48***	**0**	**No**
R47 - Residential	B	67	55	55*	0	No	63	+8	No	55*	0	No
R48 - Residential	B	67	55	55*	0	No	57	+2	No	55*	0	No
R49 - Residential	B	67	55	55*	0	No	57	+2	No	64	+9	No
R50 - Residential	B	67	54	54*	0	No	61	+7	No	56	+2	No
R51 - Residential	B	67	51	51*	0	No	61	+10	No	51	0	No
R52 - Residential	B	67	52	52*	0	No	52*	0	No	60	+8	No
R53 - Residential	**B**	**67**	**47**	**47***	**0**	**No**	**47***	**0**	**No**	**65**	**+18**	**Yes**
R54 - Residential	**B**	**67**	**54**	**54***	**0**	**No**	**68**	**+14**	**Yes**	**54***	**0**	**No**
R55 - Residential	B	67	54	54*	0	No	64	+10	No	54*	0	No
R56 - Residential	**B**	**67**	**58**	**58***	**0**	**No**	**68**	**+10**	**Yes**	**58***	**0**	**No**
R57 - Residential	B	67	45	45*	0	No	45*	0	No	54	+9	No
R58 - Residential	**B**	**67**	**51**	**51***	**0**	**No**	**51***	**0**	**No**	**65**	**+14**	**Yes**
R59 - Residential	B	67	47	47*	0	No	47*	0	No	55	+8	No
R60 - Residential	**B**	**67**	**56**	**56***	**0**	**No**	**67**	**+11**	**Yes**	**56***	**0**	**No**
R61 - Residential	B	67	60	60*	0	No	64	+4	No	60*	0	No
R62 - Residential	**B**	**67**	**58**	**58***	**0**	**No**	**58***	**0**	**No**	**68**	**+10**	**Yes**
R63 - Church Volleyball Court	C	67	56	56*	0	No	56*	0	No	62	+6	No
R64 - Church	D	52	30	30*	0	No	30*	0	No	39	+9	No
R65 - Residential	**B**	**67**	**55**	**55***	**0**	**No**	**55***	**0**	**No**	**70**	**+15**	**Yes**

Exhibit 4-15.2. Existing and Predicted Traffic Noise Levels for the Three Reasonable Alternatives

SH 68 Existing and Predicted Traffic Noise Levels for the Three Reasonable Alternatives

Receiver Number -Type	NAC Category	NAC Level	Existing (2017) dB(A) Leq	2014 Modified 2 Alternative Predicted (2035) dB(A) Leq	Change (+/-)	Noise Impact	2014 PSM Alternative Predicted (2035) dB(A) Leq	Change (+/-)	Noise Impact	FM 1423 PSM Alternative Predicted (2035) dB(A) Leq	Change (+/-)	Noise Impact
R66 - Residential	B	67	51	60	+9	No	57	+6	No	51*	0	No
R67 - Residential	**B**	**67**	**51**	**66**	**+15**	**Yes**	**56**	**+5**	**No**	**51***	**0**	**No**
R68 - Residential	B	67	53	53*	0	No	53*	0	No	62	+9	No
R69 - Residential	**B**	**67**	**51**	**59**	**+8**	**No**	**63**	**+12**	**Yes**	**51***	**0**	**No**
R70 - Residential	**B**	**67**	**50**	**52**	**+2**	**No**	**63**	**+13**	**Yes**	**50***	**0**	**No**
R71 - Residential	**B**	**67**	**51**	**61**	**+10**	**No**	**64**	**+13**	**Yes**	**51***	**0**	**No**
R72 - Residential	**B**	**67**	**51**	**67**	**+16**	**Yes**	**55**	**+4**	**No**	**51***	**0**	**No**
R73 - Residential	**B**	**67**	**56**	**56***	**0**	**No**	**56***	**0**	**No**	**68**	**+12**	**Yes**
R74 - Residential	B	67	51	Within ROW	N/A	N/A	60	+9	No	51*	0	No
R75 - Residential	**B**	**67**	**51**	**Within ROW**	**N/A**	**N/A**	**62**	**+11**	**Yes**	**51***	**0**	**No**
R76 - Residential	**B**	**67**	**52**	**52***	**0**	**No**	**52***	**0**	**No**	**69**	**+17**	**Yes**
R77 - Residential	**B**	**67**	**51**	**Within ROW**	**N/A**	**N/A**	**64**	**+13**	**Yes**	**51***	**0**	**No**
R78 - Residential	**B**	**67**	**49**	**49***	**0**	**No**	**49***	**0**	**No**	**68**	**+19**	**Yes**
R79 - Residential	**B**	**67**	**50**	**61**	**+11**	**Yes**	**61**	**+11**	**Yes**	**50***	**0**	**No**
R80 - Residential	**B**	**67**	**51**	**64**	**+13**	**Yes**	**64**	**+13**	**Yes**	**51***	**0**	**No**
R81 - Residential	**B**	**67**	**51**	**51***	**0**	**No**	**51***	**0**	**No**	**64**	**+13**	**Yes**
R82 - Residential	B	67	50	60	+10	No	60	+10	No	50*	0	No
R83 - Residential	**B**	**67**	**48**	**67**	**+19**	**Yes**	**67**	**+19**	**Yes**	**48***	**0**	**No**
R84 - Residential	B	67	52	52*	0	No	52*	0	No	62	+10	No
R85 - Residential	**B**	**67**	**52**	**52***	**0**	**No**	**52***	**0**	**No**	**63**	**+11**	**Yes**
R86 - Residential	**B**	**67**	**53**	**69**	**+16**	**Yes**	**69**	**+16**	**Yes**	**53***	**0**	**No**
R87 - Residential	**B**	**67**	**53**	**66**	**+13**	**Yes**	**66**	**+13**	**Yes**	**53***	**0**	**No**
R88 - Residential	**B**	**67**	**54**	**71**	**+17**	**Yes**	**71**	**+17**	**Yes**	**54***	**0**	**No**
R89 - Residential	**B**	**67**	**51**	**71**	**+20**	**Yes**	**71**	**+20**	**Yes**	**51***	**0**	**No**
R90 - Residential	**B**	**67**	**65**	**65***	**0**	**No**	**65***	**0**	**No**	**70**	**+5**	**Yes**
R91 - Residential	**B**	**67**	**50**	**73**	**+23**	**Yes**	**73**	**+23**	**Yes**	**50***	**0**	**No**
R92 - Residential	**B**	**67**	**64**	**64***	**0**	**No**	**64***	**0**	**No**	**71**	**+7**	**Yes**
R93 - Residential	**B**	**67**	**63**	**63***	**0**	**No**	**63***	**0**	**No**	**72**	**+9**	**Yes**
R94 - Residential	**B**	**67**	**60**	**73**	**+13**	**Yes**	**73**	**+13**	**Yes**	**60***	**0**	**No**
R95 - Residential	**B**	**67**	**60**	**68**	**+8**	**Yes**	**68**	**8**	**Yes**	**60***	**0**	**No**
R96 - Residential	B	67	59	59*	0	No	59*	0	No	59	0	No
R97 - Residential	**B**	**67**	**64**	**64***	**0**	**No**	**64***	**0**	**No**	**71**	**+7**	**Yes**
R98 - Residential	**B**	**67**	**47**	**68**	**+21**	**Yes**	**68**	**+21**	**Yes**	**47***	**0**	**No**

Exhibit 4-15.3. Existing and Predicted Traffic Noise Levels for the Three Reasonable Alternatives

SH 68 Existing and Predicted Traffic Noise Levels for the Three Reasonable Alternatives

Receiver Number -Type	NAC Category	NAC Level	Existing (2017) dB(A) Leq	2014 Modified 2 Alternative Predicted (2035) dB(A) Leq	Change (+/-)	Noise Impact	2014 PSM Alternative Predicted (2035) dB(A) Leq	Change (+/-)	Noise Impact	FM 1423 PSM Alternative Predicted (2035) dB(A) Leq	Change (+/-)	Noise Impact
R99 - Residential	**B**	**67**	**46**	**67**	**+21**	**Yes**	**67**	**+21**	**Yes**	**46**	**0**	**No**
R100 - Residential	**B**	**67**	**48**	**71**	**+23**	**Yes**	**71**	**+23**	**Yes**	**48***	**0**	**No**
R101 - Residential	**B**	**67**	**48**	**70**	**+22**	**Yes**	**70**	**+22**	**Yes**	**48***	**0**	**No**
R102 - Residential	**B**	**67**	**55**	**55***	**0**	**No**	**55***	**0**	**No**	**71**	**+16**	**Yes**
R103 - Residential	**B**	**67**	**50**	**50***	**0**	**No**	**50***	**0**	**No**	**71**	**+21**	**Yes**
R104 - Residential	**B**	**67**	**46**	**67**	**+21**	**Yes**	**67**	**+21**	**Yes**	**46**	**0**	**No**
R105 - Residential	**B**	**67**	**53**	**53***	**0**	**No**	**53***	**0**	**No**	**66**	**+13**	**Yes**
R106 - Residential	**B**	**67**	**52**	**52***	**0**	**No**	**52***	**0**	**No**	**66**	**+14**	**Yes**
R107 - Residential	**B**	**67**	**46**	**68**	**+22**	**Yes**	**68**	**+22**	**Yes**	**46***	**0**	**No**
R108 - Residential	**B**	**67**	**58**	**58***	**0**	**No**	**58***	**0**	**No**	**73**	**+15**	**Yes**
R109 - Residential	**B**	**67**	**51**	**74**	**+23**	**Yes**	**74**	**+23**	**Yes**	**51***	**0**	**No**
R110 - Residential	B	67	51	61	+10	No	61	+10	No	51*	0	No
R111 - Residential	**B**	**67**	**60**	**60***	**0**	**No**	**60***	**0**	**No**	**67**	**+7**	**Yes**
R112 - Residential	**B**	**67**	**61**	**61***	**0**	**No**	**61***	**0**	**No**	**69**	**+8**	**Yes**
R113 - Residential	B	67	55	55*	0	No	55*	0	No	65	+10	No
R114 - Residential	**B**	**67**	**63**	**66**	**+3**	**Yes**	**66**	**+3**	**Yes**	**63***	**0**	**No**
R115 - Church	D	52	38	46	+8	No	46	+8	No	38*	0	No
R116 - Residential	**B**	**67**	**53**	**53***	**0**	**No**	**53***	**0**	**No**	**69**	**+16**	**Yes**
R117 - Residential	**B**	**67**	**62**	**62***	**0**	**No**	**62***	**0**	**No**	**71**	**+9**	**Yes**
R118 - School	D	52	36	36*	0	No	36*	0	No	39	+3	No
R119 - School Playground	C	67	59	59*	0	No	59*	0	No	59*	0	No
R120 - Residential	**B**	**67**	**53**	**53***	**0**	**No**	**53***	**0**	**No**	**70**	**+17**	**Yes**
R121 - School	D	52	34	34*	0	No	34*	0	No	34	0	No
R122 - School Playground	C	67	59	59*	0	No	59*	0	No	60	+1	No
R123 - Residential	**B**	**67**	**50**	**71**	**+21**	**Yes**	**71**	**+21**	**Yes**	**50***	**0**	**No**
R124 - Residential	**B**	**67**	**50**	**71**	**+21**	**Yes**	**71**	**+21**	**Yes**	**50***	**0**	**No**
R125 - Residential	**B**	**67**	**50**	**69**	**+19**	**Yes**	**69**	**+19**	**Yes**	**50***	**0**	**No**
R126 - Residential	**B**	**67**	**50**	**69**	**+19**	**Yes**	**69**	**+19**	**Yes**	**50***	**0**	**No**
R127 - Residential	**B**	**67**	**48**	**70**	**+22**	**Yes**	**70**	**+22**	**Yes**	**48***	**0**	**No**
R128 - Residential	**B**	**67**	**53**	**53***	**0**	**No**	**53***	**0**	**No**	**70**	**+17**	**Yes**
R129 - Church	**D**	**52**	**30**	**30***	**0**	**No**	**30***	**0**	**No**	**47**	**+17**	**Yes**

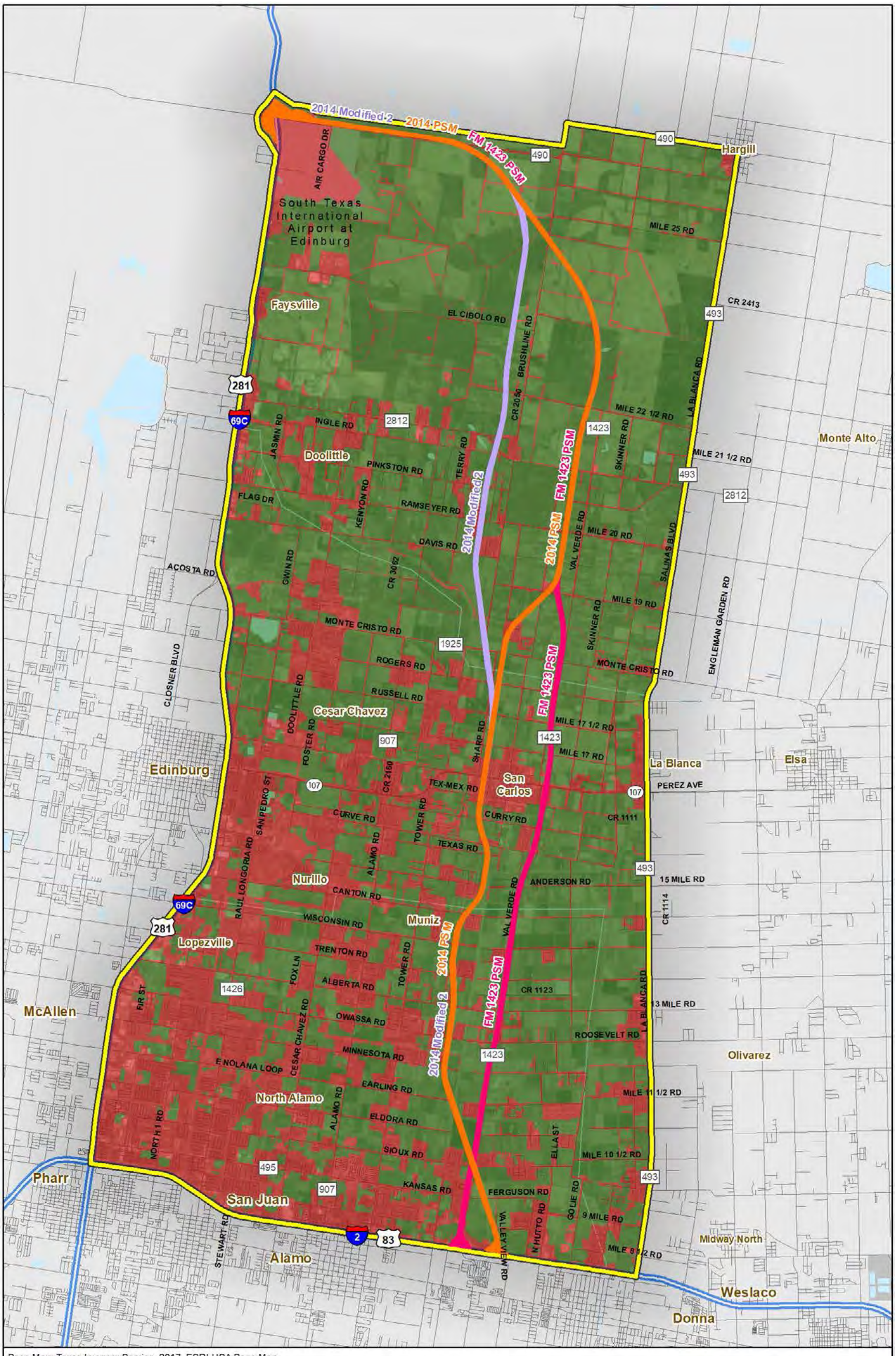
Exhibit 4-15.4. Existing and Predicted Traffic Noise Levels for the Three Reasonable Alternatives

SH 68 Existing and Predicted Traffic Noise Levels for the Three Reasonable Alternatives

Receiver Number -Type	NAC Category	NAC Level	Existing (2017) dB(A) Leq	2014 Modified 2 Alternative Predicted (2035) dB(A) Leq	Change (+/-)	Noise Impact	2014 PSM Alternative Predicted (2035) dB(A) Leq	Change (+/-)	Noise Impact	FM 1423 PSM Alternative Predicted (2035) dB(A) Leq	Change (+/-)	Noise Impact
R130 - Residential	**B**	**67**	**53**	**53***	**0**	**No**	**53***	**0**	**No**	**71**	**+18**	**Yes**
R131 - Residential	**B**	**67**	**50**	**50***	**0**	**No**	**50***	**0**	**No**	**61**	**+11**	**Yes**
R132 - Residential	**B**	**67**	**54**	**70**	**+16**	**Yes**	**70**	**+16**	**Yes**	**54***	**0**	**No**
R133 - Residential	B	67	54	64	+10	No	64	+10	No	54*	0	No
R134 - School	D	52	27	27*	0	No	27*	0	No	34	+7	No
R135 - School	D	52	27	27*	0	No	27*	0	No	35	+8	No
R136 - Residential	**B**	**67**	**53**	**53***	**0**	**No**	**53***	**0**	**No**	**71**	**+18**	**Yes**
R137 - Residential	**B**	**67**	**50**	**72**	**+22**	**Yes**	**72**	**+22**	**Yes**	**50***	**0**	**No**
R138 - Cemetery	C	67	64	64*	0	No	64*	0	No	64	0	No
R139 - Residential	**B**	**67**	**54**	**54***	**0**	**No**	**54***	**0**	**No**	**72**	**+18**	**Yes**
R140 - Residential	**B**	**67**	**65**	**65***	**0**	**No**	**65***	**0**	**No**	**68**	**+3**	**Yes**
R141 - Residential	**B**	**67**	**54**	**54***	**0**	**No**	**54***	**0**	**No**	**71**	**+17**	**Yes**
R142 - Residential	**B**	**67**	**65**	**65***	**0**	**No**	**65***	**0**	**No**	**71**	**+6**	**Yes**
R143 - Residential	B	67	55	55*	0	No	55*	0	No	58	+3	No
R144 - Residential	**B**	**67**	**60**	**60***	**0**	**No**	**60***	**0**	**No**	**71**	**+11**	**Yes**
R145 - Residential	**B**	**67**	**64**	**64***	**0**	**No**	**64***	**0**	**No**	**70**	**+6**	**Yes**
R146 - Residential	**B**	**67**	**63**	**67**	**+4**	**Yes**	**67**	**+4**	**Yes**	**64**	**+1**	**No**
R147 - Residential	B	67	62	64	+2	No	64	+2	No	62	0	No
R148 - Residential	**B**	**67**	**57**	**57**	**0**	**No**	**57**	**0**	**No**	**71**	**+14**	**Yes**
R149 - Residential	**B**	**67**	**63**	**63***	**0**	**No**	**63***	**0**	**No**	**71**	**+8**	**Yes**
R150 - Residential	**B**	**67**	**63**	**63***	**0**	**No**	**63***	**0**	**No**	**70**	**+7**	**Yes**
R151 - Residential	**B**	**67**	**61**	**73**	**+12**	**Yes**	**73**	**+12**	**Yes**	**61***	**0**	**No**
R152 - Residential	**B**	**67**	**59**	**70**	**+11**	**Yes**	**70**	**+11**	**Yes**	**59***	**0**	**No**

Note: **Bold** receiver number indicates an absolute or relative criterion potential noise impact. An interior noise reduction factor of 25 dB(A), per TxDOT's 2011 Guidelines for Analysis and Abatement of Roadway Traffic Noise, was applied to NAC category "D" receivers.
* Indicates the modeled receiver location is greater than 500 feet from the modeled reasonable alternative and per TxDOT guidance existing year dB(A) levels were used as a baseline for the predicted future dB(A) when the modeled noise level was lower than the existing year dB(A).
Abbreviations: NAC, Noise Abatement Criteria; dB(A), A-weighted decibel; Leq, average/equivalent sound level; N/A, not applicable

Exhibit 4-15.5. Existing and Predicted Traffic Noise Levels for the Three Reasonable Alternatives



Base Map: Texas Imagery Service, 2017, ESRI-USA Base Map

- 2014 Modified 2 Alternative
- 2014 PSM Alternative
- FM 1423 PSM Alternative
- Developed
- Undeveloped
- Area of Influence

N W E S

0 0.5 1 2
Miles

Exhibit 4-16
Indirect Impacts Area of Influence
Developed/Undeveloped Land Use
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

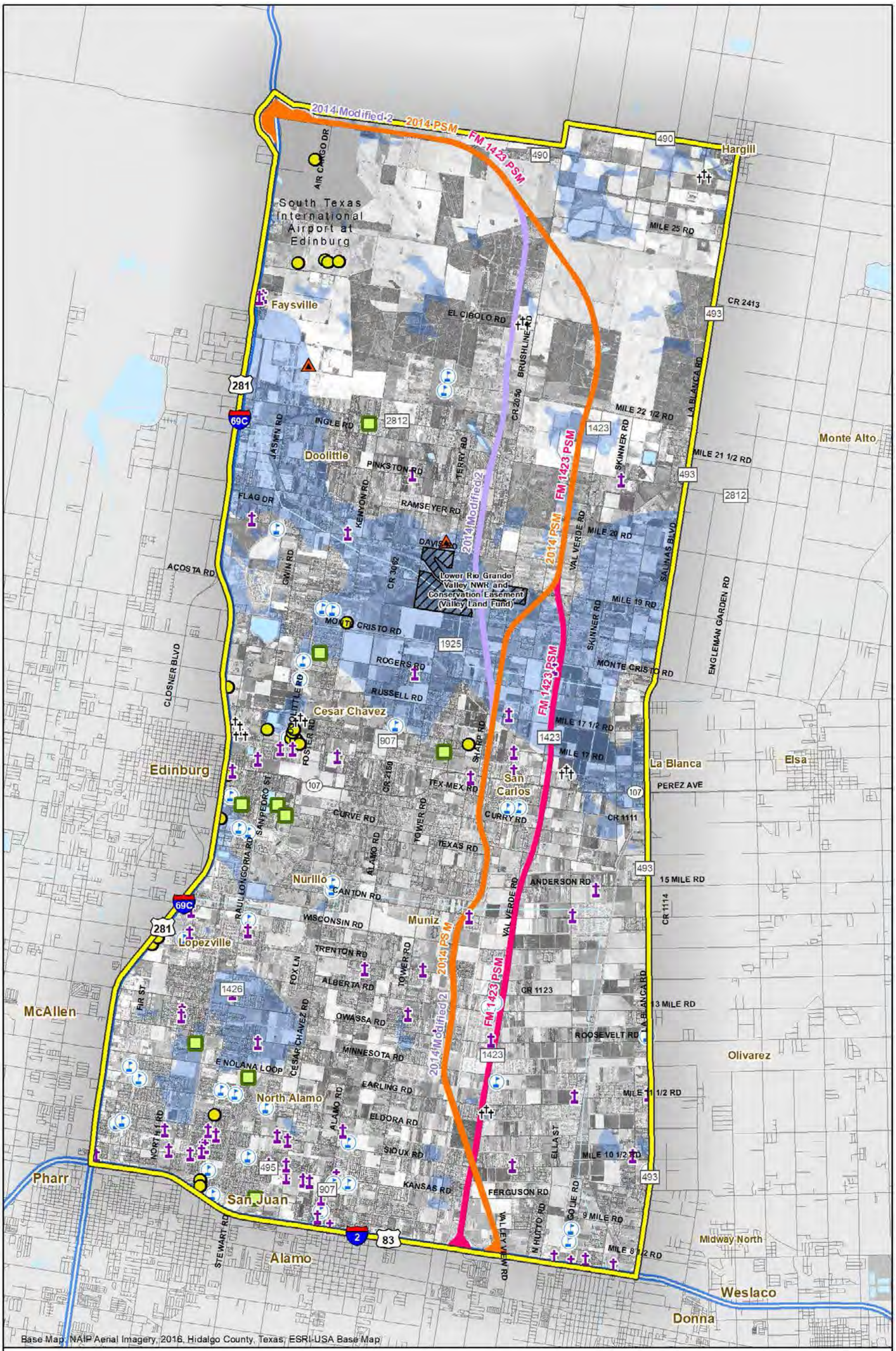


Exhibit 4-17
Indirect Impacts Area of Influence
Development Constraints
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

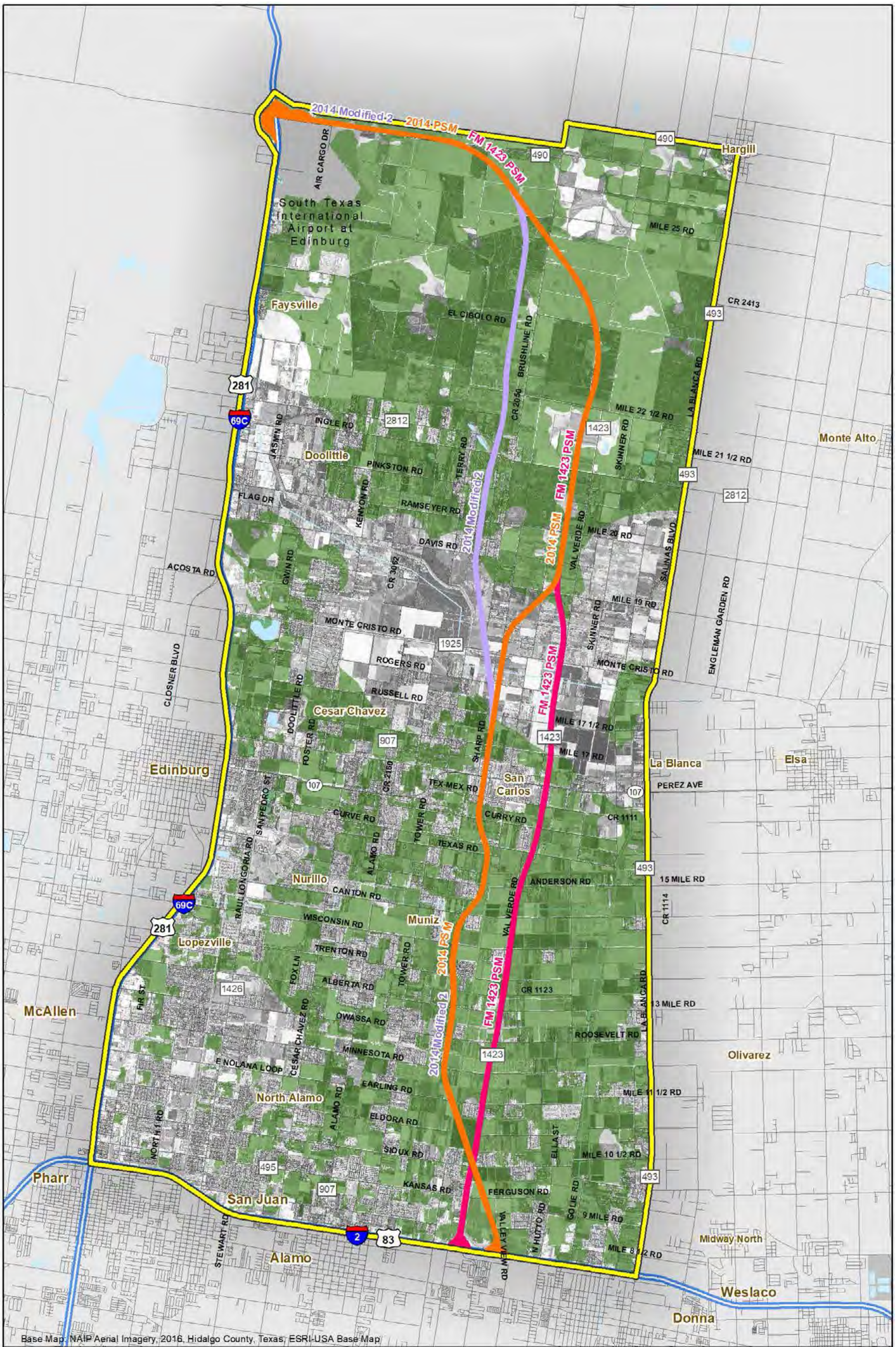


Exhibit 4-18
Potential Developable Land
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

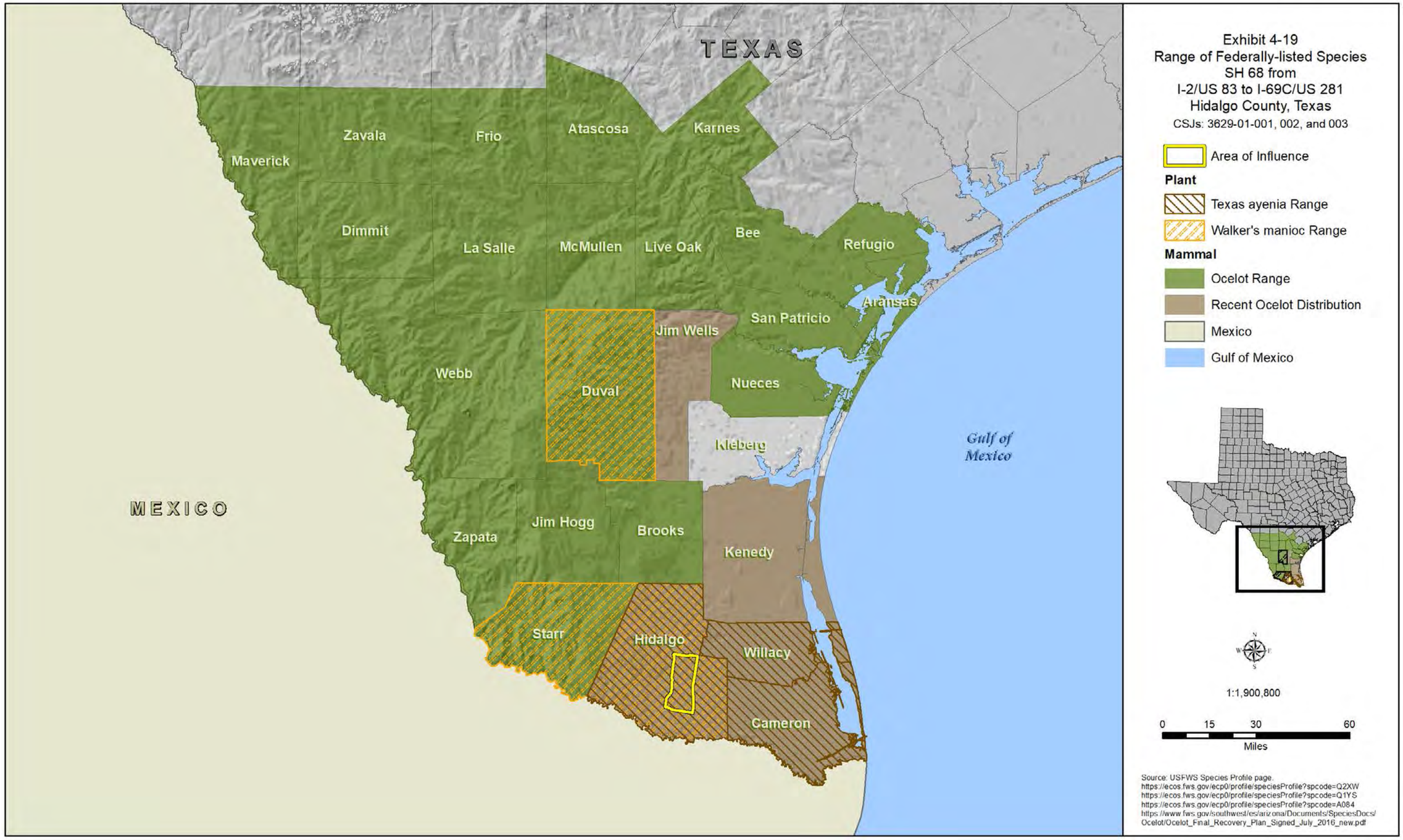


Exhibit 4-19
Range of Federally-listed Species
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Area of Influence
Plant
Texas ayenia Range
Walker's manioc Range
Mammal
Ocelot Range
Recent Ocelot Distribution
Mexico
Gulf of Mexico
1:1,900,800
0 15 30 60
Miles
Source: USFWS Species Profile page.
https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=Q2XW
https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=Q1YS
https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=A084
https://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/Ocelot/Ocelot_Final_Recovery_Plan_Signed_July_2016_new.pdf
TEXAS
MEXICO
Gulf of Mexico
Maverick
Zavala
Frio
Atascosa
Karnes
Dimmit
La Salle
McMullen
Live Oak
Bee
Refugio
Aransas
San Patricio
Jim Wells
Webb
Duval
Nueces
Kleberg
Zapata
Jim Hogg
Brooks
Kenedy
Starr
Hidalgo
Willacy
Cameron

1

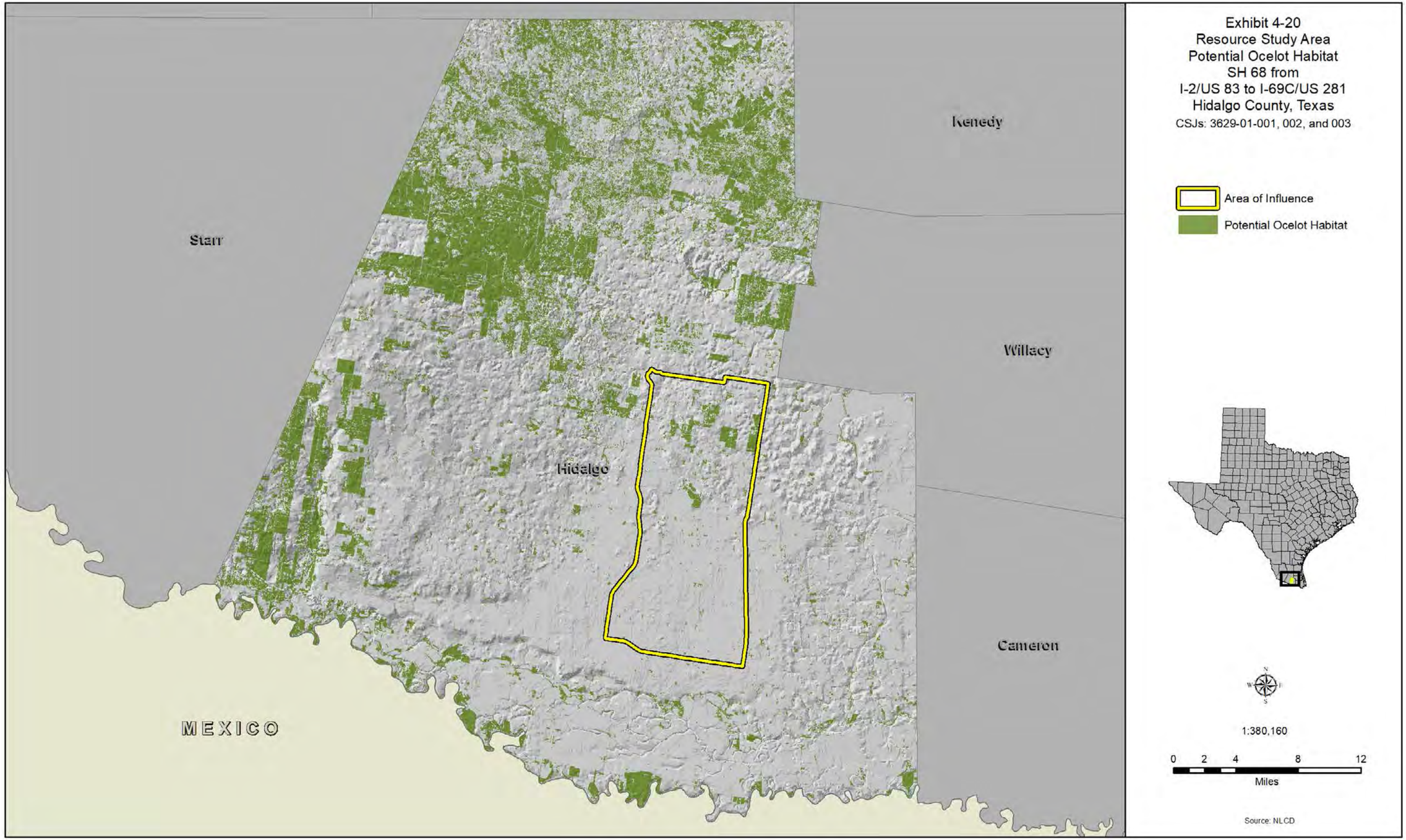


Exhibit 4-20
Resource Study Area
Potential Ocelot Habitat
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Area of Influence
Potential Ocelot Habitat
Kenedy
Starr
Willacy
Hidalgo
Cameron
MEXICO
1:380,160
0 2 4 8 12
Miles
Source: NLCD

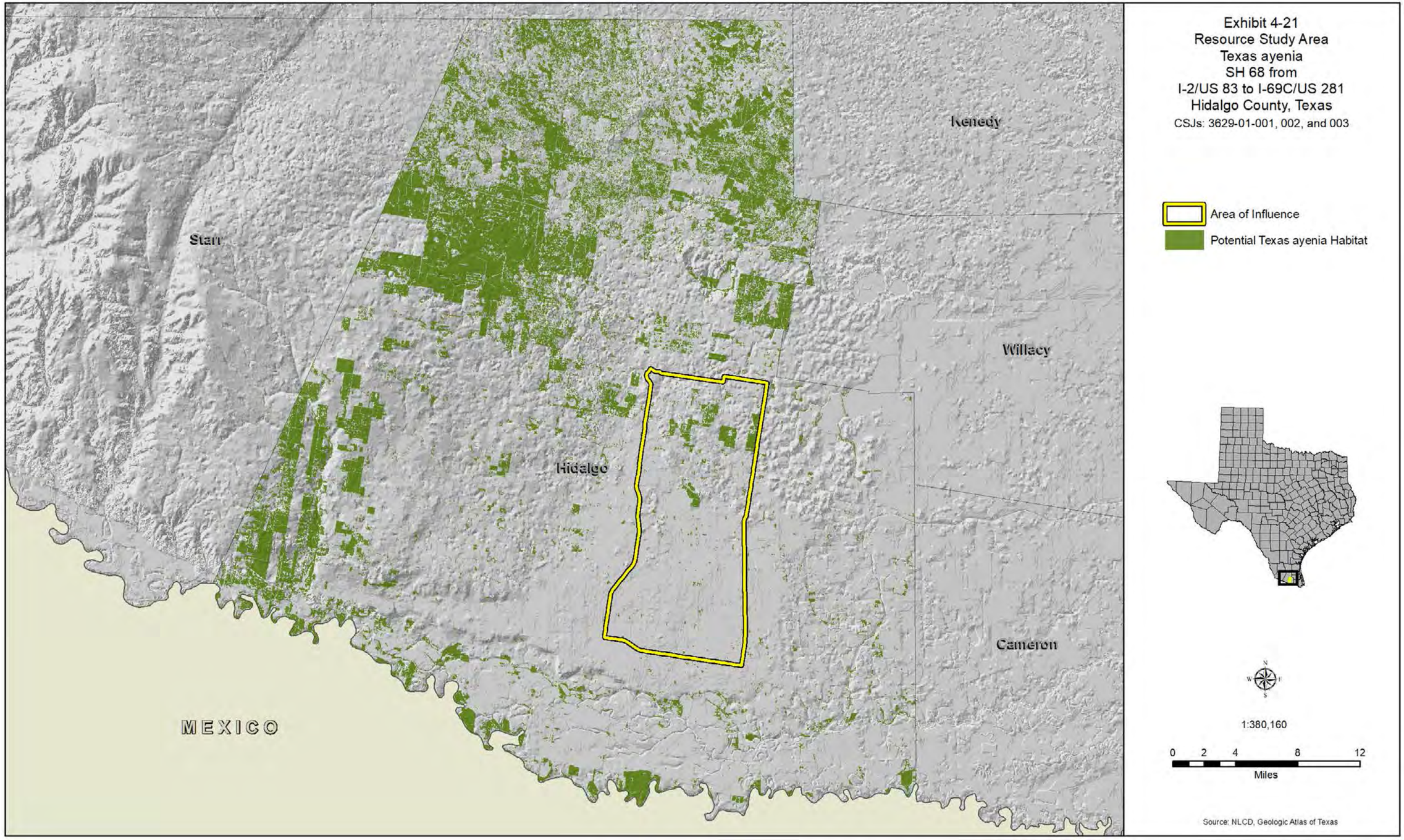


Exhibit 4-21
Resource Study Area
Texas ayenia
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Area of Influence
Potential Texas ayenia Habitat
Kenedy
Starr
Willacy
Hidalgo
Cameron
MEXICO
1:380,160
0 2 4 8 12
Miles
Source: NLCD, Geologic Atlas of Texas

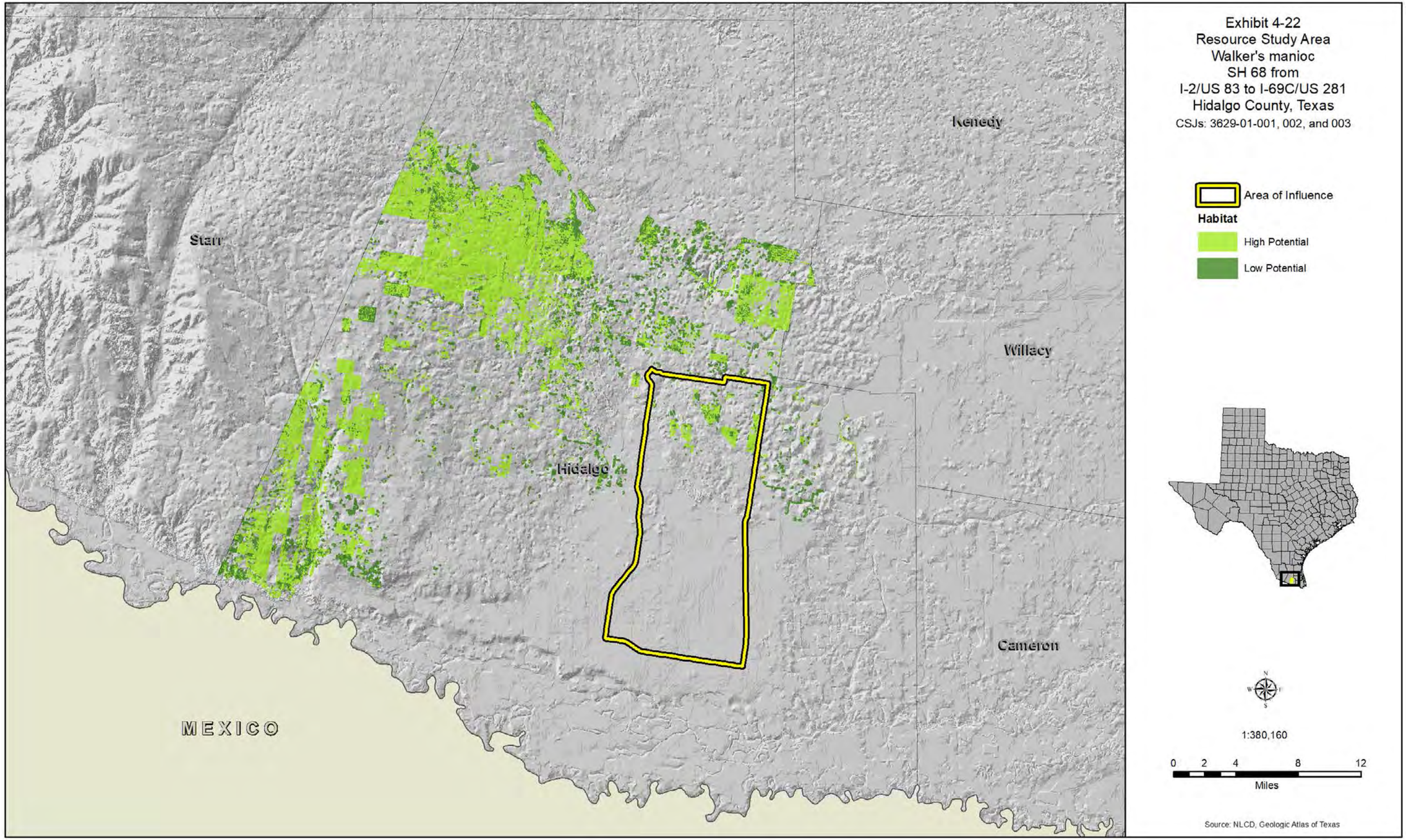


Exhibit 4-22
Resource Study Area
Walker's manioc
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
Area of Influence
Habitat
High Potential
Low Potential
Kenedy
Starr
Willacy
Hidalgo
Cameron
MEXICO
1:380,160
0 2 4 8 12
Miles
Source: NLCD, Geologic Atlas of Texas

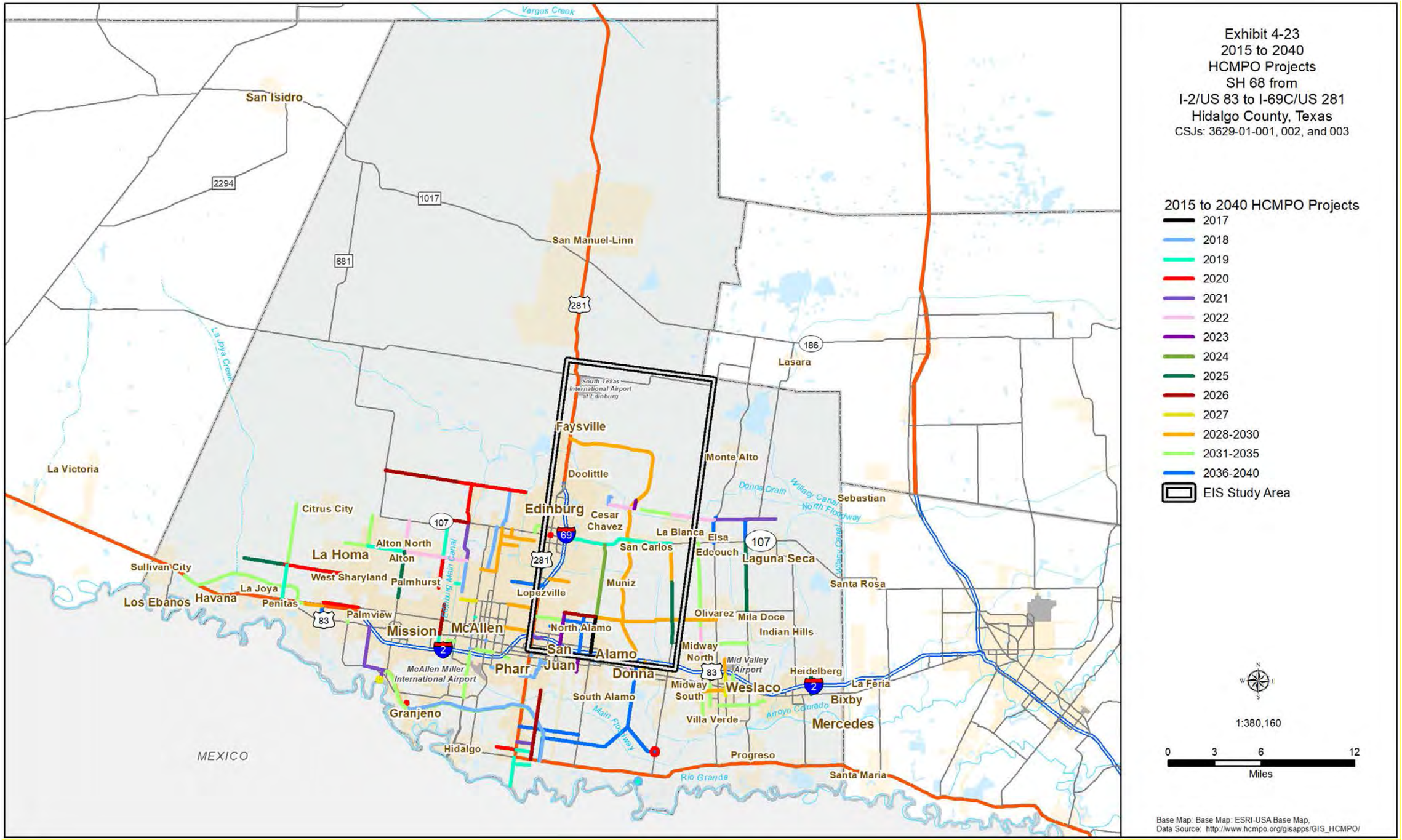


Exhibit 4-23
2015 to 2040
HCMPO Projects
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003
2015 to 2040 HCMPO Projects
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028-2030
2031-2035
2036-2040
EIS Study Area
1:380,160
0 3 6 12
Miles
Base Map: Base Map: ESRI-USA Base Map,
Data Source: http://www.hcmpo.org/gisapps/GIS_HCMPO/
Vargas Creek
San Isidro
2294
1017
681
San Manuel-Linn
281
186
Lasara
La Joya Creek
South Texas International Airport at Edinburg
Faysville
Monte Alto
Doolittle
La Victoria
Donna Drain
Willacy Canal
North Floodway
Sebastian
Citrus City
Edinburg
Cesar Chavez
107
69
La Blanca
Elsa
San Carlos
Edcouch
Laguna Seca
Alton North
Alton
La Homa
Sullivan City
West Sharyland
Palmhurst
Muniz
Santa Rosa
La Joya
Los Ebanos
Havana
Penitas
Lopezville
Olivarez
Mila Doce
Indian Hills
83
Palmview
Mission
McAllen
North Alamo
San Juan
Alamo
Midway North
Mid Valley Airport
Heidelberg
McAllen Miller International Airport
Pharr
Donna
Weslaco
La Feria
Midway South
Bixby
South Alamo
Granjeno
Villa Verde
Arroyo Colorado
Mercedes
Main Floodway
Hidalgo
MEXICO
Progreso
Rio Grande
Santa Maria

1

Appendix B

SH 68 Minute Order

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TEXAS TRANSPORTATION COMMISSION

HIDALGO County **MINUTE ORDER** Page 1 of 1

PHARR District

In HIDALGO COUNTY, local officials have requested the designation of STATE HIGHWAY 68 (SH 68) along a new location from US 281 approximately 0.4 mile north of FARM TO MARKET 2812 in the city of Edinburg east and southward to US 83 approximately 0.6 mile east of FM 1423 in the city of Donna, a total distance of approximately 19.9 miles.

Pursuant to Texas Transportation Code, §§201.103 and 221.001, the executive director of the Texas Department of Transportation has recommended the designation of SH 68 on the state highway system.

The Texas Transportation Commission (commission) finds that the designation of SH 68 will facilitate the flow of traffic, promote public safety, and maintain continuity of the state highway system and is necessary for the proper development and operation of the system.

IT IS THEREFORE ORDERED by the commission that SH 68 be designated along a new location from US 281 in the city of Edinburg east and southward approximately 19.9 miles to US 83 in the city of Donna.

Submitted and reviewed by:

Director of Planning

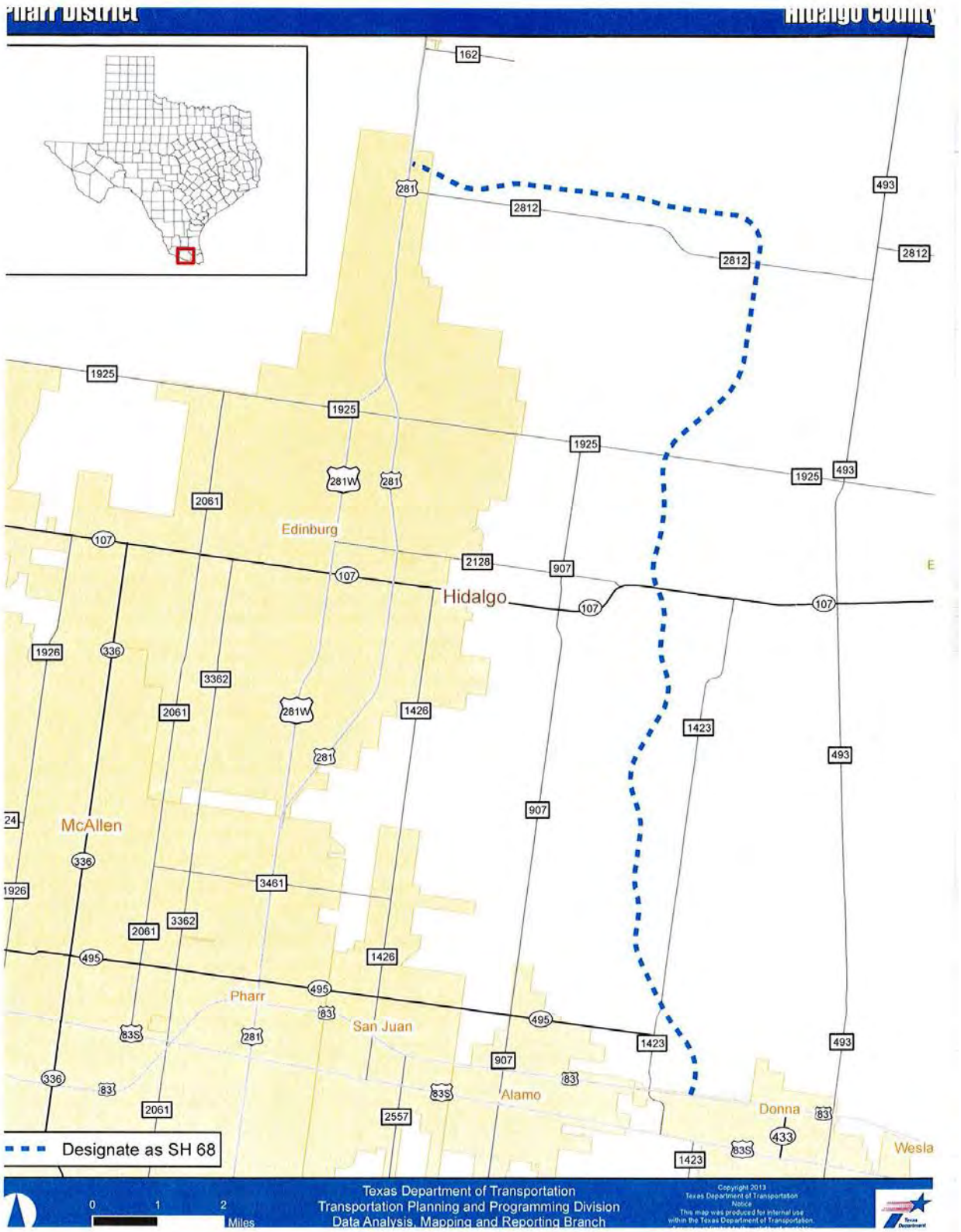
Recommended by:

Executive Director

113515 FEB 28 13

Minute Number Date Passed

1


Pharr District
Hidalgo County
Edinburg
Hidalgo
McAllen
Pharr
San Juan
Alamo
Donna
Wesla
Designate as SH 68
0 1 2 Miles
Texas Department of Transportation
Transportation Planning and Programming Division
Data Analysis, Mapping and Reporting Branch

Appendix C

Planning Questionnaires and 2010-2040 MTP Table

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Texas Department of Transportation

The Texas Department of Transportation (TxDOT) Pharr District is preparing an Environmental Impact Statement (EIS) for the proposed construction of State Highway (SH) 68. The roadway is planned as a four-lane divided rural highway facility with future mainlanes and overpasses in Hidalgo County between Interstate Highway (I)-2/United States Highway (US) 83 and I-69C/US 281. Blanton and Associates, Inc., along with RJ RIVERA Associates, Inc. and the TxDOT Pharr District, is preparing the EIS for the proposed project. The purpose of the proposed project is to improve north/south mobility, increase travel capacity for local and regional traffic, and provide an alternate north-south evacuation route during emergency events.

Under TxDOT guidance, the potential "indirect and cumulative" effects of the project must be addressed. TxDOT guidance requires that we assess potential indirect and cumulative effects out to the planning horizon year, which has been established as 2040 in conjunction with the Hidalgo County Metropolitan Transportation Plan.

A key component of this requirement is determining whether or not a project would have indirect impacts, such as induced growth and changes in land use, as well as cumulative impacts to area resources. We are seeking to identify areas where any potential development could occur (whether or not it is currently planned) within the planning horizon, as well as identifying development that could be attributed at least in part to the proposed project.

We recognize that the people who are most knowledgeable about how projects might affect a community are the local experts. Therefore, we are requesting that you please complete the attached questionnaire and identify any reasonably foreseeable land developments within your jurisdiction on the attached map and provide the location, type, size (e.g. acres, density, number of units), and timing of any planned developments. Site plans or other information showing the exact location of these developments would be helpful for the purposes of mapping and quantifying potential cumulative impacts.

Please return your responses electronically to Jasmine Gardner at jgardner@blantonassociates.com or mail them to **Blanton & Associates, Inc., attn. Jasmine Gardner, 5 Lakeway Centre Court, Suite 200, Austin, TX 78734** by May 26, 2017.

If you have any questions regarding the project, please contact TxDOT Project Manager Margil Maldonado Jr., P.E. at (956) 702-6134 or Margil.Maldonado@txdot.gov.

We appreciate your time and input in this process.

Questionnaire:

1. Are you aware of any proposed land developments within your jurisdiction or area? If so, please mark the areas on either of the attached "Area of Influence" maps and provide the location, type, size (e.g. acres, density, number of units), and timing of any planned development.

2. On either of the attached maps depicting the "Reasonable Alternatives" please identify areas (if any) that you think would likely be developed by the year 2040 as a result of the particular alternative depicted, or the project in general. (*Please distinguish from developments identified in Question 1.*)

3. Would the proposed project (any of the three alternatives) affect the rate or intensity of land development in your jurisdiction?

4. Are there other capital improvement projects, such as water or sewer infrastructure, school or hospital construction, or roadway improvements, that are planned within the study area?

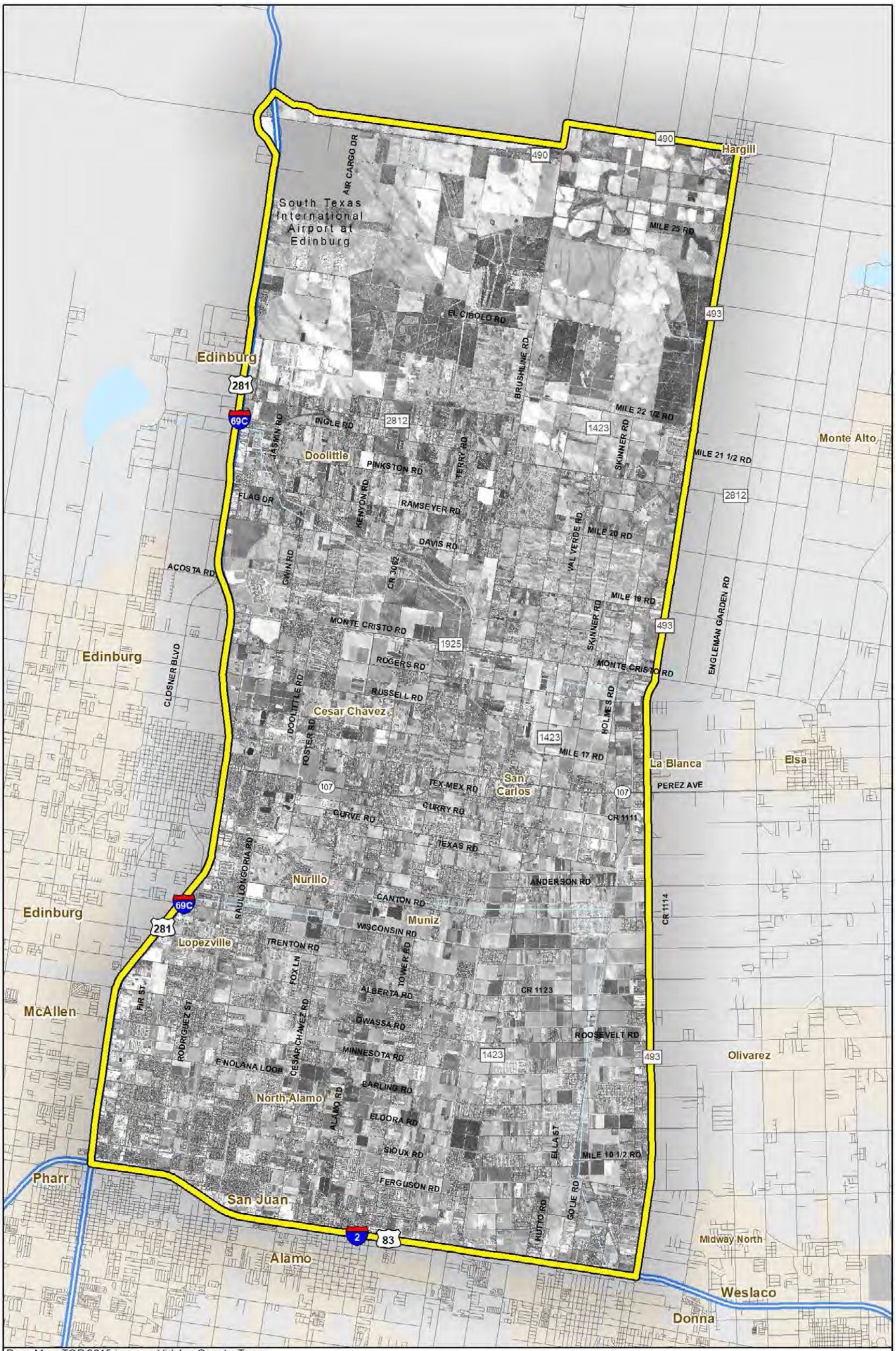
5. Is the proposed project (any of the three alternatives) consistent with local planning efforts (e.g. master or comprehensive plans, growth management plans, zoning, or land use policies, etc.)?

6. Are there any factors that could limit growth within the study area, such as current development, conservation easements, protected lands, etc.?

7. How would the three proposed alternatives (any of the three alternatives) be expected to impact travel patterns in the area? Which existing roadways would be expected to benefit or experience negative effects from each alternative?

8. What type of traffic would you expect to use the proposed facility (e.g. local traffic, regional commuters, through traffic, etc.)?

9. Do you have input on general development trends and land use changes in the region, including influencing factors (e.g. economy, real estate market, etc.)?



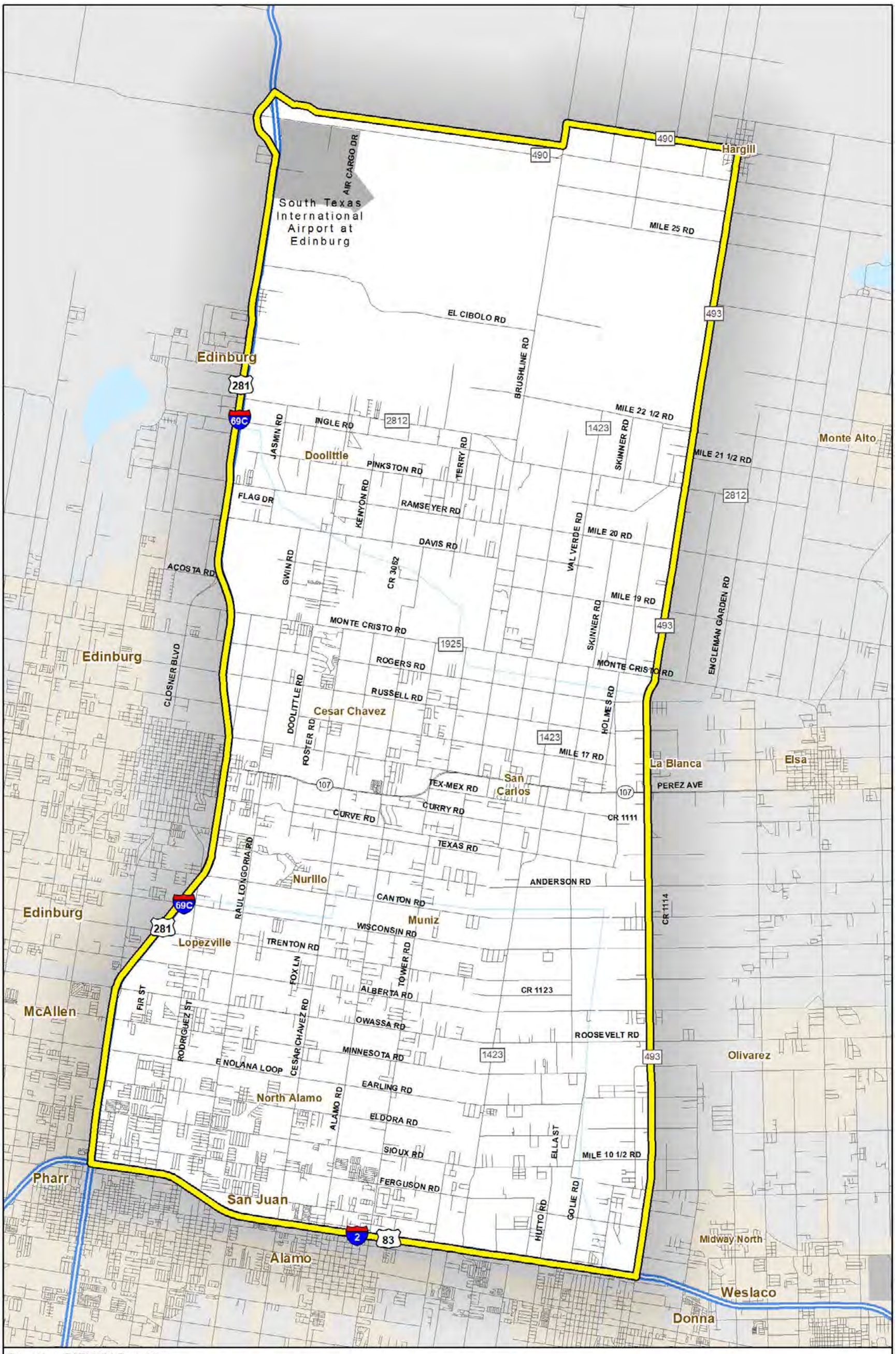
Base Map: TOP 2015 imagery Hidalgo County, Texas
ESRI-USA Base Map

Area of Influence

N W E S

0 0.5 1 2
Miles

Area of Influence on
Aerial Map
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

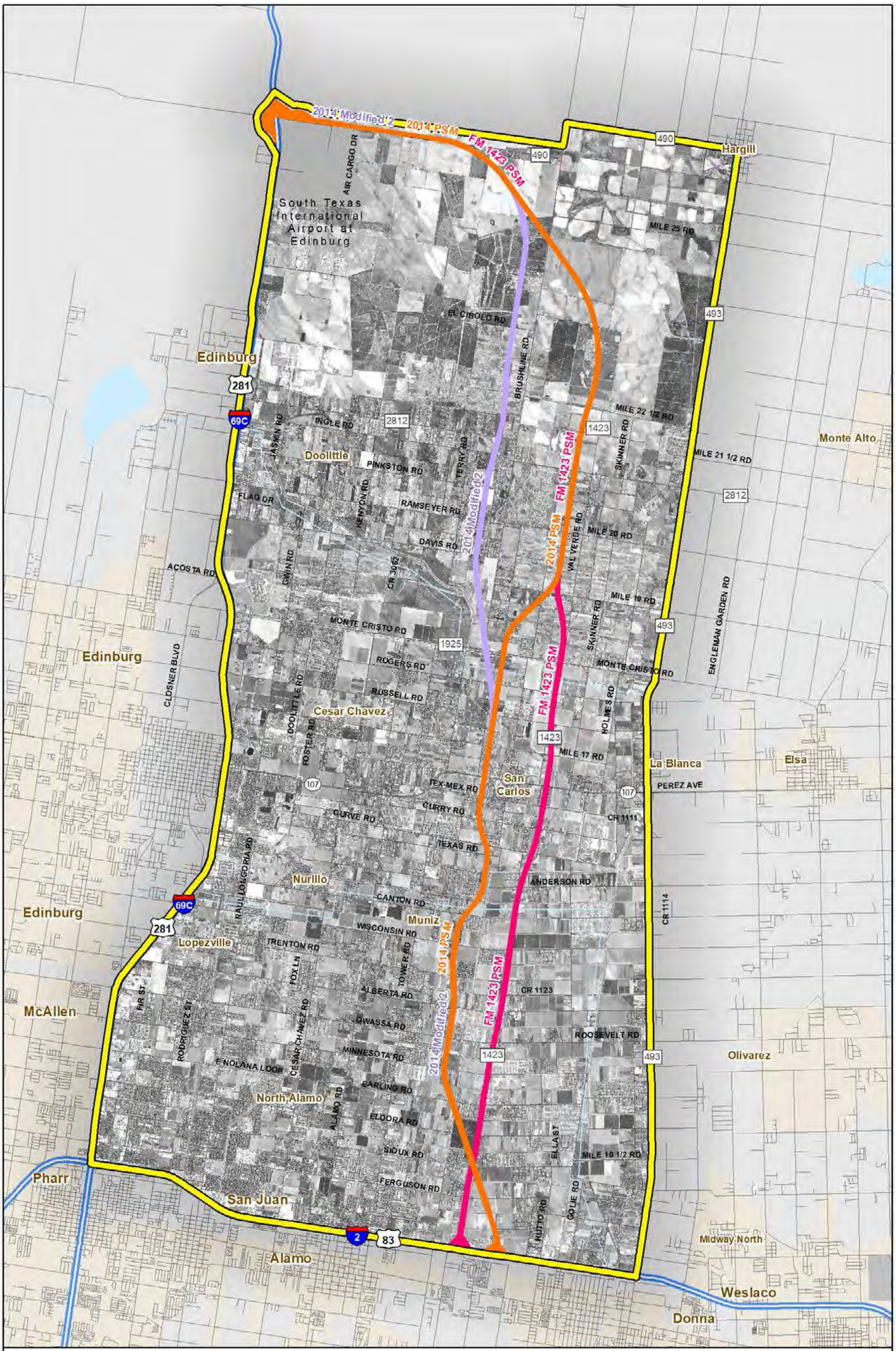


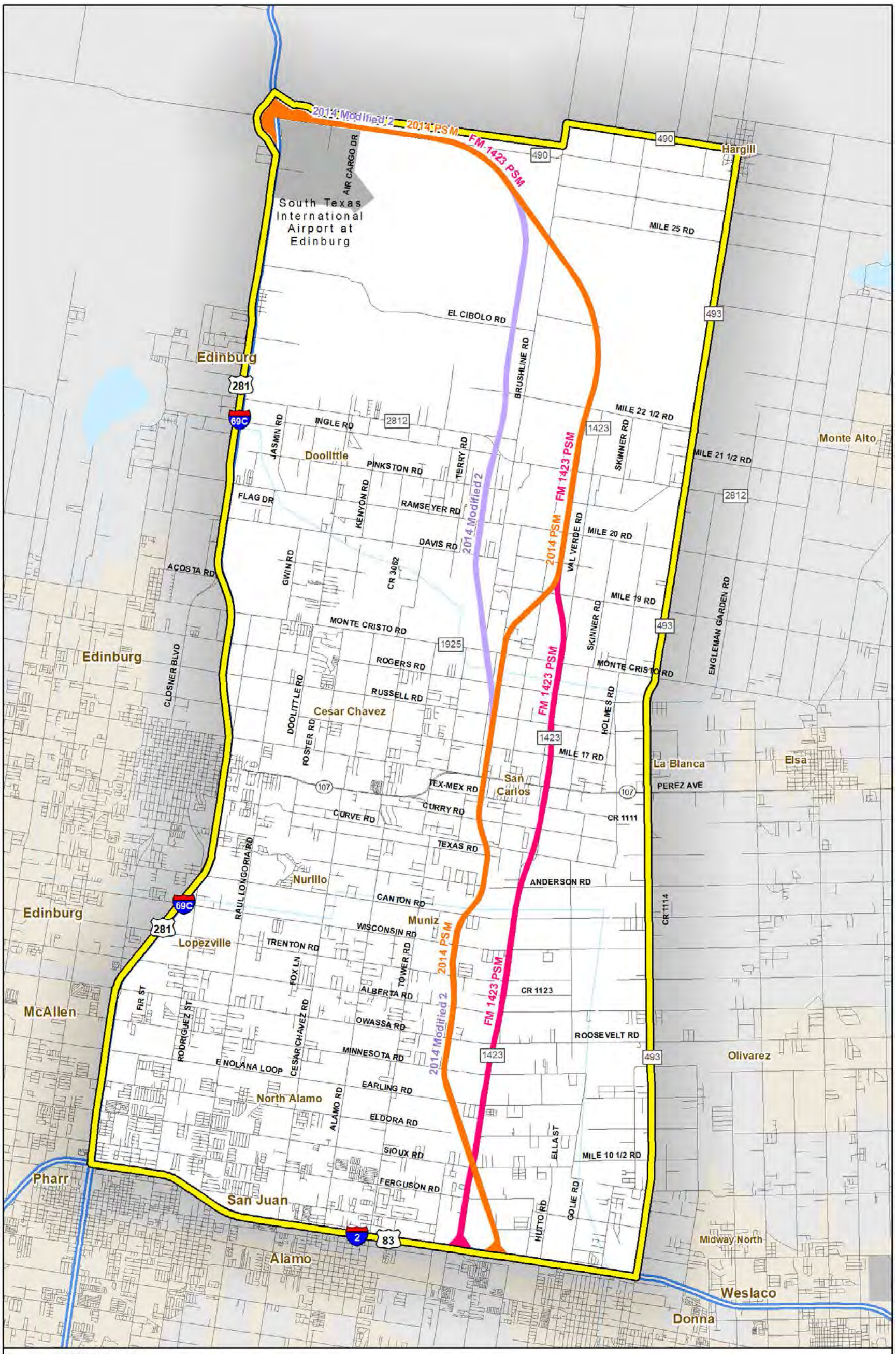
Base Map: ESRI-USA Base Map

Area of Influence

0 0.5 1 2
Miles

Area of Influence on
County Map
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003


2014 Modified 2
2014 PSM
FM 1423 PSM
South Texas International Airport at Edinburg
Hargill
Edinburg
Doolittle
Monte Alto
Cesar Chavez
San Carlos
La Blanca
Elsa
Nurillo
Muniz
Lopezville
McAllen
North Alamo
Olivarez
Pharr
San Juan
Alamo
Midway North
Weslaco
Donna
AIR CARGO DR
MILE 25 RD
EL CIBOLO RD
BRUSHLINE RD
MILE 22 1/2 RD
INGLE RD
JASMIN RD
PINKSTON RD
TERRY RD
SKINNER RD
MILE 21 1/2 RD
FLAG DR
RAMSEYER RD
KENYON RD
DAVIS RD
VAL VERDE RD
MILE 20 RD
ACOSTA RD
GWIN RD
CR 3062
MILE 19 RD
ENGLEMAN GARDEN RD
MONTE CRISTO RD
ROGERS RD
CLOSNER BLVD
RUSSELL RD
DOOLITTLE RD
HOLMES RD
FOSTER RD
MILE 17 RD
TEX-MEX RD
PEREZ AVE
CURRY RD
CURVE RD
CR 1111
TEXAS RD
RAULLONGORIA RD
ANDERSON RD
CANTON RD
CR 1114
WISCONSIN RD
TRENTON RD
FOX LN
TOWER RD
ALBERTA RD
CR 1123
FIR ST
RODRIGUEZ ST
CESAR CHAVEZ RD
OWASSA RD
ROOSEVELT RD
MINNESOTA RD
E NOLANA LOOP
EARLING RD
ALAMO RD
ELDORA RD
ELLAST
MILE 10 1/2 RD
SIOUX RD
FERGUSON RD
HUTTO RD
GOLUE RD
281
69C
490
493
2812
1423
1925
107
2
83
Base Map: TOP 2015 imagery Hidalgo County, Texas
ESRI-USA Base Map
Area of Influence
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative
N
W
E
S
0 0.5 1 2
Miles
Reasonable Alternatives on Aerial Map
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003



Base Map: ESRI-USA Base Map

Area of Influence

2014 Modified 2 Alternative

2014 PSM Alternative

FM 1423 PSM Alternative

N W E S

0 0.5 1 2

Miles

Reasonable Alternatives on County Map
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas

CSJs: 3629-01-001, 002, and 003

Jasmine Gardner

From: Jasmine Gardner
Sent: Wednesday, May 17, 2017 10:41 AM
To: 'acanon@hcmpo.org'
Cc: Dean Tesmer; Robert Ryan; Ray Green
Subject: Information Request- TxDOT's Proposed SH 68 Project
Attachments: SH 68 DEIS Planning Questionniare.pdf

Hello-

The Texas Department of Transportation (TxDOT) Pharr District is preparing an Environmental Impact Statement (EIS) for the proposed construction of State Highway (SH) 68. The roadway is planned as a four-lane divided rural highway facility with future mainlanes and overpasses in Hidalgo County between Interstate Highway (I)-2/United States Highway (US) 83 and I-69C/US 281. Blanton and Associates, Inc., along with RJ RIVERA Associates, Inc. and the TxDOT Pharr District, is preparing the EIS for the proposed project. The purpose of the proposed project is to improve north/south mobility, increase travel capacity for local and regional traffic, and provide an alternate north-south evacuation route during emergency events.

As part of the EIS, we are seeking to identify areas where any potential development could occur (whether or not it is currently planned), as well as identifying development that could be attributed at least in part to the proposed project.

We recognize that the people who are most knowledgeable about how projects might affect a community are the local experts. Therefore, we are requesting that you please complete a planning questionnaire to identify any reasonably foreseeable land developments within your jurisdiction. We have provided **a link below** to complete the survey online. Or, if you prefer to complete the questionnaire by hand, you can complete the attached PDF and return via email or mail. The PDF includes detailed instructions about providing your responses.

https://www.surveymonkey.com/r/AndrewCanon

We appreciate your time and consideration of this request.

Thank you-

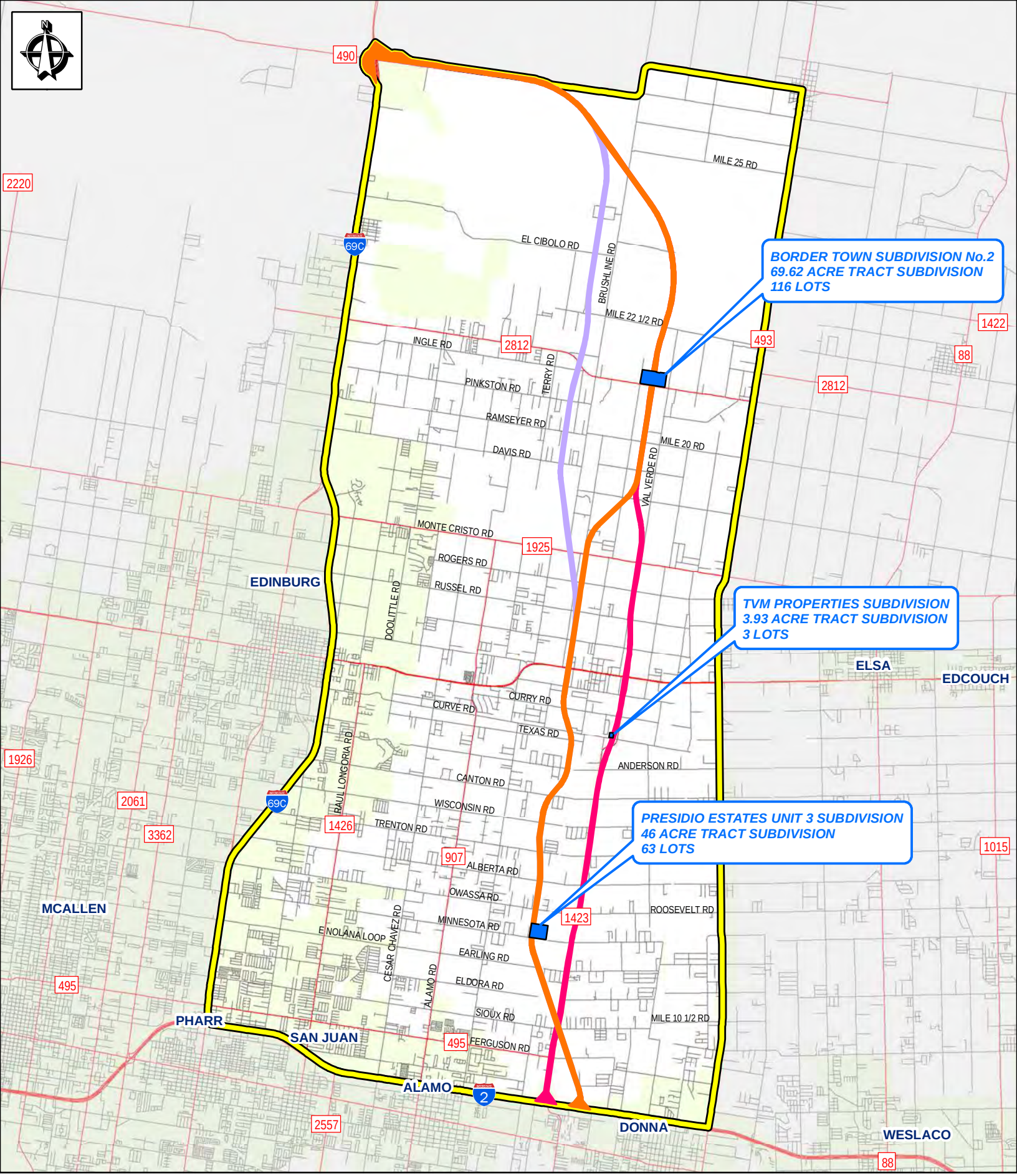
Jasmine Gardner

Jasmine Gardner

Blanton & Associates, Inc.
5 Lakeway Centre Court, Suite 200
Austin, Texas 78734
Tel 512.264.1095, ext. 147
Cell 512.663.0148
Fax 512.264.1531
jgardner@blantonassociates.com
Please consider the environment before printing this e-mail.

City	Title	Name	Phone Number	email address	email 2	Address 1	Address 2	City	State	ZIP	
Hidalgo MPO	Director	Andrew Canon	956-330-3380(c) |956-969-5778x302 (w)	acanon@hcmpo.org		501 S. Pleasantview Dr.		Weslaco	TX		78596
San Juan EDC	Acting Director	Benjamin Arjona	(956) 783-3448	barjona@cityofsanj		4810 N. Raul	Suite 5	San Juan	TX		78589
Alamo	Community and Planning	Bobby Salinas	787-0006 x106	bsalinas@alamotexas.org		420 N Tower Rd		Alamo	TX		78516
UTRGV- Center for Rural Advancement	Administrative Assistant and Event	Catalina Resto	(956) 665-7555	catalina.resto@utrgv.edu							
Alamo	Planner I	Dalia Zuniga	787-0006 x128			420 N Tower Rd		Alamo	TX		78516
LRGV Development Council		Gabriel Zuniga	956-682-3481	gzuniga@lrgvdc.org	gzuniga@lrgvdctran	301 W. Railroad		Weslaco	TX		78596
UTRGV- Center for Rural Advancement	Executive Director of Business and Rural Development	George Bennack	(956) 665-7544	george.bennack@utrgv.edu							
McAllen Chamber of Commerce	VP of Special Projects and	Gerry Garcia	956-682-2871 x3014	ggarcia@mcallenchamber.com		1200 Ash Avenus		McAllen	TX		78501
McAllen EDC	Executive Vice	Joyce Dean	(956) 682-2875	joyce@mcallenedc.		6401 South 33rd St		McAllen	TX		78503
Alamo Chamber of Commerce	Executive Director	Kassandra Elejarza	956-787-2117	alamotx.chamber@gmail.com		803 Main Street		Alamo	TX		78516
McAllen EDC	President and CEO	Keith Patridge	(956) 682-2875	keith@mcallenedc.		6401 South 33rd St		McAllen	TX		78503
Edinburg Chamber of Commerce	President	Letty Gonzalez	956-383-4974	chamber@edinburg.com		P.O. Box 85		Edinburg	TX		78539
Hidalgo MPO	Assistant Director	Linda De La Fuente	956-279-8353(c) | 956-969-5778 x307	ldelafuente@hcmpo.org		501 S. Pleasantview Dr.		Weslaco	TX		78596
Alamo	City Manager	Luciano Ozuna Jr.	787-0006 x123	lozuna@alamotexa		420 N Tower Rd		Alamo	TX		78516
Donna EDC	Economic Development	Lyle Garza	(956) 272-6171	lgarza@cityofdonna.org		127 S. 8th Street		Donna	TX		78537
Pharr	Engineer In Training	Maria Rangel	956-402-4242	maria.rangel@phar		118 South Cage	1st Floor	Pharr	TX		78577
Pharr	Director, Development	Melanie Cano	956-402-4242 x1408	melanie.cano@pharr-tx.gov		118 South Cage Blvd.	1st Floor	Pharr	TX		78577
UTRGV- Data and Information Systems Center		Michael Uhrbrock	(956) 665-7185	michael.uhrbrock@utrgv.edu		CESS Building 1407 E. Freddy Gonzalez Dr.		Edinburg	TX		78539
San Juan	Planner II	Monica Gomez	956-223-2220	mgomez@cityofsan		709 S. Nebraska		San Juan	TX		78589
Pharr	Interim City Engineer and	Pilar Rodriguez	956-402-4221	pilar.rodriguez@pharr-tx.gov		118 South Cage Blvd.	1st Floor	Pharr	TX		78577
Hidalgo County	Executive Director	Pilar Rodriguez, PE	956-402-4762	prodriguez@hcrma		118 South Cage	4th Floor	Pharr	TX		78577
Hidalgo County RMA	Chief Construction Engineer	Ramon Navarro IV	956-402-4762	rnavarro@hcrma.net	ramon.navarro@hcrma.net	118 South Cage Blvd.	4th Floor	Pharr	TX		78577
Edinburg	Director of Zoning and Planning/ City	Richard Hinojosa	956 - 388 - 8207	rhinojosa@cityofedinburg.com		415 W. University Drive		Edinburg	TX		78541
Donna	Director	Robert Escobar	(956)464-6917	rescobar@cityofdo	planning@cityofdo	307 S. 12th St.		Donna	TX		78537
Pharr	Senior Planner	Roland Gomez	956-402-4242	roland.gomez@pha		118 South Cage	1st Floor	Pharr	TX		78577
LRGV Development Council	Executive Director	Ron Garza	956-682-3481	rgarza@lrgvdc.org	rongarza@lrgvdc.org	301 W. Railroad		Weslaco	TX		78596

UTRGV- Data and Information Systems Center		Sai Mullapudi	(956) 665-2301	sai.mullapudi@utrgv.edu		CESS Building 1407 E. Freddy Gonzalez Dr.		Edinburg	TX	78539
RGV Partnership	President and CEO	Sergio Contreras	(956) 355-0011	sergio@valleycham		322 South Missouri		Weslaco	TX	78596
Hidalgo County	Hidalgo County Economic	Sofia Hernandez		sofia.hernandez@hidalgocountyjudge.	sofia.hernandez@co.hidalgo.tx.us					
McAllen Chamber of Commerce	President and CEO	Steve Ahlenius	956-682-2871 x3027	steve@mcallenchamber.com		1200 Ash Avenus		McAllen	TX	78501
Hidalgo County	Director of Planning and	T.J. Arredondo	(956) 318-2840	tj.arredondo@hchd		1304 S. 25th St.		Edinburg	TX	78539
San Juan	Zoning Director	Xavier Cervantes	956-223-2220	xcervantes@cityofsanjuantexas.com		709 S. Nebraska		San Juan	TX	78589
Alamo EDC			(956) 787-6622	can email through their webpage:		715 E Business 83		Alamo	TX	78516
Edinburg EDC			(956) 383-7124	info@edinburgedc.		101 N. 10th Ave		Edinburg	TX	78541
Elsa EDC & IDC			(956) 262-2127	cdotson@cityofelsa	jgarza@cityofelsa.n	102 S. Diana St		Elsa	TX	
Pharr EDC			(956) 475-3449	pedc@pharr-tx.gov		1215 South Cage		Pharr	TX	78577
RGV Hispanic Chamber of			956-928-0060	chamber@rgvhcc.com		801 E Fern Avenue	Suite 143	McAllen	TX	78501
Rio South Texas Economic Council				info@riosouthtexas.com		PO Box 1499		Weslaco	TX	78599
Weslaco Area Chamber of			956-968-2102	chamber@weslaco.com		275 S. Kansas	Suite B	Weslaco	TX	78596
Weslaco EDC			(956) 969-0838	weslacoedc@gmail.		275 S. Kansas Ave	Suite A	Weslaco	TX	78596
Hidalgo County	Hidalgo County Economic	Michael Leo	(956) 318-2600	michael.leo@co.hidalgo.tx.us		100 E. Cano St. 2nd Floor		Edinburg	TX	78539



Legend

- 2014 Modified 2 Alternative
- 2014 PSM Alternative
- FM 1423 PSM Alternative
- Area of Influence
- Affected Subdivisions

0 0.5 1 2
Miles

HIDALGO COUNTY
PLANNING DEPARTMENT
1304 S. 25TH STREET
EDINBURG TX. 78542
TEL: (956) 318-2840 ★ FAX: (956) 318-2844
www.co.hidalgo.tx.us
T.J. ARREDONDO, CFM
DIRECTOR OF PLANNING

The Texas Department of Transportation (TxDOT) Pharr District is preparing an Environmental Impact Statement (EIS) for the proposed construction of State Highway (SH) 68. The roadway is planned as a four-lane divided rural highway facility with future mainlanes and overpasses in Hidalgo County between Interstate Highway (I)-2/United States Highway (US) 83 and I-69C/US 281. Blanton and Associates, Inc., along with RJ RIVERA Associates, Inc. and the TxDOT Pharr District, is preparing the EIS for the proposed project. The purpose of the proposed project is to improve north/south mobility, increase travel capacity for local and regional traffic, and provide an alternate north-south evacuation route during emergency events.

Under TxDOT guidance, the potential "indirect and cumulative" effects of the project must be addressed. TxDOT guidance requires that we assess potential indirect and cumulative effects out to the planning horizon year, which has been established as 2040 in conjunction with the Hidalgo County Metropolitan Transportation Plan.

A key component of this requirement is determining whether or not a project would have indirect impacts, such as induced growth and changes in land use, as well as cumulative impacts to area resources. We are seeking to identify areas where any potential development could occur (whether or not it is currently planned) within the planning horizon, as well as identifying development that could be attributed at least in part to the proposed project.

We recognize that the people who are most knowledgeable about how projects might affect a community are the local experts. Therefore, we are requesting that you please complete the attached questionnaire and identify any reasonably foreseeable land developments within your jurisdiction on the attached map and provide the location, type, size (e.g. acres, density, number of units), and timing of any planned developments. Site plans or other information showing the exact location of these developments would be helpful for the purposes of mapping and quantifying potential cumulative impacts.

Please return your responses electronically to Jasmine Gardner at jgardner@blantonassociates.com or mail them to **Blanton & Associates, Inc., attn. Jasmine Gardner, 5 Lakeway Centre Court, Suite 200, Austin, TX 78734** by May 30, 2017.

If you have any questions regarding the project, please contact TxDOT Project Manager Margil Maldonado Jr., P.E. at (956) 702-6134 or Margil.Maldonado@txdot.gov.

We appreciate your time and input in this process.

Questionnaire:

1. Are you aware of any proposed land developments within your jurisdiction or area? If so, please mark the areas on either of the attached "Area of Influence" maps and provide the location, type, size (e.g. acres, density, number of units), and timing of any planned development. They're not near the three routes left for SH 68, but there will be development of a stain glass museum, Lexus dealership, public safety building, Boy & Girls Club, Golden Chick, Cantu Building, Porsche Dealership, Pueblo Tires, and Bob Acosta Commercial Plaza. (He did not choose to markup the map exhibits.)

2. On either of the attached maps depicting the "Reasonable Alternatives" please identify areas (if any) that you think would likely be developed by the year 2040 as a result of the particular alternative depicted, or the project in general. (*Please distinguish from developments identified in Question 1.*) Regardless as to where SH 68 may end up, I think there will be mixed development of both residential and commercial. Perhaps some industrial development, but that may be dependent upon access to gas pipelines.

3. Would the proposed project (any of the three alternatives) affect the rate or intensity of land development in your jurisdiction? The City of San Juan will be developing regardless of State Highway 68.

4. Are there other capital improvement projects, such as water or sewer infrastructure, school or hospital construction, or roadway improvements, that are planned within the study area? There will be the widening of Nolana Loop, and the Cesar Chavez Blvd. There are also N. Alamo Water Supply projects in the study area. There will also be the expansion of water services (sewage) on Veterans Blvd. north of US 83.

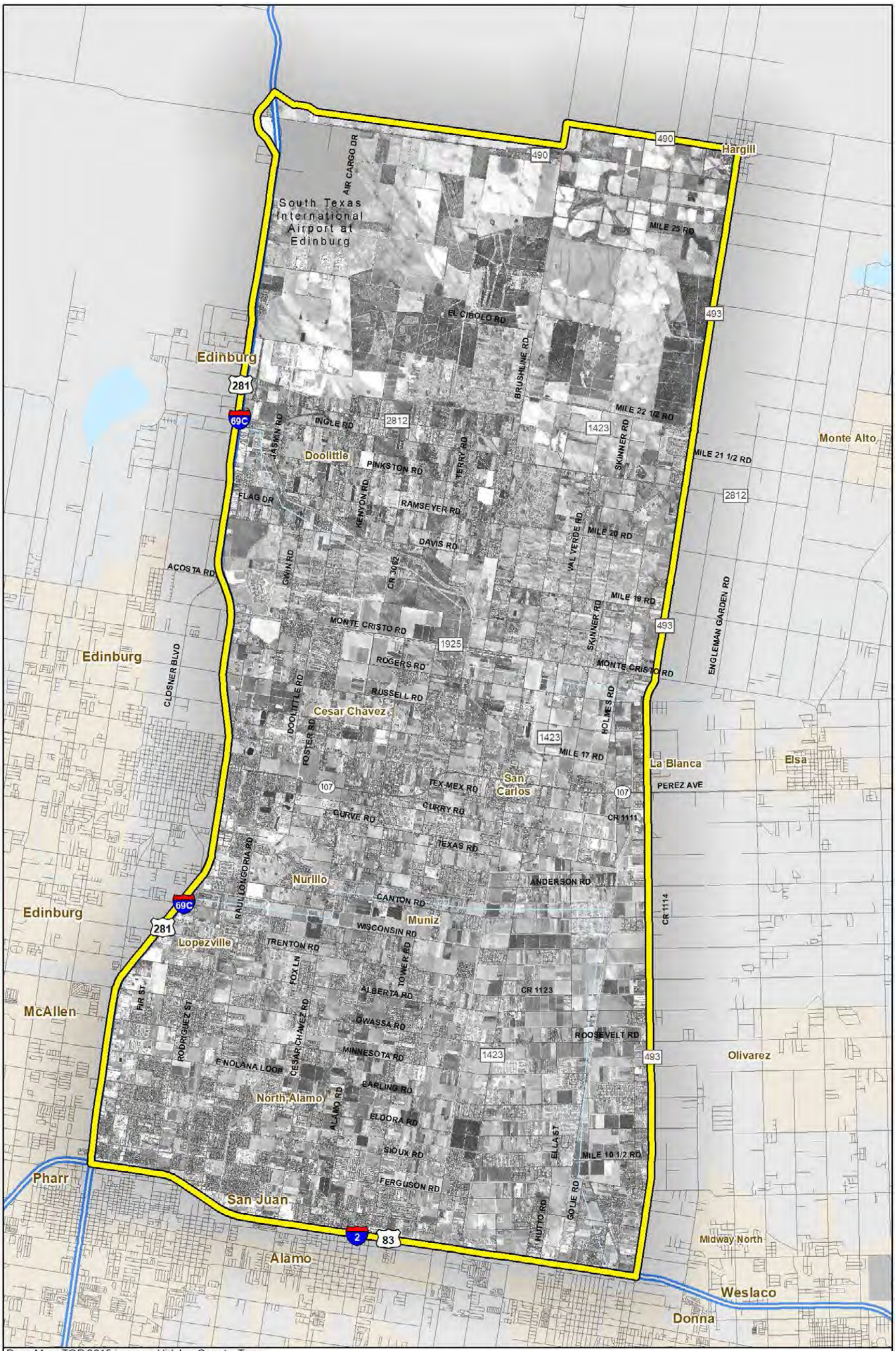
5. Is the proposed project (any of the three alternatives) consistent with local planning efforts (e.g. master or comprehensive plans, growth management plans, zoning, or land use policies, etc.)? SH 68 is not in the City of San Juan, so this question does not apply to us. You may want to check with Alamo and Donna.

6. Are there any factors that could limit growth within the study area, such as current development, conservation easements, protected lands, etc.? I'm not aware of any.

7. How would the three proposed alternatives (any of the three alternatives) be expected to impact travel patterns in the area? Which existing roadways would be expected to benefit or experience negative effects from each alternative? SH 68 will help with congestion at the interchange (US 83 and US 281) by serving as a bypass.

8. What type of traffic would you expect to use the proposed facility (e.g. local traffic, regional commuters, through traffic, etc.)? Local traffic and regional traffic, especially those commuting to downtown Edinburg or UTRGV. They may take SH 68 to bypass the interchange and then take SH 107 into Edinburg.

9. Do you have input on general development trends and land use changes in the region, including influencing factors (e.g. economy, real estate market, etc.)? Changes to NAFTA and the impacts to the trucking industry, price of land, N. Alamo Sewer Line additions could lead to higher density populations in the area, and any new additional schools.



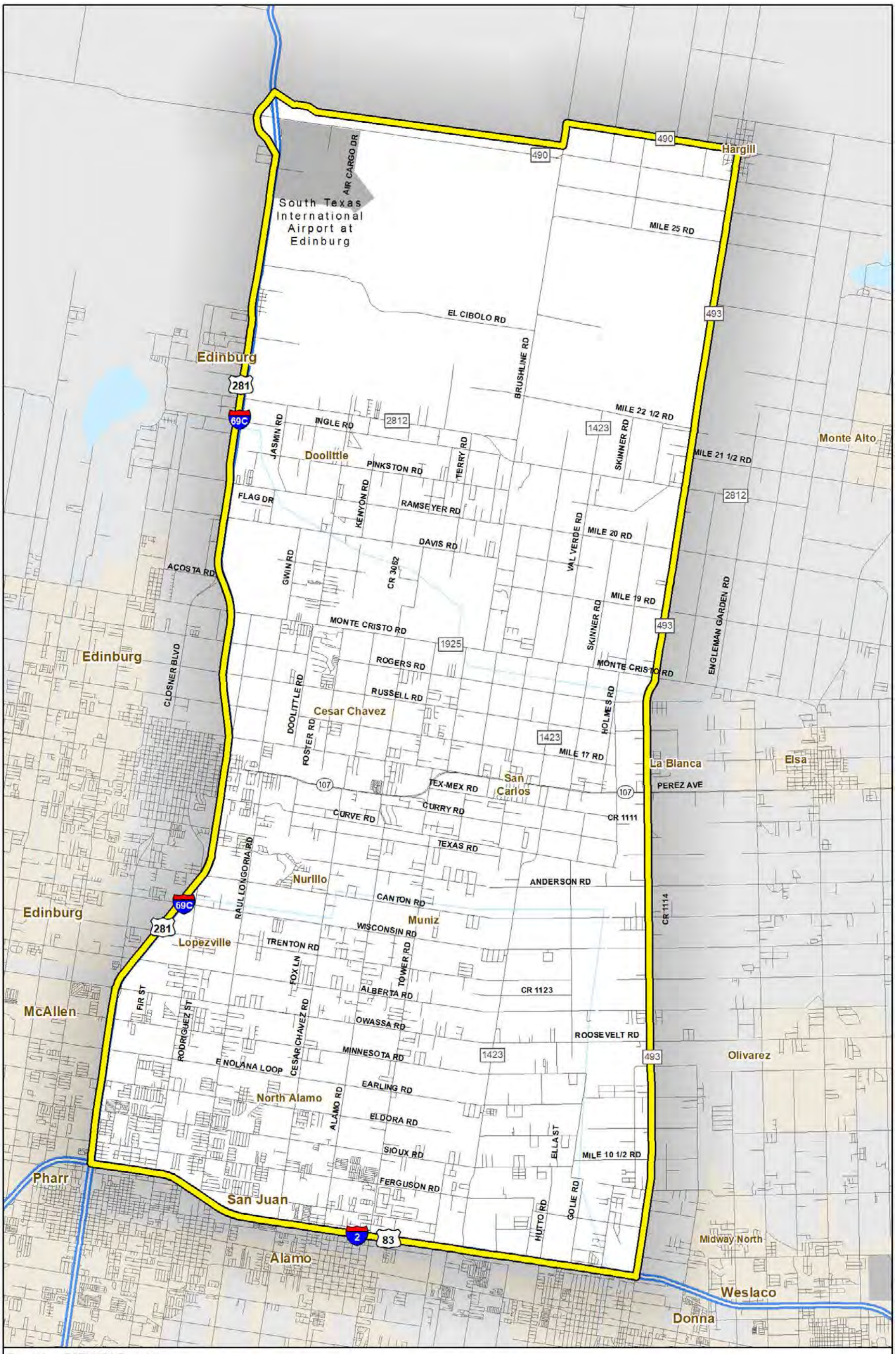
Base Map: TOP 2015 imagery Hidalgo County, Texas
ESRI-USA Base Map

Area of Influence

N W E S

0 0.5 1 2
Miles

Area of Influence on
Aerial Map
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

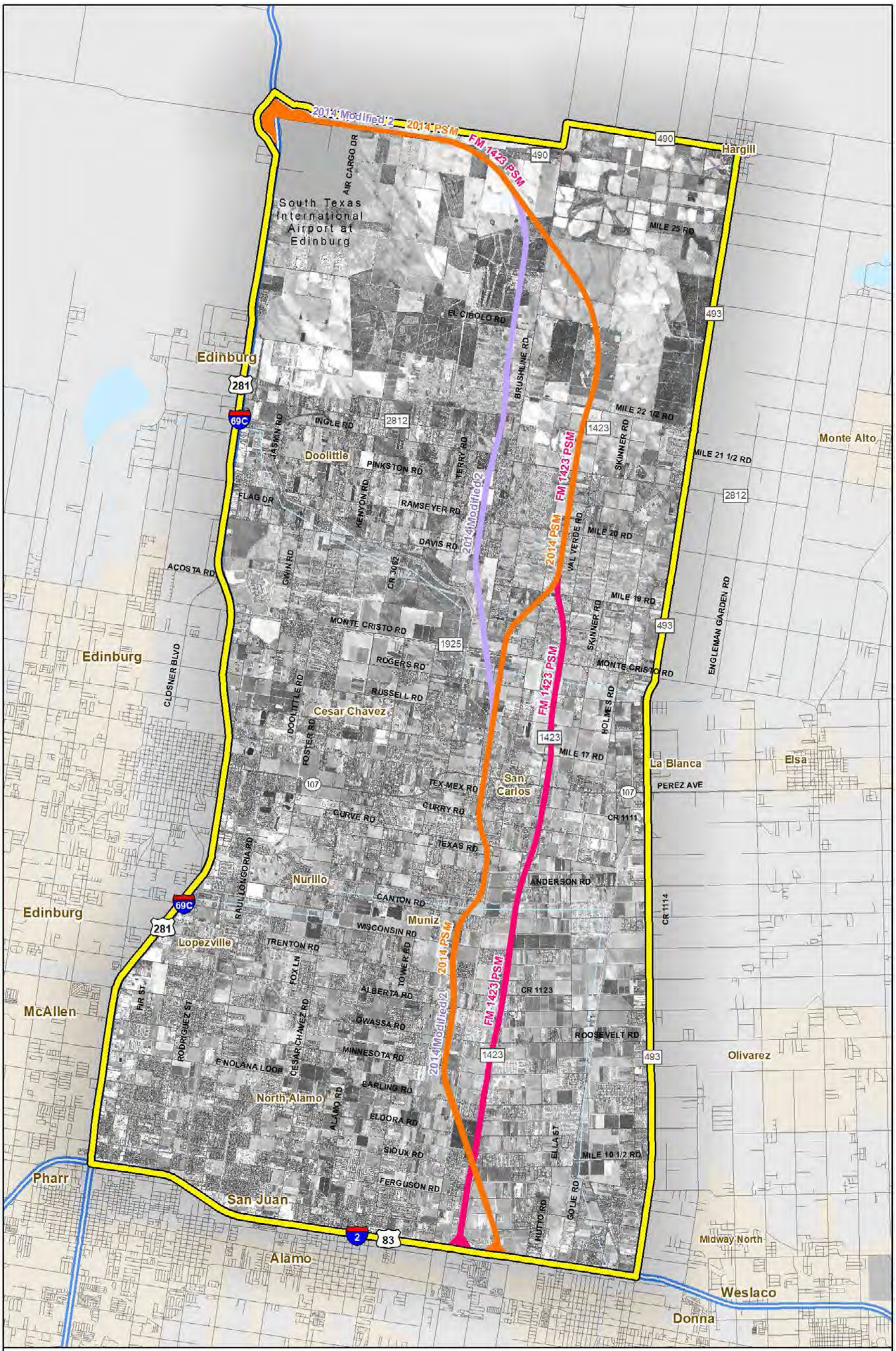


Base Map: ESRI-USA Base Map

Area of Influence

0 0.5 1 2
Miles

Area of Influence on
County Map
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003

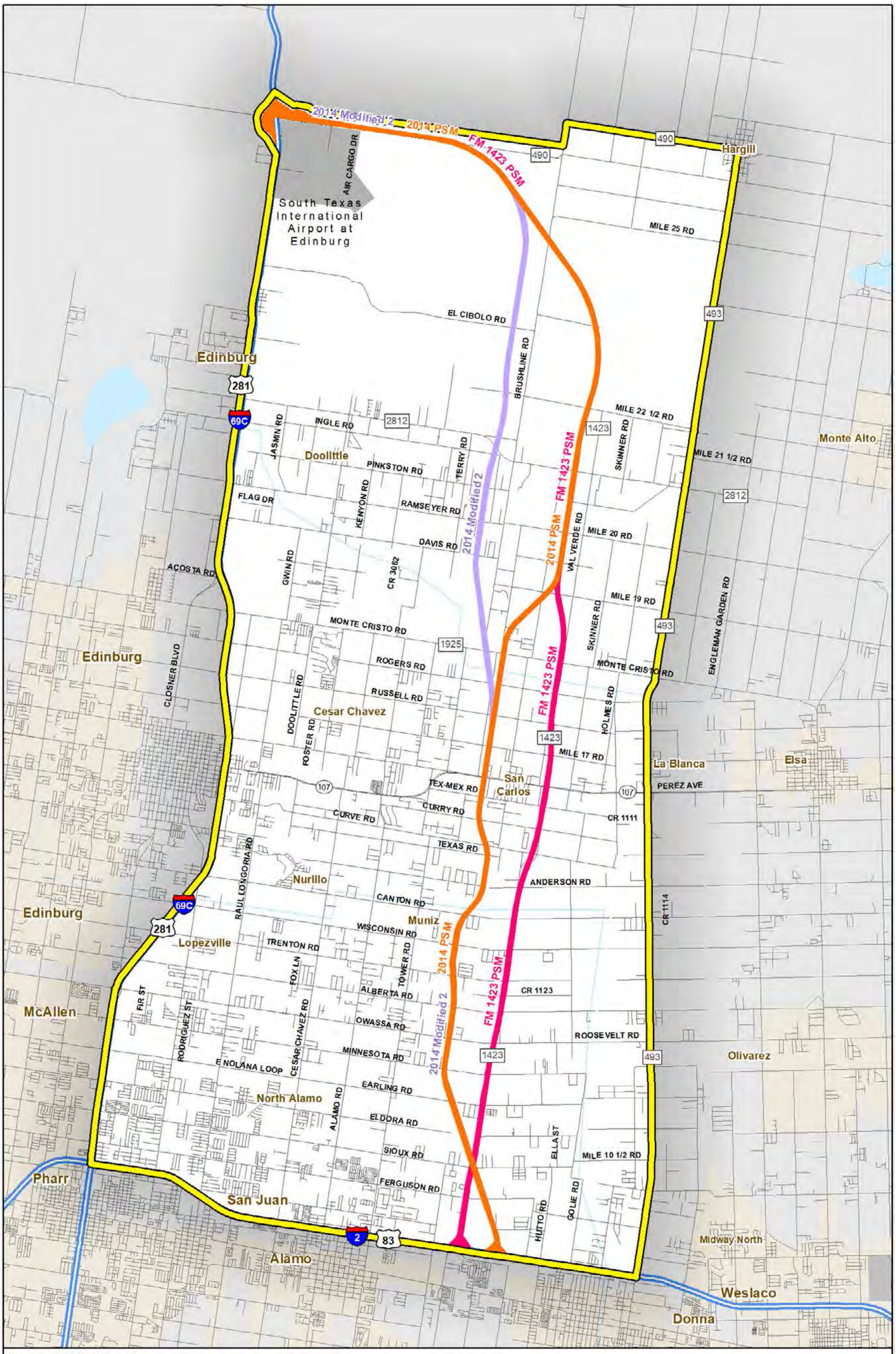


Base Map: TOP 2015 imagery Hidalgo County, Texas
ESRI-USA Base Map

Area of Influence
2014 Modified 2 Alternative
2014 PSM Alternative
FM 1423 PSM Alternative

0 0.5 1 2
Miles

Reasonable Alternatives on Aerial Map
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas
CSJs: 3629-01-001, 002, and 003



Base Map: ESRI-USA Base Map

Area of Influence

2014 Modified 2 Alternative

2014 PSM Alternative

FM 1423 PSM Alternative

N W E S

0 0.5 1 2

Miles

Reasonable Alternatives on County Map
SH 68 from
I-2/US 83 to I-69C/US 281
Hidalgo County, Texas

CSJs: 3629-01-001, 002, and 003

2015-2040 Hidalgo Count MPO MTP Project List

MPO ID	Roadway Name	From	To	Year	Type of Improvement
New Location Projects					
HC-79	10th st	SH 107	FM 1925 (Monte Cristo)	2017	Construct new 4 Lane
HC-286b	Mile 3 N (Phase II)	Tom Gill Road	FM 2221	2025	New Location 2 Lane Rural Roadway
HC-289	N Alamo Road Extension	FM 1925	0.5 Mi North	2017	New Location 2-Lane Rural Roadway
HC-15	FM 1925	FM 491 (Mile 1 W)	Cameron County Line	2036_2040	Construct new 4 Lane Divided arterial
HC-91	Bicentennial Blvd (Hoehn Rd)	Trenton Rd	SH 107	2018	Construct New 4 Lane Urban Rdwy
RMA-3	International Bridge Trade Corridor (IBTC) Phase 1	Interchange to SH 365 to I-2	Valley View Interchange to FM 493	2025	4 Lane Divided at grade non toll facility
RMA-3	International Bridge Trade Corridor (IBTC) Phase 2	Interchange to SH 365 to I-2	Valley View Interchange to FM 493	2031_2035	4 Lane Divided at grade non toll facility
Improvements to Existing Facilities					
HC-119	FM 907 (Alamo Rd)	Nolana	US 83	2017	Widen to 4 Lane Divided
HC-51a	SP 115 (S 23rd St)	US 83	FM 1016 (Military Hwy)	2027_2030	Widen to 6 Lane Divided Urban
HC-18	FM 2062 (Bentsen Palm)	US 83 S	Bus 83	2027_2030	Widen to 4 Lane Divided
HC-117b	FM 676 (Mile 5 N)	SH 364 (La Homa Rd)	SH 107 (Conway)	2018	Widen to 4 Lane Divided
HC-117a	FM 676 (Mile 5 N)	FM 492 (Doffing)	SH 364 (La Homa Rd)	2031_2035	Widen to 4 Lane
HC-144	Mile 5 N	Taylor Rd	FM 2220	2022	Widen to 4 Lane Divided with siphon and boxes
HC-19a	FM 2220 (Ware Rd)	Mile 5 N (Auburn Ave)	SH 107	2021	6 Lanes Divided Urban Section
HC-117c	FM 676 (Mile 5 N)	SH 107 (Conway)	Taylor Rd	2022	Widen to 4 Lane Divided
HC-253	Trenton Rd	FM 1926 (23rd st)	SH 336 (10th St)	2027_2030	Widen 6 lanes divided with landscape median
HC-113	FM 3461 (Nolana)	FM 2061 (McColl Rd)	US 281	2027_2030	Widen to 6 Lanes
HC-40	FM 907 (Alamo Rd)	SH 107	Nolana	2024	Proposed 4 Lane Curb and Gutter
HC-14	FM 1925	FM 491 (Mile 1 W)	Cameron County Line	2021	Widen to 4 Lane Divided
HC-39cb	FM 88	SH 107	0.2m N of FM 1925	2036_2040	Widen to 4 Lane Divided
HC-13	FM 1925	FM 88	FM 491 (Mile 1 W)	2022	Widen to 4 Lane Divided
HC-155a	Nolana Loop	FM 2220 (Ware Rd)	FM 1926 (23rd st)	2027_2030	Widen to 6 Lane
HC-152b	Nolana Loop	0.25m E of FM 907	0.25m E of FM 1423	2027_2030	Widen to 4 Lane Divided
HC-62a	FM 495	2nd St (McAllen)	US 281	2027_2030	Widen to 6 lane divided
HC-182ab	SH 364 (La Homa)	FM 676	FM 2221	2031_2035	Construct 4 Lane Divided Urban
HC-152d	Nolana Loop	0.25m E of FM 493	FM 88	2027_2030	Widen to 4 Lane Divided

MPO ID	Roadway Name	From	To	Year	Type of Improvement
HC-178b	US 83	0.5 Mi E of Bus 83	FM 1427 (Abram)	2027_2030	Widen to 6 lanes
HC-130	Jackson Ave	S Bicentennial Ave	S 2nd St	2031_2035	Widen to 4 Lane
HC-125	Hutto Rd	US 83	Bus 83	2027_2030	Widen to 4 Lane
HC-93	Bridge Ave	10th St	Pike Blvd	2027_2030	Widen to 4 Lane
HC-83	6th St (Weslaco)	Westgate Drive	Bus 83	2027_2030	Widen to 4 Lane
HC-244	Mile 4 1/2 W Rd	US 83	Mile 9 N Rd	2027_2030	Widen to 4 Lane Divided
HC-85	Airport Drive (Weslaco)	US 83	BUS 83	2027_2030	Widen to 4 Lane
HC-166	Schunior Ave	Sugar Rd	4th St	2031_2035	Widen to 4 Lane
HC-87	Alberta Rd	McColl Rd	US 281	2036_2040	Widen to 4 Lane
HC-170	Sprague Ave	Sugar Rd	SH 336 (N 10th St)	2027_2030	Widen to 4 Lane
HC-171	Sugar Rd	SH 107	Schunior Ave	2027_2030	Widen to 4 Lane
HC-264	Mile 10 North	Westgate (Mile 6 W)	FM 1015	2031_2035	Widen to 4 lanes - Urban
HC-177a	Trenton Rd	US 281	FM 1426 (Raul Longoria)	2027_2030	Construct 4 Lane
HC-92	Border Ave	S 18th St (Mile 6 N)	Bus 83	2031_2035	Widen to 4 Lane
HC-284b	Liberty Blvd (Phase II)	Mile 3 Rd	FM 2221	2031_2035	Construct 2 lanes with shoulders
HC-34a	FM 493 (La Blanca)	Mile 10 N Rd	Mile 14 N Rd	2025	Widen to 4 Lane Divided
HC-248	E Yuma Ave	Jackson Rd	McColl Rd	2027_2030	Widen to 4 Lane Urban with siphon
HC-275	Donna Int'l Bridge Commercial Approach	Donna BSIF	Future IBTC / FM 493 intersection	2020	Construct 4 lane controlled access tolled facility
RMA-1c	SH 365 (Ultimate Construction)	US 281 Military Highway	FM 1016 (Conway Rd)	2031_2035	Expansion from a 4-lane to 6-lane controlled access toll facility (constructing an additional 2-lanes)
HC-152a	Nolana Loop	FM 1426 (Raul Longoria)	0.25m E of FM 907	2026	Widen to 4 Lane Divided
HC-152c	Nolana Loop	0.25m E of FM 1423	0.25m E of FM 493	2027_2030	Widen to 4 Lane Divided
HC-34b	FM 493 (La Blanca)	Mile 14 N Rd	SH 107	2027_2030	Widen to 4 Lane Divided
HC-19b	FM 2220 (Ware Rd)	FM 1924 (Mile 3 N)	Mile 5 N (Auburn Ave)	2017	Widen to 6 Lane Divided
HC-290	FM 1925	10th St	McColl Rd	2019	Widen to 6 lane with Raised Median
HC-291	Dicker Road	Spur 115 (23rd St)	FM 2061 (Jackson Rd)	2024	Widen to 4 lane with continuous left turn
HC-284a	Liberty Blvd (Phase I)	US 83	Mile 3 Rd	2019	Widen to 4 lanes with dedicated left turn lane
HC-286a	Mile 3 N (Phase I)	Tom Gill Rd	FM 492 (Goodwin Road)	2020	Widen to 4 Lane Divided - Curb & Gutter Section
HC-292a	FM 494	FM 676 (Mile 5)	SH 107	2018	Widen to 4 lane
RMA-1aa	365 TollWay	US 281 Military Highway	FM 396 (Anzalduas Highway)	2017	A toll improvement being a 4 lane controlled access facility
RMA-1b	SH 365 (Phase II)	FM 396 (Anzalduas Highway)	FM 1016 (Conway Rd)	2027_2030	Toll improvement being a 4 lane controlled access facility
HC-249b	SH 336 (10th st)	Trenton Rd	SH 107	2027_2030	Widen to 6 Lanes

MPO ID	Roadway Name	From	To	Year	Type of Improvement
HC-256	Taylor Rd	BUS 83	I-2 (US 83)	2018	Widen 4 lanes with left turn lane
HC-257	Taylor Rd	Bus 83	Mile 2 N	2026	4 Lane Divided Urban Section with 1 Bridge Widening and 1 Bridge Class Irrigation Siphon
HC-12b	FM 1925	3rd Street	FM 493 (La Blanca)	2027_2030	Widen to 4 Lane Divided
HC-167	Sioux Rd	I Rd	FM 1426 (Raul Longoria)	2031_2035	Widen to 4 Lane
HC-277	Anzalduas Int'l Port of Entry	Anzalduas Int'l Port of Entry		2017	Construction of Southbound Inspection Station
HC-293	US 83 La Joya Relief Route (Phase II)	0.44Mi W FM 2221	0.44Mi E Liberty Blvd	2027_2030	Construct Overpasses at FM 2221, Tom Gill Rd & Liberty Rd
HC-294	US 83 La Joya Relief Route (Phase III)	1.0m E FM 886	0.53m W Showers Rd	2031_2035	Construct main lanes and widen/construct direct connectors
HC-12ab	Sharp Road Realignment	FM 1925	0.46Mi North	2023	Road Realignment 2 lane rural roadway
HC-312	SH 336	Intersection Business US 83	135ft S Intersection US Business 83	2018	Addition of north bound right turn lane
HC-315	Dove Ave	41st Street	Bentsen Rd	2018	4 lane divided
HC-325	US 83 @ 2nd St	FM 2061 (McColl Rd)	SH 336 (10th St)	2026	Convert existing Underpass to diamond intersection Overpass
HC-120	Freddy Gonzalez	SH 336 (10th St)	FM 2061 (McColl Rd)	2027_2030	Widen to 5 Lane with traffic street improvements
HC-242	Paso del Norte	Bus 83	2nd St	2031_2035	Widen to 4 Lane Divided
HC-316	Oakland Ave	K-Center	Jackson Rd	2027_2030	Add 4 lanes
HC-317	FM 2220 (Ware) & FM 495 (Pecan)	390ft W Intersection FM 2220	350ft E Intersection FM 2220	2027_2030	Addition of East & West bound right turn lanes on FM 495
HC-318	Erie Ave	Ware Road (FM 2220)	Bentsen Rd	2031_2035	2 lane divided with bike lanes
HC-322	Eldora Rd (Segment I)	FM 3362 (Jackson Rd)	I Rd	2031_2035	Divided Urban Section
HC-148ba	Mile 6 W Rd	Mile 9 N	Mile 11 N	2022	Widen to 4 Lane
HC-321	Westgate	Business 83	Mile 5 N	2031_2035	Widen to 4 lane divided
HC-50	Veterans Blvd (Future SH 495)	IH-2 / US83	La Homa (SH 364)	2020	4 Lanes Divided Urban Section
HC-146	Mile 6 N (18th St)	FM 88	Mile 2 W	2031_2035	Widen to 4 Lane
HC-323	East Eldora Rd (Segment II)	FM 907 (Alamo Rd)	I Rd	2036_2040	Divided Urban Section
HC-20	FM 2220 (Ware Rd)	SH 107	FM 1925 (Monte Cristo)	2020	6 Lanes Divided Urban Section
HC-306	Sioux Rd	Cesar Chavez Rd	I Road (Veterans Blvd)	2036_2040	Divided Urban Section
HC-84a	Abram Rd	Bus 83	US Expressway 83	2036_2040	4 Lane Divided Urban Section
HC-326	Cesar Chavez Rd	Nolana Loop	Business 83	2036_2040	Divided Urban Section

MPO ID	Roadway Name	From	To	Year	Type of Improvement
HC-2	FM 1015	Mile 12 N Rd	SH 107	2025	Widen to 4 Lane Divided
HC-26	FM 3072 (Dicker Rd)	S Cage Blvd	FM 907 (Alamo Rd)	2036_2040	Widen to 4 Lane Divided
HC-3	FM 1015	SH 107	FM 1925	2036_2040	Widen to 4 Lane Divided
HC-148bb	Mile 6 W Rd	Mile 11 N	SH 107	2031_2035	Widen to 4 Lane
HC-309	Donna Int'l Bridge	@ Donna Int'l Bridge		2017	Federal commercial vehicles inspection facilities at Donna Int'l Bridge
HC-314	FM 1926 (23rd st)	FM 1926 (23rd st) & Jackson Ave		2018	Addition of North and South bound center turn lanes
HC-313	FM 1926 (23rd st)	FM 1926 (23rd st) & Ebony Ave		2018	Addition of east, north and south bound center turn lanes
HC-310	FM 1926 (23rd st)	FM 1926 (23rd st) & Hackberry Ave		2018	Addition of North and South bound center turn lanes
HC-311	FM 1926 (23rd st)	SH 1926 (23rd st) & Kendlewood Ave		2018	Addition of North and South bound center turn lanes
HC-269	Mile 1 East	Bus 83	Mile 8 North	2025	Reconstruct & widen to urban 2 lanes & shoulders
HC-329	Regional Hike & Bike Trail Project (Precinct 2) - TAP	S San Antonio Ave (San Juan)	S 2nd St (McAllen)	2017	Proposed location of Hike & Bike Trail Connectivity
HC-327	SH 68 - Phase II	FM 1925	IH 69C / US 281	2027_2030	Divided Rural Highway
HC-328	SH 68 - Phase III	IH 2 / US 83	IH 69C / US 281	2027_2030	Main Lanes with Overpasses
HC-333	McIntyre Railroad Pedestrian Crossing	6th Ave	5th Ave	2017	McIntyre Railroad Pedestrian Crossing Improvements
HC-227	SH 107	US 281	FM 493 (La Blanca)	2018	Overpass At Schunior Rd
HC-336	E Hi Line Rd	Cage	Veterans Blvd	2019	Widen to 5 lane curb and gutter
HC-339	W Hi Line Rd	Cage	S Jackson Rd	2020	Widen to 5 lane curb and gutter
HC-337	SH 107 Courthouse	E McColl Rd	BUS 281 (Closner)	2020	Construction Drainage ROW
HC-338	FM 1925	10th St	Wallace Rd	2020	6 lane with Raised Median
HC-340	Anaya Rd	Cage	Veterans Blvd	2021	Widen to 5 Lanes
HC-341	Inspiration Rd/Military Parkway Loop	US 83 on Inspiration Rd	Military Rd E to FM 1016	2021	Connector to Madero International Bridge
HC-156a	Owassa	US 281	I Rd	2022	Widen to 4 Lane
HC-12aa	FM 1925	FM 907 (Alamo Rd)	Sharp Rd	2022	Widen to 4 Lane Divided
HC-342	FM 1423	Bus 83	IH-2 / US 83	2022	Proposed 4 Lane Curb & Gutter
HC-343	SH 107	FM 676	SH 107	2022	
HC-344	Cesar Chavez	Bus 83	Ridge Rd	2023	
HC-345	Fm 1426	IH-2	Nolana LP	2023	Proposed 6 Lane raised median
HC-346	FM 1423 (Val Vaerde)	Roosevelt	Sh 107	2025	Proposed 4 lane curb & gutter

MPO ID	Roadway Name	From	To	Year	Type of Improvement
HC-224	SH 107	Mile 2	Mile 5	2025	Widen to 6 lane divided
HC-127	I Rd	Rancho Blanco	Military	2026	Construction 2 lane with shoulders
HC-348	FM 1925	FM 681 (Moorefeild)	Wallace Rd	2026	Proposed 4 lane curb & gutter
HC-21	FM 2221	Jara Chinas Rd	Abram Rd	2026	Widen to 4 lane divided rule
HC-349	SH 107	FM 681	Ware Rd(FM 2220)	2026	
HC-350	Inspiration Rd/Military Parkway loop	US 83 On Inspiration Rd	Military Rd E To FM 1016	2027_2030	Madero Intl vehicular & rail bridge
HC-292b	FM 494	FM 1924 (mile 3)	FM 676 (mile 5)	2020	Widen to 4 Lane
HC-354	Pharr Intl Bridge Northbound Lanes	@ Pharr Intl Bridge		2019	Construction additional northbound lane and related canopies and booths into the Pharr POE inspection Area
HC-355	Pharr Intl Bridge 2nd BSIF exit	@ Intl Bridge		2019	Construction of additional exit lane and related canopies and booths out of Pharr POE BSIF
HC-353	Mon Mack Rd	Sprague	SH 107	2027_2030	4 Lane Urban Section
HC-356	Vision Zero Planning Study - TAP	McAllen City Limits		2018	Vision Zero Planning Study
HC-358	PSJA Tri-City Pedestrian Safety Improvements - TAP	City of Pharr	City of Alamo	2018	New Construction Pedestrian Safety Improvements
HC-357	Pharr Comprehensive Pedestrian Safety Wellness Plan - TAP	City of Pharr		2018	Planning Study for new construction pedestrian safety improvements
HC-359	Cano Hike & Bike Trail Lighting Project - TAP	Cano St.	Freddy Gonzalez	2018	Installation of solar powered lighting along Cano walking trail
HC-360	Donna Sidewalk Project - TAP	S. International Blvd.		2018	Rehabilitation of deteriorated sidewalks and construction of new sidewalks
HC-361	Donna Int'l Bridge	Donna Int'l Bridge		2018	Construction commercial facilities northbound loaded / empty and southbound loaded trucks
HC-351	Anzalduas Int'l Port of Entry	Anzalduas Int'l Port of Entry		2017	Construction of two additional northbound passenger lanes
HC-352	Anzalduas Int'l Port of Entry NB Empties	Anzalduas Int'l Port of Entry		2017	Inbound commercial inspection pre-primary inspection pre-cleared cargo
HC-362	I-2 / I-69c Interchange	I-2 / I-69c Interchange		2021	Improvements at Interchange

Source: HCMPO MTP, November 2017.