Draft Environmental Assessment

SH 105, Houston District

SH 105 (From Mount Mariah to FM 149)
CSJ: 0338-02-032
Montgomery County, Texas
December 2016

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

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1.0 INTRODUCTION

1.1 Project Overview

The Texas Department of Transportation (TxDOT) is proposing to reconstruct and expand State Highway (SH) 105 from Mount (Mt.) Mariah Road to Farm-to-Market Road (FM) 149 in Montgomery County. The project would be located in a mostly rural area of Montgomery County adjacent to two urban areas. The City of Montgomery is in the eastern portion of the project study area, and the community of Dobbin is in the western portion of the project study area. The length of the project would be approximately 6.2 miles. **Exhibit A** depicts the project location and general study area for the project in Montgomery County.

1.2 Project Definition Process

The project is currently listed in the Houston-Galveston Area Council's (H-GAC's) *2040 Regional Transportation Plan (RTP) Amendment 3,* approved April 22, 2016. It is also listed in Appendix D of the 2017-2020 Transportation Improvement Program (TIP), dated June 23, 2016 (See **Appendix A**). As described further in *Section 2.4* of this EA, TxDOT held three public meetings for the project to date, and TxDOT will conduct a public hearing to receive input for the project once the project is approved for further processing.

2.0 DESCRIPTION OF PROPOSED ACTION

2.1 Description of Proposal

The project proposes to widen existing SH 105 from a two-lane, undivided highway to a four-lane, divided highway with outside shoulders and open ditches for most of its length. The proposed highway would typically consist of four travel lanes with two, 12-foot-wide lanes in each direction and intermittent sidewalks. The width of the proposed right-of-way (ROW) would vary from 160 feet to as much as 355 feet at the bridge crossing areas. Additional ROW would be required from the north and south sides adjacent to existing SH 105 to complete the project. TxDOT would be responsible for the ROW acquisition. **Exhibit B** illustrates the existing and proposed schematic and typical sections for SH 105.

2.2 Need and Purpose

2.2.1 Project Need

The transportation improvement needs that affect the project study area are related to expanding capacity because of growing congestion in the area and safety concerns.

2.2.1.1 Traffic

Construction of the new Montgomery High School west of the City of Montgomery has led to increased traffic along existing SH 105. Additionally, construction of Buffalo Springs, a residential subdivision located along the Lone Star Parkway, contributed to residential growth in and around the City of Montgomery. Although the subdivision is not within the study area, traffic demands along an associated portion of existing SH 105 have greatly increased because of traffic related to the subdivision.

In 2014, the annual average daily traffic (AADT) was 8,500 vehicles per day (vpd). AADT is projected to increase to 12,800 vpd for the design year of 2040. According to H-GAC's *Montgomery County Mobility Plan*, if improvements are not implemented, existing SH 105 would not meet area traffic demands in 2020 (H-GAC 1998). Montgomery County, in a partnership with the City of Conroe and H-GAC, is developing a long-range Thoroughfare Plan to identify

roadway facilities that are needed to accommodate the projected growth and development of the county. It is anticipated that this study would be completed in 2015.

Additionally, a portion of SH 105 has been designated as a Texas Trunk System (TTS) highway. As a complement to the larger federal highway system, the TTS plans to connect all cities with a population of 20,000 or more by a four-lane, divided facility, as approved by the transportation commission. Existing SH 105, west to SH 36 and east to U.S. Highway (US) 69, is currently designated as a TTS highway. The project would subsequently link trunk system projects proposed to the east and west of this project.

According to H-GAC, Montgomery County has experienced considerable growth in population and employment since 2010. By the year 2040, the area's population is projected to increase at a rate of 6.10 percent from 452,509 to 1,280,750. Employment is projected to increase 53 percent by almost 1.5 million new jobs in the CMS (H-GAC 2015). Meeting the transportation needs that result from this growth is a priority for the County's decision makers.

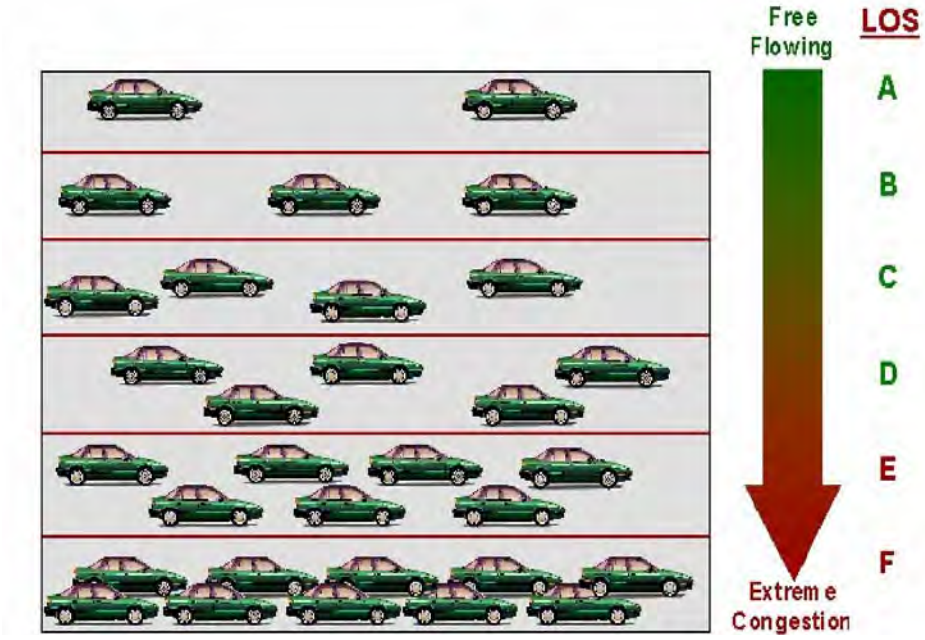
Level of service (LOS) is a qualitative measure related to the volume/capacity ratio of highway section. LOS categories range from ratings of A through F to describe highway operating conditions, where LOS A indicates very good operating conditions and LOS F essentially represents the functional failure of the highway in terms of traffic movement. **Table 1-1** defines the general characteristics of LOS, and **Figure 1** depicts LOS in relation to congestion.

Table 1-1: LOS Characteristics

LOS Rating	Description
A	Free flow with low volumes and high speeds
B	Reasonably free flow, but speeds beginning to be restricted by traffic conditions
C	In stable flow zone, but most drivers are restricted in the freedom to select their own speeds
D	Approaching an unstable flow where drivers have little freedom to select their own speeds
E	Unstable flow and may require short stoppages
F	Unacceptable congestion, stop-and-go, and forced flow

Source: SH 105 Study Team 2014.

Figure 1: LOS and Congestion



Source: SH 105 Study Team 2014.

TxDOT analyzed the project's build and no-build LOS conditions for both the existing year (2014) and projected 2040. The results indicate that motorists encountered serious and severe levels of congestion (LOS D) on existing SH 105 in 2014. If improvements to SH 105 are not implemented, LOS is predicted to deteriorate to LOS E by 2040. If the proposed improvements are implemented, LOS would improve to LOS A for the current year and LOS B for 2040.

2.2.1.2 Safety

Highway safety often plays a major role in determining the need for highway improvements. According to accident rates obtained from the Texas Department of Public Safety (TDPS), a substantial number of accidents has occurred on existing SH 105, which would likely increase as the highway becomes more congested. Between 1999 and 2001, crash rates on SH 105 were 122 accidents per 100 million vehicle miles traveled (VMT), with 78 crashes (including two fatalities) occurring on the 6.2-mile stretch of SH 105 between Mt. Mariah Road to FM 149. For comparison, the 2013 Texas statewide average of recorded accidents along a two-lane, undivided highway (rural) like existing SH 105 is 105.15 accidents per 100 million VMT. The statewide average along a four-lane, divided highway as proposed by the project would be 58.39 accidents per 100 million VMT.

As of July 1, 1995, TDPS has not listed property damage or accidents with no injuries and no vehicles towed. The only accidents TDPS now records are those that result in fatalities, injuries, or at least one vehicle towed because of damage. Since accident datasets do not include all accidents occurring along existing SH 105, the actual number of accidents is likely greater than the number of accidents per 100 million VMT calculated. Although it is not possible to accurately predict or project accident rates, it stands to reason that as traffic increases, the accident rate along existing SH 105 would also increase, if the proposed improvements were not implemented.

2.2.2 Project Purpose

The purpose of the project is to (1) improve traffic flow within the study area and larger region and (2) reduce the number of traffic accidents from Mt. Mariah Road to FM 149.

2.3 Logical Termini and Independent Utility

Logical termini for the project would be at Mt. Mariah Road on the west side of the project and FM 149 on the east side of the project. Mt. Mariah Road and FM 149 would be logical termini for the project because they are functionally classified as collectors.

The project also has independent utility, in that the project would meet all aspects of the identified need and purpose without having to construct any additional improvements at either project terminus. Furthermore, the project would not restrict the consideration of other foreseeable transportation improvements in the region.

It should be noted that the *2040 RTP* lists the project limits as FM 149 and Montgomery County Line; however, Federal Highway Administration (FHWA) states that rational endpoints need to set the logical termini need, which is not a county line. The roadway transitions from the four-lane proposed improvements back to the existing two-lane roadway approximately 1350 feet west of Mt. Mariah.

2.4 Public Involvement

Section 8.0 outlines agency coordination conducted (See **Appendix B** for coordination letters).

TxDOT led three public meetings to gather public input on the project. The three meetings were all held near the project's eastern terminus (near FM 149) in the City of Montgomery because there were no suitable facilities near the project's central area or western terminus to host the public meetings. TxDOT conducted the three public meetings in an open-house format to allow the public an opportunity to view the different alternatives and ask questions. Each meeting ran from 6:00 p.m. to 8:00 p.m. A copy of the public meeting summary report for the three public meetings is available for review at TxDOT Houston District.

2.4.1 Public Meeting 1

The first public meeting occurred on March 31, 2005, at the Montgomery High School cafeteria, located at 22825 SH 105 West in the City of Montgomery. TxDOT published the Notice of Public Meeting on March 1 and March 21, 2005, in the *Conroe Courier* and the *Houston Chronicle* newspapers. Approximately 50 people attended the meeting, and feedback received from the meeting led to the selection of the Preferred Alternative. Attendees submitted four comment forms at the meeting and three written comment forms via mail by the comment deadline of April 14, 2005. Comments received were in regards to:

- Highway design;
- The proposed construction schedule;
- Potential displacements, acquisitions, and compensation; and
- Alternative preference.

2.4.2 Public Meeting 2

The second public meeting occurred on August 23, 2006, at the Montgomery County Middle School cafeteria, located at 803 Liberty Street in the City of Montgomery. TxDOT published the Notice of Public Meeting on July 17 and August 11, 2006, in the *Conroe Courier* and *Houston Chronicle* newspapers, and on July 19 and August 9, 2006, in the *Montgomery County News*. Approximately 44 people attended the meeting, which presented the Preferred Alternative to the attendees. Attendees submitted four comment forms at the meeting and three written comment forms via mail by the comment deadline of September 7, 2006. Comments received were in regards to:

- The need for the project;
- Raised median concerns and traffic light needs at FM 1486;
- Noise and drainage concerns;
- Potential displacements, acquisitions and compensation;
- Cumulative impacts;
- Future public involvement and notifications; and
- The proposed construction schedule.

2.4.3 Public Meeting 3

The third public meeting occurred on May 2, 2007, at the Montgomery County Middle School cafeteria. TxDOT published the Notice of Public Meeting on April 2 and 22, 2007, in the *Conroe Courier* and *Houston Chronicle* newspapers, and on April 4 and 18, 2007, in the *Montgomery County News*. Approximately 57 people attended the meeting, which presented engineering modifications that eliminated the raised median within the City of Montgomery. Attendees submitted four comment forms at the meeting and three written comment forms via mail by the comment deadline of May 17, 2007. Comments received were in regards to:

- Roadway design;
- The proposed construction schedule;
- Historical impacts;
- Potential displacements, acquisitions, and compensation; and
- Alternative preference.

3.0 DESCRIPTION OF EXISTING FACILITY

Existing SH 105 typically consists of two, undivided 12-foot-wide travel lanes (one lane in each direction) and 12-foot-wide shoulders. Existing ROW widths range from 80 to 305 feet. **Exhibit B** depicts the existing highway's typical sections, and **Appendix C** provides site photographs showing typical existing development and roadside vegetation within the study area.

4.0 ALTERNATIVES

4.1 Build Alternative

The process used to develop each of the project's build alternatives followed the procedural provisions of the National Environmental Policy Act (NEPA), Council on Environmental Quality

(CEQ) regulations, and 23 Code of Federal Regulations (CFR) 771 in developing appropriate build alternatives along SH 105 from Mt. Mariah Road to FM 149. The alternative analysis evaluated the potential alternatives based on existing conditions and a review of color infrared aerial photography, environmental records, topographic maps, National Wetland Inventory (NWI) maps, Montgomery County soil surveys, and site visits to identify the presence of environmental and engineering constraints.

Since the Burlington Northern and Santa Fe (BNSF) railway runs south of existing SH 105 for a majority of the study area limits, limiting the ability to acquire additional ROW south of SH 105, the project was divided into two sections when analyzing alternatives. The BNSF railroad parallels SH 105 to the south for a portion of the project limits and acts as a barrier when studying alternatives; therefore, for the purposes of discussion, the project has been divided into two sections. Section 1 includes SH 105 from FM 149 to the community of Dobbin. This section is characterized by the presence of the railroad directly adjacent to the roadway, thus limiting the ability to widen the roadway to the south. Section 2 includes SH 105 from east of Dobbin to Mt Mariah Road. In this section, the BNSF railroad is no longer directly adjacent to the roadway and allows for some flexibility in alternative alignments.

Section 1: SH 105 Alternatives FM 149 to Dobbin

Due to the noted BNSF railway south of exiting SH 105 and east of the community of Dobbin, only two alternatives were analyzed along Section 1 of SH 105.

Build Alternative: This section of the Build Alternative would widen SH 105 to create a four-lane highway with a flushed median in the urban portions of the study area. In the rural areas, SH 105 would become a four-lane highway with a depressed median. Widening would occur to the north of existing SH 105. This section of the Build Alternative would require 5.7 acres of new ROW.

No-Build Alternative: The No-Build Alternative would not widen SH 105 or expand the highway's ROW. Normal routine maintenance would continue along this section of SH 105.

Section 2: SH 105 from Dobbin to Mt. Mariah Road

The No-Build Alternative and four build alternatives were initially evaluated for Section 2 of SH 105 from the community of Dobbin to Mt. Mariah Road.

Alternative 1: This alternative would widen SH 105 on the south side of existing SH 105 to a four-lane highway with a raised median. There would be two, two-lane bridges constructed at the Lake Creek crossing. Alternative 1 would require 16.82 acres of new ROW.

Alternative 2: This alternative would widen SH 105 on both the north and south side of existing SH 105 to a four-lane highway with a depressed median. There would be two, two-lane bridges constructed at the Lake Creek crossing. Alternative 2 would require 28.29 acres of new ROW.

Alternative 3: This alternative would widen SH 105 on the north side of existing SH 105 to a four-lane highway with a raised median to Mt. Mariah Road. There would be one, four-lane bridge constructed at the Lake Creek crossing. Alternative 3 would require 16.93 acres of new ROW.

Alternative 4: This alternative would widen SH 105 to a four-lane highway with a raised median through the community of Dobbin. Proposed SH 105 would then revert to a four-lane highway

with a depressed median to the project's western terminus at Mt. Mariah Road. Both sections of Alternative 4 would widen the north side of existing SH 105. There would be one, four-lane bridge constructed at the Lake Creek crossing. Alternative 4 would require 20.04 acres of new ROW.

Using a systematic, interdisciplinary approach, TxDOT leveraged principal design requirements, desired design benefits, environmental protection and enhancement requirements, and public input to develop and evaluate each of the project's alternatives. The identification of reasonable alternatives selected for detailed analysis was based on these criteria.

No-Build Alternative: The No-Build Alternative would not widen SH 105 or expand the highway's ROW. Normal routine maintenance would continue along this section of SH 105.

4.2.2 Section 2 Alternatives Eliminated from Further Study

Table 4-1 provides an evaluation matrix of the four build alternatives based on four preliminary impact categories.

Table 4-1: Preliminary Impact Evaluation of Project Build Alternatives for Section 2

Preliminary Impacts	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Displacements	3	4	3	3
Total Bridge Replacement	No	No	Yes	Yes
Additional ROW acreages	16.82	28.29	16.93	20.04

Source: SH 105 Study Team 2007.

TxDOT selected Alternative 1 as the preferred build alternative for Segment 2 over the other three alternatives because the alternative would have the fewest displacements, require the least amount of additional ROW, and would not require a total bridge replacement over Lake Creek. The existing railway and highway bridges over Lake Creek were constructed in the mid-1990s, and TxDOT has made a concerted effort to save these bridges by using the bridges in the project's proposed design. Because Alternative 1 would not require a total reconstruction of the bridge, the alternative would reduce reconstruction costs and eliminating having a major detour along existing SH 105.

4.2.3 Detailed Description of Reasonable Build Alternative

Alternative 1 at 16.82 acres of additional ROW, hereinafter combined with Segment 1 at 5.7 acres of additional ROW, is defined as the Build Alternative, and was further developed to widen SH 105 both to the north and south side of the existing highway from an undivided, two-lane highway to a four-lane divided highway with outside shoulders, intermittent sidewalks within the urban section of the project and at the Montgomery High School, and open ditches for most of the highway's length. The total combined additional ROW required would be approximately 23 acres. There are five detention ponds located within the proposed ROW. Proposed SH 105 would typically consist of two, 12-foot-wide travel lanes in each direction, with a 16 to 40-foot-wide median and 10-foot-wide shoulders that could serve as a shared use with bicycles. The width of the proposed ROW would range from 160 feet near the project's western terminus at Mt. Mariah Road to 355 feet at the bridge crossing areas. Total cost for the project is approximately $115.38 million.

Two portions of the proposed highway would deviate from the typical section described above.

- A proposed section located between Old Plantersville Road and Montgomery High School (approximately 0.94 mile in length) would consist of two, 12-foot-wide lanes in each direction, a 16-foot-wide continuous left-turn lane, and 12-foot-wide shoulders that could serve as a shared use with bicycles.
- A proposed section located near the project's eastern terminus from FM 149 to Old Plantersville Road (approximately 0.66 mile in length) would consist of two, 11-foot-wide travel lanes in each direction, 2-foot-wide shoulders, and a 14-foot-wide continuous left-turn lane.

Traffic modeling indicates that the proposed project would provide an improved highway that would meet estimated traffic volume demand beyond the design year of 2040.

4.2 No-Build Alternative

Under the No-Build Alternative, widening of existing SH 105 would not occur. Traffic flow and improved safety would also not occur along SH 105. However, all other improvements listed in H-GAC's *2040 RTP Update* would be implemented within the study area.

4.3 Right-of-Way/Easement Requirements and Utility Adjustments

As presented on **Exhibit B**, the current proposed typical section would require up to 60 feet of ROW (or 23 acres of additional ROW), which would affect 64 parcels along both the north and south sides of SH 105. Currently, the Build Alternative would displace/relocate one residential structure, two commercial businesses (the Silver Dollar Liquor Store and Dobbin's Trade Days), one commercial billboard, and one abandoned commercial property (a former gas station). TxDOT would be responsible for ROW acquisition.

Utilities, including water, sewer, telephone, and overhead electrical lines, exist along existing SH 105. Any utility adjustments and relocations would occur in adherence to standard TxDOT procedures. Adjustments would be coordinated so that no substantial interruptions would take place while utility adjustments are being completed.

As further discussed in Section 5.2.2.3, the Build Alternative would not affect any public facilities or emergency services.

5.0 POTENTIAL SOCIAL, ECONOMIC, AND ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION

Project objectives and environmental issues were the primary focus during the planning, design and environmental analysis process. Based on the environmental studies the proposed project would have no impact, due to the project being outside the boundaries of the following resource categories: Wild and Scenic Rivers, Navigable Waters, Fish and Wildlife Coordination Act and Essential Fish Habitat.

The following sections describe the potential environmental consequences associated with the Build Alternative and No-Build Alternative carried forward from the alternatives analysis. For the purpose of this EA and unless otherwise noted, the study area for evaluating proposed project impacts is defined as both the existing and proposed ROW that extends throughout the proposed project limits.

5.1 Natural Resources

5.1.1 Waters of the U.S., including Wetlands

Waters of the U.S., including wetlands, refer to the features that fall within the jurisdictional authority of the U.S. Army Corps of Engineers (USACE). Pursuant to Executive Order 11990 (Protection of Wetlands) and Section 404 of the Clean Water Act, field investigations were performed on August 19 and 20, 2014, to identify potential waters of the U.S., including wetlands, within the study area. The following references were reviewed to assist the investigation:

- U.S. Department of Agriculture's soil survey for Montgomery County;
- U.S. Fish and Wildlife Service (USFWS) NWI maps for Montgomery, Texas;
- U.S. Geological Service's (USGS's) 7.5-minute topographic maps for Plantersville, Dacus, and Montgomery quadrangles;
- The Federal Emergency Management Agency's (FEMA's) Flood Insurance Rate Map for panels 48339C0200G, 48339C0175G, and 48339C0325G dated August 18, 2014;
- FEMA's National Flood Hazard Layer geographic information system (GIS) dataset; and
- Current aerial photographs of the study area.

The characteristics and size of six potential jurisdictional waters of the U.S. were documented in the study area to be approximately 0.198 acre.

No wetlands were identified within the study area. However, the analysis indicated that the potential jurisdictional streams are subject to USACE jurisdiction under Section 404 of the Clean Water Act (**Exhibit C**). **Table 5-1** summarizes the delineated features. In addition, representative photographs of the study area, including potential jurisdictional features are attached as **Appendix C**. Wetland determination forms are on file at the TxDOT Houston District.

Table 5-1: List of Waters of the U.S.

Name of Water Body	Station Location	Approx. OHWM	Flow Regime	Flow Direction	Cowardin Class	Area In Existing ROW	Area of Impact
Tributary 1 to Lake Creek	99+00	8 lf	Intermittent	East	PFO1A	350 lf (natural)	350 lf
						150 lf (culvert)	None
Tributary 1a to Lake Creek	103+00	2 lf	Ephemeral	South	PUB2A	175 lf	175 lf
Lake Creek	134+00	15 lf	Perennial	North	R2UBH	325 lf	None
Unnamed Tributary	251+00	2 lf	Ephemeral	South	PUB2A	175 lf (natural)	175 lf
						175 lf (culvert)	None
Town Creek Tributary 1	307+00	3 lf	Intermittent	South	PFO1A	50 lf (natural)	50 lf
						85 lf (culvert)	None
Town Creek Tributary 2	336+00	4 lf	Intermittent	South	PFO1A	40 lf (natural)	40 lf
						85 lf (culvert)	None
Total						1,115 lf (natural) 495 lf (culvert)	790 lf (natural) 0 lf (culvert)

Source: SH 105 Study Team 2014.

Notes: lf = linear feet; OHWM = ordinary high water mark; ROW = right-of-way; P = Palustrine; R = Riverine; FO = Forested; EM = Emergent; UB = Unconsolidated Bottom; 1 = Persistent; 2 = Non-Persistent; H = Permanently Flooded; A =Temporarily Flooded.

Build Alternative

Each of the proposed Build Alternative crossings of the six waters of the U.S. would meet the definition of a single and complete project as defined under 33 CFR 330. The current level of project design is not detailed enough to quantify impacts at each identified stream crossing. Once the design has been refined, impacts to the streams can be assessed and permitting and mitigation can be completed. It is assumed the construction of culverts or bridges within these waters would qualify for authorization under NWP 14 for linear transportation projects and/or NWP 25 for structural discharges, provided that all of the terms and conditions are met.

Nationwide Permit (NWP) 14 covers the construction, expansion, modification, or improvements of linear transportation projects. For single and complete public transportation projects, the maximum limit of impact to jurisdictional waters of the U.S. that would be covered under NWP 14 is 0.5 acre. A preconstruction notification (PCN) would be required if impacts are 0.10 acre or greater, or if there is any proposed discharge (temporary and/or permanent) within a special aquatic site, which would include wetlands. Compensatory mitigation is required in a PCN for NWP 14 when more than 0.10 acre of wetlands are permanently impacted. This is to ensure that those losses result only in minimal adverse effects to the aquatic environment. Impacts from the project are not anticipated to exceed 0.10 acre at each single and complete crossing; therefore, no PCN would be required.

NWP 25 covers the placement of dredged or fill material into waters of the U.S involving discharges, such as concrete, sand, or rock, into tightly sealed forms or cells to be used as a structural member for standard pile-supported structures, such as the proposed bridges for the

project. NWP 25 also includes excavation of bottom material from within the form prior to the discharge of the concrete, sand, or rock. Activities that fall under the criteria for this permit do not require USACE coordination by way of a PCN.

In order to comply with the TCEQ's 401 Water Quality Certification Conditions for NWPs, at least one BMP from each of the following three categories of on-site water quality management (i.e., erosion control, post-construction total suspended solids [TSS] control, and sedimentation control) must be used for the Build Alternative.

This proposed project does not involve work in or over a navigable water of the U.S.; therefore, Section 9 and 10 of the Rivers and Harbors Act does not apply. In addition, the proposed project is outside the Coastal Management Program boundary, so a consistency statement is not required.

No-Build Alternative

The No-Build Alternative would not affect any waters of the U.S., including wetlands.

5.1.2 Water Quality

Build Alternative

The Build Alternative would likely not affect long-term water quality in the study area. Subsurface water would not be required for the project; therefore, no adverse effects to groundwater are expected to occur. The Build Alternative is also not expected to alter rainfall drainage patterns, contaminate, or otherwise adversely affect the public water supply, water treatment facilities, or water distribution systems. The project is outside of a regulated MS4 boundary.

As described, six stream crossings are within the study area. None of the six crossings is listed as impaired on the Texas Commission on Environmental Quality's (TCEQ's) *2014 State of Texas Clean Water Act Section 303 (d) List* (TCEQ 2014). In addition, none of the crossings are within 5 miles upstream of an impaired segment. Therefore, coordination with TCEQ is not required per the MOU TxDOT has with TCEQ.

However, since the Build Alternative would disturb more than 5 acres, TxDOT is required to comply with TCEQ's Texas Pollutant Discharge Elimination System (TPDES) General Permit for Construction Storm Water Runoff requirements. A Storm Water Pollution Prevention Plan (SW3P) would be developed and a Notice of Intent (NOI) and would be filed with TCEQ prior to beginning construction. Control measures for temporary erosion, sediment, and total suspended solids would be carried out, and additional items and/or methods required by TCEQ would be established on a force account basis by an agreed unit price. Where appropriate, the temporary erosion and sedimentation control features are to be in place prior to construction. The construction and maintenance of the project would not create conditions that would violate state or federal water quality standards.

The project engineer would ensure that appropriate steps are taken to control water pollution during construction. The amount of disturbed earth would be limited, so that the potential for excessive erosion is minimized and sedimentation outside of the proposed ROW is avoided. Existing vegetation would be preserved wherever possible. Temporary erosion and sedimentation control measures (such as silt fences, rock berms, sedimentation basins, and/or soil retention blankets) would be implemented as needed prior to beginning construction. Permanent soil erosion control features would be constructed as soon as feasible during the

early stages of the contract through proper sodding and/or seeding techniques. Disturbed areas would be restored and stabilized as soon as the construction schedule permits, and temporary sodding would be considered where large areas of disturbed ground would be left bare for a considerable length of time.

The contractor would take appropriate measures to prevent, minimize, and control spillage of hazardous materials in the construction staging area. All materials being removed or disposed of by the contractor would be done in accordance with applicable state and federal laws so as not to degrade ambient water quality. According to the TPDES Construction General Permit (CGP), stabilization measures must be initiated no more than 14 days after the project has permanently ceased. If project construction resumes activities within 21 days, then no temporary stabilization measures are required. If the halt lasts more than 21 days, then stabilization measures must be initiated 14 days after construction activity has ceased. All of these measures would be enforced under the appropriate specifications in the plan, specification, and estimate stage of project development.

No-Build Alternative

The No-Build Alternative would not affect water quality within the study area.

5.1.3 Floodplains

Build Alternative

Executive Order 11988 (Floodplain Management) requires that federal agencies avoid activities that directly or indirectly result in the development of a floodplain. Montgomery County participates in the National Flood Insurance Program and coordination would be required with the county floodplain coordinator. According to FEMA's Flood Insurance Rate Map for Montgomery County (panels 48339C0200G, 48339C0175G, and 48339C0325G dated August 18, 2014) and National Flood Hazard Layer GIS dataset, three stream crossings (Lake Creek, Lake Creek Tributary, and Town Creek Tributary 2) in the study area are within the designated floodway (Zone AE), 100-year floodplain (Zones A and AE), and/or the 500-year floodplain (Zone X-Shaded). Approximately 13 acres of existing and proposed ROW would be located within the 100-year floodplain or floodway, the majority of which would be in the Lake Creek floodplain.

The design of the project would not increase the base flood elevation to a level that would violate applicable floodplain regulations and ordinances. The project's hydraulic design would be in accordance with current TxDOT and Federal Highway Administration (FHWA) policies and standards. The Build Alternative would permit the conveyance of the 100-year flood, inundation of the highway being acceptable, without causing significant damage to the highway or other property. **Exhibit C** depicts the floodplains within the study area.

No-Build Alternative

The No-Build Alternative would not affect any floodplains in the study area.

5.1.4 Vegetation

The study area's landscape consists of gently rolling terrain of residential and commercial properties, forested areas, and improved pastureland. Land use is primarily rangeland with some residential and commercial uses in both Montgomery and Dobbin. According to the TPWD TPWD's Ecological Mapping System of Texas (EMST), most of the vegetation is mapped as riparian, disturbed prairie, tallgrass prairie (grassland), mixed woodlands and forest, post oak savanna and urban. Site visits conducted on August 19 and 20, 2014, revealed that a majority

of the vegetation located within the study area corresponds to the EMST (see discussion below).

Dominant vegetation identified within the areas of maintained roadside included: hackberry (*Celtis laevigata*), post oak (*Quercus virginiana*), ashe juniper (*Juniperus ashei*), loblolly pine (*Pinus taeda*), live oak (*Quercus virginiana*), flowering dogwood (*Cornus florida*), baldcypress (*Taxodium distichum*), western ragweed (*Ambrosia psilostachya*), giant ragweed (*Ambrosia trifida*), goathead/puncturevine (*Tribulus terrestris*), beggar's tick (*Bidens* spp.), bermudagrass (*Cynodon dactylon*), bahia grass (*Paspalum notatum*), vasey grass (*Paspalum urvillei*), windmill grass (*Chloris verticillata),* Johnsongrass (*Sorghum halepense*), yellow indiangrass (*Sorghastrum nutans*), annual ryegrass (*Lolium multiflorum*), and Dallisgrass (*Paspalum dilatum*).

Dominant vegetation identified within the riparian corridors at the stream crossings included: pecan (*Carya illinoinensis*), cedar elm (*Ulmus crassifolia*), bois d' arc (*Maclura pomifera*), Chinese tallowtree (*Triadica sebifera*), Chinese privet (*Ligustrum sinense*), swamp privet (*Forestiera acuminate*), American elm (*Ulmus americana*), hackberry, black willow (*Salix nigra*), Mexican plum (*Prunus mexicana*), dwarf palmetto (*Sabal minor*), blackgum (*Nyssa sylvatica*), possumhaw (*Ilex decidua*), yaupon (*Ilex vomitoria*), poison ivy (*Toxicodendron radicans*), willow baccharis (*Baccharis salicina*), Virginia creeper (*Parthenocissus quinquefolia)*, peppervine (*Ampelopsis arborea)*, muscadine grape (*Vitis rotundiflora*), goathead/puncturevine, catclaw sensitivebriar (*Mimosa nuttalii*), common greenbrier (*Smilax rotundiflora*), dewberry (*Rubus trivialis*), morning glory/bindweed (*Calystegia* spp.*),* giant ragweed, western ragweed, partridge pea (*Chamaecrista fasciculate*), Nuttall milkvetch (*Astragalus nuttallianus*), gerardia (*Agalinus purpurea*), beggar's tick, bulrush (*Scirpus* spp.*),* water primrose (*Ludwigia* spp.*),* slim aster (*Aster subulatus*), umbrella sedge (*Cyperus odoratus*), spotted spurge (*Euphorbia maculata*), smartweed (*Polygonum hydropiperoides*), rose mallow (*Hibiscus* spp.), buttonbush (*Cephalanthus occidentalis*), wild onion (*Allium* spp.*)* cattail (*Typha latifolia*), water hyacinth (*Eichhornia crassipes*), windmill grass (*Chloris verticillata*), sedge (*Carex* spp.), yellow foxtail (*Setaria pumila*), bermudagrass, vasey grass, sprangletop (*Leptochloa dubia*), brushy bluestem (*Andropogon glomeratus*), annual ryegrass, bahia grass, Canada wildrye (*Elymus Canadensis*), and Johnsongrass.

Dominant vegetation identified within the rangeland areas included post oak, pecan, hackberry, Johnsongrass, bermudagrass, annual ryegrass, brushy bluestem, bahia grass, oldfield threeawn (*Aristida oligantha*), willow baccharis, giant ragweed, western ragweed, croton (*Croton texensis*), slim aster, beggar's tick, catclaw sensitive brier, wild onion, and firewheel (*Gaillardia pulchella*).

Build Alternative

TPWD's EMST was used through ArcGIS to further characterize the MOU vegetation/habitat types present within the existing and proposed ROW. The TPWD's EMST GIS shape files were edited in ArcGIS to more accurately reflect observations during the site visits. **Exhibit D1, Exhibit D2**, and **Table 5-2** summarize the results of the EMST evaluation and show the areas of different MOU vegetation/habitat types before and after edits, comparing the areas to the impact thresholds set forth in TxDOT's Threshold Table Programmatic Agreement (PA) for the South Central Plains (West Gulf Coast Plains in Texas Conservation Action Plan) ecoregion. Further details, including exhibits and GIS output, can be found in the Biological Evaluation Form and associated backup data on file at TxDOT Houston District. In total, the Build

Alternative would affect approximately 88.9 acres of vegetation. The vegetation includes the areas within existing and proposed ROW.

Table 5-2: TPWD's EMST Habitat Evaluation Results

MOU Type	Acres within Study Area	Threshold Table PA Impact Threshold for South Central Plains (acres)
Riparian	5.9	0.1
Disturbed Prairie	15.6	3
Tallgrass Prairie, Grassland	62.1	1
Mixed Woodlands and Forest	3.2	3
Post Oak Savanna	2.1	1
Vegetation Total	**88.9**	--
Urban[a]	17.3	N/A
Study Area Total	**137.4**	--

Source: SH 105 Study Team 2014.

[a] Urban does not include highway pavement.

Notes: N/A = not applicable.

In addition, TPWD's Texas Natural Diversity Database (TXNDD) was reviewed on June 14, 2016, to determine the presence of rare plant communities within either the study area or in a location that could be impacted by the Build Alterntive. One Alfisol Coastal Prairie (*Schizachyrium scoparium - Paspalum plicatulum - Sorghastrum nutans - Dichantheliumoligosanthes - Paspalum setaceum - Symphyotrichum pratense Alfisol Herbaceous Vegetation* community and one specimen citation dated 1948) for bristle nailwort (*Paronchia setacia*) were noted within a 1.5-mile buffer of the study area. In combination with observations made during the site visits, the TXNDD was used to evaluate the possible impact to important remnant vegetation from the Build Alternative. No Alfisol Coastal Prairie communities or occurrences of bristle nailwort were observed during the site visits. Based upon this evaluation, it was determined that the Build Alternative would not impact remnant vegetation communities in the study area.

In accordance with the 2013 TxDOT/TPWD MOU, coordination with TPWD would be required because the conditions for the following triggers per Section 2.205, 2.206, and 2.213 of the MOU would be met:

- A proposed project may impact at least 0.10 acre of riparian vegetation based on the judgment of a qualified biologist or as mapped in the EMST; or
- A proposed project would disturb habitat in an area equal to or greater than the area of disturbance indicated in the Threshold Table PA to be developed under Section 2.213 of the MOU.

The conditions for the following MOU coordination trigger were not met:

- A proposed project is 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 programmatic agreement developed under §2.213 of this subchapter (relating to Programmatic Agreements).

- A proposed project may adversely impact important remnant vegetation based on the judgment of a qualified biologist or as mapped in the TXNDD.

- A proposed project requires a nationwide permit with pre-construction notification or an individual permit, issued by the United States Army Corps of Engineers.

- A proposed project includes in the TxDOT right of way or conservation, construction, or drainage easement 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: channel realignment; or stream bed or stream bank excavation, scraping, clearing or other permanent disturbance.

A Biological Evaluation Form, including a Tier 1 Site Assessment, was completed in order to determine if project activities would trigger TxDOT/TPWD early coordination under the 2013 TxDOT/TPWD MOU. It was determined that coordination with TPWD would be required per the coordination triggers noted above because of impact threshold exceedances to riparian, disturbed prairie, tallgrass prairie grassland, mixed woodlands and forest, and post oak savanna MOU habitat types. The Tier 1 Site Assessment and supporting data are on file at TxDOT Houston District.

Early coordination was conducted with TPWD in April of 2015. TPWD recommended the used of hydromulching and/or hydroseeding to reduce entanglement risks to wildlife. If erosion control blankets or mats will be used during this project, TxDOT should utilize products that contain no netting or contain loosely woven, natural fiber netting in which the netting design allows the threads to move, therefore allowing expansion of the netting openings. Plastic netting should be avoided. In addition, TPWD recommends the judicious use and placement of sediment control fence to exclude wildlife, particularly amphibians and turtles, from the construction area and away from areas of potential vehicle-wildlife collisions. The exclusion fence should be buried at least six inches and be at least 24 inches high or following TxDOT's sediment control fence installation specifications. The exclusion fence should be maintained for the life of the project and only removed after the construction is completed and the disturbed site has been re-vegetated. Construction personnel should be encouraged to examine the inside of the exclusion area daily to determine if any wildlife species have been trapped inside the area of impact and provide safe egress opportunities prior to initiation of construction activities.

No-Build Alternative

The No-Build alternative would not affect vegetation in the study area.

5.1.5 Invasive Species and Beneficial Landscaping

In accordance with the Executive Memorandum on Environmental and Economically Beneficial Landscape Practices issued August 10, 1995, all agencies are to comply with NEPA as it relates to vegetation management and landscape practices for all federally associated projects. The Executive Memorandum directs that where cost effective and to the extent practicable, agencies are to (1) use regionally native plants for landscaping; (2) design, use, or promote

construction practices that minimize adverse effects on the natural habitat; (3) seed to prevent pollution by, among other things, reducing fertilizer and pesticide use; (4) implement water efficient and runoff reduction practices; and (5) create demonstration projects employing the practices. Any landscaping plans associated with the Build Alternative would comply with the Executive Memorandum.

In accordance with Executive Order 13112 on Invasive Species and the Executive Memorandum on beneficial landscaping, the seeding and replanting of Build Alternative ROW would be performed (where possible) with TxDOT-approved seeding specifications that are in compliance with Executive Order 13112. Moreover, abutting turf grasses within the ROW are expected to reestablish over the length of the project. Where necessary, topsoil would be salvaged, stockpiled, and then appropriately placed to ensure that soil disturbance would be minimized and to further ensure that invasive species would not establish in the ROW.

5.1.6 Wildlife

The study area and adjacent areas are located in a mostly rural agricultural setting with interspersed suburban areas. The predominant wildlife found in these areas includes species that have adapted to rural agricultural environments and adjacent wooded and riparian areas near suburban development, such as white-tailed deer (*Odocoileus virginana*), feral hogs (*Sus scrofa*), bobcats (*Lynx rufus*), coyotes (*Canis latrans*), mice (*Mus* spp.), rats (*Rattus* spp.), rabbits (*Sylvilagus* spp.), squirrels (*Sciurus* spp.), turtles (order *Testudines*), mussels (family *Unionidae*), frogs and toads (order *Anura*), snakes (suborder *Serpentes*), insects (order *Insecta*), and a variety of birds (class *Aves*).

The majority of the wildlife habitat within the study area is concentrated in the riparian areas associated with the Lake Creek stream system (including its tributaries) and the tributaries to Town Creek. However, several species (deer, wild hogs, rabbits, mice, and snakes) use the rangeland or maintained highway vegetation as a food source or habitat/cover, while other species (coyotes, bobcats, raptors, and snakes) prey upon those species. Several species may also use roadsides, edges of wooded areas, or the many streams and fencerows within the study area as travel corridors.

Build Alternative

Disturbance to wildlife habitat within the study area would occur during construction of the Build Alternative. The Build Alternative would also affect distinct areas of rangeland, the riparian corridors and/or floodplains at the stream crossings, and maintained roadside vegetation. As mapped by TPWD's EMST, impacts to these distinct areas also represent impacts to MOU habitat comprised of riparian, tallgrass prairie grassland, disturbed prairie, post oak savanna, and mixed woodlands and forest. Impacts to the riparian, tallgrass prairie grassland, and disturbed prairie MOU habitat types would exceed the impact thresholds listed in TxDOT's Threshold Table PA, which would trigger TxDOT coordination with TPWD per Sections 2.205, 2.206, and 2.213 of the 2013 TxDOT/TPWD MOU.

No-Build Alternative

Under the No-Build Alternative, the wildlife that currently uses the study area would not be adversely affected. Existing highway repairs, maintaining the existing ROW, and mowing along existing SH 105 would continue to occur and would likely not adversely affect wildlife and the associated habitat that exists within the study area.

5.1.7 Threatened and Endangered Species

The study area is within the designated ranges of and suitable habitat for several state-listed threatened species and species of greatest conservation need (SGCN). The project would be in a rural and/or suburban setting that would require the acquisition and development of new ROW adjacent to existing SH 105. Therefore, the project would not substantially fragment or alter wildlife habitat currently within the study area because there is suitable habitat adjacent to the ROW that would remain undisturbed during construction for use by displaced wildlife. Federal or state-listed wildlife species would be avoided by actively maintaining proper awareness of the species and through stopping construction activities upon the event of their discovery.

The most recent TPWD-annotated County List of Rare Species for Montgomery County and the current USFWS on-line Endangered Species List were reviewed for state and federally threatened and endangered species that occur within Montgomery County and could occur within the study area. The USFWS list contains two species in Montgomery County that are currently on the federally threatened and endangered species list. The red-cockaded woodpecker (*Picoides borealis*) is listed as endangered, and the bald eagle (*Haliaeetus leucocephalus*) is in the final recovery stage. No individuals of either species were observed during field investigations conducted in August 2014. Results from the August 2014 field investigations were also compared to the most recent (May 2016) TPWD-annotated County List and the USFWS Endangered Species list, included as **Table 5-3**. Suitable habitat not present within the study area has been underlined in the following table.

Table 5-3: Federal and State-listed Threatened and Endangered Species for Montgomery County

Species *(Scientific Name)*	**Federal Status**	**State Status**	**Description of Habitat**	**Habitat Present**	**Species Effect/Impact**
Amphibians					
Southern crawfish frog *(Lithobates areolatus areolatus)*	*		Moist meadows, pasturelands, pine scrub, and river flood plains.		
Birds					
American peregrine falcon *(Falco peregrinus anatum)*	DL	T	Potential migrant; year-round resident and local breeder in west Texas; nests in tall cliff eyries	No	No effect
Arctic peregrine falcon *(Falco peregrinus tundrius)*	DL		Potential migrant; urban, concentrations along coast and barrier islands, stopovers at leading landscape edges (lake shores, coastlines, and barrier islands)	No	No effect
Bald eagle (nesting-wintering) *(Haliaeetus leucocephalus)*	DL	T	Primarily near rivers and large lakes; nests in tall trees or on cliffs near water	No	No effect
Henslow's sparrow *(Ammodramus henslowii)*	*		Found in weedy fields where lots of bunch grasses occur along with vines and brambles; need bare ground for running/walking	No	No impact
Peregrine Falcon *(Falco peregrinus)*	DL	T	Potential migrant; year-round resident and local breeder in west Texas; nests in tall cliff eyries	No	No effect

Table 5-3: Federal and State-listed Threatened and Endangered Species for Montgomery County

Species *(Scientific Name)*	**Federal Status**	**State Status**	**Description of Habitat**	**Habitat Present**	**Species Effect/Impact**
Piping plover (*Charadrius melodus)*	LT	T	Wintering migrant along Texas Gulf Coast; beaches and bayside mud or salt flats	No	No effect
Red Knot *(Calidris canutus rufa)*	T		Prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Primary prey items include coquina clam (Donax spp.) on beaches and dwarf surf clam (Mulinia lateralis) in bays, at least in the Laguna Madre. Wintering Range includes- Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kennedy, Kleberg, Matagorda, Nueces, San Patricio, and Willacy. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore.	No	No effect
Red-cockaded woodpecker *(Picoides borealis)*	LE	E	Nest in older pine (60+ years); forages in younger pines (30+ years); prefers longleaf, shortleaf, and loblolly	No	No effect
Sprague's pipit *(Anthus spragueii)*	*		Only in Texas during migration and winter; diurnal migrant; strongly tied to native upland prairie; common locally in coastal grasses; avoids edges	No	No effect
White-faced ibis *(Plegadis chihi)*	*	T	Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and salt habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats	No	No impact
Whooping crane *(Grus Americana)*	LE	E	Potential migrant; winters in coastal marshes of Aransas, Calhoun, and Refugio counties	No	No effect
Wood stork *(Mycteria Americana)*	*	T	Forages in prairie ponds, flooded pastures or fields, ditches, and other shallow water, including salt water; roosts communally in tall snags; formerly nested in Texas, but no breeding record since 1960	Yes, discussed below	May impact, not likely to adversely impact.
Fishes					
Creek chubsucker *(Erimyzon oblongus)*	*	T	Tributaries of the Red, Sabine, Neches, Trinity, and San Jacinto rivers; small rivers and creeks of various types; prefers headwaters, but seldom occurs in springs	No	No impact
Paddlefish *(Polydon spathula)*	*	T	Prefers large, free-flowing rivers, but will frequent impoundments with access to spawning sites; spawns in fast, shallow water over gravel bars.	No	No impact

Table 5-3: Federal and State-listed Threatened and Endangered Species for Montgomery County

Species *(Scientific Name)*	**Federal Status**	**State Status**	**Description of Habitat**	**Habitat Present**	**Species Effect/Impact**
Insects					
A mayfly *(Tricorythodes curvatus)*	*		AR, OK, TX; Mayflies distinguished by aquatic larval stage; adult generally found in bankside vegetation	No	No impact
A mayfly *(Plauditus gloveri)*	*		NY, SC, TX: Mayflies distinguished by aquatic larval stage; adult generally found in bankside vegetation	No	No impact
Gulf Coastal clubtail *(Gomphus modestus)*	*		Medium river, moderate gradient, and streams with silty sand or rocky bottoms; adults forage in trees, males perch near riffles to wait for females, larvae overwinter; flight season late Apr - late Jun.	No	No impact
Texas emerald dragonfly *(Somatochlora margarita)*	*		East Texas pineywoods; spring fed creeks and bogs; small sandy forested streams with moderate current.	No	No impact
Mammals					
Louisiana black bear *(Ursus americanus luteolus)*	LT	T	Possible transient; bottomland hardwoods and large tracts of inaccessible forested areas.	No	No effect
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.	Yes, discussed below table	May impact, not likely to adversely impact
Rafinesque's big-eared bat *(Corynorhinus rafinesquii)*	*	T	Roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures.	Yes, discussed below table	May impact, not likely to adversely impact.
Red wolf *(Canis rufus)*	LE	E	Extirpated; brushy, forested areas, and coastal prairies.	No	No effect
Southeastern myotis bat *(Myotis austroriparius)*	*		Roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures	Yes, discussed below table	May impact, not likely to adversely impact
Mollusks					
Louisiana pigtoe *(Pleurobema riddellii)*	*	T	Streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and gravel; not generally known from impoundments; Sabine, Neches, and Trinity (historic) River basins.	No	No impact

Table 5-3: Federal and State-listed Threatened and Endangered Species for Montgomery County

Species *(Scientific Name)*	**Federal Status**	**State Status**	**Description of Habitat**	**Habitat Present**	**Species Effect/Impact**
Sandbank pocketbook *(Lampsilis satura)*	*	T	Small to large rivers with moderate flows and swift current on gravel, gravel-sand, and sand bottoms; east Texas, Sulfur south through San Jacinto River basins; Neches River.	No	No impact
Texas pigtoe *(Fusconaia askewi)*	*	T	Rivers with mixed mud, sand, and fine gravel in protected areas associated with fallen trees or other structures; east Texas River basins, Sabine through Trinity rivers as well as San Jacinto River.	No	No impact
Reptiles					
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.	No	No impact
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	No	No impact
Timber/canebrake 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.	No	No impact
Plants					
Bristle nailwort *(Paronychia setacea)*	*		Flowering vascular plant; endemic to eastern, southcentral Texas, occurring in sandy soils	No	No impact
Correll's false dragon-head *(Physostegia correllii)*	*		Wet, silty clay loams on stream sides, in creek beds, irrigation channels and roadside drainage ditches; or seepy, mucky, sometimes gravelly soils along riverbanks or small islands in the Rio Grande; or underlain by Austin Chalk limestone along gently flowing spring-fed creek in central Texas; flowering May-September	No	No impact
Texas sandmint (*Rhododon ciliates*)	*		Open sandy areas in the Post Oak Belt of east-central Texas; Annual; Flowering April-Aug; Fruiting May-Aug		

Sources: TPWD 2016 (5/16/2016); SH 105 Study Team Field Visits (08/19/2014 and 08/20/2014).

Notes: E = state-listed endangered; LE = federal-listed endangered; T = state-listed threatened; LT= federal-listed threatened; DL = federally delisted; SGCN = species of greater conservation need.

* = TPWD's threatened and endangered species list indicates that species could be present in Montgomery County; however, USFWS' threatened and endangered species list does not indicate a listing status for the species in Montgomery County.

Build Alternative

Field surveys, along with research data, concluded that suitable habitat exists for the state-listed wood stork, plains spotted skunk, Rafinesque's big-eared bat, and southeastern myotis bat within the study area. Detailed information on each species is described in the following sections.

Birds

The wood stork is a state-listed threatened species for Montgomery County. The bird formerly nested in Texas, but there have been no breeding records since 1960. The stork forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt water. The bird usually roosts communally in tall snags, but sometimes it roosts in association with other wading birds. While the study area could provide prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, no visual observations of the bird occurred while conducting the onsite surveys, and there are no confirmed sightings of the wood stork near the study area according to the TXNDD. Consequently, the wood stork is not expected to occur within the study area, and no impacts are anticipated for this species.

Mammals

The plains spotted skunk is state listed as an SGCN in Montgomery County. The skunk can be found in open fields, prairies, croplands, fencerows, farmyards, forest edges, and woodlands. It prefers wooded, brushy areas and tall grass prairies. Although the study area provides these habitats, no visual observations of the skunk occurred while conducting the onsite biological surveys, and there are no confirmed sightings of the skunk near the study area according to the NDD. Per TxDOT's Best Management Practice (BMP) Programmatic Agreement (PA), contractors would be advised of the potential occurrence of the plains spotted skunk and would avoid unnecessary impacts that would harm the species, its dens, and/or its suitable habitat.

The Rafinesque's big-eared bat is a state-listed threatened species in Montgomery County. Habitat includes roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures. Suitable habitat may exist within the concrete culverts and abandoned man-made structures near the study area. However, no visual observations of the bat were made while conducting the onsite biological surveys, and there are no confirmed sightings of the Rafinesque's big-eared bat near the study area according to the NDD. Surveys for the Rafinesque's big-eared bat should be conducted by TxDOT and the and the following tree bat BMPs will be implemented to avoid impacts to the state-threatened bat and its suitable habitat: avoiding unnecessary removal of dead fronds on native and ornamental palm trees in south Texas (Cameron, Hidalgo, Willacy, Kenedy, Brooks, Kleberg, Nueces, and San Patricio counties) and large hollow trees will be surveyed for maternity colonies and, if found, should not be disturbed until after the pups fledge.

The southeastern myotis bat is state listed as an SGCN in Montgomery County. Habitat includes roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures. Suitable habitat may exist within the concrete culverts and abandoned

man-made structures near the study area. However, no visual observations of the bat occurred while conducting other biological field studies and there are no confirmed sightings of the southeastern myotis bat near the study area according to the TXNDD. Surveys for the southeastern myotis bat should be conducted by TxDOT and the following tree bat BMPs will be implemented to avoid impacts to the state-threatened bat and its suitable habitat, should it be found: avoiding unnecessary removal of dead fronds on native and ornamental palm trees in south Texas (Cameron, Hidalgo, Willacy, Kenedy, Brooks, Kleberg, Nueces, and San Patricio counties) and large hollow trees will be surveyed for maternity colonies and, if found, should not be disturbed until after the pups fledge.

Mollusks

Per the commitment made during TPWD coordination, a survey for mussels will be conducted in the project area. The following mussel BMPs will be implemented to avoid impacts to state-threatened mussels and their suitable habitats: surveying project footprints for state listed species where appropriate habitat exists, relocating state listed and SGCN mussels under TPWD permit and implementing Water Quality BMPs when mussels are discovered, and when work is adjacent to the water, implementing Water Quality BMPs as part of the SWPPP for a construction general permit or any conditions of the 401 water quality certification for the project will be implemented.

Element Occurrence Records

TPWD conducted an TXNDD search on June 23, 2016. The TXNDD search included a 10-mile radius, which revealed four species with element occurrence records.

Alfisol Coastal Prairie (EOID 11783, 11784, and 11785)

The Element Occurrence Record Identifications (EOIDs) contain no recorded data for the Alfisol Coastal Prairie.

Bald Eagle (EOID 3619)

The last observation of the bird was in 2009. The general species location included a territory on the northern portion of Lake Conroe, extending north into the Sam Houston National Forest. GIS data identified an EOID approximately 2.84 miles from the study area. The NDD cannot be used for presence/absence determinations.

The bald eagle has been de-listed by the USFWS, but the bird is identified as state-threatened by the TPWD for Montgomery County. The study area does not include river systems or other large bodies of water, and the average tree height is 15 to 45 feet, both of which are not suitable habitat for the eagle. No visual observations of the eagle occurred while conducting the onsite surveys. As such, the Build Alternative would have no impact on the state-threatened bird.

Bristle Nailwort (EOID 11102)

The last observation of the species was in 1948. GIS data identified an EOID located within the study area. The NDD cannot be used for presence/absence determinations.

Red-cockaded Woodpecker (EOID 7423)

The last observation of the species was from 1979 to 1980. GIS data identified 46 EOIDs within 10 miles northeast of the study area. **Table 5-4** lists all 46 occurrences.

Table 5-4: EOID within 10 miles of the Study Area

EOID	Distance From Project (miles)	EOID	Distance From Project (miles)
632	6.98	3944	6.52
633	6.94	4222	6.49
812	5.06	4394	7.87
1145	6.62	4395	6.14
1434	5.00	4611	5.77
1435	7.44	4612	5.5
1599	6.91	4907	6.96
1600	6.00	5312	6.82
1834	5.38	5499	5.14
1981	7.80	5644	6.57
1982	7.45	5645	5.04
1987	6.77	5850	4.98
2158	5.34	6405	6.89
2160	10.03	6575	6.69
2273	6.25	6741	7.44
2474	5.88	6742	5.59
2476	5.43	6743	4.88
3171	7.48	7066	5.42
3172	6.20	7184	6.44
3381	7.93	7188	5.68
3650	5.26	7423	8.68
3794	4.47	7613	8.08
3795	4.45	7623	5.15

Source: TPWD 2016.

Note: EOID = Element Occurrence Record Identification.

According to USFWS, populations of the red-cockaded woodpecker occur to the north of the study area in the Sam Houston National Forest. Although the study area is not within the Sam Houston National Forest, all areas of suitable nesting and foraging habitat within the study area were surveyed by a qualified individual for the presence or absence of the woodpecker. The recommended *Recovery Plan for the Red-Cockaded Woodpecker (Picoides borealis),* second revision, was reviewed and on-site surveys were conducted. No suitable nesting or foraging habitat exists within the study area, and no visual observations of the bird occurred while conducting on-site surveys. The USFWS East Texas Sub Office was contacted, as recommended, and no red-cockaded woodpeckers are known to exist near existing SH 105.

There are currently no state-listed threatened or endangered species, species of greater conservation need, or critical habitat that would be impacted by the Build Alternative, and the Build Alternative would have no effect on federally listed threatened or endangered species. However, further surveys for the southeastern myotis bat and mussels (if necessary) will be conducted per coordination with TPWD which may identify potential impacts. Consequently, no significant adverse impacts to wildlife resources are anticipated at this time because of the Build Alternative. **Appendix B** includes a copy of both the coordination letter sent to TPWD and TPWD's response letters.

During project development, TxDOT would design, use, and promote BMPs per the TxDOT BMP PA to minimize adverse effects on the habitat within the study area that is also within the

range of state-threatened or endangered species or SGCN. The standard recommendations would also be followed as guidance to prevent impact to the listed SGCN and state-threatened species with suitable habitat within the study area. BMPs from the PA that would be implemented include, but are not limited to, bird BMPs, mussel BMP's and bat BMPs. Consequently, the BMP PA would eliminate the need to coordinate with TPWD concerning the impacts to habitat per Sections 2.213 and 2.214 of the 2013 TxDOT/TPWD MOU.

In accordance with the 2013 TxDOT/TPWD MOU, a Biological Evaluation Form, including a Tier 1 Site Assessment, is on file at TxDOT Houston District.

No-Build Alternative

The No-Build Alternative would not affect any state or federally listed threatened and endangered species in the study area.

5.1.7.1 Bald and Golden Eagle Act

Build Alternative

The Bald and Golden Eagle Protection Act (enacted in 1940 and amended several times since) prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" eagles, including their parts, nests, or eggs. The act defines criminal penalties for persons who "take, posses, sell, purchase, barter, offer to sell, transport, export or import, at any time or any manner, any Bald Eagle (or any Golden Eagle), alive or dead, or any part, nest, or egg thereof."

No eagles were observed during the site visit, nor does the study area offer suitable eagle habitat. Therefore, it is anticipated that the Build Alternative would not adversely affect any bald or golden eagles, their nests, or their habitat.

No-Build Alternative

The No-Build Alternative would not affect any bald or golden eagles, their nests, or their habitat in the study area.

5.1.7.2 Migratory Bird Treaty Act

Build Alternative

The Migratory Bird Treaty Act 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 with the act's policies and regulations. All of the bird species listed in **Table 5-3** are considered migratory. Furthermore, many other migratory bird species in addition to those listed in **Table 5-3** could use the study area. However, when ensuring compliance with the Migratory Bird Treaty Act, site visits and visual inspection of the study area on August 19 and 20, 2014 did not reveal the presence of any active migratory bird nests within the study area.

The Build Alternative would not affect any migration patterns of the listed bird species. Removal of woody vegetation would take place outside of the nesting season in order to maintain compliance with the Migratory Bird Treaty Act. When practical, construction activities would be scheduled outside of the typical nesting season, noting that the prohibitive provisions of the Migratory Bird Treaty Act apply year round. The nesting season is from February 15 to October 1. In the event that migratory birds are encountered onsite during construction, adverse impacts

on protected birds, active nests, eggs, and/or young would be avoided, and the proper bird BMPs would be implemented.

No-Build Alternative

The No-Build Alternative would not affect any migratory birds within the study area.

5.1.8 Soils and Farmland

As depicted on **Exhibit C**, 12 mapped soil units are within the study area and correspond to the soil maps illustrated in the Soil Surveys of Montgomery County published by the Natural Resources Conservation Service (NRCS). **Table 5-5** lists the mapped soil units in the study area.

Table 5-5: Mapped Soil Units within the Study Area

Map Unit	Mapped Soil Unit	Drainage Classification	Percent Slope
BIC	Betis fine sand	Somewhat excessively drained	0 to 5% slopes
FcC2	Latium clay	Well drained	1 to 5% slopes, eroded
FcD2	Latium clay	Well drained	5 to 8% slopes, eroded
Hs	Bleiblerville clay	Moderately well drained	
Kc	Kaufman clay	Moderately well drained	frequently flooded
KIB	Crockett fine sandy loam	Moderately well drained	1 to 3% slopes
KnA	Normangee soils	Moderately well drained	0 to 1% slopes
KpB	Normangee clay loam	Moderately well drained	1 to 3% slopes
ObC2	Woodville soils	Somewhat poorly drained	2 to 5% slopes, eroded
SuC	Woodville fine sandy loam	Somewhat poorly drained	1 to 5% slopes
Th	Gowker sandy clay loam	Moderately well drained	overwash
WkC	Fetzer loamy fine sand	Somewhat poorly drained	1 to 5% slopes

Source: NRCS 2004.

One of these soils (the Kaufman clay, frequently flooded) is classified as hydric on NRCS's most current hydric soils list for Montgomery County (NRCS 2012).

Build Alternative

The purpose of the Farmland Protection Policy Act, Subtitle I of Title XV of the Agricultural and Food Act of 1981 (Pub. L. 97-98), is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of prime, unique, and other farmlands of statewide or local importance to non-agricultural uses. Bleiblerville clay is the only mapped soil unit in the study area listed on NRCS's Prime Farmland List for Montgomery County that is considered potentially subject to the Farmland Protection Policy Act (NRCS 2004).

Included as **Appendix D**, a total corridor assessment was completed for the proposed 23.30 acres of new ROW with the Farmland Conversion Impact Rating Form for Corridor Type Project (NRCS-CPA-106). Approximately 1.48 acres of proposed ROW are designated as prime farmland soils, which are currently being used as pastureland. The assessment totaled 42 points out of a maximum of 160 points. NRCS evaluates the relative value of farmland based on a maximum score of 100 points. Per the Farmland Protection Policy Act regulations, if a combined score of a total corridor assessment and the relative value of farmland are 160 points

or more, a study area should be given more consideration for protection. Since the total score was 42 points, coordination with NRCS is not required, and the Build Alternative is not anticipated to affect prime, unique, or other farmlands of statewide or local importance.

No-Build Alternative

The No-Build Alternative would not result in impacts to soils or farmlands in the study area.

5.1.9 Air Quality

5.1.9.1 National Ambient Air Quality Standards

This project is located within Montgomery County, which is part of the Houston-Galveston-Brazoria area that has been designated by Environmental Protection Agency (EPA) as a marginal nonattainment area for 2008 ozone National Ambient Air Quality Standard (NAAQS): therefore, transportation conformity rules apply.

The project is currently listed in the Houston-Galveston Area Council's (H-GAC's) *2040 RTP Amendment 3,* approved April 22, 2016 and *2017-2020 TIP, Appendix D,* dated June 23, 2016.

5.1.9.2 Traffic Air Quality Analysis

Traffic data for the design year 2040 is 12,800 vehicles per day. 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 annual daily traffic (AADT) below 140,000. The AADT projections for the proposed project does not exceed 140,000 vehicles per day; therefore, a Traffic Air Quality Analysis is not required.

5.1.9.3 Congestion Management Process

The congestion management process (CMP) is a systematic process for managing congestion that provides information on transportation systems performance and on alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet state and local needs. The CMP was adopted by H-GAC on January 2015.

The region commits to operational improvements and travel demand reduction strategies at two levels of implementation: program level and project level. Program level commitments are inventoried in the regional CMP, which was adopted by H-GAC; they are included in the financially constrained 2035 RTP Update, and future resources are reserved for their implementation. A CMP has not been developed based on the 2040 RTP at this time.

The CMP element of the plan carries an inventory of all project commitments (including those resulting from major investment studies) detailing type of strategy, implementing responsibilities, schedules, and expected costs. At the project-level programming stage, travel demand reduction strategies and commitments would be added to the regional TIP or included in the construction plans. The regional TIP provides for programming of these projects at the appropriate time with respect to the single occupancy vehicle (SOV) facility implementation and project-specific elements.

Committed congestion reductions strategies and operational improvements which could be proposed within the project area would consist of signalization and intersection improvements; however, individual CMP projects within or adjacent to the study area were not noted in the *2015-2018 TIP*.

In an effort to reduce congestion and the need for SOV lanes in the region, TxDOT and H-GAC would continue to promote appropriate congestion reduction strategies through the Congestion Mitigation and Air Quality program, the CMP, and the *2040 RTP*.

5.1.9.4 Hot-Spot Analysis

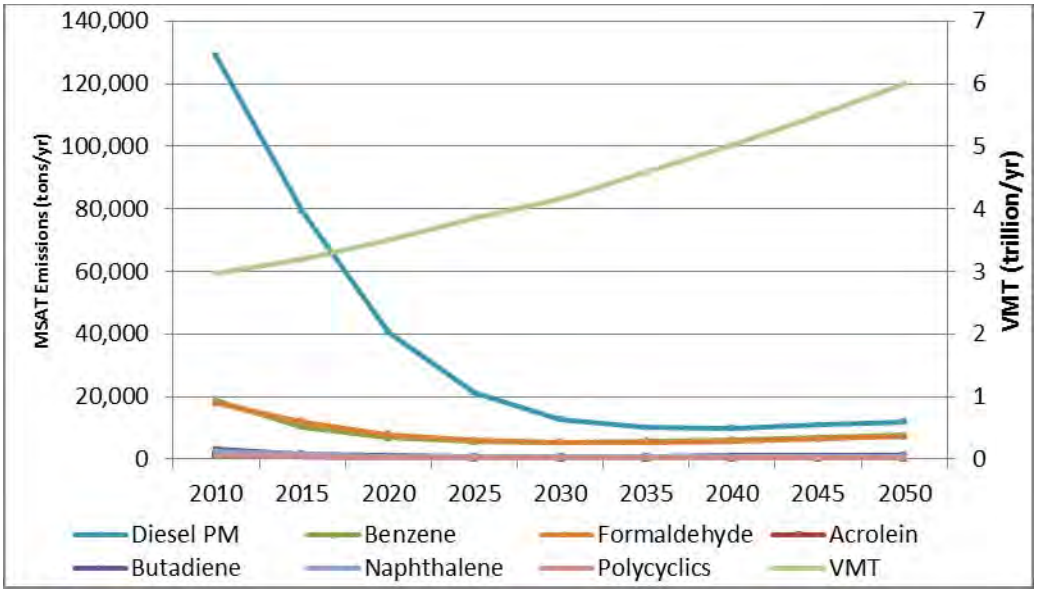
The project is not located within a CO/particulate matter non-attainment or maintenance area. As such, a project-level hot-spot analysis is not required.

5.1.9.5 Mobile Source Air Toxics

Qualitative Mobile Source Air Toxic Assessment (MSATs)

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 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/ncea/iris/index.html). 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-butidiene, 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 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 2** and **Table 5-6**, 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.

Figure 2: Projected National MSAT Emission Trends 2010 to 2050 for Vehicles Operating on Roadways using EPA's MOVES2010b Model



Source: EPA MOVES2010b and **Table 5-6** below.

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

Table 5-6: Projected National MSAT Emission Trends (2010 through 2050) for Vehicles Operating on Roadways using the EPA's Moves2010b Model

Pollutant / VMT	Pollutant Emissions (in tons) and VMT by Calendar Year									Change
	2010	2015	2020	2025	2030	2035	2040	2045	2050	2010 to 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%
VMT (trillions)	2.96	3.19	3.5	3.85	4.16	4.58	5.01	5.49	6	102%

Source: EPA MOVES2010b.

Notes: Model runs conducted from May through June 2012 by FHWA. % = percent; PM = particulate matter; VMT = vehicle miles traveled.

Air toxic 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. The limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure are to be factored into project-level decision making within the context of NEPA. FHWA, the EPA, the Health Effects Institute (HEI), and others have funded and conducted research studies to try to more clearly define potential risks from MSAT

emissions associated with highway projects, and FHWA continues to monitor the developing research in the emerging field.

Project-Specific Mobile Source Air Toxic 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:

http://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemissions.pdf.

For the Build Alternative in this EA, 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 Build Alternatives is slightly higher than that for the No Build Alternative, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. This increase in VMT would lead to higher MSAT emissions for the preferred action alternative along the highway corridor, 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 additional travel lanes contemplated as part of the project alternatives will have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under certain Build Alternatives than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the expanded roadway sections that would be near the City of Montgomery. 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 highway is widened, the localized level of MSAT emissions for the Build Alternative 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 Impact 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 U.S. Environmental Protection Agency (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 the IRIS, which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA 2013a). 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 or in the future as vehicle emissions substantially decrease (HEI 2007a, 2009).

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 (HEI 2007a). 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 and the HEI have not established a basis for quantitative risk assessment of diesel PM in ambient settings (EPA 2013a; HEI 2007b).

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 the Build Alternative may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated. Since the proposed project adds capacity and is located within a nonattainment area, coordination with TCEQ is required under the Air Quality MOU.

5.1.9.6 Air Quality Construction Emissions Reduction Strategies

During the construction phase of this project, temporary increases in PM and MSAT emissions may occur from construction activities. The primary construction-related emissions of PM are fugitive dust from site preparation, and the primary construction-related emissions of MSAT are diesel particulate matter from diesel powered construction equipment vehicles.

The potential impacts of particulate matter emissions will be minimized by using fugitive dust control measures contained in standard specifications, as appropriate. The Texas Emissions Reduction Plan (TERP) provides financial incentives to reduce emissions from vehicles and equipment. TxDOT encourages construction contractors to use this and other local and federal incentive programs to the fullest extent possible to minimize diesel emissions. Information about the TERP program can be found at: http://www.tceq.state.tx.us/implementation/air/terp/.

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

5.2 Community Impact Assessment

5.2.1 Land Use

While the existing land use in the study area (existing and proposed ROW) is mixed, it is predominately forested land with some rangeland used for livestock grazing. Commercial and

resident areas exist along SH 105 within both urban areas. Single-family residences are scattered throughout the study area, and several oil and gas lines are adjacent to existing SH 105. The Old Montgomery Cemetery (also called the Old Methodist Cemetery), the Montgomery United Methodist Church, the Lone Star Cowboy Church, Montgomery High School, Montgomery Junior High School, Montgomery Preschool, and the Cedar Branch Park are also adjacent to existing SH 105.

Build Alternative

Based on verbal comments at the public meetings held in 2005, 2006, and 2007, property owners expressed little desire to develop property along existing SH 105, even if the Build Alternative were to be implemented. In addition, there are no residential or commercial developments planned within the project area. Since capacity would be added to the highway, there would be increased accessibility to the study area, which would cause a direct impact on land use. The Build Alternative would alter approximately 60.40 acres of land to a transportation use, of which 23 acres would be new ROW. **Table 5-7** lists the land uses in the study area in comparison to the Build Alternative's direct impact on these same land uses. Although the Build Alternative would convert pastureland/residential land to a transportation use, the Build Alternative is not anticipated to significantly change existing land use within the study area.

Table 5-7: Land Use Impacts from the Build Alternative

By Land Use Type[a]	Existing (acre)	Impact (acre)	Percent of Total
Commercial	0.001	0.0	0
Residential	6.32	2.00	31.65
Undevelopable	20.39	9.80	48.06
Vacant Developable (includes pastureland)	33.70	23.00	68.25
Total	**60.40**	**34.8**	-

Source: H-GAC 2015c.

[a] Does not include acreages for roadways within the proposed ROW.

No-Build Alternative

The No-Build Alternative would not result in land use impacts within the study area.

5.2.2 Social and Community Impacts

Socioeconomic measures assess the social and economic conditions of a region or area often times through population and housing statistics. The U.S. Census Bureau provides population characteristics for various geographic levels, including counties, Census tracts, block groups, and blocks. Census tracts subdivide counties, block groups subdivide Census tracts, and blocks subdivide block groups. The following section discusses population, racial and ethnic composition, and economic status of the area surrounding the study area, in addition to potential impacts of the Build Alternative based on *2010 Census* (when available) and *2008-2012 American Community Survey (ACS)* data.

The study area boundary for social and economic conditions was developed to analyze the socioeconomic characteristics of the population that would live and work in proximity to the proposed project. The study area includes all Census Tracts (and Census block groups and the Census blocks within them) immediately adjacent to the existing and proposed ROW for the proposed project. The study area includes and is adjacent to 50 blocks within five block groups

and three Census tracts. Of the 50 blocks, only 27 report a residential population. Block groups either partially or wholly contained within the study area are shown on **Exhibit E**.

5.2.2.1 Population

The population within the Houston-Galveston-Brazoria Consolidated Metropolitan Statistical Area (CMSA) (which includes Montgomery County) increased from 4.7 million residents in 2000 to 5.6 million residents in 2010, a 19 percent increase (U.S. Census Bureau 2000, 2010). H-GAC has produced demographic projections as part of its *2040 RTP*. According to the projections listed in **Table 5-8**, both regional and study area populations are predicted to grow between 2010 and 2040. The CMSA is projected to increase by an annual average growth rate of 2.41 percent, and Montgomery County is predicted to grow by over 6.10 percent.

Table 5-8: Regional and Study Area Projected Population Growth (2010 to 2040)

Geographic Area	2010	2040	Population Growth (Annual Average Growth)
Houston-Galveston-Brazoria CMSA	5,809,869	10,018,940	2.41
Montgomery County	452,509	1,280,750	6.10

Source: H-GAC 2015c.

5.2.2.2 Demographics

The term minority is defined by the U.S. Department of Transportation Order 5610.2(a) as person who is:

- Black (a person having origins from any of the black racial group of Africa);
- Asian-American (a person having origins from of the original peoples of the Far East, Southeast Asia, or the Indian Subcontinent);
- American Indian and Alaskan Native (a person having origins in any of the original people of North America, South America [including Central America] and who maintains cultural identification through tribal affiliation or community recognition);
- Native Hawaiian and Other Pacific Islander (people having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands); or
- Hispanic or Latino (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race) (USDOT 2012).

The federal government considers race and Hispanic origin to be two separate and distinct concepts. The *2010 Census* uses the Office of Management and Budget definition of Hispanic or Latino to be “a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race.”

Overall, minorities account for 20.5 percent of the study area’s population at the block level. Three of the blocks in the study area have a minority population greater than 50 percent, which are bolded in **Table 5-9** and shown on **Exhibit E**. None of the block groups report a minority population greater than 50 percent. The two largest minority groups within the study area are Hispanics (11.0 percent) and Blacks (8.5 percent) at the block level. **Table 5-9** lists the percent minority population for each block, block group, and Census tract within the study area.

Table 5-9: Study Area Population, Race and Ethnicity Characteristics

Census 2010 Geography	Total Pop.	Not Hispanic[a]														Hispanic[b]		Total Minority	
		White		Black		Indian		Asian		Islander		Other		Two					
		#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Census Tract 6943.01	12,302	10,948	89	176	1.4	46	0.4	157	1.3	8	0.1	7	0.1	142	1.2	818	6.6	1,354	11.0
Block Group 2	4,773	4,196	87.9	94	2	14	0.3	77	1.6	0	-	4	0.1	59	1.2	329	6.9	577	12.1
Block 2087	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 2088	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 2089	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Census Tract 6945.00	6,402	5,543	86.6	108	1.7	35	0.5	79	1.2	2	-	7	0.1	66	1	562	8.8	859	13.4
Block Group 1	1,537	1,412	91.9	28	1.8	2	0.1	10	0.7	1	0.1	0	-	7	0.5	77	5	125	8.1
Block 1000	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1001	2	1	50	0	0	0	-	0	-	0	-	0	-	0	-	1	50	1	50.0
Block 1002	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Census Tract 6946.00	6,405	5,070	79.2	575	9	36	0.6	16	0.2	0	-	2	-	81	1.3	625	9.8	1,335	20.8
Block Group 1	1,901	1,402	73.8	318	16.7	6	0.3	6	0.3	0	-	1	0.1	10	0.5	158	8.3	499	26.2
Block 1000	385	345	89.6	29	7.5	0	-	1	0.3	0	-	0	-	4	1	6	1.6	40	10.4
Block 1002	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1003	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1004	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1022	97	63	64.9	34	35.1	0	-	0	-	0	-	0	-	0	-	0	-	34	35.1
Block 1024	17	17	100	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1025	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1026	12	10	83.3	2	16.7	0	-	0	-	0	-	0	-	0	-	0	-	2	16.7
Block 1027	41	36	87.8	2	4.9	1	2.4	0	-	0	-	0	-	0	-	2	4.9	5	12.2
Block 1031	2	2	100	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1032	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1033	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1034	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-

Table 5-9: Study Area Population, Race and Ethnicity Characteristics

Census 2010 Geography	Total Pop.	Not Hispanic[a]														Hispanic[b]		Total Minority	
		White		Black		Indian		Asian		Islander		Other		Two					
		#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Block 1039	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1040	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1048	32	29	90.6	0	-	0	-	0	-	0	-	0	-	0	-	3	9.4	3	9.4
Block 1050	**8**	**2**	**25**	**0**	**-**	**0**	**-**	**0**	**-**	**0**	**-**	**0**	**-**	**1**	**12.5**	**5**	**62.5**	**6**	**75.0**
Block 1052	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1053	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1054	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1055	8	5	62.5	3	37.5	0	-	0	-	0	-	0	-	0	-	0	-	3	37.5
Block 1056	36	19	52.8	6	16.7	0	-	0	-	0	-	1	2.8	0	-	10	27.8	17	47.2
Block 1057	81	78	96.3	1	1.2	0	-	0	-	0	-	0	-	0	-	2	2.5	3	3.7
Block 1058	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1059	4	4	100	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1060	29	29	100	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1061	**133**	**59**	**44.4**	**0**	**-**	**1**	**0.8**	**0**	**-**	**0**	**-**	**0**	**-**	**0**	**-**	**73**	**54.9**	**74**	**55.6**
Block 1062	1	1	100	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1063	1	1	100	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1064	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1065	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1066	1	1	100	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1067	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 1068	**1**	**0**	**0**	**0**	**-**	**0**	**-**	**0**	**-**	**0**	**-**	**0**	**-**	**0**	**-**	**1**	**100**	**1**	**100.0**
Block Group 2	3,066	2,472	80.6	148	4.8	23	0.8	9	0.3	0	-	0	-	22	0.7	392	12.8	594	19.4
Block 2000	27	25	92.6	2	7.4	0	-	0	-	0	-	0	-	0	-	0	-	2	7.4
Block 2002	3	3	100	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 2003	38	31	81.6	1	2.6	0	-	0	-	0	-	0	-	1	2.6	5	13.2	7	18.4
Block Group 3	1,438	1,196	83.2	109	7.6	7	0.5	1	0.1	0	-	1	0.1	49	3.4	75	5.2	242	16.8

Table 5-9: Study Area Population, Race and Ethnicity Characteristics

Census 2010 Geography	Total Pop.	Not Hispanic[a]														Hispanic[b]		Total Minority	
		White		Black		Indian		Asian		Islander		Other		Two					
		#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Block 3003	4	4	100	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 3006	2	2	100	0	-	0	-	0	0	0	-	0	-	0	-	0	-	-	-
Block 3007	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 3008	30	24	80	6	20	0	-	0	-	0	-	0	-	0	-	0	-	6	20.0
Block 3009	3	2	66.7	0	-	0	-	0	-	0	-	0	-	1	33.3	0	-	1	33.3
Block 3010	0	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	-	-
Block 3011	11	9	81.8	0	-	0	-	0	-	0	-	0	-	0	-	2	18.2	2	18.2
Places																			
City of Montgomery	621	360	58	163	26.2	4	0.6	4	0.6	0	-	0	-	0	-	90	14.5	261	42.0
Counties																			
Montgomery County	455,746	324,611	71.2	18,537	4.1	1,807	0.4	9,347	2.1	241	0.1	635	0.1	5,870	1.3	94,698	20.8	131,135	28.8

Source: U.S. Census Bureau 2010 (Summary File 1, Table P9).

[a] The complete *2010 Census* race descriptions are as follows: White alone, Black or African American alone, American Indian and Alaska Native alone, Asian alone, Native Hawaiian and Other Pacific Islander alone, Some Other Race alone, and Two or More Races.

[b] The 2010 Census asked respondent to identify their race and ethnicity based on their own perception of their racial and ethnic identity. Ethnicity is defined as a population that shares common characteristics such as religion, traditions, culture, language, and/or tribal or national origin. As such, people who identify themselves as Hispanic can be of any race.

Notes: Bolded rows indicate a 50 percent or greater total minority population for the noted geographical designation.

5.2.2.3 Public Facilities and Services

There are three public schools located within or adjacent to the study area. Montgomery High School is located on the east end of the study area off existing SH 105. Montgomery Middle School is just south of SH 105 on FM 149, and Montgomery Elementary School is north of the study area on SH 105.

The closest full-service hospital to the study area is the Conroe Regional Medical Center, located east of the study area in the City of Conroe. Smaller public and private clinics serve the basic healthcare needs of study area residents. Montgomery County Health Department clinics are the only publicly funded facilities devoted to healthcare in the study area that nearby communities can use for services. Services provided by the facilities include indigent healthcare services and immunizations, in addition to services for children with special health care needs.

Other public facilities within or adjacent to the study area are one local public library, the Chamber of Commerce, Montgomery City Hall, and local fire departments and police departments. The noted facilities serve both the study area and the surrounding region by contributing to interaction between each of the communities within the study area.

Build Alternative

The Build Alternative would not affect any public facility or service within or adjacent to the City of Montgomery, community of Dobbins, or larger Montgomery County. The Build Alternative would not prohibit access to or use of any public facility or service. Changes to travel patterns are not expected.

No-Build Alternative

The No-Build Alternative would not result in impacts to public facilities or services within any of the noted communities or larger County.

5.2.2.4 Economic Impacts

The following addresses economic impacts in and around the study area. This would include temporary impacts from construction and long-term impacts resulting from Build Alternative operations, primarily related to maintenance activities.

Build Alternative

Increased roadway capacity would reduce congestion on existing SH 105. This would decrease travel time and reduce vehicle-operating costs for both commuters and truck drivers using the highway. Increased accessibility would likely lead to additional land development, particularly residential and associated retail development into the surrounding area, which would, in turn, increase the local and regional tax base.

The highway improvements would also likely reduce the frequency and severity of accidents that have a significant cost to individuals and the larger region. For example, the lifetime economic cost to society for each fatality is more than $977,000 (USDOT 2002). Property damage averages more than $2,500 per accident, and other costs include medical costs, loss of productivity, lost workplace productivity, and travel delay.

Improvements to an existing highway often result in adverse economic impacts as well. Firms that depend on passing traffic for their business, such as service stations, fast-food restaurants, and convenience stores, are particularly susceptible to impacts related to highway widening.

Short-term business impacts can be a significant issue. Restricted access to business sites during construction is often a major concern. Under the Build Alternative, construction-related restrictions would involve closed driveways, temporarily reduced capacity of driveways or the highway, intermittent blockage of driveways, reduced number of parking spaces, and patron uncertainty about how to reach a business during construction.

Often times, the business community expresses concerns that local businesses depending on pass-by traffic (particularly gas stations and fast-food restaurants) would be adversely affected by raised medians. Studies on the economic impacts of access management have been conducted in a number of states, including Texas. The findings of these studies have concluded the following.

- Business owners whose businesses were present before, during, and after median installation indicated that business was the same or better after installation of the raised median compared to what business was before.
- Business owners tend to rank accessibility to the store fourth or lower below some combination of customer service, product quality, and product price.

A Texas study found that construction impacts to certain businesses (durable goods retail, specialty retail, fast-food restaurants, and sit-down restaurants) tend to experience an increase in customers and gross sales, whereas gas stations, auto repair, and other service businesses tend to experience decreases in customers and gross sales (Eisele 2000). Other studies have indicated that traffic-dependent businesses, such as convenience stores and fast-food restaurants, were not affected in a significantly different manner than all other businesses.

No-Build Alternative

The No-Build Alternative would limit roadway capacity and decrease the level of service on existing SH 105. This would increase travel time and increase vehicle-operating costs for both commuters and truck drivers using the highway. This decrease in mobility and accessibility to the surrounding area could reduce future growth, which could affect the potential growth of the local and regional tax base.

5.2.2.5 Right-of-Way and Displacements

The project would require approximately 23 acres of additional ROW.

Build Alternative

The Build Alternative was selected to avoid and minimize potential displacements. The data used in the following analysis were determined through interpreting aerial photographs and field visits. (**Exhibit E** depicts the current locations of the potential displacements under the Build Alternative.) Five displacements are anticipated because under the Build Alternative, which would be one residential property, two commercial properties, one commercial billboard, and one abandoned commercial property (a former gas station).

The two commercial properties are the Silver Dollar Liquor Store and Dobbin's Trade Days; Dobbin's Trade Days appears to be vacant. The residential property is a single-family home. The abandoned commercial property appears to be a former gas station currently being used for storage. In addition, one billboard and one barn would be displaced.

According to the Montgomery Central Appraisal District, the property value for the residential displacement is approximately $115,130 (MCAD 2013). The Houston Association of Realtors Multiple Listing homes currently for sale near the potential residential relocation. The price range of available, comparable housing is estimated to be from $115,000 to $125,000. The data represent the market at a particular point in time (November 20, 2014) and is subject to change because of changing market conditions.

While it appears that replacement housing is within the general area, supplemental payments may be required to relocate the displaced property owners into comparable housing. As mandated by the Uniform Relocation Assistance and Real Properties Acquisitions Policies Act, or the Uniform Act, as amended in 1987, assistance would be provided should the local existing housing market be insufficient for relocation. Assistance would apply to any potential displacements, if the values of the displaced homes are not commensurate with available housing values. TxDOT would complete a survey of the housing market and provide housing supplements to displaced residents, if necessary.

Values for commercial properties cannot be determined at this time, and currently, there are no properties listed in the study area. However, because the area is largely rural and undeveloped, a number of parcels could be purchased and developed in order to retain the commercial properties within the study area. Properties of this type range from $65,000 to $250,000. Based on current market data, comparable real estate sites appear to be available within the same zip code of the noted relocations. The proximity of suitable commercial properties for relocation indicates the business displacements may be preserved within the immediate area.

No-Build Alternative

The No-Build Alternative would not result in any relocations or displacements in the study area.

Relocation Assistance by TxDOT

TxDOT offers relocation counseling and financial assistance to residents and businesses that are displaced by the acquisition of highway ROW in accordance with the Uniform Act. Once it has been determined that a structure must be acquired in order to construct a highway, the property owner and/or tenant is contacted by a relocation counselor who provides information on exactly what benefits the owner/tenant is eligible for and who will assist the owner/tenant in applying for those benefits. In general, the relocation counselor provides listings of comparable housing, transportation to inspect the housing (especially for elderly and handicapped persons), and referrals to other agencies that provide assistance for relocated persons.

When a relocatee is contacted by a relocation counselor, the counselor provides a listing of comparable housing which is currently available. The listing is as similar as possible to the dwelling being affected or acquired in terms of the number of rooms, living spaces, location, and square footage. The properties in the listing are currently available on the market and within the financial means of the occupant. Replacement housing has to meet all minimum standards established by the state (decent, safe, and sanitary) and conform to all local building codes.

In addition to residential relocation assistance, TxDOT also provides assistance to relocated businesses, farms, and nonprofit organizations. These benefits may be in the form of reimbursements for reasonable moving and reestablishment expenses.

5.2.2.6 Community Cohesion and Access

As defined in FHWA's Technical Advisory T6640.8A, changes in community cohesion resulting from highway construction and improvements may be beneficial or adverse. Changes in community cohesion can result from splitting neighborhoods, isolating a portion of a neighborhood or an ethnic group, generating new development, changing property values, terminating residential roads, and/or separating residents from community facilities.

An adverse impact to community cohesion would occur when an alternative severs or alters social interaction among groups or individual members of a community. This includes dividing or displacing a functioning neighborhood, or displacing that which allows for the members of the community to assemble and interact (such as an impact to a local place of worship or community recreational facility).

There are two communities within or near the study area, the City of Montgomery and the community of Dobbin. The remainder of the study area consists of single-family residential homes scattered along existing SH 105.

Build Alternative

The Build Alternative would not divide, separate, or isolate any neighborhood or community. It is anticipated that no major changes in access or travel patterns would occur because of the Build Alternative, nor would there be any other changes that could result in disproportionate impacts to any community or neighborhood. Sidewalks do not currently exist within the study area; therefore, pedestrian routes would not be disrupted. Displacements would include one residential property, two commercial properties, one commercial billboard, and one abandoned commercial property.

Although displacements are proposed under the Build Alternative, vacant housing units and lots are for sale in and around the study area. Given this information, the Build Alternative would not affect community cohesion, which would likely remain intact.

No-Build Alternative

The No-Build Alternative would not result in any impacts to community cohesion or access in or around the study area.

5.2.2.7 Pedestrians and Bicyclists

Build Alternative

The Build Alternative would not adversely affect any existing bicycle or pedestrian network. Sidewalks would be constructed in all urban areas, specifically within the community of Dobbin, the City of Montgomery, and at Montgomery High School. In addition, a crosswalk would be provided at Montgomery High School, to allow access to the stadium, north of SH 105, from the high school, located south of SH 105. Where sidewalks are proposed, the sidewalks would be compliant with the Texas Accessibility Standards, the Americans with Disabilities Act accessibility guidelines, and TxDOT's bicycle and pedestrian standards. While dedicated bicycle lanes are not proposed at this time, the 14-foot-wide outside lanes could accommodate bicycles.

No-Build Alternative

The No-Build Alternative would not affect any existing bicycle or pedestrian network in the study area. No new sidewalks would be constructed under the No-Build Alternative.

5.2.2.8 Section 4(f), 6(f) and Chapter 26 Resources

Section 4(f) of the U.S. Department of Transportation Act protects publicly owned and accessible parks, recreation areas, and wildlife and waterfowl refuges and historic sites, regardless of ownership and accessibility. Chapter 26 of the Texas Parks and Wildlife Code protects any public land designated and used as a park, recreation area, scientific area, wildlife refuge, or historic area from the use or take from such land. The Land and Water Conservation Fund Act (LWCF Act) of 1965 established a funding source assisting states and federal agencies to meet present and future outdoor recreation demands and needs. Section 6(f)(3), as codified in 36 CFR 59.3, is the cornerstone of federal efforts to ensure that the federal investments in LWCF assistance are being maintained for public outdoor recreation use.

Cedar Branch Park and the Old Montgomery Cemetery are both considered Section 4(f) and Chapter 26 resources located adjacent to existing SH 105 within the City of Montgomery near the eastern end of the study area. Neither property is a Section 6(f) resource.

Build Alternative

The Build Alternative would not require the use of any publicly owned land from a public park, recreational area, wildlife and waterfowl refuge, or historic site of national, state, or local significance. No ROW would be acquired from Cedar Branch Park or the Old Montgomery Cemetery. In addition, the park and cemetery are within the logical termini limits of the project, but not the construction limits (no construction activities would occur adjacent to these locations); therefore, there would not be a constructive use associated with these properties. As such the Build Alternative is not anticipated to impact either of the Section 4(f) or Chapter 26 resources in the study area, and subsequently no Section 6(f) properties would be impacted.

No-Build Alternative

The No-Build Alternative would not result in impacts to any Section 4(f), Section 6(f), or Chapter 26 resources in the study area.

5.2.2.9 Environmental Justice

Executive Order 12898 (Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations) mandates that federal agencies “identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of programs on minority and low-income populations” (59 Federal Register 7629-7633, February 16,1994). The three fundamental principles of environmental justice (EJ) are to:

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations;
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and
- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

The According to the U.S. Department of Transportation Order 5610.2(a), disproportionately high and adverse effects on minority or low-income populations generally means an adverse effect that is predominantly borne by a minority population and/or low-income population, or would be suffered by the minority population and/or low-income population, and is appreciably more severe or greater in magnitude than the adverse effect that would be suffered by the non-minority population and/or non-low-income population (USDOT 2012).

Low income is defined in Order 5610.2(a) as a person whose median household income is at or below the U.S. Department of Health and Human Services (DHHS) poverty guidelines. The DHHS poverty guidelines are categorized by the number of persons living in a household. The 2015 DHHS poverty guideline for a family of four is $24,250 (DHHS 2015).

As listed in **Table 5-10**, the median household income within the study area at the block group level is $65,018, which is well above the 2015 DHHS poverty guideline for a family of four. None of the study area block groups reports a median household income below the DHHS poverty guidelines. Approximately 8.1 percent of the study area's population at the Census track level (the lowest level the dataset is available) reports having income in the past 12 months below DHHS's poverty guideline for the study area's income data.

Table 5-10: Study Area Income Characteristics

Census 2010 Geography	Total Households	Median Household Income ($)	Total Pop. for whom Poverty Status is Determined	% Pop. with Income in the past 12 months below poverty level
Census Tract 6943.01	4,683	$85,417.00	11,425	13
Block Group 2	1,573	$84,083.00	N/A	N/A
Census Tract 6945.00	2,152	$90,969.00	5,904	6
Block Group 1	628	$54,924.00	N/A	N/A
Census Tract 6946.00	2,119	$59,375.00	6,338	11
Block Group 1	626	$67,981.00	N/A	N/A
Block Group 2	1,048	$55,000.00	N/A	N/A
Block Group 3	445	$63,102.00	N/A	N/A

Source: U.S. Census Bureau 2014a (*2008-2012 ACS*, Tables B11001, B19013, and B17001).

Notes: N/A = not applicable.

Build Alternative

Although minority and low-income populations are present within the study area, there would be no residential or commercial displacements within EJ-concentrated areas. Additionally, the Build Alternative would not bisect any EJ communities that are not already bisected by SH 105. It is not anticipated that the Build Alternative would have disproportionate impacts to minority or low-income populations.

No-Build Alternative

The No-Build Alternative would not result in impacts to EJ populations in the study area.

5.2.2.10 Limited English Proficiency

Executive Order 13166 (Improving Access to Services for Persons with Limited English Proficiency) requires agencies to examine the services they provide and to identify any need for services to those with limited English proficiency (LEP). Agencies are also required to develop and implement a system to provide services so that LEP individuals can have meaningful access to the services. Failure to ensure that LEP individuals can effectively participate in the benefits from federally assisted programs and activities may violate the prohibition under Title VI of the Civil Rights Restoration Act of 1987, 42 United States Code (USC) 2000d and Title VI regulations.

The U.S. Department of Justice defines LEP individuals as those "who do not speak English as their primary language and who have a limited ability to read, write, speak, or understand English" (67 Federal Register 41459). As the lowest level at which LEP data is available, Block group data was obtained from the U.S. Census Bureau's *2008-2012 ACS* database to evaluate potential impacts (U.S. Census Bureau 2014a).

Within a block group, census data recorded the presence of persons who describe their ability to speak English as "Less than Very Well." **Table 5-11** lists the percentages of adults who speak English "Less than Very Well" by language category. According to the *2008-2012 ACS,* approximately 3.7 percent of the population would characterize themselves as those who speak English "Less than Very Well." Therefore, there is an LEP population within the study area. Data indicate that of the residents who speak English "Less than Very Well" in the study area, the predominant language spoken is Spanish. Field reconnaissance did not identify building signage, newspapers, or advertisements printed in Spanish within the study area.

Table 5-11: Study Area Percent of Adult Speakers Who Speak English "Less than Very Well"

Census 2010 Geography	Population 5 Years & Over	% Spanish Speakers	% Other Indo-European Speakers	% Asian & Pacific Islander Speakers	% Other Speakers
Census Tract 6943.01	11,116	0.34	0.22	0.20	0.18
Block Group 2	4,294	0.63	0.58	0.51	0.00
Census Tract 6945.00	5,600	2.61	0.00	0.77	0.48
Block Group 1	1,244	0.72	0.00	0.00	0.00
Census Tract 6946.00	6,078	5.03	0.53	0.21	0.00
Block Group 1	2,103	1.43	0.00	0.00	0.00
Block Group 2	2,697	5.41	1.19	0.48	0.00
Block Group 3	1,278	10.17	0.00	0.00	0.00

Source: U.S. Census Bureau 2014a (*2008-2012 ACS*, Table B16004).

Note: ACS data are estimates, not counts.

In accordance with the Safe Harbor provisions, written translations of vital documents would be provided for LEP language upon request. All public meeting materials would be provided in both English and Spanish, and translators would be onsite during the meeting to assist those who may need it. Translators for other LEP languages would be provided upon request. None of the

LEP populations would be discriminated against because of the project and would have full equality of access to all project-related materials. The requirements of Executive Order 13166 appear to be satisfied.

Build Alternative

The Build Alternative would not pose any discriminatory barriers to LEP individuals. Public notice for all public meetings held thus far have informed citizens of the opportunity to request an interpreter for language or other special communication needs to be present at the public meetings to ensure that such persons have meaningful access to the programs, services, and information that TxDOT provides. In addition, bilingual representatives attended all three public meetings. Any future public involvement would continue to offer bilingual translations of project information, and public notices would be placed in a bilingual publication.

No-Build Alternative

The No-Build Alternative would not result in impacts to LEP individuals within the study area.

5.2.3 Visual and Aesthetic Quality

Build Alternative

Since the Build Alternative consists of widening existing SH 105 primarily within the existing ROW, the Build Alternative is not anticipated to adversely impact visual resources in the study area.

No-Build Alternative

No impacts to visual and aesthetic quality would be anticipated under the No-Build Alternative.

5.2.4 Noise

The following noise analysis was accomplished in accordance with TxDOT's (FHWA-approved) *Guidelines for Analysis and Abatement of Roadway Traffic Noise* (TxDOT 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 "dBA."

Also, because traffic sound levels are never constant because of 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 "Leq."

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, and
- Consideration and evaluation of measures to reduce noise impacts.

FHWA has established the noise abatement criteria (NAC) for various land use activity areas that are used as one of two means to determine when a traffic noise impact would occur. The NAC can be seen in **Table 5-12**.

Table 5-12: Noise Abatement Criteria (NAC)

Activity Category	FHWA dB(A) L_{eq}	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, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (exterior)	Hotels, motels, offices, restaurants/bars and other developed lands, properties, or activities not included in A to D or F.
F	------	Agriculture, 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.

Source: TxDOT 2011.

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.

The FHWA traffic noise modeling software was used to calculate existing and predicted traffic noise levels. 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.

Existing and predicted traffic noise levels were modeled at receiver locations (listed in **Table 5-13** and marked on **Exhibit F**) that represent the land use activity areas adjacent to the project that might be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement.

Table 5-13: Traffic Noise Levels (dB[A] L_{eq})

Receiver		NAC Category	NAC Level	Existing	Predicted 2040	Change (+/-)	Noise Impact
R1	Residence	B	67	47	51	+4	No
R2	Residence	B	67	57	61	+4	No
R3	Residence	B	67	54	57	+3	No
R4	Residence	B	67	50	53	+3	No
R5	Residence	B	67	47	52	+5	No
R6	Residence	B	67	48	53	+5	No
R7	Residence	B	67	61	63	+2	No
R8	Residence	B	67	59	62	+3	No
R9	Residence	B	67	59	64	+5	No
R10	Residence	B	67	57	58	+1	No
R11	Residence	B	67	58	58	0	No
R12	RV Park	B	67	58	58	0	No
R13	Residence	B	67	59	61	+2	No
R14	Residence	B	67	50	54	+4	No
R15	Residence	B	67	54	58	+4	No
R16	Residence	B	67	52	56	+4	No
R17	Residence	B	67	58	64	+6	No
R18	Residence	B	67	55	61	+6	No
R19	Residence	B	67	52	58	+6	No
R20	Residence	B	67	53	58	+5	No
R21	Residence	B	67	55	60	+5	No
R22	Residence	B	67	47	50	+3	No
R23	Residence	B	67	59	61	+2	No
R24	Residence	B	67	63	67	+4	Yes
R25	Residence	B	67	63	67	+4	Yes
R26	School	D	52	33	36	+3	No
R27	School	D	52	29	32	+3	No
R28	Active sport area	C	67	44	47	+3	No

Table 5-13: Traffic Noise Levels (dB[A] L_{eq})

Receiver		NAC Category	NAC Level	Existing	Predicted 2040	Change (+/-)	Noise Impact
R29	Church Playground	C	67	52	55	+3	No
R30	Place of worship	D	52	38	40	+2	No
R31	Residence	B	67	61	62	+1	No
R32	Residence	B	67	61	64	+3	No
R33	Residence	B	67	53	58	+5	No
R34	Place of worship	D	52	40	43	+3	No
R35	Church Playground	C	67	56	60	+4	No
R36	City Hall	D	52	41	43	+2	No
R37	Residence	B	67	60	63	+3	No
R38	Park	C	67	56	58	+2	No
R39	Post office	D	52	41	43	+2	No
R40	Residence	B	67	60	63	+3	No
R41	Residence	B	67	61	64	+3	No
R42	Day care	D	52	38	41	+3	No
R43	Residence	B	67	60	63	+3	No
R44	Residence	B	67	59	62	+3	No
R45	Residence	B	67	56	59	+3	No
R46	Residence	B	67	57	59	+2	No
R47	Cemetery	C	67	59	61	+2	No
R48	Cemetery	C	67	59	62	+3	No
R49	Medical facility	D	52	42	44	+2	No
R50	Residence	B	67	57	59	+2	No
R51	Residence	B	67	59	62	+3	No

Source: SH 105 Study Team 2016.

As indicated in **Table 5-13**, the project would result in a traffic noise impact, 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 barriers.

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 percent of impacted, first row receivers by at least 5 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 5 dB(A) and the abatement measure must be able to reduce the noise level at least one impacted, first row receiver by at least 7 dB(A).

Traffic Management

Control devices could be used to reduce the speed of the traffic; however, the minor benefit of 1 dB(A) per 5 miles per hour (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 would displace existing businesses and residences, require additional ROW, and 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 Barriers

This is the most commonly used noise abatement measure. Noise barriers were evaluated for each of the impacted receiver locations.

Noise barriers would be feasible and reasonable for the following impacted receivers and, therefore, are proposed for incorporation into the project (**Table 5-14** and **Exhibit F**):

R24, R25, R50 and R51: Noise barriers would be reasonable and feasible for receivers R24 and R25. However, TxDOT's practice for mitigation efforts is to provide a wall for the entire apartment complex. Therefore, receivers R50 and R51 were included in the mitigation analysis, even though they are not impacted. Each receiver represents a total of four multiunit residences with two residences per unit of each floor. A segmented noise barrier was modeled. The first segment is 338 feet in length and 18 feet in height and the second segment is 307 feet in length and 18 feet in height. This barrier would reduce noise levels by at least 5dBA for 11 benefited receivers at a total cost of $208,914 or $18,992 for each benefited receiver.

Table 5-14: Traffic Noise Barrier Proposal (preliminary)

Barrier	Barrier Segments	Representative Receivers	Total # Benefited	Length (feet)	Height (feet)	Total Cost	$/Benefited Receiver
1	2	R24, R25 and R50, R51	11	645	18	$208,914	$18,992

Any subsequent project design changes may require a reevaluation of this preliminary noise barrier proposal. The final decision to construct the proposed noise barrier will not be made until completion of the project design, utility evaluation and polling of adjacent property owners.

To avoid noise impacts that may result from future development of properties adjacent to the 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 following predicted (2040) noise impact contours shown in **Table 5-15**.

Table 5-15: Traffic Noise Impact Contours

Land Use	Impact Contour	Distance from ROW
NAC B and C	66 dB(A)	At ROW
NAC E	71 dB(A)	Inside ROW

Source: SH 105 Study Team 2014.

Notes: dB(A) = a-weighted decibel; NAC = Noise Abatement Criteria; ROW = right-of-way.

Noise associated with the construction of the 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 is expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected. Provisions would be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

A copy of this traffic noise analysis would be available to local officials to assist in future land use planning. On the date of approval of this document (Date of Public Knowledge), FHWA and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project.

5.3 Cultural Resources

5.3.1 Historical Properties

An historical properties survey was completed for an area of potential effect (APE) and is on file at the TxDOT Houston District office. The historic properties survey conforms to the standards set forth by the Texas Historical Commission (THC) and TxDOT's Environmental Affairs Division. For the purposes of the project, the APE is considered 150 feet beyond the proposed ROW.

A review of the National Register of Historic Places (NRHP), the list of State Antiquities Landmarks (SALs), and the list of Recorded Texas Historic Landmarks (RHTLs) indicated that there are no previously recorded NRHP properties or SALs located within the APE. Two RHTLs (the Nathaniel Hart Davis Cottage and the Davis Law Office) were identified at the eastern limit of the APE in the City of Montgomery. One Official Texas Historical Marker for the Old Methodist Cemetery was also identified just west of the two RTHLs on the north side of existing SH 105. There are two additional cemetery subject markers and one Centennial Marker in the APE located in the cemetery. Additionally, a reconnaissance survey conducted in April 2007 revealed 86 historic-age resources (built prior to 1966) in the APE, including the two RTHLs noted previously. Since the last survey was conducted in April 2007, a TxDOT historian reviewed the APE for any additional historical properties between 1966 and 1979 on June 1, 2015, and no additional historical properties were found.

TxDOT Historians evaluated the 86 properties through the criteria of eligibility and determined that only the Nathaniel Hart Davis Complex (Resources #9a-9d), the Old Methodist Cemetery (Resource #10), and the William S. Taylor Centennial Marker (Resource #10-3) are eligible for NRHP listing.

Build Alternative

The Build Alternative would pose no adverse effect to historical properties in the APE. The Centennial Marker would not need to be relocated or moved, and no new ROW would be required from the Old Methodist Cemetery or the Nathaniel Hart Davis Complex. All construction activities would be conducted a distance from the three historic properties. The predicted noise level would increase 2 dB, which is 3 dB below the maximum criteria. The Official Texas Historical Marker would not need to be relocated or moved.

Pursuant to Stipulation VI "Undertakings with potential to Cause Effects" of the Programmatic Agreement for Transportation Undertakings (PA-TU) among FHWA, the State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation, and TxDOT and pursuant to the MOU, TxDOT determined that the Build Alternative would have no adverse effects to historical properties on September 23, 2008. A copy of the determination memorandum is on file at the TxDOT Houston District office and the 2008 coordination letter can be found in **Appendix B**.

It should be noted that sidewalks and detention ponds were added to the design after the 2008 approval memorandum. Upon coordination with TxDOT, it was determined that sidewalks and detention ponds were placed within the APE originally reviewed, and no additional historical surveys are required. Per the 2015 PA-TU, TxDOT historians determined project activities pose no adverse effects to historic properties. Therefore, additional project coordination with SHPO is not required and the determination that the Build Alternative would have no adverse effects to historical properties remains valid.

No-Build Alternative

Under the No-Build Alternative, there would be no impact to historical properties in the APE.

5.3.2 Archeological Resources

An archeological report dated January 22, 2007 is on file at the TxDOT Houston District office that details the archeological survey performed for the project. Consultation with the University of Texas-Austin Texas Archeological Research Laboratory indicated that there were no previously recorded archeological or historical sites within or near the APE. Approximately 3.7 miles of the APE falls within Unit 4 (no survey recommended) of the Potential Archeological Liability Map (PALM). A total of 1.7 miles of the APE falls within Unit 2 (surface survey recommended; no deep reconnaissance recommended) of the PALM, and 0.8 mile of the APE falls within Unit 1 (surface survey recommended; deep reconnaissance recommended) of the PALM. The PALM can be seen in **Appendix E**.

Due to the lack of right-of-entry when the original studies were conducted, a limited archeological survey was conducted within the APE. (Approximately 12.5 percent of the proposed ROW was surveyed.) Seven backhoe trenches and seven shovel tests were excavated east of Lake Creek. No archeological sites were recorded. No further work is recommended for this section of the APE. However, further archeological surveys are recommended during the ROW acquisition process for areas that right-of-entry was not granted. The archeological survey report on file at the TxDOT Houston District office provides further details on additional archeological survey recommendations. Confirmation of the recommendations is pending the completion of the noted archeological survey.

Build Alternative

Based on the proposed design in 2003, TxDOT archaeologists determined that the Build Alternative was not anticipated to have adverse effects to archeological properties. See coordination memorandum, dated December 27, 2007, in **Appendix B**. However, the design has been modified to include intermittent sidewalks and detention facilities since the approval in December 2007. Therefore, a memo was developed detailing the design changes since the 2007 Archeological Letter Report. The memo determined that the new sidewalks are within the original ROW limits already surveyed and would not require any additional survey. However, the detention ponds are either located outside of those areas originally surveyed, or found within areas that would require survey, but could not be surveyed because right of entry was not provided by the property owner. As such, additional studies will need to be conducted once the proposed ROW has been acquired. See **Exhibit G** for all areas surveyed in the January 2007 Letter Report, those areas that still need to be surveyed, and those areas where right-of-entry was received. A copy of the memo is on file with TxDOT.

No-Build Alternative

Under the No-Build Alternative, there would be no impacts to archeological resources in the APE.

5.4 Hazardous Materials

Hazardous materials are substances that are toxic to plants, animals, or humans; corrosive to materials; flammable; or explosive. If hazardous substances contaminate soil and/or groundwater, the substances may cause harm to the human or natural environment. A hazardous materials database search was conducted to identify sites within the study area that may have experienced soil and/or groundwater contamination by hazardous materials. The assessment consisted of a regulatory/governmental agency database records review, an on-site investigation, and an oil/gas well review.

5.4.1 Regulatory/Governmental Agency Database Records Review

A database search was prepared in October 2014 and is on file at the TxDOT Houston District office. According to TxDOT standards, the regulatory review involved reviewing lists of regulated facilities at both the federal and state level that occur within a number of minimum search distances set by the American Society for Testing and Materials (ASTM) E 1527-13. The information from databases returning a result within the ASTM-standard search distances is summarized in **Table 5-16.**

Table 5-16: Hazardous Material Regulatory Database Records Summary in and around the Study Area

Searched Regulatory Databases	ASTM Search Distance (miles)	0.125 Mile	0.25 Mile	0.5 Mile	1 Mile	> 1 Mile	Total
CERCLIS	0.5	0	1	0	NR	NR	1
NFRAP	0.5	0	1	0	NR	NR	1
PST	0.25	3	0	NR	NR	NR	3
LPST	0.5	2	0	0	NR	NR	2
Total Records	**-**	**5**	**2**	**0**	**0**	**0**	**7**

Source: GeoSearch 2014a.

Notes: CERCLIS = Comprehensive Environmental Response, Compensation, and Liability Information System; LPST = Leaking Petroleum Storage Tank; NFRAP= No Further Remedial Action Planned; NR = Not Reported; PST = Petroleum Storage Tank.

The following descriptions expand on each of the databases listed in **Table 5-16**.

- The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) lists sites that the EPA is currently investigating for the release or threatened release of hazardous substances pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980.
- Under CERCLIS, the No Further Remedial Action Planned (NFRAP) (property and adjoining) sites are locations where, following an initial investigation, no contamination was found, where contamination was removed quickly without the need for the site to be placed on the National Priority List (NPL), or where the contamination was not serious enough to require federal Superfund action or NPL consideration.
- The Leaking Petroleum Storage Tank (LPST) database lists the underground storage tanks that have reported leaks of petroleum substances.
- The Petroleum Storage Tank (PST) database (property and adjoining properties) maintains a listing of petroleum storage tanks that have been registered with the state.

Table 5-17 describes the facility locations and details for the identified hazardous materials and waste sites depicted on **Exhibit H**.

Table 5-17: Hazardous Materials and Waste Site Summary in and around the Study Area

Description and Address	Map ID	Regulatory Database	Status	Distance and Direction	Potential Concern
Giles Brothers Lumber Company SH 105 (1.8 miles west of FM 149), Montgomery, Texas 77356	3	CERCLIS	TXD008433971: After initial investigation, no contamination was found. Contamination was quickly removed, or contamination was not serious enough to require federal Superfund action or NPL consideration. The site was archived August 24, 1994.	0.24-mile southeast	No Risk
		NFRAP			
Western Hill Shell Station 26001 SH 105 West Montgomery, Texas 77356	1	PST	Facility ID #2924: Four tanks removed from the ground.	0.05-mile west	Low Risk
		LPST	Facility ID #115921: No groundwater impact, and no threat to receptors. Final concurrence issued, and the case is closed.		
Mock's Grocery 26126 SH 105 West Montgomery, Texas 77356	1	PST	Facility ID #9688: Five tanks in use.	0.04-mile west	Low Risk
		LPST	Facility ID #114822: Tank permanently filled in place. No groundwater impact, and no threat to receptors. Final concurrence issued, and the case is closed.		

Table 5-17: Hazardous Materials and Waste Site Summary in and around the Study Area					
Description and Address	**Map ID**	**Regulatory Database**	**Status**	**Distance and Direction**	**Potential Concern**
Fuel Max 1526866 SH 105 West Dobbin, Texas 77333	2	PST	Facility ID #86775: Construction scheduled for 04/25/2014.	0.05-mile south	Low Risk

Source: GeoSearch 2014a.

5.4.2 Oil and Gas Wells

In November 2014, an oil and gas well database search identified six well sites located within a 0.50-mile radius of the study area. The information is summarized below in **Table 5-18** and mapped on **Exhibit H**.

Table 5-18: Oil and Gas Wells in and around the Study Area

Map ID	Surface ID	Distance and Direction	Well Type
1	307434	0.13-mile northwest	Dry Hole
2	307438	0.18-mile southeast	Cancelled Location
3	307437	0.19-mile southeast	Cancelled Location
4	307433	0.22-mile southeast	Dry Hole
5	307439	0.25-mile east	Cancelled Location
6	307440	0.34-mile southeast	Cancelled Location

Source: GeoSearch 2014b.

5.4.3 On-site Visual Investigations

A preliminary on-site visual investigation was performed in September 2014 from the existing ROW within the study area to identify sites with potential environmental concerns indicative of environmental contamination by hazardous materials. The visual investigation also verified the four sites listed in **Table 5-17** and identified from the regulatory agency database records review.

The on-site visual investigation involved noting any visual and/or olfactory evidence of potential environmental concerns. Typical recognized evidence of potential environmental concerns includes storage tanks (above and belowground), underground tank fill pipes, vent pipes, solid waste disposal (landfills, dumps, drums, barrels, batteries, tires, metal, cans, etc.), hazardous waste generating/disposal operations, abandoned equipment or tanks containing liquids or residues, electrical or hydraulic equipment potentially containing polychlorinated biphenyls, surface stains, visible evidence of water contamination, distressed vegetation, and/or ponding or pooled liquids.

The on-site visual investigation identified four additional sites included in **Table 5-19**.

Table 5-19: On-site Visual Investigation Summary within the Study Area

Map ID	Name	Address	Potential Risk
A	Dobbin Auto	26863 Highway 105 West Montgomery, Texas 77316	No
B	New gas station	26866 Highway 105 West Montgomery, Texas 77356	No
C	Unnamed site (former gas station currently being used as storage)	24310 Highway 105 West Montgomery, Texas 77356	High
D	Stowe's Collision Repair	21587 Eva Street, Montgomery, Texas 77356	No

Source: SH 105 Study Team 2014.

The first site is directly across the street from the new gas station is Dobbin Auto (**Exhibit H**, Site ID# A), which was not identified by the agency database review. Since no proposed ROW would be required from the site, the site is anticipated to pose no risk to the Build Alternative.

The second site is a new gas station presently under construction (**Exhibit H**, Site ID# B) located on the north side of existing SH 105 at its intersection with Mt. Mariah Road. Since no proposed ROW would be required from the site, the site is anticipated to pose no risk to the Build Alternative.

The third site appears to be a former gas station (**Exhibit H**, Site ID# C), currently being used for storage, located north of existing SH 105, approximately 0.17 mile northeast of Old Dobbin Road. The site would be within the proposed ROW of the Build Alternative. The site was not identified by the agency database review and there are no signs of tank removal. Approximately 0.26 acre of ROW would be required from this site. Therefore, the site may pose a high risk, and it is recommended that a Phase II Environmental Site Assessment be conducted during acquisition and prior to construction.

The fourth site, Stowe's Collision Repair (**Exhibit H**, Site ID# D), is located on the south side of existing SH 105 just outside of the City of Montgomery. Since no proposed ROW would be required from the site, it is anticipated to pose no risk to the Build Alternative.

5.4.4 Asbestos Containing Materials and Lead-based Paint

The project would involve the demolition and/or removal of existing structures in the ROW and would require an inspection for asbestos containing material (ACM) and lead-based paint to be completed for impacted bridge structures. ACM and lead-based paint issues would be addressed prior to construction. If the presence of ACM is confirmed, a mitigation plan for the removal and disposal of the ACM would need to be developed according to federal, state, and local regulations.

Asbestos and lead-based paint inspections, specifications, notification, license, accreditation, abatement, and disposal (as applicable) would comply with federal and state regulations. If required, contingencies would be developed to address worker safety, material recycling, and proper management of any paint-related wastes.

Build Alternative

Four sites containing seven documented records were identified within the ASTM-standard database search (GeoSearch 2014a). There is a low potential risk that these adjacent sites had releases of regulated substances that may have affected the study area. Furthermore, a visual observation conducted in September 2014 revealed four additional and undocumented sites. One site, a former gas station, may pose a high risk to the Build Alternative from encountering on-site migration of contaminants. A Phase II Environmental Site Assessment is recommended prior to the next phase of the project to address the potential risk.

None of the identified oil and gas well sites would be within the proposed ROW; therefore, no impact to these sites is anticipated under the Build Alternative.

If hazardous substances/wastes are encountered unexpectedly during construction, appropriate measures for proper management of the contamination would be initiated in accordance with all applicable federal, state, and local regulations per TxDOT Standard Specifications.

No-Build Alternative

Current conditions on existing hazardous materials sites would remain unaltered under the No-Build Alternative, unless remediation plans are in place. Existing remediation plans would continue to occur independently of the project under the jurisdiction of TCEQ and the EPA.

5.5 Construction Impacts

Although temporary congestion may occur from project construction, access to businesses near the project would be maintained during all phases of construction. No detours from highway lane closures would be necessary, and no substantial adverse impacts to routes available to pedestrians and bicyclists would occur. All practicable steps would be taken to minimize any inconvenience to motorists using existing SH 105 during the construction phase. People living and working in the immediate area of construction may experience increased levels of noise and dust from construction activities. Measures to control fugitive dust would be considered and incorporated into the final design and construction specifications.

Although storage and use of hazardous materials would be necessary during construction, use and handling of hazardous materials associated with construction machinery/equipment would pose minimal risk to the environment, if plans, safety measures, and BMPs are followed. Storage of on-site hazardous materials is discouraged, and any required materials would be limited to small quantities and only for short-term operational needs of the site. Site storage would be limited to areas designated as low risk to the environment and would not be located in or adjacent to drainage areas. Any on-site storage would be temporary and removed when the need to support construction activities is no longer required.

Temporary aboveground storage tanks, containing oil and diesel fuel, are typically used to provide fuels for equipment and vehicles used for construction. These aboveground storage tanks would be regulated and require control measures for spills and leaks. Potential impacts could occur from small spills and leaks from fueling and maintenance of equipment and vehicles. The impacts should be minimal and would not pose a substantial impact to the environment. Every effort would be taken to reduce these types of impacts during construction. Activities dealing with the use and storage of hazardous materials during construction would be required to conform to TxDOT standards for spill containment and control strategies.

6.0 INDIRECT AND CUMULATIVE IMPACTS ANALYSIS

Indirect Impacts

The potential of the proposed project to result in induced growth and related effects was determined using TxDOT's Induced Growth Indirect Impacts Decision Tree (TxDOT 2014). The need and purpose of the proposed project does not include economic development, nor is the proposed project intended to serve a specific development. The proposed project would not result in changes in access. While there is land available for development surrounding the proposed project, there are currently no documented plans for development either residential or commercial within the project area. While the proposed project would add capacity to the existing facility, it would not provide new access to previously inaccessible parcels of land. Additionally, an overall lack of demand for additional development within the project area indicates the potential for induced growth related to the proposed improvements would be limited.

As indicated by the results of the Induced Growth Indirect Impacts Decision Tree and in consideration of the nature of the proposed improvements (expansion of an existing roadway in order to meet current design standards and reduce travel delays), the proposed project is not likely to induce growth within the area, and further analysis of induced growth related to the proposed project was not required.

The complete the Risk Assessment for Indirect Impacts is included in **Appendix F**.

Cumulative Impacts

The potential of the proposed project to result in cumulative impacts was determined using TxDOT's Cumulative Impacts Decision Tree (TxDOT 2014). The proposed project would not have a substantial direct or indirect impact on any resources. Although there is a declining resource in the project ROW (habitat for two SGCNs (the plains spotted skunk and the Southeastern myotis bat) and two state-listed threatened species (the Rafinesque's big-eared bat and the wood stork), the proposed project is not expected to have a direct impact to this resource. As it is not anticipated that the proposed project would have any impacts on a resources that is in poor or declining health, no cumulative impacts analysis would be required.

The complete the Risk Assessment for Cumulative Impacts is included in **Appendix F**.

7.0 MITIGATION AND MONITORING COMMITMENTS

7.1 Water Resources, including Wetlands/Waters of the U.S.

7.1.1 USACE Nationwide Permits

Wetland impacts, whether direct, indirect, or cumulative, would be regulated through the USACE Section 404 permit process. Natural resource agencies (including TPWD, USFWS, USACE, EPA, and TCEQ) would be party to decisions regarding appropriate mitigation (if required), as well as wetland type, function, location, and size. Should mitigation be required, the USACE 2008 mitigation rule regarding compensatory mitigation for losses of aquatic resources would be followed. Possible mitigation alternatives may be wetland/habitat restoration, enhancement, creation, and/or preservation. Preference would be given to potential mitigation within the San Jacinto River Basin.

USACE NWPs 14 (Linear Transportation Projects) and/or 25 (Structural Discharges) would satisfy project requirements as follows.

- NWP 14 covers the construction, expansion, modification, or improvements of linear transportation projects. For single and complete public transportation projects, the maximum limit of impact to jurisdictional waters of the U.S. that could be covered under NWP 14 is 0.5 acre. At this time, design is not completed to a level of detail to quantify specific impacts. However, it is anticipated that none of the tributaries to be impacted would measure more than 0.5 acre. Although the water crossing at Lake Creek is 0.11 acre, it is likely the proposed bridge structure would span Lake Creek and would not impact the water crossing below the ordinary high water mark (OHWM). No pilings would be placed below the OHWM of Lake Creek. Furthermore, the impacts to the six individual water crossings (each as single and complete projects) are expected to be less than 0.10 acre and none of the water crossings possess wetlands. Therefore, a PCN or stream mitigation is not anticipated. However, once design is complete and impacts are known, a mitigation plan would be provided in accordance with a PCN 14, including stream mitigation if needed.
- NWP 25 covers the placement of dredged or fill material into waters of the U.S involving discharges, such as concrete, sand, or rock, into tightly sealed forms or cells to be used as a structural member for standard pile supported structures, such as the proposed bridges on the project. NWP 25 also includes excavation of bottom material from within the form prior to discharge of the concrete, sand, or rock. Activities that fall under the criteria for this permit do not require USACE coordination by way of a PCN.

7.1.2 Water Quality

A SW3P would be implemented, and an NOI would be posted because of soil disturbances over 5 acres. The plan would include temporary erosion and sedimentation control items to be used as directed by the project engineer in response to changing field conditions and by the contractor for industrial activities within state ROW. Where appropriate, these temporary erosion and sedimentation control structures would be in place before initiation of work and would be maintained throughout the duration of the project. The contractor would take appropriate measures to prevent, minimize, and control the spill of hazardous materials in staging areas. All materials being removed and/or disposed of by the contractor would be done in accordance with state and federal laws and by approval of the project engineer.

In order to comply with the TCEQ's 401 Water Quality Certification Conditions for NWPs, at least one BMP from each of the following three categories of on-site water quality management (erosion control, post-construction total suspended solid control, and sedimentation control) must be used on the project. BMPs would include temporary vegetation, silt fencing, and vegetative filter strips.

7.2 Noise

Noise barriers were found to be feasible and reasonable and are recommended for inclusion in the proposed design. Noise associated with the construction of the 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 is expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected. Provisions would be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

7.3 Wildlife Habitat and Vegetation Communities, including Threatened and Endangered Species

Mitigation efforts to compensate for the loss of natural resources could be done within or near the study area. There may also be opportunities from other projects to restore or enhance degraded natural areas, or to create certain habitat types for terrestrial and aquatic wildlife (as an example) that previously were not present in a particular area. Re-vegetation along the ROW would adhere to TxDOT re-vegetation guidelines. Prior to construction the project footprint would be surveyed for state listed species of mollusks and bats**,** where appropriate habitat exists, relocating state listed and SGCN mussels under TPWD permit and implementing Water Quality BMPs when mussels are discovered, and when work is adjacent to the water, implementing Water Quality BMPs as part of the SWPPP for a construction general permit or any conditions of the 401 water quality certification for the project will be implemented. **If found during the surveys, bat BMPs would be implemented.**

7.4 Archeological Resources

Approximately 12.5 percent of the total proposed ROW was surveyed. Section 106 consultation was conducted for the surveyed areas per the memorandum dated December 27, 2007, and it was determined that no further work is recommended for those archeological surveys completed. During ROW acquisition, additional archeological surveys would need to be conducted for areas where right-of-entry had not been granted, prior to construction. The Archeological Survey on file at the TxDOT Houston District office further details the location of the surveys conducted. In the unlikely event that evidence of archeological deposits is encountered during construction, work in the immediate area would cease and TxDOT archeological staff would be contacted to initiate accidental discovery procedures under both the provisions of the PA-TU among TxDOT, THC, FHWA, and the Advisory Council on Historic Preservation and under the MOU between TxDOT and THC.

7.5 Hazardous Materials

The contractor would take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction staging area. The use of construction equipment within sensitive areas would be minimized or eliminated entirely. All construction materials used for the project would be removed as soon as the work schedules permit. Any unanticipated hazardous materials and/or petroleum contamination encountered during construction would be handled in accordance with all applicable federal, state, and local regulations per TxDOT Standard Specifications. All commitments required from the Phase II Environmental Site Assessment, when completed, are to be followed.

8.0 AGENCY COORDINATION

Section 2.4 of this EA details the three public meetings held in the City of Montgomery to gather public input on the project.

During the development of this Environmental Assessment (EA), coordination was initiated with various resource agencies. Included in **Appendix B**, coordination letters were sent to TPWD, TCEQ, and the Tonkawa Tribe of Oklahoma, requesting input pertaining to potential project impacts.

TPWD stated that coordination is considered to be complete based on the commitments outlined during coordination and provided the project does not change.

TCEQ concurred with TxDOT's assessment of the project being within an area designated as marginal nonattainment for the 2008 ozone Nation Ambient Air Quality Standard and there were no comments on this project.

In addition, Section 106 consultation was conducted per the memorandum dated December 27, 2007 and it was determined that no further work is recommended for those archeological surveys completed. It was also determined there are no adverse effects to Historical resources under Stip VI and the PA that was in effect at the time of signature (September 23, 2008).

9.0 RECOMMENDATION OF THE PREFFERED ALTERNATIVE

9.1 Identification of the Preferred Alternative

TxDOT recommends the Build Alternative be the Preferred Alternative.

9.2 Support Rationale

The Build Alternative, as the Preferred Alternative, would meet the public's need for congestion reduction, long-term management of future traffic needs, by expanding capacity to improve traffic flow and reduce the number of traffic accidents. The Preferred Alternative would displace one residence, two businesses, one commercial billboard, and one abandoned commercial property (a former gas station). The Preferred Alternative would acquire roughly 23 acres of additional ROW. The Preferred Alternative would have No Effect on Federal- or State-listed endangered species. However, the Preferred Alternative may impact, but is not likely to adversely impact the State-listed threatened or SGCN discussed in Section 5.1.9. Approximately 790 linear feet (0.198 acre) of waters of the U.S. could be impacted by the Preferred Alternative, but no wetlands would be impacted by the Preferred Alternative.

9.3 Recommendation(s): Significance Determination, Alternative Selection, FONSI

This EA concludes that the project is necessary for safe and efficient travel within the study area and larger region. The Preferred Alternative would have no significant adverse social, economic, or environmental impacts of a level that would warrant an Environmental Impact Statement. Alternative selection would occur following the completion of the public review period, which would include a public hearing.

Unless significant impacts are identified as a result of public review or at the public hearing, a Finding of No Significant Impact (FONSI) would be prepared for the proposed action as a basis for federal-aid corridor-location approval.

10.0 LIST OF ACRONYMS

AADT	Average Annual Daily Traffic
ACM	Asbestos Containing Material
ACS	American Community Survey
AOI	Area of Influence
APE	Area of Potential Effects
ASTM	American Society for Testing and Materials
BMPs	best management practices
BNSF	Burlington Northern and Santa Fe
CEQ	Council on Environmental Quality
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
CGP	Construction General Permit
CMSA	Consolidated Metropolitan Statistical Area
CO	carbon monoxide
CSJ	control-section-job
dB	decibel
dB(A)	a-weighted decibel
DHHS	U.S. Department of Health and Human Services
EA	Environmental Assessment
e.g.	exempli gratia ("for example")
EJ	environmental justice
EOID	Element Occurrence Record Identification
EPA	U.S. Environmental Protection Agency
ESTM	Ecological Mapping System of Texas
et al.	et alii (“and others”)
etc.	et cetera (“and other things”)
FEMA	Federal Emergency Management Agency
FM	Farm-to-Market Road
FHWA	Federal Highway Administration
GIS	Geographic Information System
HEI	Health Effects Institute
H-GAC	Houston-Galveston Area Council
i.e.	id est ("that is" or "in other words")
IRIS	Integrated Risk Information System
L_{eq}	average or equivalent sound level
LEP	limited English proficiency
LOS	level of service
LPST	leaking petroleum storage tank
MOU	Memorandum of Understanding
MOVES	Motor Vehicle Emission Simulator
mph	miles per hour
MS4	Municipal Separate Storm Sewer System
MSAT	mobile source air toxic
Mt.	Mount
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NCHRP	National Cooperative Highway Research Program

NEPA	National Environmental Policy Act
NFRAP	No Further Remedial Action Planned Sites
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
NWP	Nationwide Permit
OHWM	Ordinary High Water Mark
PA	Programmatic Agreement
PALM	Potential Archeological Liability Map
PCN	Preconstruction Notification
PM	particulate matter
PST	petroleum storage tank
PA-TU	Programmatic Agreement for Transportation Undertakings
R	receiver
ROW	right-of-way
RSA	Resource Study Area
RTHL	Recorded Texas Historic Landmarks
RTP	Regional Transportation Plan
SAL	State Antiquities Landmark
SGCN	species of greatest conservation need
SH	State Highway
SHPO	State Historic Preservation Officer
SOV	single occupancy vehicle
SW3P	Stormwater Pollution Prevention Plan
TAC	Texas Administrative Code
TAQA	Traffic Air Quality Analysis
TCEQ	Texas Commission on Environmental Quality
TDPS	Texas Department of Public Safety
TERP	Texas Emissions Reduction Plan
THC	Texas Historical Commission
TIP	Transportation Improvement Program
TPDES	Texas Pollutant Discharge Elimination System
TPWD	Texas Parks and Wildlife Department
TTS	Texas Trunk System
TxDOT	Texas Department of Transportation
TxNDD	Texas Natural Diversity Database
U.S.	United States
US	United States Highway
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VMT	vehicle miles traveled
VOC	Volatile Organic Compounds
VPD	vehicles per day

11.0 REFERENCES

Alam, J.B., et al. 2007. "Water Quality Parameters along Rivers." *International Journal of Environment Science and Technology*. Vol. 4, Issue 1: 159-167.

Cowardin, L.M., et al. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service.

Federal Highway Administration (FHWA). 2011. *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*. Website: http://www.fhwa.dot.gov/environment/ air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemissions.cfm. Accessed October 2013.

_____. 2012. *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA.* <http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/aqintguidmem.cfm>. Accessed May 2013.

GeoSearch. 2014a. *SH 105 Radius Report*. Job #93939. October 28, 2014.

_____. 2014b. *SH 105 Texas Oil and Gas Detailed Report*. Job #93941. October 28, 2014.

Health Effects Institute (HEI). 2007a. *Mobile-Source Air Toxics: A Critical Review of the Literature on Exposure and Health Effects*. Website: http://pubs.healtheffects.org/ view.php?id=282. Accessed October 2013.

_____. 2007b. Mobile-Source Air Toxics: A Critical Review of the Literature on Exposure and Health Effects: Summary of Studies of Diesel Exhaust. Website: http://pubs.healtheffects.org/view.php?id=282. Accessed October 2013.

_____. 2009. A Special Report of the Institute's Panel on the Health Effects of Traffic-Related Air Pollution. Website: http://pubs.healtheffects.org/view.php?id=306. Accessed October 2013.

Houston-Galveston Area Council (H-GAC). 1998. *Montgomery County Mobility Plan*.

_____. 2015a. *2040 Regional Transportation Plan Update*. Website: http://www.h-gac.com/taq/airquality_model/conformity/2040-rtp-conformity-updates.aspx. Accessed September 2015.

_____. 2015b. *2015-2018 Transportation Improvement Program*. Website: http://www.h-gac.com/taq/tip/docs/2015-2018%20TIP%20-%20As%20Adopted%20-%20052314.pdf. Accessed September 2015.

_____. 2015c. *2040 Regional Growth Forecast Data*. Website: http://www.h-gac.com/community/socioeconomic/2040-regional-growth-forecast/. Accessed September 2015.

Montgomery Central Appraisal District (MCAD). 2013. *Property Appraisal and Assessment Information*. Website: http://www.mcad-tx.org/. Accessed December 2014.

National Cooperative Highway Research Program (NCHRP). 2002. *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects*. Report 466. National Academy Press: Washington, D.C.

Natural Resources Conservation Service (NRCS). 2004. *Soil Survey Geographic (SSURGO) Database for Montgomery County, Texas*. Website: http://soildatamart.nrcs.usda.gov. Accessed October 2014.

_____. 2012. *Nonirrigated Yields by Map Unit: Montgomery County*. Website: http://soildatamart.nrcs.usda.gov. Accessed October 2014.

Texas A&M. 2007. *Loss of Agricultural Lands, Texas Land Trends. Institute of Renewable Natural Resources*. Website: http://txlandtrends.org/Briefings/LossOfAgLand.aspx. Accessed October 2013.

Texas Commission on Environmental Quality (TCEQ). 2002. *Draft 2002 Texas Water Quality Inventory, Basin Summaries*. Website: http://www.tnrcc.state.tx.us/water/quality/ 02_twqmar/ 02_305b/sanjacintobrazos.html. Accessed March 2013.

_____. 2014. *Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d)*. Website: http://www.tceq.texas.gov/waterquality/ assessment/12twqi/twqi12. Accessed June 2016.

Texas Department of Transportation (TxDOT). 2016. *Environmental Handbook for Air Quality*. Revised January 2016. Website: http://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/210-01-gui.pdf. Accessed June 2016.

_____. 2010. *Guidance on Preparing Indirect and Cumulative Impact Analyses*. Revised September 2010. Website: http://ftp.dot.state.tx.us/pub/txdot-info/env/impact_analyses.pdf. Accessed October 2013.

_____. 2011. *Guidelines for Analysis and Abatement of Roadway Traffic Noise*. Website: http://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/bus/env/traffic_noise.pdf. Accessed October 2013.

Texas Natural Resources Information System (TNRIS). 2013. *Maps and Data*. Website: http://www.tnris.org/get-data. Accessed November 2013.

Texas Parks and Wildlife Department (TPWD). 1984. *The Vegetation Types of Texas*. Website: http://www.tpwd.state.tx.us/publications/pwdpubs/pwd_bn_w7000_0120/. Accessed October 2014.

_____. 2014. *Texas Natural Diversity Database (TXNDD)*. Data received October 2, 2014.

_____. 2015. *Montgomery County State and Federal Listed Threatened and Endangered Species*. Website: http://www.tpwd.state.tx.us/huntwild/wild/wildlife4_ diversity/ texas_rare_species/listed_species/>. Accessed October and November 2014.

U.S. Census Bureau. 2000. *2000 U.S. Census.* Website: http://www.census.gov/main/www/cen2000.html. Accessed October 2014.

_____. 2010. *2010 U.S. Census*. Website: http://www.census.gov/2010census/. Accessed October 2014.

_____. 2014a. *2008-2012 American Community Survey*. Website: http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml. Accessed October 2014.

_____. 2014b. *U.S. Decennial Census*. Website: http://www.census.gov. Accessed October 2014.

U.S. Department of Health and Human Services (DHHS). 2015. *2015 HHS Poverty Guidelines*. Website: http://aspe.hhs.gov/poverty/15poverty.shtml. Accessed October 2014.

U.S. Department of Transportation (USDOT). 2012. *Updated Environmental Justice Order 5610.2(a). 2 May 2012*. Website: http://www.fhwa.dot.gov/environment/environmental_justice/ej_at_dot/order_56102a/dot56102a.pdf. Accessed October 2014.

_____. 2002. The Economic Impact of Motor Vehicle Crashes. Website: http://www.nhtsa.gov/Driving+Safety/The+Economic+Impact+of+Motor+Vehicle+Crashes+2000.pdf. Accessed October 2014.

U.S. Environmental Protection Agency (EPA). 2005. *Sustained Commitment Needed to Further Advance Watershed Approach*. Report No. 2005-P-00025. Website: http://www.epa.gov/oig/reports/2005/20050921-2005-P-00025.pdf. Accessed October 2014.

_____. 2007. Control of Hazardous Air Pollutants from Mobile Sources. Federal Register, Volume 72: 37, page 8430. February 26, 2007.

_____. 2010. National Air Toxics Assessment (NATA). Website: http://www.epa.gov/ttn/atw/nata1999/. Accessed October 2014.

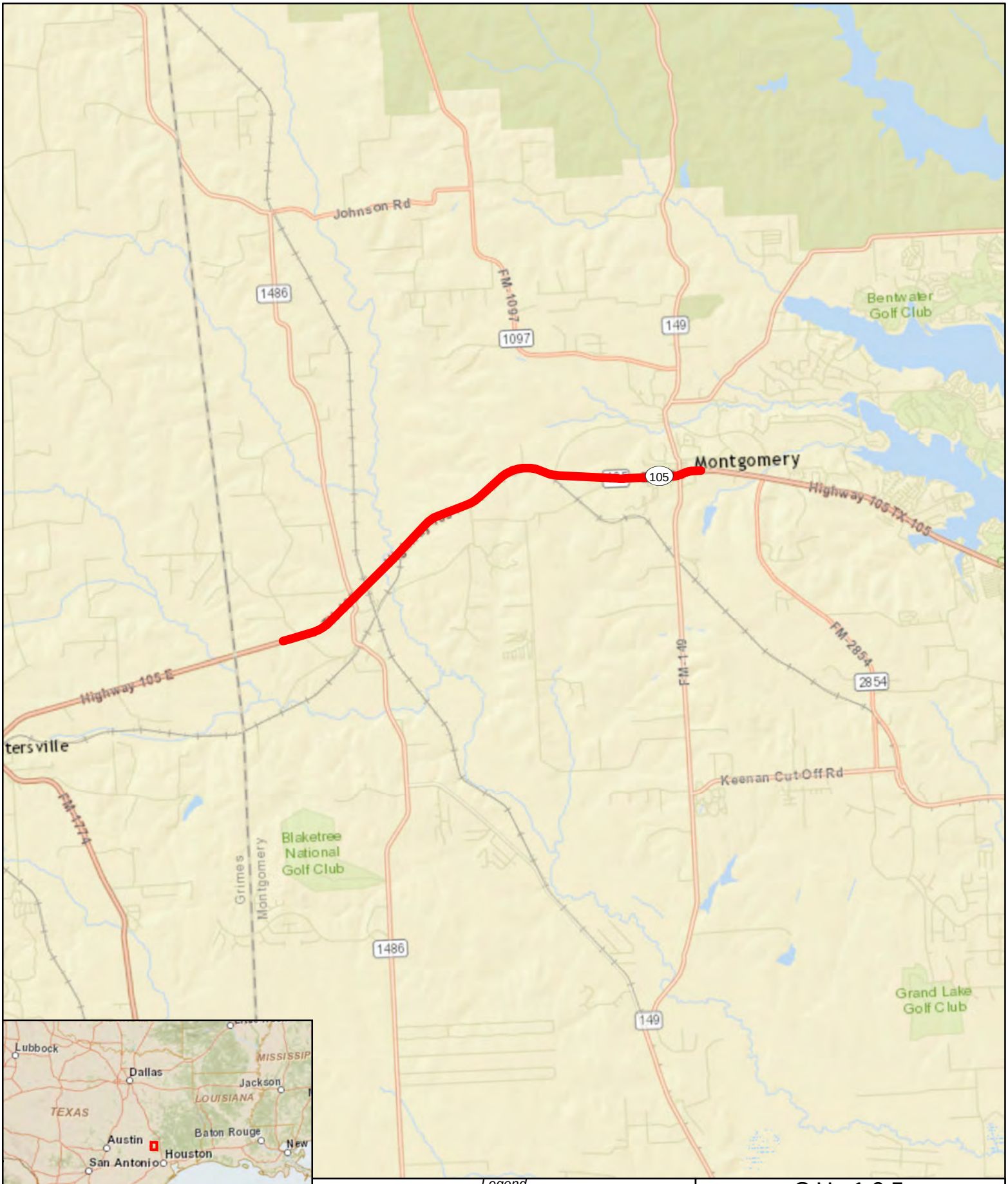
_____. 2013a. *Integrated Risk Information System (IRIS)*. Website: http://www.epa.gov/iris/. Accessed October 2014.

_____. 2013b. Wetlands - Status and Trends. Website: http://water.epa.gov/type/wetlands/vital_status.cfm. Accessed November 2014.

_____. 2014. Texas, West Fork San Jacinto Watershed. Website: http://ofmpub.epa.gov tmdl_waters10 attains_watershed.pdf. Accessed April 2014.

U.S. Fish and Wildlife Service (USFWS). 2013. *Montgomery and Grimes Counties Threatened and Endangered Species Listing*. Website: http://ifw2es.fws.gov/EndangeredSpecies/lists/ListSpecies.cfm. Accessed October 2014.

Wilkins, N., A. Hays, D. Kubenka, D. Steinbach, W Grant, E Gonzalez, M Kjelland, and J. Shackelford. 2003. *Texas Rural Lands: Trends and Conservation Implications for the 21st Century.* Texas A&M Institute of Renewable Natural Resources. Website: http://irnr.tamu.edu/media/252143/texas_rural_lands.pdf. Accessed October 2013.



Legend

Project Alignment

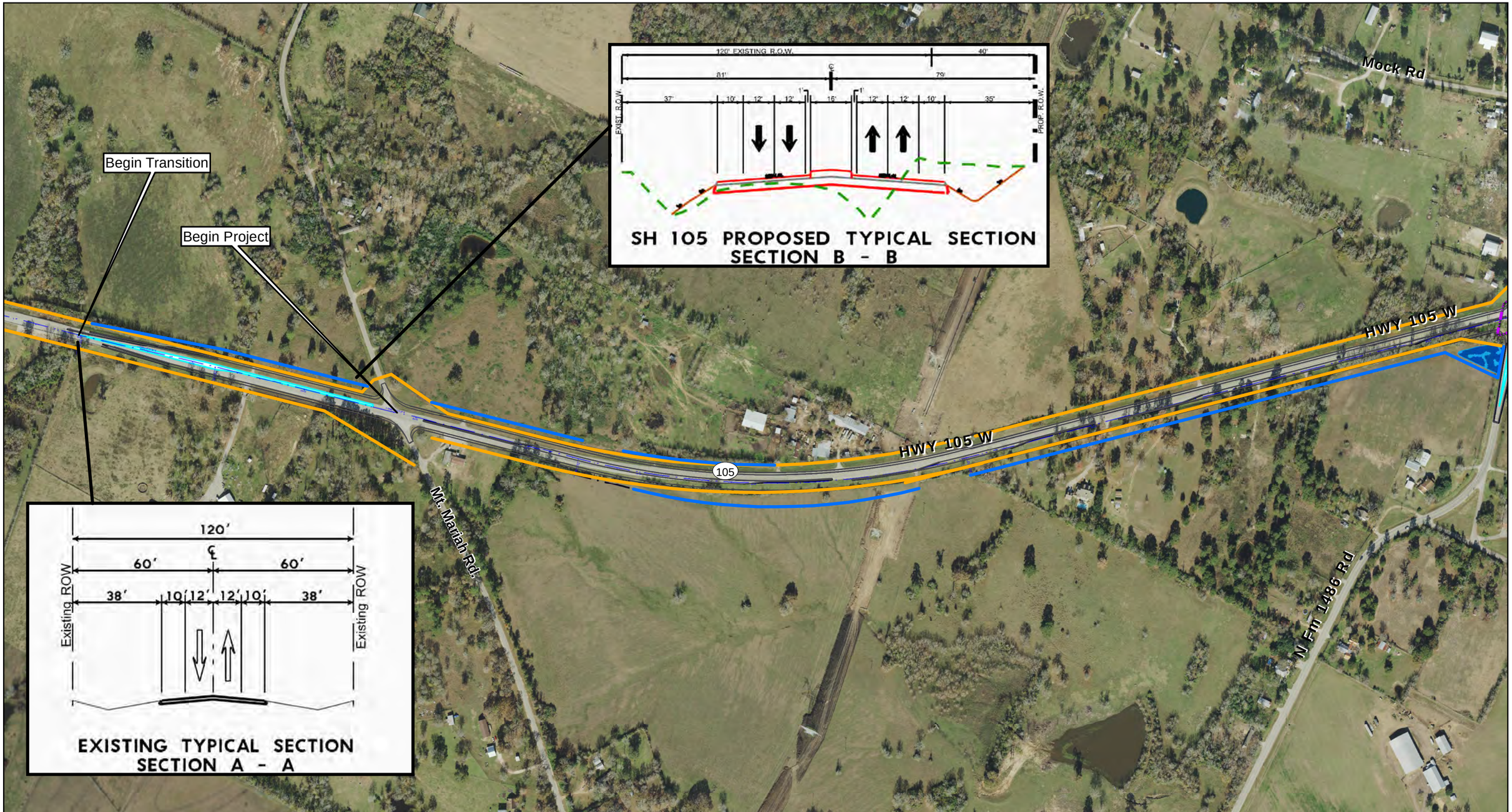
SH 105

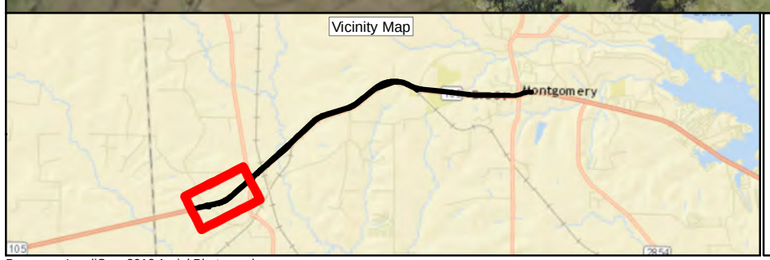
(Mt. Mariah Rd. to FM 149)

Exhibit A:
Project Location Map

0 0.25 0.5 1 1.5 2 Miles

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS





Basemap: LandiScor 2012 Aerial Photography

Legend

- Proposed Sidewalk
- Proposed ROW
- Existing ROW
- Proposed Design
- Proposed Detention Pond

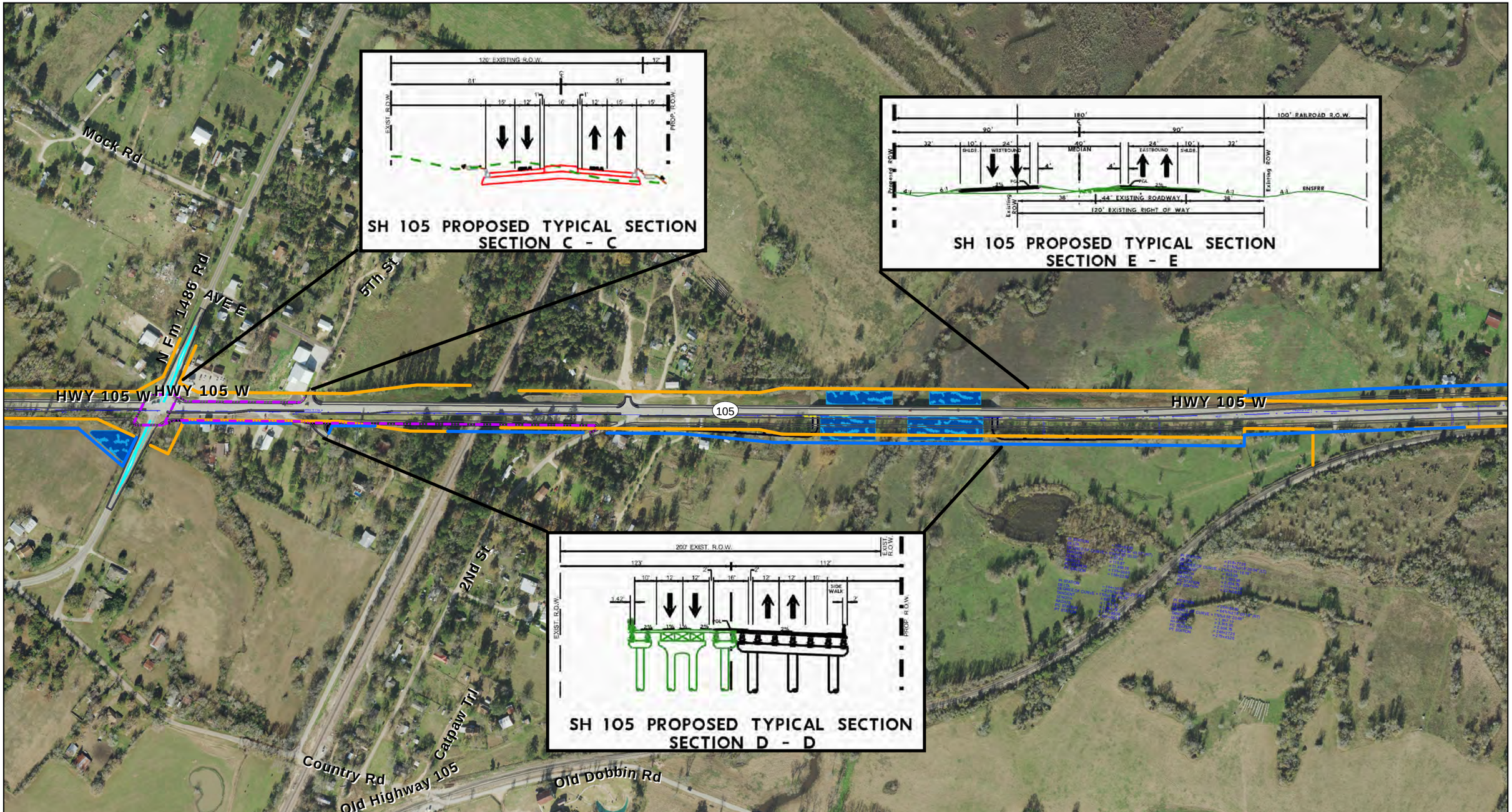
SH 105

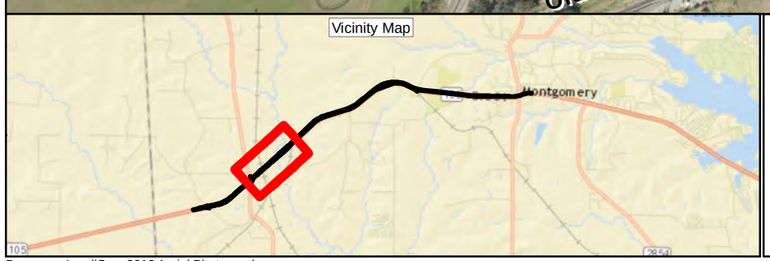
(Mt. Mariah Rd. to FM 149)

Exhibit B:
Schematic Layout and
Existing and Proposed Typical Sections

0 125 250 500
Feet

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community





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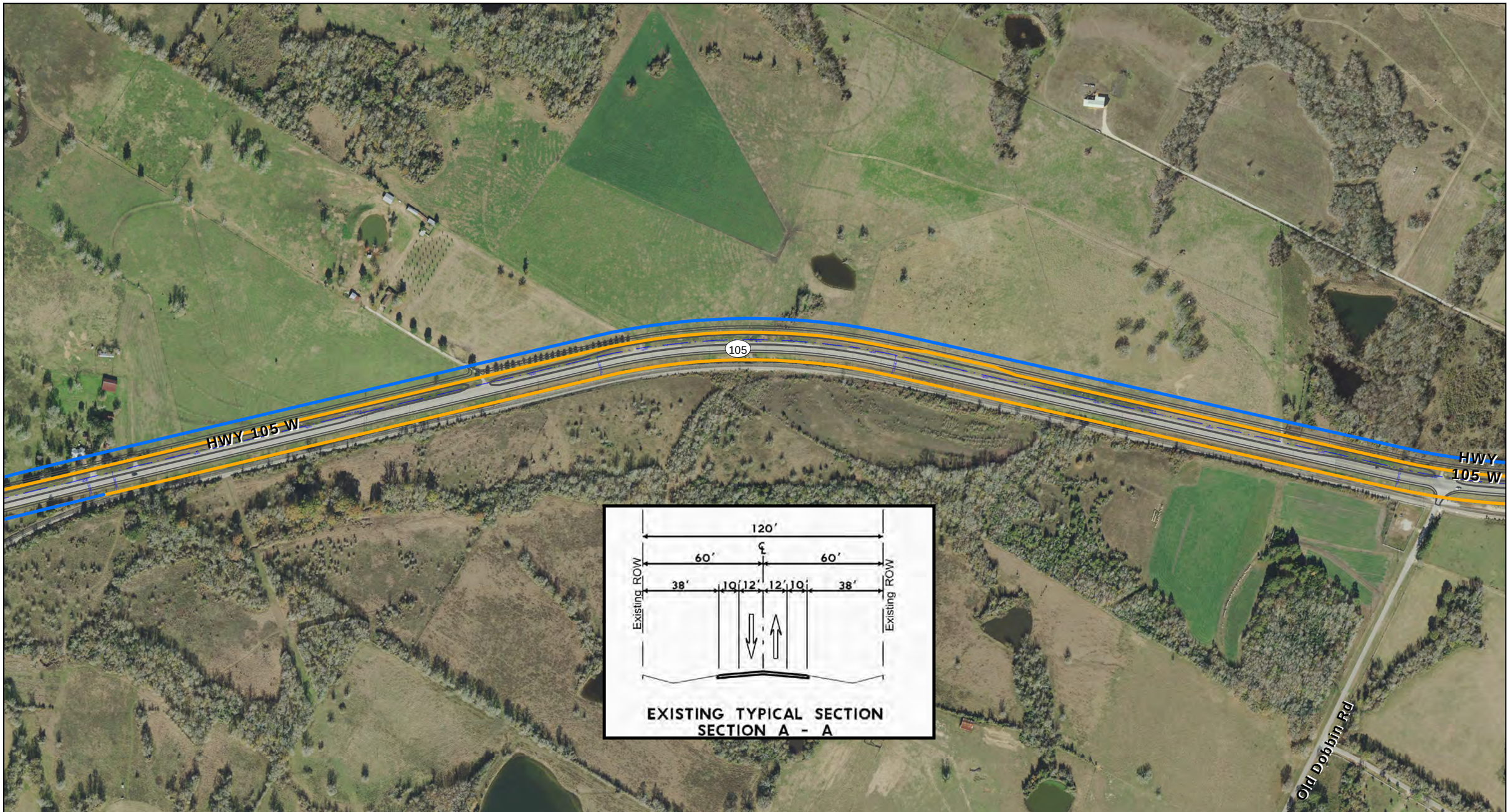

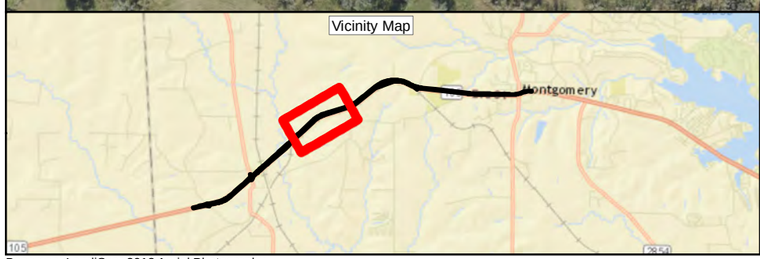

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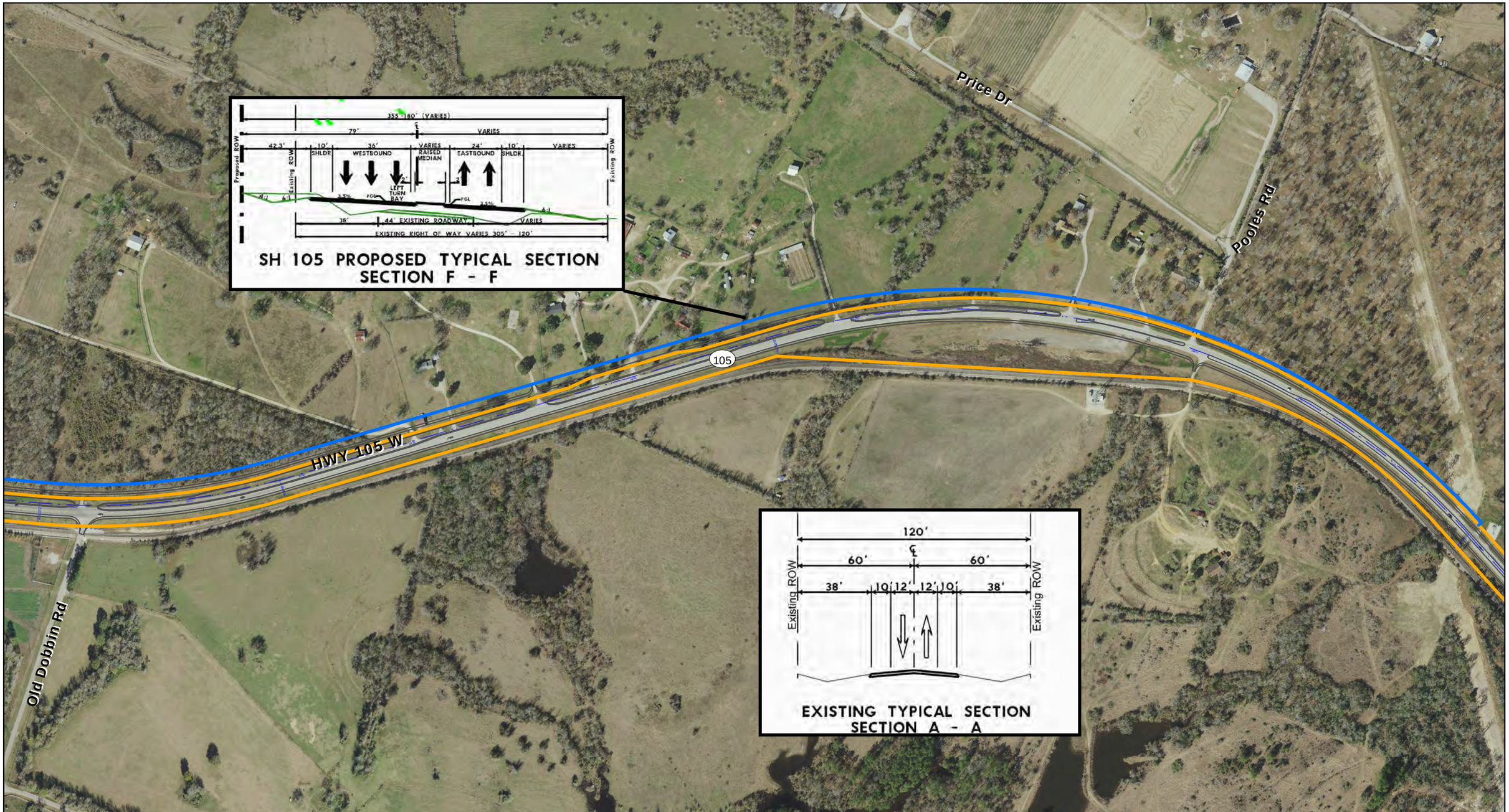

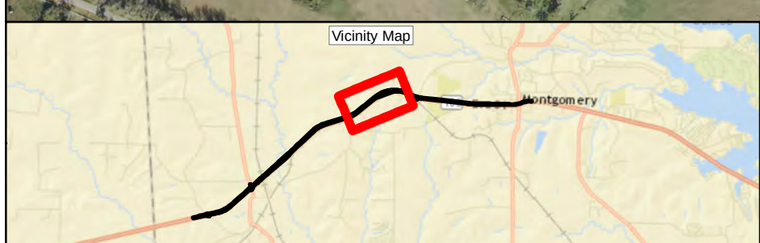

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SH 105

(Mt. Mariah Rd. to FM 149)

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Existing and Proposed Typical Sections

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Feet

Basemap: LandiScor 2012 Aerial Photography

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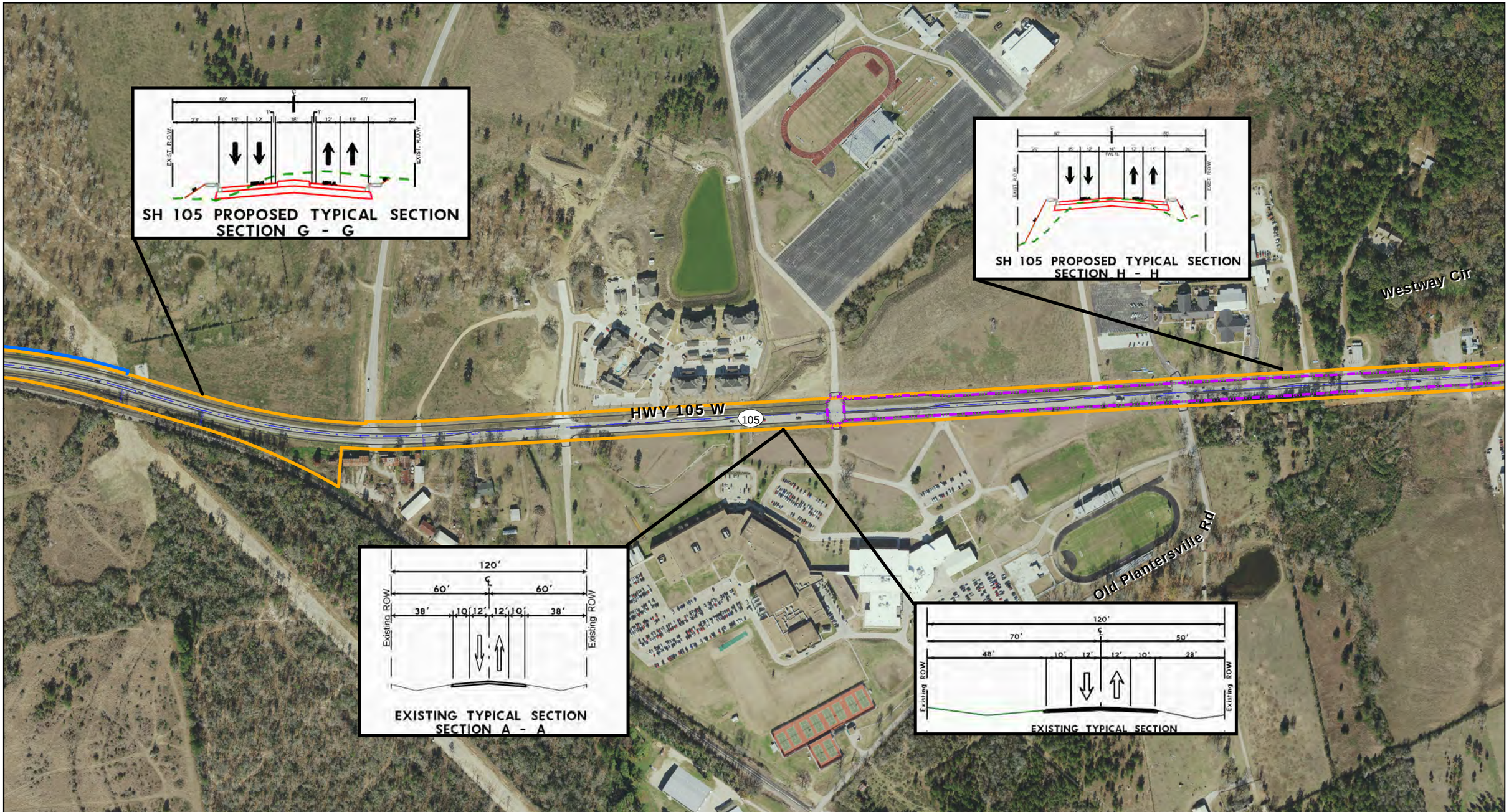

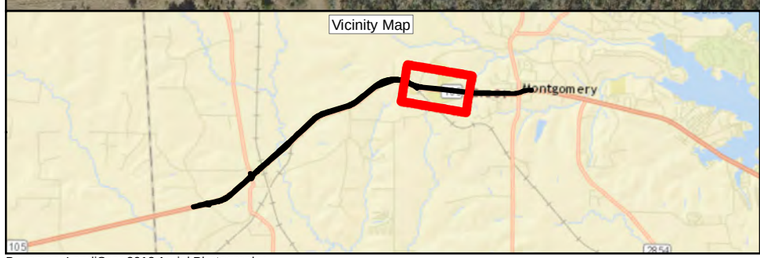

Legend

- Proposed Sidewalk
- Proposed ROW
- Existing ROW
- Proposed Design
- Proposed Detention Pond

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit B:
Schematic Layout and
Existing and Proposed Typical Sections

0 125 250 500 Feet

Basemap: LandiScor 2012 Aerial Photography

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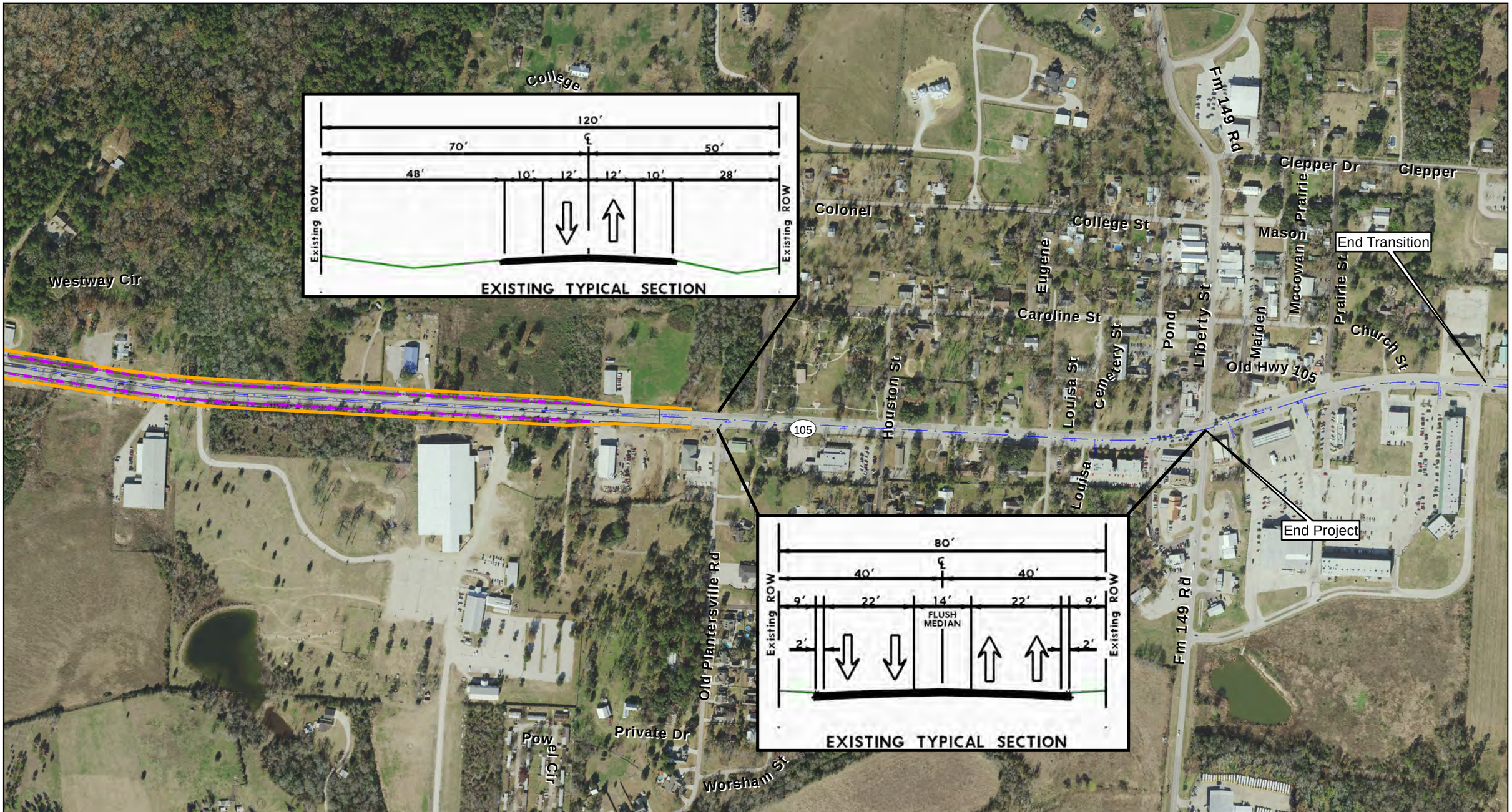

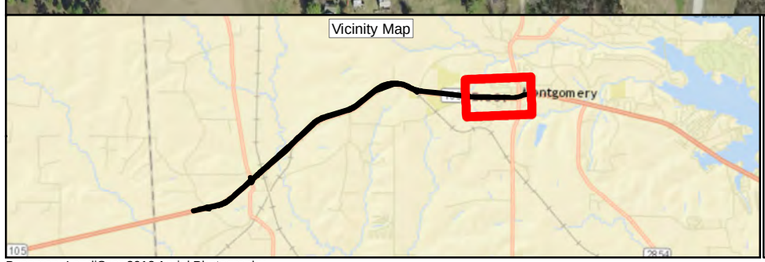

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- Proposed Detention Pond

SH 105

(Mt. Mariah Rd. to FM 149)

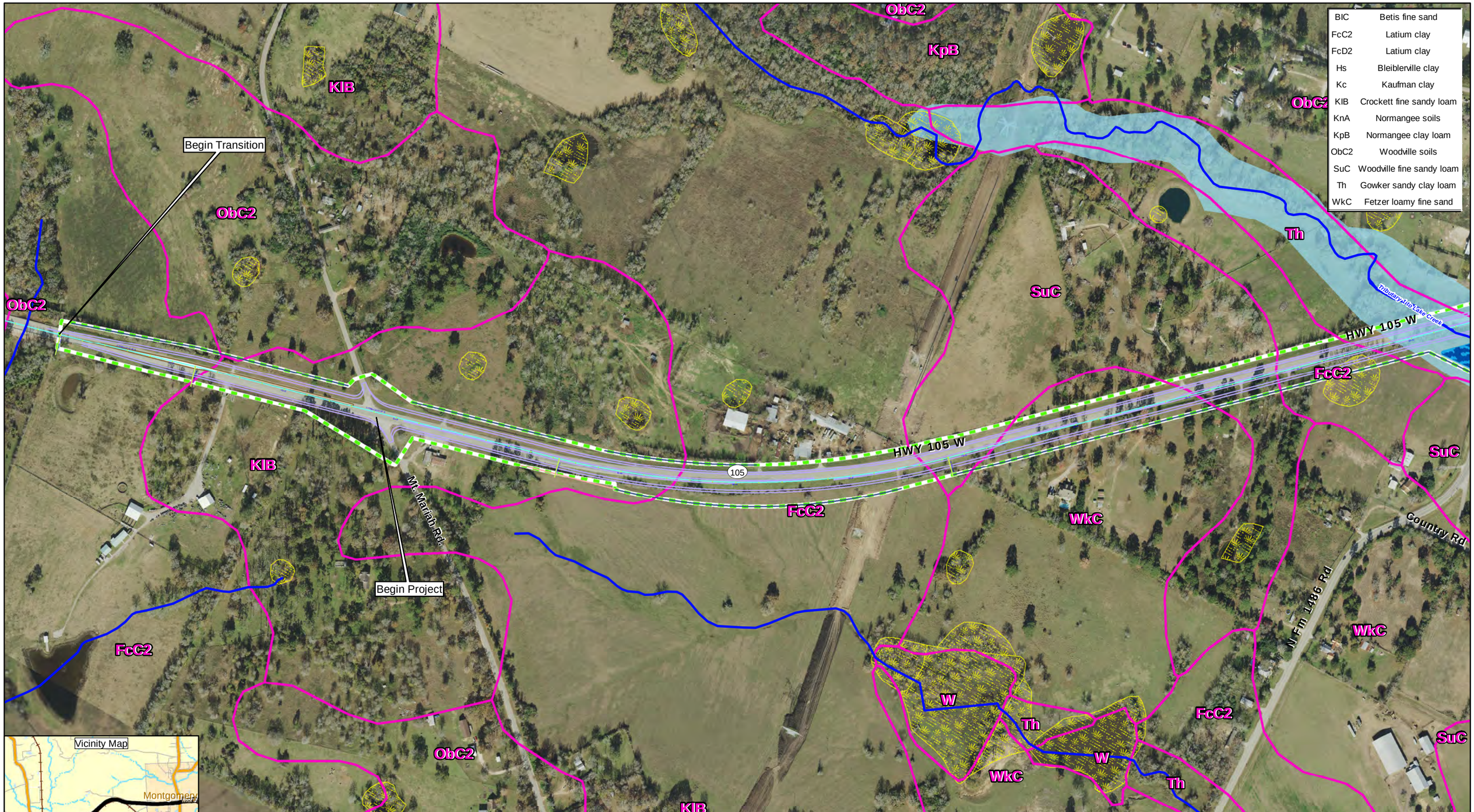
Exhibit B:
Schematic Layout and
Existing and Proposed Typical Sections

Page 6 of 6

0 125 250 500 Feet

Basemap: LandiScor 2012 Aerial Photography

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



BlC	Betis fine sand
FcC2	Latium clay
FcD2	Latium clay
Hs	Bleiblerville clay
Kc	Kaufman clay
KlB	Crockett fine sandy loam
KnA	Normangee soils
KpB	Normangee clay loam
ObC2	Woodville soils
SuC	Woodville fine sandy loam
Th	Gowker sandy clay loam
WkC	Fetzer loamy fine sand

Legend

- Stream
- Soils
- Proposed Build Alternative
- National Wetland Inventory
- **FEMA Flood Zone**
  - 100-year
- County Boundary
- Existing Detention Pond
- Proposed Detention Pond

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit C:
Soils and Water Resources

0 125 250 500
Feet

USFWS National Wetland Inventory, FEMA floodplain, USGS Soil Data (2014)

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP,

BlC	Betis fine sand
FcC2	Latium clay
FcD2	Latium clay
Hs	Bleiblerville clay
Kc	Kaufman clay
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KnA	Normangee soils
KpB	Normangee clay loam
ObC2	Woodville soils
SuC	Woodville fine sandy loam
Th	Gowker sandy clay loam
WkC	Fetzer loamy fine sand

Legend

- Stream
- Soils
- Proposed Build Alternative
- National Wetland Inventory
- **FEMA Flood Zone**
  - 100-year
- County Boundary
- Existing Detention Pond
- Proposed Detention Pond

SH 105

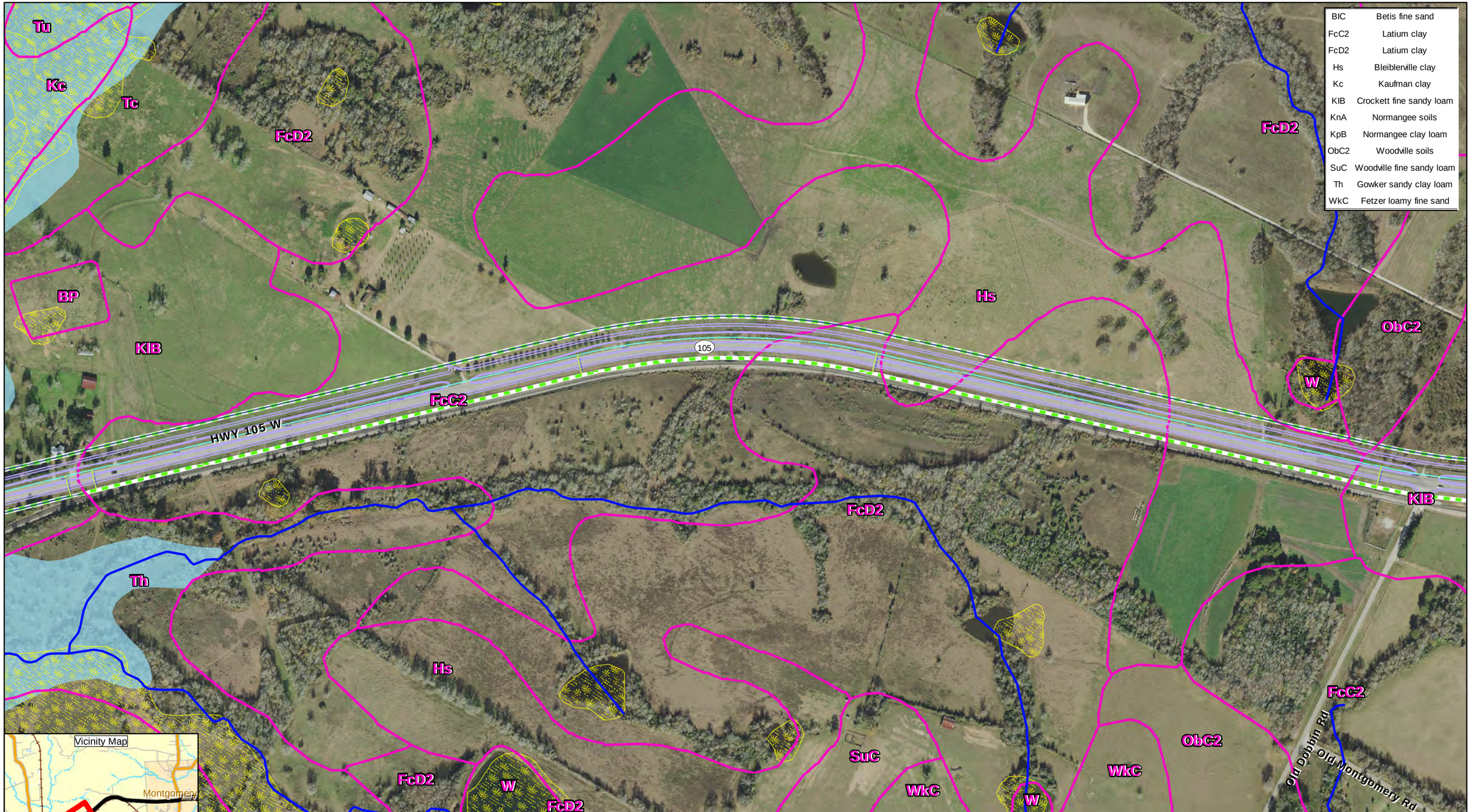
(Mt. Mariah Rd. to FM 149)

Exhibit C:
Soils and Water Resources

0 125 250 500
Feet

USFWS National Wetland Inventory, FEMA floodplain, USGS Soil Data (2014)

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP,



BlC	Betis fine sand
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KpB	Normangee clay loam
ObC2	Woodville soils
SuC	Woodville fine sandy loam
Th	Gowker sandy clay loam
WkC	Fetzer loamy fine sand

Legend

- Stream
- Soils
- Proposed Build Alternative
- National Wetland Inventory
- **FEMA Flood Zone**
  - 100-year
- County Boundary
- Existing Detention Pond
- Proposed Detention Pond

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit C:
Soils and Water Resources

Page 3 of 6

0 125 250 500
Feet

USFWS National Wetland Inventory, FEMA floodplain, USGS Soil Data (2014)

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP,

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Th	Gowker sandy clay loam
WkC	Fetzer loamy fine sand

Legend

- Stream
- Soils
- Proposed Build Alternative
- National Wetland Inventory
- **FEMA Flood Zone**
  - 100-year
- County Boundary
- Existing Detention Pond
- Proposed Detention Pond

SH 105

(Mt. Mariah Rd. to FM 149)

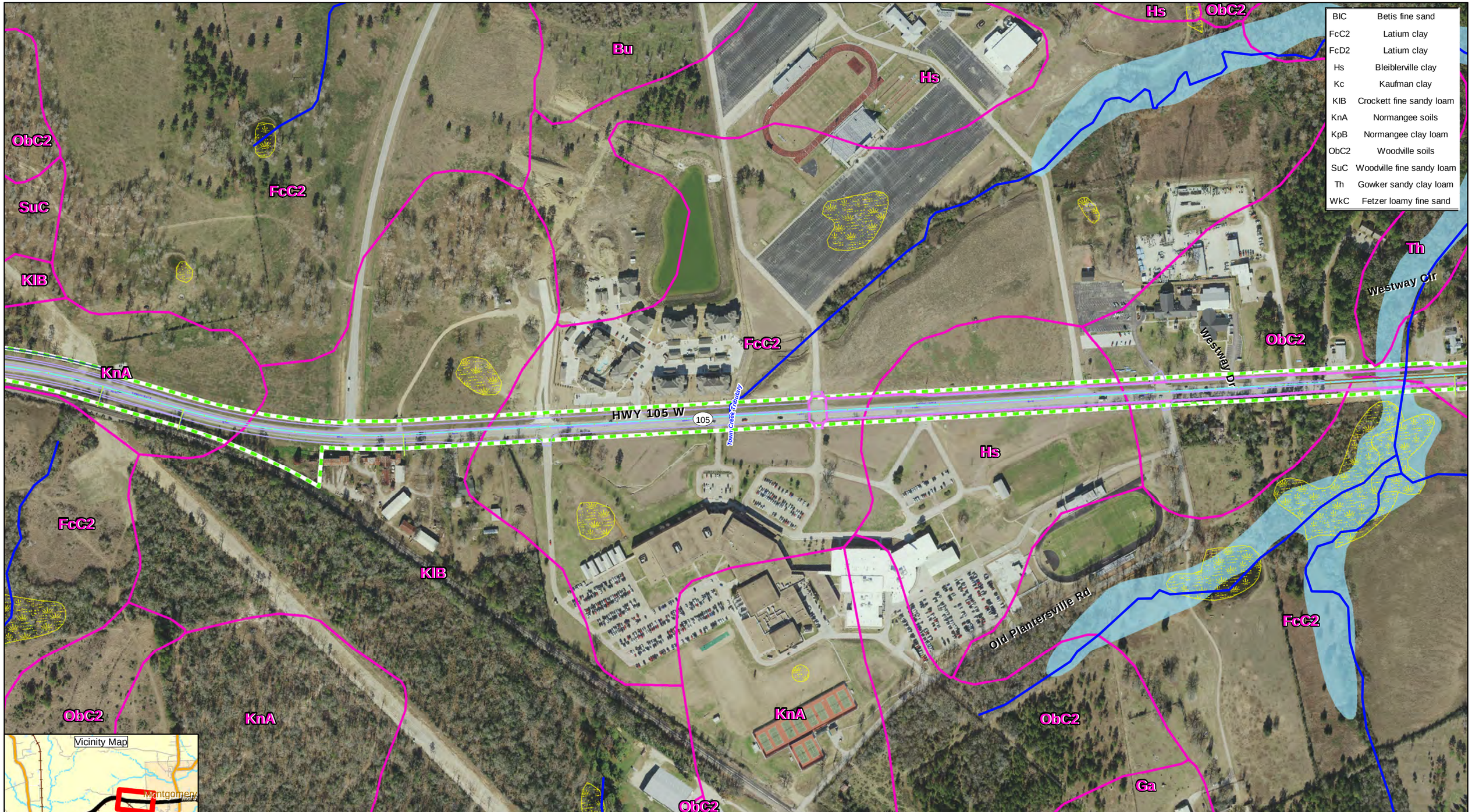
Exhibit C:
Soils and Water Resources

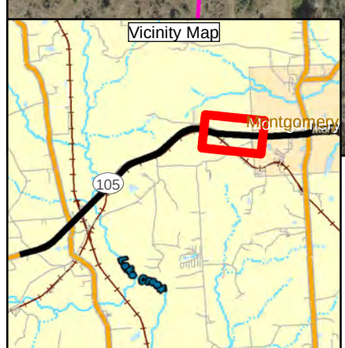
Page 4 of 6

0 125 250 500
Feet

USFWS National Wetland Inventory, FEMA floodplain, USGS Soil Data (2014)

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP,





Legend

- Stream
- Soils
- Proposed Build Alternative
- National Wetland Inventory
- **FEMA Flood Zone**
  - 100-year
- County Boundary
- Existing Detention Pond
- Proposed Detention Pond

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit C:
Soils and Water Resources

N W E S

0 125 250 500 Feet

USFWS National Wetland Inventory, FEMA floodplain, USGS Soil Data (2014)

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP,

BlC	Betis fine sand
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Legend

- Stream
- Soils
- Proposed Build Alternative
- National Wetland Inventory
- **FEMA Flood Zone**
  - 100-year
- County Boundary
- Existing Detention Pond
- Proposed Detention Pond

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit C:
Soils and Water Resources

N W E S

0 125 250 500
Feet

USFWS National Wetland Inventory, FEMA floodplain, USGS Soil Data (2014)

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP,

Begin Project

Mock Rd

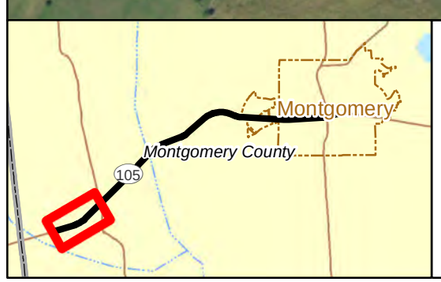
HWY 105 W

105 HWY 105 W

Mt. Mariah Rd.

N Fm 1486 Rd

Country Rd



Legend

- Proposed Build Alternative
- Main Rail Line; Branch line
- USA Streams and Rivers
- Blackland Prairie: Disturbance or Tame Grassland
- Native Invasive: Deciduous Woodland
- Pineywoods: Disturbance or Tame Grassland
- Pineywoods: Small Stream and Riparian Temporarily Flooded Hardwood Forest
- Pineywoods: Small Stream and Riparian Wet Prairie
- Pineywoods: Upland Hardwood Forest
- Post Oak Savanna: Post Oak Motte and Woodland
- Urban High Intensity
- Urban Low Intensity

SH 105

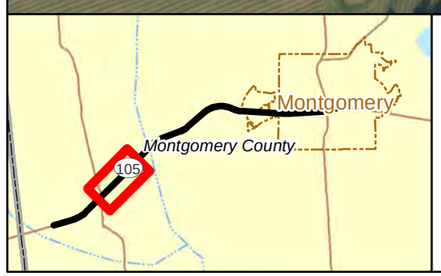
(Mt. Mariah Rd. to FM 149)

Exhibit D1:
EMST Map

0 80 160 320
Feet

Base Photo: Landiscor 2014

Mock Rd
5Th St
AVE E
5Th St
HWY 105 W
HWY 105 W
105
HWY 105 W
2Nd St
AVE C
N Fm 1486 Rd
Lake Creek
Catpaw Trl
Country Rd
Old Highway 105
Old Dobbin Rd



Legend

- Proposed Build Alternative
- Main Rail Line; Branch line
- USA Streams and Rivers
- Blackland Prairie: Disturbance or Tame Grassland
- Native Invasive: Deciduous Woodland
- Pineywoods: Disturbance or Tame Grassland
- Pineywoods: Small Stream and Riparian Temporarily Flooded Hardwood Forest
- Pineywoods: Small Stream and Riparian Wet Prairie
- Pineywoods: Upland Hardwood Forest
- Post Oak Savanna: Post Oak Motte and Woodland
- Urban High Intensity
- Urban Low Intensity

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit D1:
EMST Map

0 80 160 320
Feet

Base Photo: Landiscor 2014

Legend

- Proposed Build Alternative
- Main Rail Line; Branch line
- USA Streams and Rivers
- Blackland Prairie: Disturbance or Tame Grassland
- Native Invasive: Deciduous Woodland
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- Pineywoods: Upland Hardwood Forest
- Post Oak Savanna: Post Oak Motte and Woodland
- Urban High Intensity
- Urban Low Intensity

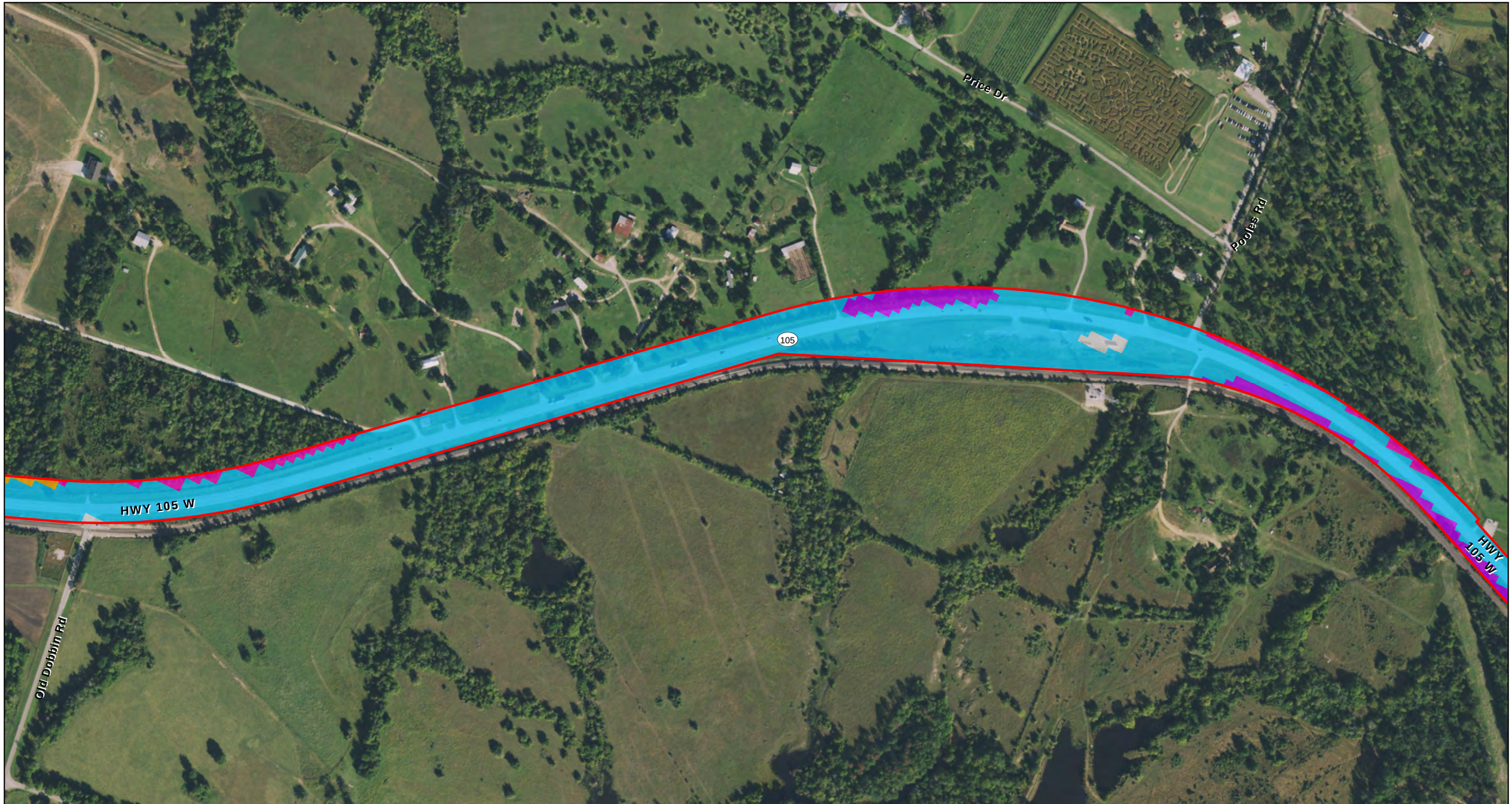
SH 105

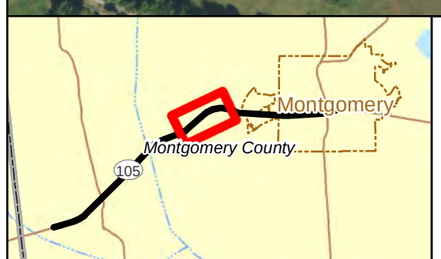
(Mt. Mariah Rd. to FM 149)

Exhibit D1: EMST Map

0 80 160 320
Feet

Base Photo: Landiscor 2014





Legend

- Proposed Build Alternative
- Main Rail Line; Branch line
- USA Streams and Rivers
- Blackland Prairie: Disturbance or Tame Grassland
- Native Invasive: Deciduous Woodland
- Pineywoods: Disturbance or Tame Grassland
- Pineywoods: Small Stream and Riparian Temporarily Flooded Hardwood Forest
- Pineywoods: Small Stream and Riparian Wet Prairie
- Pineywoods: Upland Hardwood Forest
- Post Oak Savanna: Post Oak Motte and Woodland
- Urban High Intensity
- Urban Low Intensity

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit D1: EMST Map

0 80 160 320
Feet

Base Photo: Landiscor 2014

HWY 105 W

105

Westway Dr

Westway Cir

Old Plantersville Rd

Legend

- Proposed Build Alternative
- Main Rail Line; Branch line
- USA Streams and Rivers
- Blackland Prairie: Disturbance or Tame Grassland
- Native Invasive: Deciduous Woodland
- Pineywoods: Disturbance or Tame Grassland
- Pineywoods: Small Stream and Riparian Temporarily Flooded Hardwood Forest
- Pineywoods: Small Stream and Riparian Wet Prairie
- Pineywoods: Upland Hardwood Forest
- Post Oak Savanna: Post Oak Motte and Woodland
- Urban High Intensity
- Urban Low Intensity

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit D1: EMST Map

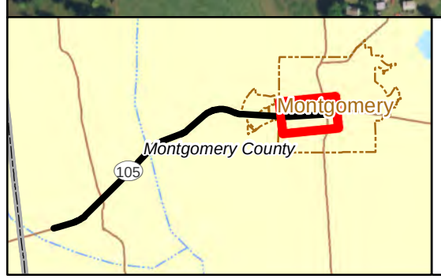
N W E S

0 80 160 320

Feet

Base Photo: Landiscor 2014

College
Colonel
Westway Cir
Sheppard Rd
Houston St
Eugene
Caroline St
Louisa St
Cemetery St
Pond
Liberty St
Fm 149 Rd
College St
Mason
Maiden
Mccowan
Prairie
Prairie St
Clepper Dr
Clepper
Church St
Old Hwy 105
End Project
105
Worsham St Stewart St
Louisa
Old Plantersville Rd
Rankin St
Fm 149 Rd
Private Dr
Powell Cir



Legend

- Proposed Build Alternative
- Main Rail Line; Branch line
- USA Streams and Rivers
- Blackland Prairie: Disturbance or Tame Grassland
- Native Invasive: Deciduous Woodland
- Pineywoods: Disturbance or Tame Grassland
- Pineywoods: Small Stream and Riparian Temporarily Flooded Hardwood Forest
- Pineywoods: Small Stream and Riparian Wet Prairie
- Pineywoods: Upland Hardwood Forest
- Post Oak Savanna: Post Oak Motte and Woodland
- Urban High Intensity
- Urban Low Intensity

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit D1: EMST Map

N W E S

0 80 160 320
Feet

Base Photo: Landiscor 2014

Begin Project

Mock Rd

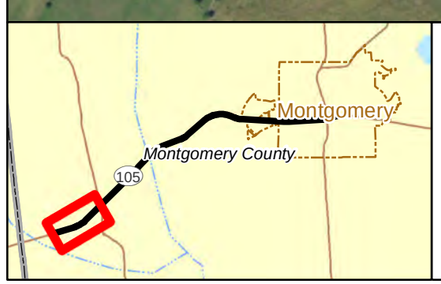
HWY 105 W

105 HWY 105 W

Mt. Mariah Rd.

N Fm 1486 Rd

Country Rd



Legend

- Proposed Build Alternative
- Main Rail Line; Branch line
- USA Streams and Rivers
- Blackland Prairie: Disturbance or Tame Grassland
- Native Invasive: Deciduous Woodland
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- Pineywoods: Small Stream and Riparian Wet Prairie
- Pineywoods: Upland Hardwood Forest
- Post Oak Savanna: Post Oak Motte and Woodland
- Urban High Intensity
- Urban Low Intensity

SH 105

(Mt. Mariah Rd. to FM 149)

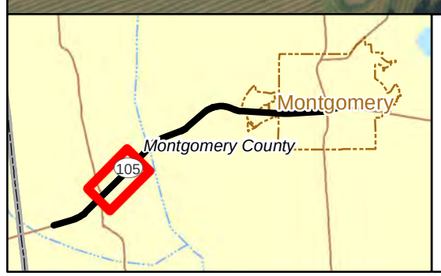
Exhibit D2: Revised EMST Map

0 80 160 320

Feet

Base Photo: Landiscor 2014

Mock Rd
5Th St
AVE E
5Th St
HWY 105 W
HWY 105 W
105
HWY 105 W
2Nd St
AVE C
N Fm 1486 Rd
Lake Creek
Catpaw Trl
Country Rd
Old Highway 105
Old Dobbin Rd



Legend

- Proposed Build Alternative
- Main Rail Line; Branch line
- USA Streams and Rivers
- Blackland Prairie: Disturbance or Tame Grassland
- Native Invasive: Deciduous Woodland
- Pineywoods: Disturbance or Tame Grassland
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- Pineywoods: Small Stream and Riparian Wet Prairie
- Pineywoods: Upland Hardwood Forest
- Post Oak Savanna: Post Oak Motte and Woodland
- Urban High Intensity
- Urban Low Intensity

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit D2: Revised EMST Map

0 80 160 320
Feet

Base Photo: Landiscor 2014

Lake Creek

HWY 105 W

105

HWY 105 W

Old Dobbin Rd

Old Montgomery Rd

Legend

- Proposed Build Alternative
- Main Rail Line; Branch line
- USA Streams and Rivers
- Blackland Prairie: Disturbance or Tame Grassland
- Native Invasive: Deciduous Woodland
- Pineywoods: Disturbance or Tame Grassland
- Pineywoods: Small Stream and Riparian Temporarily Flooded Hardwood Forest
- Pineywoods: Small Stream and Riparian Wet Prairie
- Pineywoods: Upland Hardwood Forest
- Post Oak Savanna: Post Oak Motte and Woodland
- Urban High Intensity
- Urban Low Intensity

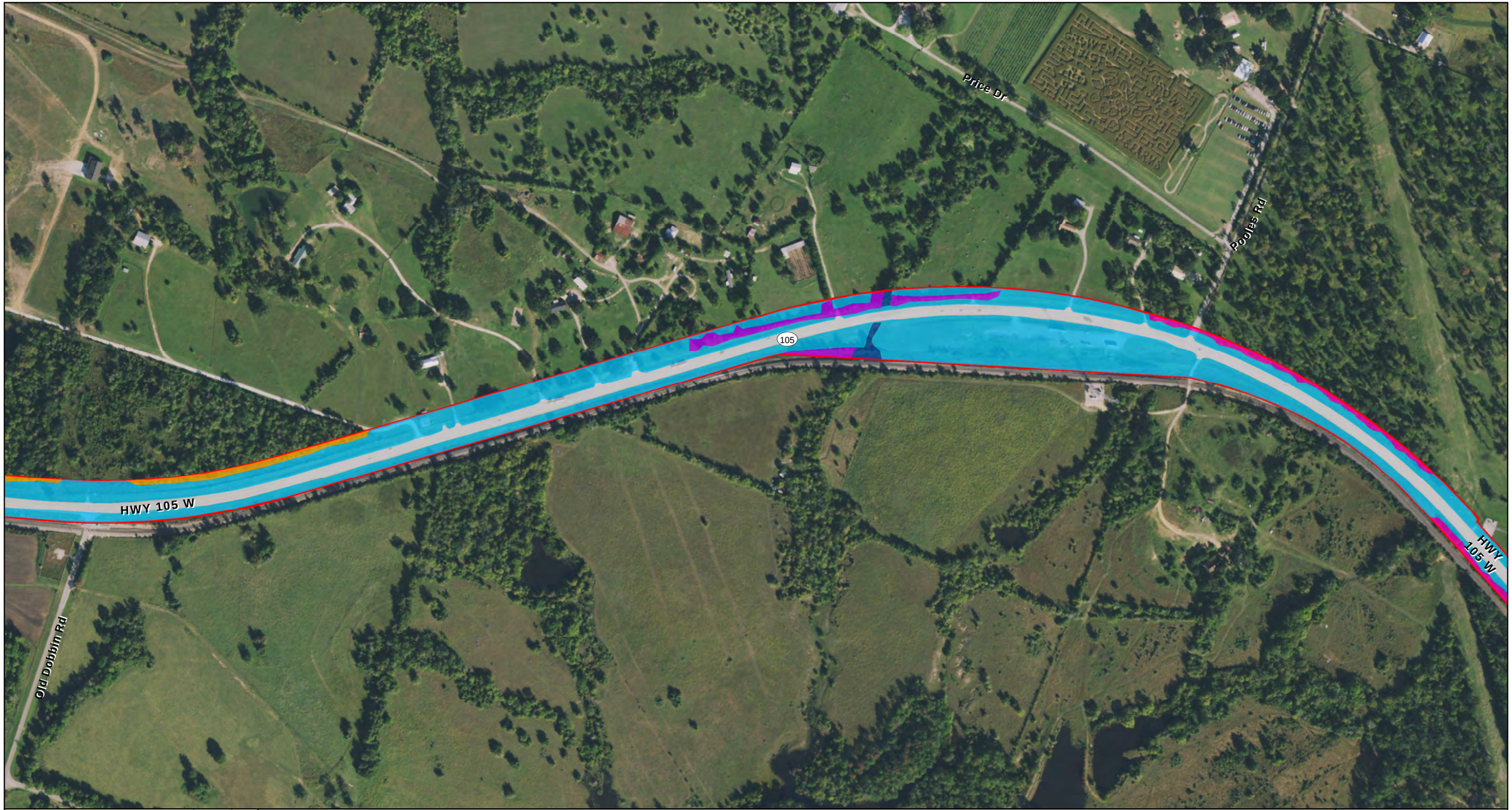
SH 105

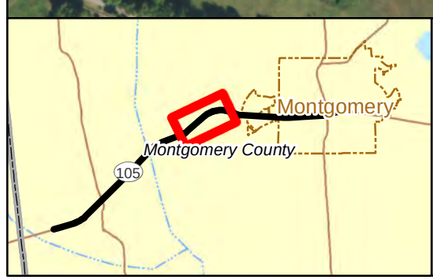
(Mt. Mariah Rd. to FM 149)

Exhibit D2: Revised EMST Map

0 80 160 320
Feet

Base Photo: Landiscor 2014





Legend

- Proposed Build Alternative
- Main Rail Line; Branch line
- USA Streams and Rivers
- Blackland Prairie: Disturbance or Tame Grassland
- Native Invasive: Deciduous Woodland
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- Pineywoods: Small Stream and Riparian Wet Prairie
- Pineywoods: Upland Hardwood Forest
- Post Oak Savanna: Post Oak Motte and Woodland
- Urban High Intensity
- Urban Low Intensity

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit D2: Revised EMST Map

0 80 160 320
Feet

Base Photo: Landiscor 2014

Legend

- Proposed Build Alternative
- Main Rail Line; Branch line
- USA Streams and Rivers
- Blackland Prairie: Disturbance or Tame Grassland
- Native Invasive: Deciduous Woodland
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- Pineywoods: Small Stream and Riparian Wet Prairie
- Pineywoods: Upland Hardwood Forest
- Post Oak Savanna: Post Oak Motte and Woodland
- Urban High Intensity
- Urban Low Intensity

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit D2: Revised EMST Map

N W E S

0 80 160 320
Feet

Base Photo: Landiscor 2014

College
Colonel
Westway Cir
Sheppard Rd
Houston St
Eugene
College St
Caroline St
Louisa St
Cemetery St
Pond
Fm 149 Rd
Liberty St
Mason
Maiden
Mccowan
Prairie
Prairie St
Clepper Dr
Clepper
Church St
Old Hwy 105
End Project
105
Worsham St Stewart St
Louisa
Old Plantersville Rd
Rankin St
Fm 149 Rd
Private Dr
Powell Cir

Legend

- Proposed Build Alternative
- Main Rail Line; Branch line
- USA Streams and Rivers
- Blackland Prairie: Disturbance or Tame Grassland
- Native Invasive: Deciduous Woodland
- Pineywoods: Disturbance or Tame Grassland
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- Pineywoods: Small Stream and Riparian Wet Prairie
- Pineywoods: Upland Hardwood Forest
- Post Oak Savanna: Post Oak Motte and Woodland
- Urban High Intensity
- Urban Low Intensity

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit D2: Revised EMST Map

N W E S

0 80 160 320
Feet

Base Photo: Landiscor 2014

Begin Transition

Begin Project

Mock Rd

HWY 105 W

HWY 105 W

105

Mt. Mariah Rd.

Country Rd

N Fm 1486 Rd

Vicinity Map

Legend

Displacement

- Commerical
- Residential
- Commercial Billboard

- Proposed ROW
- Existing ROW

- County Boundaries
- Greater than 50% Minority
- Proposed Detention Pond

None of the study area BG's report a median household income below the DHHS poverty guidelines.

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit E:
Displacements and
Minority Block and Low Income
Block Groups

Page 1 of 6

Source: US Census 2010

Basemap: LandiScor 2012 Aerial Photography

Block 1050

Mock Rd

N Fm 1486 Rd

AVE E

6Th St

5Th St

HWY 105 W

HWY 105 W

105

HWY 105 W

2Nd St

AVE C

26091 TX-105
Montgomery, Texas 77316

99-231 TX-105
Montgomery, Texas 77316

Catpaw Trl

Country Rd

Old Highway 105

Old Dobbin Rd

Vicinity Map

Legend

Displacement

- Commerical
- Residential
- Commercial Billboard

- Proposed ROW
- Existing ROW

- County Boundaries
- Greater than 50% Minority
- Proposed Detention Pond

None of the study area BG's report a median household income below the DHHS poverty guidelines.

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit E:
Displacements and
Minority Block and Low Income
Block Groups

Page 2 of 6

0 125 250 500
Feet

Source: US Census 2010

Basemap: LandiScor 2012 Aerial Photography

Block 1050

25380 TX-105 .
Montgomery TX, 77356-1919

105

HWY 105 W

HWY 105 W

Old Dobbin Rd

Old Montgomery Rd

Vicinity Map

Legend

Displacement

- Commerical
- Residential
- Commercial Billboard

- Proposed ROW
- Existing ROW

- County Boundaries
- Greater than 50% Minority
- Proposed Detention Pond

None of the study area BG's report a median household income below the DHHS poverty guidelines.

SH 105

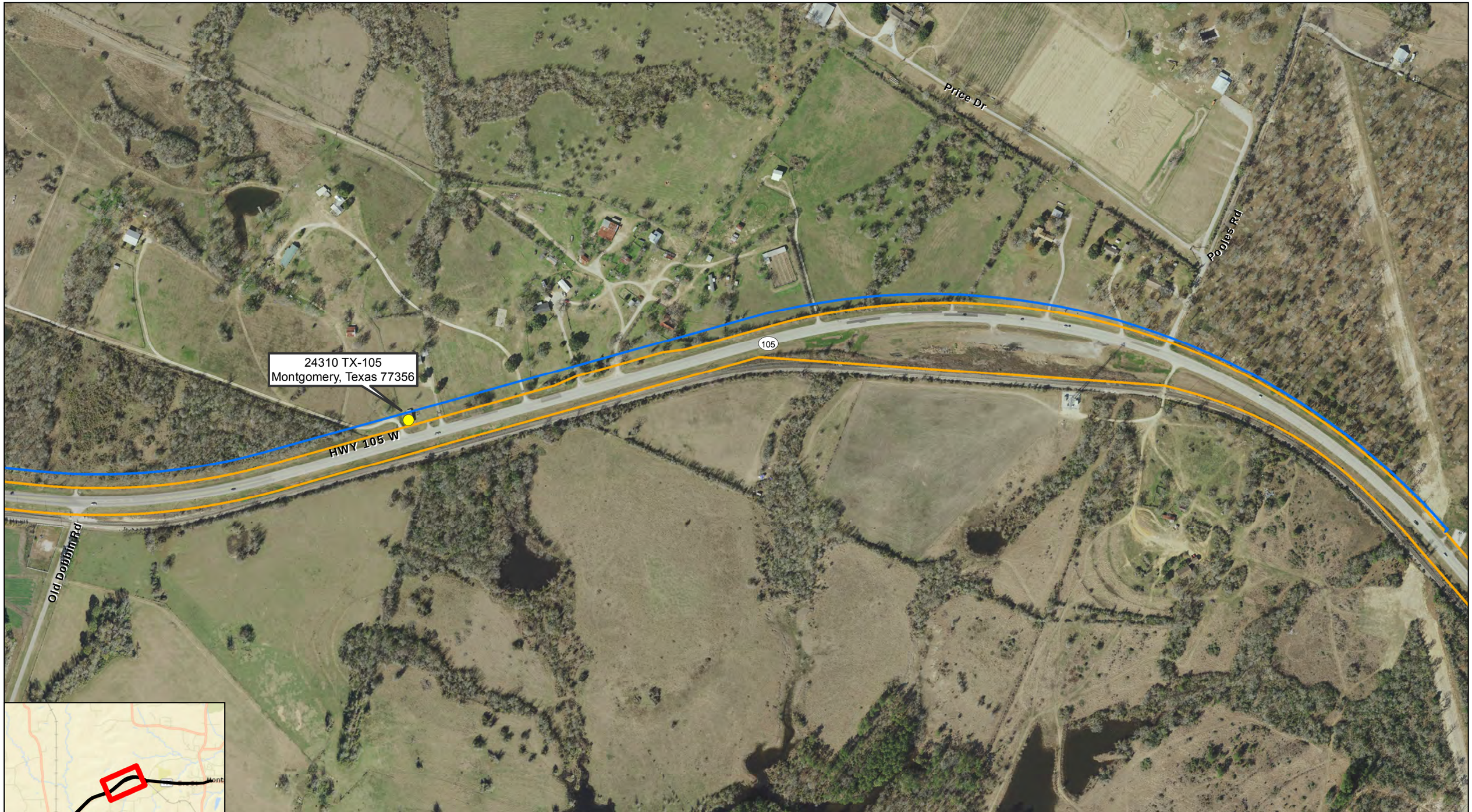
(Mt. Mariah Rd. to FM 149)

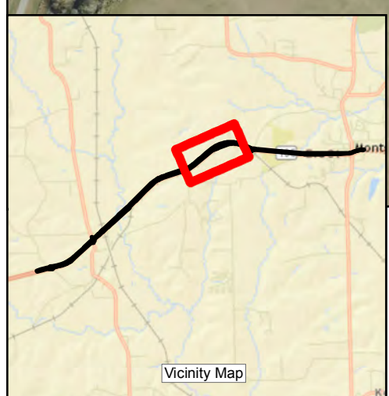
Exhibit E:
Displacements and
Minority Block and Low Income
Block Groups

0 125 250 500
Feet

Source: US Census 2010

Basemap: LandiScor 2012 Aerial Photography





Legend

Displacement

- Commerical
- Residential
- Commercial Billboard

- Proposed ROW
- Existing ROW

- County Boundaries
- Greater than 50% Minority
- Proposed Detention Pond

None of the study area BG's report a median household income below the DHHS poverty guidelines.

SH 105

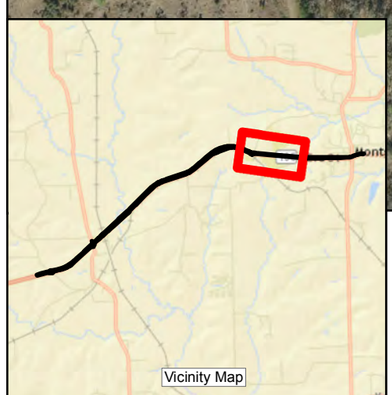
(Mt. Mariah Rd. to FM 149)

Exhibit E:
Displacements and
Minority Block and Low Income
Block Groups

0 125 250 500
Feet

Source: US Census 2010

Basemap: LandiScor 2012 Aerial Photography



Legend

Displacement

- Commerical
- Residential
- Commercial Billboard

- Proposed ROW
- Existing ROW

- County Boundaries
- Greater than 50% Minority
- Proposed Detention Pond

None of the study area BG's report a median household income below the DHHS poverty guidelines.

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit E:
Displacements and
Minority Block and Low Income
Block Groups

0 125 250 500
Feet

Source: US Census 2010

Basemap: LandiScor 2012 Aerial Photography

College
Colonel
Westway Cir
Shepperd Rd
Houston St
Eugene
College St
Caroline St
Louisa St
Cemeter St
Pond
Liberty St
Fm 149 Rd
Mason
Prairie
Mccowan
Clepper Dr
Clepper
Waiden
Prairie St
Church St
Old Hwy 105
End Transition
End Project
105
Worsham St
Stewart St
Louisa
Rankin St
Block 1061
Powe Cir
Private Dr
Old Plantersville Rd
Fm 149 Rd

Vicinity Map

Legend

Displacement

- Commerical
- Residential
- Commercial Billboard

- Proposed ROW
- Existing ROW

- County Boundaries
- Greater than 50% Minority
- Proposed Detention Pond

None of the study area BG's report a median household income below the DHHS poverty guidelines.

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit E:
Displacements and
Minority Block and Low Income
Block Groups

0 125 250 500
Feet

Source: US Census 2010

Basemap: LandiScor 2012 Aerial Photography

Begin Transition

Begin Project

R1

R2

R3

R4

R5

R6

R7

HWY 105 W

HWY 105 W

105

Mt. Mariah Rd.

Mock Rd

Country Rd

N Fm 1486 Rd

Legend

- Non-impacted
- Benefitted
- Proposed Barriers
- Proposed Sidewalk
- Proposed ROW
- Existing ROW
- Proposed Design
- Project Alignment
- Proposed Detention Pond

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit F:
Noise and Schematic
Layout Map

0 125 250 500
Feet

Basemap: TNRIS 2014 Aerial Photography

Mock Rd
5Th St
N Fm 1496 Rd
Ave E
6Th St
R7
R8
R12
R11
HWY 105 W
HWY 105 W
105
HWY 105 W
R9
R10
2Nd St
R13
AVE C
R6
Catpaw Trl
Old Dobbin Rd
Montgomery
105
Montgomery County

Legend

- Non-impacted
- Benefitted
- Proposed Barriers
- Proposed Sidewalk
- Proposed ROW
- Existing ROW
- Proposed Design
- Project Alignment
- Proposed Detention Pond

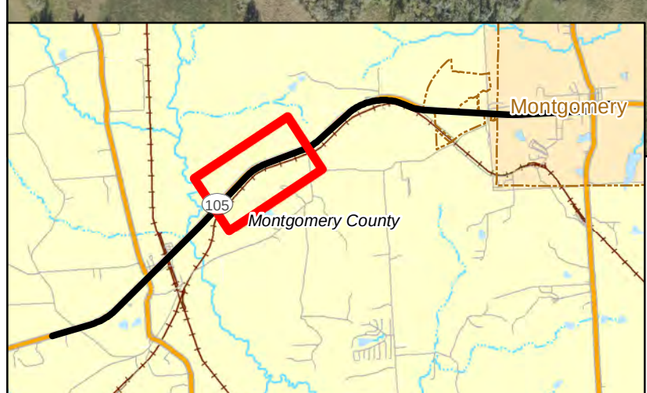
SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit F:
Noise and Schematic
Layout Map

0 125 250 500
Feet

Basemap: TNRIS 2014 Aerial Photography



Legend

- Non-impacted
- Benefitted
- Proposed Barriers
- Proposed Sidewalk
- Proposed ROW
- Existing ROW
- Proposed Design
- Project Alignment
- Proposed Detention Pond

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit F:
Noise and Schematic
Layout Map

0 125 250 500
Feet

Basemap: TNRIS 2014 Aerial Photography

Legend

- Non-impacted
- Benefitted
- Proposed Barriers
- Proposed Sidewalk
- Proposed ROW
- Existing ROW
- Proposed Design
- Project Alignment
- Proposed Detention Pond

SH 105

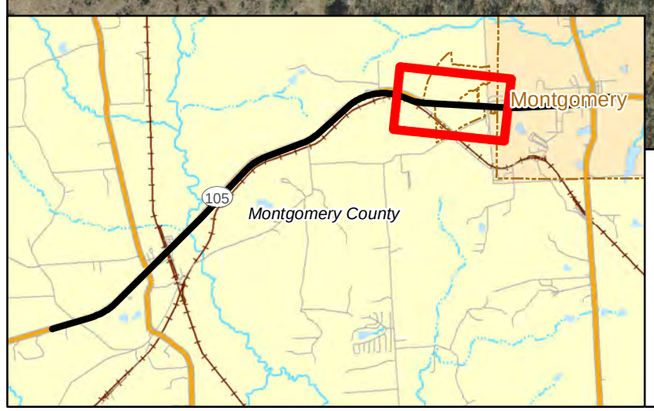
(Mt. Mariah Rd. to FM 149)

Exhibit F:
Noise and Schematic
Layout Map

0 125 250 500
Feet

Basemap: TNRIS 2014 Aerial Photography

R28
R29
R30
R50
R51
R24
R25
HWY 105 W
105
R31
R32
R23
R26
R27
Westway Cir
Westway Dr
Old Plantersville Rd



Legend

- Non-impacted
- Benefitted
- Proposed Barriers
- Proposed Sidewalk
- Proposed ROW
- Existing ROW
- Proposed Design
- Project Alignment
- Proposed Detention Pond

SH 105

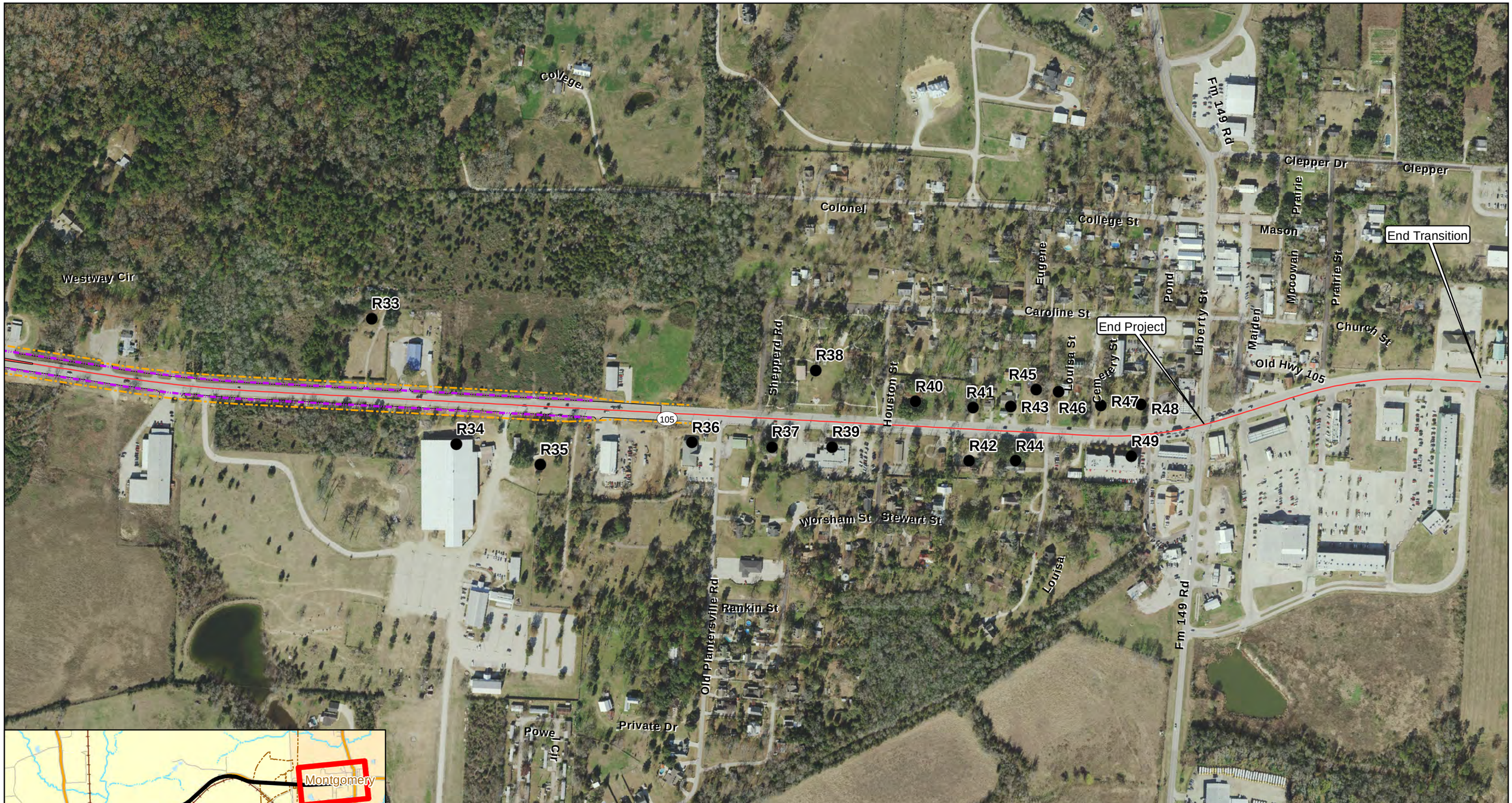
(Mt. Mariah Rd. to FM 149)

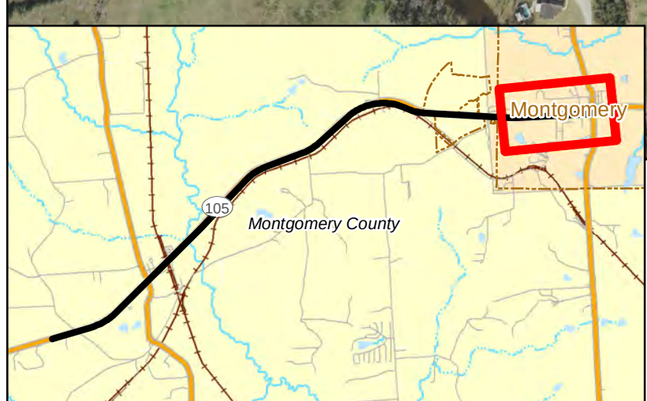
Exhibit F:
Noise and Schematic
Layout Map

N W E S

0 125 250 500
Feet

Basemap: TNRIS 2014 Aerial Photography





Legend

- Non-impacted
- Benefitted
- Proposed Barriers
- Proposed Sidewalk
- Proposed ROW
- Existing ROW
- Proposed Design
- Project Alignment
- Proposed Detention Pond

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit F:
Noise and Schematic
Layout Map

N W E S

0 125 250 500
Feet

Basemap: TNRIS 2014 Aerial Photography

Begin Transition

Begin Project

Mock Rd

HWY 105 W

105

Mt. Mariah Rd.

Country Rd

N Fm 1486 Rd

35+00

40+00

45+00

50+00

55+00

60+00

65+00

70+00

75+00

80+00

85+00

90+00

95+00

Montgomery

Montgomery County

105

Legend

- Right-of-Entry
- Alignment
- Proposed Sidewalk
- Proposed ROW
- Existing ROW
- Proposed Detention Pond
- Area surveyed
- Survey needed
- 2003 Original Design Survey

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit G:
Archeological Survey Areas

0 125 250 500
Feet

Basemap: Landiscor 2012 Aerial Photography

Mock Rd
N Fm 1486 Rd
Ave E
5Th St
6Th St
HWY 105 W
HWY 105 W
95+00
100+00
105+00
110+00
115+00
120+00
125+00
130+00
135+00
140+00
145+00
HWY 105 W
105
AVE C
2Nd St
Catpaw Trl
Old Dobbin Rd
Montgomery
Montgomery County
105

Legend

- Right-of-Entry
- Alignment
- Proposed Sidewalk
- Proposed ROW
- Existing ROW
- Proposed Detention Pond
- Area surveyed
- Survey needed
- 2003 Original Design Survey

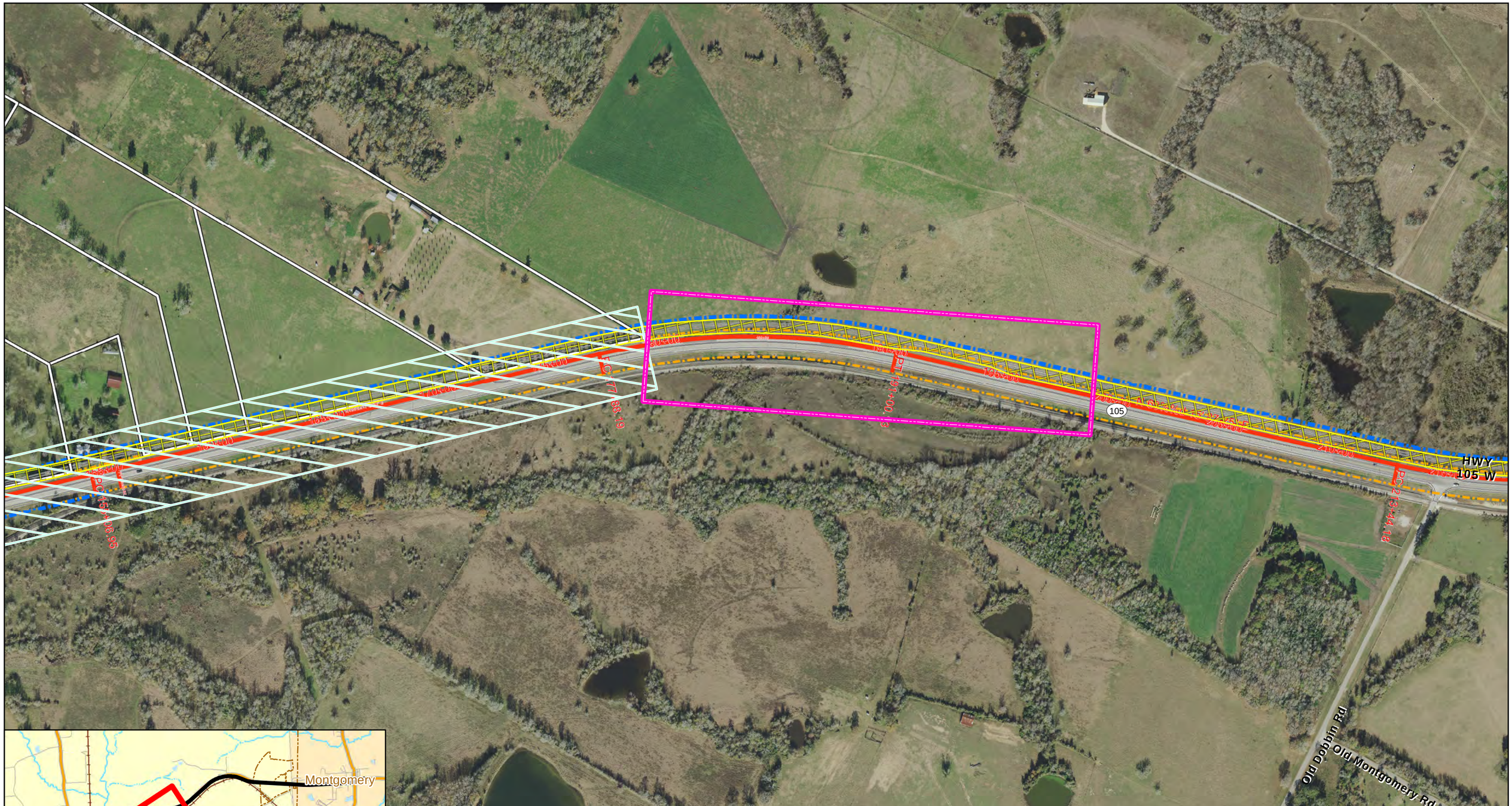
SH 105

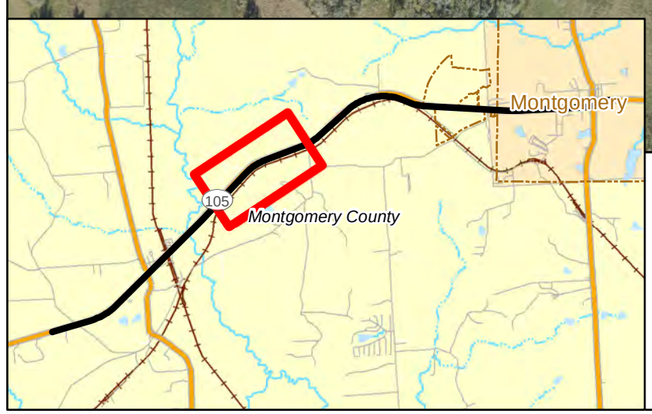
(Mt. Mariah Rd. to FM 149)

Exhibit G:
Archeological Survey Areas

0 125 250 500
Feet

Basemap: Landiscor 2012 Aerial Photography





Legend

- Right-of-Entry
- Alignment
- Proposed Sidewalk
- Proposed ROW
- Existing ROW
- Proposed Detention Pond
- Area surveyed
- Survey needed
- 2003 Original Design Survey

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit G:
Archeological Survey Areas

0 125 250 500
Feet

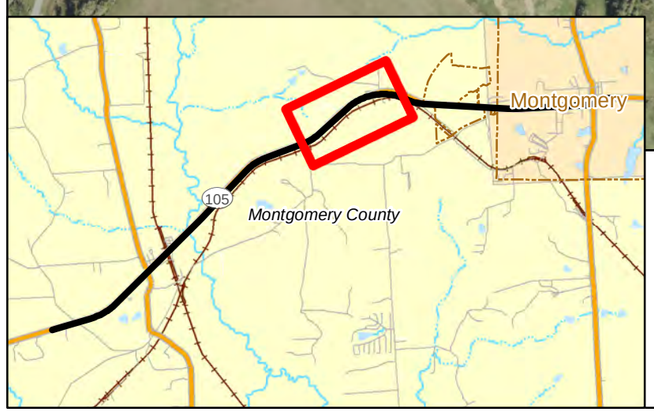
Basemap: Landiscor 2012 Aerial Photography

Price Dr

Pooles Rd

HWY 105 W

Old Dobbin Rd



Legend

- Right-of-Entry
- Alignment
- Proposed Sidewalk
- Proposed ROW
- Existing ROW
- Proposed Detention Pond
- Area surveyed
- Survey needed
- 2003 Original Design Survey

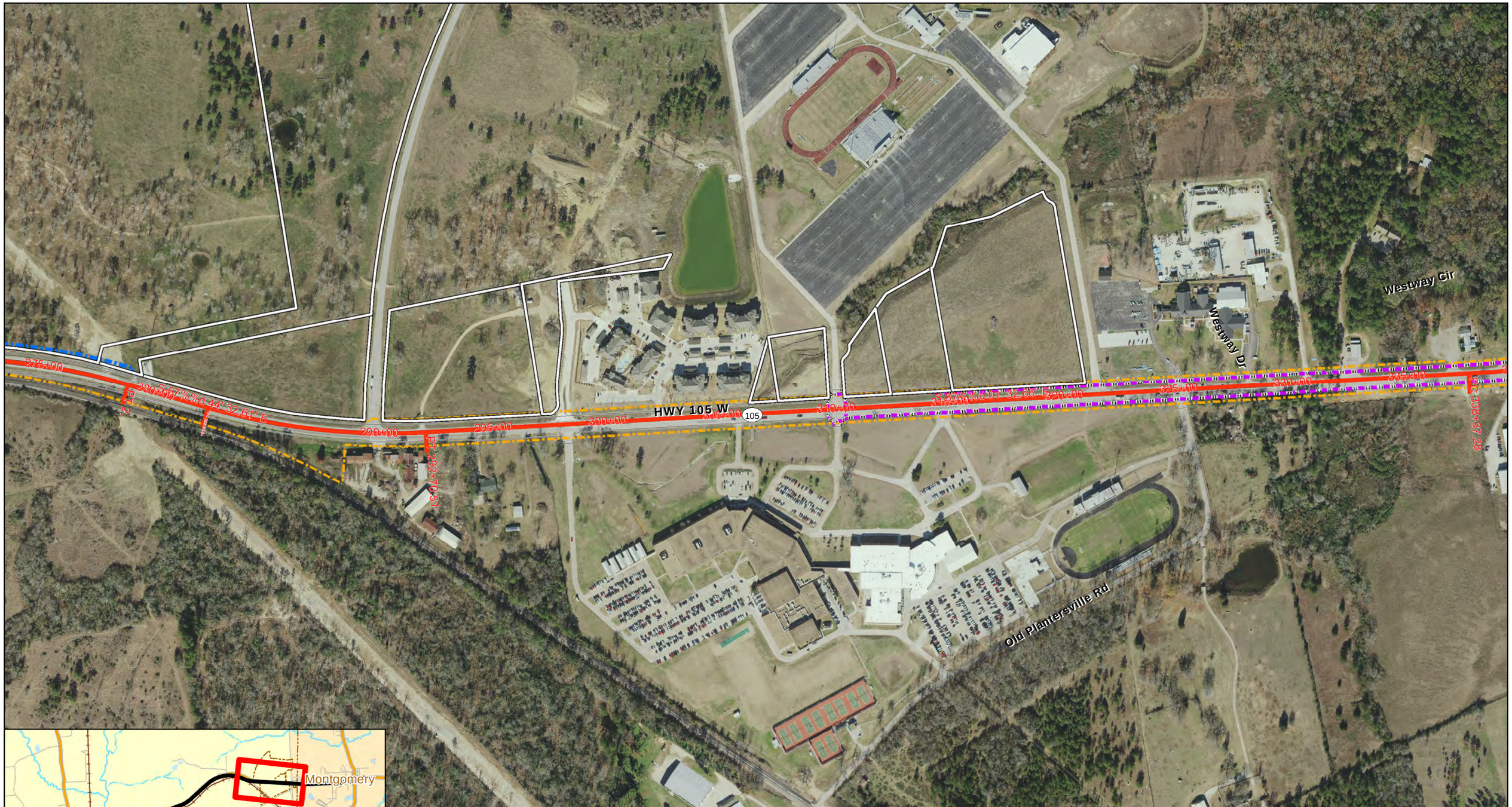
SH 105

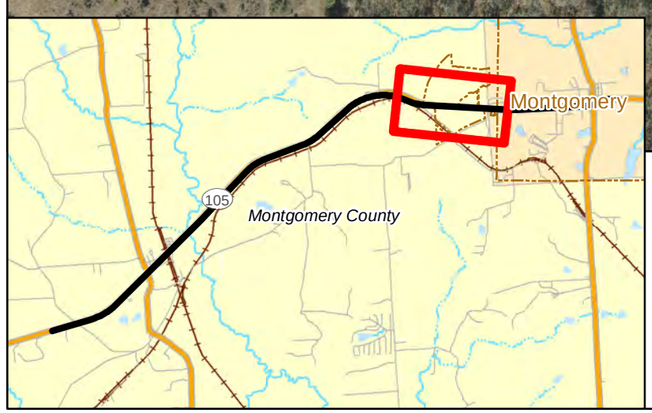
(Mt. Mariah Rd. to FM 149)

Exhibit G:
Archeological Survey Areas

0 125 250 500
Feet

Basemap: Landiscor 2012 Aerial Photography





Legend

- Right-of-Entry
- Alignment
- Proposed Sidewalk
- Proposed ROW
- Existing ROW
- Proposed Detention Pond
- Area surveyed
- Survey needed
- 2003 Original Design Survey

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit G:
Archeological Survey Areas

0 125 250 500
Feet

Basemap: Landiscor 2012 Aerial Photography

College
Colonel
Westway Cir
Sheppard Rd
Houston St
Eugene
Caroline St
Louisa St
Cemetery St
Pond
Liberty St
College St
Mason
Maiden
Mccowan
Prairie
Prairie St
Clepper Dr
Clepper
Church St
Old Hwy 105
Fm 149 Rd
End Project
End Transition
Worsham St
Stewart St
Louisa
Old Plantersville Rd
Rankin St
Private Dr
Powe Cir
105
BC 338+31.28
EC 339+10.62
BC 380+88.14
EC 390+00
N 87°00'00" E 1427.03' E
N 66°00'00" E 76' E
Montgomery
Montgomery County

Legend

- Right-of-Entry
- Alignment
- Proposed Sidewalk
- Proposed ROW
- Existing ROW
- Proposed Detention Pond
- Area surveyed
- Survey needed
- 2003 Original Design Survey

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit G:
Archeological Survey Areas

0 125 250 500
Feet

Basemap: Landiscor 2012 Aerial Photography

Begin Transition

Begin Project

B

A

HWY 105 W

105

Mt. Mariah Rd.

Mock Rd

Country Rd

N Fm 1486 Rd

Vicinity Map

Montgomery

105

Legend

Proposed Build Alternative

CERCLIS

NFRAP

PST

LPST

Water Well

Sites Identified During Visual Assessment

Oil or Gas

Proposed Detention Pond

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit H:
Hazardous Materials

Page 1 of 6

0 62.5 125 250 375 500 Feet

Source: GeoSearch 2014

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Mock Rd
N Fm 1486 Rd
5Th St
Ave E
6Th St
HWY 105 W
HWY 105 W
105
HWY 105 W
2Nd St
Ave C
Catpaw Trl
Country Rd
Old Highway 105
Old Dobbin Rd

Vicinity Map
Montgomery
105

Legend

- Proposed Build Alternative
- CERCLIS
- NFRAP
- PST
- LPST
- Water Well
- Sites Identified During Visual Assessment
- Oil or Gas
- Proposed Detention Pond

SH 105

(Mt. Mariah Rd. to FM 149)

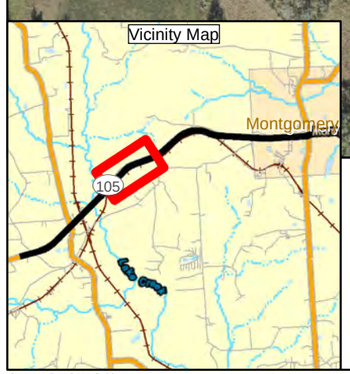
Exhibit H:
Hazardous Materials

Page 2 of 6

0 62.5 125 250 375 500 Feet

Source: GeoSearch 2014

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Legend

- Proposed Build Alternative
- CERCLIS
- NFRAP
- PST
- LPST
- Water Well
- Sites Identified During Visual Assessment
- Oil or Gas
- Proposed Detention Pond

SH 105

(Mt. Mariah Rd. to FM 149)

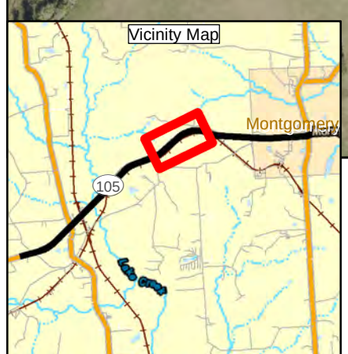
Exhibit H:
Hazardous Materials

Page 3 of 6

0 62.5 125 250 375 500 Feet

Source: GeoSearch 2014

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Legend

- Proposed Build Alternative
- CERCLIS
- NFRAP
- PST
- LPST
- Water Well
- Sites Identified During Visual Assessment
- Oil or Gas
- Proposed Detention Pond

SH 105

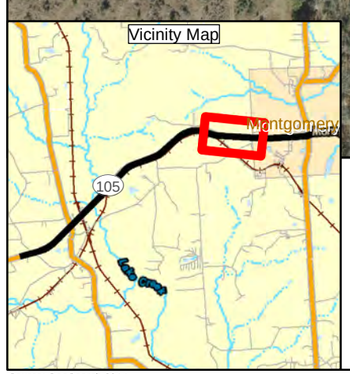
(Mt. Mariah Rd. to FM 149)

Exhibit H:
Hazardous Materials

0 62.5 125 250 375 500 Feet

Source: GeoSearch 2014

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Legend

- Proposed Build Alternative
- CERCLIS
- NFRAP
- PST
- LPST
- Water Well
- Sites Identified During Visual Assessment
- Oil or Gas
- Proposed Detention Pond

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit H:
Hazardous Materials

N W E S

0 62.5 125 250 375 500 Feet

Source: GeoSearch 2014

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

College
Colonel
Westway Cir
College St
Eugene
Louisa St
Cemetery St
Caroline St
Pond
Liberty St
Fm 149 Rd
Clepper Dr
Clepper
Prairie
Mason
Maiden
Mccoyan
Prairie St
Church St
End Transition
Old Hwy 105
105
Sheppard Rd
Houston St
D
Worsham St
Stewart St
End Project
Louisa
Old Plantersville Rd
Rankin St
Fm 149 Rd
Private Dr
Powe
Cir

Vicinity Map
Montgomery
105

Legend

- Proposed Build Alternative
- CERCLIS
- NFRAP
- PST
- LPST
- Water Well
- Sites Identified During Visual Assessment
- Oil or Gas
- Proposed Detention Pond

SH 105

(Mt. Mariah Rd. to FM 149)

Exhibit H:
Hazardous Materials

N W E S

0 62.5 125 250 375 500 Feet

Source: GeoSearch 2014

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Appendix A: RTP/TIP

Amendment # 2040-3

Program 2015 Call-for-Projects selected by Policy Council in the 2040 Regional Transportation Plan for funding in FY2019 or later

	Project Details						Proposed Changes	
Action	MPOID	CSJ	Fiscal Year	Sponsor	Description	Funding	Change	Comments
Add	6045	0500-04-105	2019	TXDOT HOUSTON	Facility: IH 45 S From: S OF FM 1764 To: N OF FM 519 Description: RECONSTRUCT AND WIDEN TO 8 MAIN LANES AND TWO 2-LANE FRONTAGE ROADS	Federal: $0 State: $159,308,000 Local: $0 Categories: 2-PROP-7	Add to the UTP.	Application ID: 300345
Add	965	0338-02-032	2023	TXDOT HOUSTON	Facility: SH 105 From: GRIMES COUNTY LINE To: FM 149 Description: WIDEN TO 4-LANE DIVIDED RURAL ROADWAY WITH INTERSECTION IMPROVEMENTS	Federal: $0 State: $108,204,000 Local: $0 Categories: 2-PROP-1	Add to the UTP.	Application ID: 300621
Add	504	0338-04-060	2024	TXDOT HOUSTON	Facility: SH 105 From: 10TH ST To: LP 336 Description: WIDEN TO 4-LANE DIVIDED ROADWAY WITH RAISED MEDIANS AND INTERSECTION IMPROVEMENTS	Federal: $0 State: $34,110,000 Local: $0 Categories: 2-PROP-7	Add to the UTP.	Application ID: 300624
Add	10125	0338-04-065	2023	TXDOT HOUSTON	Facility: SH 105 From: LP 336 To: FM 1484 Description: WIDEN TO 4-LANE DIVIDED ROADWAY (RAISED MEDIAN AND RURAL IN SECTIONS) WITH INTERSECTION IMPROVEMENTS	Federal: $0 State: $77,551,000 Local: $0 Categories: 2-PROP-7	Add to the UTP.	Application ID: 300627
Add	10124	0338-04-066	2023	TXDOT HOUSTON	Facility: SH 105 From: FM 1484 To: SAN JACINTO C/L Description: WIDEN TO 4-LANE DIVIDED RURAL ROADWAY WITH INTERSECTION IMPROVEMENTS	Federal: $0 State: $80,003,000 Local: $0 Categories: 2-PROP-7	Add to the UTP.	Application ID: 300630
Add	7705	0338-06-011	2024	TXDOT HOUSTON	Facility: SH 105 From: MONTGOMERY C/L To: MONTGOMERY C/L Description: INFORMATION ONLY (PROJECT IN SAN JACINTO CO): WIDEN TO 4-LANE DIVIDED RURAL ROADWAY WITH INTERSECTION IMPROVEMENTS	Federal: $0 State: $15,939,000 Local: $0 Categories: 2-PROP-7	Information Only.	Application ID: 300909 Funding will be programmed by TxDOT in the UTP.

APPENDIX D -- 2040 RTP, PROJECTS UNDERGOING ENVIRONMENTAL ASSESSMENT

MPOID	CSJ	County	Sponsor	Facility	From	To	Description	Length	Fiscal Year	Total Project Cost (M, YOE)
OTHER MAJOR ROADWAY IMPROVEMENTS										
11013		Harris	UPTOWN HOUSTON DISTRICT	WESTHEIMER ST	IH 610	POST OAK BLVD	WIDEN FROM 8 TO 9-LANES	0.2	2020	$ 1.95
17094		Harris	CITY OF HOUSTON	WESTPARK DR	DAIRY ASHFORD RD	WILCREST ST	WIDEN TO 4-LANES AND REPLACE TRAFFIC SIGNALS IN CONJUNCTION WITH DRAINAGE AND PUBLIC UTILITY IMPROVEMENTS	2.1	2021	$ 15.22
12007		Liberty	TXDOT BEAUMONT DISTRICT	SH 105 BYPASS	SH 105 W OF CLEVELAND	SH 321 E OF CLEVELAND	WIDEN FROM 2 TO 4 LANES	5.5	2034	$ 12.29
172	0028-04-069	Liberty	TXDOT BEAUMONT DISTRICT	US 90	FM 563	FM 160	RECONSTRUCT AND WIDEN TO 4-LANE DIVIDED ROADWAY WITH CONTINUOUS LEFT TURN LANE	2.4	2024	$ 10.30
501	0523-08-007	Montgomery	TXDOT HOUSTON DISTRICT	FM 1488	JOSEPH RD	FM 1774	WIDEN FROM 2 TO 4-LANES WITH CONTINUOUS CENTER LFET TURN LANE AND BICYCLE ACCOMODATIONS	3.8	2025	$ 55.30
499	0523-09-009	Montgomery	TXDOT HOUSTON DISTRICT	FM 1488	FM 1774	W OF FM 149	WIDEN FROM 2 TO 4-LANES WITH CONTINUOUS CENTER LEFT TURN LANE AND BICYCLE ACCOMMODATIONS	4.0	2025	$ 82.40
965	0338-02-032	Montgomery	TXDOT HOUSTON DISTRICT	SH 105	GRIMES C/L	FM 149	WIDEN TO 4-LANE DIVIDED RURAL ROADWAY WITH INTERSECTION IMPROVEMENTS	6.8	2023	$ 115.38
504	0338-04-060	Montgomery	TXDOT HOUSTON DISTRICT	SH 105	10TH ST	LP 336	WIDEN TO 4-LANE DIVIDED ROADWAY WITH RAISED MEDIANS AND INTERSECTION IMPROVEMENTS	2.6	2024	$ 42.30
10125	0338-04-065	Montgomery	TXDOT HOUSTON DISTRICT	SH 105	LP 336	FM 1484	WIDEN TO 4-LANE DIVIDED ROADWAY (RAISED MEDIAN AND RURAL IN SECTIONS) WITH INTERSECTION IMPROVEMENTS	4.5	2023	$ 109.30
10124	0338-04-066	Montgomery	TXDOT HOUSTON DISTRICT	SH 105	FM 1484	SAN JACINTO C/L	WIDEN TO 4-LANE DIVIDED RURAL ROADWAY WITH INTERSECTION IMPROVEMENTS	6.1	2023	$ 112.70
7706	0338-07-019	Montgomery	TXDOT HOUSTON DISTRICT	SH 105	SAN JACINTO C/L	LIBERTY C/L	WIDEN TO 4-LANE DIVIDED RURAL ROADWAY WITH INTERSECTION IMPROVEMENTS	3.5	2024	$ 62.90
507	0110-04-129	Montgomery	TXDOT HOUSTON DISTRICT	SH 75	GLADSTELL ST	IH 45 UNDERPASS	WIDEN FROM 2 LANES TO 4 LANES UNDIVIDED INCLUDING BICYCLE ACCOMODATIONS AND DRAINAGE IMPROVEMENTS	1.0	2017	$ 4.02
7060		Montgomery	MONTGOMERY COUNTY	WOODLANDS PKWY	SH 249	FM 2978	CONSTRUCT NEW 2-LANE DIVIDED	5.7	2023	$ 6.00

Projects shaded in GRAY are exempt from conformity or are not considered regionally significant under H-GAC regional emissions analysis.

Appendix B: Agency Coordination Letters

Carter::Burgess

55 Waugh Drive
Suite 800
Houston, TX 77007-5833
Phone: 713.869.7900
Fax: 713.869.5502
www.c-b.com

January 6, 2005

Ms. Celeste Brancel-Brown
Wildlife Habitat Assessment Program
Texas Parks and Wildlife Department
3000 S. IH-35, Suite 100
Austin, Texas 78704

Reference: SH 105 Improvements
Limits: FM 149 to Grimes County Line
Length: Approximately 7 Miles

Dear Ms. Brancel-Brown:

The Texas Department of Transportation (TxDOT) is proposing to widen SH 105 in Montgomery County at the above-referenced location. Carter & Burgess, Inc. is currently under contract with TxDOT to perform environmental services for this proposed highway project.

The proposed project consists of widening the roadway from a two-lane undivided facility to a four-lane divided facility. The existing right-of-way (ROW) width varies from 120 to 150 feet. The proposed ROW width is a usual of 120-200 feet. The enclosed vicinity map indicates the location of the proposed project.

We are beginning the preparation an environmental assessment (EA) to determine the significance of potential environmental impacts, which may result from project implementation. In order to help determine the environmental significance of this project, we are requesting your input and any comments pertaining to potential impacts to threatened and endangered species within the project area.

We would like to incorporate your input into the EA. Therefore, your prompt attention regarding this matter is appreciated. If you need additional information, please contact me at (713) 803-2326.

Sincerely,

CARTER & BURGESS, INC.

Matthew Clinton

Matthew Clinton AWB
Environmental Planner
Enclosure

cc: Mr. Nathan Drozd, Texas Department of Transportation, Houston District

October 14, 2005

TEXAS PARKS & WILDLIFE

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LEE M. BASS
CHAIRMAN-EMERITUS
FORT WORTH

ROBERT L. COOK
EXECUTIVE DIRECTOR

Mr. Matthew Clinton
Carter & Burgess Inc.
55 Waugh Drive, Suite 800
Houston, TX 77007-5833

Dear Mr. Clinton:

This letter is in response to your information request, dated January 6, 2005, for rare, threatened, and endangered species within or near the proposed widening of SH 105 from FM 149 to Grimes County line in Montgomery County. This letter does not include a review of impacts to threatened and endangered species or general fish and wildlife habitat from this project.

Given the small proportion of public versus private land in Texas, the TPWD Natural Diversity Database (NDD) (formerly Biological and Conservation Data System) does not include a representative inventory of rare resources in the state. Although it is based on the best data available to TPWD regarding rare species, the data from the NDD do not provide a definitive statement as to the presence, absence, or condition of special species, natural communities, or other significant features within your project area. These data cannot substitute for an on-site evaluation by your qualified biologists. The NDD information is intended to assist you in avoiding harm to species that may occur on your site.

Currently, TPWD has no rare resource information mapped for the immediate project area. However, the following species, special features, natural communities, and managed areas have been documented in the general project area:

Federal and State Listed Endangered
Red-cockaded Woodpecker (*Picoides borealis*)
Navasota ladies'-tresses (*Spiranthes parksii*)

Federal and State Listed Threatened (Federal Proposed for Delisting)
Bald Eagle (*Haliaeetus leucocephalus*)

Special Features and Natural Communities
Colonial Waterbird Rookeries
Little Bluestem-Indiangrass (*Schizachyrium scoparium-Sorghastrum nutans*) Series
Loblolly Pine-Post Oak-Blackjack Oak/Farkleberry (*Pinus taeda-Quercus stellata-Q. marilandica/Vacinium arboreum*) Series
Water Oak-Willow Oak (*Quercus nigra-Quercus phellos*) Series

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Managed Areas
Huntsville State Park
Sam Houston National Forest

Enclosed are TPWD lists of rare, threatened, and endangered species for Montgomery and Grimes counties. When additional information for the project site becomes available, please use this list for your analysis and the enclosed Rare Resources Review Request form as a guideline for the information to send us so that we can provide you a narrowly-focused site-specific review.

Thank you for the opportunity to provide you preliminary information for your project analysis. Please contact me if you have any questions or need additional assistance (512/912-7054).

Sincerely,

Julie C. Wicker

Julie C. Wicker, Environmental Review Assistant
Wildlife Habitat Assessment Program
Threatened and Endangered Species

Enclosures (2)

Carter::Burgess

55 Waugh Drive
Suite 800
Houston, TX 77007-5833
Phone: 713.869.7900
Fax: 713.869.5502
www.c-b.com

January 6, 2005

Ms. Kathy Boydston
Wildlife Habitat Assessment Program
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744

Reference: SH 105 Improvements
Limits: FM 149 to Grimes County Line
Length: Approximately 7 Miles

Dear Ms. Boydston:

The Texas Department of Transportation (TxDOT) is proposing to widen SH 105 in Montgomery County at the above-referenced location. Carter & Burgess, Inc. is currently under contract with TxDOT to perform environmental services for this proposed highway project.

The proposed project consists of widening the roadway from a two-lane undivided facility to a four-lane divided facility. The existing right-of-way (ROW) width varies from 120 to 150 feet. The proposed ROW width is a usual of 120-200 feet. The enclosed vicinity map indicates the location of the proposed project.

We are beginning the preparation an environmental assessment (EA) to determine the significance of potential environmental impacts, which may result from project implementation. In order to help determine the environmental significance of this project, we are requesting your input and any comments pertaining to potential impacts to wildlife resources and any measures that should be adopted to prevent or minimize impacts to wildlife resources.

We would like to incorporate your input into the EA. Therefore, your prompt attention regarding this matter is appreciated. If you need additional information, please contact me at (713) 803-2326.

Sincerely,

CARTER & BURGESS, INC.

Matthew Clinton

Matthew Clinton AWB
Environmental Planner
Enclosure

cc: Mr. Nathan Drozd, Texas Department of Transportation, Houston District

TEXAS PARKS & WILDLIFE

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ROBERT L. COOK
EXECUTIVE DIRECTOR

February 11, 2005

Mr. Matthew Clinton
Environmental Planner
Carter & Burgess, Inc.
55 Waugh Drive, Suite 800
Houston, Texas 77007-5833

RE: Proposed widening of State Highway 105, Montgomery County.

Dear Mr. Clinton:

Texas Parks and Wildlife received your request for environmental clearance for the project referenced above. Department staff reviewed the information provided and offers the following comments to assist you in minimizing the impact of your project on the State's natural resources.

Carter & Burgess, Inc. and The Texas Department of Transportation (TxDOT) proposes to widen State Highway (SH) 105 from a two-lane undivided facility to a four-lane divided facility. The proposed project limits are from Farm to Market Road (FM) 149 to the Grimes County line and the project length is approximately 7 miles. The existing right-of-way (ROW) width varies from 120 to 150 feet. The proposed ROW width is a usual 120-200 feet.

Due to the lack of information regarding this project, it is not possible to adequately assess the potential impacts of this project upon fish and wildlife resources. Additional information is necessary detailing the type and extent of proposed construction activities. The environmental assessment should minimally include an inventory of wildlife and vegetative communities present, and evaluation of impacts of the project on these species and communities and proposed mitigative measures. Cumulative impacts of this and other projects also need to be determined. Attached are the ***Texas Parks and Wildlife Department Suggested Guidelines for Preparation of Environmental Assessment Documents.***

The Department recommends that TxDOT avoid clearing old timber and mature, native trees. The Department typically recommends a replacement ratio of 3 trees for each tree lost and development of a maintenance plan to ensure 80% survival of the trees for the first five years. When possible consider planting landscape

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vegetation to link existing shrub thickets or groves of trees to allow wildlife to travel across developed areas. Planting a high diversity of vegetation would provide a high variability of flowers and fruits for wildlife food throughout the year. Trees that produce nuts, acorns, or berries are particularly valuable as food sources and places of refuge.

The Texas Parks and Wildlife Department's Land and Water Resources Conservation and Recreation Plan (LWRCRP) establishes priority habitat types and ecoregions based on the conserved status, threat and biological value. Every ecosystem in Texas is home to important game species, threatened and endangered species, significant habitats and communities. The Priority Ecoregion Analysis showed that native prairies, grasslands, and riparian habitats across the state are the most important wildlife habitats, contain the highest numbers of rare species, and are often the most threatened. These habitat types are listed as the highest priority to be conserved by TPWD. Riparian habitats and corridors in urban areas are of extreme interest to TPWD as they are the most threatened subset of riparian habitat and are often the only wildlife habitat left.

Also, clearing riparian vegetation can potentially adversely affect aquatic systems. Because the root systems of riparian vegetation help stabilize soils and minimize erosion, TPWD recommends that if riparian vegetation, including mature trees and shrubs, must be removed, the root systems should be left to stabilize the sediment thus reducing erosion potential. This method of vegetation clearing in riparian zones is also endorsed by the Federal Highway Administration and preferred over the traditional method of clearing and pushing entire trees over with a bulldozer. Staff recommends seeding the area with native grasses and forbs and allowing native vegetation to reestablish along the creek after construction has been completed. Avoid maintenance activities like mowing in the riparian buffer zone. Attached are the ***Texas Parks and Wildlife Guidelines for Construction and Clearing within Riparian Areas*** which should assist you in your planning process to further reduce the likelihood your project will impact fish, wildlife, and plant resources.

The Migratory Bird Treaty Act (MBTA) provides for a year round closed season for non-game birds and prohibits the taking of migratory bird nests and eggs, except as permitted by the U.S. Fish and Wildlife Service. Construction activities such as, but not limited to, tree felling as well as vegetation clearing, trampling, or maintenance should occur outside the April 1- July 15 migratory bird nesting season of each year the project is authorized and lasting for the life of the project. To comply with the MTBA, the proposed site should be surveyed for migratory

bird nest sites prior to construction or future maintenance activities. In addition, since raptors nest in late winter and early spring, all construction activities as identified above should be excluded from a minimum zone of 100 meters around any raptor next during the period of February 1- July 15. Please contact the U.S. Fish and Wildlife Service Southwest Regional Office (Region 2) at (505) 248-6879 for further information.

The Clean Water Act (CWA) sets the basic regulatory framework for regulating discharges of pollutants to U.S. waters. Section 404 of the CWA establishes a federal program to regulate the discharge of dredge and fill material into waters of the U.S., including wetlands. The U.S. Army Corps of Engineers (COE) and the Environmental Protection Agency (EPA) are primarily responsible for making jurisdictional determinations and regulating wetlands under Section 404 of the CWA. The COE also makes jurisdictional determinations under Section 10 of the Rivers and Harbors Act of 1899. If the proposed construction would impact aquatic resources then the project sponsor should contact the U.S. Army Corp of Engineers for determination of jurisdictional wetlands and for permitting requirements. Compensation may be required for any encroachment into these areas.

Please find the list of special species that occur in Montgomery County. Measures should be taken to ensure that rare species are not present along the route and are not subject to adverse impacts. ROW and access easements often display exceptional biotic diversity and quality by representing isolated areas free from agricultural grazing and cultivation impacts. Consequently, caution should be taken to avoid any unique and rare plant communities that may occur. More site-specific information from a search of the Natural Diversity Database (NDD) database and review of potential project impacts to endangered and threatened species can be obtained for a $50 fee. For more information about the NDD or threatened and endangered species in the project area please contact Celeste Brancel at (512) 912-7021.

If any proposed route would affect area wildlife refuges, management areas, or parks, please include that information in the environmental document and coordinate with area managers.

Thank you for providing the opportunity to comment on this project. Future coordination of this project should be addressed to Kathy Boydston, TPWD Wildlife Division, Wildlife Habitat Assessment Program, 4200 Smith School Road, Austin, TX 78744. Please contact me if we may be of further assistance.

Sincerely,

Amy Hanna

Amy Hanna
Wildlife Habitat Assessment Program
Wildlife Division

/ajh

Attachment(s)

De La Cruz, Lisa

From: Laura Zebehazy <Laura.Zebehazy@tpwd.texas.gov>
Sent: Thursday, May 21, 2015 12:32 PM
To: Terri Dedhia
Subject: RE: Early Project Coordination - SH 105 W 0338-02-032 - Montgomery County

Good afternoon, Terri,

I understand that the specific details of the SH 105 Widening project in Montgomery County have not been determined at the time of early coordination with TPWD. In order to complete the coordination process, TPWD understands that TxDOT will implement the additional recommendations for the use of hydromulching/seeding and wildlife barriers at the detention pond near Culverts 9 & 10, if feasible and practical. TPWD has made these recommendations to avoid and minimize impacts to wildlife, particularly reptiles and amphibians.

With that being said, TPWD appreciates TxDOT's commitment to implement the recommendations discussed below and in the early coordination materials provided on April 14, 2015. Based on that commitment and a review of the documentation and project description, and provided that the project plans do not change, TPWD considers coordination to be complete. However, please note it is the responsibility of the project proponent to comply with all federal, state, and local laws that protect fish and wildlife.

Sincerely,

Laura Zebehazy, CWB
Transportation Conservation Coordinator
TPWD – Wildlife Habitat Assessment Program
Phone: (512)389-4638

From: Terri Dedhia [mailto:Terri.Leeson@txdot.gov]
Sent: Thursday, May 21, 2015 11:25 AM
To: Laura Zebehazy
Subject: RE: Early Project Coordination - SH 105 W 0338-02-032 - Montgomery County

Morning,

For this purpose it means that I cannot guarantee that these measures will be implemented at this time. I can only recommend these be incorporated.

Thanks,
Terri

Terri Dedhia
Environmental Coordinator/Lead Worker
TxDOT – Houston District

From: Laura Zebehazy [mailto:Laura.Zebehazy@tpwd.texas.gov]
Sent: Wednesday, May 20, 2015 2:34 PM
To: Terri Dedhia
Subject: RE: Early Project Coordination - SH 105 W 0338-02-032 - Montgomery County

Hi Terri,

For the sake of the administrative record of this early coordination, can you expand on what "Recommendation noted" means to TxDOT? Does this mean you will just consider implementing these recommendations or does it mean that they will be included in the EPICS and incorporated into design plans?

Thanks for clarifying this for me!

Laura Zebehazy, CWB
Transportation Conservation Coordinator
TPWD – Wildlife Habitat Assessment Program
Phone: (512)389-4638

From: Terri Dedhia [mailto:Terri.Leeson@txdot.gov]
Sent: Wednesday, May 20, 2015 2:04 PM
To: Laura Zebehazy
Subject: RE: Early Project Coordination - SH 105 W 0338-02-032 - Montgomery County

Hi Laura, please see my responses below. Thanks!

Terri Dedhia
Environmental Coordinator/Lead Worker
TxDOT – Houston District

From: Laura Zebehazy [mailto:Laura.Zebehazy@tpwd.texas.gov]
Sent: Wednesday, May 20, 2015 12:39 PM
To: Terri Dedhia
Subject: RE: Early Project Coordination - SH 105 W 0338-02-032 - Montgomery County

Hi Terri,

Thanks for your response. Based on your response and further review, I have a couple more questions:

- Is the project really slated to be let 9 years from now? Is it possible that we will see this project again and at that time the site plans will have more specific detail? This project is currently not funded, therefore the let date has been slated for 2024. However, it is anticipated that the project will be moved up once funding is established.
- The reason I asked about the Rafinesque's big-eared bat is because the early coordination materials state that the Tree Bat BMPs will be implemented for this species. Unfortunately, in Table 2 of the 2014 version of the BMP PA between TxDOT and TPWD does not acknowledge that Rafinesque's big-eared bat can also be found using culverts and bridges. So, for the record, can TxDOT be implement the Tree Bat AND the Bridge Bat BMPs, as stated on page 11 of the 2014 TxDOT-TPWD BMP PA, for this species? Also, since the project occurs within range of the southeastern myotis and they are known to roost in concrete culverts, can TxDOT also implement the Bridge Bat BMPs for this species as well? TxDOT will survey bridges and culverts for both species of bat and implement the Bridge Bat BMP.
- Texas pigtoe has been located in Lake Creek and sandbank pocketbook has been located in West Fork San Jacinto River (Lake Creek feeds into this river) downstream from the project area. Since the details have not been ironed out for project design, is TxDOT willing to implement the Freshwater Mussel BMPs to minimize potential impacts to these species? TxDOT will implement the Freshwater Mussel BMPs.
- The BEF mentions following the standard recommendations listed in the BMP PA would be followed as guidance, and I appreciate that you will do this; however can you specifically identify which of these suggested BMPs you will incorporate into the EPICS? Some of the BMPs listed in that section do not necessarily apply to this project or the potential species or habitats in Montgomery County.

- Minimize the amount of vegetation cleared. Removal of native vegetation, particularly mature native trees and shrubs should be avoided to the greatest extent practicable. Wherever practicable, impacted vegetation should be replaced with in-kind on-site replacement/restoration of native vegetation.
- The use of any non-native vegetation in landscaping and revegetation is discouraged. Locally adapted native species should be used.
- Avoid vegetation clearing activities during the general bird nesting season, March through August, to minimize adverse impacts to birds.
- Once construction is complete and disturbed areas have been revegetated, remove silt fence and accumulated sediment to reduce wildlife barriers and hazards.
- When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing.

- Is TxDOT willing to implement the following recommendations?
  - For soil stabilization and/or revegetation of disturbed areas within the proposed project area, TPWD recommends that TxDOT utilize erosion and seed/mulch stabilization materials that avoid entanglement hazards to snakes and other wildlife species. The netting found in many erosion control blankets or mats poses an entanglement hazard to wildlife, particularly snakes; therefore TPWD recommends the use of hydromulching and/or hydroseeding to reduce entanglement risks to wildlife. If erosion control blankets or mats will be used during this project, TxDOT should utilize products that contain no netting or contain loosely woven, natural fiber netting in which the netting design allows the threads to move, therefore allowing expansion of the netting openings. Overall, plastic netting should be avoided. Recommendation noted.
  - For work around the detention pond (at Culverts 9 & 10) and if it regularly holds water, TPWD recommends the judicious use and placement of sediment control fence to exclude wildlife, particularly amphibians and turtles, from the construction area and away from areas of potential vehicle-wildlife collisions. In many cases, sediment control fence placement for the purposes of controlling erosion and protecting water quality can be minimally modified to also provide the benefit of excluding wildlife access to construction areas. The exclusion fence should be buried at least six inches and be at least 24 inches high or following TxDOT's sediment control fence installation specifications. The exclusion fence should be maintained for the life of the project and only removed after the construction is completed and the disturbed site has been re-vegetated. Construction personnel should be encouraged to examine the inside of the exclusion area daily to determine if any wildlife species have been trapped inside the area of impact and provide safe egress opportunities prior to initiation of construction activities. Recommendation noted.

Thanks for taking the time to review my questions!

Sincerely,

Laura Zebehazy, CWB
Transportation Conservation Coordinator
TPWD – Wildlife Habitat Assessment Program
Phone: (512)389-4638

From: Terri Dedhia [mailto:Terri.Leeson@txdot.gov]
Sent: Monday, May 18, 2015 11:57 AM
To: Laura Zebehazy
Subject: RE: Early Project Coordination - SH 105 W 0338-02-032 - Montgomery County

Laura,

Please find my responses below. Let me know if you need any further information.

Thanks,

Terri

Terri Dedhia
Environmental Coordinator/Lead Worker
TxDOT – Houston District

From: Laura Zebehazy [mailto:Laura.Zebehazy@tpwd.texas.gov]
Sent: Thursday, May 07, 2015 10:29 AM
To: Terri Dedhia
Subject: RE: Early Project Coordination - SH 105 W 0338-02-032 - Montgomery County

Good morning, Terri,

I am reviewing the SH 105 project in Montgomery County, and I have some questions:

- In the previous coordination materials, bridge replacements are mentioned; however in the most recent early coordination materials, there is no direct mention. The materials do state that NWP 14 w/out at PCN will cover impacts to three intermittent streams and two ephemeral streams. Will there be any bridge replacements or improvements? What are your plans specifically for the crossing over Lake Creek? Lake Creek is identified as an ecologically significant stream by TPWD. It is my understanding that TxDOT is not proposing to replace the bridges over Lake Creek and has made a concerted effort to save these bridges by using them in the proposed design. Unfortunately, the design is not far enough along to give specific details. I believe the consultant preparing the EA anticipated some impacts at all the stream crossings as a precaution.
- Where is the suitable habitat for the Rafinesque's big-eared bat within the project area? If the project does not let until August 2024, how and when will TxDOT survey large, hollow trees for maternity colonies per the Tree Bat BMPs? The potential suitable habitat for the big-eared bat exists along the study corridor in the form of concrete culverts and abandoned buildings. While potential habitat may exist, no visual observations were made during field visits and no confirmed sightings are noted in the NDD. If warranted, TxDOT has a consultant qualified to do such surveys before construction begins.
- Is there any suitable habitat for mussels within the project area? Or is it assumed that there is not any suitable habitat since waterways in the project area are either intermittent or ephemeral? The habitat was found to not suitable based on the fact that the waterways in the project area are intermittent or ephemeral. If warranted, TxDOT has consultants qualified to conduct surveys before construction begins.

Thanks for taking time to respond to my questions.

Sincerely,

Laura Zebehazy, CWB
Transportation Conservation Coordinator
TPWD – Wildlife Habitat Assessment Program
Phone: (512)389-4638

From: WHAB_TxDOT
Sent: Tuesday, April 14, 2015 4:33 PM
To: Terri Dedhia; WHAB_TxDOT
Cc: Laura Zebehazy
Subject: RE: Early Project Coordination - SH 105 W 0338-02-032 - Montgomery County

Good afternoon,

The TPWD Wildlife Habitat Assessment Program has received your request for Early Coordination and has assigned it project ID #34534. The Habitat Assessment Biologist who will complete your project review is copied on this email.

Thank you,
Gloria Garza
Administrative Assistant
Texas Parks and Wildlife Dept
Wildlife Division - Habitat Assessment Program
4200 Smith School Rd
Austin, TX 78744

Office: (512) 389-4571
Fax: (512) 389-4599

gloria.garza@tpwd.texas.gov

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From: Terri Dedhia [mailto:Terri.Leeson@txdot.gov]
Sent: Tuesday, April 14, 2015 2:48 PM
To: WHAB_TxDOT
Subject: Early Project Coordination - SH 105 W 0338-02-032 - Montgomery County

Afternoon,

I would like to request early coordination for SH 105 W in Montgomery County. TxDOT proposes to widen SH 105 (Mt Mariah Road to FM 149) from existing two lane divided to a four lane divided roadway. The project was previously coordinated in 2008 (attached); however due to the time lapse we felt it was important to re-coordinate. Please find attached the BEF and let me know if you need any further information.

Thank you,
Terri

Terri Dedhia
Environmental Coordinator/Lead Worker
TxDOT – Houston District

Talk. Text. Crash.

Talk. Text. Crash.

Talk. Text. Crash.

Talk. Text. Crash.

MEMORANDUM

Texas Department of Transportation

TO: 850 File, Various Road Projects, Various CSJs, Various Districts

FROM: Scott Pletka, Ph.D. **DATE:** December 27, 2007

SUBJECT: Internal review under the First Amended Programmatic Agreement Among the Federal Highway Administration, the Texas Department of Transportation, the Texas State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Implementation of Transportation Undertakings (PA-TU), and internal review under the Memorandum of Understanding (MOU) Between the Texas Historical Commission and the Texas Department of Transportation

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Attached are the lists of projects reviewed internally by qualified TxDOT archeologists from 12/21/2007 to 12/27/2007. These projects either do not warrant survey as a result of a low probability of encountering archeological historic properties and State Archeological Landmarks, or the projects were inspected by survey or impact evaluation and do not warrant further work. As provided under the PA-TU, project-specific consultation with SHPO is not necessary for these undertakings. As provided under the PA-TU, consultation with the Texas State Historic Preservation Officer is not necessary for these undertakings. As provided under the MOU, the proposed projects do not require individual coordination with the Texas Historical Commission.

Signature _____ Date December 27, 2007
For FHWA and TxDOT

Attachment

Cc: Project Management; PA File; Archeologists

ETS

ARCHEOLOGICAL COORDINATION

Projects that do not warrant Archeological Survey

(Section 106 and ANTIQUITIES CODE OF TEXAS)

From : 12/21/2007 To: 12/27/2007

COUNTY	DISTRICT	PROJECT	CSJ	*F30/T20 Concur, no further work	*F10/T10 Unable to Concur
Guadalupe	San Antonio	FM 464	0436-01-008		
Karnes	Corpus Christi	FM 81	0691-01-029		

Number of Projects: 2

Signature Scott Pe[illegible] Date December 27, 2007
For FHWA and TxDOT

Attachment

ETS

ARCHEOLOGICAL COORDINATION

Archeological Surveys, No Further Work Recommended

(Section 106 and ANTIQUITIES CODE OF TEXAS)

From : 12/21/2007 To: 12/27/2007

COUNTY	DISTRICT	PROJECT	CSJ	*F30/T20 Concur, no further work	*F10/T10 Unable to Concur
Kaufman	Dallas	FM 741	1092-01-015		
Montgomery	Houston	SH 105	0338-02-032		
Stephens	Brownwood	FM 576	0107-04-900		

Number of Projects: 3

Signature Scott Pearl Date December 27, 2007
For FHWA and TxDOT

Attachment

MEMORANDUM

Texas Department of Transportation

TO: Project Management 850 File

District: Houston
County: Montgomery County
CSJ #: 0338-02-032
Highway: SH 105
Project Limits: From Mt. Miriah Road to FM 149

Project Description: **Stipulation VI, Appendix 4: Widen 58' two-lane undivided facility to a maximum 116' four-lane divided facility, 22.52 acres new ROW, no easements, no adverse effects to historic properties**

FROM: Alexis A. Reynolds AR **DATE:** September 23, 2008

SUBJECT: Internal review under the Programmatic Agreement for Transportation Undertakings (PA-TU) among the Federal Highway Administration, Texas State Historic Preservation Officer (SHPO), Advisory Council on Historic Preservation, and the Texas Department of Transportation (TxDOT); and the Memorandum of Understanding (MOU) between the Texas Historical Commission and the Texas Department of Transportation

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INTRODUCTION

The Texas Department of Transportation (TxDOT), Houston District, proposes widening a 6.2 mile segment of the existing SH 105 roadway in Montgomery County, Texas. The current roadway varies from two 12' travel lanes with 10' shoulders to four 11' travel lanes with a 14' median. The project calls for widening the existing road to a maximum four 12-foot travel lanes with 10' outside shoulders, 4' inside shoulders, and 40' median. Two existing not eligible 1948 steel I-beam bridges would also be widened: Lake Creek Bridge (NBI# 121700033802079) and the overpass crossing the Burlington North Santa Fe (BNSF) Railroad (NBI# 121700033802083). The project would require **22.52 acres of new right-of-way**.

EFFORTS TO IDENTIFY HISTORIC PROPERTIES

Background research was conducted at the Texas Historical Commission (THC) to identify properties listed on the National Register of Historic Places (NRHP), State Archaeological Landmarks (SAL), and Recorded Texas Historic Landmarks (RTHL), as well as Official Texas Historical Markers (OTHM). The record search revealed no previously recorded NRHP properties or SALs located within the project APE, which for this project was determined to be the 150 feet from the existing and proposed right-of-way. Two RHTLs were identified at the eastern limit of the project in the town of Montgomery: the Nathaniel Hart Davis Cottage and the Davis Law Office. One OTHM for the Old Methodist Cemetery was also identified just west of the RTHLs on the north side of SH 105. There are two additional cemetery subject markers and one Centennial Marker in the APE located in the cemetery. See Historic Resources Survey Form for Resource #10 for marker locations.

A reconnaissance survey conducted in April 2007 revealed that there are *86 historic-age resources* (built prior to 1966) in the project APE including the two RTHLs noted above. TxDOT Historians have re-categorized several properties into different property types due to their current function. As a result, the historic-age resources include 27 domestic buildings, 17 commercial buildings, 17 agricultural outbuildings, seven industrial buildings, six domestic outbuildings, four museum buildings, two bridges, two culverts, one park, one school, one cemetery, and one Centennial Marker.

DETERMINATION OF NATIONAL REGISTER ELIGIBILITY

TxDOT Historians have evaluated these 86 properties through the Criteria of Eligibility and have concurred with the attached survey report that only the Nathaniel Hart Davis Complex (Resources #9a-9d), the Old Methodist Cemetery (Resource #10), and the William S. Taylor Centennial Marker are **eligible** for NRHP listing. The remaining resources are **not eligible** for the National Register, either individually or collectively. These resources do not have associations with significant historical figures or events to qualify for eligibility under Criteria A or B. They also represent common vernacular types that do not clearly reflect the distinctive characteristic of type, period, method of construction, work of a master, or high artistic value to qualify as eligible under Criterion C. Additionally, many of the properties evidence unsympathetic alterations that have compromised their integrity.

HISTORIC PROPERTIES IN APE

PROPERTY NO.	LOCATION	IDENTIFICATION SUBTYPE	INTEGRITY	NRHP ELIGIBLE
9a-9d	308 Liberty Street	Recreation and culture: museum	Relatively intact and unmodified	YES Criteria A, B, & C
10	Old Methodist Cemetery Bounded by SH 105, Cemetery and Pond Streets	Funerary: cemetery	Relatively intact and unmodified	YES Criterion A
10-3	Old Methodist Cemetery Centennial Marker	Recreation and culture: Centennial marker	Design, materials, workmanship, association and setting intact	YES Criterion A

Nathaniel Hart Davis Complex (Resource #9a-9d): Resources #9a-9d are eligible for NRHP-listing as a whole under Criteria A, B, and C. Resources #9a and 9b have RTHL-status and are individually eligible under Criteria A, B, and C, at the local level of significance. Built in 1851, Resource #9a is a one-and-a-half story wood-frame Greek Revival residence just south of Resource #9b, an 1845 one-story wood-frame Greek Revival law office/commercial building and a contributing feature to the property. Resources #9c and 9d (shed and outhouse, respectively) are also contributing features to the property, located to the east of the residence and law office and constructed c. 1920. As outlined in the attached survey report, Resources #9a and 9b have RTHL-status for their association with Nathaniel Hart Davis, the first mayor of the city of Montgomery, who also held the offices of county attorney, county commissioner, county chief justice, and later a judge for the Thirteenth Judicial District. Additionally, Resources #9a and 9b are among the earliest extant buildings from the settlement period of Montgomery and are only a few of the remaining Greek Revival buildings in Montgomery that also maintain high integrity of workmanship, materials, design, location, setting, feeling, and association. Finally, while Resources #9c and 9d were built c. 1920, seventy-five years after the construction of Resource #9b, the outbuildings are still historic-age and the Davis family owned and occupied the property until 1984 when the family donated the property to the Montgomery Historical Society.

Old Methodist Cemetery (Resource #10): The cemetery meets eligibility requirements under Criterion Consideration D: Cemeteries and is eligible to the National Register under Criterion A, at the local level of significance for its association with the settlement of the town of Montgomery. The town was founded in 1837 and the cemetery, dating to 1840, was the first official burial ground for the town. Among the early settlers buried in the cemetery is James Alexander McCowan, instrumental in developing the town of Montgomery and for which McCowan Street, a few blocks east of the cemetery, is named. The cemetery is not eligible under Criterion B because aside from McCowan, the other settlers buried in the cemetery were

not of transcendent importance in Montgomery, state, or national history. The cemetery is also not eligible under Criterion C as it does not exhibit any distinctive design or landscape features. The grave markers themselves possess no significant artistic or sculptural value.

The Reuben Jonathan Palmer and John M. Wade cemetery subject markers were erected by THC in 1972 and 1977, respectively. These two markers and the William S. Taylor Texas Centennial marker are scattered throughout the cemetery. The Old Methodist Cemetery OTHM is located on the southeast side of the cemetery, just outside of the fence.

William S. Taylor Texas Centennial Marker (Resource #10-3): This Texas Centennial Marker commemorates William S. Taylor who served in the Battle of San Jacinto and for which he received a headright (land grant) in Milam County. This granite marker was erected by the Texas Highway Department during a statewide campaign to commemorate historical issues in conjunction with the Texas Centennial celebrations of 1936. The centennial markers typically were not associated with specific locations, but served as points of interest for the traveling public. They were typically located adjacent to the roadway within the TxDOT ROW, although this example currently lies just inside the cemetery, facing SH 105. Despite this apparent loss of integrity of location, the object meets NRHP Criterion Consideration F for Commemorative Properties and is NRHP eligible under Criterion A: Recreation and Culture at the state level of significance.

ADDITIONAL DETERMINATIONS OF ELIGIBILITY

PROPERTY NO.	LOCATION	IDENTIFICATION SUBTYPE	INTEGRITY	NRHP ELIGIBLE
8	306 John A. Butler Street	Commerce: Specialty store	Moved from original location, altered fenestration, porch addition	NO
25a-d	24216 SH 105	Agriculture: farmstead	Non historic-age additions	NO
26a-c	24264 SH 105	Agriculture: farmstead	Replacement windows and siding	NO
31a-e	25344 SH 105	Agriculture: farmstead	Replacement doors, siding, windows	NO
32	Lake Creek & SH 105	Transportation: bridge	Widened in 1994	NO
33	BNSF Railroad & SH 105	Transportation: bridge	Widened in 1994	NO
49a-j	23249 SH 105	Industry: lumber mill	Moved from original location, non historic-age additions and resources	NO

Dobbin African American School (Resource #8)
Located east of the Nathaniel Hart Davis Complex, this resource is not eligible for NRHP-listing under Criteria A, B, or C. While it was originally associated with a small African American community in Montgomery, it was moved from its original location in the 1990s and now serves as a specialty gift store. As a result, it has lost its integrity of association, location, setting, and feeling. The building's integrity of materials, workmanship, and design have also been compromised due to the altered fenestration pattern and a non historic-age porch that has been added to the façade.

Resources #25a-d and 26a-c
These resources are elements of two farmsteads located approximately 2.5 miles to the west of Montgomery on the north side of SH 105. Current aerial maps show an interior driveway that crosses both parcels, indicating that these two farmsteads may have originally been one parcel. However, as evidenced by the separate addresses for each property, the farmsteads are currently two separate parcels. They are not eligible for NRHP-listing under Criteria A, B, or C, either individually or as a whole. Research did not yield an association with significant historical figures or events for either farmstead. Although Resource #25a-d appears to be a complete agricultural complex with a residence, associated outbuildings and fields, the residence (Resource #25a) was built in 1980 and thus is not historically associated with the farmstead and its outbuildings. Resource #25b is a c. 1950 front gable barn with shed wings, Resource #25c is a c. 1930 hipped barn with shed addition, and Resource #25d is a c. 1950 L-shaped flat roofed shed south of the other resources and fronting SH 105. The attached survey dates Resource #25c to c. 1950; however, the hipped roofline is indicative of an earlier period of construction. The outbuildings are historic-age but are common vernacular structures that do not rise to the level of significance necessary for NRHP-listing.

Resources #26a-c comprise another farmstead located southwest and adjacent to Resources #25a-d. Resource #26a is a c. 1910 two-story, L-plan residence. Both Resources #26b and 26c are side-gable minimal traditional storage outbuildings built c. 1940. Resource #26a has experienced alterations such as replacement windows and siding and porch modifications that have compromised its integrity of materials, workmanship, and design. Resources #26b and 26c retain much of their integrity but are common vernacular structures that do not rise to the level of significance necessary for NRHP-listing.

Resources #31a-e
These resources are located approximately 1 mile northeast of Dobbin on the north side of SH 105. Built c. 1960, Resource #31a is a ranch style residence and Resource #31b is a side gable utilitarian storage shed. Both are common vernacular structures that do not rise to the level of significance necessary for NRHP-listing. Resources #31c-e are secondary structures and agricultural outbuildings associated with the property. Resource #31c is a c. 1935 side gable building that most likely was a secondary residence on the property. It has undergone alterations that significantly impacted its integrity of workmanship and materials. While the original fixed and six-over-six double hung windows remain intact, the siding and doors have been replaced. Resources #31d and 31e are c. 1935 shed barns located north of the other resources. Resource #31d appears to retain its original materials and Resource #31e has some sections of replacement siding and roofing. Although they have not undergone extensive alterations, they are also common vernacular types that do not clearly reflect the distinctive characteristic of type, period, method of construction, work of a master, or high artistic value. Therefore, Resources #31a-e are not eligible for NRHP-listing.

Resource #49a-j
Resources #49a-j are associated with the Giles Lumber Company, located 1.70 miles west of Montgomery on the south side of SH 105. The resources are not eligible for the National Register under Criteria A, B, or C. The property is not eligible under Criterion A because while it was a fully operational sawmill from 1954-1960, these dates are outside of the period of significance for the lumber industry in the town of Montgomery and Montgomery County. As outlined in the attached survey report, the lumber industry was a key economic venture in Montgomery County from the late 1800s to the 1920s. It went into decline for the next seventy years but has since become a key industry again due to reforestation efforts during the period of decline. The Giles Lumber Company neither set new precedents in the lumber industry nor was the crux of the community's economy. The property is also not eligible under Criterion B as research did not yield associations with significant historical figures.

Finally, the property is also not eligible under Criterion C due to compromised integrity of setting, feeling, location, association, workmanship, design, and materials. Three of the storage buildings were built in the 1990s and are not historic-age (Resources #49h, i, and j). Six resources were moved to the property in the 1950s from an unknown site (Resources #49b-g). One of the moved structures, Resource #49b, is a silo

dating to the 1920s. The Giles Lumber Company still conducts small-scale lumber operations but the silo is no longer operational. Some sections of the metal siding have also been replaced. The remaining resource that is historic-age and was built on-site and not moved to the property is the company office (Resource #49a). Built c. 1950, the office is a one-story minimal traditional building. It does not rise to the level of significance necessary for NRHP-listing as it does not clearly reflect the distinctive characteristic of type, period, method of construction, work of a master, or high artistic value. Therefore, Resources #49a-j are not eligible for the National Register under Criteria A, B, or C.

Bridges
In compliance with Section 110 of the National Historic Preservation Act and the Memorandum of Understanding between TxDOT and the Texas Historical Commission, TxDOT historians evaluated the Lake Creek and BNSF 1948 steel I-beam bridges to establish their historical significance (Resources #32 and 33). In accordance with the registration evaluation criteria established by THC and TxDOT for the 1999 Non-Truss Bridge Inventory, these bridges were determined not eligible for the National Register. The bridges were found to exhibit a loss of engineering integrity due to substantial widening in 1994. The bridges therefore, do not possess sufficient design or engineering significance to meet National Register eligibility under Criterion C: Engineering at the state level of significance. Because the proposed project would only widen the bridges and not replace them, consultation with the Montgomery County Historical Commission is not necessary.

Historic District/Rural Historic Landscape
Finally, TxDOT Historians determined that there is no historic district or rural historic landscape present in the project area. As the attached survey notes, with the exception of the Davis Complex and the Old Methodist Cemetery, the surveyed historic-age resources in the town of Montgomery have either been moved to their current locations, have experienced extensive alterations to their architectural fabric, or do not rise to a level of significance necessary for NRHP-listing as a historic district. Current aerial images also show vacant lots and modern infill in almost every block and four planned communities are currently slated for the area north and east of Montgomery. Like in Montgomery, the buildings in Dobbin have been altered, are scattered throughout the community and lack architectural cohesiveness, and do not rise to a level of significance necessary for NRHP-listing.

Additionally, no rural historic landscape is present in the project area because the landscape no longer conveys a sense of time or place. As outlined in the NRHP Bulletin *Guidelines for Evaluating and Documenting Rural Historic Landscapes*, while properties will experience evolution and change over time, "recent changes that have erased historic characteristics, and do not have exceptional importance, make a property ineligible, even if scenic qualities are still present" (p. 2). Modern infill including mobile homes, outbuildings, and main farmstead residences are prevalent along SH 105 as evidenced by Resources #25a, 28b, 34g-p, 37b, and 49h-j, among others. On the east end of the project limit, the modern Montgomery school complex to the north and south of SH 105 has compromised the scenic quality. Although the land use patterns have remained primarily agricultural, the remaining farmsteads are not identifiable with the cotton industry, historically the major agricultural production in the area. The lumber industry is also only evident in Resources #49a-j but this sawmill was constructed and operational after the period of significance for lumber production. The railroad is also significant to the area's history and runs north from Bobville, then parallel to SH 105 on the south side, and turns south on the western edge of Montgomery. However, none of the surveyed resources are linked to it.

Consequently, no historic district or rural historic landscape is present as the landscape no longer conveys a sense of time and place.

DETERMINATION OF EFFECTS

In accordance with CFR 800.5, TxDOT Historians applied the *Criteria of Adverse Effect* and determined that the proposed project poses no adverse effect to historic properties in the APE. The Centennial Marker will

not need to be relocated or moved and no new ROW is required from the cemetery or the Nathaniel Hart Davis Complex. Therefore no direct effect would occur. The logical termini for the projects ends at FM 149 but no construction would occur at this location. All construction ends before all historic properties. Therefore, the distance between the cemetery, Centennial Marker, Davis Complex, and the roadway would remain the same. The widening at the project end to the west of the historic properties is less than doubling and is not adding capacity. Just east of the historic properties at the intersection of Louisa Street and SH 105, the predicted noise level does not substantially exceed the existing level and thus no noise impact would occur. The predicted noise level would only increase two decibels and that level is still three decibels below the maximum criteria. None of the markers at the cemetery, including the OTHM and Centennial Marker, would need to be moved or relocated for the project. The expanded highway therefore would not pose indirect or cumulative adverse effects to the historic properties.

CONCLUSION

Pursuant to Stipulation VI "Undertakings with Potential to Cause Effects" of the PA-TU, TxDOT Historians determined that the proposed project would have no adverse effects to historic properties.

Approved by _____ for TxDOT 9.24.08
Bruce Jensen Date

Lead Reviewer MRS for TxDOT 9/23/08
Initials Only Date

cc: District: Houston Attn: Terri Leeson
THC: Adrienne Campbell
ENV/CRM: Warren Grannis
Reading File

From: Rebekah Dobrasko
To: Sonya Hernandez
Cc: Juan Valera-Lema
Subject: RE: CSJ 0338-02-032_SH 105
Date: Monday, June 01, 2015 10:56:29 AM

I've looked at this project in ECOS, and our original clearance in 2008 is still valid. No recoordination is necessary, but I recommended in my comments that the EA consultant reflect the updated historic-age date and that there are no significant properties from that date in the APE. I put the clearance date on the Project Summary page as the 2008 clearance date.

Rebekah

From: Terri Dedhia
Sent: Friday, May 29, 2015 8:54 AM
To: Sonya Hernandez
Cc: Juan Valera-Lema
Subject: RE: CSJ 0338-02-032_SH 105

Sonya,

I apologize for the delay, it's been crazy here. Please see my responses below.

Terri Dedhia
Environmental Coordinator/Lead Worker
TxDOT – Houston District

From: Sonya Hernandez
Sent: Thursday, May 21, 2015 10:11 AM
To: Terri Dedhia
Cc: Juan Valera-Lema
Subject: Fw: CSJ 0338-02-032_SH 105

Hi Terri,
Can you answer Rebekah's questions?
Thanks,
Sonya

From: Rebekah Dobrasko
Sent: Wednesday, May 20, 2015 3:35:25 PM
To: Sonya Hernandez
Cc: Juan Valera-Lema
Subject: RE: CSJ 0338-02-032_SH 105

Hi Sonya and Juan,

Can you answer the following questions for me, please?

1. Is there any additional ROW added to the project since we reviewed it in 2008? Yes, additional ROW has been added.
2. Are the additions of sidewalks the only design changes? Depending on where they are located, that may affect our coordination. Detention ponds have been added as well. I have attached an exhibit showing the location of the proposed detention ponds. (blue squares on PLOT1)
3. No final decision was made on this, right? This is not a reevaluation? No decision has been made previously. This is still an ongoing EA.

I think that the existing survey takes us through 1966, so I will need to look at the project area to update it to our new historic-age date (which I guess is 1979 based on the 2024 letting date in ECOS) and I want to know if we need to extend the APE out further, too.

Thanks,

Rebekah

From: Sonya Hernandez
Sent: Friday, May 15, 2015 11:04 AM
To: Tim Wood; Nicolle Kord; wproctor@bergoliver.com; Rebekah Dobrasko; Jason Barrett; Mario Mata Jr; Mark Norman
Cc: Jackie Ploch; Juan Valera-Lema
Subject: CSJ 0338-02-032_SH 105

Hi All,
The Houston District has reinitiated work on one of their old EAs – SH 105. Since this EA was developed prior to the legislative rules that require a scope (April 2012) those rules don't apply to this project; therefore, there is no project scope in ECOS. Similarly, there will also not be an administrative completeness review.

I believe the District staff has done a preliminary review of the document recently (end of 2014). Juan and I agreed that ENV would do this review with them. Since so much time has passed since ENV has seen a copy, we would like for you to review the document as well and let us know if you think anything needs to be updated to current standards or to follow our current guidance. All of the documents currently in ECOS are the most recent updated reports we have. The EA document is a PDF titled 0338-02-032_DraftEA_March2015_ECOS.pdf.

I believe the project now includes sidewalks through the urban areas of the project, which were not part of the design before. I'm not sure if that affects the coordination that was done previously. We may need to do some comparison to be sure.

Juan and I are co-managing this project. Please let us both know if you have any questions.
Thanks!
Sonya

Sonya Hernandez, P.G.
Project Delivery Manager
Environmental Affairs Division
Texas Department of Transportation

512-416-2579
Sonya.Hernandez@txdot.gov

Sue T.

TONKAWA TRIBE OF OKLAHOMA
NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT
• 1 RUSH BUFFALO ROAD, TONKAWA, OKLAHOMA 74653 •
• PHONE (580) 628-2561 • FAX: (580) 628-9903 •
WEB SITE: www.tonkawatribe.com

Texas Department of Transportation
Dewitt C. Greer State Highway Bldg.
125 E. 11th Street
Austin Texas 78701-2483

Tx DOT RECEIVED
MAY 8 - 2008
5/8/08
HOUSTON MAIL OPERATIONS

Date: April 24, 2008

Regarding the proposed construction projects listed we submit the following:

Project No. CSJ: 0338-02-032 (HOU)
Project No. CSJ: 3510-07-003 (HOU)
Project No. CSJ: 0913-27-046 (YKM)
Project No. CSJ: 0643-02-020 (WAC)
Project No. CSJ: 0914-04-248 (AUS)
Project No. CSJ: 2964-06-009 (DAL)
Project No. CSJ: 2964-06-010 (DAL)
Project No. CSJ: 2964-06-017 (DAL)
Project No. CSJ: 2964-06-018 (DAL)
Project No. CSJ: 0009-11-210 (DAL)
Project No. CSJ: 3510-04-030 (HOU)
Project No. CSJ: 0914-05-134 (AUS)
Project No. CSJ: 0912-31-195 (HOU)
Project No. CSJ: 0252-02-046 (AUS)
Project No. CSJ: 0619-06-007 (DAL)
Project No. CSJ: 1012-03-013 (DAL)
Project No. CSJ: 0643-01-043 (BRY)
Project No. CSJ:0914-05-136 (AUS)

The Tonkawa Tribe has no specifically designated historical or cultural sites identified in any of the above listed project areas. However if any human remains, funerary objects, or other evidence of historical or cultural significance is inadvertently discovered then the Tonkawa Tribe would certainly be interested in proper disposition thereof.

We appreciate notification by your office of the many projects on-going, and as always the Tonkawa Tribe is willing to work with your representatives in any manner to uphold the provisions of NAGPRA to the extent of our capability.

Respectfully,

NAGPRA Representative

SCANNED ON
5/8/08
MAY 8 - 2008
MAIL OPERATIONS HOUSTON

TXDOT-ENV
MAY 0 2008

Concurrence: Tonkawa Tribe Business Committee

DPD

Distribution for Tribal Response Letter Received May 2, 2008
From Tonkawa Tribe of Oklahoma
For Multiple Projects Located in Six Districts

DISTRIBUTION:
Barbara Maley, FHWA Env Coord
Mike Walker, Env Coord, Austin District
John Moravec, Env Coord, Bryan District
Dan Perge, Env Coord, Dallas District
Sue Theiss, Env Coord, Houston District
Mike Rhodes, Env Coord, Waco District
Bryan Ellis, Env Coord, Yoakum District
Julia Ragsdale, ENV-PM, Austin District
Bryan Phillips, ENV-PM, Bryan and Houston District
Margaret Canty, ENV-PM, Dallas District
Juan Valera-Lema, ENV-PM, Waco District
Sonya Hernandez, ENV-PM, Yoakum District
Jon Budd, ENV-ARCH, Austin District
Jason Barrett, ENV-ARCH, Bryan District
Barbara Hickman, ENV-ARCH, Dallas District
Allen Bettis, ENV-ARCH, Houston and Yoakum District
John Arnn, ENV-ARCH, Waco District
ENV-ARCH Project Files
ETS Scans

From: Sonya Hernandez
To: NEPA@tceq.texas.gov
Cc: Terri Dedhia
Subject: Montgomery County, CSJ: 0338-02-032, SH 105, Houston District - TCEQ Coordination
Date: Thursday, October 06, 2016 9:49:09 AM

To Whom It May Concern:

TxDOT requests the TCEQ evaluate the SH 105 project per 43 TAC 2.305. The proposed project would be a 6.2 mile widening from a two-lane, undivided highway to a four-lane, divided highway with outside shoulders and open ditches.
We are requesting this TCEQ review since the project meets MOU triggers related to air quality.

An electronic version of the Environmental Assessment will be transmitted to your office using our FTP system (Dropbox). Please let me know if you have any questions.

Thank you,

Sonya Y. Hernandez, P.G.
Project Delivery Manager
Environmental Affairs Division
Texas Department of Transportation

512-416-2579
Sonya.Hernandez@txdot.gov

From:	NEPA
To:	Sonya Hernandez; NEPA
Cc:	Terri Dedhia
Subject:	RE: Montgomery County, CSJ: 0338-02-032, SH 105, Houston District - TCEQ Coordination
Date:	Monday, October 24, 2016 11:22:18 AM
Attachments:	NEPA Response 15-43.docx

Ms. Hernandez,

Attached is the response to your request

Thank you,

Chikaodi Agumadu
NEPA Coordinator
Texas Commission on Environmental Quality Intergovernmental Relations
12100 Park 35 Circle Bldg. F | Mail Code 119 | Austin, TX 78753
(512) 239-1267

From: Sonya Hernandez [mailto:Sonya.Hernandez@txdot.gov]
Sent: Thursday, October 06, 2016 9:49 AM
To: NEPA <NEPA@tceq.texas.gov>
Cc: Terri Dedhia <Terri.Leeson@txdot.gov>
Subject: Montgomery County, CSJ: 0338-02-032, SH 105, Houston District - TCEQ Coordination

To Whom It May Concern:

TxDOT requests the TCEQ evaluate the SH 105 project per 43 TAC 2.305. The proposed project would be a 6.2 mile widening from a two-lane, undivided highway to a four-lane, divided highway with outside shoulders and open ditches.
We are requesting this TCEQ review since the project meets MOU triggers related to air quality.

An electronic version of the Environmental Assessment will be transmitted to your office using our FTP system (Dropbox). Please let me know if you have any questions.

Thank you,

Sonya Y. Hernandez, P.G.
Project Delivery Manager
Environmental Affairs Division
Texas Department of Transportation

512-416-2579
Sonya.Hernandez@txdot.gov

Re: Response to Request for TCEQ Environmental Review

The Texas Commission on Environmental Quality (TCEQ) received a request from the Texas Department of Transportation (TxDOT) regarding the following project: Montgomery County, CSJ: 0338-02-032, SH 105, Houston District

In accordance with the Memorandum of Understanding between TxDOT and TCEQ addressing environmental reviews, which is codified in Chapter 43, Subchapter I of the Texas Administrative Code (TAC) and 30 TAC § 7.119, TCEQ is responding to your request for review by providing the below comments.

This project is in an area of Texas classified by the United States Environmental Protection Agency as marginal nonattainment for the 2008 ozone National Ambient Air Quality Standard. Air Quality staff has reviewed the document in accordance with transportation and general conformity regulations codified in 40 Code of Federal Regulations Part 93 Subparts A and B. We concur with TxDOT's assessment.

The Office of Water has no comment on this project.

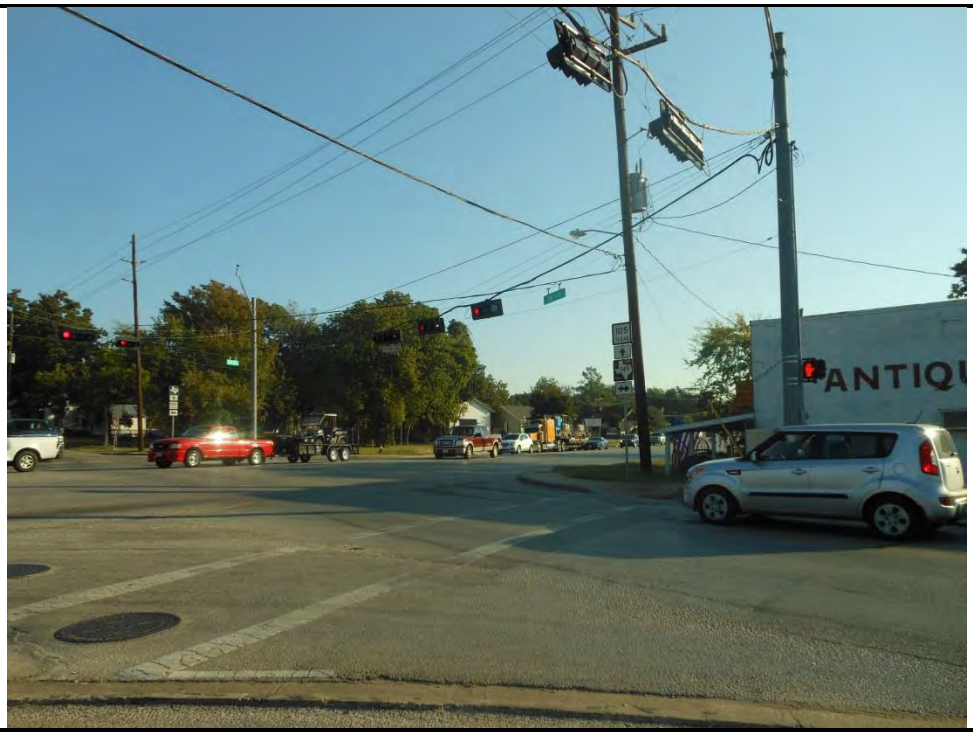
TxDOT will still need to follow all other applicable laws related to this project, including applying for applicable permits.

If you have any questions, please feel free to contact the NEPA Coordinator at (512) 239-3500 or NEPA@tceq.texas.gov.

Chikaodi Agumadu
NEPA Coordinator
TCEQ, MC-119
NEPA@tceq.texas.gov
512-239-3500

Appendix C: Project Photographs

Appendix B: Project Photographs



View of Project Start at the intersection of SH 105 and FM 149.

View of commercial development within the City of Montgomery.

View west along SH 105 near project start.

View south towards Montgomery High Schools.

Typical view west of woody fencerow vegetation along SH 105.

View of typical vegetation within existing and proposed ROW.

View of ROW south along SH 105.

Typical view of ROW facing southwest near the center of the proposed project.

View east along SH 105 in the town of Dobbin.

View of typical ROW west along SH 105.

View east of Lake Creek Tributary 1 from south side of SH 105.

View south of Lake Creek Tributary 1A.

View northeast of Lake Creek floodplain beneath SH 105 bridge.

View south of Lake Creek.

View north of Unnamed Tributary from the north side of SH 105.

View south of Town Creek Tributary 2 sough of SH 105.

View of new gas station on the north side of SH 105 at its intersection of Mr. Mariah Road.

View of former gas station, located north of SH 105 approximately 0.17 miles northeast of Old Dobbin Road.

View of Stowe's Collision Repair, located on the south side of the SH 105 just outside of the City of Montgomery.

Appendix D: Farmland Conversion Impact Rating Form

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request 11/11/14	4. Sheet 1 of 2
1. Name of Project SH 105	5. Federal Agency Involved TxDOT/FHWA	
2. Type of Project SH 105 Roadway Expansion	6. County and State Montgomery County	
PART II *(To be completed by NRCS)*	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 ☐ NO ☐		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

PART III *(To be completed by Federal Agency)*		Alternative Corridor For Segment			
		Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly		23.37			
B. Total Acres To Be Converted Indirectly, Or To Receive Services					
C. Total Acres In Corridor		23.37			
PART IV *(To be completed by NRCS) Land Evaluation Information*					
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)*					
PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))*	Maximum Points				
1. Area in Nonurban Use	15	11			
2. Perimeter in Nonurban Use	10	7			
3. Percent Of Corridor Being Farmed	20	0			
4. Protection Provided By State And Local Government	20	0			
5. Size of Present Farm Unit Compared To Average	10	1			
6. Creation Of Nonfarmable Farmland	25	0			
7. Availablility Of Farm Support Services	5	4			
8. On-Farm Investments	20	10			
9. Effects Of Conversion On Farm Support Services	25	0			
10. Compatibility With Existing Agricultural Use	10	9			
TOTAL CORRIDOR ASSESSMENT POINTS	160				
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100				
Total Corridor Assessment (From Part VI above or a local site assessment)	160				
TOTAL POINTS *(Total of above 2 lines)*	260				

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used?
Corridor A	42	11/11/14	YES ☐ NO ☑

5. Reason For Selection:

Note: Corridor A is the Build Alternative Alignment

Signature of Person Completing this Part: | DATE

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

Clear Form

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

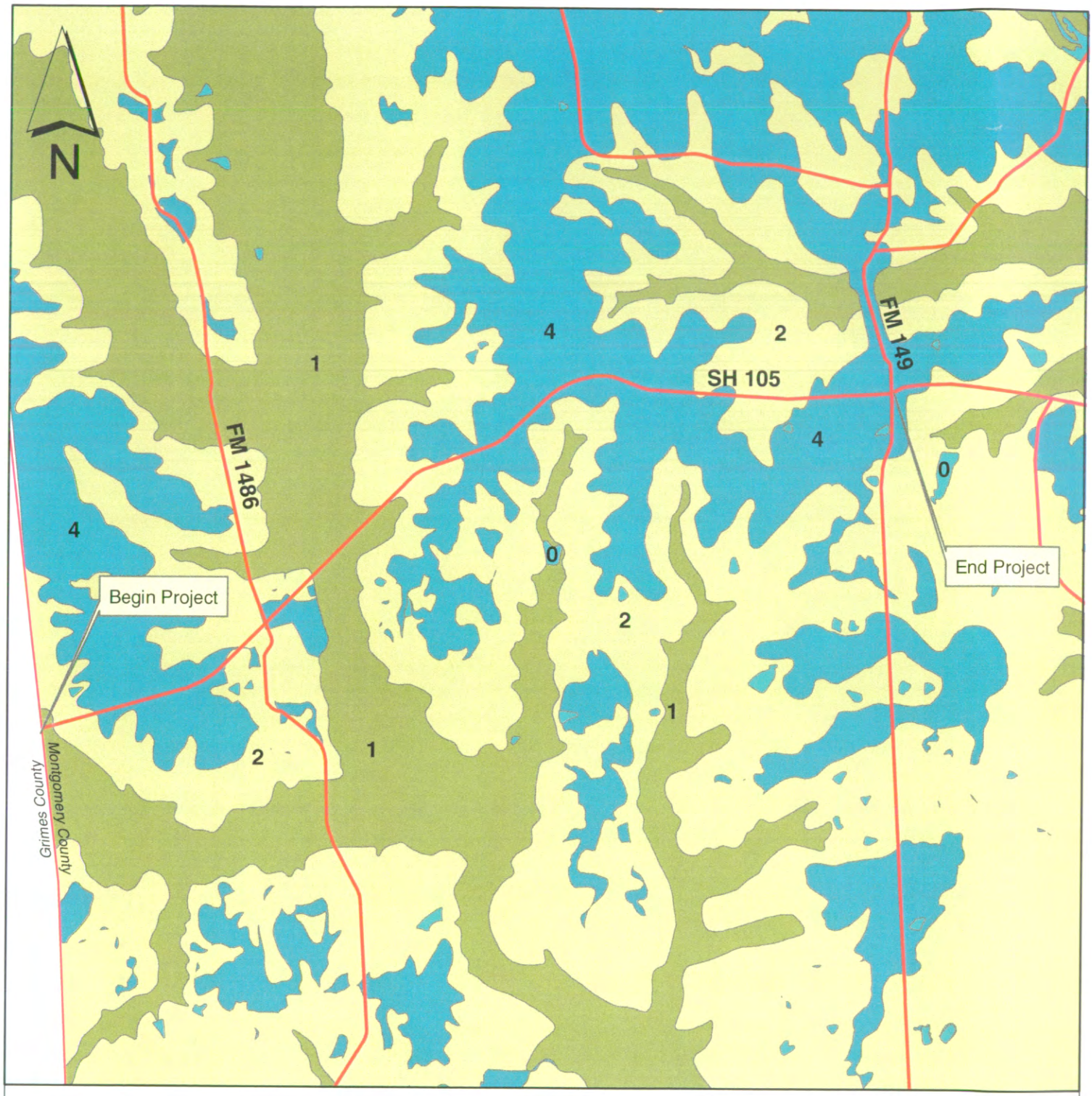
(7) Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?
All required services are available - 5 points
Some required services are available - 4 to 1 point(s)
No required services 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

Appendix E: PALM



Miles

0 1 2 4

Potential Archeological Liability Map

- 0 = Water; No survey recommended
- 1 = Surface survey recommended; deep reconnaissance recommended if deep impacts are anticipated
- 2 = Surface survey recommended; no deep reconnaissance recommended
- 2a = Surface survey of mounds only; no deep reconnaissance recommended
- 3 = No surface survey recommended; deep reconnaissance recommended if deep impacts are anticipated
- 3a = No surface survey recommended; deep reconnaissance recommended only if severe deep impacts are anticipated
- 4 = No survey recommended

USGS Topography Quad
Montgomery #3095-243
Dacus #3095-234
Plantersville #3095-231

SH 105
Grimes C/L to FM 149
Montgomery County
CSJ 0338-02-032
August 2004

Appendix F: Indirect and Cumulative Risk Analysis

Risk Assessment for Indirect Impacts

Project Name: SH 105 Roadway Expansion

CSJ Number: 0338-02-032

County: Montgomery

District: Houston

Requirement: Indirect Impacts Analysis

1. Does the Purpose and Need include economic development, or is the project proposed to serve a specific development?

☐ **Yes** — If **Yes**, Indirect impacts analysis is required. Include Indirect Impacts Analysis task on project scope*. No further assessment for indirect impacts is required.

☒ **No** — If **No**, proceed to the next question.

☐ **Unknown** — If **Unknown**, include the following outstanding task in the scoping document:
Determine if project Need and Purpose relates to economic development.
Update Risk Assessment when known.

2. Are economic development or new opportunities for growth/development cited as benefits of the project?

☐ **Yes** — If **Yes**, Indirect impacts analysis is required. Include Indirect Impacts Analysis task on project scope*. No further assessment for indirect impacts is required.

☒ **No** — If **No**, proceed to the next question.

☐ **Unknown** — If **Unknown**, include the following outstanding task in the scoping document:
Determine if economic growth is described as a benefit of the project.
Update Risk Assessment when known.

3. Is land in the project area available for development and/or redevelopment?

☒ **Yes** — If **Yes**, proceed to the next question.

☐ **No** — If **No**, no indirect impacts analysis is required, and no further risk assessment is needed.

☐ **Unknown** — If **Unknown**, include the following outstanding task in the scoping document:
Determine if land in the project area is available for development and/or redevelopment.
Update Risk Assessment when known.

4. Does the project add capacity?

☒ **Yes** If **Yes**, proceed to the next question.

☐ **No** If **No**, skip to Question 6.

☐ **Unknown** If **Unknown**, include the following outstanding task in the scoping document:
Determine if project will add capacity.
Update Risk Assessment when known.

5. Is the project located in a rural area outside of the MPO boundary?

☐ **Yes** If **Yes**, no indirect impacts analysis is required, and no further risk assessment is needed.

☒ **No** If **No**, proceed to the next question.

☐ **Unknown** If **Unknown**, include the following outstanding task in the scoping document:
Determine if project is located in a rural area outside of the MPO boundary.
Update Risk Assessment when known.

6. Does the project substantially increase access or mobility in the project area?

☐ **Yes** If **Yes**, proceed to the next question.

☒ **No** If **No**, no indirect impacts analysis is required, and no further risk assessment is needed.

☐ **Unknown** If **Unknown,** include the following outstanding task in the scoping document:
Determine if project will substantially increase access or mobility.
Update Risk Assessment when known.

7. Is the project area experiencing population and/or economic growth?

☐ **Yes** If **Yes**, indirect impacts analysis is required. Include Indirect Impacts Analysis task on project scope*.

☐ **No** If **No**, no indirect impacts analysis is required, and no further risk assessment is needed.

☐ **Unknown** If **Unknown**, include the following outstanding task in the scoping document:
Determine if project area is experiencing population/economic growth.
Update Risk Assessment when known.

* *For planning purposes, include Cumulative Impacts Analysis in the project scope when Indirect Impacts Analysis is required. In general, the final determination regarding whether Cumulative Impacts Analysis is necessary will occur when other technical studies are complete.*

The following table shows the revision history for this document.

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

1. No, the need and purpose of the proposed project does not include economic development, nor is the proposed project intended to serve a specific development.
2. No, Economic development or new opportunities for growth/development is not cited as a benefit for the proposed project.
3. Yes, there is land available for development and/or redevelopment within the project area. There are currently no documented plans for development either residential or commercial within the project area.
4. Yes, the proposed project would increase capacity by expanding the roadway from a 2 lane facility to a 4 lane facility.
5. No, the project is located within the MPO boundary.
6. No, while the proposed project would add capacity to the existing facility, it would not provide new access to previously inaccessible parcels of land.

Risk Assessment for Cumulative Impacts

Project Name: SH 105 Roadway Expansion

CSJ Number: 0338-02-032

County: Montgomery

District: Houston

Requirement: Cumulative Impacts Analysis

1. Will the project have substantial direct or indirect impacts on any resource?

☐ **Yes** If **Yes**, cumulative impacts analysis is required. Include Cumulative Impacts Analysis task on project scope*. No further assessment for indirect impacts is required.

☒ **No** If **No**, proceed to the next question.

2. Are any resources in the project area in poor or declining health?

☒ **Yes** If **Yes**, proceed to next question.

☐ **No** If **No**, no cumulative impacts analysis is required. No further assessment for cumulative impacts required.

3. Will the project have any impact on a resource that is in poor or declining health?

☐ **Yes** If **Yes**, cumulative impacts analysis is required. Include Cumulative Impacts Analysis task on project scope*.

☒ **No** If **No**, no cumulative impacts analysis is required, and no further risk assessment is needed.

* For planning purposes, include Cumulative Impacts Analysis in the project scope when Indirect Impacts Analysis is required. In general, the final determination regarding whether Cumulative Impacts Analysis is necessary will occur when other technical studies are complete.

1. It is not anticipated that the proposed project would have any substantial direct or indirect impacts on any resource.
2. Yes. Habitat for two for two SGCNs (the plains spotted skunk and the Southeastern myotis bat) and two state-listed threatened species (the Rafinesque's big-eared bat and the wood stork) is located within the ROW for the proposed project.
3. No. The proposed project is not expected to have a direct impact to critical habitat for the above listed species. There are no adverse impacts to wildlife resources or either habitat expected.

The following table shows the revision history for this document.

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