



## **Final Environmental Assessment**

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SH 249: From FM 1774 to SH 105

Grimes County

CSJ: 3635-02-002

August 2016

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## 1.0 INTRODUCTION

The Texas Department of Transportation (TxDOT) is planning to extend State Highway (SH) 249 on new location from its current proposed terminus at Farm to Market (FM) 1774 to SH 105 in Grimes County, Texas. The project is commonly referred to as SH 249 in Grimes County. **Exhibits A, B and C** provide the project location map, a U.S. Geological Survey (USGS) topographic map and floodplains, National Wetland Inventory (NWI) and soils map, respectively. The project length is approximately 10 miles. TxDOT has prepared a State Environmental Assessment (EA) to determine the potential environmental, social, and economic impacts of the proposed SH 249 project. The project is anticipated to be 100% state funded and, therefore, the EA was prepared in accordance with 43 Texas Administrative Code (TAC) Chapter 2.

## 2.0 EXISTING FACILITY

SH 249 originates in Houston, Texas, at Interstate Highway (IH) 45 between IH 610 (North Loop) and Beltway 8 north of downtown. From IH 45, drivers can travel northwest through Houston and the City of Tomball. SH 249 currently terminates at the intersection of SH 249 and FM 1774 west of the City of Pinehurst (Pinehurst). An Environmental Impact Statement (EIS) has been approved to extend SH 249 from just south of the SH 249/FM 1774 interchange in Pinehurst to a new SH 249/FM 1774 interchange north of the City of Todd Mission (the southern terminus of the proposed SH 249 in Grimes County). The proposed SH 249 Controlled-Access Tollway Extension project (proposed SH 249 Extension) would ultimately be constructed as a four-mainlane, controlled-access tollway with auxiliary lanes, on-ramps and off-ramps (where appropriate), and intermittent frontage roads within a typical 400-foot-wide right-of-way (ROW).

## 3.0 PROPOSED PROJECT

The proposed project would construct a tolled, controlled-access two-lane roadway from FM 1774 to SH 105 with a passing lane in alternating directions throughout the project limits. This roadway configuration is commonly referred to as a Super 2. The roadway would consist of two 12-foot lanes (one in each direction), an alternating 12-foot passing lane, and 10-foot shoulders on the outside of the travel lane. In addition, two-lane, one-way, non-toll frontage roads would be constructed along approximately five miles of the proposed project (from Urbanosky Lane to west of CR 304). While the proposed project and this EA only address the construction of the Super 2 facility and frontage roads described above, this EA also addresses the acquisition of sufficient ROW to accommodate the future widening of SH 249 to a four-lane divided facility. The construction of the future four-lane divided roadway would require additional environmental investigations and analyses when the construction is determined necessary. Overpasses with ramps for local access are proposed at FM 1774, Urbanosky Lane to tie in with proposed frontage roads, west of County Road (CR) 304 to tie in with proposed frontage roads, CR 306 and SH 105. Design of the overpasses and ramps would accommodate the future widening from a Super 2 to a four-lane divided roadway. Right of way would also accommodate direct connectors from SH 249 to SH 105 for both east and west directions. The overall construction would be phased with the SH 105 west direct connector built in the initial construction project. The connectors to SH 105 would be designed to accommodate a future widening of SH 105 from the current Super 2 configuration to a four-lane roadway. Again, the widening of SH 105 and the associated environmental impacts would be addressed separately. The total ROW analyzed in this EA varies between 623 and 658 acres. Typical ROW width is 450 feet in

areas with frontage roads and 400 feet in areas without frontage roads. The proposed project typical sections are included in **Appendix A**.

FM 1774 and SH 105 are considered logical termini (rational end points for a transportation improvement and review of the environmental impacts) as they are major traffic generators in the area. The proposed project would have independent utility, i.e. be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made.

When the road opens to traffic, the proposed SH 249 is predicted to carry a projected traffic volume of 9,700 vehicles per day (vpd). In 2040, the traffic volume is projected to increase approximately 46 percent to 14,200 vpd. The posted speed limit would be 70 mph on the tolled lanes and 50 mph on the frontage roads.

#### **4.0 PROJECT FUNDING**

The proposed toll road project is anticipated to use State funds only. No federal funding participation is expected. The project is included in the 2015 Unified Transportation Plan which was approved on August 28, 2014, by the Texas Transportation Commission. The UTP authorizes projects for construction, development and planning activities. A copy of the UTP page is included in **Appendix B**. The project is included in the 2015-2018 Statewide Transportation Improvement Program (STIP) (see **Appendix B**). As of February 2016, the estimated construction cost of the proposed project is approximately \$164.9-170.4M. Construction is estimated to begin in 2017 and be complete in 2019.

#### **5.0 PURPOSE AND NEED**

The proposed project is needed to facilitate the safe and efficient movement of people and goods between the Grimes County/Brazos Valley Region and the Houston metropolitan area. The proposed project needs to address safety; existing, future and seasonal traffic congestion; transportation system linkage and emergency evacuation routes.

##### Safety

Currently, FM 1774 and SH 105 both have accident rates considerably higher than the statewide average for rural four-lane divided roadways. There were 259 crashes along FM 1774 (from Waller County Line to SH 105) and SH 105 (from FM 1774 to SH 6) between 2010 and 2014, including 12 fatal crashes according to Crash Records Information System (2010-2014). The crash rates for FM 1774, SH 105 and the statewide average for a rural four-lane divided roadway are shown in **Table 1**.

There are approximately 32 intersections and over 100 driveways along FM 1774 and SH 105. These intersections and driveways create conflict points for vehicles traveling on the roadways. The proposed improvements are needed to address safety for the passenger and freight traffic traveling through this region, while providing safer access points for the residents in the region.

**Table 1: Crash Rates**

Year	FM 1774	SH 105	Statewide Average (Rural Four-lane Divided)
2010	209.9	93.3	47.96
2011	165.1	59.7	43.69
2012	120.9	53.6	51.46
2013	249.3	67.3	46.24
2014	151.7	77.0	60.98
<b>Average</b>	<b>179.4</b>	<b>70.2</b>	<b>52.07</b>

Source: Crash Records Information System (2010-2014), accessed Feb. 2016; Statewide Crash Rates, accessed Feb. 2016

### Existing, Future and Seasonal Congestion

According to TxDOT traffic maps, between 1980 and 2010, traffic has nearly tripled on FM 1774 and SH 105. Traffic growth (percent increase) measured in vpd on FM 1774 and SH 105 is shown in **Table 2**.

**Table 2: Traffic Growth**

Roadway	Vehicles per Day		Percent Increase
	1980	2010	
FM 1774	1,150	4,300	<b>273.9%</b>
SH 105	2,900	8,600	<b>196.6%</b>

Source: TxDOT Traffic Maps (1980 & 2010)

From 2000 to 2010, Grimes County had a population growth rate of 13%. Development plans throughout the region indicate that these growth trends will likely continue for the foreseeable future.

During seasonal special events at Texas A&M University and the Texas Renaissance Festival (October and November in Todd Mission) more traffic is added to the already congested local roadways. The proposed improvements need to address local congestion problems and through traffic congestion by adding capacity to the corridor.

### Transportation System Linkage

The existing and proposed SH 249 route in Harris and Montgomery Counties currently extends from Houston to Pinehurst. SH 249 is either already an access-controlled facility or is proposed to be upgraded to an access-controlled facility as part of other corridor studies within these counties. West of Pinehurst, the connections to Navasota consists of FM 1774 and SH 105, mostly two-lane undivided facilities with at-grade intersections and driveways. North of Navasota, SH 6 provides a four-lane divided route from Navasota to Bryan, Texas. The closest alternate route is US 290 and SH 6, which is a four-lane divided facility located to the south of Navasota. US 290 is heavily congested in the Houston area and continues to be upgraded, as well, to accommodate rapid traffic growth.

An EIS assessed improvements to SH 249 from FM 1774 in Pinehurst to Todd Mission in Montgomery County. The proposed facility would be generally consistent with that between Houston and Pinehurst, a high speed controlled access facility.

The proposed improvements need to provide system continuity between SH 249/FM 1774 in Todd Mission and Navasota, providing a more direct route between the Houston metropolitan area and Navasota as well as Bryan/College Station.

### Emergency Evacuation

The Gulf Coast Region of Texas, including the low-lying and populous areas of the Houston metropolitan region, is seasonally affected by hurricanes. During such emergency events, it is imperative to have sufficient roadway capacity to evacuate residents in a safe and timely manner. Because regional evacuation routes like US 290 and IH 45 become congested during evacuation, the proposed improvements need to provide additional capacity to complement the efficient movement of traffic.

### **Purpose for the Proposed Project**

The purpose of the proposed project is to meet the needs identified above by increasing safety, reducing congestion, improving system linkage and providing additional capacity for emergency evacuation. To accomplish this, SH 249 would be extended from the current proposed terminus at FM 1774 in Todd Mission to SH 105 near Navasota as a controlled-access facility.

### **Objectives of the Proposed Project**

The objectives of the proposed project are to meet the project's needs and purpose while minimizing environmental impacts. In addition, specific goals and objectives include:

- Enhance mobility along the corridor
- Sustain regional economic competitiveness and vitality
- Improve safety along the corridor
- Consider the environment
- Leverage use of public funds

## **6.0 ALTERNATIVES**

### **6.1 NO BUILD ALTERNATIVE**

The No Build Alternative assumes no transportation improvements beyond the SH 249 Extension from Montgomery County other than short-term minor reconstruction that maintains continuing operation of existing roadways, such as safety upgrading and maintenance and other planned and programmed transportation improvements within the project study area. The No Build Alternative would not improve safety, address existing or increased traffic demands, improve regional connectivity or address evacuation needs. This alternative would not meet the purposes and needs of the project; however, the No Build alternative will be carried forward as a baseline by which to measure the build alternatives.

### **6.2 BUILD ALTERNATIVES**

#### **Upgrade FM 1774**

At the first public meeting for the SH 249 in Grimes County project, held on October 29, 2013, and in subsequent communications, area citizens voiced a preference to upgrade FM 1774 from the SH 249 Extension connection north to SH 105 in Plantersville rather than extend SH 249 to SH 105 on new

location. TxDOT considered this alternative; however, upgrading FM 1774 to include a center turn lane does not meet the project's purpose and need. Due to the multiple entry points and turning movements, the need for safety improvements, support for future traffic growth and congestion relief would not be satisfied. Neither would an upgraded FM 1774 improve the regional connectivity of the area or address emergency evacuation needs. Upgrading FM 1774 would result in an estimated 18 relocations and would impact more floodplain acreage than any of the new location alternatives discussed below. For these reasons, upgrading FM 1774 was not considered a reasonable alternative and will not move forward in the evaluation process.

### **New Location Alternatives**

At the October 29, 2013, public meeting, the project study area (see **Appendix C, Exhibit 1**) was presented for review and comment. One of the purposes of the meeting was to identify any additional project constraints prior to the development of alternatives in order to minimize impacts to these constraints. Citizens attending the meeting had the opportunity to draw potential routes and mark constraints on large aerial photos of the project area. These maps, as well as data and maps showing other previously identified constraints, were used by TxDOT to develop ten preliminary project build alternatives (see **Appendix C, Exhibit 2**) which were displayed at the April 23, 2014, open house public meeting.

The ten preliminary alternatives (A1, A2, A3, B1, B2, B3, C1, C2, D1 and D2) were developed based on the project's purpose and need, public input, known environmental constraints, proposed typical section and roadway design standards. In addition, all of the preliminary alternatives were developed to minimize the relocation of homes and businesses. Frontage roads were not initially included in the development of alternatives. Frontage roads were added after additional public involvement later in the project development process. All of the preliminary alternatives share a common southern terminus at FM 1774. The preliminary alternatives shared three common northern termini at SH 105 in the vicinity of Yarboro Lake. Two termini, numbers 1 and 2, connected to SH 105 west of Yarboro Lake while terminus number 3 connected to SH 105 east of Yarboro Lake. All three termini would require interchanges crossing the Union Pacific Railroad (UPRR). At termini numbers 1 and 3, the railroad is immediately adjacent to the south side of SH 105. At terminus number 2, the UPRR is approximately 580 feet south of SH 105. In addition, SH 105 terminus number 2 intersected SH 105 in essentially the same location as FM 1748. Due to conflicts with FM 1748 and the increased distance between SH 105 and the UPRR (which would require longer, more expensive interchange bridge structures), terminus number 2 was dismissed from further consideration. The removal of SH 105 terminus number 2 eliminated four (A2, B2, C2 and D2) of the ten preliminary alternatives.

The six remaining preliminary alternatives (A1, A3, B1, B3, C1 and D1) were designated as reasonable alternatives and advanced for further study (see **Appendix C, Exhibit 3**). As with the preliminary alternatives, all of the reasonable alternatives share a common southern terminus and alignment from FM 1774 to approximately 3.75 miles west of FM 1774. All of the reasonable alternatives start at FM 1774. The alternatives travel to the west, cross Mill Creek and the UPRR, and pass south of the Shadow Lakes and Pinebrook subdivisions. Once past Pinebrook subdivision, the alternatives turn northwest, cross an overhead transmission line easement and then split into the six different alternatives described below.

**Alternative A1:**

Alternative A1 is a 9.7-mile alternative that roughly follows an existing pipeline easement (see **Appendix C, Exhibit 4**). It starts at FM 1774 where the SH 249 Extension (Montgomery County section) ends. The alternative travels to the west, crosses Mill Creek and the UPRR, and passes south of the Shadow Lakes and Pinebrook subdivisions. Once past Pinebrook subdivision, the alternative turns northwest, crosses the overhead transmission line easement and then crosses over the CR 304/Greenwood Road intersection 2.5 miles northwest from the turn south of Pinebrook subdivision. The alternative's centerline proximity to the pipeline varies from zero to 800 feet before it crosses over the pipeline 0.5 miles south of CR 306. When it crosses CR 306, it continues northwest for 1.4 miles before crossing over FM 1748. Then, it turns north and travels 0.95 miles to intersect SH 105 approximately 0.75 mile west of Yarboro Lake.

**Alternative A3:**

Alternative A3 is a 9.1-mile alternative that roughly follows an existing pipeline easement (see **Appendix C, Exhibit 5**). It starts at FM 1774 where the SH 249 Extension (Montgomery County section) ends. The alternative travels to the west, crosses Mill Creek and the UPRR, and passes south of the Shadow Lakes and Pinebrook subdivisions. Once past Pinebrook subdivision, the alternative turns northwest, crosses the overhead transmission line easement and then crosses over the CR 304/Greenwood Road intersection 2.5 miles northwest from the turn south of Pinebrook subdivision. The alternative's centerline proximity to the pipeline varies from zero to 800 feet before it crosses over the pipeline 0.5 miles south of CR 306. Unlike Alternative A1, after crossing CR 306, Alternative A3 travels north-northwest about 1.75 miles to intersect SH 105 approximately 0.25 mile east of Yarboro Lake.

**Alternative B1:**

Alternative B1 is a 10.0-mile alternative (see **Appendix C, Exhibit 6**). It starts at FM 1774 where the SH 249 Extension (Montgomery County section) ends. The alternative travels to the west, crosses Mill Creek and the UPRR, and passes south of the Shadow Lakes and Pinebrook subdivisions. Once past Pinebrook subdivision, the alternative turns northwest, crosses the overhead transmission line easement and then turns west. Approximately 1.25 miles after the turn, it crosses CR 304 and travels north-northwest for another 2.5 miles to CR 306. Immediately after passing over CR 306, it curves northwest for 1.4 miles before crossing over FM 1748. Then, it travels approximately one mile to intersect SH 105 approximately 0.75 miles west of Yarboro Lake.

**Alternative B3:**

Alternative B3 is a 9.5-mile alternative (see **Appendix C, Exhibit 7**). It starts at FM 1774 where the SH 249 Extension (Montgomery County section) ends. The alternative travels to the west, crosses Mill Creek and the UPRR, and passes south of the Shadow Lakes and Pinebrook subdivisions. Once past Pinebrook subdivision, the alternative turns northwest, crosses the overhead transmission line easement and then turns west. Approximately 1.25 miles after the turn, it crosses CR 304 and travels north-northwest for another 2.5 miles to CR 306. Unlike Alternative B1, immediately after passing over CR 306, Alternative B3 continues north-northwest for approximately 1.75 miles to intersect SH 105 approximately 0.25 miles east of Yarboro Lake.

**Alternative C1:**

Alternative C1 is a 10.1-mile alternative (see **Appendix C, Exhibit 8**). It starts at FM 1774 where the SH 249 Extension (Montgomery County section) ends. The alternative travels to the west, crosses Mill

Creek and the UPRR, and passes south of the Shadow Lakes and Pinebrook subdivisions. Once past Pinebrook subdivision, the alternative turns northwest, crosses the overhead transmission line easement and then turns west. Approximately 1.25 miles after the turn, it crosses CR 304. After passing over CR 304, it continues northwest for 2.75 miles, crossing CR 307 and turning to the north, to cross CR 306. After crossing CR 306, it turns northwest for 1.4 miles before crossing over FM 1748. Then, it travels another 0.95 miles to intersect SH 105 approximately 0.75 miles west of Yarboro Lake. As there is only one terminus location for Alternative C1, the designation was changed to Alternative C.

**Alternative D1:**

Alternative D1 is a 10.7-mile alternative (see **Appendix C, Exhibit 9**). It starts at FM 1774 where the SH 249 Extension (Montgomery County section) ends. The alternative travels to the west, crosses Mill Creek and the UPRR, and passes south of the Shadow Lakes and Pinebrook subdivisions. Once past Pinebrook subdivision, the alternative turns northwest, crosses the overhead transmission line easement and then crosses over the CR 304/Greenwood Road intersection 2.5 miles northwest from the turn south of Pinebrook subdivision. After crossing CR 304, the alternative turns west. After crossing CR 307, it turns north to cross CR 306 1.5 miles later. After crossing CR 306, it turns northwest for 1.4 miles before crossing over FM 1748. Then, it travels another 0.95 miles to intersect SH 105 approximately 0.75 miles west of Yarboro Lake. As there is only one terminus location for Alternative D1, the designation was changed to Alternative D.

**Evaluation Criteria**

In order to recommend an alternative(s) for detailed environmental evaluation, criteria for evaluating the six reasonable alternatives include estimated construction cost, roadway length, distance from the SH 105 intersection to SH 6 in Navasota, estimated acres of ROW acquisition, number of affected parcels, major roadway crossings (SH 105, CR 201, CR 202, CR 304, CR 306, CR 307, FM 1748 and FM 1774), railroad crossings, pipeline crossings, potential relocations, number of wetland crossings, acreage of floodplain crossings and number of stream crossings.

A matrix quantifying the evaluation criteria for each reasonable alternative was developed (see **Appendix C, Reasonable Alternatives Evaluation Matrix**). In order to aid in the evaluation of the alternatives, the alternative with the most desirable result in each of the evaluation criteria was colored dark green. For example, Alternative B3's cost is the lowest estimated construction cost of all six reasonable alternatives and was, therefore, colored dark green. The alternative with the second most desirable result for each evaluation criteria was colored light green. For example, Alternative A3's cost was the second lowest estimated construction cost of the six reasonable alternatives and was colored light green.

All of the reasonable alternatives were determined to meet the project's purpose and need and no residential or commercial displacements would be required by any of the reasonable alternatives. The reasonable alternatives are summarized below:

**Alternative A1:**

- Intersects SH 105 closest to SH 6 in Navasota
- Fewest stream crossings
- Most closely follows the pipeline alignment
- Second highest cost to build

- Impacts the highest number of parcels
- Most mapped wetland crossings (tied with C and D)
- Intersection with CR 304/Greenwood Road will require roadway realignments
- More complicated mid-access point
- May isolate property at the southern end of Joubert Road

**Alternative A3:**

- Second lowest cost to build
- Requires the least amount of ROW
- Fewest major roadway crossings
- Most closely follows the pipeline alignment
- Intersects SH 105 farther from SH 6 in Navasota
- Impacts second highest number of parcels
- Intersection with CR 304/Greenwood Road will require roadway realignments
- More complicated mid-access point (crosses CR 304 at a skewed angle and would require realignment of CR 304)
- May isolate property at the southern end of Joubert Road

**Alternative B1:**

- Intersects SH 105 closest to SH 6 in Navasota
- Second fewest wetland crossings
- Simplified crossing of CR 304
- Least complicated mid-point access (perpendicular crossing of CR 304 which would not require extensive realignment of CR 304)
- Third longest alternative

**Alternative B3:**

- Lowest cost to build
- Second lowest amount of ROW
- Lowest amount of wetland crossings
- Simplified crossing of CR 304
- Least complicated mid-point access (perpendicular crossing of CR 304 which would not require extensive realignment of CR 304)
- Intersects SH 105 farther from SH 6 in Navasota

**Alternative C:**

- Intersects SH 105 closest to SH 6 in Navasota
- Impacts fewest number of parcels (tied with D)
- Simplified crossing of CR 304
- Least complicated mid-point access (perpendicular crossing of CR 304 which would not require extensive realignment of CR 304)
- Second highest estimated construction cost
- Second longest alternative
- Second highest amount of ROW required
- Highest amount of major roadway crossings

- Most mapped wetland crossings (tied with A1 and D)
- Crosses the most floodplain acreage
- Second most stream crossings

**Alternative D:**

- Intersects SH 105 closest to SH 6 in Navasota
- Impacts fewest number of parcels (tied with C)
- Highest estimated construction cost
- Longest alternative
- Most mapped wetland crossings (tied with A1 and C)
- Crosses the second most floodplain acreage
- Most stream crossings
- Intersection with CR 304/Greenwood Road will require roadway realignments
- Least complicated mid-point access (perpendicular crossing of CR 304 which would not require extensive realignment of CR 304)

**Results of the Second Public Meeting**

After reviewing the reasonable alternatives, Alternative B3 was preliminarily recommended by TxDOT for the SH 249 project in Grimes County. Although it intersects SH 105 approximately 1.1 miles farther east of SH 6 than several other alternatives, it meets the stated purpose and need of the project, has the lowest estimated construction cost, has the second lowest amount of required ROW, affects the second lowest number of parcels, has the fewest major roadway crossings, the lowest number of wetland crossings, and has a simplified crossing of CR 304 which provides the least complicated mid-point access. The preliminarily recommended alternative, in addition to all of the reasonable alternatives, was presented at a second public meeting on April 3, 2014, as TxDOT wanted to receive feedback from interested parties.

After the April 3, 2014, public meeting, TxDOT received letters and/or e-mails from 39 concerned citizens. Some of the common themes expressed in the comments received included concern about the acquisition of right-of-way from private property, division of private property by the proposed SH 249, the terminus of the proposed SH 249 at SH 105, use of National Oilwell Varco (NOV) property, the potential for SH 249 to bypass Navasota and adverse impacts to the residents' quality of life.

Based on the comments mentioned above, TxDOT reexamined the preliminary recommended alternative in order to address public concerns and impacts to private property. A large, contiguous tract of land located west of Yarboro Lake is owned by NOV. Commenters suggested using the NOV property rather than multiple smaller parcels of land in that area. Commenters and local officials also requested that frontage roads be included in the project design. TxDOT developed a modified alternative, called the C Hybrid, which runs slightly south of Alternative C between CR 304 and CR 306, incorporates frontage roads and utilizes the westernmost terminus at SH 105 (see **Appendix C - Exhibit 10**). The C Hybrid was determined to meet the project's purpose and need and no residential or commercial relocations would be required.

The C Hybrid was compared to Alternative B3 and the following points were identified:

- The C Hybrid intersects SH 105 1.1 miles closer to SH 6 in Navasota than Alternative B3. This facilitates travel to Navasota and addresses public comments in favor of the more western connection to SH 105.
- The C Hybrid is located farther away from Yarboro Lake than Alternative B3 and would have less of an impact on the scenic qualities of the lake.
- Although the C Hybrid impacts three more parcels than Alternative B3, the C Hybrid crosses four large parcels (totaling approximately 1,600 acres) owned by NOV instead of smaller individually-owned parcels.
- The NOV property is primarily undeveloped and used for ranching and agriculture. According to a representative from NOV, the company has no plans to develop their property south of SH 105. Field investigations of the NOV property revealed no environmental issues or fatal flaws that would eliminate the C Hybrid Alternative from consideration (photographs of the NOV property are included in **Appendix D**, photos 1-13).
- The C Hybrid requires 218 more acres of right-of-way than Alternative B3 due to the expanded ROW necessary to construct frontage roads.
- The C Hybrid is estimated to cost more than Alternative B3 due to the need for additional bridge structures at CR 307 and FM 1748 which are not crossed by the B3 Alternative and expanded ROW for and construction of frontage roads.
- The C Hybrid crosses two National Wetland Inventory mapped waters while the B3 Alternative crosses only one. Field investigations indicate that all of these mapped waters are isolated stock ponds.
- The C Hybrid crosses four more streams than Alternative B3 and 10.4 acres more floodplain than the B3 Alternative. Further analysis will be required to determine if stream crossings would be bridged or culverted. All reasonable efforts would be made to avoid or minimize impacts to all streams.

Between FM 1774 and CR 304 and between CR 306 and SH 105, the C Hybrid route has been designed to minimize property impacts and use the large NOV tract of land. Between CR 304 and 306, TxDOT received questions from stakeholders and property owners concerning the route location and associated impacts to property owners. The TxDOT Bryan District reached out to all potentially impacted property owners in this area to gain information such as property use, property access, land features, and other information considered important to each land owner. Stakeholders were also encouraged to suggest routes and any preferences for routes through the area. After meeting with stakeholders, verifying information and making additional field visits, additional route alternatives were developed to more closely assess impacts to private properties.

As a result of this additional public involvement, three build alternatives, the Blue, Green and Yellow Alternatives (all variations on the C Hybrid route), were carried forward though this EA for a more in-depth evaluation (see **Exhibits A-E**). Environmental impacts of the three build alternatives and the No Build Alternative were evaluated and are described in Sections 7, 8 and 9.

### 6.3 RIGHT-OF-WAY

Based on the current engineering design work for the three build alternatives, approximately 623 to 658 acres of ROW would be required for construction. The three build alternatives would impact between 35 and 40 different parcels of land. Project design focused on maintaining access to all affected properties and property access will continue to be considered during further refinement of project design. All ROW acquisition will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

## 7.0 AFFECTED ENVIRONMENT

### 7.1 LAND USE

The project area is primarily characterized as rural ranch/farm land, with scattered residential development. Shadow Lakes and Pinebrook Subdivisions are located north of the proposed facility near FM 1774 and have lot sizes typical of rural subdivisions. East of these subdivisions, on the south side of the proposed facility, large-lot development occurs in the Millstone Subdivision and along Tierra Buena Drive. Commercial development is largely confined to the communities of Plantersville and Stoneham. A large, contiguous tract of land located west of Yarboro Lake and south of SH 105 is owned by NOV. Although energy-related development has occurred in the project area, NOV has no current plans to drill on this land. Project area photographs are found in **Appendix D**.

Land use impacts are the same between all three alternatives east of CR 304 and north of CR 306. In the area between CR 304 and CR 306, the three build alternatives were analyzed to determine their potential impacts to land use, and more specifically, property impacts. A comparison of land use impacts is shown in **Table 3**.

**Table 3: Land Use Impacts between CR 304 and CR 306**

<b>Land Use Component</b>	<b>Blue Alternative</b>	<b>Green Alternative</b>	<b>Yellow Alternative</b>
Total ROW Acquisition (acres)	208	195	218
Affected Parcels	15	12	17
Affected Property Owners	11	8	13
Potential Relocations	0	0	0

The Yellow Alternative requires the most amount of ROW, affects the highest number of parcels and property owners and has no relocations.

The Green Alternative requires the least amount of ROW, affects the fewest number of parcels and property owners and has no relocations.

The Blue Alternative falls in between the Yellow and the Green with regard to ROW acres, affected parcels and affected property owners. The Blue Alternative has no relocations.

## 7.2 NATURAL SETTING

According to the Ecological Mapping Systems of Texas (EMST), the project area falls within the South Central Plains and Texas Blackland Prairies ecoregions.

Locally termed the “piney woods”, the South Central Plains region of mostly irregular plains represents the western edge of the southern coniferous forest belt. Once blanketed by a mix of pine and hardwood forests, much of the region is now in loblolly and shortleaf pine plantations. Soils are mostly acidic sands and sandy loams. Covering parts of Louisiana, Arkansas, east Texas, and Oklahoma, only about one sixth of the region is in cropland, primarily within the Red River floodplain, while about two thirds of the region is in forests and woodland. Lumber, pulpwood, oil, and gas production are major economic activities.

The Texas Blackland Prairies form a disjunct ecological region, distinguished from surrounding regions by fine-textured, clayey soils and predominantly prairie potential natural vegetation. Dominant grasses included little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), yellow Indiangrass (*Sorghastrum nutans*), and switchgrass (*Panicum virgatum*). This region contains a higher percentage of cropland than adjacent regions; pasture and forage production for livestock is common. Large areas of the region are being converted to urban and industrial uses. Typical game species include mourning dove and northern bobwhite on uplands and eastern fox squirrel along stream bottomlands.

The proposed ROW for each of the three build alternatives as mapped by the EMST is shown in **Table 4**.

**Table 4: EMST Vegetation Mapped within Proposed ROW**

Vegetation Type	Acres within Proposed ROW		
	Blue Alternative	Green Alternative	Yellow Alternative
Pineywoods	513 (82%)	513 (82%)	536 (81%)
Blackland Prairie	58 (9%)	58 (9%)	58 (9%)
Floodplain (hardwood/herbaceous)	24 (4%)	21 (3%)	34 (5%)
Post Oak Savanna	13 (2%)	14 (2%)	17 (3%)
Urban	6 (1%)	6 (1%)	6 (1%)
Native Invasive Deciduous Woodland	8 (1%)	7 (1%)	5 (1%)
Riparian	4 (1%)	4 (1%)	2 ( $< 1\%$ )
Pine Plantation	3 ( $< 1\%$ )	1 ( $< 1\%$ )	1 ( $< 1\%$ )

Actual habitat present in the project area is consistent with the EMST. A large fire occurred in the area east of CR 304 in 2011. Known as the Dyer Mill Fire, it burned approximately 3,600 acres. The original pine forest in this area was severely damaged, but is now in the process of regrowth. Scattered residential

development has occurred within the project area. There is no unusual difference between the vegetation inside and outside of the proposed ROW.

## 8.0 ENVIRONMENTAL CONSEQUENCES

### 8.1 SOCIOECONOMICS

#### 8.1.1 Age, Race and Ethnicity

The three build alternatives are contained within one Census 2010 Block Group (BG), BG 2 of Census Tract 1801.02 (**Exhibit D**). The total population within this block group is 1,213 people (approximately six percent of the total population of Grimes County in 2010). The median age of the project area's population is higher than that of Grimes County as a whole, and is also higher than the median age for the state of Texas (see **Table 5**).

**Table 5: Median Age, 2010**

Geography	Median Age
Block Group 2, Census Tract 1801.02, Grimes County, Texas	50.2
Census Tract 1801.02, Grimes County, Texas	38.5
Grimes County, Texas	39.2
State of Texas	33.8

Source: 2010 Census, Table P13

The project area census tract has a minority population of 17.8 percent while the block group has a minority population of 17.7 percent (see **Table 6**). Twelve out of the thirteen blocks within BG 2 have minority populations less than 29 percent. Block 2111 has a 100 percent minority population; however, the total population of the block is two people, less than one percent of the BG population (see **Table 6**).

**Table 6: 2010 Race Characteristics of Project Area Blocks and Block Groups**

Census Tract	Block Group	Block	Total Population	Not Hispanic or Latino							Hispanic or Latino of Any Race	Total Minority Population	Total % Minority Population
				White	Black or African American	American Indian & Alaska Native	Asian	Pacific Islander	Other Race	Two or More Races			
<b>CENSUS TRACT</b>													
1801.02	N/A	N/A	3100	2549	114	13	4	4	1	45	370	551	17.8%
<b>BLOCK GROUP</b>													
1801.02	2	N/A	1213	998	49	7	2	1	1	15	140	215	17.7%
<b>PROJECT AREA BLOCKS</b>													
1801.02	2	2008	12	10	2	0	0	0	0	0	0	2	16.7%
1801.02	2	2013	12	10	0	0	0	0	0	0	0	2	16.7%
1801.02	2	2015	0	0	0	0	0	0	0	0	0	0	0%
1801.02	2	2019	334	258	18	1	2	0	0	10	45	76	22.8%
1801.02	2	2021	3	3	0	0	0	0	0	0	0	0	0%

1801.02	2	2060	74	65	0	0	0	0	0	1	8	9	12.2%
1801.02	2	2063	52	37	1	0	0	0	1	0	13	15	28.8%
1801.02	2	2093	34	31	0	0	0	0	0	0	3	3	8.8%
1801.02	2	2096	0	0	0	0	0	0	0	0	0	0	0%
1801.02	2	2100	17	14	3	0	0	0	0	0	0	3	17.6%
1801.02	2	2102	29	27	0	0	0	0	0	1	1	2	6.9%
1801.02	2	2111	2	0	0	0	0	0	0	0	0	2	100%
1801.02	2	2116	29	28	0	0	0	0	0	0	1	1	3.4%

Source: Census 2010 Redistricting Data SF (PL 94-171), Table P2

**8.1.2 Income**

Household income data at the Census Tract level is provided through the 2007-2011 American Community Survey (ACS). In the Census Tract traversed by the three build alternatives, median household income was \$37,109 (see **Table 7**).

**Table 7: Median Household Income for Project Area**

<b>Geography</b>	<b>Median Household Income</b>
Census Tract 1801.02	\$37,109
Grimes County, Texas	\$32,280

Source: U.S. Census Bureau, 2007-2011 American Community Survey

**8.1.3 Limited English Proficiency**

Executive Order 13166, “Improving Access to Services for Persons with Limited English Proficiency,” requires federal agencies to examine the services they provide and identify any need for services to those with Limited English Proficiency (LEP). Executive Order 13166 requires federal agencies to work to ensure that recipients of federal financial assistance, such as TxDOT, provide meaningful access to their LEP applicants and beneficiaries. Failure to ensure that LEP persons can effectively participate in or benefit from federally assisted programs and activities may violate the prohibition under Title VI of the Civil Rights Act of 1964, 42 U.S.C. 2000d and Title VI regulations against national origin discrimination.

For the purposes of this analysis, LEP individuals are those listed in the 2007-2011 ACS as speaking English less than “very well.” ACS data for the census tract intersected by the project area was compiled, and the proportion of LEP persons was determined (see **Table 8**). The project area census tract has an LEP population of 80 persons, representing 2.1 percent of the total population five years and older in the census tract. The language most often spoken by LEP persons in the census tract is Spanish (70.0 percent), followed by Asian and Pacific Island languages. No signs in Spanish or other languages were observed during fieldwork.

TxDOT’s webpage, TxDOT.gov, is available in Spanish, and Spanish translation services are available through the Bryan District office. To ensure full and fair public participation, public involvement efforts (two public meetings, see **Section 11.0**) included the availability of Spanish-speaking TxDOT representatives to assist with translation services. At the second public meeting, formal Spanish

translation services were available and used by seven attendees. Translation services would be available at any future public involvement activities.

**Table 8: 2011 Limited English Proficiency**

<b>Population</b>	<b>CT 1801.02</b>
Population 5 years and over	3848
<b>Speak only English</b>	<b>3285</b>
<b>Language other than English</b>	<b>563</b>
<b>Spanish</b>	<b>519</b>
Speak English less than "very well"	56
<b>Other Indo-European languages</b>	<b>20</b>
Speak English less than "very well"	0
<b>Asian and Pacific Island languages</b>	<b>24</b>
Speak English less than "very well"	24
<b>Other languages</b>	<b>0</b>
Speak English "very well"	0
<b>TOTALS</b>	
<b>Do not speak English "very well"</b>	<b>80</b>
<b>Do not speak English "very well" (%)</b>	<b>2.1%</b>

Source: U.S. Census Bureau, 2007-2011 American Community Survey

#### **8.1.4 Land Use**

Current land use in the project area vicinity includes rural ranch/farm land, with scattered residential development. Shadow Lakes and Pinebrook Subdivisions are located north of the proposed facility near FM 1774 and have lot sizes typical of rural subdivisions. East of these subdivisions, on the south side of the proposed facility, large-lot development occurs in the Millstone Subdivision and along Tierra Buena Drive. Commercial development is largely confined to the communities of Plantersville and Stoneham. A large, contiguous tract of land located west of Yarboro Lake and south of SH 105 is owned by NOV. Although energy-related development has occurred in the project area, NOV has no current plans to drill on this land.

There is no public land designated as a park, recreation area, scientific area, wildlife refuge, or historic site in the vicinity of the three build alternatives. Therefore, none of the three build alternatives would result in the use or constructive use of any properties protected by Chapter 26 of the Parks and Wildlife Code, Title 3.

There are no community resources such as schools, churches, recreation centers, grocery stores, etc. in the project area.

#### **NO BUILD ALTERNATIVE**

Under the No Build Alternative, land use would not be altered by the introduction of a new transportation facility. Current land development patterns and trends would be expected to continue.

### **8.1.5 Bicycle and Pedestrian Access**

The three build alternatives do not include dedicated bicycle or pedestrian facilities. The proposed facility has a functional classification as Rural Principal Arterial and no pedestrian accommodations are required. Additionally, no pedestrian paths were observed in the project area. Cyclists, however, would be accommodated through the use of the ten-foot shoulders and frontage roads.

### **NO BUILD ALTERNATIVE**

Under the No Build Alternative, pedestrians and cyclists would continue to use the existing transportation network.

### **8.1.6 Community Impacts**

The proposed SH 249 in Grimes County is a new location facility that would be constructed across a rural landscape with scattered residential development. Although the three build alternatives would divide multiple parcels of land, none would bisect or divide neighborhoods or communities. Access to the proposed facility would be available at FM 1774, Urbanosky Lane to tie in with proposed frontage roads, west of CR 304 to tie in with proposed frontage roads, CR 306 and SH 105. Overpasses are proposed at all local roadway crossings allowing travel patterns for local residents and emergency services to continue as they currently exist. Frontage roads would be included between Urbanosky Lane and west of CR 304. The additional capacity provided by the proposed facility would reduce congestion on area roadways (primarily FM 1774 and SH 105). These improvements could result in slightly shorter travel times in the area and improved emergency service response times. The three build alternatives have been designed to minimize changes in access to impacted and adjacent properties; however, as some individual parcels would be divided, access changes could not be entirely avoided. TxDOT will continue to work with property owners through the design process to minimize and mitigate access issues.

Each of the three build alternatives would introduce a new visual element to the rural landscape of southern Grimes County. The majority of the proposed facility would be constructed at grade and follow the existing ground. Bridges, overpasses and interchanges would add elevated structures to the visual landscape. TxDOT will consider and include aesthetic features to minimize the visual impacts of the proposed project.

The three build alternatives would require the acquisition of between 623 and 658 acres of ROW which would be removed from the Grimes County tax base.

None of the three build alternatives would require relocations. All three build alternatives would improve mobility in the area for the traveling public. The three build alternatives would not isolate any persons, groups or neighborhoods and would not cause any change in community cohesion. The three build alternatives would not have adverse community impacts. TxDOT has held two public meetings for the proposed project, where the community had an opportunity to comment on proposed improvements. A public hearing is anticipated in summer 2016, giving a final opportunity to comment on the proposed project.

## NO BUILD ALTERNATIVE

Under the No Build Alternative, the rural landscape would not be impacted by a new transportation facility. The 623-658 acres of proposed ROW would remain part of the Grimes County tax base. Congestion on area roadways (primarily FM 1774 and SH 105) would continue to increase and potentially increase travel and emergency service response times. No parcels, neighborhoods or communities would be bisected or divided.

### 8.1.7 Environmental Justice

Executive Order (EO) 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” requires each federal agency to “make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental impacts of its programs, policies, and activities on minority populations and low-income populations.” The Federal Highway Administration (FHWA) has identified three fundamental principles of environmental justice:

1. To avoid, minimize, or mitigate disproportionately high and adverse human health or environmental impacts, including social and economic impacts, on minority populations and low-income populations;
2. To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and
3. To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority populations and low-income populations.

Disproportionately high and adverse human health or environmental impacts are defined by FHWA as adverse impacts that:

1. Are predominately borne by a minority population and/or a low-income population; or
2. Will be suffered by the minority population and/or low-income population and are appreciably more severe or greater in magnitude than the adverse impacts that will be suffered by the non-minority population and/or non-low-income population.

#### 8.1.7.1 Identification of Low-Income and Minority Populations

As defined by FHWA, “low-income” means a household income at or below the Department of Health and Human Services (DHHS) poverty guideline for the current year. For 2016, the DHHS guideline is \$24,300 for a family of four. According to data from the 2007-2011 ACS, the project area Census Tract has a median income well above that level, \$37,109 (see **Table 7**).

As defined by the Council on Environmental Quality (CEQ) report, *Environmental Justice Guidance Under the National Environmental Policy Act*, a minority population 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.

A minority person is someone who is:

- Black (having origins in any of the black racial groups of Africa);
- Hispanic (of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);
- Asian-American (having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or
- American Indian and Alaskan Native (having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition).
- A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds.

As shown in **Table 6**, twelve out of the thirteen blocks within Block Group 2 have minority populations less than 29 percent. Block 2111 has a 100 percent minority population; however, the total population of the block is two people, less than one percent of the block group.

#### *8.1.7.2 Impacts to Environmental Justice Populations*

As shown above, the median income in the project area is well above the DHHS threshold for poverty and only one block reported over 50% minorities and that block consists of only two residents; therefore, there are no environmental justice populations present. Additionally, the overall impacts from this project (increased safety, reduced congestion, improved system linkage and additional capacity for emergency evacuation) would be beneficial for the entire community including minorities and low-income individuals living in the project area. If this project was not constructed, the entire community, including minorities and low-income individuals, could be adversely impacted by the increasing congestion on FM 1774 and SH 105.

Consideration is given to whether there is a disproportionate effect resulting from operating SH 249 in Grimes County as a toll road. Because all motorists pay the same toll regardless of their income, the toll for using the SH 249 facility may constitute a greater burden on lower-income motorists. In addition, toll collection methods can also serve to restrict access to a facility or disproportionately burden low-income populations because of a lack of credit or the inability to maintain a prepaid account. However, alternate non-toll roads are available now and would continue to be available in the future; therefore, motorists would not be forced to use the new SH 249, with added expense. In addition, two-lane, one-way, non-toll frontage roads would be constructed along approximately six miles of the proposed project (from Urbanosky Lane to west of CR 304). The toll rates for SH 249 in Grimes County would be consistent with the other tolled portions of SH 249. Additionally, low-income individuals may be impacted as a result of the difference in time travel since non-tolled routes may present a more circuitous route (depending on the origin and destination for the trip) than the tolled route.

Per the proposed design specifications for this project, the existing non-tolled roads would not be modified to force the use of any potential tolled direct connectors. Any future modifications would depend on traffic volumes and safety considerations. Having the proposed SH 249 available would reduce

traffic on existing area roads, making them less congested and safer to travel. However, individual low-income persons may choose to utilize adjacent non-toll alternatives specifically for cost saving measures.

In addition to potential negative impacts to EJ persons the project would generally provide benefits to the community in general including low-income and minority individuals. Following is a summary of offsetting actions and beneficial impacts.

- FM 1774 is a non-tolled north/south facility located east of the proposed SH 249 and is available to all motorists, including low-income and minority populations. SH 105 is a non-tolled east/west facility located north of the proposed SH 249 and is available to all motorists, including low-income and minority populations. FM 1774 and SH 105 intersect in Plantersville, Texas. Motorists currently utilize these two roadways to travel through this portion of southern Grimes County and could continue to do so at no expense once the proposed SH 249 was constructed.
- Access to roadways along SH 249, within the proposed project limits, would be provided for with overpasses and ramps at FM 1774, Urbanosky Lane, CR 304, CR 306 and SH 105. Frontage roads would be constructed between Urbanosky Lane and west of CR 304.
- Safety would be improved by increasing capacity to provide a more efficient transportation facility between the proposed project limits and to accommodate future traffic demands. The proposed SH 249 in Grimes County would decrease congestion and reduce travel times.
- In general there would be improved system linkage and mobility in the corridor.
- During emergency evacuation, the toll facility would be available as a non-toll travel route for all persons, including low-income and minority populations.
- Using tolling as a funding source to provide accelerated project implementation for the proposed project would provide benefits, including congestion relief on non-toll local arterials sooner than through traditional funding methods.

In summary, no environmental justice impacts would occur from any of the three build alternatives because the proposed project would not disproportionately impact minority or low-income populations, as defined by the CEQ and FHWA Order 6640.23. Therefore, the requirements of EO 12898 appear to be satisfied.

Proactive public involvement began in 2013, which included public meetings and coordination with local planning officials. These activities allow all persons regardless of income or ethnicity to be a part of the planning process by voicing concerns and commenting on the proposed project.

### **NO BUILD ALTERNATIVE**

Under the No Build Alternative, no ROW would be required and no environmental justice impacts would occur. However, the beneficial impacts of the proposed project (increased safety, reduced congestion, improved system linkage and additional capacity for emergency evacuation) would not be realized for the entire community including minorities and low-income individuals living in the project area. The entire community, including minorities and low-income individuals, could be adversely impacted by the increasing congestion on FM 1774 and SH 105.

## **8.2 CULTURAL RESOURCES**

Cultural resources are structures, buildings, archeological sites, districts (a collection of related structures, buildings, and/or archeological sites), cemeteries and objects. Both federal and state laws require consideration of cultural resources during project planning. At the federal level, the National Environmental Policy Act (NEPA) of 1969, as amended, and the National Historic Preservation Act (NHPA) of 1966, as amended, among others, apply to transportation projects such as this one. In addition, state laws such as the Antiquities Code of Texas (ACT) apply to these projects. Compliance with these laws often requires consultation with the Texas Historical Commission (THC)/Texas State Historic Preservation Officer (SHPO) and/or federally recognized tribes to determine the proposed project's effects on cultural resources. Review and coordination of this project will follow approved procedures for compliance with federal and state laws.

### **8.2.1 Historic Resources**

TxDOT shall be responsible for ensuring compliance with cultural resource Laws on the proposed project through the Term of the Agreement. TxDOT performed consultation for the project under the provisions of the MOU between TxDOT and the Texas Historical Commission (THC) in compliance with the Antiquities Code of Texas. Review of a project PCN by the USACE may result in additional cooperation between the agencies to complete NHPA Section 106-compliant coordination.

### **NO BUILD ALTERNATIVE**

Under the No Build Alternative, no impacts to historic resources would occur and, as a result, no coordination would be required with the THC.

### **8.2.2 Archeological Resources**

The Design/Build (DB) Contractor shall be responsible for ensuring compliance with cultural resource laws on the proposed project through the Term of the Agreement. TxDOT shall perform consultation for the proposed project under the provisions of the MOU between TxDOT and the THC. Subsequent to issuance of Notice to Proceed (NTP), the DB Contractor shall be responsible for performing any cultural resource surveys, evaluations, testing, and mitigation activities required within the APE as defined on the schematics in the final approved State Environmental Assessment document. The DB Contractor shall obtain all necessary Antiquities Permits from the THC for archeological surveys, testing, monitoring, and data recovery. The DB Contractor shall document efforts to avoid impacts to cultural resources that are listed on or eligible for inclusion in the National Register of Historic Places (NRHP), or that are designated as or eligible for designation as State Antiquities Landmarks.

TxDOT completed an archeological survey for the C Hybrid alignment (Green Build Alternative) on March 23-25, 2015. The total archeological APE for the alignment consists of approximately 550 acres. The survey was performed on the 228 acre portion of the APE for which right of entry was obtained. Right of entry was not granted for any of the properties contained within the three proposed build alternatives. No archeological resources were identified within the surveyed portion of the proposed SH 249 corridor.

On 29 December 2015, TxDOT archeologists visited the Nobles (parcel #14961) and Eversole (parcel #19967) properties to investigate headstones that had been reported within the proposed ROW alignment of the Blue Build Alternative. Five headstones with carved inscription were identified, along with two unmarked concrete markers, two iron braces protruding vertically from the ground (to which simple marker stone would likely have been once attached), an iris patch (often denoting the location of a grave), and an anomalous soil depression (the dimensions of which could suggest another unmarked interment). The position of each feature was recorded with a hand-held GPS unit, with the points later plotted in relationship to the proposed alignment of the Blue Build Alternative. Each of the recorded features fell within the proposed alignment. Death records for the interred identify their place of burial as the Whiteside Cemetery, and a search of public records found three additional individuals buried at that location. The "Whiteside" name is after J.J. Whiteside, the original owner of the land grant on which the cemetery is located. The Whiteside family owned the property for multiple generations, improving it for agricultural use with the use of slave labor. The Whiteside Cemetery appears to have been used exclusively by descendants of the family's former slaves, many of whom continued to work on the land as share croppers following emancipation. According to some accounts, the "Whiteside Cemetery" is an antiquated, no longer in-used name for the Yarboro Cemetery, located on CR 306 3.3 kilometers (2.05 miles) to the northwest. This is inaccurate. Rather, the existence and actual location of the Whiteside Cemetery appears to have been lost over time. It is a separate cemetery and is located on the Eversole parcel, within the proposed alignment of the Blue Build Alternative. The Whiteside Cemetery is a black "workers" cemetery populated by descendants of the former slaves of the Whiteside property. Burial records for African Americans in the first few decades following emancipation are poor, and are nearly absent for the Antebellum Period in Grimes County. It is likely that there are more burials of Whiteside descendants at the cemetery than have been identified to this point.

A background review completed for the Green Build Alternative identified archeological site 41GM455 within the proposed alignment. A similar review completed for the Yellow Build Alternative identified archeological sites 41GM456 and 41GM457 within the proposed alignment. All three sites were identified in 2013 by SWCA in association with the Seaway Loop Pipeline Project. Each site was prehistoric in nature, and described as a subsurface lithic scatter. The investigated portion of each site was evaluated as being ineligible for listing as an Archeological Historic Property or for designation as a State Antiquities Landmark.

## **NO BUILD ALTERNATIVE**

Under the No Build Alternative, no impacts to archeological resources would occur and, as a result, no coordination would be required with the THC.

## **8.3 AIR QUALITY**

### **8.3.1 Transportation Conformity**

The three build alternatives are located in Grimes County, which is in an area in attainment or unclassifiable for all national ambient air quality standards (NAAQS); therefore, the transportation conformity rules do not apply.

### **8.3.2 Carbon Monoxide Traffic Air Quality Analysis**

Traffic data for the design year (2040) is 14,200 vpd. A prior TxDOT modeling study and previous analyses of similar projects demonstrated that it is unlikely that a carbon monoxide standard would ever be exceeded as a result of any project with an Average Daily Traffic (ADT) below 140,000. The ADT projections for the three build alternatives do not exceed 140,000 vehicles per day; therefore a Traffic Air Quality Analysis (TAQA) was not required.

### **8.3.3 Mobile Source Air Toxics (MSATs)**

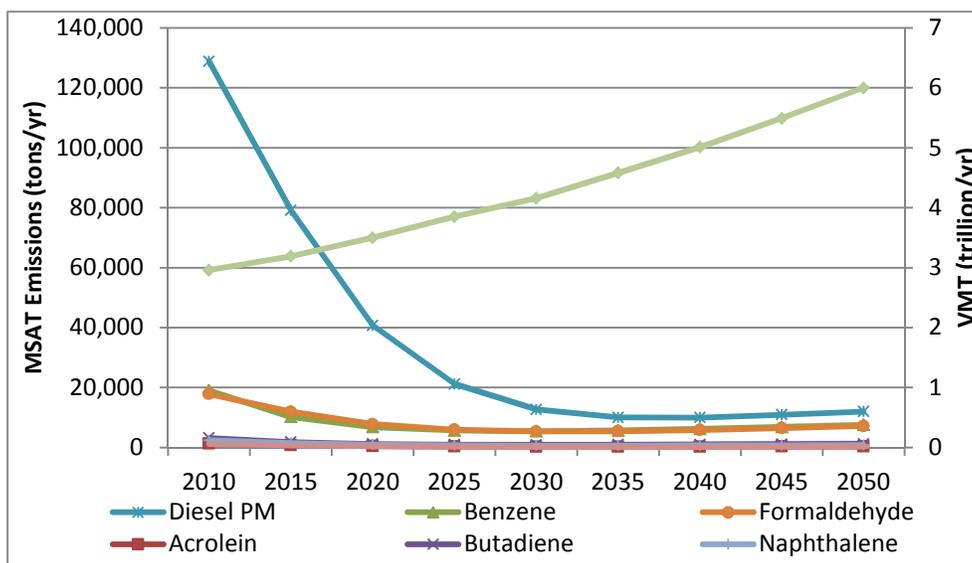
#### ***Background***

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (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 (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (<http://www.epa.gov/iris/>). In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA) (<http://www.epa.gov/ttn/atw/nata1999/>). These are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules.

The 2007 EPA Mobile Source Air Toxics (MSAT) rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. Based on an FHWA analysis using EPA's MOVES2010b model, as shown in **Figure 1**, even if vehicle-miles travelled (VMT) increases by 102 percent as assumed from 2010 to 2050, a combined reduction of 83 percent in the total annual emissions for the priority MSAT is projected for the same time period.

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision-making within the context of the NEPA. The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this emerging field.

**Figure 1: PROJECTED NATIONAL MSAT EMISSION TRENDS 2010 – 2050 FOR VEHICLES OPERATING ON ROADWAYS USING EPA’S MOVES2010b MODEL**



Source: Table below.

Note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors.

**PROJECTED NATIONAL MSAT EMISSION TRENDS 2010 – 2050 FOR VEHICLES OPERATING ON ROADWAYS USING EPA’S MOVES2010b MODEL**

Pollutant / VMT	Pollutant Emissions (tons) and Vehicle-Miles Traveled (VMT) by Calendar Year									Change 2010 to 2050
	2010	2015	2020	2025	2030	2035	2040	2045	2050	
Acrolein	1,244	805	476	318	258	247	264	292	322	-74%
Benzene	18,995	10,195	6,765	5,669	5,386	5,696	6,216	6,840	7,525	-60%
Butadiene	3,157	1,783	1,163	951	890	934	1,017	1,119	1,231	-61%
Diesel PM	128,847	79,158	40,694	21,155	12,667	10,027	9,978	10,942	11,992	-91%
Formaldehyde	17,848	11,943	7,778	5,938	5,329	5,407	5,847	6,463	7,141	-60%
Naphthalene	2,366	1,502	939	693	607	611	659	727	802	-66%
Polycyclics	1,102	705	414	274	218	207	219	240	262	-76%
Trillions VMT	2.96	3.19	3.5	3.85	4.16	4.58	5.01	5.49	6	102%

Source: EPA MOVES2010b model runs conducted during May – June 2012 by FHWA.

**Project-Specific MSAT Information**

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA entitled A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives, found at: [www.fhwa.dot.gov/environment/air\\_quality/air\\_toxics/research\\_and\\_analysis/mobile\\_source\\_air\\_toxics/msatemissions.pdf](http://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemissions.pdf)

For each of the three build alternatives, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative.

The VMT estimated for each of the three build alternatives is higher than that for the No Build Alternative, because the new location roadway would operate more efficiently than local roadways and attract rerouted trips from elsewhere in the transportation network. This increase in VMT would lead to higher MSAT emissions for each of the three build alternative corridors, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to EPA's MOVES2010b model, emissions of all of the priority MSAT decrease as speed increases. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The new-location facility contemplated as part of the proposed project will have the effect of placing traffic closer to nearby homes; therefore, there may be localized areas where ambient concentrations of MSAT could be higher than the No Build Alternative. However, the magnitude and the duration of these potential increases compared to the No Build Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. In sum, when a roadway is constructed, the localized level of MSAT emissions for each of the three build alternatives could be higher relative to the No Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

### ***Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis***

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain IRIS, which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, <http://www.epa.gov/iris/>). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's Interim Guidance Update on Mobile source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are; cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI, <http://pubs.healtheffects.org/view.php?id=282>) or in the future as vehicle emissions substantially decrease (HEI, <http://pubs.healtheffects.org/view.php?id=306>).

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (<http://pubs.healtheffects.org/view.php?id=282>). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA (<http://www.epa.gov/risk/basicinformation.htm#g>) and the HEI (<http://pubs.healtheffects.org/getfile.php?u=395>) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework.

Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable. Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

### ***Conclusion***

In this document, a qualitative MSAT assessment has been provided relative to the various alternatives of MSAT emissions and has acknowledged that each of the three build alternatives may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated.

### **NO BUILD ALTERNATIVE**

Under the No Build Alternative, property adjacent to any of the three build alternatives would not be exposed to potentially higher MSAT emissions; however, exposure to increased MSAT emissions could occur on other area roadways such as FM 1774 and SH 105. Again, because concentrations and duration of exposures are uncertain, the health effects from these emissions cannot be estimated.

### **8.3.4 Construction and Post-Construction Emissions**

During the construction phase of the proposed project, temporary increases in air pollutant emissions may occur from construction activities. The primary construction-related emissions are particulate matter (fugitive dust) from site preparation. These emissions are temporary in nature (only occurring during actual construction); it is not possible to reasonably estimate impacts from these emissions due to limitations of the existing models. However, the potential impacts of particulate matter emissions would be minimized with dust suppression techniques such as site watering and other dust abatement control measures, as appropriate.

The construction activity phase of the proposed project may generate a temporary increase in MSAT emissions from construction activities, equipment, and related vehicles. The primary MSAT construction-related emissions are particulate matter from diesel-powered construction equipment and vehicles. However, considering the temporary and transient nature of construction-related emissions, as well as the mitigation actions to be utilized, it is not anticipated that emissions from construction of the proposed project would have any significant impact on air quality in the area.

### **NO BUILD ALTERNATIVE**

Under the No Build Alternative, construction activities would not occur and temporary increases in air pollutant or MSAT emissions would not occur.

## **8.4 BIOLOGICAL RESOURCES**

A detailed discussion of biological resources within the SH 249 project area is presented below. Additional information can be found in the Biological Evaluation Form included in **Appendix E**.

### 8.4.1 Endangered Species Act of 1973

The U.S. Fish and Wildlife Service (USFWS) maintains a list of federally threatened and endangered species of potential occurrence for each Texas County, and the Texas Parks and Wildlife Department (TPWD) maintains a similar list, containing both federally-listed and state-listed species. A copy of each list for Grimes County is included in **Appendix F**. Site visits were conducted in September and October of 2014, to assess the area for signs of listed species and their habitat. Right-of-entry was requested to parcels crossed by the three build alternatives. Seven property owners granted right-of-entry and site visits were, therefore, limited to those parcels. For the remainder of the project area, visual inspections were made from the public ROW of local roads crossed by the three build alternatives. **Table 9** provides a summary of the federally and state-listed threatened and endangered species for Grimes County, their listed status, habitat description, and anticipated level of take (federal species) or impact (state species) from the three build alternatives.

**Table 9: State and Federally-Listed Threatened and Endangered Species and Species of Greatest Conservation Need of Grimes County**

Common Name	Scientific Name	State Status	Federal Status	Habitat Description	Habitat Present	Effect/Impact
<b>BIRDS</b>						
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	T	DL†	Potential migrant, nest in west Texas	No	No Impact
Arctic Peregrine Falcon	<i>Falco peregrinus tundrius</i>	SGCN	DL†	Potential migrant, nest in tall structures, cliffs	No	No Impact
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	DL	Near water areas, nests in tall trees	No	No Impact
Henslow’s Sparrow	<i>Ammodramus henslowii</i>	SGCN	*	Weedy fields or cut-over where lots of bunch grasses occur	Yes	May Impact
Interior Least Tern	<i>Sterna antillarum athalassos</i>	E	LE†	Nests along sand and gravel bars within braided streams, rivers; eats small fish and crustaceans	No	No Take
Peregrine Falcon	<i>Falco peregrinus</i>	T	DL†	Potential migrant, nest in tall structures, cliffs	No	No Impact
Red-cockaded Woodpecker	<i>Picoides borealis</i>	E	LE†	Cavity nests in older pine (60+ years); prefers longleaf, shortleaf and loblolly	Yes	No Take Anticipated
Sprague’s Pipit	<i>Anthus spragueii</i>	SGCN	C	Potential migrant, strongly tied to native upland prairie	No	No Effect
White-faced Ibis	<i>Plegadis chihi</i>	T	*	Freshwater marshes, but some brackish or salt marshes	No	No Impact
Whooping Crane	<i>Grus americana</i>	E	LE	Winters in Aransas National Wildlife Refuge, potential migrant via plains throughout most of the state to coast	Yes	No Take Anticipated
Wood Stork	<i>Mycteria americana</i>	T	*	Prairie ponds and flooded pastures	No	No Impact
<b>FISHES</b>						
Blue Sucker	<i>Cycleptus elongates</i>	T	*	Larger portions of major rivers in Texas; usually in channels and flowing pools with moderate current	No	No Impact
Sharpnose Shiner	<i>Notropis oxyrhynchus</i>		LE	Endemic to Brazos River drainage; large turbid river, with bottom a combination of sand, gravel, and clay mud	No	No Take

Common Name	Scientific Name	State Status	Federal Status	Habitat Description	Habitat Present	Effect/ Impact
<b>MAMMALS</b>						
Louisiana Black Bear	<i>Ursus americanus luteolus</i>	T	LT†	Bottomland hardwoods; large, undisturbed forested areas	No	No Take
Plains Spotted Skunk	<i>Spilogale putorius interrupta</i>	SGCN	*	Open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands	Yes	May Impact
Red Wolf	<i>Canis rufus</i>	E	LE†	Extirpated, brushy, forested areas, coastal prairies	No	No Take
Southeastern myotis bat	<i>Myotis austroriparius</i>	SGCN	*	Roosts in cavity trees of bottomland hardwoods, concrete culverts and abandoned man-made structures	Yes	May Impact
<b>MOLLUSKS</b>						
False Spike Mussel	<i>Quadrula mitchelli</i>	T	*	Medium to large rivers; substrates vary from mud through mixture of sand, gravel and cobble	No	No Impact
Smooth Pimpleback	<i>Quadrula houstonensis</i>	T	C	Small to moderate streams and rivers; tolerates very slow to moderate flow rates	No	No Take
Texas Fawnsfoot	<i>Truncilla macrodon</i>	T	C	Possibly rivers and larger streams; flowing rice irrigation canals	No	No Take
<b>REPTILES</b>						
Alligator Snapping Turtle	<i>Macrocllemys temminckii</i>	T	*	Deep water of rivers and canals	No	No Impact
Texas Horned Lizard	<i>Phrynosoma cornutum</i>	T	*	Open, semi-arid regions, with bunch grass	No	No Impact
Timber/Canebrake Rattlesnake	<i>Crotalus horridus</i>	T	*	Swamps/ floodplains of hardwood/upland pine	Yes	May Impact
<b>PLANTS</b>						
Branched gay-feather	<i>Liatris cymosa</i>	SGCN	*	Barren grassland openings in post oak woodlands; Texas endemic	Yes	May Impact
Navasota false foxglove	<i>Agalinis navasotensis</i>	SGCN	*	Relatively sparsely vegetated shallow sandy soils on calcareous sandstone outcrops	No	No Impact
Navasota ladies'-tresses	<i>Spiranthes parksii</i>	E	LE	Openings in post oak woodlands in sandy loams along upland drainages or intermittent streams	Yes	No Take Anticipated
Texas meadow-rue	<i>Thalictrum texanum</i>	SGCN	*	Mostly found in woodlands and woodland margins on soils with sandy loam surface layer	Yes	May Impact

\* These species occur on the State listing of threatened or endangered species; however, they are not federally listed at this time by the U.S. Fish and Wildlife Service (2014).

† These species are listed by the U.S. Wildlife Service; however, they are not listed to occur within these counties by the Clear Lake office of the U.S. Fish and Wildlife Service (2014).

E = endangered T = threatened SGCN = Species of Greatest Conservation Need LE = Federally listed endangered LT = Federally listed threatened PT = Federally proposed threatened C = Federal candidate for listing DL = Federally delisted “blank” = rare, but with no regulatory listing status

Sources: U.S. Fish & Wildlife Service and TPWD/Field Investigations

Field surveys, along with research data, concluded that suitable habitat or the potential for suitable habitat exists for some State and four Federal listed species within the construction limits: Henslow’s Sparrow, the Red-cockaded Woodpecker, the Whooping Crane, the Plains Spotted Skunk, the Southeastern Myotis Bat, the Timber/Canebrake Rattlesnake, the Branched Gay-feather, the Navasota Ladies’-tresses and

Texas Meadow-rue. Although three mollusk species are listed, two as Federal candidates, no perennial stream habitat was identified within the project location, so no impacts to these species are anticipated. Detailed information on each species can be seen below.

The **Henslow's Sparrow** is State listed as a Species of Greatest Conservation Need (SGCN) in Grimes County. Visual inspections were limited to where right-of-entry had been granted and public rights-of-way. In the areas visited, habitat for the Henslow's Sparrow was not observed. Aerial photography was utilized in areas where access was not granted and specific habitat needs for the sparrow were not identified. However, as the entire ROW was not surveyed, the three build alternatives may impact the Henslow's Sparrow. To mitigate impacts to the species, TxDOT will implement the Best Management Practices (BMPs) for bird species as contained in the Best Management Practices Programmatic Agreement between TxDOT and TPWD. These include:

- Not disturbing, destroying or removing active nests, including ground nesting birds, during the nesting season;
- Avoiding the removal of unoccupied, inactive nests, as practicable;
- Preventing the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair;
- Not collecting, capturing, relocating or transporting birds, eggs, young or active nests without a permit.

The **Red-cockaded Woodpecker** is State and Federally-listed as endangered in Grimes County. Visual inspections were limited to where right-of-entry had been granted and public rights-of-way. In the areas visited, fires or logging activities had removed the old growth (60+ year old) pine trees required for nesting by the species. A review of aerial photography indicates other forested areas are similar in nature to the areas visited and old growth pines are not anticipated to be present. None of the three build alternatives are anticipated to result in a take of the species. The mobility of this species, coupled with the amount of additional suitable habitat located nearby would suggest that although there may be suitable foraging habitat in the project area, a take of the species would not be expected to occur. The implementation of the bird BMPs listed above would also mitigate impacts to the Red-cockaded Woodpecker.

The **Whooping Crane** is State and Federally-listed as endangered in Grimes County. Visual inspections were limited to where right-of-entry had been granted and public rights-of-way. In the areas visited, stopover habitat for the crane (agricultural fields and ponds) was observed. Aerial photography indicates that stopover habitat is also available in areas where access was not granted. None of the three build alternatives are anticipated to result in a take of the species as the species is transient in Grimes County and large amounts of stopover habitat would still be available in the project area after project construction. The migratory nature and mobility of this species, coupled with the amount of additional suitable habitat located nearby would suggest that although there may be suitable habitat in the project area, a take of the species would not be expected to occur. The implementation of the bird BMPs listed above would also mitigate impacts to the Whooping Crane.

The **Plains Spotted Skunk** is State listed as a SGCN in Grimes County. The construction area does provide crops, farmyards, forest edges, and woodlands and does have the preferred habitat of wooded, brushy areas. The three build alternatives may impact the species; however, as large amounts of habitat would still be available in the project area after project construction, impacts are not anticipated to be significant. To mitigate impacts to the species, TxDOT will implement the BMPs for the Plains Spotted Skunk. The DB Contractor will be advised of the potential occurrence in the project area, and to avoid harming the species if encountered, and to avoid unnecessary impacts to dens.

The **Southeastern Myotis Bat** is State listed as a SGCN in Grimes County. Roost sites for the bat (cavity trees) are available in the project construction area. None of the three build alternatives would impact any existing structures that could contain bats. The three build alternatives may impact the species; however, as large amounts of habitat would still be available in the project area after project construction, impacts are not anticipated to be significant. To mitigate impacts to the species, TxDOT will implement aspects of the Bridge and Tree Bat BMPs for the Southeastern Myotis Bat. These include:

- Habitat assessment by a qualified biologist to determine if bats are present.
- If bats are present, take appropriate measures as practicable to ensure that bats are not harmed such as exclusion or timing activities. For maternity colonies, exclusion activities should be timed to avoid separating lactating females from nursing pups.
- Large hollow trees shall be surveyed for maternity colonies, and if found, should not be disturbed until after the pups fledge.
- If structures 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.

The **Timber/Canebrake Rattlesnake** is State listed as a threatened species in Grimes County. The project construction area does not provide swamps but does cross the floodplains of hardwood and pine forests. The three build alternatives may impact the species; however, as large amounts of habitat would still be available in the project area after project construction, impacts are not anticipated to be significant. To mitigate impacts to the species, TxDOT will implement the BMPs for the Timber/Canebrake Rattlesnake. DB contractors will be advised of the potential occurrence in the project area and to avoid harming the species if encountered.

The **Branched Gay-feather** is State listed as a SGCN in Grimes County. Visual inspections were limited to where right-of-entry had been granted and public rights-of-way. In the areas visited, habitat for the Branched Gay-feather was not observed; however, based on aerial photography the project area does potentially provide barren grassland openings in post oak woodlands. The three build alternatives may impact the species; however, as large amounts of habitat would still be available in the project area after project construction, impacts are not anticipated to be significant. To mitigate impacts to the species and other vegetation, vegetation clearing would be minimized to the extent practicable.

The **Navasota Ladies'-tresses** is State and Federally-listed as endangered in Grimes County. Visual inspections were limited to where right-of-entry had been granted and public rights-of-way. In the areas

visited, while habitat for the Navasota Ladies'-tresses was observed, no individuals of the species were identified. Aerial photography indicates that habitat is also available in areas where access was not granted. The three build alternatives may affect but are not likely to adversely affect the species as large amounts of habitat would still be available in the project area after project construction.

The proposed project does not have a federal nexus; therefore, consultation under Section 7 of the Endangered Species Act (ESA) is not required for this project. Federally listed threatened or endangered plants are protected under Section 9 of the ESA; however, the prohibitions applicable to listed plants are more limited than those applicable to listed fish or wildlife species. There is no prohibition against the removal of listed plants from state-owned right-of-way as needed to construct a highway project in Texas.

Although the Navasota Ladies'-tresses has the potential to occur within the project area, TxDOT does not plan to conduct presence/absence surveys for this species. However, should Navasota Ladies'-tresses be found within the project area during construction, TxDOT will coordinate with TPWD and determine appropriate conservation measures. TxDOT will avoid and minimize impacts to listed species and their habitat as practicable during the construction of the SH 249 project.

The **Texas Meadow-rue** is State listed as a SGCN in Grimes County. Woodlands and woodland margins are available in the project construction area. The three build alternatives may impact the species; however, as large amounts of habitat would still be available in the project area after project construction, impacts are not anticipated to be significant. To mitigate impacts to the species and other vegetation, vegetation clearing would be minimized to the extent practicable.

Three mollusk species are listed in Grimes County. The **False Spike Mussel** is State listed as threatened. The **Smooth Pimpleback** and **Texas Fawnsfoot** are State listed as threatened and Federal candidate species. The three build alternatives cross up to fifteen creeks/tributaries (see **Section 8.5.1**). All of the drainages are mapped as ephemeral on the USGS map where crossed by each of the build alternatives. Three of the crossings were inspected in the field and confirmed to be ephemeral. Visual inspection of the remaining tributaries (either upstream or downstream of the crossing) from public ROW also confirmed the ephemeral nature of the drainages. As all three mollusk species require perennial water, there is no habitat for these mollusks in the project area.

Based on the above information, no adverse impacts to threatened or endangered species are anticipated as a result of any of the three build alternatives.

#### **NO BUILD ALTERNATIVE**

Under the No Build Alternative, no impacts to threatened or endangered species or their habitats would occur and, as a result, no coordination would be required with the USFWS or TPWD.

#### **8.4.2 Natural Diversity Database**

An NDD search was conducted by TPWD on October 5, 2014 and August 6, 2015. The NDD search included a 10-mile radius and identified one species with element occurrence records. The species is as follows:

**Bristle Nailwort** (*Paronychia setacea*) EOID 11102: The Bristle Nailwort (a State listed SGCN, although not listed in Grimes County) is a flowering vascular plant endemic to eastern southcentral Texas and occurs mainly in sandy soils. According to the Element Occurrence Record, the last observation of this species was in 1948. The specimen citation does not include the name of the county in which it was found and has anonymously been attributed to Montgomery County. Although sandy soils are present in the project area, no bristle nailworts were observed while conducting onsite surveys. The three build alternatives may impact the species; however, as large amounts of habitat would still be available in the project area after project construction, impacts are not anticipated to be significant. To mitigate impacts to the species and other vegetation, vegetation clearing would be minimized to the extent practicable.

#### **NO BUILD ALTERNATIVE**

Under the No Build Alternative, no impacts to the Bristle Nailwort would occur.

#### **8.4.3 Migratory Bird Treaty Act**

The Migratory Bird Treaty Act (MBTA) states that it is unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, or egg in part or in whole, without a Federal permit issued in accordance within the act's policies and regulations. Migration patterns would not be affected by any of the three build alternatives. To ensure that impacts to other migratory bird species are avoided, typical measures would be in place to comply with the Migratory Bird Treaty Act. The following conservation measures are proposed: vegetation clearing would take place outside nesting season to the extent practicable, and if possible, in the year prior to construction and the DB contractor would be required to remain vigilant for the presence of early nesting species if vegetation clearing occurs in mid-winter. In the event that migratory birds are encountered on-site during construction, every effort would be made to avoid harm to protected birds, active nests, eggs, and/or young. The DB contractor would remove any old migratory bird nests between September 1 and February 28 from any structure where work would be done. In addition, the DB contractor would be prepared to prevent migratory birds from building nests between March 1 and August 31.

#### **NO BUILD ALTERNATIVE**

The No Build Alternative would not require any removal or disturbance of migratory birds, their nest, or their young and there would be no impacts to migratory birds.

#### **8.4.4 Vegetation and TPWD Coordination**

##### *8.4.4.1 Vegetation*

According to the EMST, the project area falls within the South Central Plains and Texas Blackland Prairies ecoregions. Locally termed the "piney woods", the South Central Plains region of mostly irregular plains represents the western edge of the southern coniferous forest belt. Once blanketed by a mix of pine and hardwood forests, much of the region is now in loblolly (*Pinus taeda*) and shortleaf pine (*Pinus echinata*) plantations. The Texas Blackland Prairies form a disjunct ecological region, distinguished from surrounding regions by fine-textured, clayey soils and predominantly prairie potential natural vegetation. Dominant grasses included little bluestem, big bluestem, yellow Indiangrass, and switchgrass. This region contains a higher percentage of cropland than adjacent regions; pasture and

forage production for livestock is common. Large areas of the region are being converted to urban and industrial uses.

The proposed ROW for each of the three build alternatives as mapped by the EMST is shown in **Table 4**. Actual habitat present in the project area is consistent with the EMST. A large fire occurred in the area east of CR 304 in 2011. Known as the Dyer Mill Fire, it burned approximately 3,600 acres. The original pine forest in this area was severely damaged, but is now in the process of regrowth. Scattered residential development has occurred within the project area. There is no unusual difference between the vegetation inside and outside of the proposed ROW.

It is anticipated that a majority of the proposed ROW would be cleared during project construction; however, impacts to vegetation would be minimized to the extent practicable. Based on the proposed ROW footprints (**Appendix A**), vegetation impacts (permanent conversion of vegetation to roadway) of the three project alternatives are shown in **Table 10**.

**Table 10: Vegetation Impacts**

Vegetation Type	Acres of Impact		
	Blue Alternative	Green Alternative	Yellow Alternative
Pineywoods	92.3	92.3	96.5
Blackland Prairie	10.4	10.4	10.4
Floodplain (hardwood/herbaceous)	4.3	3.8	6.1
Post Oak Savanna	2.3	2.5	3.1
Urban	1.1	1.1	1.1
Native Invasive Deciduous Woodland	1.4	1.3	0.9
Riparian	0.7	0.7	0.4
Pine Plantation	0.5	0.2	0.2
Total Acres of Impact	113.0	112.3	118.7

#### 8.4.4.2 Unusual Vegetation and Special Habitat Features

Unusual vegetation includes unmaintained vegetation, fence line vegetation, riparian vegetation, unusually large trees and/or stands of vegetation. Site visits were conducted in September and October of 2014 to assess project area vegetation. Right-of-entry was requested to parcels crossed by the three build alternatives. Seven property owners granted right-of-entry and site visits were, therefore, limited to those parcels. For the remainder of the project area, visual inspections were made from the public ROW of local roads crossed by the three build alternatives. Due to limited access to the three build alternatives ROW, aerial photography was also used to identify unusual vegetation. As each of the three build alternatives are on new location, the majority of the vegetation within the proposed 623-658 acres of ROW is unmaintained. It is anticipated that a majority of the proposed ROW would be cleared during project construction; however, impacts to vegetation would be minimized to the extent practicable. Minimal fenceline vegetation was observed and is found primarily along the ROW of two existing

roadways in the project area (CR 306 and SH 105). The portion of impacted vegetation that could be characterized as fenceline is estimated to be approximately 2 acres for each of the three build alternatives. Riparian vegetation was observed at the three crossings visited in the field and is anticipated to occur along all area creeks and drainages crossed by the three build alternatives. No unusually large trees and/or stands of vegetation were observed during site visits or on aerial photography. Impacts to riparian vegetation were based on the total linear feet of mapped stream crossings and an assumed 30-foot riparian buffer on each side of the streams. Impacts to vegetation that could be characterized as riparian for the three build alternatives are as follows: Blue Alternative – 8.9 acres; Green Alternative – 7.5 acres; and, Yellow Alternative – 8.0 acres.

Special habitat features include bottomland hardwood, caves, ponds, native prairies, water bodies or structures which may provide habitat for bird colonies. Bottomland hardwoods were not observed, but could be anticipated to occur along area drainages within the floodplains. For the three build alternatives, the portion of impacted vegetation that could be characterized as bottomland hardwood is estimated to vary between twelve and thirteen acres. The three build alternatives ROW crosses up to fifteen creeks/drainages. The Blue Alternative would cross five small stock ponds while the Green and Yellow Alternatives would only cross four small stock ponds. The creeks and drainages would be bridged; however, the portions of the stock ponds within the proposed ROW would likely be filled. No caves, native prairies or structures with associated bird colonies were observed.

8.4.4.3 TPWD Coordination

In accordance with the TxDOT/TPWD Memorandum of Understanding (MOU) (effective September 1, 2013), a Tier I Site Assessment was conducted in order to define the amount and type of potential habitat within the project area and to determine the potential need for coordination with TPWD. **Table 11** outlines the triggers for project coordination with TPWD as documented in the MOU.

**Table 11: MOU Triggers for TPWD Coordination**

MOU Section	Trigger	Yes/No
2.206 (1)	Is the project within the range of a state threatened or endangered species or SGCN as identified by the TPWD County list of Rare and Protected Species as it exists on the day the agreed-upon project scope is finalized under §2.44 of this chapter (relating to Project Scope) or if there is no project scope and for reevaluations, as it exists when TxDOT makes its determination regarding whether coordination is required, and there is suitable habitat, unless BMPs as defined in this MOU are implemented as provided by a programmatic agreement developed under §2.213 of this subchapter (relating to Programmatic Agreements).	Yes
2.206 (2)	Does the project adversely impact important remnant vegetation based on the judgment of a qualified biologist OR as mapped in the NDD?	No
2.206 (3)	Does the project require a Nationwide Permit (NWP) with preconstruction notification (PCN) or an Individual Permit (IP) from the United States Army Corps of Engineers (USACE)?	Yes
2.206 (4)	Does the project include more than 200 linear feet of stream channel within the TxDOT right-of-way or easements for each single and complete crossing of one or more of the following (that is not already channelized or otherwise maintained): (a) channel realignment, or (b) stream bed or bank excavation, scraping, clearing, or other permanent disturbance?	Yes
2.206 (5)	Does the project contain known isolated wetlands outside the existing TxDOT right-of-way that would be directly impacted by the project?	No

2.206 (6)	Does the project impact at least 0.10 acre of riparian vegetation based on the judgment of a qualified biologist or as mapped in the EMST?	Yes
2.206 (7)	Does the project disturb habitat in an area equal to or greater than an area of disturbance indicated in the <i>Threshold Programmatic Agreement</i> ?	Yes

Therefore, as outlined in **Table 11**:

- The three build alternatives are within the range of state or federally listed/candidate threatened and endangered species or SGCNs and habitat for these species occurs within the project area; therefore, BMPs as described in Section 8.4.1 are required to address habitat impacts.
- None of the three build alternatives would adversely impact important remnant vegetation. A review of the Natural Diversity Database (NDD) did not reveal any records of occurrence within 1.5 miles of the three build alternatives, and a field visit by a qualified biologist did not reveal important remnant vegetation within the project area.
- It is anticipated that the proposed project would require a Nationwide Permit (NWP) 14 from the USACE; however, at this time it is not known if a Preconstruction Notification (PCN) would be required. The PCN requirement can only be determined after ROW acquisition and a full wetland delineation of the entire project. The trigger is considered met to receive TPWD input.
- The three build alternatives cross up to thirteen creeks/streams and would each potentially impact greater than 200 linear feet.
- None of the three build alternatives contain known isolated wetlands outside the proposed TxDOT ROW.
- Each of the three build alternatives would result in greater than 0.10 acre of impacts to riparian vegetation.
- The proposed ROW for each of the three build alternatives as mapped by the EMST is shown in **Table 4**. Actual habitat present in the project area is consistent with the EMST mapping.

In summary, based on the assessment of coordination triggers provided above, coordination with TPWD is required by the MOU. Coordination was initiated January 9, 2015, and concluded April 20, 2015.

**NO BUILD ALTERNATIVE**

The No Build Alternative would not require any conversion of vegetation to a transportation facility nor would it impact unusual vegetation or special habitat features.

**8.5 WATER QUALITY**

**8.5.1 Section 404 of the Clean Water Act: Waters of the U.S.**

Site visits were conducted in September and October of 2014, to identify Waters of the U.S., including wetlands. Right-of-entry was requested to parcels crossed by the three build alternatives. Seven property owners granted right-of-entry and site visits were, therefore, limited to those parcels. For the remainder of the project area, visual inspections were made from the public ROW of local roads crossed by the three build alternatives. Due to limited access to the three build alternatives ROW, USGS, Federal Emergency Management Agency (FEMA) and NWI maps along with aerial photography were also used to identify

potential Waters of the U.S. Up to fifteen potentially jurisdictional waters of the U.S. may be impacted by the three build alternatives (see **Table 12**).

Based on right-of-entry, the two tributaries of Kickapoo Creek and Beason Creek were the only creek crossings that could be visited in the field. All three were located in deep channels and none had more than a foot of water during the site visits. No associated wetlands were identified. Photographs of the creeks are included in **Appendix D**. The remaining creeks were identified using NWI, USGS and FEMA maps as well as aerial photography. All of the tributaries as well as Beason Creek are mapped as ephemeral on the USGS map. Visual inspection of the tributaries (either upstream or downstream) from public ROW confirmed the ephemeral nature of the drainages. Although none of the available data indicates any wetlands associated with these remaining creeks, a site visit would be required to characterize the creeks once ROW is obtained.

**Table 12: Waters of the U.S.**

Stream No.	Water of the U.S.	Linear Feet of Stream within ROW			Associated Wetlands?
		Blue Alignment	Green Alignment	Yellow Alignment	
1	Tributary of Mills Creek	449	449	449	Unknown
2	Tributary of Mills Creek	393	393	393	Unknown
3	Tributary of Mills Creek	776	776	776	Unknown
4	Tributary of Mills Creek	904	904	904	Unknown
5	Tributary of Kickapoo Creek	468	468	468	No
6	Tributary of Kickapoo Creek	650	650	650	No
7	Tributary of Beason Creek	770	770	770	Unknown
8	Tributary of Beason Creek	613	613	613	Unknown
9	Tributary of Beason Creek	1,260	640	1870	Unknown
10	Tributary of Beason Creek	1,540	657	660	Unknown
11	Tributary of Beason Creek	2,712	532	210	Unknown
12	Tributary of Beason Creek	0	965	1130	No
13	Tributary of Grassy Creek	2,460	2,460	2,460	Unknown
<b>Total Linear Feet</b>		12,995	10,277	11,353	

All drainages are proposed to be bridged or culverted. The three build alternatives may result in the placement of temporary or permanent dredge or fill material into these potentially jurisdictional waters; however, the total amount of fill at each single and complete crossing is estimated to be less than 0.5 acre. A Section 404 NWP 14 is anticipated to be required for impacts. A PCN for NWP 14 would be required if wetlands or other special aquatic sites associated were impacted and/or if impacts total greater than 0.1 acre at each single and complete crossing. The activities would comply with all general and regional conditions applicable to NWP 14. Once ROW is obtained, an on-site investigation and delineation would be conducted to accurately characterize the Waters of the U.S. and determine if wetlands are present. An Individual Permit could be required if impacts are greater than anticipated or if required by the USACE.

In addition to the creeks described above, five small stock ponds are located within or partially within the ROW of the three build alternatives (five in the Blue Alternative and four in each of the Green and Yellow Alternative). Three of the five stock ponds were visited in the field while two were on property for which right-of-entry was not granted. All ponds are considered isolated and, therefore, presumed non-jurisdictional and not subject to permitting under Section 404. However, only the USACE can determine jurisdictional status of the ponds.

Appropriate measures would be taken to maintain normal downstream flows and minimize flooding. No temporary fills are anticipated; however, if required, temporary fills would consist of materials and be placed in a manner that would not be eroded by expected high flows. Any temporary fills would be removed in their entirety and the affected area returned to pre-construction elevation, and revegetated as appropriate. No stream modification is anticipated; however, if required, stream channel modifications, including bank stabilization, would be limited to the minimum necessary to construct or protect the structure and the immediate vicinity of the proposed project.

#### **NO BUILD ALTERNATIVE**

Under the No Build Alternative, no impacts to Waters of the U.S. would occur and, as a result, no permitting would be required with the USACE.

#### **8.5.2 Section 401 of the Clean Water Act: Water Quality Certification**

The 401 Certification requirements for NWP 14 would be met by implementing approved erosion controls, sedimentation controls, and post-construction total suspended solids (TSS) controls BMPs from the Texas Commission on Environmental Quality's (TCEQ) 401 Water Quality Certification Conditions for Nationwide Permits.

#### **NO BUILD ALTERNATIVE**

Under the No Build Alternative, no impacts to Waters of the U.S. would occur and, as a result, no 401 Certification would be required.

#### **8.5.3 River and Harbors Act of 1899, Section 10**

None of the three build alternatives would involve work in or over a navigable water of the U.S.; therefore, Section 10 of the River and Harbors Act does not apply.

#### **8.5.4 General Bridge Act of 1946**

None of the three build alternatives would involve work in or over a navigable water of the U.S.; therefore the General Bridge Act of 1946 does not apply.

#### **8.5.5 Section 303(d) of the Clean Water Act/TCEQ Coordination**

Runoff from any of the three build alternatives would not discharge directly into a Section 303(d)-listed threatened or impaired water, or into a stream within five miles upstream of a Section 303(d)-listed threatened or impaired water. The 2014 Integrated Report for Water Quality was utilized in this assessment.

Per the 2013 MOU between TCEQ and TxDOT, coordination triggers were evaluated. The project does not add capacity in a nonattainment or maintenance area of the state, is not located in the recharge, transition or contributing zones of the Edwards Aquifer, and is not located within five miles of an impaired assessment unit and within the watershed of the impaired assessment unit. A Tier II individual Clean Water Act Section 401 certification may be required once impacts to streams are determined. If a Tier II certification is required, coordination with TCEQ would be required.

**8.5.6 Section 402 of the Clean Water Act: Texas Pollutant Discharge Elimination System and Municipal Separate Storm Sewer System**

Each of the three build alternatives would involve five or more acres of earth disturbance. TxDOT would comply with the requirements of the TCEQ’s Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit. TxDOT would implement a Storm Water Pollution Prevention Plan (SW3P), and a construction site notice would be posted at the construction site. TxDOT would prepare the required Notice of Intent (NOI). None of the three build alternatives are located within the boundaries of a regulated Municipal Separate Storm Sewer System (MS4).

**NO BUILD ALTERNATIVE**

Under the No Build Alternative, there would be no earth disturbance and compliance with the TPDES Construction General Permit would not be required.

**8.5.7 Floodplains**

The amount of floodplains crossed by the three build alternatives is shown in **Table 13**.

**Table 13: Floodplain Impacts**

Build Alternative	Acres of Impact		
	Beason Creek	Mill Creek	Total
Blue Alternative	8.9	2.2	11.1
Green Alternative	9.7	2.2	11.9
Yellow Alternative	13.5	2.2	15.7

The hydraulic design for this project would be in accordance with current FHWA and TxDOT design policies. The facility would permit the conveyance of the 100-year flood, inundation of the roadway being acceptable, without causing significant damage to the facility, stream, or other property. None of the three build alternatives would increase the base flood elevation to a level that would violate applicable floodplain regulations and ordinances. Coordination with the local Floodplain Administrator, Grimes County Engineering Office, would be required.

**NO BUILD ALTERNATIVE**

Under the No Build Alternative, no impacts to floodplains would occur and, as a result, no coordination would be required with the local Floodplain Administrator.

## 8.6 NOISE

This analysis was accomplished in accordance with TxDOT's (FHWA approved) Guidelines for Analysis and Abatement of Roadway Traffic Noise (April 2011).

Sound from highway traffic is generated primarily from a vehicle's tires, engine, and exhaust. It is commonly measured in decibels and is expressed as "dB."

Sound occurs over a wide range of frequencies. However, not all frequencies are detectable by the human ear; therefore, 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)."

Also, because traffic sound levels are never constant due to the changing number, type, and speed of vehicles, a single value is used to represent the average or equivalent sound level and is expressed as "L<sub>eq</sub>."

The traffic noise analysis typically includes the following elements:

- Identification of land use activity areas that might be impacted by traffic noise
- Determination of existing noise levels
- Prediction of future noise levels
- Identification of possible noise impacts
- Consideration and evaluation of measures to reduce noise impacts

The FHWA has established the following Noise Abatement Criteria (NAC) (**Table 14**) for various land use activity areas that are used as one of two means to determine when a traffic noise impact would occur.

**Table 14: Noise Abatement Criteria**

Activity Category	dB(A) L <sub>eq</sub>	Description of Land Use Activity Areas
A	57 (exterior)	Lands on which serenity and quiet are of extra-ordinary 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 sport areas, amphitheatres, 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.

Activity Category	dB(A) L <sub>eq</sub>	Description of Land Use Activity Areas
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, shipyards, utilities (water resources, water treatment, electrical) and warehousing.
G	--	Undeveloped lands that are not permitted.

A noise impact occurs when either the absolute or relative criterion is met:

**Absolute criterion** - The predicted noise level at a receiver approaches, equals or exceeds the NAC. “Approach” is defined as one dB(A) below the NAC. For example: a noise impact would occur at a Category B residence if the noise level is predicted to be 66 dB(A) or above.

**Relative criterion** - The predicted noise level substantially exceeds the existing noise level at a receiver even though the predicted noise level does not approach, equal or exceed the NAC. “Substantially exceeds” is defined as more than 10 dB(A). For example: a noise impact would occur at a Category B residence if the existing level is 54 dB(A) and the predicted level is 65 dB(A).

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.

Since this is a new location project, existing noise levels were determined by conducting onsite noise measurements in the field at several different locations using a precision Type I sound level meter. Permission to conduct onsite noise measurements was not obtained at any of the receiver locations shown in **Table 15**. Therefore, the existing noise measurements were conducted at locations where permission was either granted or was not required. The existing noise levels in **Table 15** represent the noise level measured at the nearest noise measurement location. However, if measurements could not be taken reasonably close to the noise receivers, the lowest measured noise level was used to represent the existing ambient noise level. The noise measurement locations are shown in **Appendix G**.

The FHWA traffic noise modeling software was used to calculate predicted (2040) traffic noise levels for the proposed Super 2 roadway and frontage roads. The model primarily considers the number, type and speed of vehicles; highway alignment and grade; cuts, fills and natural berms; surrounding terrain features; and the locations of activity areas likely to be impacted by the associated traffic noise.

The existing and predicted traffic noise levels at receiver locations (**Table 15** and **Appendix G**) represent the land use activity areas adjacent to the three build alternatives that might be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement.

As indicated in **Table 15**, the three build alternatives would each result in traffic noise impacts and the following noise abatement measures were considered: traffic management, alteration of horizontal and/or

vertical alignments, acquisition of undeveloped property to act as a buffer zone and the construction of noise walls.

**Table 15: Traffic Noise Levels (dB(A) Leq)**

Receiver	NAC Category	NAC Level	2014 Noise Level		Build Alternative	2040 Noise Level dBA	Change (+/-)	Noise Impact?
			dBA	Measurement Location				
R1 - Residential	B	67	48	#2*	Blue	56	8	No
					Green	56	8	No
					Yellow	56	8	No
R2 - Residential	B	67	48	#2*	Blue	58	10	No
					Green	58	10	No
					Yellow	58	10	No
R3 - Residential	B	67	50	#3	<b>Blue</b>	<b>63</b>	<b>13</b>	<b>Yes</b>
					<b>Green</b>	<b>63</b>	<b>13</b>	<b>Yes</b>
					<b>Yellow</b>	<b>63</b>	<b>13</b>	<b>Yes</b>
R4 - Residential	B	67	48	#2*	Blue	54	6	No
					Green	54	6	No
					Yellow	54	6	No
R5 - Residential	B	67	48	#2*	<b>Blue</b>	<b>59</b>	<b>11</b>	<b>Yes</b>
					<b>Green</b>	<b>59</b>	<b>11</b>	<b>Yes</b>
					<b>Yellow</b>	<b>59</b>	<b>11</b>	<b>Yes</b>
R6 - Residential	B	67	48	#2*	Blue	58	10	No
					Green	58	10	No
					Yellow	58	10	No
R7 - Residential	B	67	48	#2*	Blue	50	2	No
					Green	**	**	No
					Yellow	**	**	No
R8 - Residential	B	67	48	#2*	Blue	49	1	No
					Green	**	**	No
					Yellow	**	**	No
R9 - Residential	B	67	57	#6	Blue	63	6	No
					Green	63	6	No
					Yellow	63	6	No
R10 - Residential	B	67	48	#2*	Blue	51	3	No
					Green	51	3	No
					Yellow	51	3	No

\*Noise measurements were not reasonably close to receiver; therefore, the lowest measured noise level was used.

\*\* Noise receiver is greater than 1,000 feet from the alignment centerline and was not modeled.

Before any abatement measure can be proposed for incorporation into the project, it must be both feasible and reasonable. In order to be "feasible," the abatement measure must be able to reduce the noise level at greater than 50% of impacted, first row receivers by at least five dB(A); and to be "reasonable," it must

not exceed the cost-effectiveness criterion of \$25,000 for each receiver that would benefit by a reduction of at least five dB(A) and the abatement measure must be able to reduce the noise level at least one impacted, first row receiver by at least seven dB(A).

Traffic management - Control devices could be used to reduce the speed of the traffic; however, the minor benefit of one dB(A) per five mph reduction in speed does not outweigh the associated increase in congestion and air pollution. Other measures such as time or use restrictions for certain vehicles are prohibited on state highways.

Alteration of horizontal and/or vertical alignments - Any alteration of the existing alignment could displace other residences, impact additional parcels, and would not be cost effective/reasonable.

Buffer zone - The acquisition of undeveloped property to act as a buffer zone is designed to avoid rather than abate traffic noise impacts and, therefore, is not feasible.

Noise walls - This is the most commonly used noise abatement measure. Noise walls were evaluated for each of the impacted receiver locations with the following results:

R3 - This receiver is a separate, individual residence. The receiver is located in the Pinebrook Subdivision; however, not all of the lots are developed and there are no other residences in the vicinity of R3. A noise wall that would achieve the minimum feasible reduction of 5 dB(A) while achieving a 7 dB(A) noise reduction design goal at this receiver would exceed the reasonable, cost-effectiveness criterion of \$25,000.

R5 - This receiver is a separate, individual residence. A noise wall that would achieve the minimum feasible reduction of 5 dB(A) while achieving a 7 dB(A) noise reduction design goal at this receiver would exceed the reasonable, cost-effectiveness criterion of \$25,000.

None of the above noise abatement measures would be both feasible and reasonable; therefore, no abatement measures are proposed for this project.

To avoid noise impacts that may result from future development of properties adjacent to the proposed project, local officials responsible for land use control programs must ensure, to the maximum extent possible, no new activities are planned or constructed along or within the predicted (2040) noise impact contours shown in **Table 16**.

**Table 16: Noise Impact Contours**

Land Use	Impact Contour	Distance from Right of Way
NAC Category B&C	66 dB(A)	Inside ROW
NAC Category E	71 dB(A)	Inside ROW

Noise associated with the construction of the proposed project is difficult to predict. 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 DB contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

A copy of this traffic noise analysis will be made available to local officials. On the date of approval of this document (Date of Public Knowledge), TxDOT is no longer responsible for providing noise abatement for new development adjacent to the proposed project.

## **NO BUILD ALTERNATIVE**

Under the No Build Alternative, ambient noise levels would be expected to remain consistent with current measurements. Increasing traffic on local roadways could result in higher noise levels for residences immediately adjacent to these roads.

## **8.7 HAZARDOUS MATERIALS**

### **8.7.1 Regulatory Database Search**

A review of environmental regulatory databases was performed in September 2013 to identify sites or facilities that might pose a potential for hazardous materials impacts to the three build alternatives. The purpose of the database review was to determine if the sites located within the project area are listed as having a past or present record of actual or potential environmental impact or are under investigation for non-compliance with a hazardous material regulation. The database searches were conducted to comply with American Society for Testing and Materials (ASTM) Standard E1527-05 and EPA's All Appropriate Inquiries Standard but are not considered a full Phase I Environmental Site Assessment. No locatable sites with records were identified in the database searches. The database search map is included in **Appendix H**.

### **8.7.2 Initial Site Assessment (ISA)**

Because the proposed project involves constructing a new location facility, Initial Site Assessment (ISA) visits were conducted in September and October of 2014, to identify potential hazardous materials in the project area. The ISA consisted of windshield and walking surveys limited to the proposed ROW where right-of-entry had been granted and limited visual inspection of other property from public roadways. According to the Texas Railroad Commission, there are numerous dry holes and permitted locations in the project vicinity; however, there is only one active oil well in the project vicinity (see **Appendix D**, photo 14). This oil well is located off of CR 307 and would not be impacted by any of the three build alternatives. The three build alternatives would cross six pipelines and one of the six would be crossed twice. One of the pipelines carries refined petroleum products, two carry crude oil and three carry natural gas. The proposed project design would accommodate the pipeline crossings. An analysis of the ISA data indicates that this project will not likely involve the acquisition of known unresolved contamination where TxDOT could reasonably expect to assume liability for corrective action upon acquisition. In addition, this project does not involve known hazardous materials impacts that could be anticipated to adversely affect construction (e.g. cannot resolve before letting or during construction).

Any unanticipated hazardous materials and/or petroleum contamination encountered during construction would be handled according to applicable federal and state regulations per TxDOT Standard Specifications. Section 6.10 of the “General Provisions of the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges,” which applies to all highway projects, includes guidelines addressing the DB contractor’s responsibilities regarding the discovery of hazardous materials.

### **NO BUILD ALTERNATIVE**

Under the No Build Alternative, no impacts to pipelines or disturbance to any potentially contaminated sites would occur.

## **9.0 INDIRECT AND CUMULATIVE IMPACTS ANALYSIS**

### **9.1 INDIRECT IMPACTS ANALYSIS**

Indirect impacts are defined as those caused by an action and are later in time or farther removed in distance, but still reasonably foreseeable. Indirect impacts are not directly associated with the construction and operation of the roadway and are often caused by related development and growth. This, in turn, can result in a variety of related impacts such as changes in land use, population density or growth rate, economic vitality, and impacts on air and water and other natural resources. Under the federal CEQ regulations, an indirect impacts analysis must identify and eliminate issues which are not significant or which have been covered by prior environmental review, while determining which issues should be analyzed in-depth. The analysis generally includes the following efforts:

1. Identifying the study area
2. Considering goals and directions of the study area
3. Identifying notable features within the study area
4. Evaluating project impact-causing activities
5. Assessing potentially significant indirect impacts
6. Assess consequences and consider mitigation (as appropriate)

#### **Step 1 – Study Area**

The Area of Influence (AOI) for this project is defined as FM 1774 to the east, SH 105 to the north, FM 362 to the west and CR 302 to the south (**Exhibit E**). The AOI represents the area travel shed and encompasses approximately 27,405 acres (approximately 43 square-miles) of land. Motorists using facilities outside of the AOI would not generally be influenced in their choice of routes by the proposed project. Land use within the AOI is predominantly undeveloped rangeland with scattered residential development. The AOI is considered rural, with approximately 93 percent of land use being farm, ranch or undeveloped. The temporal boundary for this was established as the year 2035, in order to capture the transportation improvements included in the 2035 MTP.

#### **Step 2 – Goals and Directions of Study Area**

The AOI is located in southern Grimes County, southeast of the City of Navasota. While Grimes County is adjacent to counties within the Houston-Galveston Metropolitan Planning Organization (MPO) (Montgomery and Waller Counties) and the Bryan/College Station MPO (Brazos County), Grimes

County is not located within a MPO. From 2000 to 2010, Grimes County had a population growth rate of 13%. Development plans throughout the region indicate that these growth trends will likely continue for the foreseeable future. According to local elected officials including the Grimes County Judge, economic development is a goal of Grimes County and the County's largest city, Navasota. SH 249 is considered to provide opportunities for job creation and economic development within the county.

Energy production in the area, both traditional and alternative, continues to grow. NOV has invested in energy production activities within the AOI. A large, contiguous tract of land located west of Yarboro Lake and south of SH 105 is owned by NOV. Although energy-related development has occurred in the project area, NOV has no current plans to drill on this portion of their land and has focused development on land outside the AOI. As the energy production growth trend continues, investment in infrastructure to support the growth is needed within the region.

### **Step 3 – Notable Features within Study Area**

The primary identifying feature within the AOI is scattered residential development with limited commercial development in the vicinity of the communities of Plantersville and Stoneham. There are seven churches and six cemeteries within the AOI; however, only one, the Whiteside Cemetery, is located in the vicinity of the three build alternatives. There are no hospitals or schools within the AOI. The Red-cockaded Woodpecker and the Navasota Ladies'-tresses are State and Federally-listed endangered species in Grimes County and habitat for the species may occur within the AOI. The study area is generally undeveloped and does not otherwise contain areas of unique environmental value. Yarboro Lake, Mill Creek, Kickapoo Creek, Beason Creek and their associated tributaries are located within the AOI.

### **Step 4 – Project Impact-Causing Activities**

The proposed project consists of constructing a tolled, controlled-access two-lane roadway from FM 1774 to SH 105 with a passing lane in alternating directions throughout the project limits. Non-toll frontage roads would be constructed between Urbanosky Lane and west of CR 304. The proposed project would be constructed within sufficient ROW to accommodate the future widening of SH 249 to a four-lane divided facility. Approximately 623 to 658 acres of ROW would be required for the proposed project. The following impact-causing activities were identified:

- *Land Transformation/Land Alternation and Construction* – The three build alternatives would require between 623 and 658 acres of ROW and convert approximately 112 to 119 acres of unmaintained woody and herbaceous vegetation to roadway.
- *Changes in Traffic* – The proposed additional travel lanes associated with the three build alternatives could result in changes in traffic patterns along existing roadways (primarily FM 1774 and SH 105). Through traffic on these existing roadways may move to the proposed SH 249 facility therefore increasing mobility and reducing congestion on existing roadways. The three build alternatives would all reduce the amount of regional through traffic on local roadways and allow for easier and safer access to commercial and residential development.
- *Access Alteration* – As described above, the three build alternatives would all provide improved regional access and local access to commercial and residential development along FM 1774 and SH 105. Along the proposed SH 249 facility, overpasses would be located at all cross streets and frontage roads would be constructed from Urbanosky Lane to west of CR 304.

### **Step 5 – Potentially Significant Indirect Impacts**

According to National Cooperative Highway Research Program (NCHRP) Report 466, the CEQ defines three broad categories of indirect impacts:

1. Encroachment-Alteration: alteration of the behavior and functioning of the affected environment caused by project encroachment (physical, chemical, biological) on the environment;
2. Induced Growth: project-influenced development impacts (i.e., the land use effect); and
3. Impacts Related to Induced Growth: impacts related to project-influenced development impacts (i.e., impacts of the change in land use on the human and natural environment).

The planning judgment method used to identify indirect impacts was primarily qualitative. This technique focused on the elements or indicators that characterize the study area using ecological, economic, demographic, and social information and data from the baseline investigations.

#### **Encroachment-Alteration Impacts**

Encroachment-alteration impacts are defined as the alteration of the behavior and functioning of the affected environment caused by project encroachments.

#### *Ecological Encroachment-Alteration Impacts*

Potential indirect impacts were identified and examined for the potential to be substantial. The three build alternatives would require 623 to 658 acres of ROW and convert 112 to 119 acres of predominantly unmaintained vegetation to a transportation facility (see **Table 10**). The amount of ROW required for any of the three build alternatives is approximately two percent of the land within the AOI. Other than the acquisition of land for the proposed facility, land use in the project area is not anticipated to be substantially impacted. Project biologists and ecologists have determined that there would be no substantial ecological encroachment-alteration impacts as a result of the construction of SH 249. The following details the findings of the ecological encroachment alteration impacts.

The loss of wildlife habitat from any of the three build alternatives would occur within the proposed ROW. The three build alternatives would require 623 to 658 acres of ROW, approximately two percent of the undeveloped land within the AOI. Each of the three build alternatives could increase animals being struck by vehicles, as the proposed project would construct a roadway where one currently does not exist. No wildlife corridors were observed in the project area, but bridge structures and large culverts would provide safer crossing points for wildlife. The proposed project would be designed per current TxDOT standards and specifications requiring appropriate site distances and clear zones so that drivers could see deer and other large wildlife that may enter the ROW. While wildlife mortality is possible, for the above reasons it is not expected to be substantial. Based on site visits conducted, none of the three build alternatives are anticipated to result in the take of three federally-listed endangered species (the Red-Cockaded Woodpecker, the Whooping Crane and the Navasota Ladies'-tresses). No takes of any other federally-listed threatened or endangered species are anticipated.

Undeveloped areas within the AOI that are located near existing residential, retail/commercial, and other development would likely be the initial areas consumed to accommodate anticipated population and employment growth. Human disturbance and activity levels in these areas may not be conducive to

supporting large numbers or diverse species of wildlife. Undeveloped areas that are more remote from existing development, particularly those areas where major and secondary roadways are not present, would not be expected to undergo major land use changes in the near term. Such areas, which may be only minimally disturbed by human activities, would continue to provide habitat for indigenous and migratory wildlife. However, regional population and economic growth may exert development pressure on many of these undeveloped tracts.

Any impacts to threatened and endangered species due to construction by others within the AOI would be addressed through compliance with the Endangered Species Act. Given the above-referenced information, fragmentation of habitat and impacts to threatened and endangered species are not considered substantial as a result of the proposed project and are not carried forward.

The wetland determinations resulted in the identification of fifteen potentially jurisdictional Waters of the U.S. and five isolated stock ponds. None of the three build alternatives would alter the hydric regime or reduce diversity within the ecosystem. The roadway drainage for the proposed project would consist of open ditch channels. The three build alternatives could potentially impact up to fifteen creeks, considered Waters of the U.S., regulated by the USACE under authority of Section 404 of the CWA. A Nationwide Permit 14 is anticipated to be required for each single and complete crossing where impacts would occur below the ordinary high water mark. Stormwater BMPs would be included in the design and construction of the proposed improvements in compliance with the TPDES stormwater permit for construction activities, TXR150000. No long-term water quality impacts are expected as a result of the construction of SH 249. Subsurface water would not be required for this project; therefore, no adverse impacts to groundwater are expected to occur. The proposed project is not expected to alter rainfall drainage patterns or contaminate or otherwise adversely affect the public water supply, water treatment facilities, or water distribution systems. None of the project area creeks are designated as either threatened or impaired and there are no other water bodies within five miles downstream of any of the three build alternatives that are designated as threatened or impaired.

Impacts to water resources due to construction within the AOI would be addressed through compliance with local, state, and federal actions and policies. The following identifies the various actions and policies protecting water resources.

The USACE administers Section 404 of the CWA and operates under a “no net loss” policy for protected wetlands, requiring avoidance and minimization of impacts, and compensatory mitigation for unavoidable impacts. Executive Order 11990, Protection of Wetlands, directs federal agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Public and private developers must identify impacts to jurisdictional wetlands and other jurisdictional waters of the U.S., in coordination with the USACE, prior to construction. Mitigation measures would be required to compensate for impacts to jurisdictional wetlands. Compensatory mitigation for non-jurisdictional waters of the U.S., including wetlands, would not be required as part of USACE permitting; therefore, functions provided by these waters may not be replaced. Because of the federal mandate with regard to wetlands, “no net loss” of wetlands is anticipated from any future land use.

In the State of Texas, the TPDES program implements the federal NPDES program. The TCEQ administers storm water permits for construction projects disturbing at least five acres of land within the

State of Texas. Therefore; any project that disturbs at least five acres of land would require a TPDES Construction General Permit (CGP) and a NOI would be required. Potential impacts to water quality would be mitigated through development and implementation of a SW3P, which would address measures to prevent or correct erosion that may develop during construction. Best Management Practices for temporary and permanent soil erosion and sedimentation controls would be implemented, along with measures to prevent/control hazardous material spills during construction. Storm water detention areas and vegetated open drainage ways with culverts would be designed to collect storm water discharges and to promote settling of suspended solids and reduce potential pollutant concentrations.

Future development that results in the conversion of agricultural and undeveloped land to residential, commercial, or industrial uses may require vegetation removal and result in increased erosion and water quality issues. Regardless of whether the forecasted development would be public or private, these activities may be required to coordinate with TCEQ and would have to comply with Sections 401 and 404 of the CWA, which regulates the fill or encroachment of these resources.

Future development within floodplains would be conducted in accordance with the National Flood Insurance Program (NFIP) and local regulations. Storm water detention facilities and hydraulic features would be used to offset potential increases in storm water flows due to the addition of impermeable cover, and to maintain the storage capacity of floodplains. Individual developments would be responsible for calculating and detaining additional runoff generated by the construction of impermeable surfaces, and maintaining conveyance capacities to accommodate expected flood flows.

Future developments would be expected to follow the guidelines of Section 305(B), Section 303(d), Section 401, and Section 404 of the CWA, which includes avoidance, minimization, and compensation; therefore, indirect impacts of future developments would not be substantially impacted. Future developments within floodplains would be expected to follow the guidelines of the NFIP; therefore, indirect impacts of existing and future development would not substantially impact the extent of the 100-year floodplain and therefore are not carried forward.

The proposed project is located in an area designated as in attainment or unclassifiable for all NAAQS. Based on the results of Steps 1 through 4 that evaluated the possible project-related actions that can indirectly impact air, it was determined that none of the three build alternatives would be anticipated to cause substantial indirect air quality impacts in the AOI. No change in attainment status is anticipated within the study area as the result of emissions associated with the proposed project, which is projected to see annual average daily traffic of less than 14,000 vehicles in 2035. Indirect air quality impacts from MSATs are unquantifiable due to existing limitations to determine pollutant emissions, dispersion, and impacts to human health. Emissions would likely be lower than present levels in future years as a result of the EPA's national control regulations (i.e., new light-duty and heavy duty on-road fuel and vehicle rules, and the use of low sulfur diesel fuel). Even with an increase in VMT and possible temporary emission increases related to construction activities, the EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions of on-road emissions, MSATs, and the ozone precursors volatile organic compounds (VOC) and nitrogen oxides (NOx). None of the three build alternatives are anticipated to result in substantial indirect air quality impacts.

Based on the information above, ecological encroachment-alteration impacts will not be carried forward to Step 6 for additional analysis.

### *Socioeconomic Encroachment-Alteration Impacts*

Encroachment-alteration impacts to socioeconomic resources associated with the all three build alternatives include impacts to land use, travel patterns and access. The proposed construction of SH 249 is expected to increase mobility and decrease travel time, which may lead to a potential growth of commercial business within the AOI. A decrease in traffic congestion, in conjunction with greater mobility, may lead economic growth for other businesses located along existing roadways within the AOI. The number and frequency of customers is anticipated to increase as the area becomes a more attractive shopping location for future residential development. The potential indirect economic impacts are not expected to disproportionately adversely affect low-income populations. This potential indirect impact is not anticipated to be substantial; however, it was determined that noting such an impact is merited.

Based on the information above, socioeconomic encroachment-alteration impacts will not be carried forward to Step 6 for additional analysis.

### **Induced Growth Impacts and Impacts Related to Induced Growth**

Induced growth impacts are those associated with new or improved access to adjacent land, as well as reduction in the time or cost of travel and other factors that may increase the attractiveness of adjacent land to developers and consumers. Impacts related to induced growth occur as a result of development induced by the proposed project. The proposed SH 249 would be a controlled-access facility with access points at the project termini (FM 1774 and SH 105) as well as CR 306. Frontage roads would be constructed between Urbanosky Lane and west of CR 304 with ramps for access at each end point. The frontage roads were added to the project as a result of public involvement (see Section 11) and are intended to facilitate local traffic moving through the project area from one side of SH 249 to the other. Frontage roads would not be constructed between FM 1774 and Urbanosky Lane due to floodplains and a railroad crossing; nor would they be constructed north of CR 307 due to the presence of existing roadways for local traffic. The speed limit on the frontage roads would be 50 mph. Traffic would be able to access the northbound SH 249 mainlanes west of CR 304 and the southbound mainlanes west of Urbanosky Lane. Due to the limited access to the proposed mainlanes, non-continuous low-speed frontage roads and the rural nature of the area, any indirect changes in land use would be expected to be localized at the five access points and are not anticipated to be regionally substantial. The frontage roads are anticipated to serve local traffic primarily and any induced growth impacts are anticipated to be minimal. Any expected development would most likely occur on parcels abutting the frontage roads and parcels at the SH 249 access points (FM 1774, CR 306 and SH 105). There is currently no commercial development in the vicinity of three build alternatives. Many of the parcels located adjacent to the three build alternatives can be characterized as rural ranch/farm land, with scattered residential development.

The AOI includes undeveloped land. Vegetation throughout the AOI consists primarily of undeveloped farm and ranch land and scattered residential properties. Induced growth impacts to vegetation would consist of converting farm and ranch land and undeveloped land into developed land uses, including commercial and residential development. Within the AOI, development along regional arterials and other

area roadways is expected to trend towards residential development. As mobility and connectivity are improved within the AOI, reduced travel time to Houston and other cities in the project area may result in growth in residential development serving those who wish to work in the city, but live in a more rural environment. Of the 27,405 acres of land within the AOI, a total of approximately 25,650 acres (93 percent) is currently undeveloped. Census data from 1960 to 2010 shows an approximate average percent increase in population of 17 percent per decade. Based on analysis of the project area, forecasted development is expected to remain as scattered residential development within a rural landscape which would tend to preserve the natural surroundings within this portion of Grimes County. Impacts to vegetation would be assessed and addressed for future projects that might involve state and/or federal funds. Re-vegetation of state and federal roadway projects would occur through EO 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping. Residential properties within the AOI trend toward wide-spread single family homes that tend to preserve the natural surroundings. Given the above-referenced information, indirect vegetation impacts are not considered substantial as a result of any of the three build alternatives and are not carried forward.

Although the proposed project is not considered to induce growth, but rather accommodate the already occurring and predicted population and employment growth in the area, the proposed project would provide increased mobility, which would facilitate the growth that is already occurring. Based on the information above, induced growth impacts and impacts related to induced growth will not be carried forward to Step 6 for additional analysis.

#### **Step 6: Assess Consequences and Consider Mitigation (as appropriate)**

Indirect impacts to land use are anticipated; however, they are not expected to be substantial. As determined in Step 5, none of the three indirect impact categories (encroachment-alteration, induced growths and impacts related to induced growth) are being carried forward for further analysis.

The proposed SH 249 would be a controlled-access facility with access points at the project termini (FM 1774 and SH 105) as well as CR 306. Frontage roads would be constructed between Urbanosky Lane and west of CR 304 with ramps for access at each end point. The frontage roads were added to the project as a result of public involvement (see **Section 11**) and although they would make adjacent properties more accessible, the purpose of these frontage roads is to facilitate existing local traffic moving through the project area from one side of SH 249 to the other. Frontage roads would not be constructed between FM 1774 and Urbanosky Lane due to floodplains and a railroad crossing; nor would they be constructed north of CR 307 due to the presence of existing roadways for local traffic. The speed limit on the frontage roads would be 50 mph. Traffic would be able to access the northbound SH 249 mainlanes west of CR 304 and the southbound mainlanes west of Urbanosky Lane. Due to the limited access to the proposed mainlanes, non-continuous low-speed frontage roads and the rural nature of the area, any indirect changes in land use would be expected to be localized at the five access points, all of which are currently undeveloped, and are not anticipated to be regionally substantial.

The construction of SH 249 would bring improvement to the project area's connectivity and travel safety and is also expected to improve regional connectivity within the AOI. These types of infrastructure improvements can stimulate growth in an area. Although noise levels would increase, a noise analysis has been conducted as part of the environmental investigations and noise barriers are not considered

reasonable and feasible. Therefore, noise barriers are not being recommended as part of the proposed project.

Structures, paving, and other development components that may occur would introduce new visual elements into the viewshed. New structures would be more noticeable in areas that are currently undeveloped, as opposed to areas where existing development is present. Depending upon the type of proposed development and design specifications, visual mitigation measures could include the preservation of naturally vegetated areas or the incorporation of landscape features that might blend with the existing landscape. The use of regionally native plants for landscaping could provide some continuity of vegetation between developed and undeveloped areas. There are no requirements that development projects mitigate for potential visual impacts. Incorporation of visual and aesthetic measures into development projects would be at the discretion of the individual developers.

Although the proposed project may increase the rate of development in the project area, it has been shown that Grimes County has been steadily increasing in population over the last several decades. Development and population growth are anticipated to continue with or without the construction of SH 249.

As stated previously, potential indirect impacts on vegetation, wildlife and threatened and endangered species, water resources, air quality, including MSATs, and many socioeconomic factors were evaluated and determined not to be substantial. Although there would be minor impacts to land use within the AOI, travel patterns and access, these impacts are a result of the existing population growth in the area, which is predicted to continue to increase in the future. Construction of the proposed project may facilitate the rate of the already occurring population and employment growth, as increased mobility and decreased travel time along regional arterials and other area roadways could lead to potential growth of residential and commercial businesses within the AOI.

Any impacts to jurisdictional waters associated with future development in the AOI would be documented, coordinated, and permitted through the USACE as necessary. The USACE would require consideration of compensatory mitigation in some instances. Also, any conversion of undeveloped land to residential, commercial, or industrial uses may require vegetation removal and could result in increased erosion and water quality issues. Private, government, and/or municipal entities may be required to coordinate with the TCEQ for impacts associated with water quality.

### **NO BUILD ALTERNATIVE**

Under the No Build Alternative, land use and the viewshed would not be altered by the introduction of a new transportation facility. Indirect impacts of the No Build Alternative could include increased congestion and travel times on other area roadways. Current land development patterns and trends would be expected to continue.

## **9.2 CUMULATIVE IMPACTS ANALYSIS**

Cumulative impacts are those that 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 other actions. Cumulative impacts can result from individually minor but

collectively significant actions taking place over a period of time. According to the CEQ's "*Considering Cumulative Effects under the National Environmental Policy Act*," an analysis of cumulative impacts generally includes scoping, identifying reasonably foreseeable actions, describing the effected environment, and determining the environmental consequences.

### **Scoping**

As part of scoping, the cumulative impacts analysis must identify the significant cumulative impacts issues associated with the proposed action. Based on the guidance document titled *Revised Guidance on Preparing Indirect and Cumulative Impact Analyses* (TxDOT, 2010), if a project does not cause direct or indirect impacts on a resource, it would not contribute to a cumulative impact on the resource. The cumulative impact analysis should focus on: 1) those resources substantially impacted by the project; and 2) resources currently in poor or declining health or at risk even if the impact of the TxDOT's proposed action is minimal.

There are no resources that would be substantially impacted by any of the three build alternatives. Additionally, none of the resources in the project area are in poor or declining health. Based on the criteria laid out in TxDOT's guidance, no cumulative impacts analysis is warranted.

### **NO BUILD ALTERNATIVE**

Under the No Build Alternative, no cumulative impacts would be anticipated.

## **10.0 PERMITS, ISSUES AND COMMITMENTS**

### **10.1 WILDLIFE HABITAT AND VEGETATION**

TxDOT would avoid and minimize the amount of vegetation to be removed to the extent practicable for this project. The minimization of impacts to existing vegetation would include the preservation of mature trees, particularly mast species, and timing prep ROW work to occur outside bird nesting season. Locally adapted native species would be used in landscaping and revegetation.

Upon completion of earthwork operations, disturbed areas would be restored and seeded according to TxDOT's Vegetation Management Guidelines and in compliance with the intent of the FHWA Executive Memorandum on Environmentally and Economically Beneficial Landscape Practices and the Executive Order 13112 on Invasive Species. The use of seed mix that contains seeds from only locally adapted native species would be used.

The Migratory Bird Treaty Act of 1918 protects migratory birds, their nests, and eggs. No evidence of migratory birds or their nests were observed within the project area; however, migratory birds may arrive in the project area to breed during construction of the proposed project. Appropriate measures, including the following, would be taken to avoid adverse impacts on migratory birds. Between September 1 and February 28, the DB contractor would complete any necessary vegetation clearing. In addition, the DB contractor would be prepared to prevent migratory birds from building nests between March 1 and August 31, per the Environmental Permits, Issues and Commitments (EPIC) plan sheet. In the event that migratory birds are encountered onsite during project construction, adverse impacts on protected birds, active nests, eggs, and/or young would be avoided.

## 10.2 WATER QUALITY

The proposed project may result in the placement of temporary or permanent dredge or fill material into potentially jurisdictional waters; however, the total amount of fill at each single and complete crossing is estimated to be less than 0.5 acre. A Section 404 Nationwide Permit 14 is anticipated to be required for impacts. A PCN for NWP 14 would be required if wetlands or other special aquatic sites associated were impacted and/or if impacts total greater than 0.1 acre at each crossing. The activities would comply with all general and regional conditions applicable to NWP 14. Once ROW is obtained, an on-site investigation and delineation would be required to accurately characterize the Waters of the U.S. and determine if wetlands are present.

TxDOT would contact the TPWD Transportation Conservation Coordinator to discuss opportunities for mitigation solutions if this project requires compensatory mitigation. TxDOT is not committing to relying solely on the TPWD Transportation Coordinator for potential future compensatory mitigation plans.

The DB contractor would remove silt fences and accumulated sediments upon completion of construction. The DB contractor would minimize impacts to streams and riparian areas during construction. The DB contractor would remove any temporary low water crossings and would restabilize the associated disturbed areas.

## 10.3 THREATENED AND ENDANGERED SPECIES

Habitat for nine state-listed species (Henslow's sparrow, red-cockaded woodpecker, whooping crane [also federally listed], plains spotted skunk, southeastern myotis bat, timber/canebrake rattlesnake, branched gay-feather, Navasota ladies'-tresses [also federally listed] and Texas meadow-rue) was identified as potentially occurring within the proposed ROW. Impacts to these species and their habitat during construction or construction staging activities would be avoided or minimized by limiting disturbance within the right of way to only that which is necessary to construct the proposed project and implementing appropriate BMPs. Once ROW has been acquired, TxDOT would survey all areas for federally listed species and habitat to confirm that the "no take" determinations are justified.

TxDOT will implement the BMPs for bird species as contained in the Best Management Practices Programmatic Agreement between TxDOT and TPWD. These include:

- Not disturbing, destroying or removing active nests, including ground nesting birds, during the nesting season;
- Avoiding the removal of unoccupied, inactive nests, as practicable;
- Preventing the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair;
- Not collecting, capturing, relocating or transporting birds, eggs, young or active nests without a permit.

DB contractors would be advised of the potential for whooping cranes to use portions of the project as potential stopover habitat and their protected status under the ESA would be emphasized. TxDOT does

not believe this project has the potential to “take” this species with respect to the ESA, therefore TxDOT does not commit to supplying a biological monitor for whooping cranes on this project.

TxDOT will implement the BMPs for the Plains Spotted Skunk. DB contractors will be advised of the potential occurrence in the project area, and to avoid harming the species if encountered, and to avoid unnecessary impacts to dens.

TxDOT will implement aspects of the Bridge and Tree Bat BMPs for the Southeastern Myotis Bat. These include:

- Habitat assessment by a qualified biologist to determine if bats are present.
- If bats are present, take appropriate measures as practicable to ensure that bats are not harmed such as exclusion or timing activities. For maternity colonies, exclusion activities should be timed to avoid separating lactating females from nursing pups.
- If structures 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.
- Large hollow trees shall be surveyed for maternity colonies, and if found, should not be disturbed until after the pups fledge.

TxDOT will implement the BMPs for the Timber/Canebrake Rattlesnake. DB contractors will be advised of the potential occurrence in the project area and to avoid harming the species if encountered.

The DB contractor would be directed to use hydromulching and/or hydroseeding on the project where appropriate field conditions warrant the use. The General Notes would include the following statement in case hydromulching/hydroseeding cannot be used in certain areas: With approval from the Engineer, other soil retention blankets may be chosen from the TxDOT approved list if they do not contain plastic netting or if they contain netting, it must be loosely woven, natural fiber netting.

In accordance with TPWD regulations, if any individuals of state-listed species are encountered during construction, care would be taken to avoid direct harm.

The SH 249 project does not have a federal nexus; therefore, consultation under Section 7 of the ESA is not required this project. Federally listed threatened or endangered plants are protected under Section 9 of the ESA; however, the prohibitions applicable to listed plants are more limited than those applicable to listed fish or wildlife species. There is no prohibition against the removal of listed plants from state-owned right-of-way as needed to construct a highway project in Texas.

Although the Navasota Ladies'-tresses has the potential to occur within the project area, TxDOT does not plan to conduct presence/absence surveys for this species. However, should Navasota Ladies'-tresses be found within the project area during construction, TxDOT will coordinate with TPWD and determine appropriate conservation measures. TxDOT will avoid and minimize impacts to listed species and their habitat as practicable during the construction of the SH 249 project.

TxDOT commits to facilitating TPWD access to the project site during the appropriate season for the purposes of collection and relocation activities for the Texas meadow-rue and branched gay-feather during January – May and July – October, respectively. Due to the complexity of the project planning and environmental due diligence process it is not feasible for TxDOT to actively seek out these opportunities for TPWD. However, TPWD can contact TxDOT during these time periods and TxDOT would facilitate access as practicable. TxDOT is working with the procurement team to write into the contract that the DB contractor would notify the TPWD point of contact when opportunities arise to get out onto the project site.

TxDOT commits to submitting observations and associated data of tracked animal and plant species to TXNDD via the reporting form and instructions found at [http://tpwd.texas.gov/huntwild/wild/wildlife\\_diversity/txndd/submit.phtml](http://tpwd.texas.gov/huntwild/wild/wildlife_diversity/txndd/submit.phtml) or by email to [TexasNatural.DiversityDatabase@tpwd.texas.gov](mailto:TexasNatural.DiversityDatabase@tpwd.texas.gov) (include date, coordinates, photos (if available), and brief description of observation). TXNDD staff may contact TxDOT for further information, if necessary.

#### **10.4 ARCHEOLOGICAL RESOURCES**

Upon ROW acquisition, an archeological survey shall be completed for portions of the selected alignment that have not been subject to prior review. The DB Contractor shall not conduct any construction, staging, storage, or ground disturbing activity of any kind within the limits of unsurveyed property without the approval of TxDOT’s Environmental Affairs Division. In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area shall cease, and TxDOT archeological staff shall be contacted to initiate post-review discovery procedures under the provisions of the MOU between TxDOT and the THC. The DB Contractor shall undertake appropriate measures to protect the site from further impact until an evaluation of the site can be made by a qualified representative of the State. Work shall not be resumed in the area until the Developer receives notification and approval from TxDOT.

#### **10.5 HAZARDOUS MATERIALS**

Any unanticipated hazardous materials and/or petroleum contamination encountered during construction would be handled according to applicable federal and state regulations per TxDOT Standard Specifications. Section 6.10 of the “General Provisions of the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges,” which applies to all highway projects, includes guidelines addressing the DB contractor’s responsibilities regarding the discovery of hazardous materials.

#### **10.6 CONSTRUCTION PHASE IMPACTS**

The DB contractor would observe proper maintenance and idling of construction equipment to control emissions of particulate matter. The DB contractor would control the generation of dust by site watering.

Disruptions would be minimized to the extent possible by the timely notification of affected residents through posted notices, personal contact, or other notification procedures. These procedures could include rerouting the traffic, barricading, using traffic cones, or any other measures deemed necessary and

prudent by TxDOT and the construction DB contractor to comply with all local, state, and federal traffic and safety regulations.

Signage and barrier placement should be alert to the inevitable reordering of travel patterns, both during construction and in the long term. During construction, procedures discussed in **Section 8.3.4** to minimize traffic congestion, noise, dust and risk to public safety should be specifically adapted to the circumstances of the proposed project.

Provisions would be included in the plans and specifications that require the DB contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

For all work in waters listed in the distribution of Zebra mussels, all machinery, equipment, or vehicles coming in contact with such waters would follow clean/drain/dry protocols. Care would be taken to avoid the spread of aquatic invasive plants from infested water bodies into areas not currently infested. All machinery, equipment, or vehicles coming in contact with such waters would follow clean/drain/dry protocols.

If using hay bales for sediment control use locally grown weed-free hay and leave them in place to break down naturally.

The DB contractor would span channels where possible. Designers would be encouraged to develop a span wide enough to cross the stream and allow for dry ground and a natural surface path under the roadway.

The DB contractor would place riprap so as not to impede aquatic and terrestrial wildlife movement. The DB contractor would avoid disturbing riparian buffer zones. The design would incorporate bat-friendly designs into bridges and culverts.

## **11.0 PUBLIC INVOLVEMENT**

The first public meeting was held on October 29, 2013, at the Grimes County Expo Center located at 5220 FM 3455 in Navasota. The purpose of the first public meeting was to gather public input on the SH 249 study area, environmental constraints and possible route alternatives. TxDOT did not present any design alternatives at this meeting. The Notice of Public Meeting was published on October 2, 2013, and October 19, 2013, in the Navasota Examiner and on September 30, 2013, and October 19, 2013, in the Bryan Eagle newspapers. The public meeting was held, from approximately 5:30 p.m. to 7:30 p.m. in an open house format. Over 230 individuals signed in at the Public Meeting. A brief presentation addressing common concerns voiced by meeting attendees was made by Bob Appleton, Transportation Planning and Development Engineer, TxDOT Bryan District, at 6:30 p.m. Common concerns were collected during one-on-one conversations and using flip charts located next to exhibits. The public was encouraged to ask questions and make comments. All verbal questions and comments were immediately responded to at the meeting. Twenty public meeting comment forms and three letters were submitted at the public meeting and fifteen comment forms, two letters and four e-mails were submitted after the public meeting.

The comment form asked the question, “Are you in support of this project?” Meeting attendees had the opportunity to answer “yes,” “no” or “undecided.” A majority of the respondents (66%) marked that they did not support the project. Detailed question results can be seen below:

Yes	4	11%
No	23	66%
Undecided	5	14%
No Response	3	9%
<b>Total Commenters</b>	<b>35</b>	<b>100%</b>

It should be noted that one of the comment forms responding “no” to the question of support had a petition with 109 signatures attached to it. Written opposition to the project would increase to 92% if each signature is counted as a “no” in response to the question of support.

Of the comments submitted, four common themes emerged:

1. Many commenters asked where the proposed roadway would be located.
2. Improvements to existing roads (FM 1774 and SH 105) were suggested as an alternative to a new-location roadway.
3. Tolling of the proposed project was a concern to many commenters.
4. Commenters expressed concern about the acquisition of right-of-way from private property, community impacts and access relating to a new location alternative.

The second public meeting was held on April 3, 2014, at the Grimes County Expo Center located at 5220 FM 3455 in Navasota. The purpose of the meeting was to present project alternatives, including the TxDOT-recommended alternative, and gather public input on the SH 249 project. The Notice of Public Meeting was published on March 12, 2014, and March 26, 2014, in the Navasota Examiner and on March 13, 2014, and March 26, 2014, in the Bryan Eagle newspapers. In addition, postcards providing information about the meeting were mailed to approximately 23,000 Grimes County residents and business property owners and over 700 copies of a meeting flier were distributed to 15 different community locations.

The public meeting was held from approximately 5:30 p.m. to 7:30 p.m. Almost 400 individuals signed in at the Public Meeting. The first hour of the meeting was conducted in an open house format. At 6:30 p.m., a brief presentation describing the project alternatives and TxDOT’s recommended alternative as well as addressing common concerns voiced by meeting attendees was made by Bob Appleton, Transportation Planning and Development Engineer, TxDOT Bryan District. Common concerns were collected during one-on-one conversations and using flip charts located next to exhibits. Following the presentation, an opportunity was provided for individuals to make comments and ask questions about the project. Spanish interpretation of the presentation and comment session was provided and seven people utilized the Spanish translation services. Twenty-four people completed speaker registration cards; however, only 21 people asked questions and/or made oral comments during the meeting’s comment period.

Twenty-seven public meeting comment forms were submitted at the public meeting and six comment forms were submitted after the public meeting. The comment form asked the question, “Are you in support of this project?” Meeting attendees had the opportunity to answer “yes,” “no” or “undecided.” A majority of the respondents (67%) marked that they did not support the project. Detailed question results can be seen below:

**“Are you in support of this project?”**

Yes	7	21%
No	22	67%
Undecided	3	9%
No Response	1	3%
<b>Total Commenters</b>	<b>33</b>	<b>100%</b>

Although some commenters stated support for the proposed project, the majority of comments received expressed opposition to the project. Common reasons for opposition included impacts to private property, opposition to tolling, impacts to the quality of life in this rural community, environmental impacts including loss of vegetation and wildlife habitat, lack of frontage roads, little perceived benefit to Grimes County residents, and unnecessary use of limited public funds.

In summary, the majority of the commenters from both public meetings (66%) are opposed to the proposed project. Detailed question results can be seen below:

**“Are you in support of this project?”**

	Public Meeting 1	Public Meeting 2	Combined Response
Yes	4 (11%)	7 (21%)	11 (16%)
No	23 (66%)	22 (67%)	45 (66%)
Undecided	5 (14%)	3 (9%)	8 (12%)
No Response	3 (9%)	1 (3%)	4 (6%)
<b>Total Commenters</b>	<b>35</b>	<b>33</b>	<b>68</b>

Reports summarizing both public meetings are available for review at the TxDOT Bryan District Office.

A public hearing was held on June 30, 2016, at the Navasota Junior High School. The hearing began at 5:30 pm with an open house where attendees could review project exhibits, layouts and other information. At 6:30pm TxDOT opened the formal portion of the hearing with a presentation followed by public comment. Two alternative options, the Green Alternative and the Yellow Alternative, were presented at the hearing. Approximately 213 people signed in at the hearing and 19 people provided verbal comments. Spanish translation services were available at the hearing, but were not required by any of the attendees. Twenty-five comment forms and multiple letters and e-mails were received from 54 individuals during the comment period which expired on July 14, 2016. Documentation of the public hearing is available for review at the TxDOT Bryan District Office.

## 12.0 RECOMMENDATION FOR ALTERNATIVE SELECTION AND FINDING OF NO SIGNIFICANT IMPACT (FONSI)

The three build alternatives were evaluated on their ability to meet the project purpose and need as well as their individual impacts on the project area environment. For the following categories, there was no statistically measureable difference between the three build alternatives:

- Limited English Proficiency
- Bicycle and Pedestrian Access
- Community Impacts
- Environmental Justice
- Historical Resources
- Air Quality
- Threatened and Endangered Species
- Migratory Birds
- Noise
- Hazardous Materials
- Indirect and Cumulative Impacts
- Permits, Issues and Commitments

Table 17 shows the different environmental components where there were differences between the three build alternatives.

**Table 17: Build Alternatives Evaluation Matrix**

Component	Unit	Build Alternatives		
		Blue	Green	Yellow
<b>Estimated Construction Cost</b>	Millions of Dollars	164.7	164.9	170.4
<b>Length of Proposed Roadway</b>	Miles	10.1	9.9	10.4
<b>Estimated Right-of-Way Acquisition</b>	Acres	629	623	658
<b>Relocations</b>	Number of Relocations	0	0	0
<b>Affected Parcels</b>	Number of Parcels	38	35	40
<b>Cemeteries</b>	Number of Cemeteries	1	0	0
<b>Vegetation Impacts</b>	Acres of Impact	113.0	112.3	118.7
<b>Stream Crossings</b>	Number of Crossings	12	13	13
<b>Stream Impacts</b>	Linear Feet of Streams	12,995	10,277	11,353
<b>Floodplain Crossings</b>	Acreage	11.0	11.9	15.7

All three build alternatives were determined to meet the purpose and need of the proposed SH 249 project as well as the project objectives. The Blue Alternative would impact one cemetery, the full extent of which is not known at this time, and the most linear feet of streams and was therefore eliminated from consideration.

Of the remaining two alternatives, the Yellow Alternative had the highest cost and highest impacts related to project length, ROW acquisition, affected parcels, vegetation impacts, stream impacts and floodplain crossings. The Green Alternative would cost \$5.5M less to construct than the Yellow Alternative and has fewer impacts related to project length, ROW acquisition, affected parcels, vegetation impacts, stream impacts and floodplain crossings.

Based on this environmental analysis and project administrative record, TxDOT has selected the Green Alternative for construction.

The engineering, social, economic, and environmental investigations conducted thus far on the proposed construction of SH 249 in Grimes County, indicate that the proposed project would result in no significant impacts of a level that would warrant an Environmental Impact Statement. Alternative selection was finalized after completion of the public review period, which included a public hearing. No significant impacts were identified as a result of public review and a Finding of No Significant Impact (FONSI) has been prepared for the proposed project.

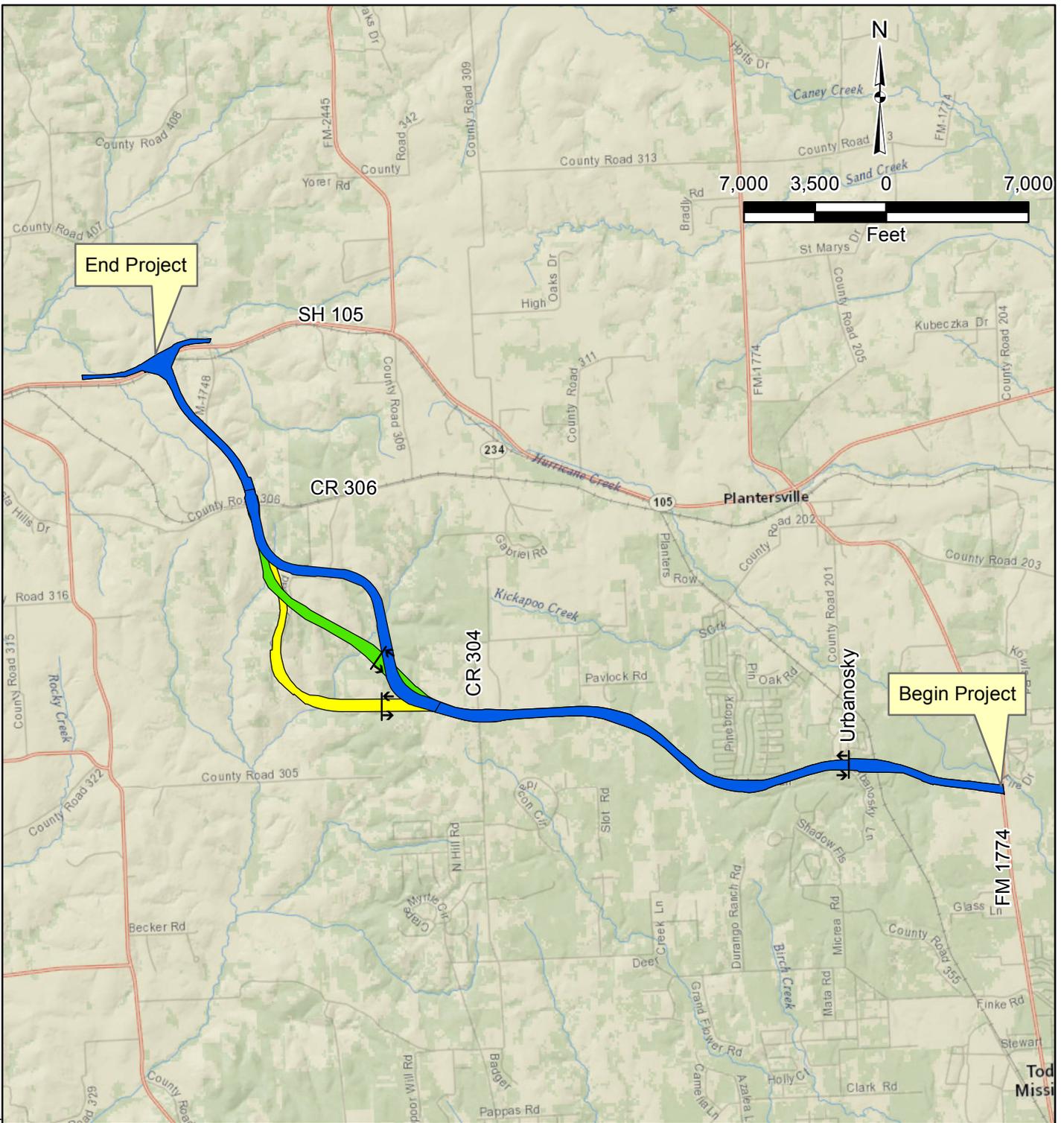
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## ACRONYMS

<b>ACS-</b> American Community Survey	<b>NAAQS-</b> National Ambient Air Quality Standard
<b>ACT-</b> Antiquities Code of Texas	<b>NAC-</b> Noise Abatement Criteria
<b>ADT-</b> Average Daily Traffic	<b>NATA-</b> National Air Toxics Assessment
<b>AOI-</b> Area of Influence	<b>NCHRP-</b> National Cooperative Highway Research Program
<b>APE-</b> Area of Potential Effect	<b>NDD-</b> Natural Diversity Database
<b>ASTM-</b> American Society for Testing and Materials	<b>NEPA-</b> National Environmental Policy Act
<b>BG-</b> Block Group	<b>NFIP-</b> National Flood Insurance Program
<b>BMP-</b> Best Management Practice	<b>NHPA-</b> National Historic Preservation Act
<b>CAAA-</b> Clean Air Act Amendments	<b>NOI-</b> Notice of Intent
<b>CEQ-</b> Council on Environmental Quality	<b>NOV-</b> National Oilwell Varco
<b>CGP-</b> Construction General Permit	<b>NOx-</b> Nitrogen Oxides
<b>CMP-</b> Congestion Management Process	<b>NRHP-</b> National Register of Historic Places
<b>CO-</b> Carbon Monoxide	<b>NWI-</b> National Wetland Inventory
<b>CR-</b> County Road	<b>NWP-</b> Nationwide Permit
<b>DB-</b> Design/Build	<b>PCN-</b> Preconstruction Notification
<b>DHHS-</b> Department of Health and Human Services	<b>PM-</b> Particulate Matter
<b>EA-</b> Environmental Assessment	<b>ROW-</b> Right-of-way
<b>EIS-</b> Environmental Impact Statement	<b>SGCN-</b> Species of Greatest Conservation Need
<b>EMST-</b> Ecological Mapping System of Texas	<b>SH-</b> State Highway
<b>EO-</b> Executive Order	<b>SHPO-</b> State Historic Preservation Officer
<b>EPA-</b> Environmental Protection Agency	<b>SW3P-</b> Storm Water Pollution Prevention Plan
<b>EPIC-</b> Environmental Permits Issues and Commitments	<b>TAC-</b> Texas Administrative Code
<b>FEMA-</b> Federal Emergency Management Agency	<b>TAQA-</b> Traffic Air Quality Analysis
<b>FHWA-</b> Federal Highway Administration	<b>THC-</b> Texas Historic Commission
<b>FM-</b> Farm to Market Road	<b>TCEQ-</b> Texas Commission on Environmental Quality
<b>FONSI-</b> Finding of No Significant Impact	<b>TIP-</b> Transportation Improvement Program
<b>HEI-</b> Health Effects Institute	<b>TPDES-</b> Texas Pollution Discharge and Elimination System
<b>IH –</b> Interstate Highway	<b>TPWD-</b> Texas Parks and Wildlife Department
<b>IRIS-</b> Integrated Risk Information System	<b>TSS-</b> Total Suspended Solids
<b>ISA-</b> Initial Site Assessment	<b>TxDOT-</b> Texas Department of Transportation
<b>LEP-</b> Limited English Proficiency	<b>UPRR-</b> Union Pacific Railroad
<b>MBTA-</b> Migratory Bird Treaty Act	<b>USACE-</b> U.S. Army Corps of Engineers
<b>MOU-</b> Memorandum of Understanding	<b>USFWS-</b> U.S. Fish and Wildlife Service
<b>MPO-</b> Metropolitan Planning Organization	<b>USGS-</b> U.S. Geological Survey
<b>MSAT-</b> Mobile Source Air Toxics	<b>VMT-</b> Vehicle Miles Traveled
<b>MS4-</b> Municipal Separate Storm Sewer System	<b>VOC-</b> Volatile Organic Compounds
<b>MTP-</b> Metropolitan Transportation Plan	<b>VPD-</b> Vehicles per Day

# **Exhibits A-E**



J:\1086.001\006\07.00 CADD\SH 249\GIS\A Vic Map.mxd



**Legend**

-  Alternatives
-  Limits of Frontage Roads
-  Roads

klotz  associates

**Project Location Map**

SH 249 In Grimes County

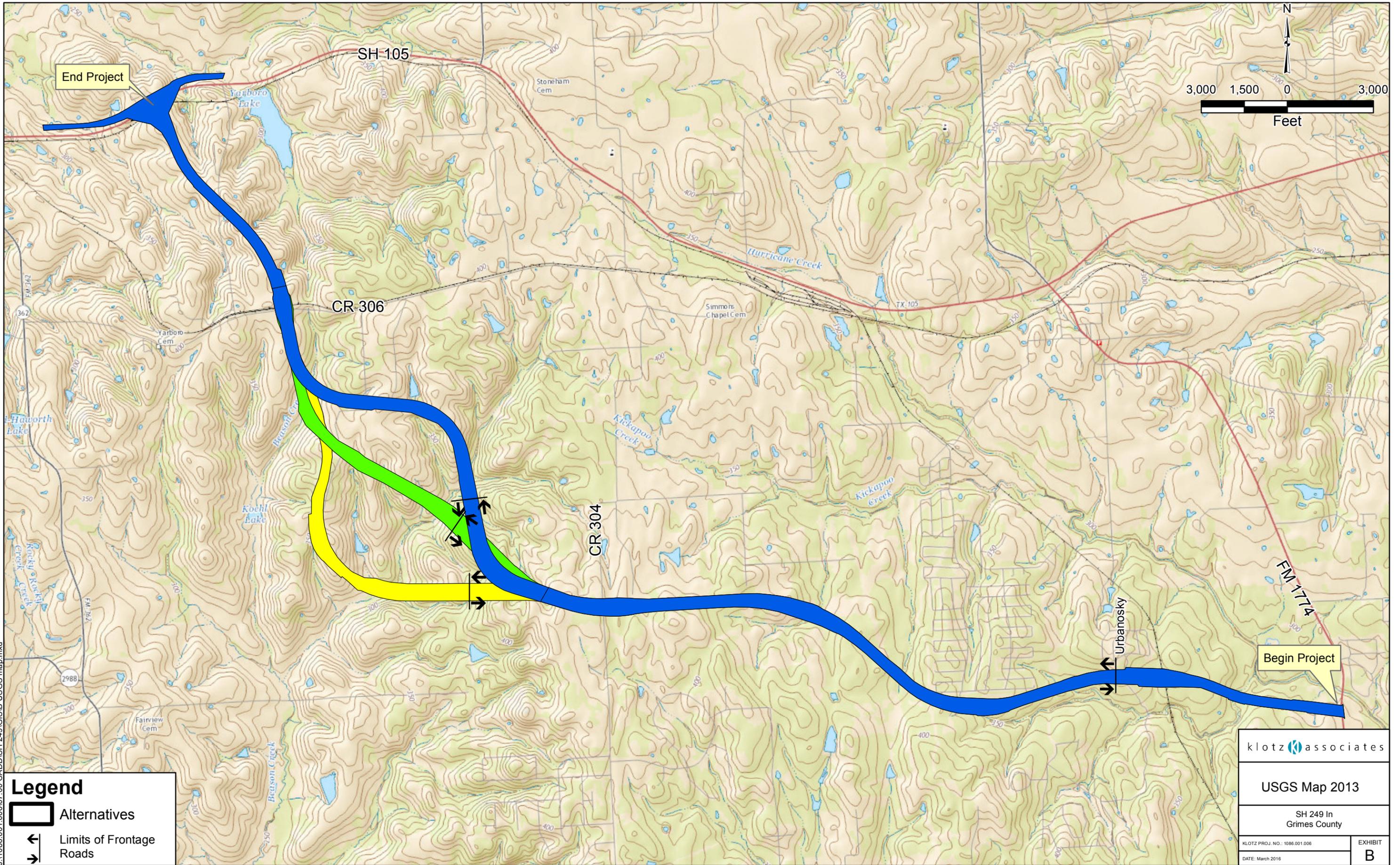
KLOTZ PROJ. NO.: 1086.001.006

DATE: March 2016

EXHIBIT

**A**

Source: National Geographic



End Project

SH 105

CR 306

CR 304

FM 1774

Begin Project

Urbanosky

**Legend**

- Alternatives
- Limits of Frontage Roads
- Roads

klotz associates

USGS Map 2013

SH 249 In  
Grimes County

KLOTZ PROJ. NO.: 1086.001.008

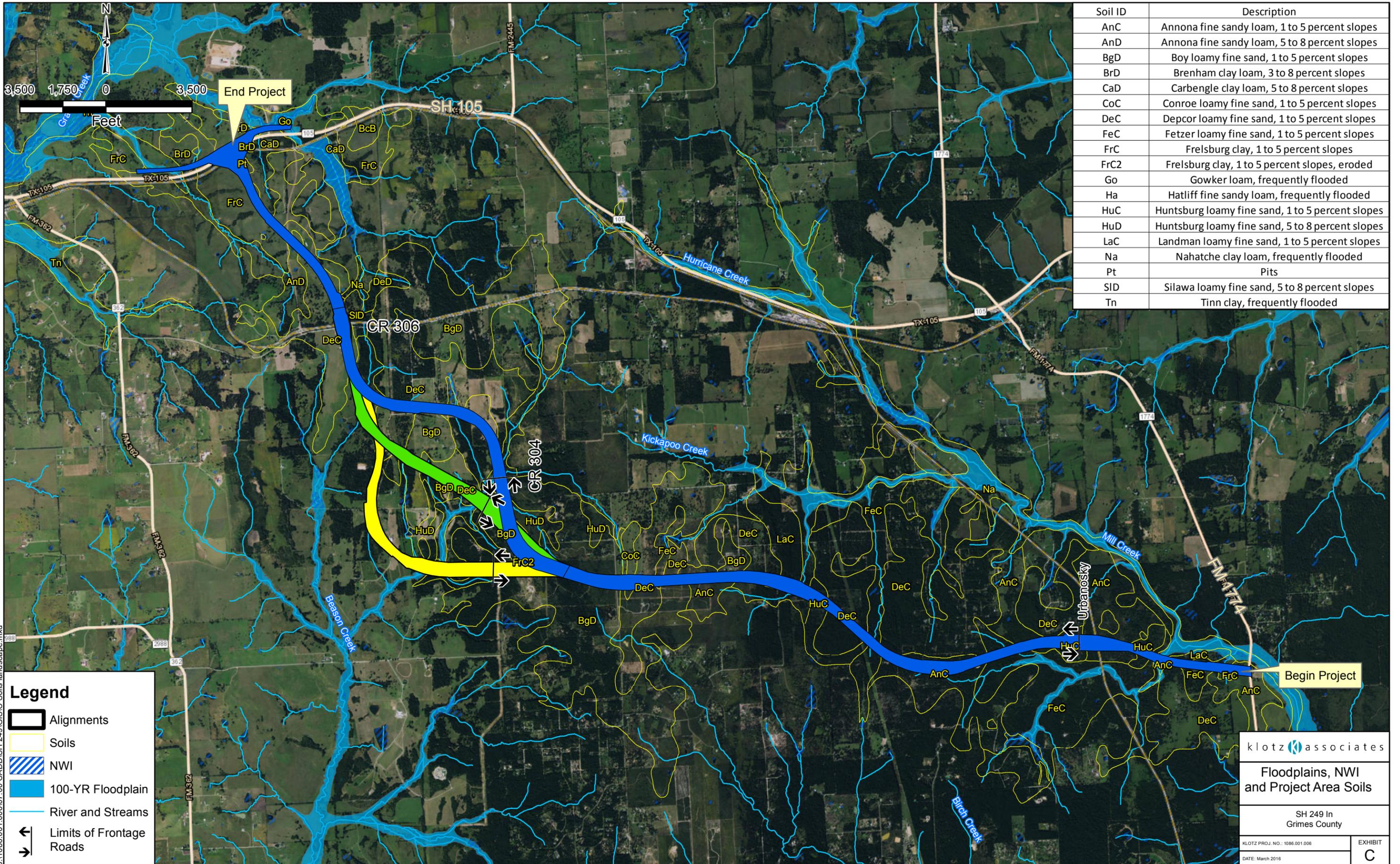
DATE: March 2016

EXHIBIT

B

J:\1086.001.006\07.00 CADD\SH 249\GIS\B USGS map.mxd

Source: USGS (2013)



Soil ID	Description
AnC	Annona fine sandy loam, 1 to 5 percent slopes
AnD	Annona fine sandy loam, 5 to 8 percent slopes
BgD	Boy loamy fine sand, 1 to 5 percent slopes
BrD	Brenham clay loam, 3 to 8 percent slopes
CaD	Carbangle clay loam, 5 to 8 percent slopes
CoC	Conroe loamy fine sand, 1 to 5 percent slopes
DeC	Depcor loamy fine sand, 1 to 5 percent slopes
FeC	Fetzer loamy fine sand, 1 to 5 percent slopes
FrC	Frelsburg clay, 1 to 5 percent slopes
FrC2	Frelsburg clay, 1 to 5 percent slopes, eroded
Go	Gowker loam, frequently flooded
Ha	Hatliff fine sandy loam, frequently flooded
HuC	Huntsburg loamy fine sand, 1 to 5 percent slopes
HuD	Huntsburg loamy fine sand, 5 to 8 percent slopes
LaC	Landman loamy fine sand, 1 to 5 percent slopes
Na	Nahatche clay loam, frequently flooded
Pt	Pits
SID	Silawa loamy fine sand, 5 to 8 percent slopes
Tn	Tinn clay, frequently flooded

**Legend**

- Alignments
- Soils
- NWI
- 100-YR Floodplain
- River and Streams
- Limits of Frontage Roads

klotz associates

**Floodplains, NWI and Project Area Soils**

SH 249 In Grimes County

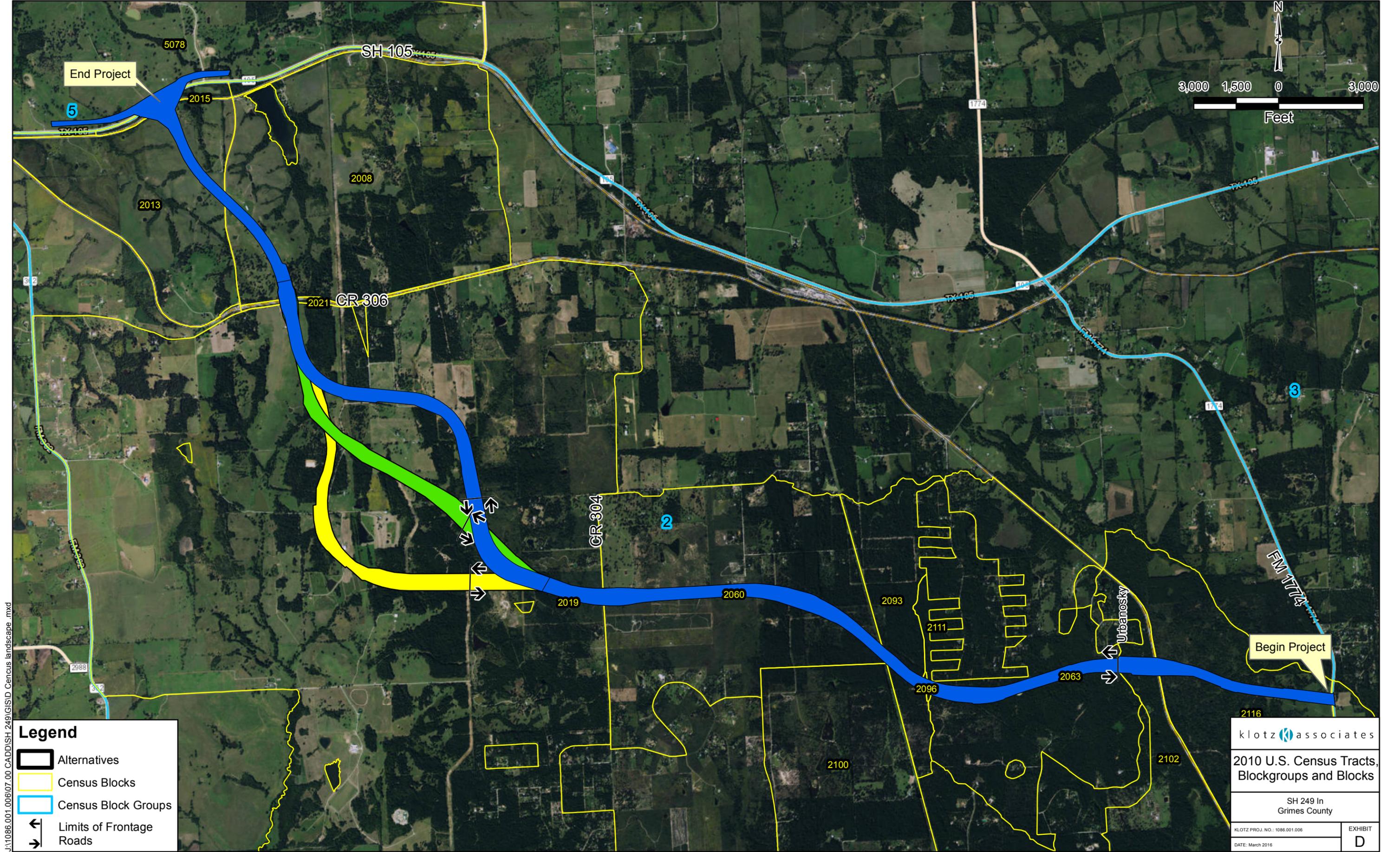
KLOTZ PROJ. NO.: 1086.001.008

DATE: March 2016

EXHIBIT **C**

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Source: ESRI Aerial (2012), Web Soil Survey (2010)



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**Legend**

- Alternatives
- Census Blocks
- Census Block Groups
- Limits of Frontage Roads
- Roads

klotz associates  
 2010 U.S. Census Tracts,  
 Blockgroups and Blocks  
 SH 249 In  
 Grimes County  
 KLOTZ PROJ. NO.: 1086.001.006  
 DATE: March 2016

EXHIBIT	D
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Source: ESRI Aerial (2012), Census (2010)



J:\1086.001.006\07.00\_CADD\SH 249\GIS\IE Land Use map - Copy.mxd

- Legend**
- Alternatives
  - Area of Unfluence
  - Open Water
  - Developed Open Space
  - Developed
  - Barren Land
  - Forest
  - Shrub/Scrub Land
  - Herbaceous
  - Hay/Pasture
  - Cultivated Crops
  - Wetlands
  - Limits of Frontage Roads

Source: NLCD (2011)

klotz associates

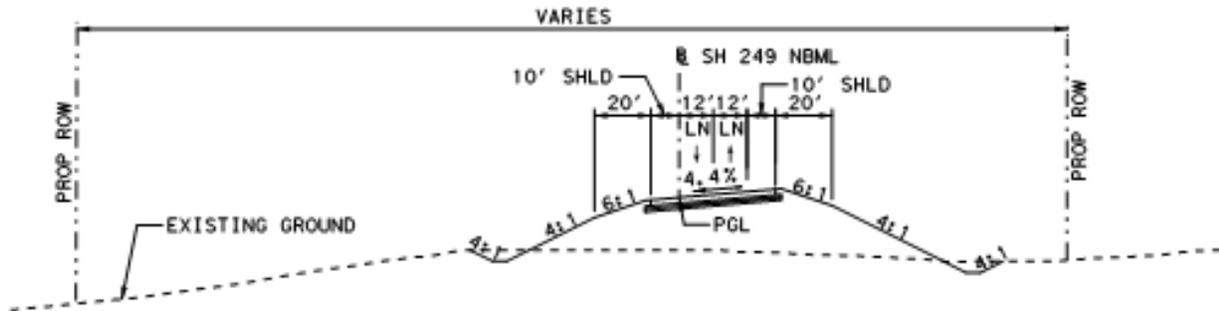
Area of Influence  
2011 NLCD  
(National Land Cover Dataset)

SH 249 In  
Grimes County

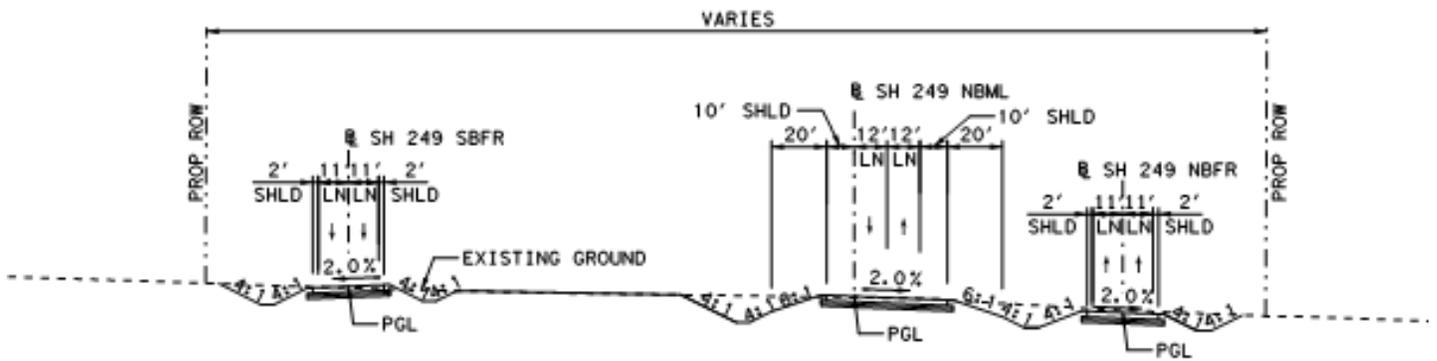
KLOTZ PROJ. NO.: 1086.001.006	EXHIBIT
DATE: March 2016	E

**Appendix A**  
**Project Typical Sections**

## SH 249 Proposed Typical Sections



Typical Section – No Frontage Roads



Typical Section – Frontage Roads

# **Appendix B**

## **Planning Documents**

# 2015 Unified Transportation Program

# Bryan

Project Listing  
Page 20 of 47

CSJ District GRIMES MPO City CR Letting FY  
0917-17-058 BRYAN COUNTY 2016

Limits From ON CR 297 (LOCAL ROAD 162)

Limits To AT THE NAVASOTA RIVER RELIEF

Ranking Tier 1

Project Description REPLACE EXISTING BRIDGE FACILITY CONSISTING OF GRADING, STRUCTURES, BASE AND SURFACE

Total Project Cost Information		Category	Description	Programmed Funding			Total
<i>INFORMATIONAL PURPOSES ONLY</i>				Authorized	Other	Local	
Preliminary Engineering	\$25,985	6	BRIDGE PROGRAM	\$500,000	\$0	\$0	\$500,000
ROW & Utilities	\$0						
Construction	\$530,298		<b>Total</b>	\$500,000	\$0	\$0	\$500,000
Construction Engineering	\$39,507						
Contingencies	\$0						
Indirect Costs	\$25,613						
Potential Change Orders	\$12,674						
<b>Total Project Cost</b>	<b>\$634,077</b>						

CSJ District GRIMES MPO City CR Letting FY  
0917-17-062 BRYAN COUNTY 2016

Limits From ON CR 182 (MILL CREEK RUN)

Limits To AT YORKE CREEK

Ranking Tier 1

Project Description REPLACE EXISTING BRIDGE FACILITY CONSISTING OF GRADING, STRUCTURES AND BASE

Total Project Cost Information		Category	Description	Programmed Funding			Total
<i>INFORMATIONAL PURPOSES ONLY</i>				Authorized	Other	Local	
Preliminary Engineering	\$20,919	6	BRIDGE PROGRAM	\$400,000	\$0	\$0	\$400,000
ROW & Utilities	\$0						
Construction	\$426,909		<b>Total</b>	\$400,000	\$0	\$0	\$400,000
Construction Engineering	\$31,805						
Contingencies	\$0						
Indirect Costs	\$20,620						
Potential Change Orders	\$10,203						
<b>Total Project Cost</b>	<b>\$510,455</b>						

CSJ District GRIMES MPO City VA Letting FY  
0917-17-069 BRYAN COUNTY 2016

Limits From FM 1774 SOUTH OF PLANTERSVILLE

Limits To SH 6 SOUTH OF NAVASOTA

Ranking Tier 3

Project Description DETERMINE LOCATION AND SCOPE OF SH 249 CORRIDOR

Total Project Cost Information		Category	Description	Programmed Funding			Total
<i>INFORMATIONAL PURPOSES ONLY</i>				Authorized	Other	Local	
Preliminary Engineering	\$9,310,000	3	TMF	\$100,000,000	\$0	\$0	\$100,000,000
ROW & Utilities	\$0			<i>Remaining Funding to be Determined</i>			
Construction	\$190,000,000		<b>Total</b>	\$100,000,000	\$0	\$0	\$100,000,000
Construction Engineering	\$9,291,000						
Contingencies	\$2,147,000						
Indirect Costs	\$9,177,000						
Potential Change Orders	\$7,904,000						
<b>Total Project Cost</b>	<b>\$227,829,000</b>						

STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM  
TXDOT BRYAN DISTRICT - HIGHWAY PROJECTS  
FY 2016

2015-2018 STIP		11/2015 Revision: Pending Approval						
DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST	
BRYAN		WALKER	0917-27-045	VA	C,E	OTHER	\$ 2,981,605	
LIMITS FROM IN HUNTSVILLE							PROJECT SPONSOR	
LIMITS TO ON SH 75, FM 1374, AND LAKE RD							REVISION DATE	11/2015
PROJECT MISCELLANEOUS WORK CONSISTING OF THE CONSTRUCTION OF ADA COMPLIANT SIDEWALKS, C/J							MPO PROJ NUM	
DESCR RB RAMP AND DRIVEWAY APRONS							FUNDING CAT(S)	
REMARKS ON SH 75 (0110-01), FM 1374 (0578-03), & LAKE RD		PROJECT HISTORY						
P7								
TOTAL PROJECT COST INFORMATION			AUTHORIZED FUNDING BY CATEGORY/SHARE					
PREL ENG \$	131,658	CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
ROW PURCH \$	0	9TAP	\$ 2,385,284	\$ 0	\$ 0	\$ 596,321	\$ 0	\$ 2,981,605
CONSTR \$	2,686,907	TOTAL	\$ 2,385,284	\$ 0	\$ 0	\$ 596,321	\$ 0	\$ 2,981,605
CONST ENG \$	171,424	COST OF APPROVED PHASES						
CONTING \$	34,661	\$ 2,981,605						
INDIRECT \$	0							
BOND FIN \$	0							
PT CHG ORD \$	0							
TOTAL CST \$	3,024,650							

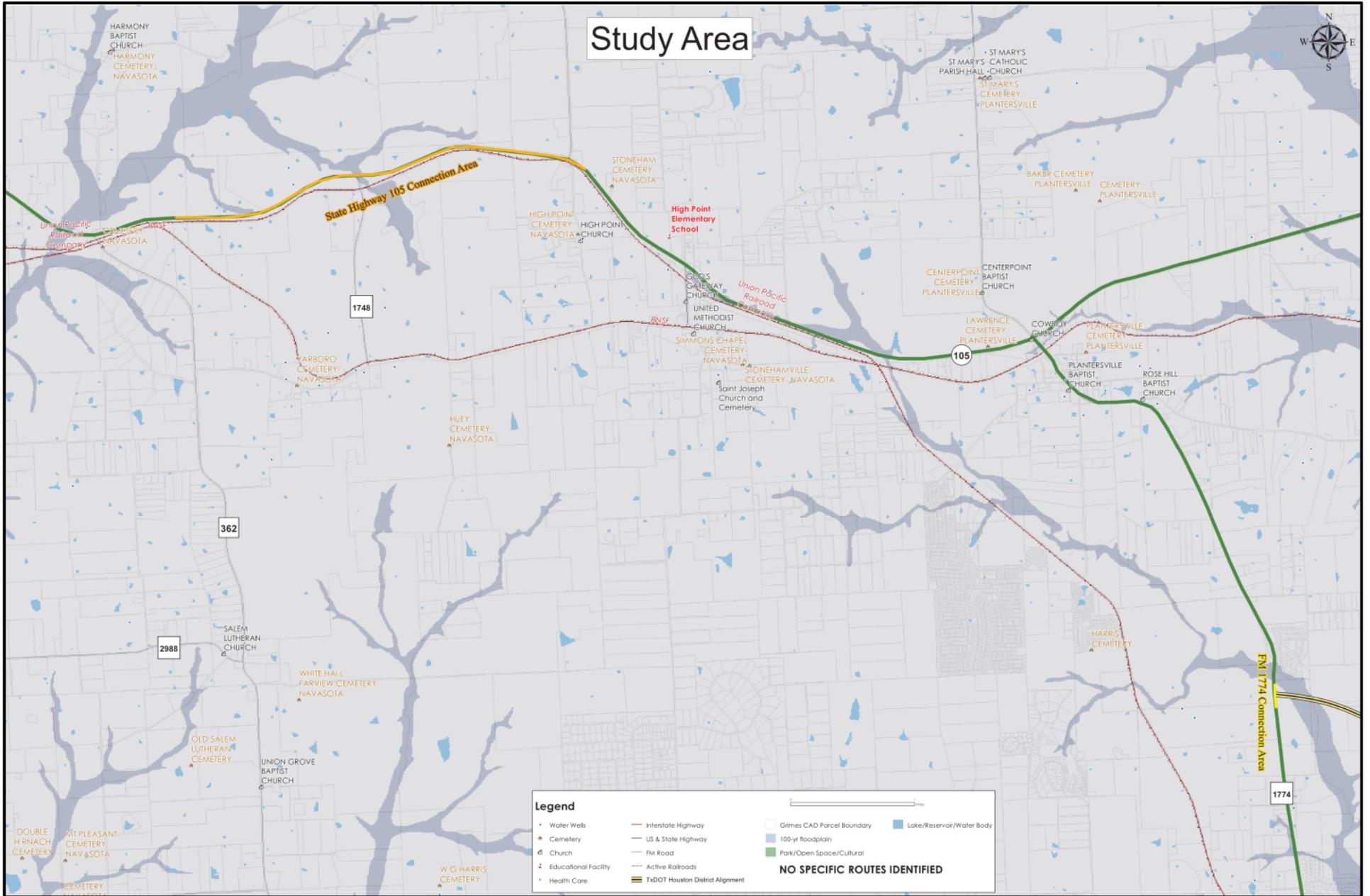
  

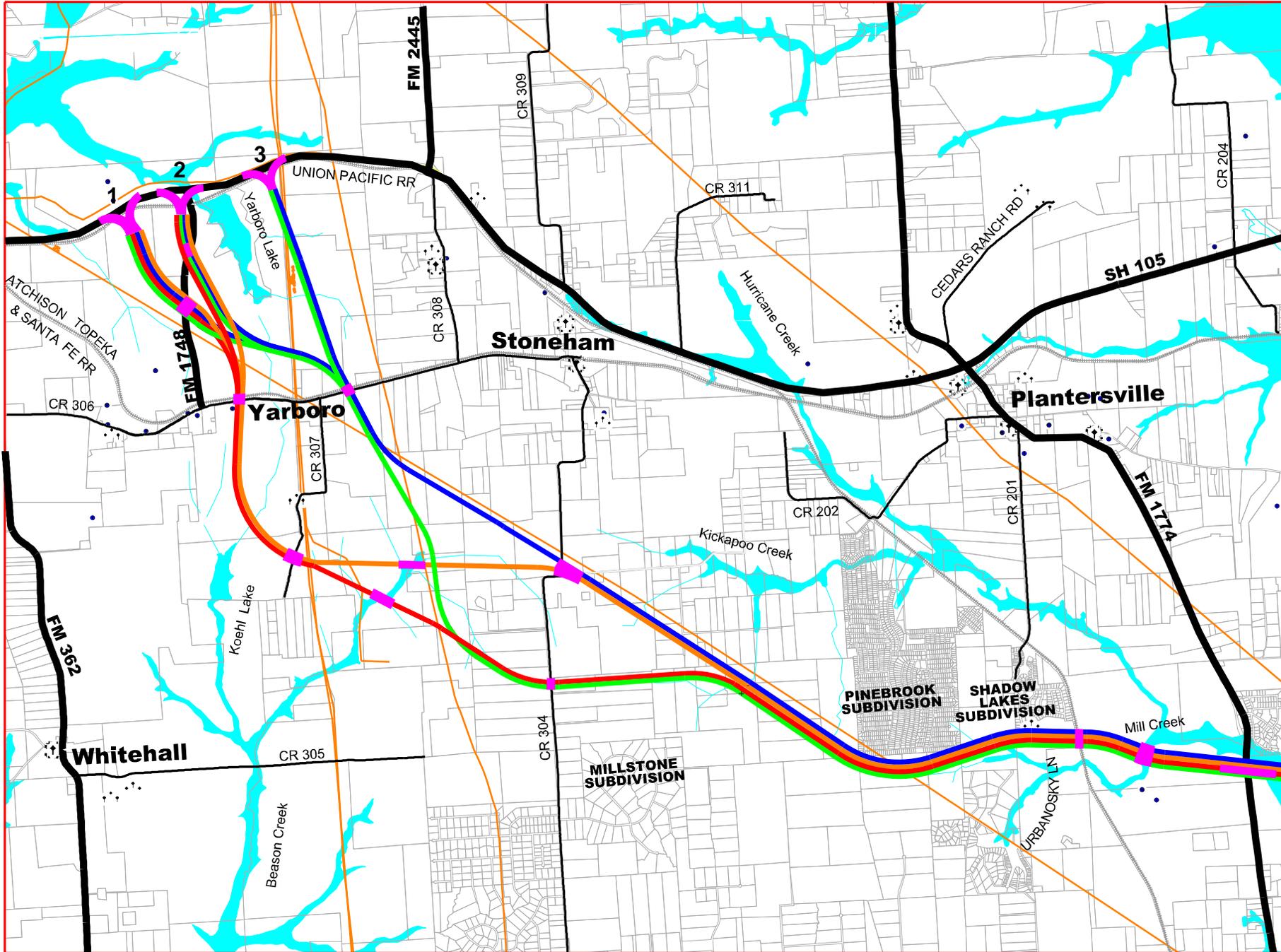
2015-2018 STIP		11/2015 Revision: Pending Approval						
DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST	
BRYAN		GRIMES	3635-02-001	SH 249	C,E	OTHER	\$ 46,100,000	
LIMITS FROM Montgomery County Line							PROJECT SPONSOR	
LIMITS TO FM 1774 in Todd Mission							REVISION DATE	11/2015
PROJECT CONSTRUCT 4 LANE TOLLWAY (REDESIGNATE NL TO GRIMES COUNTY)							MPO PROJ NUM	
DESCR							FUNDING CAT(S)	
REMARKS		PROJECT HISTORY						
P7								
TOTAL PROJECT COST INFORMATION			AUTHORIZED FUNDING BY CATEGORY/SHARE					
PREL ENG \$	2,340,978	CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
ROW PURCH \$	0	3RTR	\$ 0	\$ 46,100,000	\$ 0	\$ 0	\$ 0	\$ 46,100,000
CONSTR \$	43,759,022	TOTAL	\$ 0	\$ 46,100,000	\$ 0	\$ 0	\$ 0	\$ 46,100,000
CONST ENG \$	2,183,320	COST OF APPROVED PHASES						
CONTING \$	3,955,775	\$ 46,100,000						
INDIRECT \$	0							
BOND FIN \$	0							
PT CHG ORD \$	2,809,173							
TOTAL CST \$	52,239,095							

2015-2018 STIP		11/2015 Revision: Pending Approval						
DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST	
BRYAN		GRIMES	3635-02-002	SH 249	C,E	OTHER	\$ 100,000,000	
LIMITS FROM FM 1774							PROJECT SPONSOR	
LIMITS TO SH 105							REVISION DATE	11/2015
PROJECT NEW LOCATION NON-FREEWAY FACILITY							MPO PROJ NUM	
DESCR							FUNDING CAT(S)	
REMARKS		PROJECT HISTORY						
P7								
TOTAL PROJECT COST INFORMATION			AUTHORIZED FUNDING BY CATEGORY/SHARE					
PREL ENG \$	5,078,044	CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
ROW PURCH \$	0	3TMF	\$ 0	\$ 100,000,000	\$ 0	\$ 0	\$ 0	\$ 100,000,000
CONSTR \$	94,921,956	TOTAL	\$ 0	\$ 100,000,000	\$ 0	\$ 0	\$ 0	\$ 100,000,000
CONST ENG \$	5,078,044	COST OF APPROVED PHASES						
CONTING \$	1,295,419	\$ 100,000,000						
INDIRECT \$	0							
BOND FIN \$	0							
PT CHG ORD \$	5,658,391							
TOTAL CST \$	106,373,463							

**Appendix C**  
**Alternative Analysis Exhibits 1-10**  
**Reasonable Alternatives Evaluation Matrix**





**LEGEND**

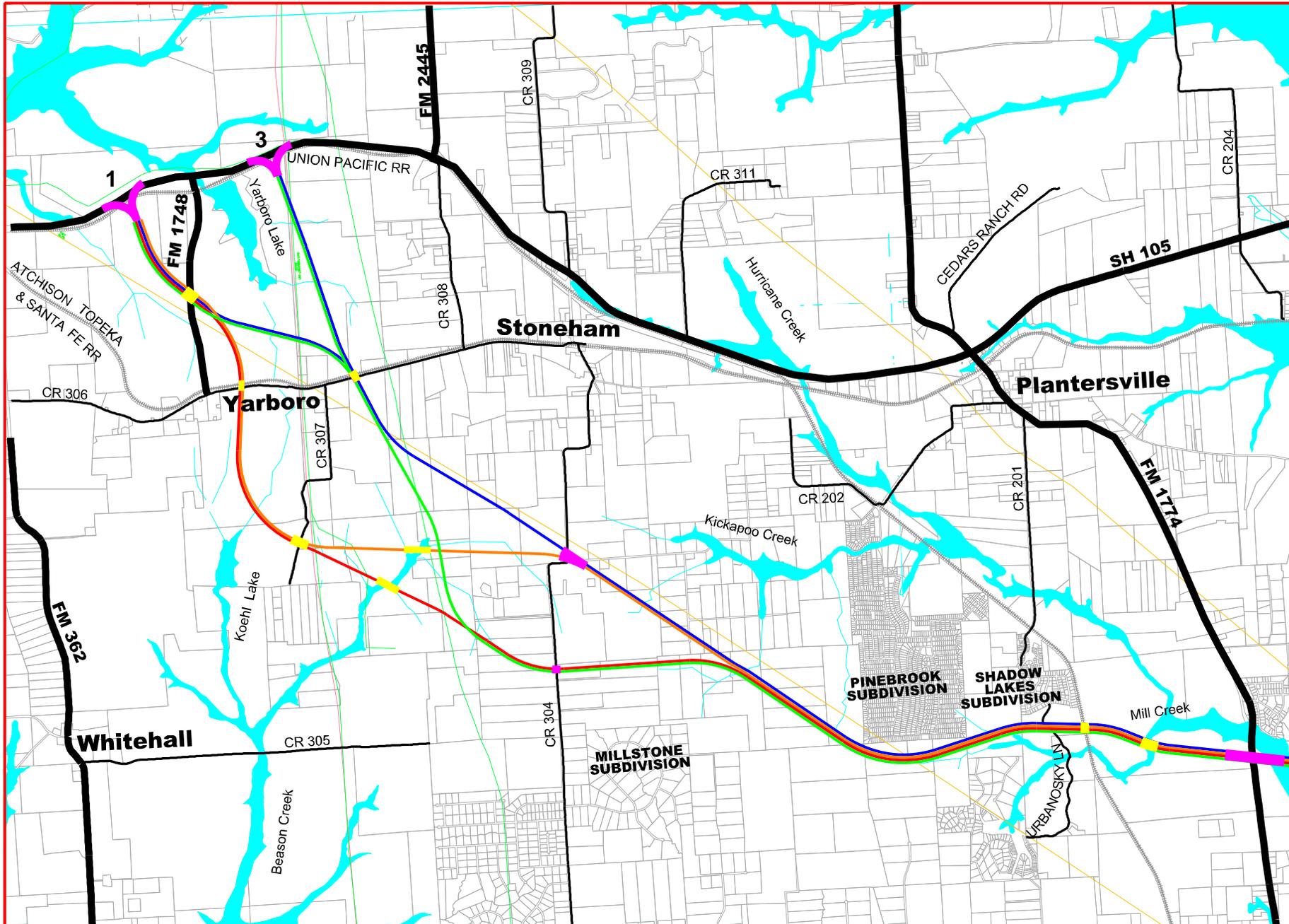
- ALTERNATIVE "A"
- ALTERNATIVE "B"
- ALTERNATIVE "C"
- ALTERNATIVE "D"
- RAILROAD
- BRIDGE STRUCTURE
- STREAMS
- PIPELINE
- PARCELS
- 100 YEAR FLOODPLAIN
- WETLANDS
- WATER WELLS
- ✠ CHURCHES
- ✠ CEMETERY



**EXHIBIT 2**

*Texas Department of Transportation*

**PRELIMINARY ALTERNATIVES**



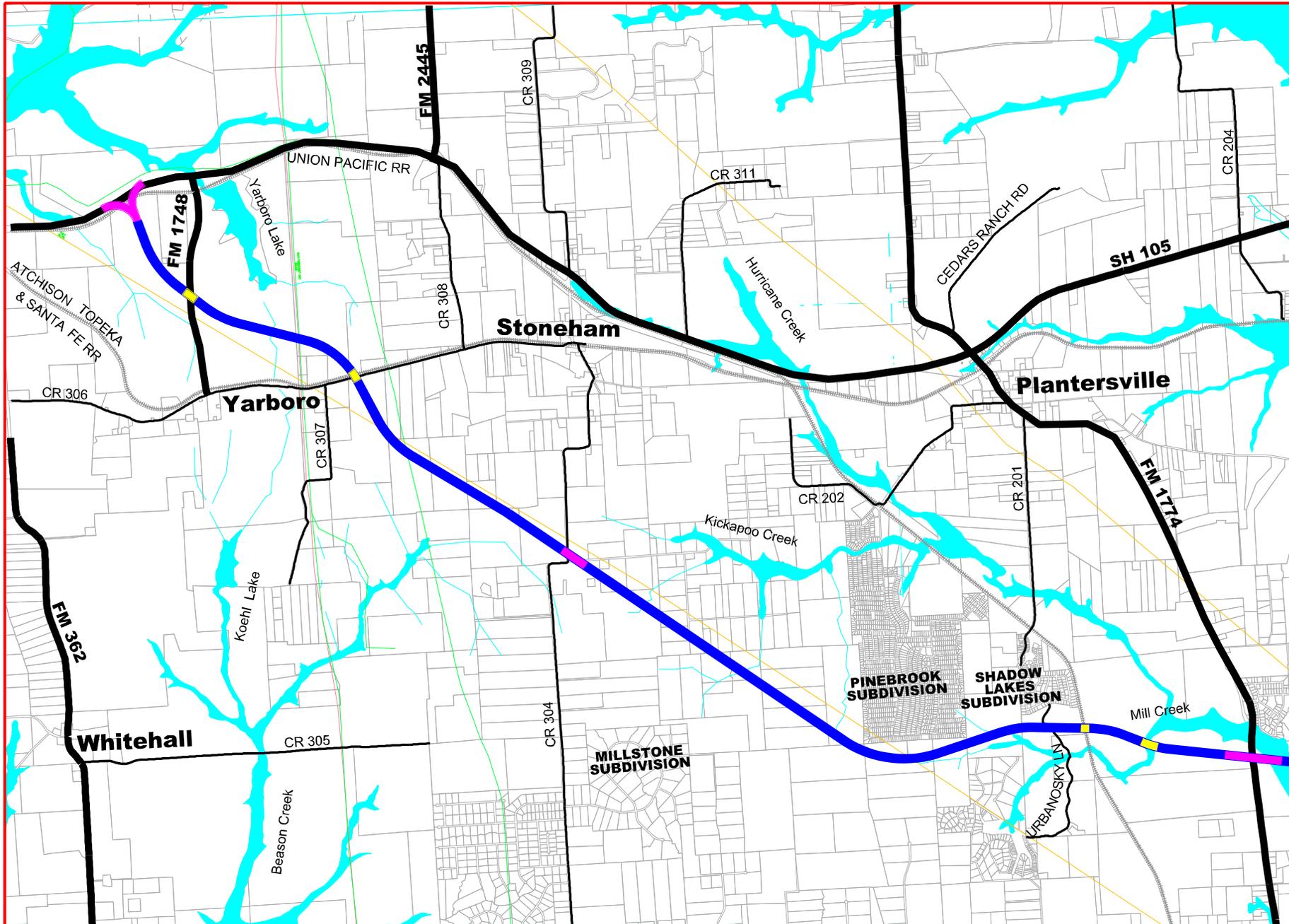
**LEGEND**

- ALTERNATIVE "A"
- ALTERNATIVE "B"
- ALTERNATIVE "C"
- ALTERNATIVE "D"
- RAILROAD
- INTERCHANGE
- BRIDGE STRUCTURE
- STREAM BRIDGE STRUCTURE
- STREAMS
- PARCELS
- PIPELINE
- 100 YEAR FLOODPLAIN
- WATER WELLS
- ⊕ CHURCHES
- ⊕ CEMETERY



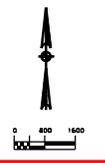
**EXHIBIT 3**

Texas Department  
*of Transportation*  
 SH 249 - GRIMES COUNTY  
**REASONABLE  
 ALTERNATIVES**  
 PUBLIC MEETING APRIL 03, 2014



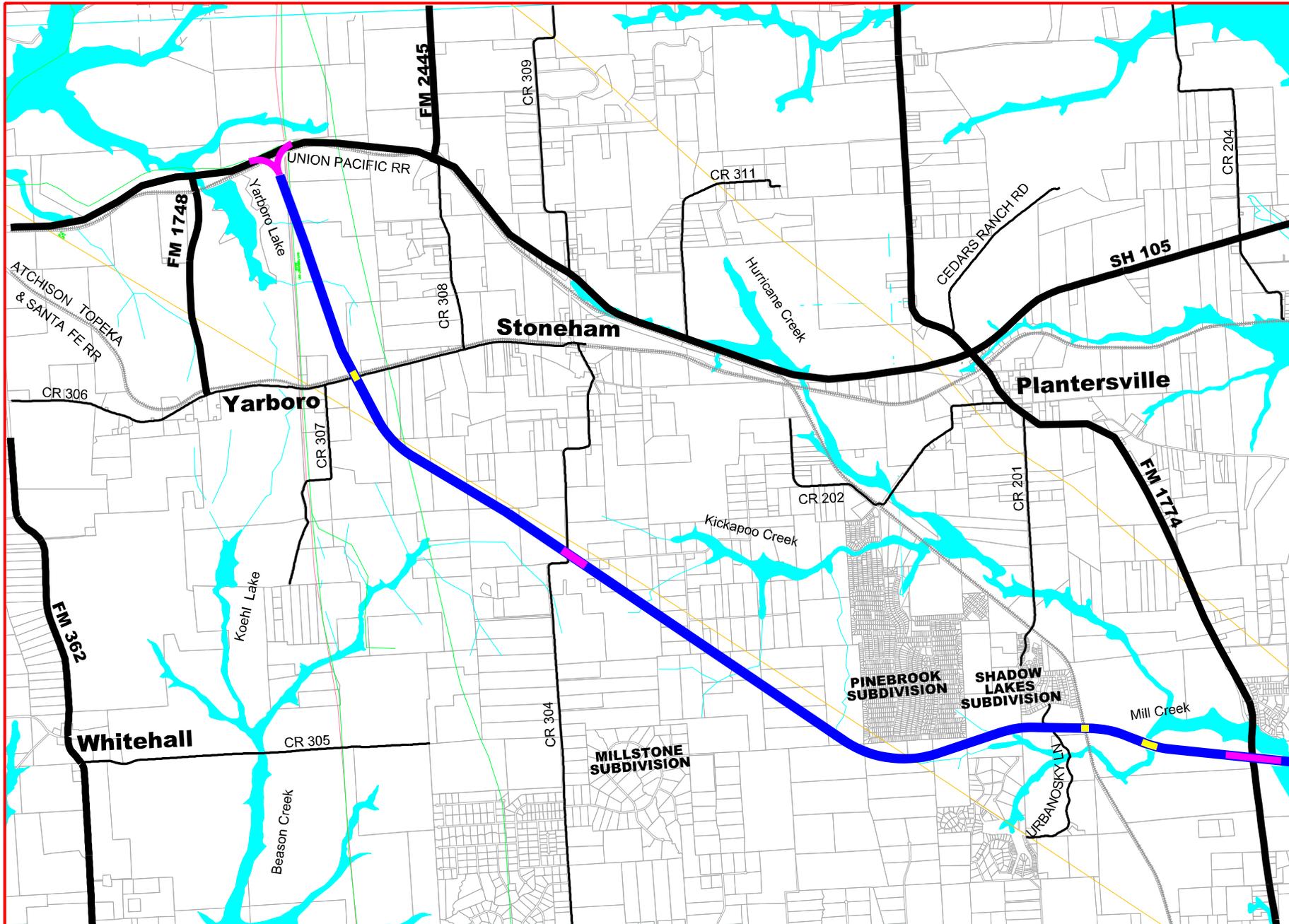
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- RAILROAD
- █ INTERCHANGE  
BRIDGE  
STRUCTURE
- █ OVERPASS/  
STREAM  
BRIDGE  
STRUCTURE
- █ STREAMS
- PARCELS
- █ PIPELINES
- █ 100 YEAR FLOODPLAIN
- WATER WELLS
- ✠ CHURCHES
- †† CEMETERY



**EXHIBIT 4**

Texas Department  
*of Transportation*  
 SH 249 - GRIMES COUNTY  
**ALTERNATIVE "A-1"**  
 PUBLIC MEETING APRIL 03, 2014



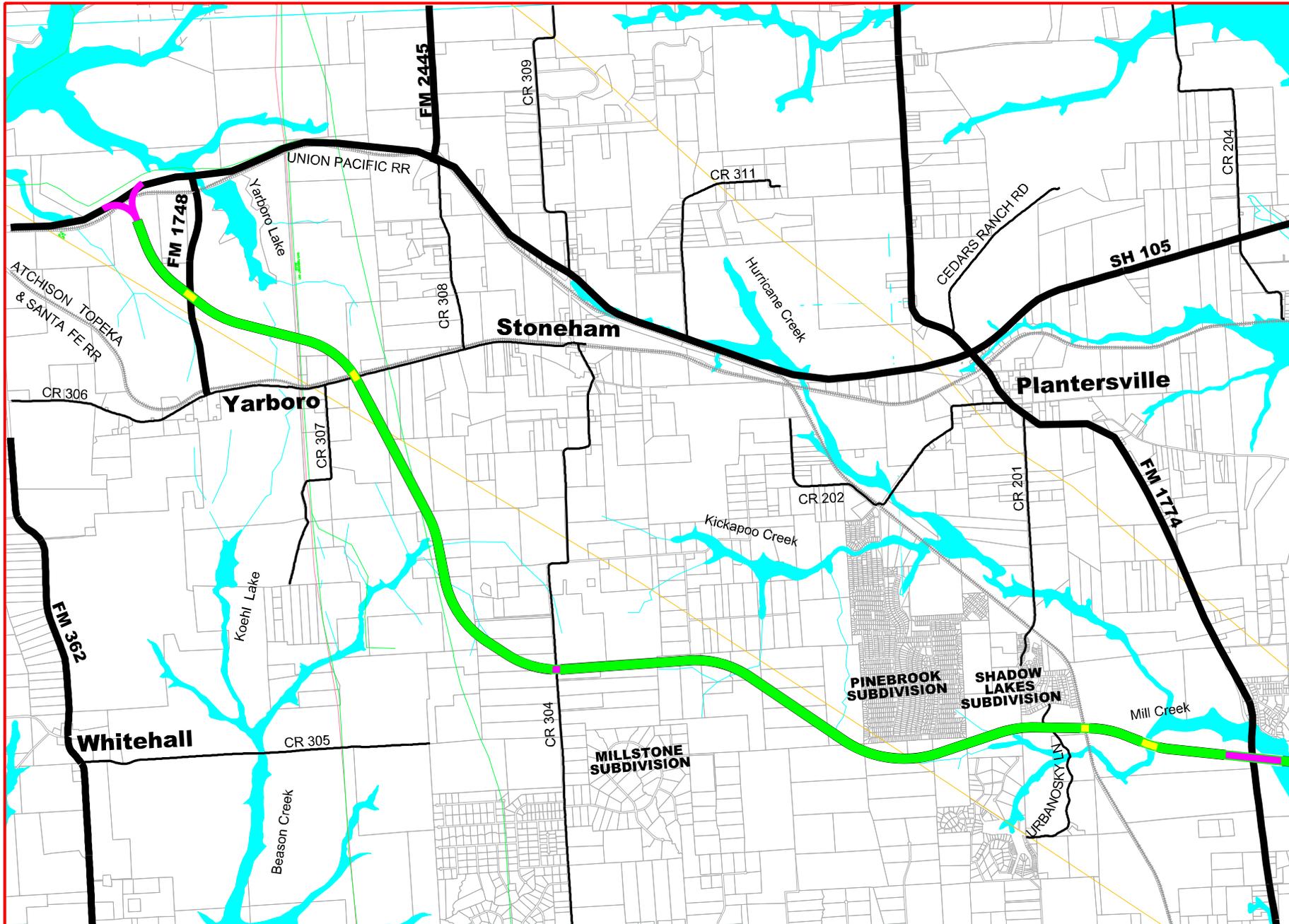
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- █ INTERCHANGE
- █ STREAM BRIDGE STRUCTURE
- █ OVERPASS/STREAM BRIDGE STRUCTURE
- █ STREAMS
- PARCELS
- █ PIPELINES
- █ 100 YEAR FLOODPLAIN
- WATER WELLS
- CHURCHES
- †† CEMETERY



**EXHIBIT 5**

Texas Department  
 of Transportation  
 SH 249 - GRIMES COUNTY  
**ALTERNATIVE "A-3"**  
 PUBLIC MEETING APRIL 03, 2014



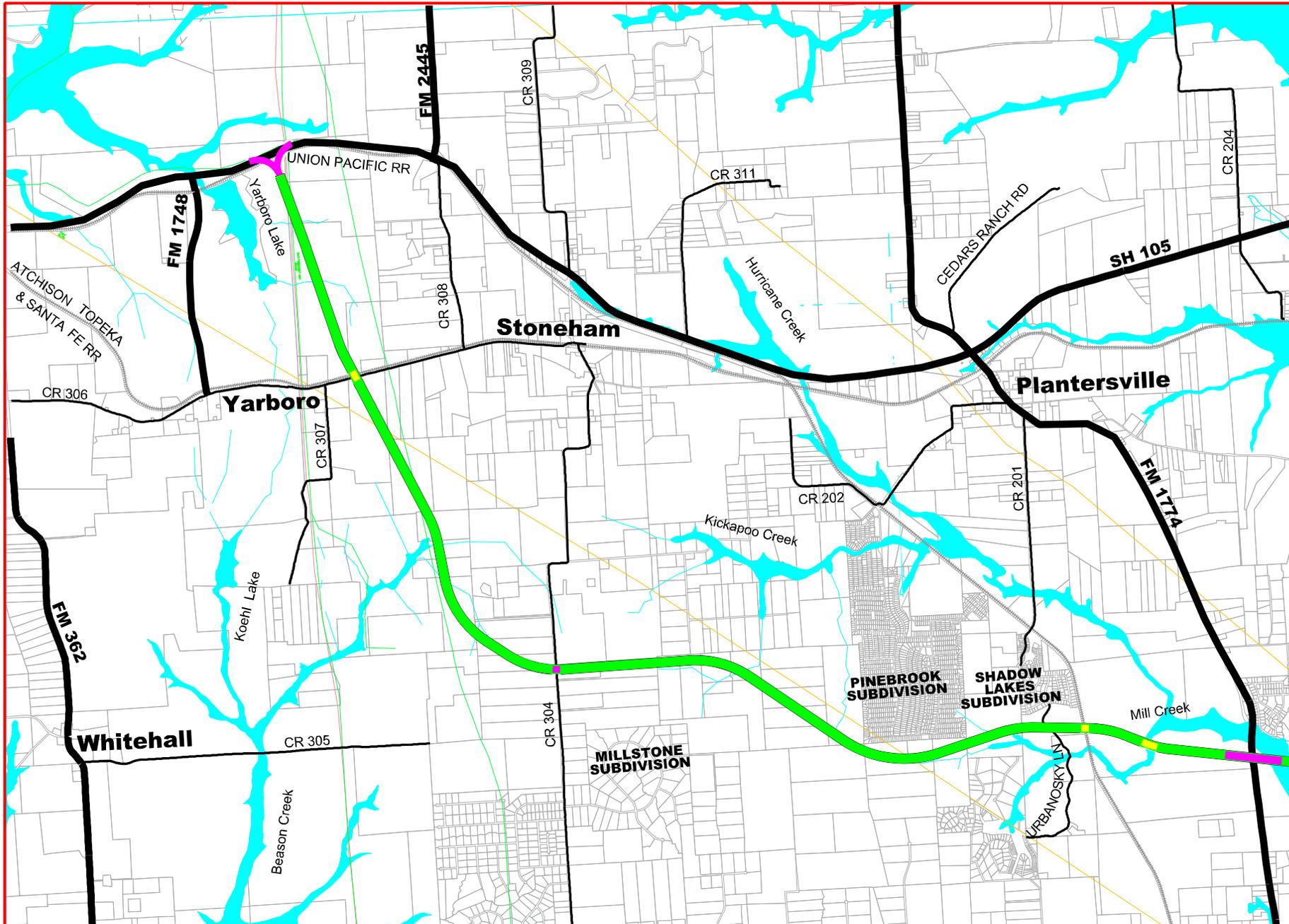
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- RAILROAD
- INTERCHANGE  
BRIDGE  
STRUCTURE
- OVERPASS/  
STREAM  
BRIDGE  
STRUCTURE
- STREAMS
- PARCELS
- PIPELINES
- 100 YEAR  
FLOODPLAIN
- WATER  
WELLS
- CHURCHES
- CEMETERY



**EXHIBIT 6**

Texas Department  
*of Transportation*  
 SH 249 - GRIMES COUNTY  
**ALTERNATIVE  
 "B-1"**  
 PUBLIC MEETING APRIL 03, 2014



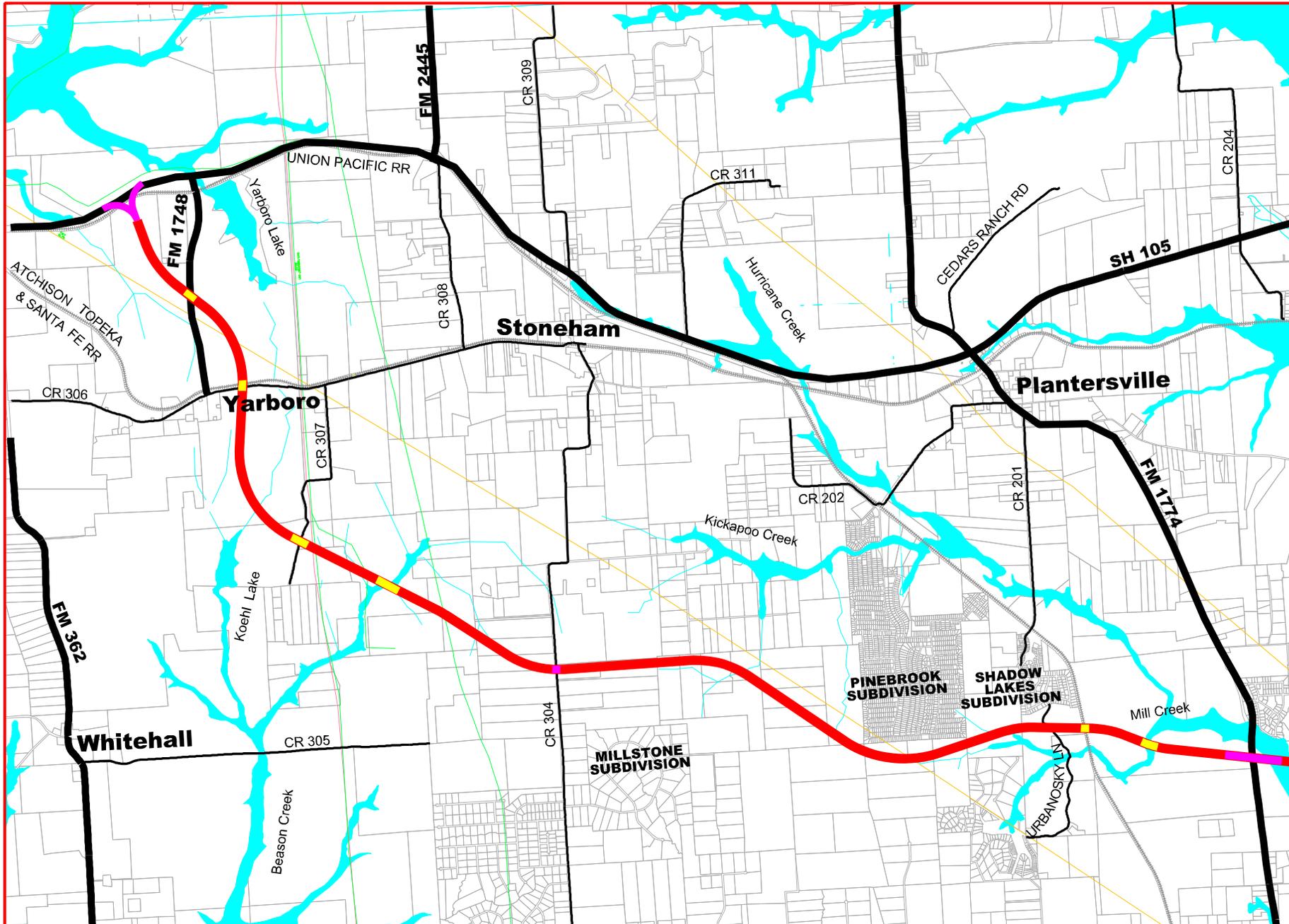
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- RAILROAD
- INTERCHANGE  
BRIDGE  
STRUCTURE
- OVERPASS/  
STREAM  
BRIDGE  
STRUCTURE
- STREAMS
- PARCELS
- PIPELINES
- 100 YEAR  
FLOODPLAIN
- WATER  
WELLS
- CHURCHES
- †† CEMETERY



**EXHIBIT 7**

Texas Department  
*of Transportation*  
 SH 249 - GRIMES COUNTY  
**ALTERNATIVE  
 "B-3"**  
 PUBLIC MEETING APRIL 03, 2014



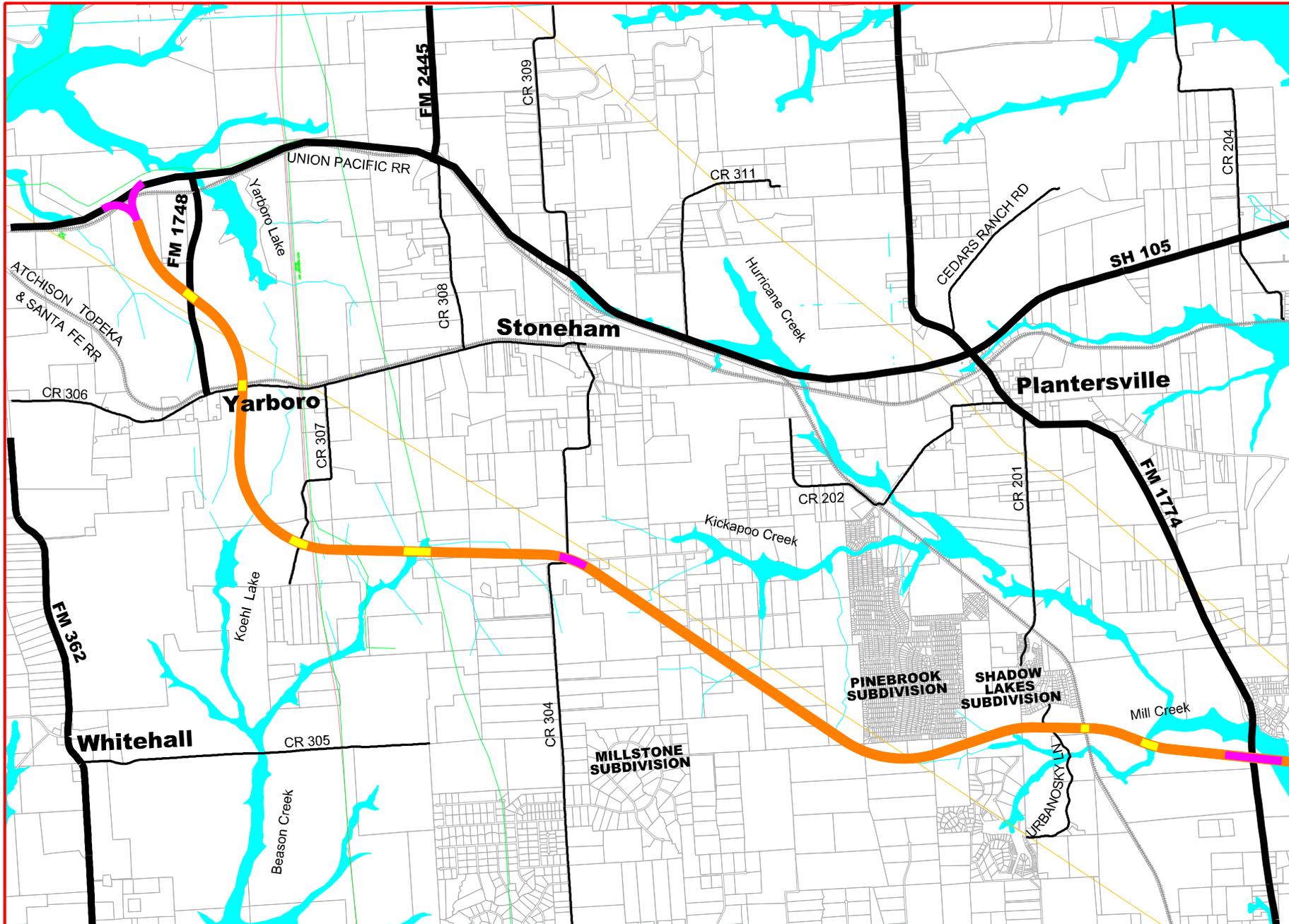
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- ALTERNATIVE "C"
- RAILROAD
- INTERCHANGE  
BRIDGE  
STRUCTURE
- OVERPASS/  
STREAM  
BRIDGE  
STRUCTURE
- STREAMS
- PARCELS
- PIPELINES
- 100 YEAR  
FLOODPLAIN
- WATER  
WELLS
- ⊕ CHURCHES
- ⊕ CEMETERY



**EXHIBIT 8**

Texas Department  
of Transportation  
SH 249 - GRIMES COUNTY  
**ALTERNATIVE  
"C"**  
PUBLIC MEETING APRIL 03, 2014



**LEGEND**

-  ALTERNATIVE "D"
-  RAILROAD
-  INTERCHANGE  
BRIDGE  
STRUCTURE
-  OVERPASS/  
STREAM  
BRIDGE  
STRUCTURE
-  STREAMS
-  PARCELS
-  PIPELINES
-  100 YEAR  
FLOODPLAIN
-  WATER  
WELLS
-  CHURCHES
-  CEMETERY



**EXHIBIT 9**

Texas Department  
of Transportation  
SH 249 - GRIMES COUNTY  
**ALTERNATIVE  
"D"**  
PUBLIC MEETING APRIL 03, 2014

## SH 249 in Grimes County REASONABLE ALTERNATIVES EVALUATION MATRIX

Component	Unit	NEW LOCATION					
		Alternative A1	Alternative A3	Alternative B1	Alternative B3	Alternative C	Alternative D
<b>Estimated Construction Cost</b>	Millions of Dollars	95	90	92	87	95	103
<b>Length of Proposed Roadway</b>	Miles	9.7	9.1	10.0	9.5	10.1	10.7
<b>Distance from SH 105 intersection to SH 6</b>	Miles	6.6	7.7	6.6	7.7	6.6	6.6
<b>Estimated Right-of-Way Acquisition</b>	Acres	399	378	419	398	422	425
<b>Affected Parcels</b>	Number of Parcels	37	36	34	34	32	32
<b>Major Roadway Crossings</b> (SH 105, CR 201, CR 202, CR 304, CR 306, CR 307, FM 1748 and FM 1774)	Number of Crossings	5	4	5	4	6	5
<b>Railroad Crossings</b>	Number of Crossings	3	3	3	3	3	3
<b>Pipeline Crossings</b>	Number of Crossings	4	4	4	4	4	4
<b>Potential Displacements/Relocations</b>	Number of Displacements/Relocations	0	0	0	0	0	0
<b>Potential for Wetlands</b>	Number of Crossings	3	2	2	1	3	3
<b>Floodplain Crossings</b>	Acreage	1.9	1.9	1.9	1.9	4.6	4.5
<b>Stream Crossings</b>	Number of Crossings	7	8	9	9	10	12

Most Desirable  
 Second Most Desirable

**DRAFT**

**LEGEND**

-  **ALTERNATIVE "C HYBRID"**
-  **RAILROAD**
-  **OVERPASS/STREAM BRIDGE STRUCTURE**
-  **STREAMS**
-  **PIPELINE**
-  **PARCELS**
-  **100 YEAR FLOODPLAIN**
-  **WETLANDS**
-  **WATER WELLS**
-  **CHURCHES**
-  **CEMETERY**

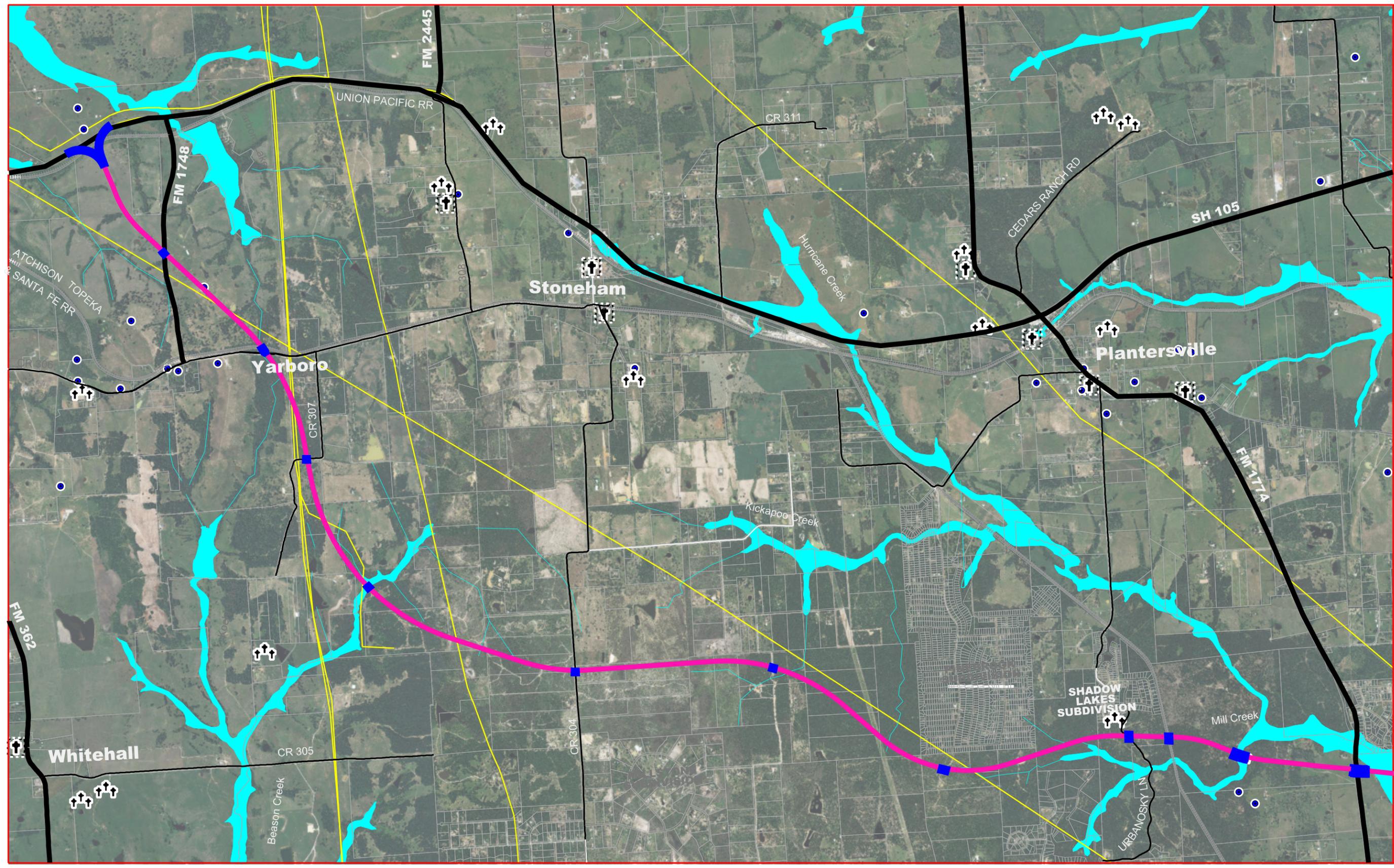


**EXHIBIT 10**



SH 249 - GRIMES COUNTY

**ALTERNATIVE "C HYBRID"**



**Appendix D**  
**Project Area Photographs**

**SH 249 in Grimes County – Project Area Photographs**



Photo 1: Viewing south from north side of SH 105 towards C Hybrid terminus



Photo 2: Viewing north towards SH 105 terminus (between SH 105 and FM 1748)

SH 249 in Grimes County – Project Area Photographs



Photo 3: Viewing north towards SH 105 terminus from west side of FM 1748



Photo 4: Viewing southeast from C Hybrid intersection with FM 1748

SH 249 in Grimes County – Project Area Photographs



Photo 5: Viewing south towards CR 306 (between FM 1748 and CR 306)



Photo 6: Water well between FM 1748 and CR 306 (outside proposed ROW)

SH 249 in Grimes County – Project Area Photographs



Photo 7: Viewing south from CR 306



Photo 8: Viewing north towards CR 306 (between CR 306 and CR 307)

SH 249 in Grimes County – Project Area Photographs



Photo 9: Viewing southeast towards Beason Creek tributary



Photo 10: Beason Creek tributary (viewing from east side of creek)

SH 249 in Grimes County – Project Area Photographs



Photo 11: Beason Creek tributary (viewing downstream)



Photo 12: Beason Creek tributary (viewing upstream)

SH 249 in Grimes County – Project Area Photographs



Photo 13: Viewing northwest from C Hybrid intersection with CR 307



Photo 14: Oil well north of C Hybrid/CR 307 intersection (outside of ROW)

SH 249 in Grimes County – Project Area Photographs



Photo 15: Viewing north at proposed crossing of CR 307



Photo 16: Viewing southwest at proposed crossing of CR 304

SH 249 in Grimes County – Project Area Photographs



Photo 17: Tributary of Kickapoo Creek



Photo 18: Tributary of Kickapoo Creek

**SH 249 in Grimes County – Project Area Photographs**



Photo 19: Roadway and vegetation within Pinebrook Subdivision



Photo 20: Viewing west from west side of FM 1774 towards C Hybrid terminus

SH 249 in Grimes County – Project Area Photographs



Photo 21: Noise Reading Location No. 1



Photo 22: Noise Reading Location No. 2

SH 249 in Grimes County – Project Area Photographs



Photo 23: Noise Reading Location No. 3



Photo 24: Noise Reading Location No. 4

SH 249 in Grimes County – Project Area Photographs



Photo 25: Noise Reading Location No. 5



Photo 26: Noise Reading Location No. 6

SH 249 in Grimes County – Project Area Photographs



Photo 27: Noise Reading Location No. 7



Photo 28: Noise Reading Location No. 8

**Appendix E**  
**Biological Evaluation Form**



# Biological Evaluation Form

---

CSJ: 0917-17-069

SH 249

From FM 1774 to SH 105

Jeff Casbeer, Klotz Associates, Inc.

CSJ: 0917-17-069

Project has no Federal nexus.

Date of Evaluation: January 2, 2015

Proposed Letting Date: July 2015

County: Grimes

Roadway Name: SH 249

Project Limits: From FM 1774 to SH 105

Project Description: Construct tolled, controlled-access two-lane roadway with a passing lane in alternating directions (Super 2) within a ROW footprint sufficient to accommodate future widening to a four-lane divided facility.

## Endangered Species Act (ESA)

1. Yes Is the action area of the proposed project within the range and in suitable habitat of federally protected species?

Date [USFWS County List](#) Accessed: October 1, 2014

- 1.1 No Would the proposed project affect protected species and/or their habitat?

\*Explain:

Visual inspections were limited to where right-of-entry had been granted and public rights-of-way. In the areas visited, while habitat for the Navasota Ladies'-tresses was observed, no individuals of the species were identified. Based on these site visits, no effect is anticipated to the species as a result of project construction. However, based on aerial photography and other available data, areas of the project for which right-of-entry was not granted could contain habitat for and individuals of the species. Therefore, it is recommended that additional habitat surveys be conducted once ROW is acquired.

Comments:

Proposed project would have no effect on any federally-listed threatened or endangered species.

Resources consulted or activities conducted to make effect determination (if applicable):

- |  |  |  |
|--|--|--|
| <input checked="" type="checkbox"/> TPWD County List               | <input type="checkbox"/> USFWS Critical Habitat Maps | <input type="checkbox"/> Species Expert Consulted                    |
| <input checked="" type="checkbox"/> Aerial Photography             | <input type="checkbox"/> Coastal Areas Maps          | <input checked="" type="checkbox"/> Site Visit                       |
| <input checked="" type="checkbox"/> Topographic Map                | <input type="checkbox"/> Species Study Conducted     | <input type="checkbox"/> Karst Zone Maps                             |
| <input type="checkbox"/> Ecological Mapping System of Texas (EMST) |  | <input checked="" type="checkbox"/> Natural Diversity Database (NDD) |

Other:

The Bristle Nailwort (a State listed SGCN, although not listed in Grimes County) is a flowering vascular plant endemic to eastern southcentral Texas and occurs mainly in sandy soils. According to the NDD Element Occurrence Record, the last observation of this species was in 1948. The specimen citation does not include the name of the county in which it was found and has anonymously been attributed to Montgomery County. Although the NDD cannot be used for presence/absence determinations, it is anticipated that the proposed project would not adversely impact the species.

## Migratory Bird Treaty Act (MBTA)

1.  Yes  No Is there potential for nesting birds to be present in the project action area during construction?
  - 1.1  No  Yes Were active nests identified during the site survey?
2.  Yes  No Will BMPs will be incorporated to protect migratory bird nests?

Comments:

No vegetation would be removed containing nests, eggs or young should clearing occur during the nesting and breeding season (March 1 through August 31).

## Bald and Golden Eagle Protection Act (BGEPA)

1.  No  Yes Does the proposed project have the potential to impact Bald or Golden Eagles?

Comments:

The project area does not offer suitable eagle habitat.

## Fish and Wildlife Coordination Act (FWCA)

1.  Yes  No Does the project have impacts on one or more Waters of the U.S. or wetlands?
  - 1.1  Yes  No Is the project covered by a Nationwide Permit?
  - 1.2  Yes  No Is the project covered by an Individual Permit from the USACE?

Comments:

All drainages are proposed to be bridged or culverted. The proposed project may result in the placement of temporary or permanent dredge or fill material into these potentially jurisdictional waters; however, the total amount of fill at each separate and complete crossing is estimated to be less than 0.5 acre. A Section 404 Nationwide Permit (NWP) 14 is anticipated to be required for impacts. A Preconstruction Notification (PCN) for NWP 14 would be required if wetlands or other special aquatic sites associated were impacted and/or if impacts total greater than 0.1 acre at each crossing. The activities would comply with all general and regional conditions applicable to NWP 14. Once ROW is obtained, a full on-site

investigation and delineation would be required to accurately characterize the Waters of the U.S. and determine if wetlands are present.

## Executive Order 13112 on Invasive Species

1.  Yes  No Would the proposed project be in compliance with EO 13112?

Comments

Project would comply with EO 13112.

## Executive Memorandum on Beneficial Landscaping

1.  No  Yes Would landscaping be included in the proposed projects?

Comments

Landscaping activities would be in compliance with the Executive Memorandum.

## Farmland Protection Policy Act (FPPA)

1.  Yes  No Would the project require new ROW or permanent easements (*Do not include temporary easements*)?
2.  No  Yes Is the proposed project exempt from the provisions of FPPA in accordance with [§523.11](#) of the act?
3.  Yes  No Has the new ROW been scored using either [FPPA Form AD-1006](#) or [SCS-CPA 106](#)?
4.  No  Yes Was the resulting score above 60 on part V of either form? (If the project scores above 60 on part V of either form, then coordination with NRCS is required.)

Comments:

The proposed project ROW was scored and the resulting score was below 60 points for the corridor assessment criteria portion of the form (Part VI), and is too low to require coordination with the NRCS.

## General Comments

## TPWD Analysis Section

### Coordination Conditions

1.  No Is the project limited to a maintenance activity exempt from coordination?  
[https://ftp.dot.state.tx.us/pub/txdot-info/env/env\\_assessment.pdf](https://ftp.dot.state.tx.us/pub/txdot-info/env/env_assessment.pdf)
2.  No Has the project previously completed coordination with TPWD?

### Tier I Site Assessment

#### MOU-Triggers

1.  Yes Is the project within range of a state threatened or endangered species or SGCN and suitable habitat is present?

**\*Explanation:**

Field surveys, along with research data, concluded that suitable habitat or the potential for suitable habitat exists for State listed species within the construction limits: Henslow's Sparrow (SGCN), the Plains Spotted Skunk (SGCN), the Southeastern Myotis Bat (SGCN), the Timber/Canebrake Rattlesnake (T), the Branched Gay-feather (SGCN), and Texas Meadow-rue (SGCN).

Date [TPWD County](#) List Accessed: October 1, 2014

Date that the NDD was accessed: October 5, 2014

What agency performed the NDD search? TPWD

- 1.1  Yes Does the BMP PA eliminate the requirement to coordinate for species?

**\*Explanation:**

Bird BMP, Bridge Bat BMP, Contractors will be advised of the potential occurrence of the Plains Spotted Skunk and Timber Canebrake Rattlesnake in the project area, and to avoid harming the species if encountered.

2.  No NDD and TCAP review indicates adverse impacts to remnant vegetation?

**Comments:**

No remnant vegetation present.

3.  Yes Does the project require a NWP with PCN or IP by USACE?

**\*Explanation:**

All drainages are proposed to be bridged or culverted. The proposed project may result in the placement of temporary or permanent dredge or fill material into these potentially jurisdictional waters; however, the total amount of fill at each separate and complete crossing is estimated to be less than 0.5 acre. A Section 404 Nationwide Permit (NWP) 14 is anticipated to be required for impacts. A Preconstruction Notification (PCN) for NWP 14 would be required if wetlands or other special aquatic sites associated were impacted and/or if

impacts total greater than 0.1 acre at each crossing. The activities would comply with all general and regional conditions applicable to NWP 14. Once ROW is obtained, a full on-site investigation and delineation would be required to accurately characterize the Waters of the U.S. and determine if wetlands are present.

4.  Yes Does the project include more than 200 linear feet of stream channel for each single and complete crossing of one or more of the following that is not already channelized or otherwise maintained:
- No Channel realignment; or
- No Stream bed or stream bank excavation, scraping, clearing, or other permanent disturbance.

\*Explanation:

Eleven drainages are crossed by the project and the linear feet of channel within the proposed ROW varies by channel from 393 to 2285 linear feet. Once ROW is obtained, a full on-site investigation and delineation would be required to accurately characterize the channels and determine impacts.

5.  No Does the project contain known isolated wetlands outside the TxDOT ROW that will be directly impacted by the project?

Comments:

There are no known isolated wetlands outside the proposed TxDOT ROW that would be impacted.

6.  Yes Would the project impact at least 0.10 acre of riparian vegetation?

\*Explanation:

Riparian vegetation was not observed but is anticipated to occur along the eleven area creeks and drainages crossed by the project. The portion of the impacted vegetation that could be characterized as riparian is estimated to be 13 acres.

7.  Yes Does project disturb a habitat type in an area equal to or greater than the area of disturbance indicated in the Threshold Table Programmatic Agreement?

\*Explanation:

The EMST maps proposed ROW as approximately 82% pineywoods (450 acres), 11% blackland prairie (58 acres), 3% floodplain hardwood/herbaceous (18 acres), 2% post oak savanna (11 acres), 1% urban (5 acres), 1% native invasive deciduous woodland (5 acres), 0.4% riparian (2 acres) and 0.1% pine plantation (1 acre).

\*Attach associated file of EMST output (Mapper Report or other Excel File which includes MOU Type, Ecosystem Name, Common/Vegetation Type Name) in ECOS

Excel File Name:

7.1     No     Is there a discrepancy between actual habitat(s) and EMST mapped habitat(s)?

Comments:

Actual habitat present in the project area is consistent with the EMST mapping.

## Is TPWD Coordination Required?

**Yes**

Early Coordination

Administrated Coordination

BMPs Implemented or EPICs included (as necessary):

Bird BMP, Bridge Bat BMP, Contractors will be advised of the potential occurrence of the Plains Spotted Skunk and Timber Canebrake Rattlesnake in the project area, and to avoid harming the species if encountered.

## TxDOT Contact Information

Name: Lindsey Kimmitt

Phone Number: 512-416-2547

E-mail: lindsey.kimmitt@txdot.gov

## Findings

### **Endangered Species Act (ESA)**

According to the USFWS and TPWD, the project action area is within the range and in suitable habitat of a federally protected species. Based on the following information, the proposed project will not affect protected species and/or their habitat and will not impact areas that have been designated as critical habitat by the USFWS.

Visual inspections were limited to where right-of-entry had been granted and public rights-of-way. In the areas visited, while habitat for the Navasota Ladies'-tresses was observed, no individuals of the species were identified. Based on these site visits, no effect is anticipated to the species as a result of project construction. However, based on aerial photography and other available data, areas of the project for which right-of-entry was not granted could contain habitat for and individuals of the species. Therefore, it is recommended that additional habitat surveys be conducted once ROW is acquired.

Consultation with the USFWS will not be required. The USFWS County list was accessed on October 1, 2014.

### **Essential Fish Habitat (EFH)**

Essential fish habitat is defined by the Magnuson-Stevens Fishery Conservation and Management Act (MSA) as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.

Tidally influenced waters do not occur within the project action area. Coordination with National Marine Fisheries Service (NMFS) is not required.

### **Coastal Barrier Resources Act (CBRA)**

The Coastal Barrier Resources Act (CBRA) established the Coastal Barrier Resources System (CBRS) to protect a defined set of geographic units along the coast of the U.S.

This project is not located within a designated CBRA map unit. Coordination with the USFWS is not required.

### **Marine Mammal Protection Act (MMPA)**

Marine mammals are protected under the Marine Mammal Protection Act (MMPA). The Texas coast provides suitable habitat and is within range of several marine mammals including the West Indian Manatee (*Trichechus manatus*), and bottlenose dolphin (*Tursiops truncatus*).

The project action area does not contain suitable habitat for marine mammals. Coordination with NMFS is not required.

### **Migratory Bird Treaty Act (MBTA)**

The Migratory Bird Treaty Act (MBTA) states that it is unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg in part or in whole, without a federal permit issued in accordance within the Act's policies and regulations.

TxDOT will take all appropriate actions to prevent the take of migratory birds, their active nests, eggs, or young by the use of proper phasing of the project or other appropriate actions. A MBTA appropriate EPIC will be included in the PS&E.

**Bald and Golden Eagle Protection Act (BGEPA)**

The proposed project does not have the potential to impact Bald or Golden Eagles.

**Executive Order 13112 on Invasive Species**

Re-vegetation of disturbed areas would be in compliance with the Executive Order on Invasive Species (EO 13112). Regionally native and non-invasive plants will be used to the extent practicable in landscaping and re-vegetation.

**Executive Memorandum on Beneficial Landscaping**

No landscaping would be a part of the proposed project. Disturbed areas would be re-vegetated according to TxDOT’s standard practices for rural areas, which to the extent practicable, is in compliance with Executive Memorandum on Beneficial Landscaping.

**Farmland Protection Policy Act (FPPA)**

The purpose of the Farmland Protection Policy Act (FPPA) is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses. The proposed project would convert farmland subject to the FPPA to a non-agricultural, transportation use, but the combined scores of the relative value of the farmland and the site assessment, as documented with the appropriate NRCS form and supporting documentation, are such that the site need not be given further consideration for protection and no additional sites need to be evaluated.

**Fish and Wildlife Coordination Act (FWCA)**

The Fish and Wildlife Coordination Act (FWCA) of 1958 requires that federal agencies obtain comments from USFWS and TPWD. This coordination is required whenever a project involves impounding, diverting, or deepening a stream channel or other body of water.

The proposed project is authorized under a Section 404 of the Clean Water Act Nationwide Permit; therefore, no coordination under FWCA would be required.

Lindsey Kimmitt  
TxDOT Reviewer

1/9/2015  
Date

## *Suggested Attachments*

**Aerial Map (with delineated project boundaries)**

**USFWS T&E List**

**TPWD T&E List**

**Species Impact Table**

**NDD EOID List and Tracked Managed Areas (Required for TPWD Coordination)**

**NOAA EFH Mapper Printout**

**USFWS CBRA Mapper Printout**

**EMST Project MOU Summary Table (Required for TPWD Coordination)**

**TPWD SGCN List**

**FPPA Documentation**

**Landscaping Plans**

**Photos (Required for TPWD Coordination)**

**Previous TPWD Coordination Documentation (if applicable)**

The following table shows the revision history for this guidance document.

Revision History	
Effective Date Month, Year	Reason for and Description of Change

## **Biological Evaluation Form Supplemental Information**

### **Attachments**

- 1 – Project Layout & Typical Sections: See Appendix A
- 2 – Threatened and Endangered Species List: See Appendix F
- 3 – Species Impact Table: See Table 9
- 4 – NDD Element Occurrence Record: Attached as part of Appendix E
- 5 – EMST Project MOU Summary Table: See Table 4
- 6 – Farmland Conversion Impact Rating: Attached as part of Appendix E
- 7 – Project Area Photos: See Appendix D

# Element Occurrence Record

**Scientific Name:** Paronychia setacea

**Occurrence #:** 10

**Eo Id:** 11102

**Common Name:** bristle nailwort

**Track Status:** Track all extant and selected historical EOs

**TX Protection Status:**

**Global Rank:** G2G3

**State Rank:** S2S3

**Federal Status:**

---

## **Location Information:**

### **Directions:**

Dobbin

---

## **Survey Information:**

**First Observation:**

**Survey Date:**

**Last Observation:** 1948-10-29

**Eo Type:**

**Eo Rank:**

**Eo Rank Date:**

**Observed Area:**

---

## **Comments:**

### **General**

#### **Description:**

**Comments:** Complete specimen citation: COUNTY NOT STATED: Dobbins, 29 Oct 1948, H. B. Parks s.n. (TAES).  
Anonymously attributed to Montgomery Co.

### **Protection**

#### **Comments:**

### **Management**

#### **Comments:**

---

## **Data:**

**EO Data:**

---

## **Reference:**

**Citation:**

---

## **Specimen:**

H. B. Parks s.n. (TAES).

**FARMLAND CONVERSION IMPACT RATING  
FOR CORRIDOR TYPE PROJECTS**

<b>PART I (To be completed by Federal Agency)</b>	3. Date of Land Evaluation Request	4. Sheet 1 of _____
---	------------------------------------	---------------------

1. Name of Project	5. Federal Agency Involved
2. Type of Project	6. County and State

<b>PART II (To be completed by NRCS)</b>		1. Date Request Received by NRCS	2. Person Completing Form
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES <input type="checkbox"/> NO <input type="checkbox"/>		4. Acres Irrigated	Average Farm Size
5. Major Crop(s)	6. Farmable Land in Government Jurisdiction Acres: _____ %	7. Amount of Farmland As Defined in FPPA Acres: _____ %	
8. Name Of Land Evaluation System Used	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned by NRCS	

<b>PART III (To be completed by Federal Agency)</b>	<b>Alternative Corridor For Segment</b>			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly				
B. Total Acres To Be Converted Indirectly, Or To Receive Services				
C. Total Acres In Corridor				

<b>PART IV (To be completed by NRCS) Land Evaluation Information</b>	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value				

**PART V (To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)**

<b>PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))</b>	Maximum Points	Corridor A	Corridor B	Corridor C	Corridor D
1. Area in Nonurban Use	15				
2. Perimeter in Nonurban Use	10				
3. Percent Of Corridor Being Farmed	20				
4. Protection Provided By State And Local Government	20				
5. Size of Present Farm Unit Compared To Average	10				
6. Creation Of Nonfarmable Farmland	25				
7. Availability Of Farm Support Services	5				
8. On-Farm Investments	20				
9. Effects Of Conversion On Farm Support Services	25				
10. Compatibility With Existing Agricultural Use	10				
<b>TOTAL CORRIDOR ASSESSMENT POINTS</b>	<b>160</b>				

<b>PART VII (To be completed by Federal Agency)</b>	Maximum Points	Corridor A	Corridor B	Corridor C	Corridor D
Relative Value Of Farmland (From Part V)	100				
Total Corridor Assessment (From Part VI above or a local site assessment)	160				
<b>TOTAL POINTS (Total of above 2 lines)</b>	<b>260</b>				

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used?  YES <input type="checkbox"/> NO <input type="checkbox"/>
-----------------------	---	-----------------------	--

5. Reason For Selection:

Signature of Person Completing this Part: \_\_\_\_\_ DATE \_\_\_\_\_

**NOTE: Complete a form for each segment with more than one Alternate Corridor**

## CORRIDOR - TYPE SITE ASSESSMENT CRITERIA

The following criteria are to be used for projects that have a linear or corridor - type site configuration connecting two distant points, and crossing several different tracts of land. These include utility lines, highways, railroads, stream improvements, and flood control systems. Federal agencies are to assess the suitability of each corridor - type site or design alternative for protection as farmland along with the land evaluation information.

(1) How much land is in nonurban use within a radius of 1.0 mile from where the project is intended?

More than 90 percent - 15 points  
90 to 20 percent - 14 to 1 point(s)  
Less than 20 percent - 0 points

(2) How much of the perimeter of the site borders on land in nonurban use?

More than 90 percent - 10 points  
90 to 20 percent - 9 to 1 point(s)  
Less than 20 percent - 0 points

(3) How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last 10 years?

More than 90 percent - 20 points  
90 to 20 percent - 19 to 1 point(s)  
Less than 20 percent - 0 points

(4) Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?

Site is protected - 20 points  
Site is not protected - 0 points

(5) Is the farm unit(s) containing the site (before the project) as large as the average - size farming unit in the County ?

(Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage or Farm Units in Operation with \$1,000 or more in sales.)

As large or larger - 10 points  
Below average - deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average - 9 to 0 points

(6) If the site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?

Acreage equal to more than 25 percent of acres directly converted by the project - 25 points  
Acreage equal to between 25 and 5 percent of the acres directly converted by the project - 1 to 24 point(s)  
Acreage equal to less than 5 percent of the acres directly converted by the project - 0 points

(7) Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?

All required services are available - 5 points  
Some required services are available - 4 to 1 point(s)  
No required services are available - 0 points

(8) Does the site have substantial and well-maintained on-farm investments such as barns, other storage building, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?

High amount of on-farm investment - 20 points  
Moderate amount of on-farm investment - 19 to 1 point(s)  
No on-farm investment - 0 points

(9) Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?

Substantial reduction in demand for support services if the site is converted - 25 points  
Some reduction in demand for support services if the site is converted - 1 to 24 point(s)  
No significant reduction in demand for support services if the site is converted - 0 points

(10) Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use?

Proposed project is incompatible to existing agricultural use of surrounding farmland - 10 points  
Proposed project is tolerable to existing agricultural use of surrounding farmland - 9 to 1 point(s)  
Proposed project is fully compatible with existing agricultural use of surrounding farmland - 0 points

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**Appendix F**  
**Threatened & Endangered Species Lists**

## GRIMES COUNTY

### BIRDS

		Federal Status	State Status
<b>American Peregrine Falcon</b>	<i>Falco peregrinus anatum</i>	DL	T
year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.			
<b>Arctic Peregrine Falcon</b>	<i>Falco peregrinus tundrius</i>	DL	
migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.			
<b>Bald Eagle</b>	<i>Haliaeetus leucocephalus</i>	DL	T
found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds			
<b>Henslow's Sparrow</b>	<i>Ammodramus henslowii</i>		
wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking			
<b>Interior Least Tern</b>	<i>Sterna antillarum athalassos</i>	LE	E
subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony			
<b>Peregrine Falcon</b>	<i>Falco peregrinus</i>	DL	T
both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (F. p. anatum) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, F.p. tundrius is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.			
<b>Red-cockaded Woodpecker</b>	<i>Picoides borealis</i>	LE	E
cavity nests in older pine (60+ years); forages in younger pine (30+ years); prefers longleaf, shortleaf, and loblolly			
<b>Sprague's Pipit</b>	<i>Anthus spragueii</i>	C	
only in Texas during migration and winter, mid September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.			
<b>White-faced Ibis</b>	<i>Plegadis chihi</i>		T
prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats			

## Annotated County Lists of Rare Species

**Whooping Crane**                      *Grus americana*                      LE                      E

potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties

**Wood Stork**                      *Mycteria americana*                      T

forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960

**FISHES**

Federal Status      State Status

**Blue sucker**                      *Cypleptus elongatus*                      T

larger portions of major rivers in Texas; usually in channels and flowing pools with a moderate current; bottom type usually of exposed bedrock, perhaps in combination with hard clay, sand, and gravel; adults winter in deep pools and move upstream in spring to spawn on riffles

**Sharpnose shiner**                      *Notropis oxyrhynchus*                      E

endemic to Brazos River drainage; also, apparently introduced into adjacent Colorado River drainage; large turbid river, with bottom a combination of sand, gravel, and clay-mud

**MAMMALS**

Federal Status      State Status

**Louisiana black bear**                      *Ursus americanus luteolus*                      LT                      T

possible as transient; bottomland hardwoods and large tracts of inaccessible forested areas

**Plains spotted skunk**                      *Spilogale putorius interrupta*

catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie

**Red wolf**                      *Canis rufus*                      LE                      E

extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies

**Southeastern myotis bat**                      *Myotis austroriparius*

roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures

**MOLLUSKS**

Federal Status      State Status

**False spike mussel**                      *Quadrula mitchelli*                      T

possibly extirpated in Texas; probably medium to large rivers; substrates varying from mud through mixtures of sand, gravel and cobble; one study indicated water lilies were present at the site; Rio Grande, Brazos, Colorado, and Guadalupe (historic) river basins

**Smooth pimpleback**                      *Quadrula houstonensis*                      C                      T

small to moderate streams and rivers as well as moderate size reservoirs; mixed mud, sand, and fine gravel, tolerates very slow to moderate flow rates, appears not to tolerate dramatic water level fluctuations, scoured bedrock substrates, or shifting sand bottoms, lower Trinity (questionable), Brazos, and Colorado River basins

## Annotated County Lists of Rare Species

**Texas fawnsfoot** *Truncilla macrodon* C T

little known; possibly rivers and larger streams, and intolerant of impoundment; flowing rice irrigation canals, possibly sand, gravel, and perhaps sandy-mud bottoms in moderate flows; Brazos and Colorado River basins

**REPTILES**

Federal Status

State Status

**Alligator snapping turtle** *Macrochelys temminckii* T

perennial water bodies; deep water of rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near deep running water; sometimes enters brackish coastal waters; usually in water with mud bottom and abundant aquatic vegetation; may migrate several miles along rivers; active March-October; breeds April-October

**Texas horned lizard** *Phrynosoma cornutum* T

open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September

**Timber rattlesnake** *Crotalus horridus* T

swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto

**PLANTS**

Federal Status

State Status

**Branched gay-feather** *Liatris cymosa*

Texas endemic; somewhat barren grassland openings in post oak woodlands on tight clayey, chalky, or gravelly soils, often over Catahoula Formation; flowering July-October

**Navasota false foxglove** *Agalinis navasotensis*

Texas endemic; relatively sparsely vegetated, shallow, sandy soils on calcareous sandstone outcrops of the Oakville Formation, with associated surrounding species more typical of Edwards Plateau, than Post Oak Savanna or Blackland Prairie; also, Catahoula Formation barrens in pine savanna; flowering September-October

**Navasota ladies'-tresses** *Spiranthes parksii* LE E

Texas endemic; openings in post oak woodlands in sandy loams along upland drainages or intermittent streams, often in areas with suitable hydrologic factors, such as a perched water table associated with the underlying claypan; flowering populations fluctuate widely from year to year, an individual plant does not flower every year; flowering late October-early November (-early December)

**Texas meadow-rue** *Thalictrum texanum*

Texas endemic; mostly found in woodlands and woodland margins on soils with a surface layer of sandy loam, but it also occurs on prairie pimple mounds; both on uplands and creek terraces, but perhaps most common on claypan savannas; soils are very moist during its active growing season; flowering/fruiting (January-)February-May, withering by midsummer, foliage reappears in late fall(November) and may persist through the winter

U.S. Fish & Wildlife Service

# SH 249 in Grimes County

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## *IPaC Trust Resource Report*

Generated July 30, 2015 11:32 AM MDT



US Fish &amp; Wildlife Service

# IPaC Trust Resource Report



## Project Description

**NAME**

SH 249 in Grimes County

**PROJECT CODE**

J7SMS-JHJM5-BPZFM-7SBFN-G7EY4A

**LOCATION**

Grimes County, Texas

**DESCRIPTION**

No description provided



## U.S. Fish & Wildlife Contact Information

Species in this report are managed by:

**Texas Coastal Ecological Services Field Office**

17629 El Camino Real, Suite 211

Houston, TX 77058-3051

(281) 286-8282

# Endangered Species

Proposed, candidate, threatened, and endangered species that are managed by the [Endangered Species Program](#) and should be considered as part of an effect analysis for this project.

This unofficial species list is for informational purposes only and does not fulfill the requirements under [Section 7](#) of the Endangered Species Act, which states that Federal agencies are required to "request of the Secretary of Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action." This requirement applies to projects which are conducted, permitted or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can be obtained by returning to this project on the IPaC website and requesting an Official Species List from the regulatory documents section.

## Birds

<p><b>Least Tern</b> <i>Sterna antillarum</i></p> <p>THIS SPECIES ONLY NEEDS TO BE CONSIDERED IF THE FOLLOWING CONDITION APPLIES Wind related projects within migratory route.</p> <p>CRITICAL HABITAT <b>No critical habitat</b> has been designated for this species.</p> <p><a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=B07N">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=B07N</a></p>	<p><b>Endangered</b></p>
<p><b>Piping Plover</b> <i>Charadrius melodus</i></p> <p>THIS SPECIES ONLY NEEDS TO BE CONSIDERED IF THE FOLLOWING CONDITION APPLIES Wind related projects within migratory route.</p> <p>CRITICAL HABITAT There is <b>final</b> critical habitat designated for this species.</p> <p><a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=B079">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=B079</a></p>	<p><b>Threatened</b></p>
<p><b>Red Knot</b> <i>Calidris canutus rufa</i></p> <p>THIS SPECIES ONLY NEEDS TO BE CONSIDERED IF THE FOLLOWING CONDITION APPLIES Wind related projects within migratory route.</p> <p>CRITICAL HABITAT <b>No critical habitat</b> has been designated for this species.</p> <p><a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=B0DM">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=B0DM</a></p>	<p><b>Threatened</b></p>
<p><b>Sprague's Pipit</b> <i>Anthus spragueii</i></p> <p>CRITICAL HABITAT <b>No critical habitat</b> has been designated for this species.</p> <p><a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=B0GD">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=B0GD</a></p>	<p><b>Candidate</b></p>

**Whooping Crane** *Grus americana***Endangered**

## CRITICAL HABITAT

There is **final** critical habitat designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B003>

## Clams

**Smooth Pimpleback** *Quadrula houstonensis***Candidate**

## CRITICAL HABITAT

**No critical habitat** has been designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=F04G>

**Texas Fawnsfoot** *Truncilla macrodon***Candidate**

## CRITICAL HABITAT

**No critical habitat** has been designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=F04E>

## Flowering Plants

**Navasota Ladies'-tresses** *Spiranthes parksii***Endangered**

## CRITICAL HABITAT

**No critical habitat** has been designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q21X>

## Critical Habitats

Potential effects to critical habitat(s) within the project area must be analyzed along with the endangered species themselves.

There is no critical habitat within this project area

# Migratory Birds

Birds are protected by the [Migratory Bird Treaty Act](#) and the Bald and Golden Eagle Protection Act.

Any activity which results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service (1). There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

You are responsible for complying with the appropriate regulations for the protection of birds as part of this project. This involves analyzing potential impacts and implementing appropriate conservation measures for all project activities.

<b>American Kestrel</b> <i>Falco sparverius paulus</i> Year-round	<b>Bird of conservation concern</b>
<b>Bald Eagle</b> <i>Haliaeetus leucocephalus</i> Season: Wintering <a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B008">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B008</a>	<b>Bird of conservation concern</b>
<b>Burrowing Owl</b> <i>Athene cucularia</i> Season: Wintering	<b>Bird of conservation concern</b>
<b>Dickcissel</b> <i>Spiza americana</i> Season: Breeding	<b>Bird of conservation concern</b>
<b>Fox Sparrow</b> <i>Passerella iliaca</i> Season: Wintering	<b>Bird of conservation concern</b>
<b>Harris's Sparrow</b> <i>Zonotrichia querula</i> Season: Wintering	<b>Bird of conservation concern</b>
<b>Henslow's Sparrow</b> <i>Ammodramus henslowii</i> Season: Wintering <a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B09D">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B09D</a>	<b>Bird of conservation concern</b>
<b>Hudsonian Godwit</b> <i>Limosa haemastica</i> Season: Migrating	<b>Bird of conservation concern</b>
<b>Kentucky Warbler</b> <i>Oporornis formosus</i> Season: Breeding	<b>Bird of conservation concern</b>
<b>Lark Bunting</b> <i>Calamospiza melanocorys</i> Season: Wintering	<b>Bird of conservation concern</b>
<b>Le Conte's Sparrow</b> <i>Ammodramus leconteii</i> Season: Wintering	<b>Bird of conservation concern</b>
<b>Least Bittern</b> <i>Ixobrychus exilis</i> Season: Breeding	<b>Bird of conservation concern</b>
<b>Lesser Yellowlegs</b> <i>Tringa flavipes</i> Season: Wintering	<b>Bird of conservation concern</b>
<b>Little Blue Heron</b> <i>Egretta caerulea</i> Season: Breeding	<b>Bird of conservation concern</b>
<b>Loggerhead Shrike</b> <i>Lanius ludovicianus</i> Year-round <a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FY">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FY</a>	<b>Bird of conservation concern</b>

<b>Long-billed Curlew</b> <i>Numenius americanus</i> Season: Wintering <a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06S">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06S</a>	<b>Bird of conservation concern</b>
<b>Louisiana Waterthrush</b> <i>Parkesia motacilla</i> Season: Breeding	<b>Bird of conservation concern</b>
<b>Mississippi Kite</b> <i>Ictinia mississippiensis</i> Season: Breeding	<b>Bird of conservation concern</b>
<b>Orchard Oriole</b> <i>Icterus spurius</i> Season: Breeding	<b>Bird of conservation concern</b>
<b>Painted Bunting</b> <i>Passerina ciris</i> Season: Breeding	<b>Bird of conservation concern</b>
<b>Peregrine Falcon</b> <i>Falco peregrinus</i> Season: Wintering <a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FU">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FU</a>	<b>Bird of conservation concern</b>
<b>Prothonotary Warbler</b> <i>Protonotaria citrea</i> Season: Breeding	<b>Bird of conservation concern</b>
<b>Red-headed Woodpecker</b> <i>Melanerpes erythrocephalus</i> Year-round	<b>Bird of conservation concern</b>
<b>Rusty Blackbird</b> <i>Euphagus carolinus</i> Season: Wintering	<b>Bird of conservation concern</b>
<b>Scissor-tailed Flycatcher</b> <i>Tyrannus forficatus</i> Season: Breeding	<b>Bird of conservation concern</b>
<b>Short-eared Owl</b> <i>Asio flammeus</i> Season: Wintering <a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HD">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HD</a>	<b>Bird of conservation concern</b>
<b>Sprague's Pipit</b> <i>Anthus spragueii</i> Season: Wintering <a href="https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0GD">https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0GD</a>	<b>Bird of conservation concern</b>
<b>Swainson's Warbler</b> <i>Limnothlypis swainsonii</i> Season: Breeding	<b>Bird of conservation concern</b>
<b>Worm Eating Warbler</b> <i>Helmitheros vermivorum</i> Seasons: Breeding, Migrating	<b>Bird of conservation concern</b>
<b>Yellow Rail</b> <i>Coturnicops noveboracensis</i> Season: Wintering	<b>Bird of conservation concern</b>

## Refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. If your project overlaps or otherwise impacts a Refuge, please contact that Refuge to discuss the authorization process.

There are no refuges within this project area

# Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes.

Project proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate [U.S. Army Corps of Engineers District](#).

## DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

## DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

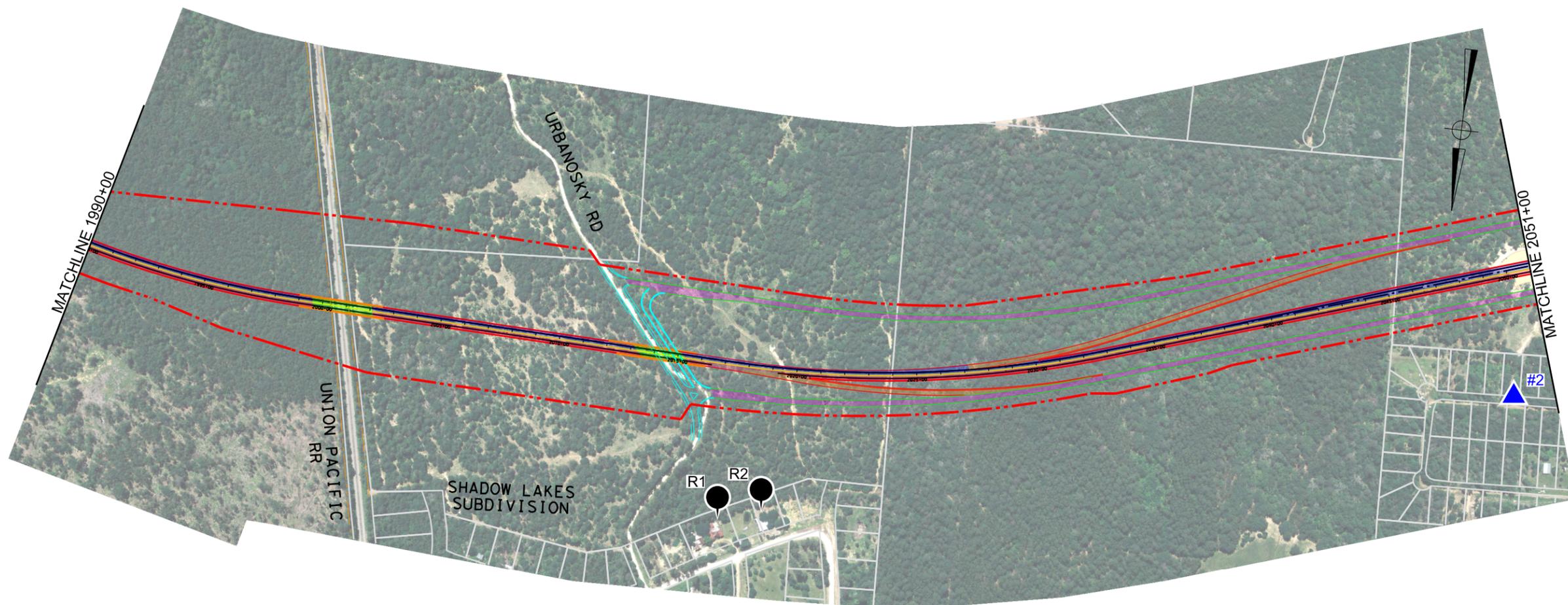
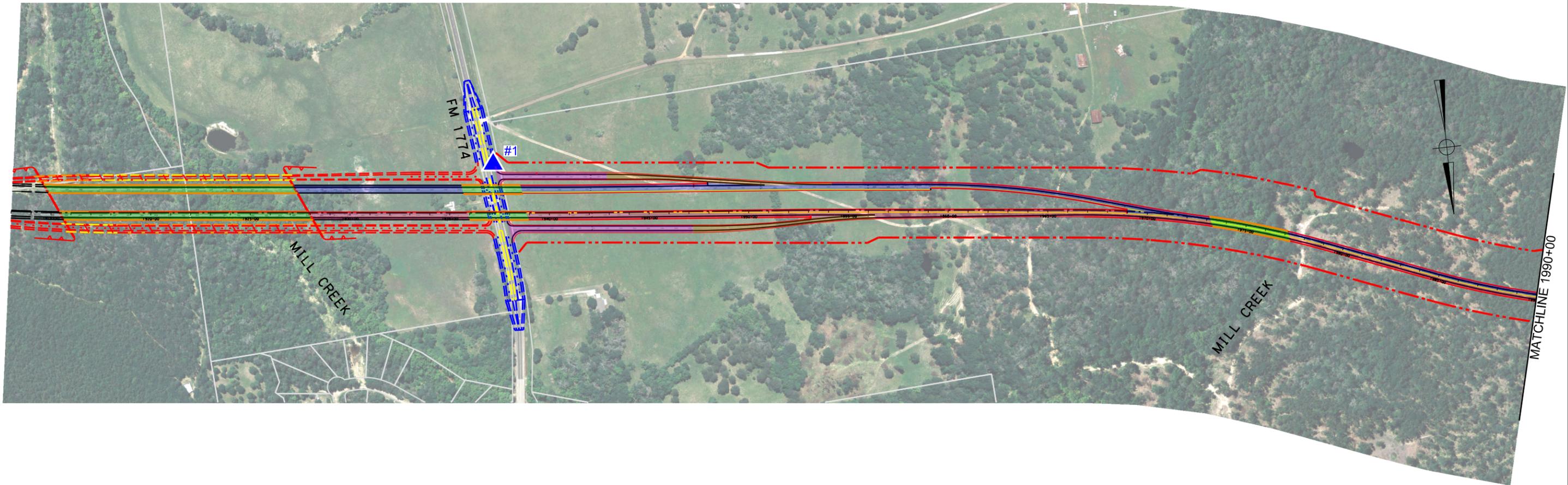
## DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Wetland data is unavailable at this time.

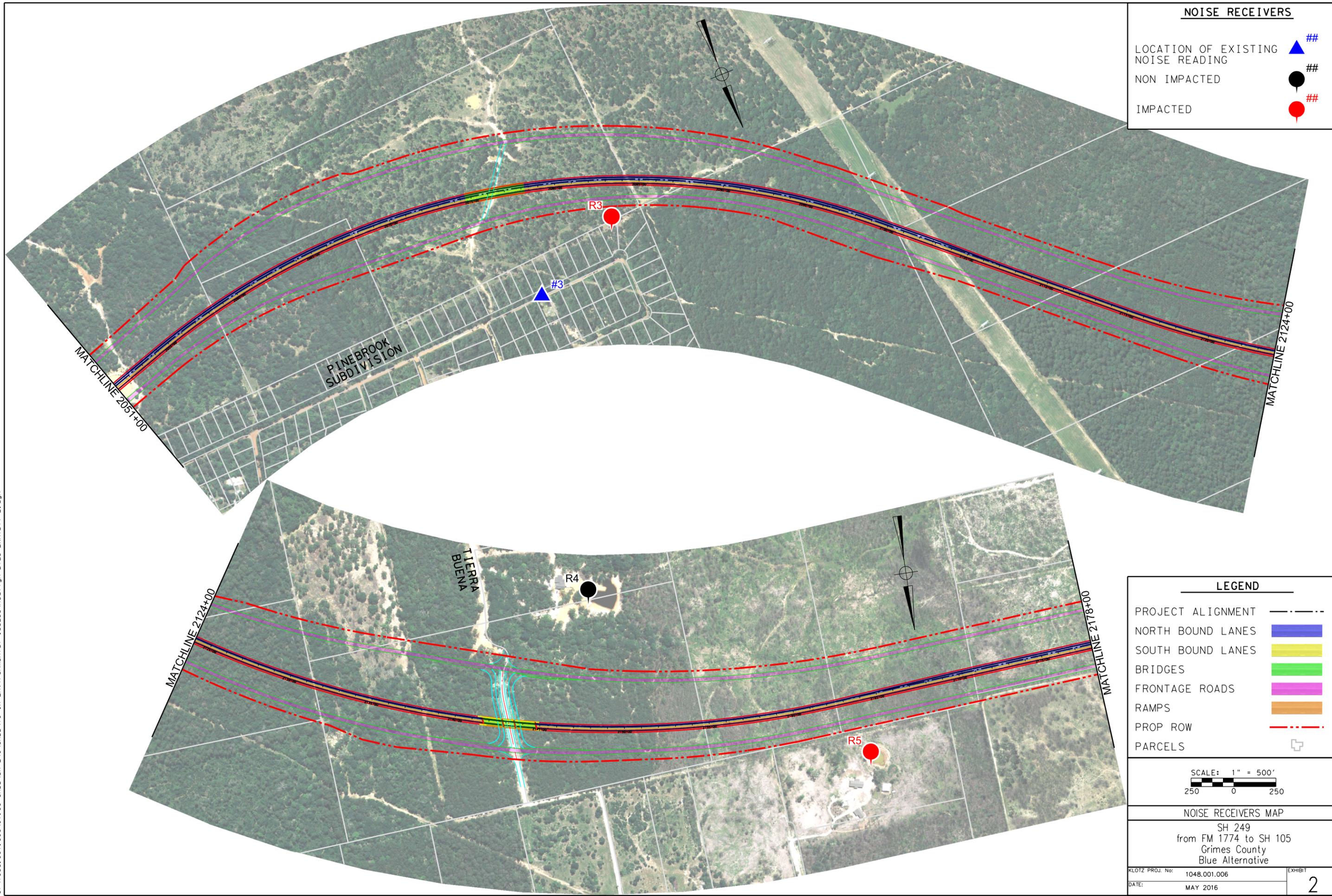
**Appendix G**  
**Noise Analysis Exhibits**

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NOISE RECEIVERS	
LOCATION OF EXISTING NOISE READING	▲ ##
NON IMPACTED	● ##
IMPACTED	● ##
LEGEND	
PROJECT ALIGNMENT	— · — · —
NORTH BOUND LANES	■
SOUTH BOUND LANES	■
BRIDGES	■
FRONTAGE ROADS	■
RAMPS	■
PROP ROW	— · — · —
PARCELS	□
SCALE: 1" = 500'	
NOISE RECEIVERS MAP	
SH 249 from FM 1774 to SH 105 Grimes County Blue Alternative	
KLOTZ PROJ. No:	1048.001.006
DATE:	MAY 2016
EXHIBIT	1

5/10/2016 8:47:03 AM J:\1086.001.006\07.00 CADD\SH 249\CADD.10-IX Environmental Issues\Realign Blue\Exhibit 2.dgn



NOISE RECEIVERS	
LOCATION OF EXISTING NOISE READING	▲ ##
NON IMPACTED	● ##
IMPACTED	● ##

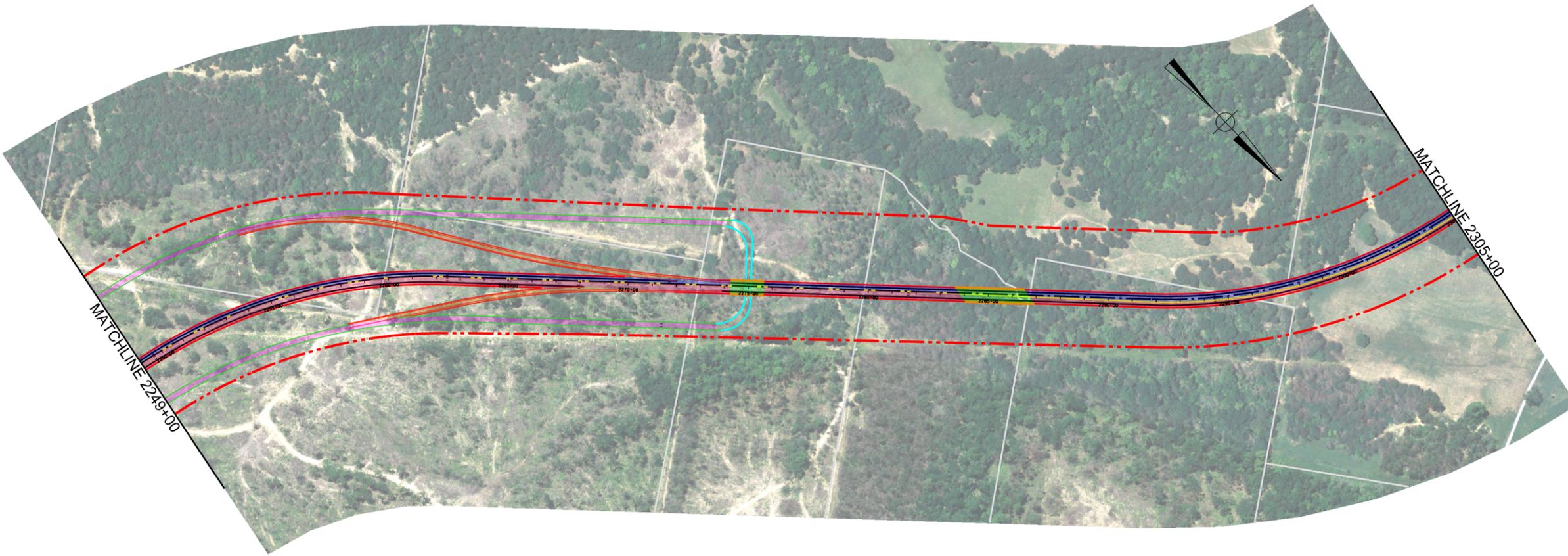
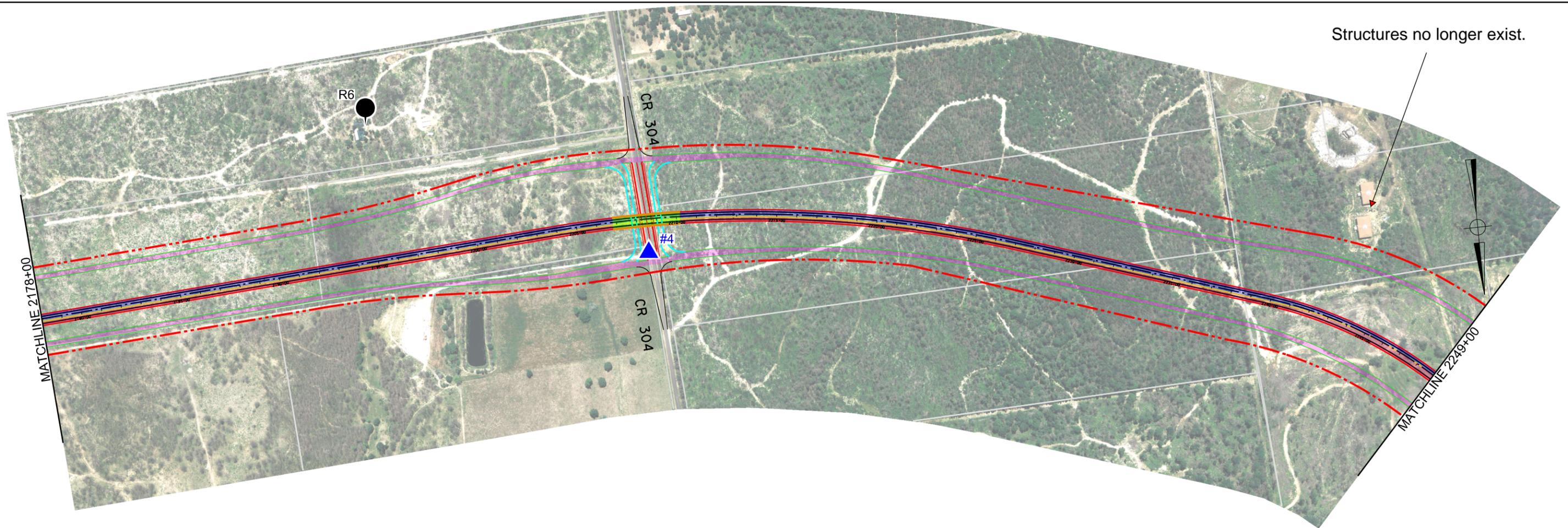
LEGEND	
PROJECT ALIGNMENT	— · — · —
NORTH BOUND LANES	■
SOUTH BOUND LANES	■
BRIDGES	■
FRONTAGE ROADS	■
RAMPS	■
PROP ROW	— · — · —
PARCELS	□



NOISE RECEIVERS MAP  
 SH 249  
 from FM 1774 to SH 105  
 Grimes County  
 Blue Alternative

KLOTZ PROJ. No:	1048.001.006	EXHIBIT
DATE:	MAY 2016	2

5/10/2016 8:48:08 AM J:\1086.001.006\07.00 CADD\SH 249\CADD.10-IX Environmental Issues\Realign Blue\Exhibit 3.dgn



Structures no longer exist.

**NOISE RECEIVERS**

- LOCATION OF EXISTING NOISE READING ▲ ##
- NON IMPACTED ● ##
- IMPACTED ● ##

**LEGEND**

- PROJECT ALIGNMENT ---
- NORTH BOUND LANES █
- SOUTH BOUND LANES █
- BRIDGES █
- FRONTAGE ROADS █
- RAMPS █
- PROP ROW - - -
- PARCELS □



**NOISE RECEIVERS MAP**

SH 249  
from FM 1774 to SH 105  
Grimes County  
Blue Alternative

5/10/2016 8:49:07 AM J:\1086.001.006\07.00 CADD\SH 249\CADD.10-IX Environmental Issues\Realign Blue\Exhibit 4.dgn



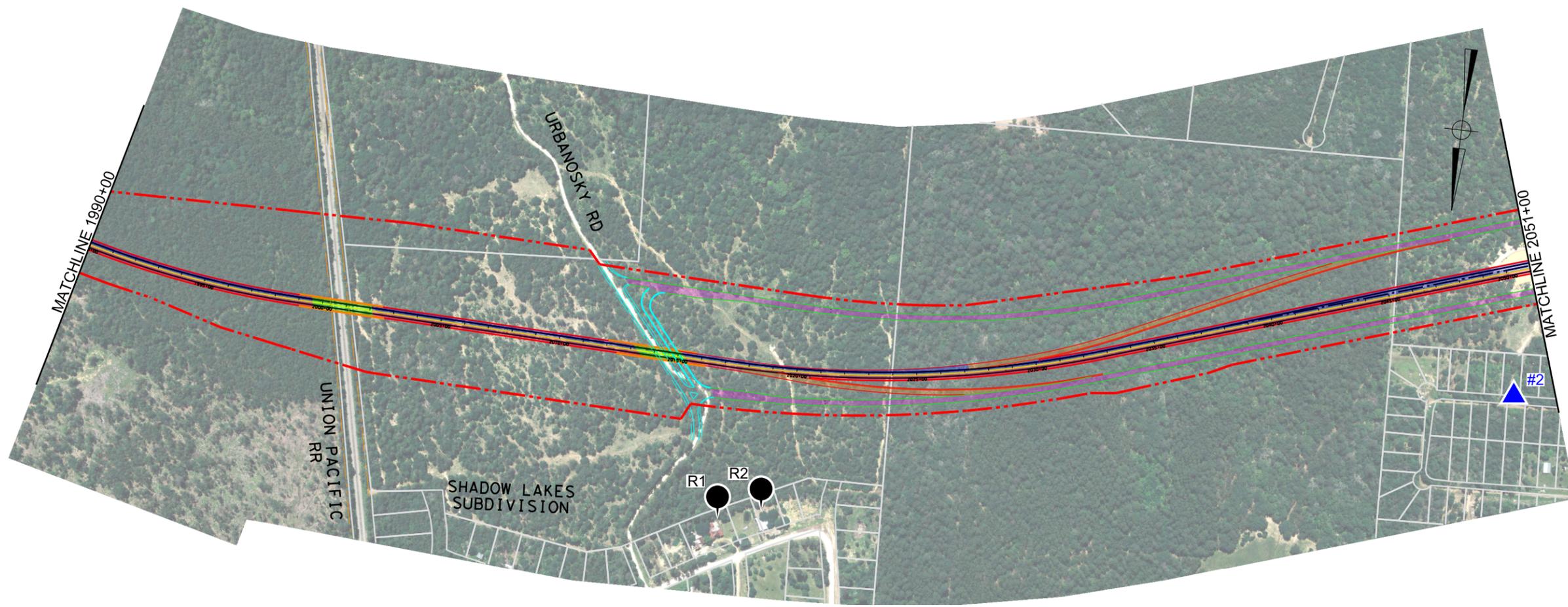
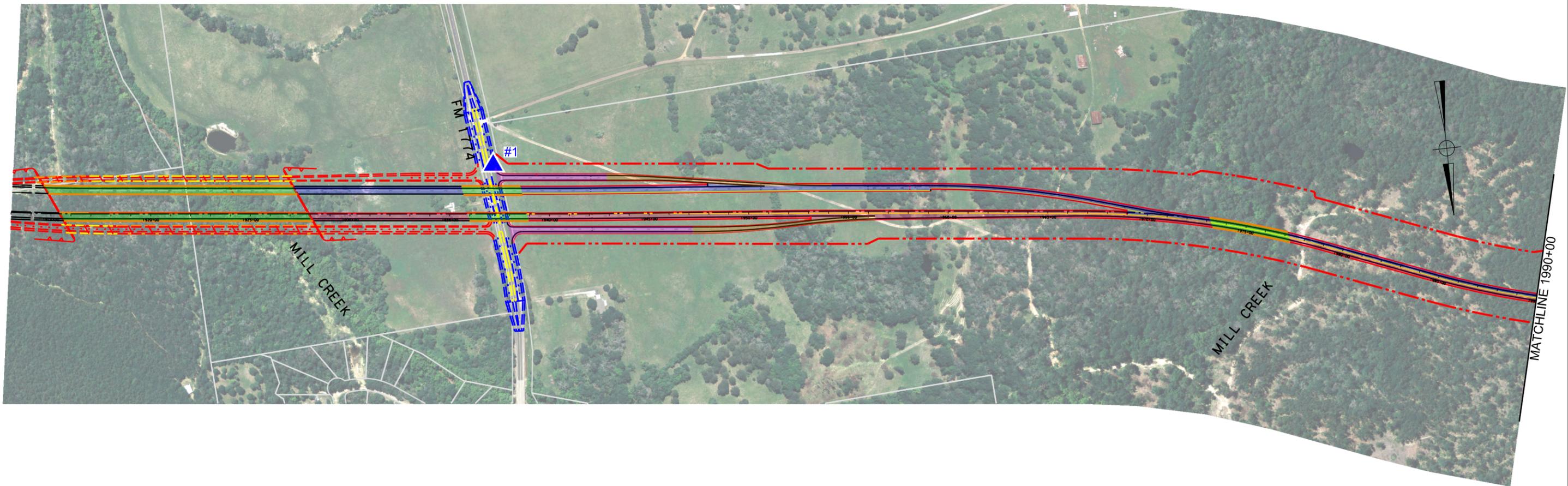
NOISE RECEIVERS	
LOCATION OF EXISTING NOISE READING	▲ ##
NON IMPACTED	● ##
IMPACTED	● ##
LEGEND	
PROJECT ALIGNMENT	— · — · —
NORTH BOUND LANES	■
SOUTH BOUND LANES	■
BRIDGES	■
FRONTAGE ROADS	■
RAMPS	■
PROP ROW	— · — · —
PARCELS	□
SCALE: 1" = 500'	
NOISE RECEIVERS MAP	
SH 249 from FM 1774 to SH 105 Grimes County Blue Alternative	
KLOTZ PROJ. No:	1048.001.006
DATE:	MAY 2016
EXHIBIT	
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5/10/2016 8:49:57 AM J:\1086.001.006\07.00 CADD\SH 249\CADD.10-IX Environmental Issues\Realign Blue\Exhibit 5.dgn



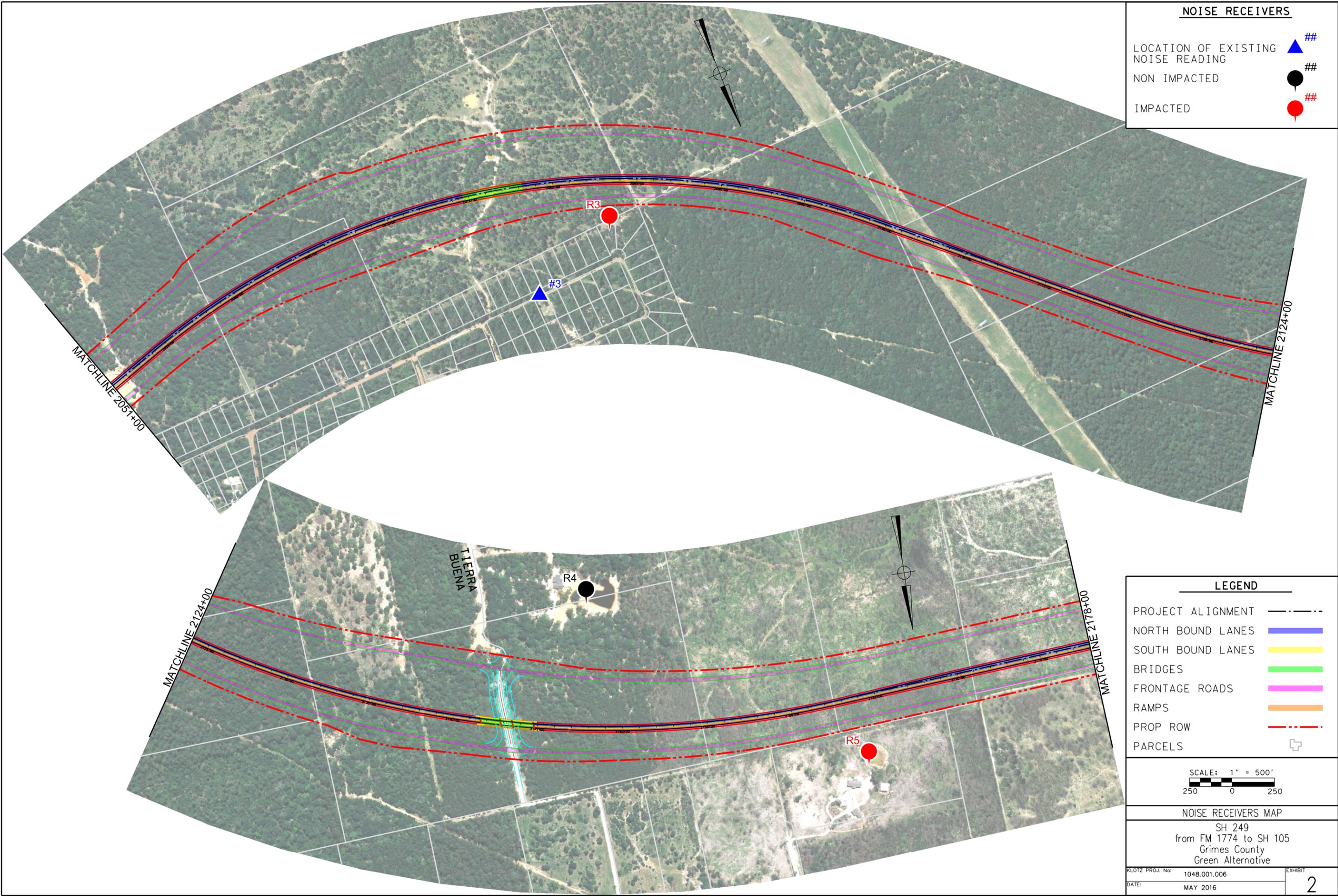
NOISE RECEIVERS	
LOCATION OF EXISTING NOISE READING	▲ ##
NON IMPACTED	● ##
IMPACTED	● ##
LEGEND	
PROJECT ALIGNMENT	— · — · —
NORTH BOUND LANES	■
SOUTH BOUND LANES	■
BRIDGES	■
FRONTAGE ROADS	■
RAMPS	■
PROP ROW	— · — · —
PARCELS	□
SCALE: 1" = 500'	
NOISE RECEIVERS MAP	
SH 249 from FM 1774 to SH 105 Grimes County Blue Alternative	
KLOTZ PROJ. No:	1048.001.006
DATE:	MAY 2016
EXHIBIT	5

5/10/2016 8:50:53 AM J:\1086.001.006\07.00 CADD\SH 249\CADD.10-IX Environmental Issues\Realign Green\*Exhibit 1.dgn



NOISE RECEIVERS	
LOCATION OF EXISTING NOISE READING	▲ ##
NON IMPACTED	● ##
IMPACTED	● ##
LEGEND	
PROJECT ALIGNMENT	— · — · —
NORTH BOUND LANES	■
SOUTH BOUND LANES	■
BRIDGES	■
FRONTAGE ROADS	■
RAMPS	■
PROP ROW	— · — · —
PARCELS	□
SCALE: 1" = 500'	
NOISE RECEIVERS MAP	
SH 249 from FM 1774 to SH 105 Grimes County Green Alternative	
KLOTZ PROJ. No:	1048.001.006
DATE:	MAY 2016
EXHIBIT	1

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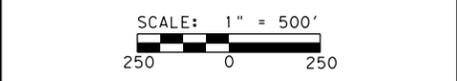
**NOISE RECEIVERS**

LOCATION OF EXISTING NOISE READING

- NON IMPACTED ▲ ##
- NON IMPACTED ● ##
- IMPACTED ● ##

**LEGEND**

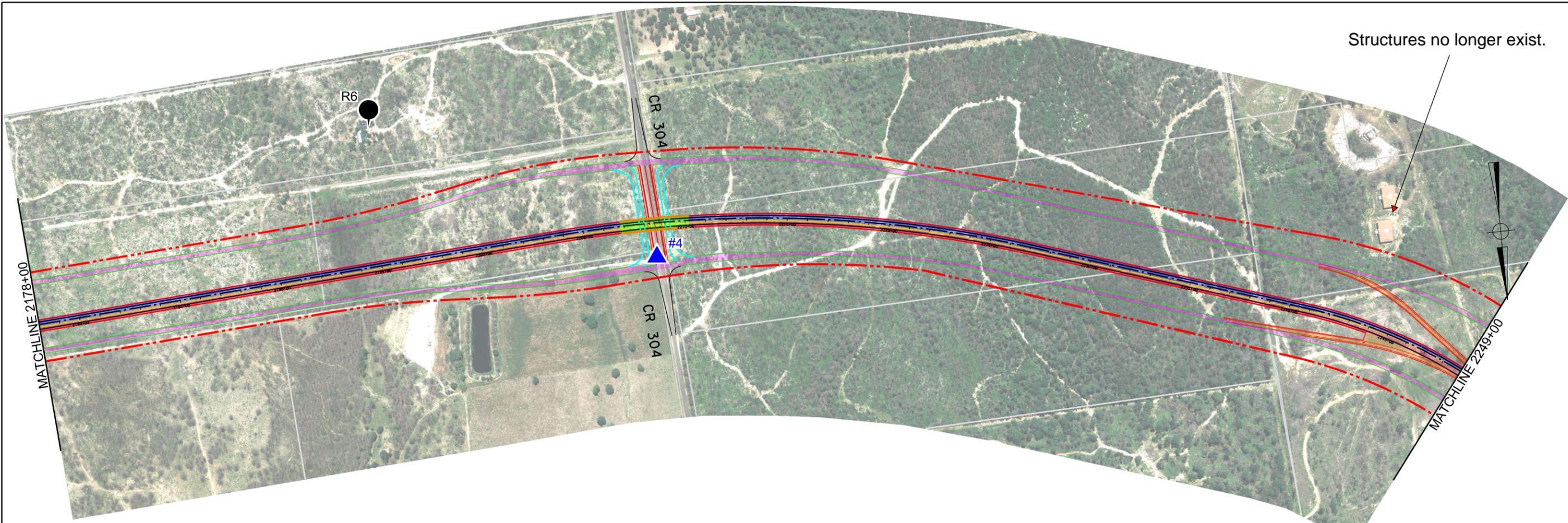
- PROJECT ALIGNMENT - - -
- NORTH BOUND LANES —
- SOUTH BOUND LANES —
- BRIDGES —
- FRONTAGE ROADS —
- RAMPS —
- PROP ROW - · - ·
- PARCELS



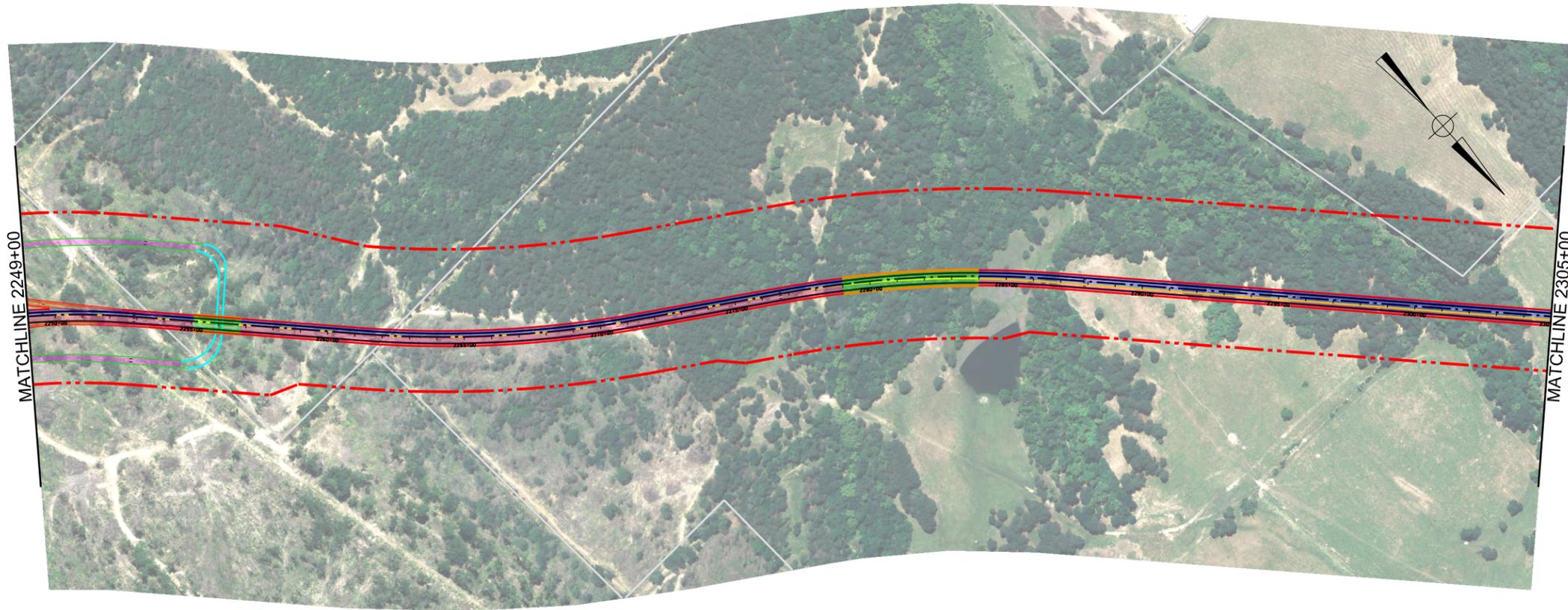
NOISE RECEIVERS MAP

SH 249  
from FM 1774 to SH 105  
Grimes County  
Green Alternative

5/10/2016 8:53:01 AM J:\1086.001.006\07\_00 CADD\SH 249\CADD.10-IX Environmental Issues\Realign Green\*Exhibit 3.dgn



Structures no longer exist.



**NOISE RECEIVERS**

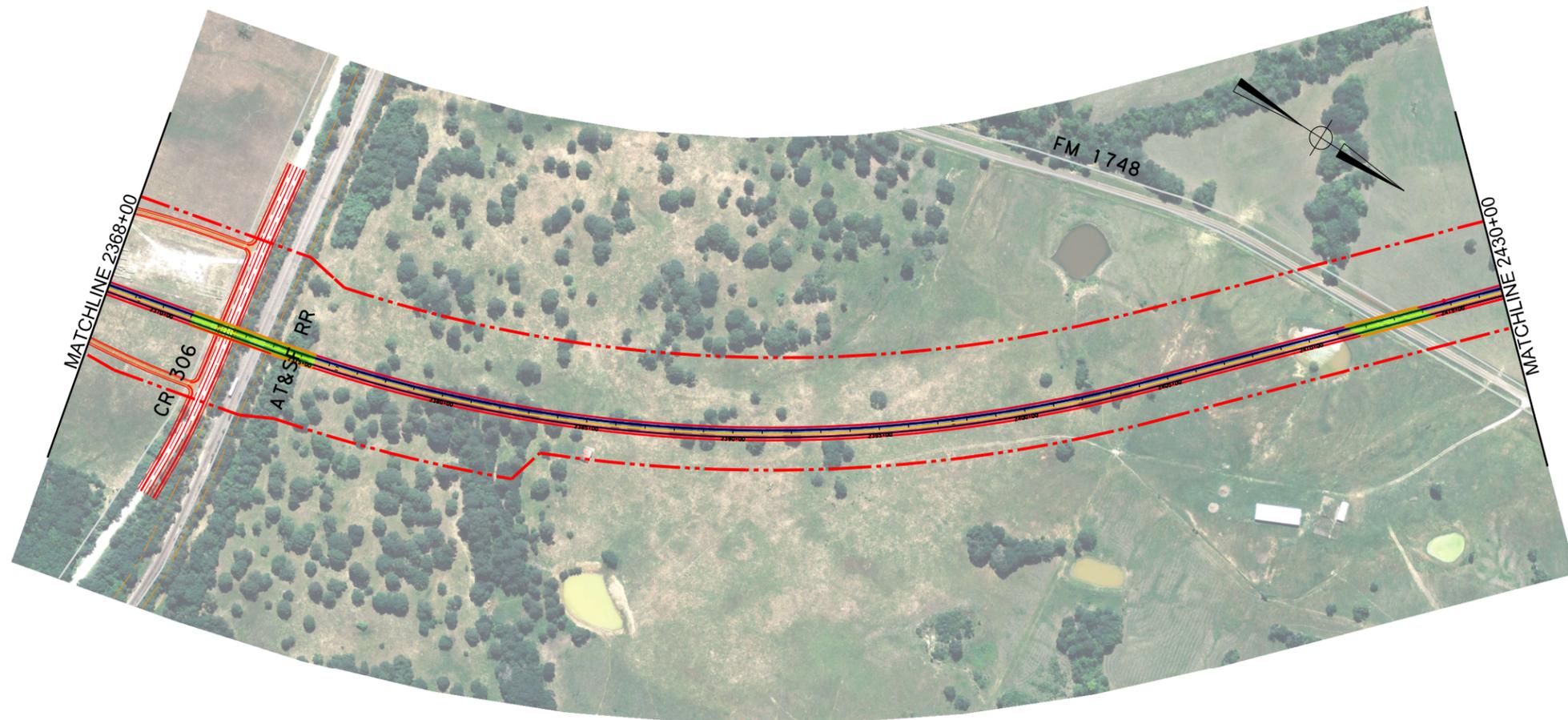
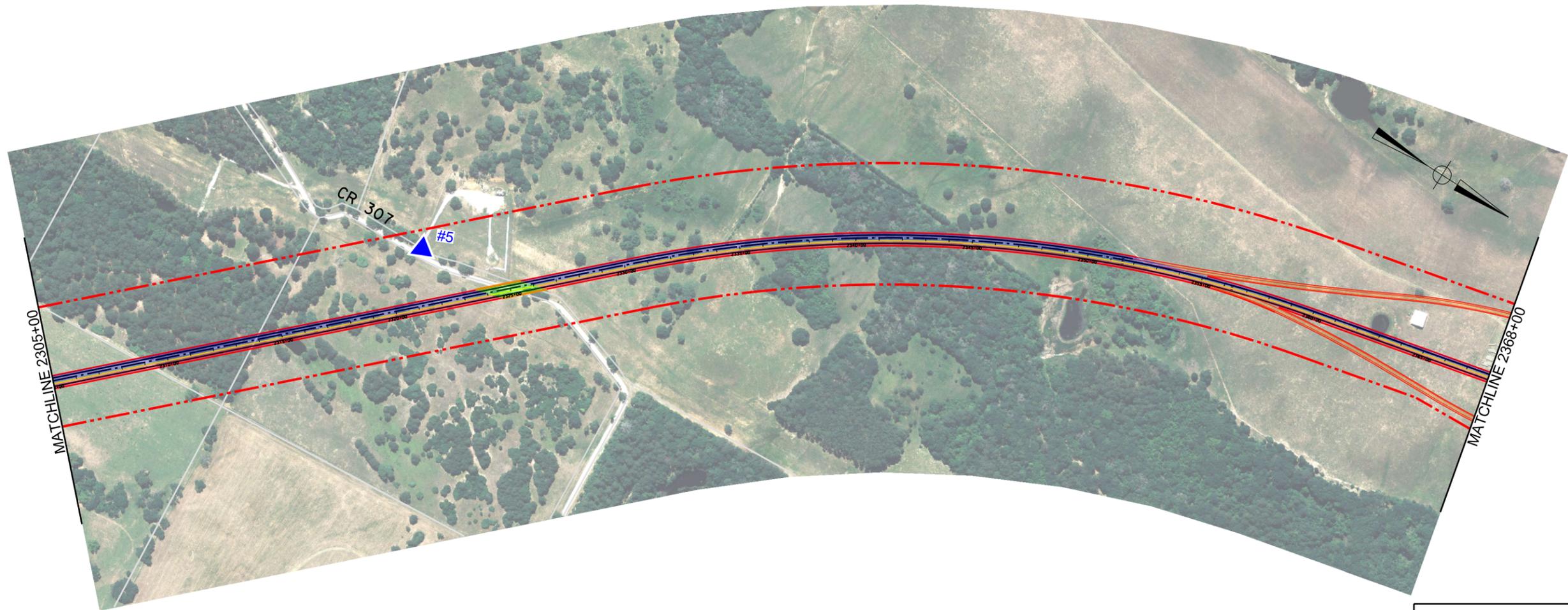
- LOCATION OF EXISTING NOISE READING ▲ ##
- NON IMPACTED ● ##
- IMPACTED ● ##

**LEGEND**

- PROJECT ALIGNMENT - - -
- NORTH BOUND LANES █
- SOUTH BOUND LANES █
- BRIDGES █
- FRONTAGE ROADS █
- RAMPS █
- PROP ROW - · - · -
- PARCELS □



NOISE RECEIVERS MAP  
 SH 249  
 from FM 1774 to SH 105  
 Grimes County  
 Green Alternative

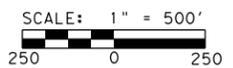


**NOISE RECEIVERS**

- LOCATION OF EXISTING NOISE READING ▲ ##
- NON IMPACTED ● ##
- IMPACTED ● ##

**LEGEND**

- PROJECT ALIGNMENT ---
- NORTH BOUND LANES █
- SOUTH BOUND LANES █
- BRIDGES █
- FRONTAGE ROADS █
- RAMPS █
- PROP ROW - - -
- PARCELS □



**NOISE RECEIVERS MAP**

SH 249  
from FM 1774 to SH 105  
Grimes County  
Green Alternative

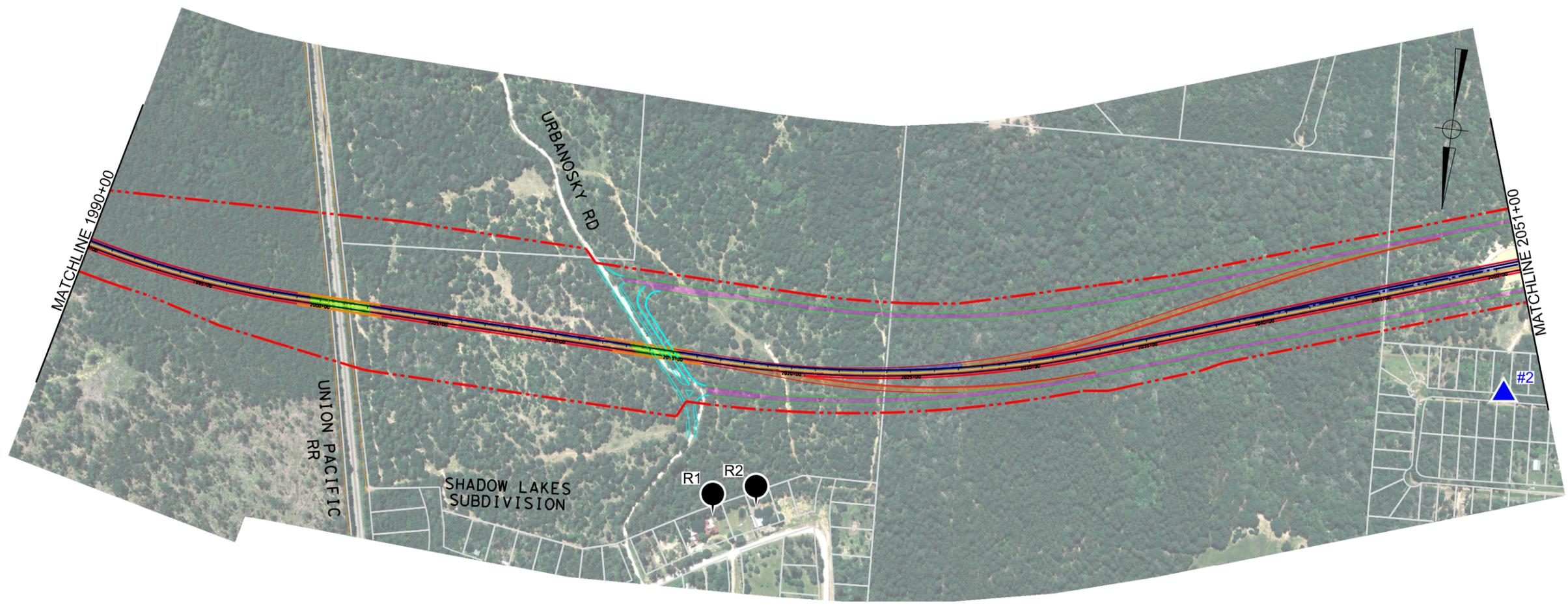
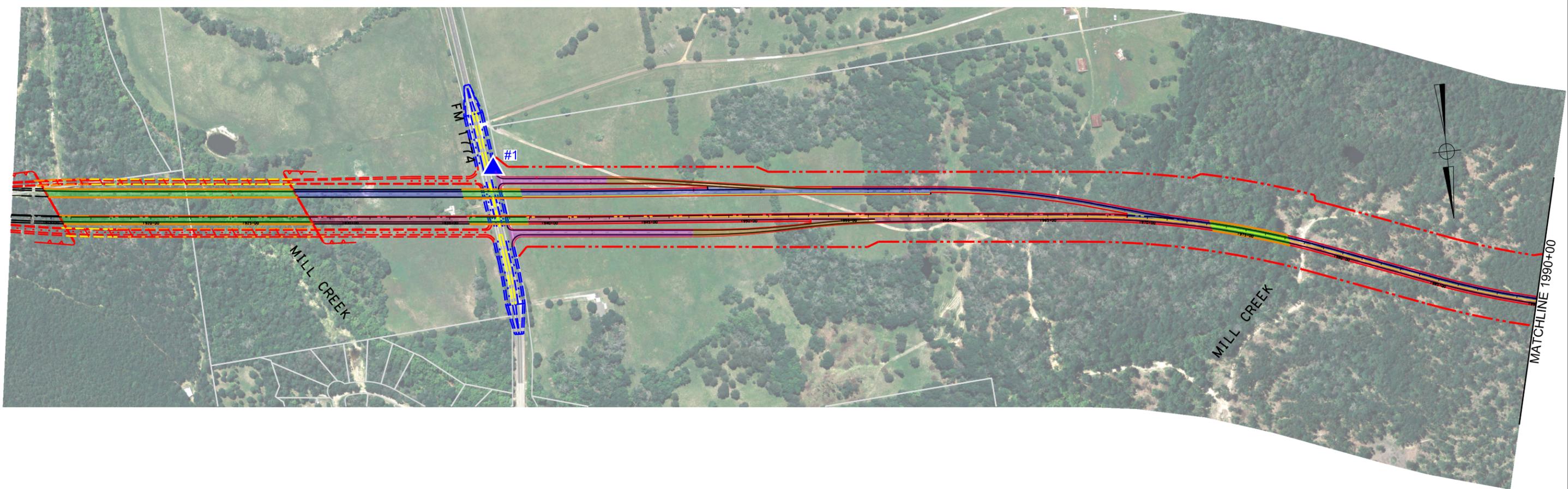
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DATE: MAY 2016

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NOISE RECEIVERS	
LOCATION OF EXISTING NOISE READING	▲ ##
NON IMPACTED	● ##
IMPACTED	● ##
LEGEND	
PROJECT ALIGNMENT	— · — · —
NORTH BOUND LANES	■
SOUTH BOUND LANES	■
BRIDGES	■
FRONTAGE ROADS	■
RAMPS	■
PROP ROW	— · — · —
PARCELS	□
SCALE: 1" = 500'	
250 0 250	
NOISE RECEIVERS MAP	
SH 249 from FM 1774 to SH 105 Grimes County Green Alternative	
KLOTZ PROJ. No:	1048.001.006
DATE:	MAY 2016
EXHIBIT	
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**NOISE RECEIVERS**

LOCATION OF EXISTING NOISE READING

NON IMPACTED

IMPACTED

**LEGEND**

PROJECT ALIGNMENT

NORTH BOUND LANES

SOUTH BOUND LANES

BRIDGES

FRONTAGE ROADS

RAMPS

PROP ROW

PARCELS

SCALE: 1" = 500'

250 0 250

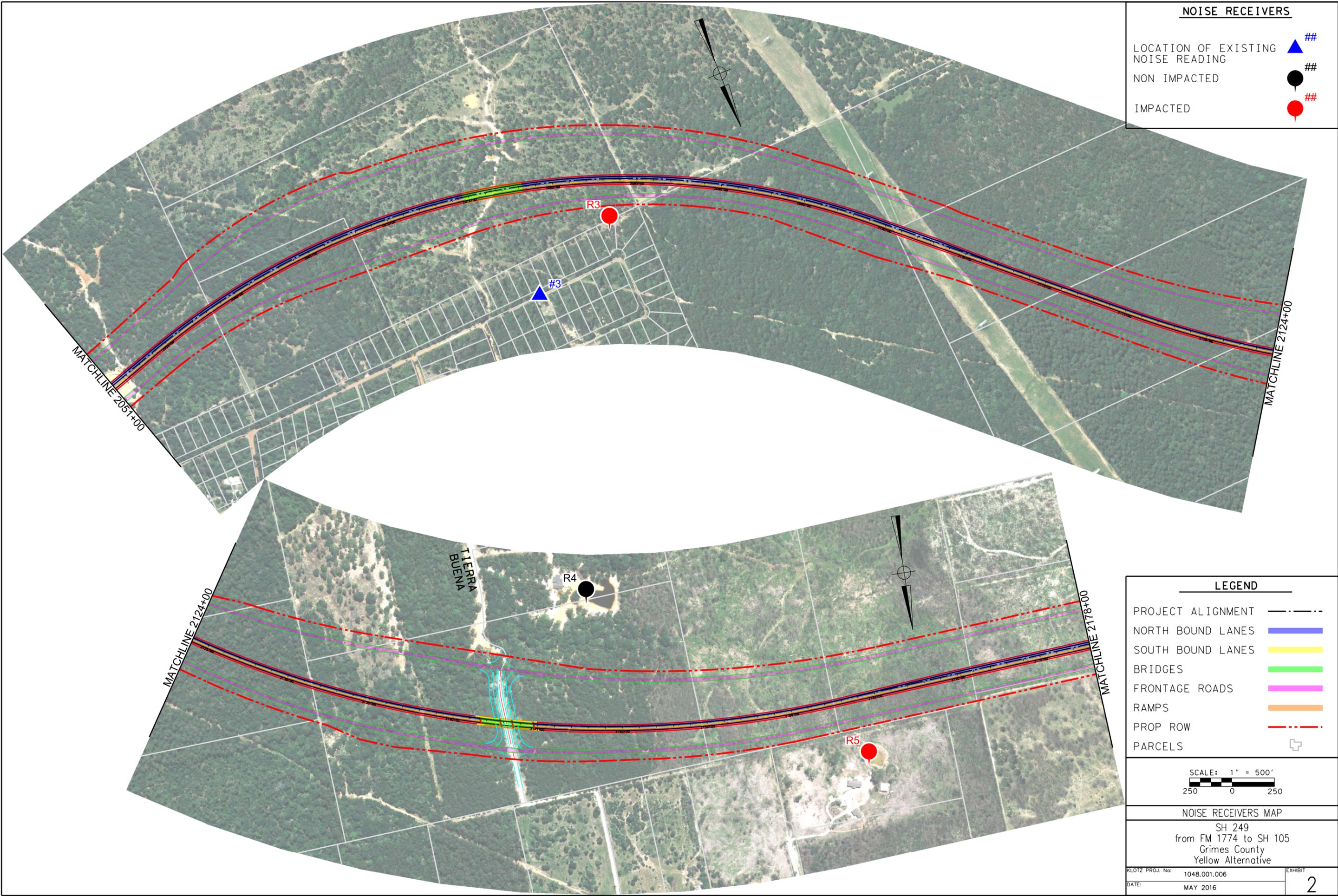
NOISE RECEIVERS MAP

SH 249  
from FM 1774 to SH 105  
Grimes County  
Yellow Alternative

KLOTZ PROJ. No: 1048.001.006 EXHIBIT

DATE: MAY 2016 1

5/10/2016 8:56:56 AM  
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**NOISE RECEIVERS**

LOCATION OF EXISTING NOISE READING

NON IMPACTED ● ##

IMPACTED ● ##

**LEGEND**

PROJECT ALIGNMENT - - -

NORTH BOUND LANES —

SOUTH BOUND LANES —

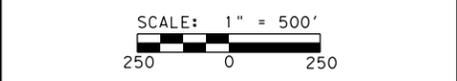
BRIDGES —

FRONTAGE ROADS —

RAMPS —

PROP ROW - · - · -

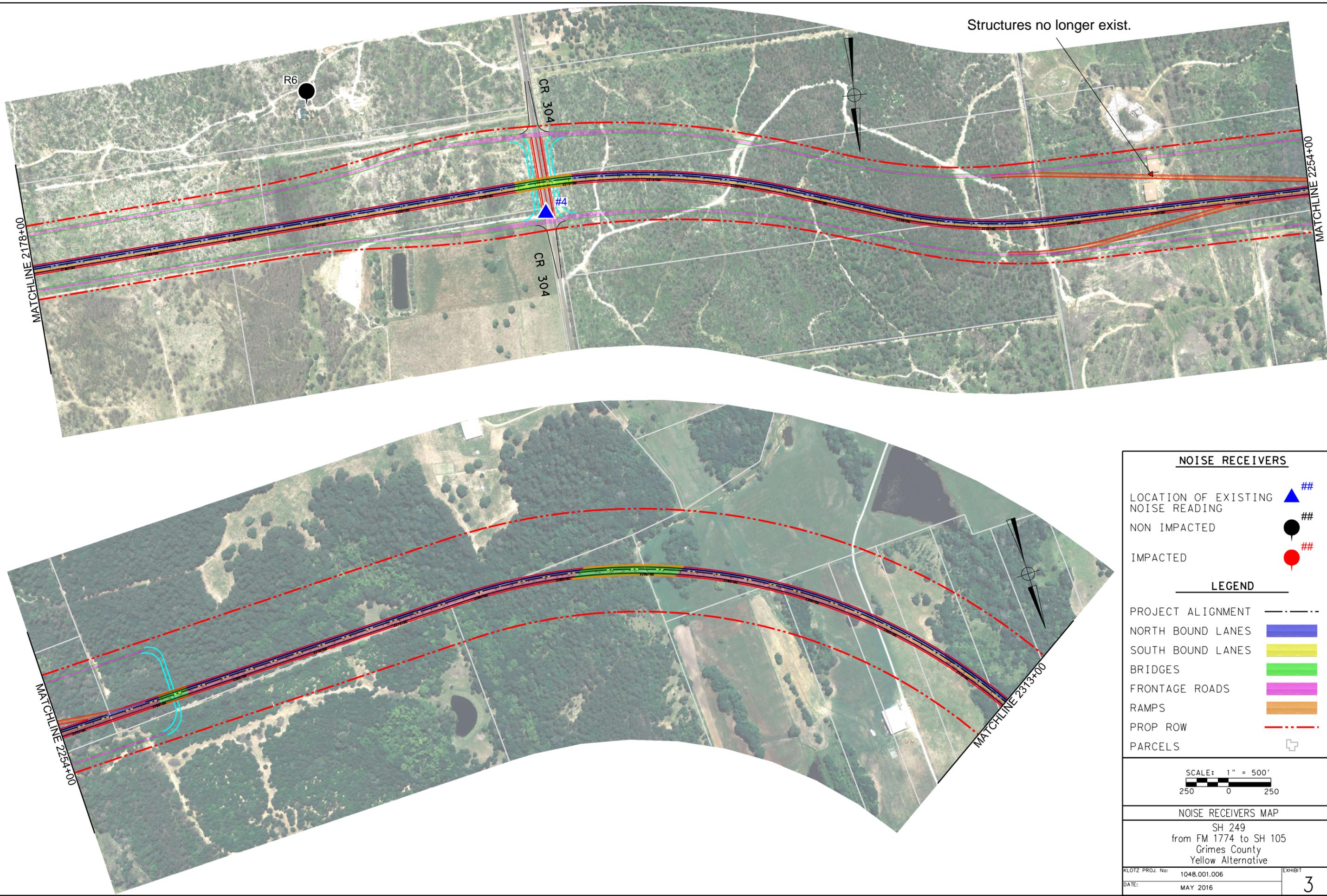
PARCELS



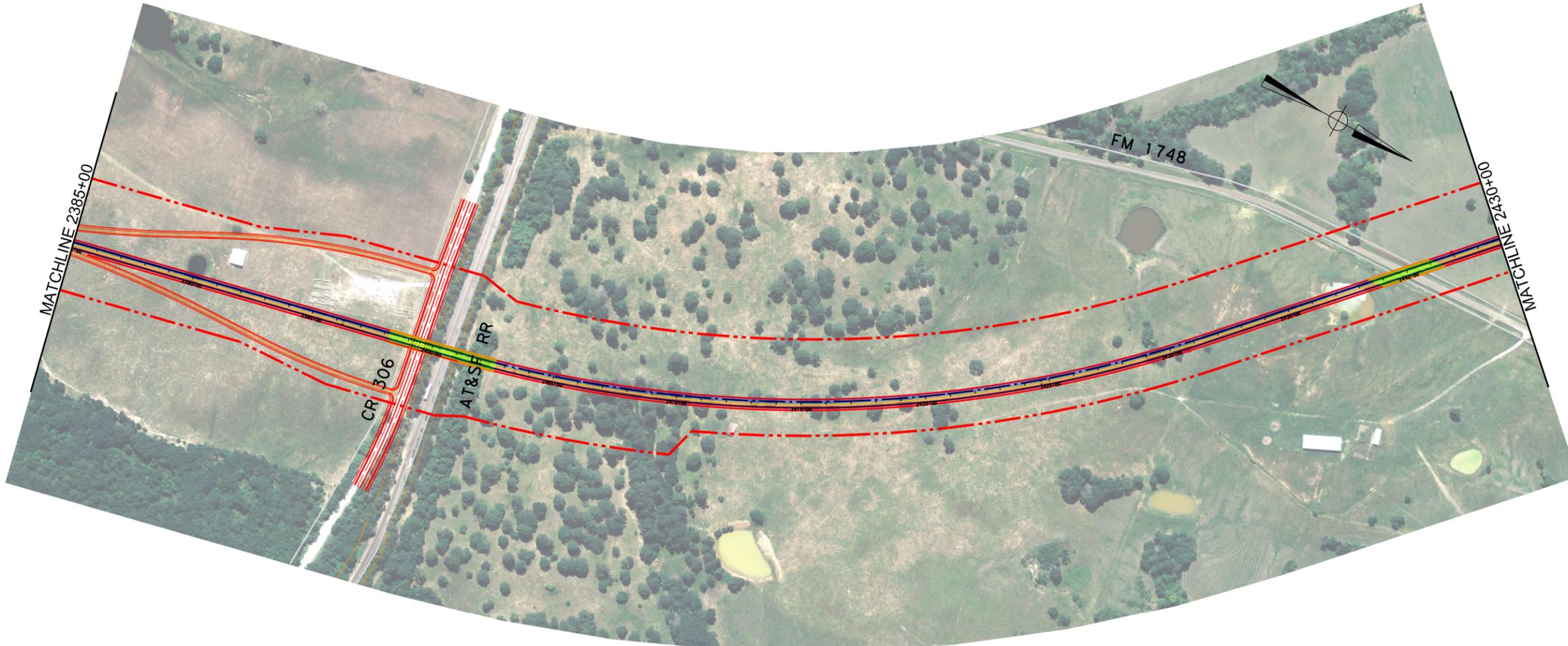
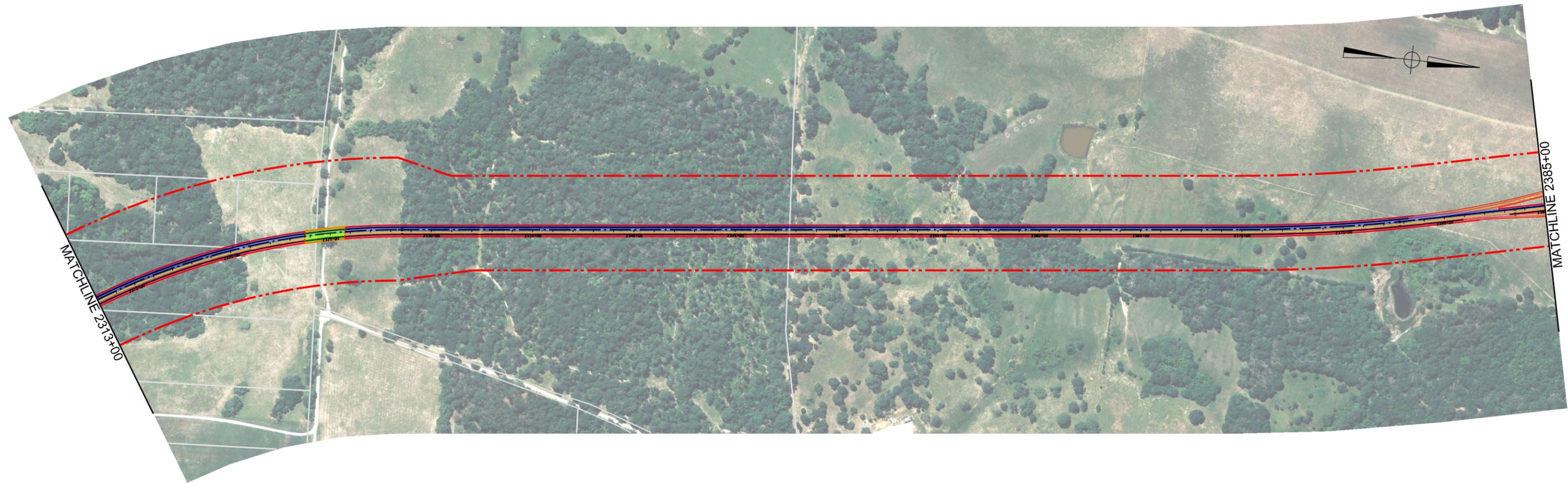
NOISE RECEIVERS MAP

SH 249  
 from FM 1774 to SH 105  
 Grimes County  
 Yellow Alternative

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NOISE RECEIVERS	
LOCATION OF EXISTING NOISE READING	▲ ##
NON IMPACTED	● ##
IMPACTED	● ##
LEGEND	
PROJECT ALIGNMENT	— · — · —
NORTH BOUND LANES	■
SOUTH BOUND LANES	■
BRIDGES	■
FRONTAGE ROADS	■
RAMPS	■
PROP ROW	— · — · —
PARCELS	□
SCALE: 1" = 500'	
NOISE RECEIVERS MAP	
SH 249 from FM 1774 to SH 105 Grimes County Yellow Alternative	
KLOTZ PROJ. No:	1048.001.006
DATE:	MAY 2016
EXHIBIT	3



**NOISE RECEIVERS**

LOCATION OF EXISTING NOISE READING

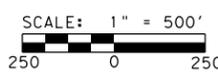
- ▲ ##
- ##
- ##

NON IMPACTED

IMPACTED

**LEGEND**

- PROJECT ALIGNMENT ———
- NORTH BOUND LANES ———
- SOUTH BOUND LANES ———
- BRIDGES ———
- FRONTAGE ROADS ———
- RAMPS ———
- PROP ROW - - - - -
- PARCELS □



NOISE RECEIVERS MAP

SH 249  
from FM 1774 to SH 105  
Grimes County  
Yellow Alternative

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NOISE RECEIVERS	
LOCATION OF EXISTING NOISE READING	▲ ##
NON IMPACTED	● ##
IMPACTED	● ##

LEGEND	
PROJECT ALIGNMENT	— · — · —
NORTH BOUND LANES	■
SOUTH BOUND LANES	■
BRIDGES	■
FRONTAGE ROADS	■
RAMPS	■
PROP ROW	— · — · —
PARCELS	□

SCALE: 1" = 500'

250 0 250

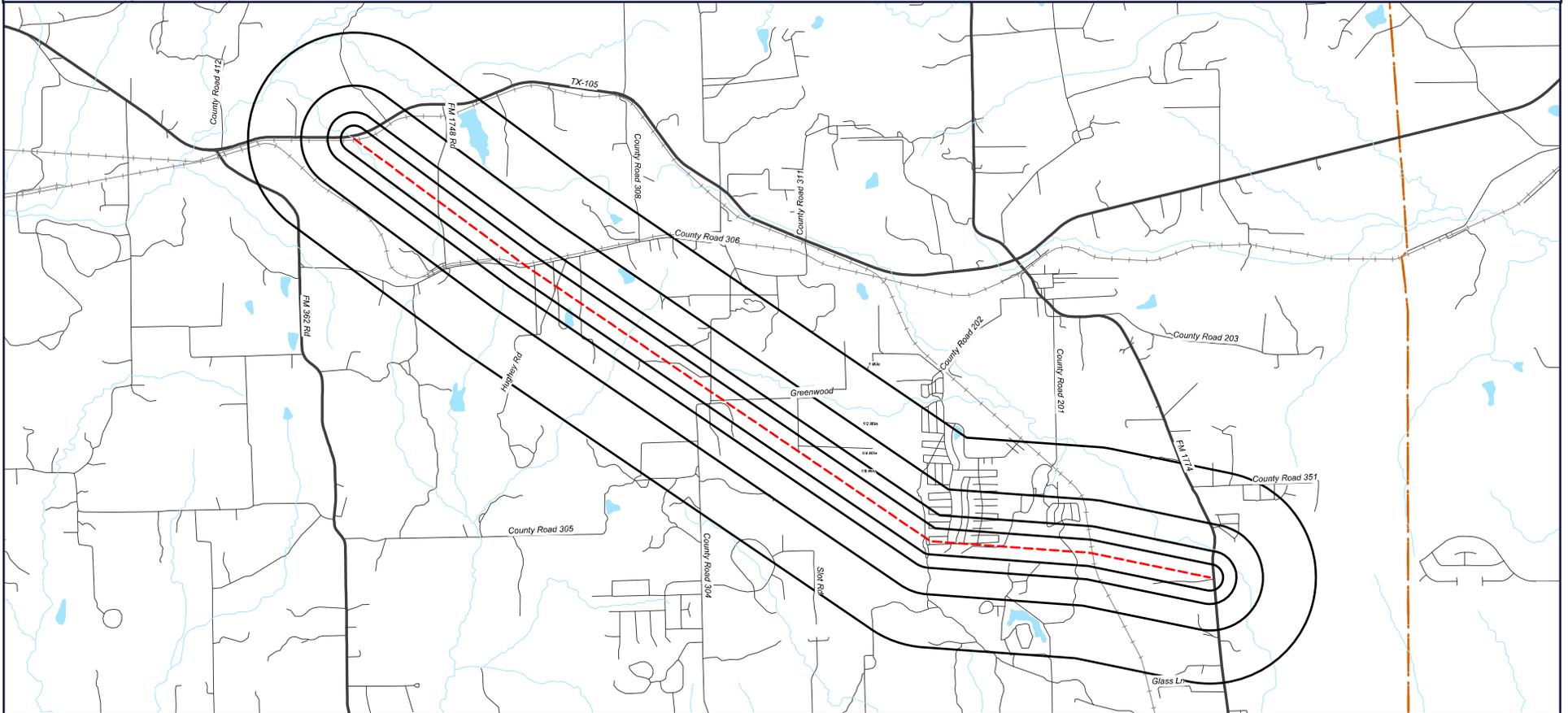
NOISE RECEIVERS MAP

SH 249  
from FM 1774 to SH 105  
Grimes County  
Yellow Alternative

KLOTZ PROJ. No:	1048.001.006	EXHIBIT
DATE:	MAY 2016	5

**Appendix H**  
**Hazardous Materials Radius Map**

**RADIUS MAP**



— Target Property (TP)

**SH 249 EA**  
**SH 249**  
**Plantersville, Texas**  
**77363**



0' 2500' 5000' 7500'  
SCALE: 1" = 5000'