

**ENVIRONMENTAL ASSESSMENT**

# **GREENS ROAD**

*from Aldine-Westfield Road to John F. Kennedy Boulevard  
Harris County, Texas*

*CSJ: 0912-71-739 and 0912-72-158*

**U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION**

**TEXAS DEPARTMENT OF TRANSPORTATION**

**CITY OF HOUSTON**

**MARCH 2013**

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# ENVIRONMENTAL ASSESSMENT

## GREENS ROAD

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*Harris County, Texas*  
*CSJ: 0912-71-739 and 0912-72-158*

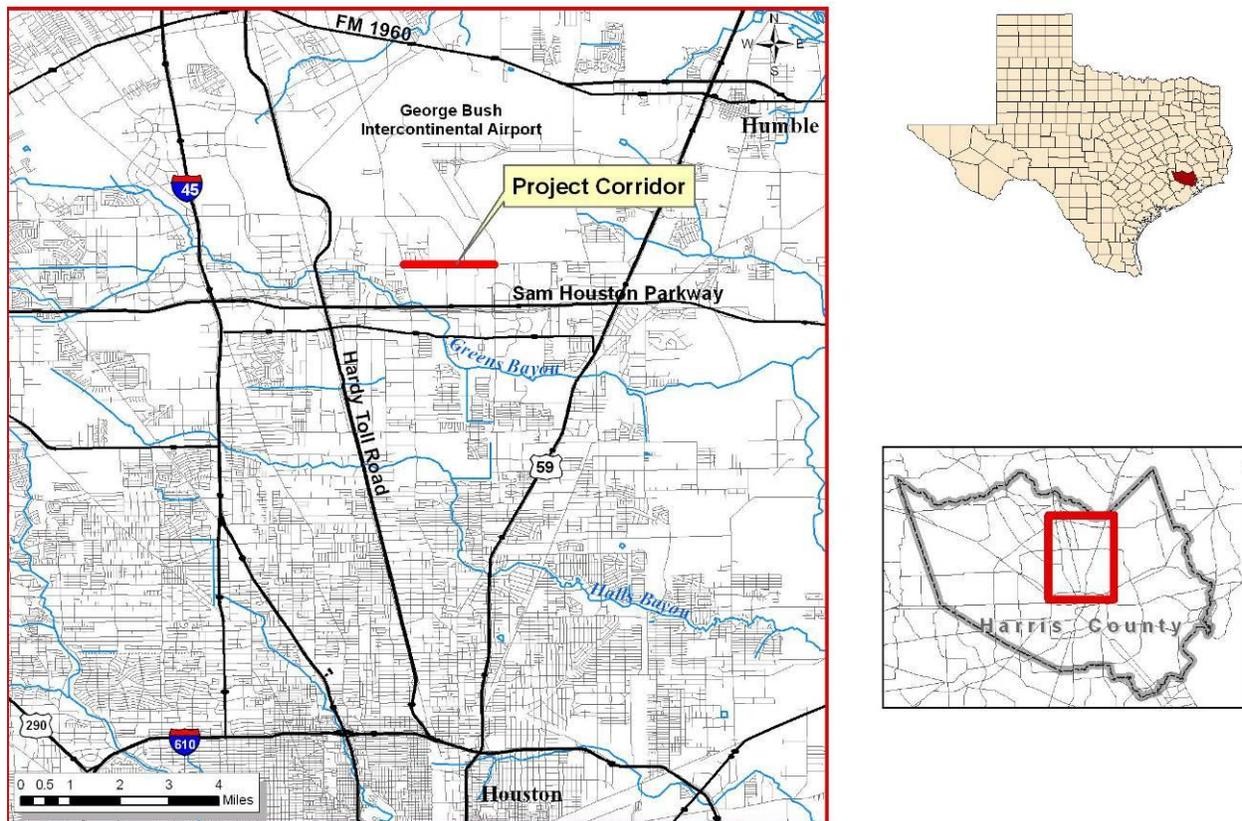
### Chapter 1: Need and Purpose for the Project

#### A. Introduction

The City of Houston and the Texas Department of Transportation (TxDOT) propose to widen Greens Road from Aldine–Westfield Road to John F. Kennedy Boulevard in Houston, Harris County, Texas. The proposed project would widen 1.6 miles of Greens Road from a 2-lane undivided roadway to a four-lane divided roadway with sidewalks on both sides, a raised median and curb and gutter drainage. Figure 1 shows the project vicinity and Figure 2 is a topographic map showing the area near the project corridor.

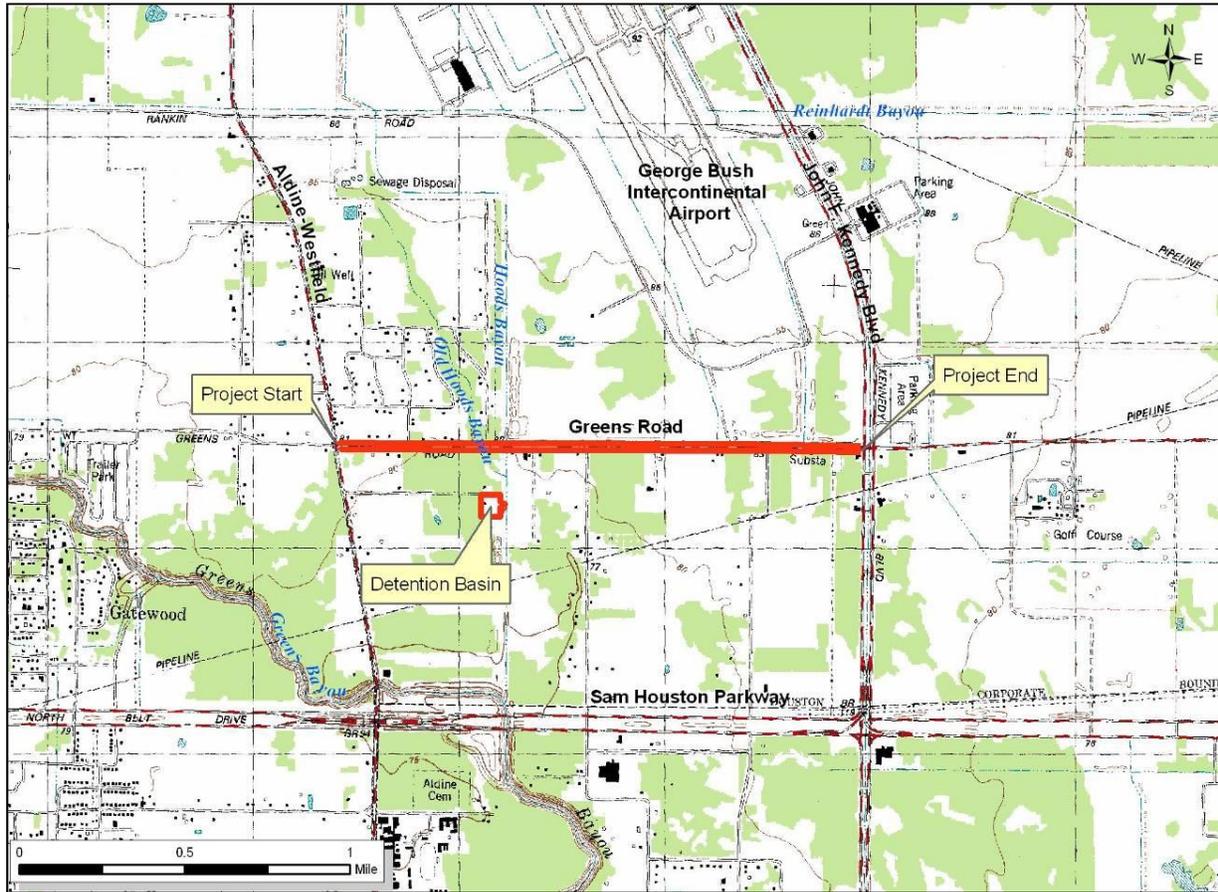
The proposed project is consistent with and included in the *2013-2016 Transportation Improvement Program*<sup>1</sup> (TIP) and the *2035 Regional Transportation Plan Update*<sup>2</sup> by the Houston-Galveston Area Council (Appendix A). All projects in the H-GAC TIP that are proposed for federal or state funds are initiated in a manner consistent with the federal guidelines in Section 405 of Title 23 and Section 613.200 of Subpart B, Title 49 of the *Code of Federal Regulations*. Ener-

**Figure 1: Vicinity Map of Project Corridor**



Source: ESRI

**Figure 2: Topographic Map of Project Area**



Source: U.S. Geological Survey, Humble Quadrangle

gy, environment, air quality, cost and mobility are considered in the TIP.

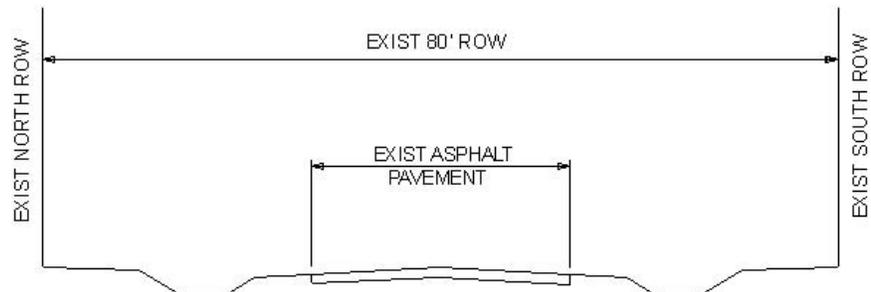
**B. Proposed Cost and Schedule**

The estimated cost of the proposed project is \$19.2 million. The proposed project is funded under Category 3, Non-Traditional Funded Transportation Projects. It is scheduled to be let for construction in 2015 and would be completed in 2017. The Federal Highway Administration of the U.S. Department of Transportation would fund 80 percent of the project cost through TxDOT, and the City of Houston would fund the remaining 20 percent. Project design would be under TxDOT CSJ 0912-71-739, and project construction would be under CSJ 0912-72-158.

**C. Existing Design**

Greens Road is a 2-lane undivided roadway, with parallel roadside ditches and 6-foot-wide unpaved shoulders within an 80-foot-wide right-of-way. Figure 3 shows a typical

**Figure 3: Typical Cross-Section View of Existing Roadway**



cross-section of the existing roadway.

Greens Road currently does not have sidewalks. Although demand for pedestrian use of Greens Road does not appear to be strong, the current roadway does not provide access to pedestrians.

**D. Traffic and Accident Data**

Traffic volume on Greens Road between Aldine-Westfield Road and John F. Kennedy Boulevard is expected to increase 150 percent by 2029, from 14,650 vehicles per day in 2009 to 36,450 vehicles per day.<sup>3</sup> Traffic engineers categorize congestion by Level of Service, where Level of Service A is free-flowing traffic and Level of Service F is very congested with stop-and-go traffic conditions. Greens Road is a Class II arterial roadway, which is a road longer than 2,000 feet with speed limit from 30 to 35 miles per hour. The *Highway Capacity Manual*<sup>4</sup> sets level of service by average travel speed (Table 1). As congestion increases, average travel speed decreases. Currently, Greens Road is at Level of Service B during peak traffic times, but it would be at Level of Service E in 2029 if the roadway remains as it is today (Table 2).

**Table 1: Levels of Service**

<i>Level of Service</i>	<i>Minimum Average Travel Speed (mph)</i>
A	30
B	24
C	18
D	14
E	10
F	0

The Houston–Galveston Area Council analyzed crash data provided by the Accident Records Bureau of the Texas

Source: Transportation Research Board

**Table 2: Current and Forecast Level of Service on Greens Road**

<i>Peak Hour</i>	<i>2009 Conditions</i>		<i>2029 Without Project</i>		<i>2029 With Project</i>	
	<i>Level of Service</i>	<i>Average Speed</i>	<i>Level of Service</i>	<i>Average Speed</i>	<i>Level of Service</i>	<i>Average Speed</i>
Eastbound AM	B	29	B	28	A	30
Westbound AM	A	30	B	24	B	29
Eastbound PM	B	28	E	14	D	16
Westbound PM	A	30	E	12	C	20

Source: AECOM

Department of Public Safety<sup>5</sup> for Greens Road from Aldine-Westfield Road to John F. Kennedy Boulevard. Between 1999 and 2001, there were 128 vehicle accidents causing fatalities, injuries or property damage on Greens Road, or almost 600 accidents per 100 million vehicle miles. This is three times the regional average of 204 accidents per 100 million vehicle miles and four times the Texas average of 150 accidents per 100 million vehicle miles.

Ninety-six percent of the accidents on Greens Road involve more than one vehicle, indicating that congestion is the most likely cause of the high accident rate. Two-thirds of the accidents occur at the intersection of John F. Kennedy Boulevard, indicating that this intersection is of concern for safety.

**E. Need and Purpose for the Project**

As demonstrated in the previous section, Greens Road between Aldine-Westfield Road and John F. Kennedy Boulevard is projected to become very congested by 2029, such that highway delays would become unacceptable. In addition, the current design of Greens Road is inadequate to carry the current traffic volume safely, and accidents are three times more common on Greens Road than on the average roadway in Houston. There is a clear need to solve these problems.

The purpose of the proposed project is to:

- Reduce congestion on Greens Road; and
- Improve traffic safety on Greens Road.

Reducing congestion would shorten travel times on Greens Road and improve local access to adjacent commercial properties and to George Bush Intercontinental Airport. Improving traffic safety would reduce the risk of an accident to motorists using Greens Road.

An additional objective of the project is to provide pedestrian access on Greens Road.

#### **F. Logical Termini and Independent Utility**

The limits of the proposed action are Aldine-Westfield Road on the west and John F. Kennedy Boulevard on the east. These two roadways are rational endpoints for this project because they are major thoroughfares in Harris County. The project would have independent utility, even if the section of Greens Road to the east were not built (the section to the west has already been built) because much of the future traffic on Greens Road is expected to begin or end on John F. Kennedy Boulevard, the eastern terminus of the proposed project. The project would function on its own without widening Greens Road east of John F. Kennedy Boulevard.

#### **G. Planning Process**

Greens Road is on the City of Houston's Major Thoroughfare Plan as an arterial roadway. As traffic levels increased in the 1990s, the City of Houston added the expansion of Greens Road from Old Greens Road to US 59, which includes this project, to its Capital Improvements Program.

#### **H. Regulatory Requirements**

This Environmental Assessment considers the social, economic and environmental impacts of the proposed project and alternatives. Chapter 2 presents alternatives to the proposed action. Chapter 3 presents the environment potentially affected by the project, and Chapter 4 explains the environmental consequences of the proposed action and alternatives. Chapter 5 describes the public involvement process. Chapter 6 presents the conclusions and recommendations of this assessment.

This Environmental Assessment fulfills the requirement under the National Environmental Policy Act of 1969 for a detailed statement of the environmental impact of major federal actions that may significantly affect the quality of the human environment. The federal action is the grant of federal funds to build the proposed project. This document satisfies the Federal Highway Administration's regulatory requirement for complying with the National Environmental Policy Act in Section 771 of Title 23, Code of Federal Regulations, and complies with TxDOT planning policy.

## **Chapter 2: Description of the Alternatives**

In this chapter, alternatives are presented that meet project objectives and design requirements. The environmental impacts of these alternatives are evaluated in later chapters.

### **A. Process to Develop the Project Alternatives**

This assessment considers a range of alternatives to meet the project's needs to reduce traffic congestion and improve safety along Greens Road. The range of alternatives includes creating a new roadway on a new alignment and keeping Greens Road at its current alignment, with widening to the north, to the south, or to both sides. Another alternative that is considered is No Action, which is reasonable but may not meet future needs.

### **B. Design Requirements of Alternatives**

Project alternatives should meet the following design criteria:

- Design speed of 45 miles per hour;
- Roadway capacity to carry the 2029 peak hour traffic at Level of Service D or better;
- Bridges over Hoods Bayou;
- Curb and gutter, sidewalks and a raised median; and
- Design geometry to TxDOT and American Association of State Highway and Transportation Officials standards.

The project must meet requirements of all laws, regulations, environmental permits and agreements and should minimize potential social and environmental impacts from construction and operation.

### **C. Preliminary Alternatives Eliminated from Detailed Study**

To meet the expected future traffic demand, the roadway capacity would need to be doubled and the new roadway would require four lanes, as compared to the current 2-lane roadway. A 4-lane roadway would have to have at least 100 feet of right-of-way width, while the current right-of-way width is 80 feet.

Alternatives that involve a new roadway on a new alignment are not reasonable because:

- The project area is mostly developed, so any new roadway on a new alignment would cause many displacements and disrupt communities; and
- The right-of-way for Greens Road already exists, so building a new roadway would be far more expensive than widening the existing road.

However, there are reasonable alternatives that widen Greens Road at its current alignment. Four preliminary alternatives are considered that would widen Greens Road to a 4-lane roadway by widening the right-of-way from 80 feet to either 100 or 120 feet, and by taking the extra right-of-way from both sides equally or from one side or the other. The alternatives are as follows:

- Alternative B would widen Greens Road to four lanes in 120 feet of right-of-way width, with 20 feet of additional right-of-way taken from the north and 20 feet taken from the south.

- Alternative C would widen Greens Road to four lanes in 120 feet of right-of-way width, with all 40 feet of additional right-of-way taken from the south side from Aldine-Westfield Road to Hoods Bayou and from the north side from Hoods Bayou to John F. Kennedy Boulevard.
- Alternative D would widen Greens Road to four lanes in 100 feet of right-of-way width, with 10 feet of additional right-of-way taken from the north and 10 feet taken from the south.
- Alternative E would widen Greens Road to four lanes in 100 feet of right-of-way width, with all 20 feet of additional right-of-way taken from the south side.

Under Alternatives B and C, the City of Houston would encroach on a ditch and detention basin in Bush Intercontinental Airport that would need to be relocated and rebuilt. The cost of these displacements would be excessive, and these alternatives are not reasonable. However, neither Alternatives D nor E would affect the ditch and detention basin in the airport, and both are reasonable. Therefore, this Environmental Assessment considers the potential impacts of Alternative A (No Action) and the reasonable actions, Alternatives D and E.

#### **D. Proposed Design of Reasonable Alternatives**

Three alternatives are reasonable: No Action (Alternative A), widen the existing 80-foot right-of-way by 10 feet on each side (Alternative D), and widen the right-of-way by 20 feet on the south side (Alternative E). The two action alternatives meet the project objectives and are feasible to build and operate. The No Action alternative does not meet the project objectives of improving safety and relieving congestion along Greens Road, but it is feasible and a benchmark by which to judge the environmental impacts of action alternatives.

##### ***1. Alternative A: No Action***

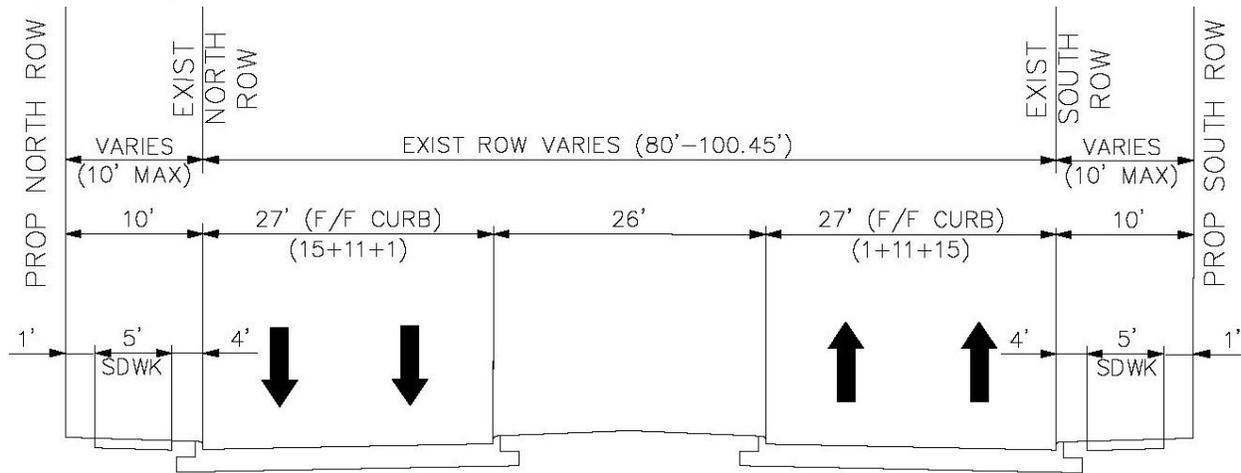
Under the No Action alternative, Greens Road would remain in its current configuration. The existing two-lane roadway is made of asphalt and has 6-foot shoulders, ditch drainage and no sidewalk (Figure 3). The No Action alternative would avoid some environmental and social impacts, but it would not reduce traffic congestion or improve safety.

##### ***2. Alternative D: Widen to Both Sides***

The right-of-way of Greens Road is 80 feet wide between just east of Aldine–Westfield Road and just west of John F. Kennedy Boulevard. Alternative D would add 10 feet to both sides of the right-of-way between these limits, resulting in a right-of-way 100 feet wide. Alternative D would require about four acres of additional right-of-way. The proposed four-lane roadway would have one 11-foot wide and one 14-foot wide travel lane in each direction, a raised median, a 5-foot sidewalk on each side of the roadway for pedestrians, grass borders on either side of the sidewalks, and curbs and gutters for drainage (Figure 4). The outside lanes in both directions would be shared-use lanes to safely accommodate bicycles in the roadway. Appendix B shows a plan view of Alternative D. This alternative would also replace the bridge across Hoods Bayou with two new bridges. The design speed for this alternative would be 45 miles per hour.

Alternative D would double the capacity for motor vehicle traffic on Greens Road and therefore would relieve congestion. It would also be designed for better traffic safety. The new design would follow current TxDOT standards. It would provide a raised median to separate traffic moving in different directions, and it would provide left-turn and right-turn bays to move vehicles waiting to turn off the through lanes.

**Figure 4: Typical Cross-Section of Alternative D**



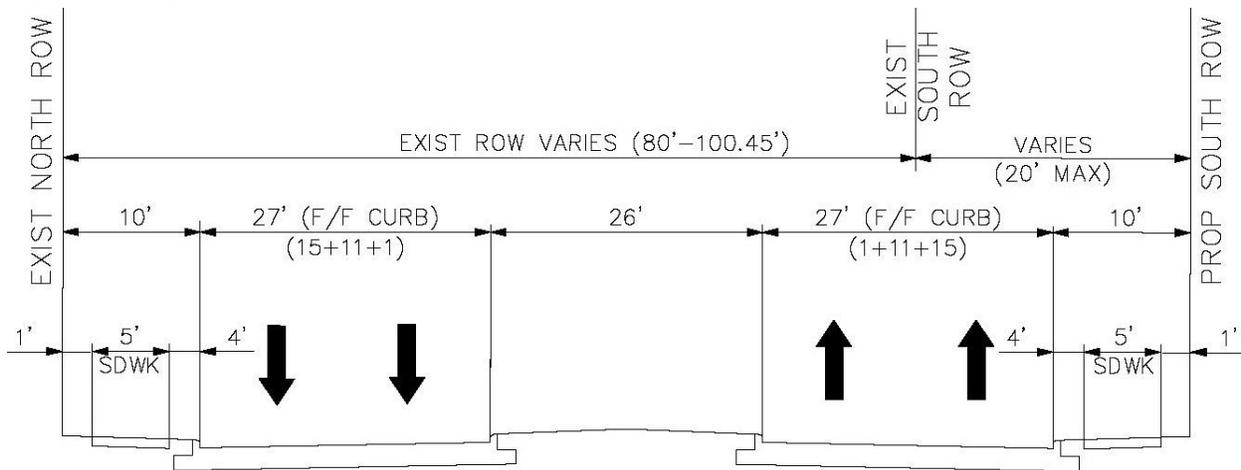
The design of Alternative D would accommodate disabled pedestrians in compliance with the Americans with Disabilities Act (ADA) requirements. All sidewalks would have ramps at street crossings designed according to ADA guidelines. The signalized intersections at John F. Kennedy Boulevard and at Aldine-Westfield Road would have audible signals to inform visually impaired pedestrians when it is safe to cross. In addition, physically disabled pedestrians would be allowed adequate clearance time to cross these intersections. At all intersections, the pedestrian flush walkway across the raised median would be at least six feet long, which would provide sufficient refuge for pedestrians in wheelchairs to wait to finish crossing if necessary.

Alternative D would also require a new detention basin to detain storm water from the widened roadway and prevent flooding. The proposed 2.5-acre detention basin would be built on the south side of the east end of Peyton Road and west of Hoods Bayou (Appendix B). It would store 12.5 acre-feet of water and discharge into Hoods Bayou.

**3. Alternative E: Widen to the South Side**

Alternative E would have the same roadway design as Alternative D, but it would acquire the entire 20 feet of additional right-of-way from the south side from just east of Aldine-Westfield Road to just west of John F. Kennedy Boulevard (Figure 5). It would have the same benefits as

**Figure 5: Typical Cross-Section of Alternative E**



Alternative D for relieving congestion, improving safety, providing a shared-use roadway for bicycles, and providing ADA-compliant sidewalks. Alternative E would also include the same proposed detention basin as Alternative D. Appendix B shows a plan view of Alternative E and the proposed detention basin.

### E. Right-of-Way and Displacements

Greens Road is currently in an 80-foot-wide right-of-way from east of Aldine-Westfield Road to west of John F. Kennedy Boulevard. The proposed project would widen the right-of-way to 100 feet. This would require acquiring about four acres of adjacent land. For Alternative D, land would be acquired from 25 parcels; for Alternative E, land would be acquired from 19 parcels.

The City of Houston has acquired three parcels for roadway expansion along the south side of Greens Road: two parcels by deed dedication and one parcel by plat dedication (Figure 6). The City of Houston has also acquired the land for the proposed detention basin at Peyton Road.

The three parcels along Greens Road are undeveloped and total 0.49 acre. The landowners dedicated the two deeds and the plat for highway use to the City of Houston. The easements are all within the proposed right-of-way of both Alternative D and Alternative E, and therefore acquisition of these easements does not influence the outcome of the Environmental Assessment. No home or business was displaced for the acquisition of these parcels. The City of Houston certifies that the landowners were made aware of their rights under the Uniform Relocation Assistance and Real Properties Assistance Act of 1970 when they dedicated the land for highway use.

The City of Houston acquired the 4.7-acre tract (Parcel EY5-126) for the proposed detention basin in 2001, for mitigation of noise impacts due to the expansion of Bush Intercontinental Airport. Its former owner had a residence on the property. The acquisition of Parcel EY5-126 did displace a residence. Minority groups and low-income populations were not affected by this ac-

**Figure 6: City of Houston Easements within Proposed Right-of-Way**



Source: City of Houston

quisition. The City of Houston certifies that the acquisition and displacement were done according to the Uniform Relocation Act. The acquisition of this parcel of land for the proposed detention basin does not influence the selection of alternatives because both action alternatives use the same proposed detention basin site. Files pertaining to this displacement are available at the Houston Airport System, 16930 JFK Boulevard, Houston, Texas 77032.

**F. Other Relevant Actions**

Harris County has recently widened Greens Road from Old Greens Road to Aldine-Westfield Road from two to four lanes, and Aldine-Westfield Road from Simmons Road to Beltway 8 from two to four lanes. In addition, the City of Houston plans to widen Greens Road from two to four lanes from John F. Kennedy Boulevard to Lee Road in 2018 and from Lee Road to US 59 in 2025.

### Chapter 3: Affected Environment

This chapter describes the environment that could be affected by the proposed action. Impacts of the proposed action and alternatives are presented in Chapter 4, Environmental Consequences.

#### A. Land Use

Land use in the project area consists of Bush Intercontinental Airport to the northeast, residential land to the northwest and southwest, industrial and commercial land to the southeast and undeveloped land to the southwest. Most of the land adjacent to the Greens Road corridor is developed or is in airport use. The Houston Airport System acquired and demolished the Greenmeadows Subdivision (north of Greens Road and west of the airport) and some of the industrial land across Greens Road for noise mitigation in the early 2000s. The proposed detention basin site is a former residential parcel on a large lot; it is currently vacant and the buildings have been removed. Figure 7 shows current land use in the project corridor.

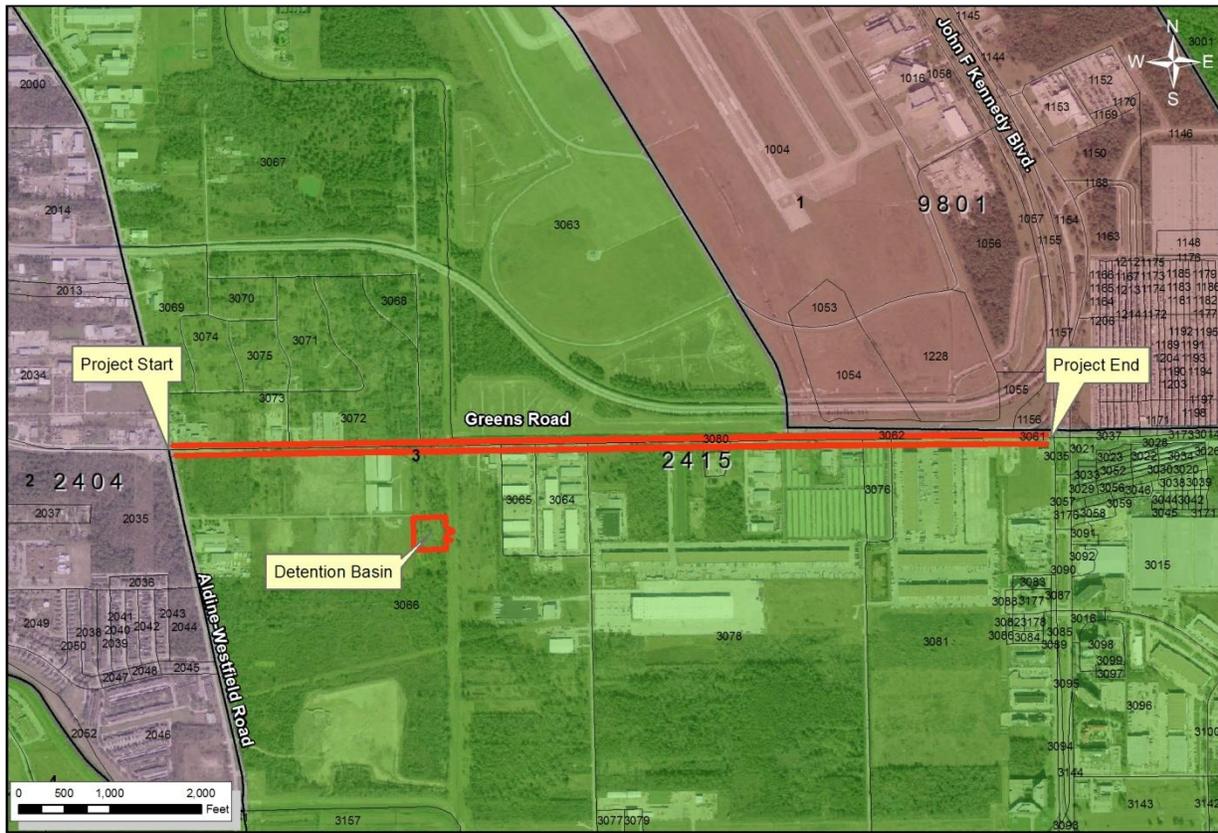
#### B. Socioeconomic Conditions

The social and economic conditions in a region include its population, housing stock, neighborhoods, tax revenues and availability of public services. The U.S. Census Bureau provides population characteristics for counties, census tracts, block groups and census blocks. Census tracts subdivide counties, block groups subdivide census tracts, and census blocks subdivide block

Figure 7: Land Use



**Figure 8: Census Tracts**



Source: U.S. Census Bureau, 2010 Census

groups. The project corridor (Figure 8) crosses Census Blocks 3064, 3065, 3066, 3067, 3072, 3073, 3076, 3078, 3080 and 3081 in Block Group 3 of Census Tract 2415 for the 2010 Census. While data on population characteristics are available for the project area in the 2010 Census, social and economic data are not, and data are reported from the 2006-2010 American Community Survey by the U.S. Census Bureau instead.

**1. Population and Racial and Ethnic Profile**

The census blocks in the project corridor are mostly airport-related commercial and industrial lands, with few residents, since the Greenmeadows Subdivision was acquired mostly before the 2000 census. Table 3 presents the population, racial and ethnic proportions of the census blocks, block group and census tract in the Greens Road corridor, along with City of Houston statistics

**Table 3: Population Characteristics, 2010 Census**

Category	Census Block 3066	Census Block 3073	Block Group 3	Census Tract 2415	City of Houston
Total population	1	14	4,208	9,146	2,099,451
Race: White	0 0%	10 71%	1,416 34%	3,526 39%	1,060,491 51%
Black	0 0%	1 7%	2,091 50%	3,789 41%	498,466 24%
American Indian	0 0%	0 0%	36 1%	98 1%	14,997 1%
Asian, Pacific	0 0%	2 14%	103 2%	249 3%	127,531 6%
Other, more than one	1 100%	1 7%	562 13%	1,484 16%	397,966 19%
Ethnicity: Hispanic	1 100%	3 21%	1,399 33%	3,438 38%	919,668 44%

Source: U.S. Census Bureau, 2010 Census

for comparison. The population of Census Tract 2415 is 9,146 in the 2010 census, and the ten census blocks had 15 residents in 2010 (of the ten census blocks in the corridor, only Blocks 3066 and 3073 have non-zero population). The blocks' racial profile is 67 percent white, seven percent African-American, 13 percent Asian and Pacific Islander, and seven percent "other" or more than one race. These percentages reflect fewer racial minorities than for Census Tract 2415 or the City of Houston.

Twenty percent of residents in the census blocks consider themselves Hispanic, regardless of race. This is lower than the Hispanic percentage for the City of Houston (44 percent).

Since the land use of the project corridor is not likely to change substantially, the population of the project corridor is not expected to change over the next 20 years.

Median household income is a statistical measure in which half the households have income above the median value and half have income below the median value. Median household income in the project census tract in the 2006-2010 American Community Survey (Table 4) was \$30,930, which is lower

**Table 4: Income Characteristics, 2006-2010**

<i>Location</i>	<i>Median Annual Household Income</i>	<i>Total Families</i>	<i>Families Below Poverty Limit</i>
City of Houston	\$42,962	472,604	18%
Census Tract 2415	\$30,930	1,981	23%

Source: U.S. Census Bureau, 2006-2010 American Community Survey

than for the City of Houston. However, this trend is not observed in terms of families under the poverty limit. Census Tract 2415 had 23 percent of its families below the poverty limit set by the U.S. Department of Health and Human Services (\$23,050 for a family of four in 2012), above that of Houston (18%).

## 2. Housing

Housing was available in the project area as of 2010. The 2006-2010 American Community Survey shows 3,211 housing units in the project census tracts, of which 393, or 12 percent, were vacant (Table 5). This is a slightly lower vacancy rate than for Houston. Sixty-two percent of all housing units in the project census tract were rented, and nine percent of rental units were vacant.

**Table 5: Housing in Project Corridor, 2006-2010**

<i>Location</i>	<i>Total Housing Units</i>	<i>Available Housing Units</i>	
City of Houston	889,489	124,731	14%
Census Tract 2415	3,211	393	12%

Source: U.S. Bureau of the Census, 2006-2010 American Community Survey

## 3. Employment

About half the residents of the project corridor are employed (Table 6). The unemployment rate for the census tracts in the project corridor was about seven percent in 2006-2010, which was higher than the unemployment rate in Houston (5%). Major employers in the project corridor include the Houston Airport System, the Houston Police and Fire Departments, United Airlines, Federal Express, United Parcel Service and other aviation-related businesses.

**Table 6: Employment in Project Corridor, 2006-2010**

<i>Location</i>	<i>Population over 16 Years Old</i>	<i>Unemployed Population over 16 Years Old</i>	
City of Houston	1,583,625	86,236	5.4%
Census Tract 2415	6,762	487	7.2%

Source: U.S. Bureau of the Census, American Community Survey, 2006-2010

**4. Community Profile**

The project corridor is dominated by commercial and light industrial land uses. Homes in the Greenmeadows Subdivision and land parcels on the south side of Greens Road across from the subdivision were acquired by the City of Houston for noise mitigation in 2000, and there is little residential land along Greens Road today. No school, church or community facility is located within 1,000 feet of the corridor.

The project corridor has many shipping businesses that receive and distribute cargo from the airport, to points around Houston via trucks. In addition, several long-term parking lots have opened along Greens Road for airline passengers to park their cars and be brought to and from the airport terminals via shuttle vans. Greens Road is the main access road for these businesses. Greens Road is also used by motor vehicles traveling between the airport and the Greenspoint business center, to the west of the project corridor.

Residents who attended the public meeting in 2005 generally supported the project.

**5. Limited English Proficiency**

The dominant language of the project corridor is English, and almost all signs in the project corridor are in English, but a substantial proportion of people in the project corridor speak English less than “very well.” Table 7 shows that in 2006-2010, 27 percent of residents in the project census tract that were over five years old spoke English less than “very well.” For most such residents, the other language was Spanish.

**Table 7: English Proficiency in Project Corridor, 2006-2010**

<i>Location</i>	<i>Population over 5 Years Old</i>	<i>Limited English Population (over 5 Years Old, Speaking English Less Than “Very Well”)</i>	<i>Proportion of Limited English Speaking Spanish</i>
City of Houston	1,898,242	462,071 24%	86%
Census Tract 2415	8,549	2,323 27%	82%

Source: U.S. Bureau of the Census, American Community Survey, 2006-2010

**C. Lakes, Rivers and Streams**

The project corridor crosses Hoods Bayou, an intermittent stream. Hoods Bayou flows south into Greens Bayou, which flows east and south into the Houston Ship Channel, which connects to Galveston Bay. The channel of Hoods Bayou was relocated in the 1950s and now flows in a straight ditch (Harris County Flood Control District unit P140-00-00) about 500 feet east of its former channel where it crosses Greens Road. Old Hoods Bayou is blocked about ¾ mile north of Greens Road and water currently flows into the new channel of Hoods Bayou. The original channel continues to receive a small amount of storm water from adjacent lands and flows to the new channel just north of its junction with Greens Bayou. Greens Road crosses the channelized Hoods Bayou on a bridge and the former channel over a culvert. Hoods Bayou is not a navigable waterway. Appendix C has photographs showing Hoods Bayou and drainage ditches in the project area.

A drainage ditch collects runoff from George Bush Intercontinental Airport and conveys it to Hoods Bayou. A weir separates these ditches. The channelized Hoods Bayou and the airport drainage ditch are not natural stream channels; historical aerial photographs indicate that both were built in uplands between 1953 and 1969.

Residents and businesses in the project corridor use municipal water from surface water supplies drawn from the San Jacinto and Trinity Rivers. Groundwater is not used for water supply in this area.

#### **D. Water Quality**

A stream within five miles downstream of the project corridor is listed as impaired on the Texas 2008 Clean Water Act Section 303(d) list of impaired stream segments:<sup>6</sup> Greens Bayou from the confluence of Halls Bayou to FM 1960 (Segment 1016). Water samples from Greens Bayou have high levels of fecal coliform bacteria that exceed the maximum water quality criterion, indicating contamination with fecal material from humans or animals. The presence of fecal contamination also indicates the possible presence of disease-causing bacteria and signals a potential health risk for people exposed to this water. The Texas Commission on Environmental Quality cites municipal point sources, collection system failure and urban runoff to storm sewers as potential sources of bacterial contamination in this stream.

#### **E. Soils**

The project corridor has soils of the Clodine-Addicks-Gessner association, which consists of poorly drained, moderately permeable loamy soils on prairies. Some of the soil series in this association are prime farmland soils. Prime farmland has the best combination of physical and chemical characteristics for producing crops and that is available for these uses. The *Soil Survey of Harris County, Texas*<sup>7</sup> (Figure 9) shows three soil series in the project corridor:

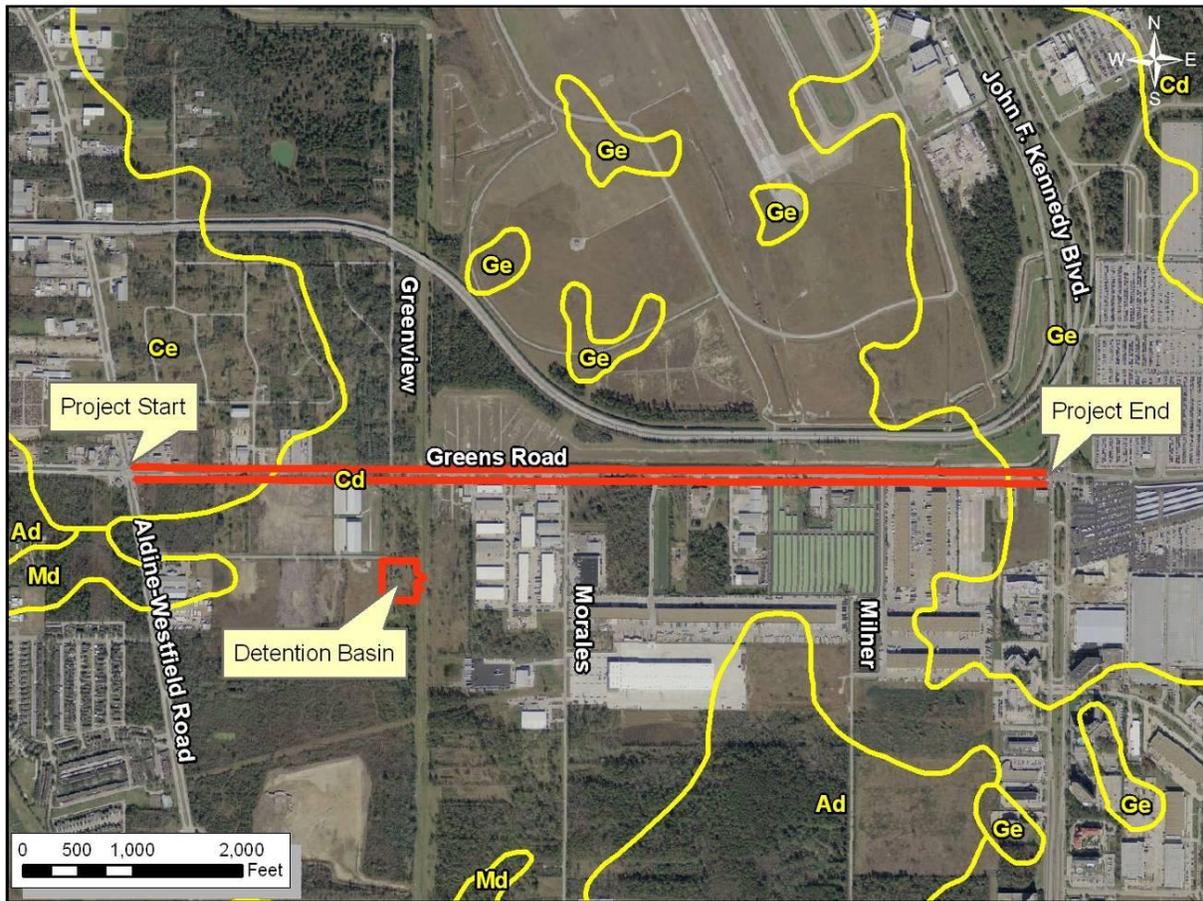
- Clodine loam (Cd). The Clodine series consists of very deep, somewhat poorly drained, moderately permeable soils. This soil is a prime farmland soil if drained.
- Clodine-Urban land complex (Ce). The Clodine series consists of very deep, somewhat poorly drained, moderately permeable soils.
- Gessner loam (Ge). The Gessner series consists of very deep, poorly drained, very slowly permeable soils. These depressional soils are on coastal prairies. Surface runoff is very slow to ponded. Gessner loam is a prime farmland soil if drained.

#### **F. Plant Communities**

The proposed project is in the Gulf Prairies and Marshes ecological region of Texas. The *Vegetation Types of Texas*<sup>8</sup> shows the project area as Urban (category 46), and the project area appears to be an urban fragmented habitat with small woodlots and grassy areas interspersed among buildings and pavement.

The roadway right-of-way includes mowed grassland (some with ornamental trees) and forest. The grassland consists of Bermuda grass (*Cynodon dactylon*), St. Augustine grass (*Stenotaphrum secundatum*) and Johnson grass (*Sorghum halepense*). Much of the grassland is mowed. The forests consist of yaupon (*Ilex vomitoria*), Chinese tallow (*Sapium sebiferum*), cedar elm (*Ulmus crassifolia*), American elm (*Ulmus americana*), pecan (*Carya illinoensis*), water oak (*Quercus nigra*), cottonwood (*Populus deltoides*), sugarberry (*Celtis laevigata*) and loblolly pine (*Pinus taeda*). Trees range from seedlings with diameters less than one inch to mature trees with diameters about 10 to 12 inches. Canopy coverage in the wooded areas ranges from 50 to 80 percent.

Old Hoods Bayou north of Greens Road is vegetated with peppervine (*Ampelopsis arborea*), giant ragweed (*Ambrosia trifida*), poison ivy (*Toxicodendron radicans*), Indian wood-oats (*Chasmanthium latifolium*) and seedlings of sugarberry and American elm trees (under three

**Figure 9: Soils**

Source: Natural Resources Conservation Service

inches diameter). South of Greens Road, the channel and banks of Old Hoods Bayou are mowed and have no trees, but water oak and sugarberry trees grow on the tops of the banks. The proposed project lands do not include riparian forest.

The proposed detention basin is a former homestead, which is now best characterized as an old field with scattered trees. The main grass species is dallis grass (*Paspalum dilatatum*), although Johnson grass and switchgrass (*Panicum virgatum*) are also present. The trees are mostly live and water oak, Chinese tallow, sugarberry and Chinese arborvitae (*Thuja orientalis*), of which live oak and arborvitae were probably planted as ornamentals by the landowner. The channel of Hoods Bayou near the detention basin is mowed grassland, similar to the project right-of-way.

Wetlands are “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”<sup>9</sup> No wetland is in the proposed project right-of-way or detention basin.

## G. Wildlife

Wildlife in the project corridor includes species that are well adapted to urban areas. Opossum (*Didelphis virginianus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), cattle egret

(*Bubulcus ibis*), nine-banded armadillo (*Dasyops novemcinctus*) and eastern cottontail (*Sylvilagus floridanus*) are potential residents of the project corridor (only the cattle egret has been observed). The wooded areas in the project corridor support birds and small mammals. Amphibians and small fish inhabit Hoods Bayou, the airport drainage ditch and Old Hoods Bayou. Egrets and herons have been observed feeding in the airport drainage ditch.

## **H. Air Quality**

The proposed action is in Harris County, which is a part of the Houston-Galveston metropolitan area. The region meets national ambient air quality standards for sulfur oxides, nitrogen oxides, particulate matter (greater than 10 microns in size), carbon monoxide and lead, but exceeds the standard for ozone, a powerful oxidizer that harms the human respiratory system. The major contributors to air pollution in the Houston-Galveston region are industries and motor vehicles; each contributes about half the region's total emissions of ozone precursor pollutants.

## **Chapter 4: Environmental Consequences**

### **A. Socioeconomic Impacts**

#### **1. Displacements**

No project alternative would displace homes or businesses.

#### **2. Community Impacts**

Since the Greenmeadows Subdivision was acquired for noise mitigation and is no longer a residential area, no residential neighborhood would be affected by any project alternative. In addition, the project would not affect community services, because no community service center, park or school is in the project corridor. Furthermore, neither action alternative would bisect, remove access or otherwise affect intact neighborhoods.

During construction, the City of Houston would keep one lane open in each direction, the same as at present, and access to adjacent properties would be maintained. If access to a particular driveway would need to be interrupted briefly, the City of Houston would provide alternative access if feasible.

One Greens Road business owner who attended the public meeting requested a median opening at the driveway to his business to allow large delivery trucks to enter and exit. The City of Houston would provide that median opening if feasible and consistent with design standards.

#### **3. Environmental Justice**

Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” requires each federal agency to “make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on populations.” The Federal Highway Administration has identified three fundamental principles of environmental justice: to avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority populations and low-income populations; to ensure the full and fair participation of all potentially affected communities in the transportation decision-making process; and to prevent the denial of, reduction in, or significant delay of the receipt of benefits by minority populations and low-income populations.

“Disproportionate impacts” are defined as disproportionately high and adverse human health or environmental effects are defined by the Federal Highway Administration as adverse effects that (1) are predominately borne by a minority population or a low-income population; or (2) will be suffered by the minority population or low-income population and are appreciably more severe or greater in magnitude than the adverse effects that will be suffered by the non-minority population and the non-low-income population. “Low-income populations” are defined as households with annual family income below the poverty limit set by the U.S. Department of Health and Human Services (\$23,050 for a family of four in 2012).

Minority and low-income populations are present in the proposed project corridor. The census blocks of Census Tract 2403 have at least 15 percent minority populations, and Block Group 2 has just below 10 percent of families with income below the poverty limit. However, these residents are at some distance from the project corridor because the Greenmeadows Subdivision has

been acquired for noise mitigation and is no longer a residential area. The project would not displace homes or businesses, and therefore the project would not disproportionately affect minority or low-income populations.

#### **4. Limited English Proficiency**

Executive Order 13166, “Improving Access to Services for Persons with Limited English Proficiency,” requires federal agencies to examine the services they provide, identify any need for services to those with limited English proficiency, and develop and implement a system to provide those services so that people with limited English proficiency can have meaningful access to them.

About one fifth of residents over five years old in Block Group 2 of Census Tract 2402 and Block Group 2 of Census Tract 2403 have limited English proficiency, and most of them speak Spanish. In accordance with the Department of Justice’s Safe Harbor provisions, public involvement will allow all interested people to provide oral and written comments about the proposed project in either language. Written translations of important documents will be made available to those with limited English proficiency, in addition to interpreters and other accommodations, to ensure that all people have meaningful access to the programs, services and information about the proposed project. Public meeting notices will be published in English and Spanish in major newspapers in these languages, and Spanish-speaking staff will be provided at public meetings. In addition, requests for language interpreters and other special communication needs will be accommodated. Thus, the requirements of EO 13166 are satisfied.

#### **B. Section 4(f) Lands**

The project corridor does not include any public park or recreation area, wildlife or waterfowl refuge, historic site or district. Such lands, which are protected under Section 4(f) of the Department of Transportation Act of 1966, would not be affected by any project alternative. A Section 4(f) evaluation is not required.

#### **C. Historic Resources**

A qualified cultural resource specialist conducted a historic resource survey of the project area on February 20, 2010. The survey identified and evaluated buildings, structures, objects, and potential districts constructed in 1965 or earlier that are in the project’s area of potential effects (APE), which TxDOT, in consultation with the State Historic Preservation Officer, has determined is limited to 150 feet beyond the proposed right-of-way of the project.

Review of the National Register of Historic Places, the list of State Archeological Landmarks and the list of Recorded Texas Historic Landmarks indicates that no historically significant resource is documented within the APE. The site survey identified five historic-age resources (built before 1965) within the APE. TxDOT historians have determined that none of the historic-age resources is eligible for the National Register of Historic Places.

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 1965 pan-girder bridge owned by the City of Houston to establish its historical significance. In accordance with the registration evaluation criteria established by the Texas Historical Commission and TxDOT for the 1999 Non-Truss Bridge Inventory, this bridge was determined not eligible for the National Register. The bridge lacks sufficient engineering

complexity or uniqueness of design to be eligible for the National Register under Criterion C: Engineering at the state level of significance.

Because the bridge may have local significance, TxDOT consulted with the Harris County Historical Commission concerning the historic significance of the bridge. Since the Commission did not respond within the agreed 30-day time period, TxDOT assumes that the Commission concurs that the bridge has no known historical significance at the local level under National Register of Historic Places Criteria A or B. A copy of the letter, dated September 21, 2010, is provided in Appendix D.

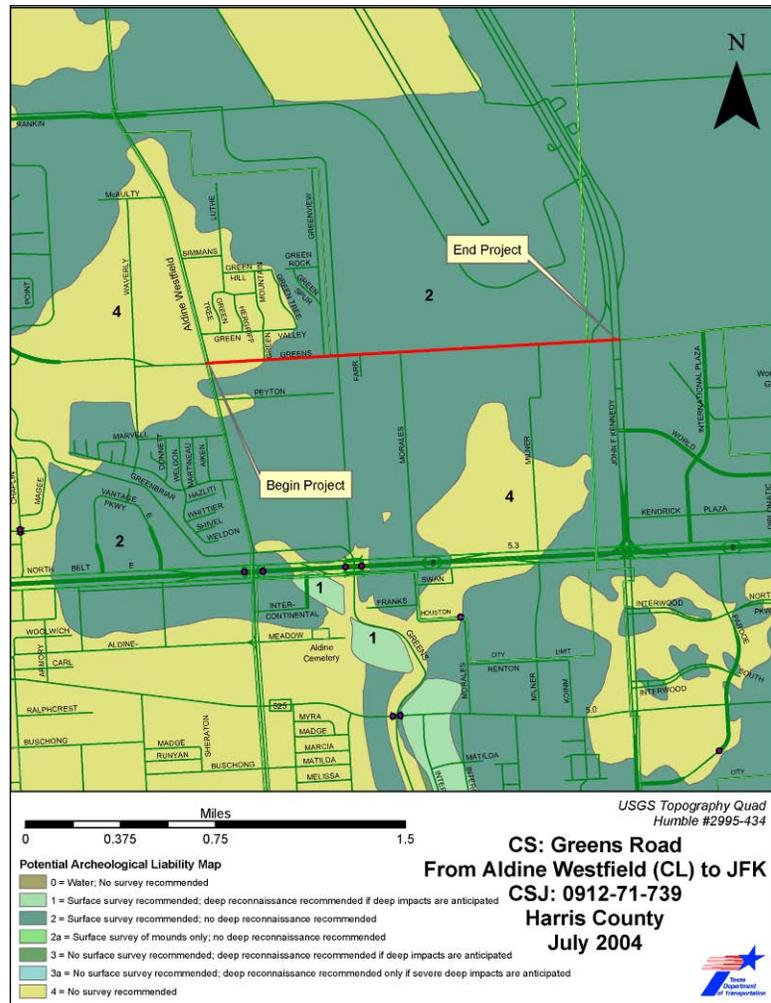
Pursuant to Stipulation VI, “Undertakings with the Potential to Affect Historic Resources,” of the First Amended Programmatic Agreement Regarding the Implementation of Transportation Undertakings between the Federal Highway Administration, the Texas State Historic Preservation Officer, the Advisory Council on Historic Preservation and TxDOT, and the Memorandum of Understanding, TxDOT historians have determined that no historic property is present and that individual coordination with the Texas State Historic Preservation Officer is not required.

#### D. Archaeological Resources

TxDOT’s Potential Archaeological Liability map for the project sites (Figure 10) shows that the project is in an area with moderate potential for having archaeological resources. Much of the proposed project is in Zone 2, in which a surface survey is recommended.

A TxDOT archaeologist evaluated the potential for the proposed undertaking to affect archaeological historic properties (36 CFR §800.16(l)) or State Archaeological Landmarks (13 TAC §26.12) in the area of potential effects. The area of potential effects comprises the existing right-of-way within the project limits and new easements. The area of potential effects extends to a maximum depth of 12 feet below the modern ground surface. Section 106 review and consultation proceeded in accordance with the First Amended Programmatic Agreement among the Federal

**Figure 10: Potential Archaeological Liability Map**



Source: TxDOT

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, as well as the Memorandum of Understanding between the Texas Historical Commission and TxDOT. The following documentation presents TxDOT’s findings and explains the basis for those findings.

Moore Archaeological Consulting, a qualified archaeological consulting firm, conducted an intensive linear and area pedestrian survey of all available areas of the proposed right-of-way for Alternatives D and E with archaeological potential in March 2010 under Texas Antiquities Permit No. 5515. The study found no archaeological deposits within the proposed undertaking’s area of potential effects.

TxDOT completed its review on August 30, 2010. Section 106 consultation was initiated on July 13, 2010 with federally recognized Native American tribes with a demonstrated historic interest in the area. No objection or expression of concern was received by August 27, 2010.

Pursuant to Stipulation VI of the Programmatic Agreement, TxDOT finds that the area of potential effects does not contain archaeological historic properties (36 CFR §800.16(l)), and thus the proposed undertaking would not affect archaeological historic properties. The project does not merit further field investigations. Project planning can also proceed, in compliance with 13 TAC §26.20(2) and 43 TAC §2.24(f)(1)(C) of the Memorandum of Understanding. If an unanticipated archaeological deposit is encountered during construction, work in the immediate area would cease, and TxDOT archaeological staff would be contacted to initiate post-review discovery procedures under the provisions of the Programmatic Agreement and Memorandum of Understanding.

**E. Plant Communities**

Alternative A would not affect plant communities. Alternative D, including the proposed roadway expansion and detention basin, would remove 5.3 acres of mowed grassland and 0.3 acre of forest. Alternative E, including the proposed roadway expansion and detention basin, would remove 4.6 acres of grassland and 0.4 acre of forest (Table 8). Both alternatives would remove 73 ornamental trees, including loblolly pine (*Pinus taeda*), crape myrtle (*Lagerstroemia indica*), baldcypress (*Taxodium distichum*), live oak (*Quercus virginiana*) and sycamore (*Platanus occidentalis*). All of the ornamental trees are between three and 15 inches in diameter. Neither alternative would affect riparian habitat.

A Memorandum of Agreement between TxDOT and the Texas Parks & Wildlife Department, signed in 1998, requires that these special habitats be considered for compensatory mitigation:

- Habitat for Federal candidate species;
- Rare vegetation series;
- Unusual or special habitat features;
- Bottomland hardwood, native prairie, and riparian areas; and

**Table 8: Plant Communities Affected By Alternatives**

<i>Alternative</i>	<i>Roadway</i>		<i>Detention Basin</i>		<i>Total</i>	
	<i>Forest</i>	<i>Grassland</i>	<i>Forest</i>	<i>Grassland</i>	<i>Forest</i>	<i>Grassland</i>
A: No Action	0.0	0.0	0.0	0.0	0.0	0.0
D: Expansion to Both Sides	0.0	3.1	0.3	2.2	0.3	5.3
E: Expansion to the South	0.1	4.2	0.3	2.2	0.4	4.6

- Locally important habitat.

No alternative would affect any of these special habitats, and no compensatory mitigation is planned.

### **1. Wetlands**

There is no wetland in the project lands, and therefore the project would not affect wetlands. Executive Order 11990 on wetlands would not apply because no wetland would be affected.

### **2. Beneficial Landscaping**

In accordance with the Executive Memorandum on Beneficial Landscaping, dated April 26, 1994, vegetation would be cleared only as needed, and clearing may be phased to maintain soil integrity and minimize exposure of an erosive surface. When construction is completed, disturbed areas would be restored and re-seeded according to the TxDOT specification *Seeding for Erosion Control*. Mowing, seeding, herbicide use and mechanical brush control would be conducted according to TxDOT's *Standards of Vegetation Management*.

### **3. Invasive Species**

Steps would be taken to prevent the introduction of invasive species, control inadvertent introductions, and minimize economic, ecological and human health impacts in compliance with Executive Order 13112 on Invasive Species. Native plant species would be used in the landscaping and in the seed mixes where practical. Soil disturbance would be minimized so that invasive species would not establish in the right-of-way. Construction equipment would be washed before they are brought to the project area to prevent seeds or propagules of invasive species that may be carried in the mud on construction equipment from being inadvertently introduced to the area.

## **F. Surface Waters**

Alternative A would not affect waters. Both Alternatives D and E would fill about 0.03 acre of Old Hoods Bayou permanently with wider box culverts. Both Alternatives D and E would also affect a very small area of Hoods Bayou by placing concrete bridge piers in the stream channel. The proposed detention basin would also affect Hoods Bayou by placing a part of its outfall structure below the ordinary high water mark of the channel. The detention basin would hold up to 12.5 acre-feet of runoff water from the widened roadway.

Section 404 of the Clean Water Act of 1972 directs the U.S. Army Corps of Engineers to require permits to discharge dredged or fill material into waters of the United States. Since Old Hoods Bayou appears to be a water of the United States (subject to Corps of Engineers verification), the placement of temporary or permanent dredge or fill material into potentially jurisdictional waters of the United States under either Alternative D or Alternative E would be authorized under Nationwide Permit No. 14, Linear Transportation Projects, without a Pre-Construction Notification.

The purpose of the proposed activity is to expand the linear transportation facility at Hoods Bayou and Old Hoods Bayou. Appropriate measures would be taken to maintain normal downstream flows and minimize flooding. Temporary fills would consist of materials and be placed in a manner that would not be eroded by expected high flows. Temporary fills would be removed in their entirety and the affected area returned to pre-construction elevations, and revegetated as appropriate. If the project involves stream modification, stream channel modifications, including bank stabilization, would be limited to the minimum necessary to construct or protect the structure and the immediate vicinity of the project. The activities at Hoods Bayou and Old Hoods Bayou have

been determined not to be single and complete projects as defined in the Nationwide Permits because they are separate crossings of different streams and would therefore be permitted together.

A Pre-Construction Notification for Nationwide Permit No. 14 at Hoods Bayou and Old Hoods Bayou would not be required because the affected stream area is less than 0.1 acre. There is no potential to affect listed species or designated critical habitat, or any historic property listed or eligible for listing on the National Register of Historic Places.

This project does not involve work in or over a navigable water of the United States. Therefore, Section 9 of the Rivers and Harbors Act does not apply.

## **G. Water Quality**

Motor vehicles deposit pollutants on roads through automobile exhaust emission and deposition of oils, fuels, wastes, metal scrapings and brake linings during travel and while braking. Storm water runoff carries pollutants deposited by vehicles such as suspended solids, heavy metals, nutrients and polycyclic aromatic hydrocarbons into streams, contributing to the overall decline of water quality. Suspended solids increase turbidity, transport other pollutants adhered to particle surfaces, and reduce runoff storage capacity in ponds and lakes. Heavy metals are toxic to many aquatic organisms and can accumulate in fish tissues, thus posing potential health risks to humans. Nutrients stimulate the growth of algae and aquatic plants, which die and degrade water quality by depleting oxygen levels below the level needed by fish. Biochemical oxygen-demanding pollutants are organic substances that break down by chemical or biological processes and deplete oxygen. Polycyclic aromatic hydrocarbons can pose risks to human health if drinking water or fish become contaminated with them.<sup>10</sup>

The amount of water pollution typically generated by highway activities has been estimated by the U.S. Environmental Protection Agency and depends on the area of pavement. Alternative A would not change the pollution load from the roadway. Alternatives D and E would double pavement area and increase the load of roadway pollutants to Hoods Bayou, but the proposed detention basin would capture some of these pollutants. However, other sources contribute much more pollution to Hoods Bayou. Runoff from nearby residential lawns, commercial and industrial properties, agricultural land and the airport are major sources of water pollution to Hoods Bayou. The 106-acre airport economy parking lot at the northeast corner of Greens Road and John F. Kennedy Boulevard adds far more pollution to Hoods Bayou than Greens Road, even after widening. The minor increase in pollution loads from the proposed project would not affect water quality.

The Texas 2008 list of impaired stream segments<sup>11</sup> under Section 303(d) of the Clean Water Act shows that the proposed project does not cross a threatened or impaired stream segment but is within five miles upstream of an impaired stream segment of Greens Bayou. Runoff from this project would discharge within five stream miles upstream of Segment 1016 of Greens Bayou, which is listed as impaired for fecal coliform bacteria on the 2008 303(d) list. The project would not contribute fecal coliform bacteria to Greens Bayou.

Pollution from storm water would be minimized during construction through adherence to measures in the project's *Storm Water Pollution Prevention Plan*, which would be prepared before construction. The TxDOT manual *Storm Water Management Guidelines for Construction Activities* would be employed. The contractor would also use best management practices to re-

duce water pollution during construction. These practices include silt fences, rock filter dikes and temporary vegetation to control erosion and sedimentation from the project during construction, and vegetation filter strips to control suspended solids after construction. The Section 401 certification requirements for Nationwide Permit No. 14, Linear Transportation Projects, would be met by using these approved best management practices from the Section 401 Water Quality Certification Conditions for Nationwide Permits by the Texas Commission on Environmental Quality.

Construction operators for the proposed project would handle fuel, hydraulic fluid, paint and possibly other hazardous substances, and generate small quantities of liquid wastes. The construction contractor would use measures to prevent spills of hazardous materials in the construction staging area. The contractor would handle and dispose of hazardous materials so as not to degrade water quality, in compliance with Texas and federal laws.

This project would include five or more acres of earth disturbance. TxDOT would comply with the Construction General Permit under the Texas Pollutant Discharge Elimination System, issued by the Texas Commission on Environmental Quality. A Storm Water Pollution Prevention Plan would be prepared because more than one acre of earth would be disturbed, and a construction site notice would be posted on the construction site. A Notice of Intent would be required because more than five acres of earth would be disturbed.

This project is in the Phase I Houston Municipal Separate Storm Sewer System area, and would comply with applicable requirements.

## **H. Farmland**

Neither action alternative would convert farmland to non-farm uses.

Because additional right-of-way is required for this project, the requirements of the Farmland Protection Policy Act apply, and the City of Houston has coordinated with the Natural Resources Conservation Service of the U.S. Department of Agriculture. Appendix D includes the Farmland Conversion Impact Rating form for Alternatives D and E. The Service indicates that the proposed project corridor does not contain important farmland soils and the project is exempt from the Farmland Protection Policy Act.

## **I. Noise**

This analysis was done in accordance with TxDOT's *Guidelines for Analysis and Abatement of Roadway Traffic Noise* (2011), which is approved by the Federal Highway Administration.

Sound from highway traffic is generated mostly 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, but the human ear does not perceive all frequencies equally. 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 due to the changing number, type and speed of vehicles, a single value is used to represent the average or equivalent sound level and is expressed as "L<sub>eq</sub>."

The traffic noise analysis typically includes the following elements:

- Identification of land use activity areas that might be impacted by traffic noise;
- Determination of existing noise levels;

- Prediction of future noise levels;
- Identifications of possible noise impacts; and
- Consideration and evaluation of measures to reduce noise impacts.

The FHWA has established the following noise abatement criteria for various land use activity areas (Table 9) that are used as one of two means to determine when a traffic noise impact would occur. 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 noise abatement criteria. The term “approach” is defined as a noise level that is 1 dBA below the FHWA noise abatement criterion for Categories A, B, C, D and E. For example, a noise impact would occur at a Category B residence (for which the FHWA noise abatement criterion is 67 dBA) if the noise level is predicted to be 66 dBA 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 Noise Abatement Criteria. “Substantially exceeds” is defined as more than 10 dBA. For example, a noise impact would occur at a Category B residence if the existing level is 54 dBA and the predicted level is 65 dBA (11 dBA increase).

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 Federal Highway Administration’s Traffic Noise Model was used to calculate existing and

**Table 9: Noise Abatement Criteria**

<i>Activity Category</i>	<i>FHWA <math>L_{eq}</math> (dBA)</i>	<i>TxDOT <math>L_{eq}</math> (dBA)</i>	<i>Description</i>
<b>A</b>	<b>57</b> (exterior)	<b>56</b> (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
<b>B</b>	<b>67</b> (exterior)	<b>66</b> (exterior)	Residential lands.
<b>C</b>	<b>67</b> (exterior)	<b>66</b> (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.
<b>D</b>	<b>52</b> (interior)	<b>51</b> (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.
<b>E</b>	<b>72</b> (exterior)	<b>71</b> (exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F.
<b>F</b>	–	–	Agricultural, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
<b>G</b>	–	–	Undeveloped lands that are not permitted.

Note: Primary consideration is given to exterior areas (Category A, B, C, or E) where frequent human activity occurs. However, interior areas (Category D) are used if exterior areas are physically shielded from the roadway, or if there is little or no human activity in exterior areas adjacent to the roadway.

Source: TxDOT

**Table 10: Projected Traffic Noise Levels, in  $L_{eq}$  (dBA)**

<i>Receiver</i>	<i>Category</i>	<i>FHWA Criterion</i>	<i>Existing 2009</i>	<i>Alt A 2029</i>	<i>Change (+/-)</i>	<i>Alt D 2029</i>	<i>Change (+/-)</i>	<i>Alt E 2029</i>	<i>Change (+/-)</i>	<i>Noise Impact?</i>
R4: Hotel	D	52	43	47	+4	46	+3	46	+3	No
R11: Restaurant/Bar	E	72	66	72	+6	72	+6	73	+7	A, D, E
R12: Fire station	D	52	44	46	+2	46	+2	47	+3	No

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 affected by the associated traffic noise.

Existing and predicted traffic noise levels were modeled at receiver locations (Table 10 and Appendix B) that represent the land use activity areas adjacent to the proposed project that might be affected by traffic noise and that may potentially benefit from noise abatement. Predicted noise levels in 2029 were modeled for Alternative A (no action), Alternative D and Alternative E.

As indicated in Table 10, predicted noise levels would result in traffic noise impacts and the following noise abatement measures are considered: traffic management, alteration of horizontal or vertical alignment, acquisition of a buffer zone of undeveloped property and construction of noise barriers.

Before a noise abatement measure can be proposed for the project, it must be both feasible and reasonable. To be feasible, an abatement measure must reduce the predicted noise level at an affected receiver by at least 7 dBA, and to be reasonable, it must not exceed the cost-effectiveness criterion of \$25,000 for each receiver that would benefit by a reduction in the predicted noise level of at least 7 dBA.

Traffic management: control devices could be used to reduce the speed of the traffic; however, the minor benefit of 1 dBA per 5 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 or vertical alignment: any alteration of the existing alignment would displace existing business and residences, require additional right of way and not be cost-effective or reasonable.

Buffer zone: acquiring undeveloped property for a buffer zone would avoid, not abate, traffic noise impacts; therefore, this measure is not feasible.

Noise barriers: this is the most common noise abatement measure. A noise barrier was evaluated for the impacted receiver location.

Receiver R11 represents a restaurant and bar with several driveways facing the roadway. A continuous noise wall would not be feasible because it would restrict access and views by potential customers. Gaps in the noise wall would satisfy access requirements, but the resulting non-continuous wall would not be sufficient to achieve the minimum feasible reduction of 5 dBA or the noise reduction design goal of 7 dBA.

The above noise abatement measure would not be feasible; therefore, no abatement measure is proposed for this project.

To avoid noise impacts that may result from development of properties adjacent to the project, landowners should avoid planning sensitive land uses within the noise impact contours for the design year 2029, as shown in Table 11.

**Table 11: Land Use Impact Contours**

<i>Category</i>	<i>Impact Contour (dBA)</i>	<i>Distance from Right-of-Way (feet)</i>
B	66	86
C	66	86
E	71	28

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 tolerable. None of the receivers would be exposed to construction noise for long; therefore, extended disruption of normal activities is not expected. The plans and specifications would require the contractor to make reasonable efforts to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

A copy of this traffic noise analysis will be provided to local officials. On the date of approval of this document (Date of Public Knowledge), the Federal Highway Administration and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project.

**J. Hazardous Materials**

Databases maintained by federal and Texas regulatory agencies that track hazardous materials were searched for potential sites within standard radii of the roadway and detention basin site (Table 12). In addition, current and prior land uses were investigated for indications of activities that could generate contamination. This study was performed in accordance with Practice E1527-05 of the American Society of Testing and Materials, and is pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA, or “Superfund”) and the Resource Conservation and Recovery Act of 1976 (RCRA). The Houston District office of TxDOT maintains detailed files of the results of this study.

Table 12 shows that there are two CERCLA sites within ½ mile of the project corridor:

**Table 12: Potential Hazardous Materials Sites**

<i>Database</i>	<i>Regulatory Agency</i>	<i>Radius</i>	<i>Sites</i>
National Priority List	U.S. Environmental Protection Agency	1 mile	0
Comprehensive Environmental Response, Compensation and Liability Information System	U.S. Environmental Protection Agency	½ mile	2
Resource Conservation and Recovery Information System (RCRIS) Treatment, Storage and Disposal Facilities	U.S. Environmental Protection Agency	½ mile	0
RCRIS Hazardous Waste Generator Violations and Corrective Action Reports	U.S. Environmental Protection Agency	1 mile	1
Toxic Release Inventory System	U.S. Environmental Protection Agency	¼ mile	0
Emergency Response Notification and Texas Spills	U.S. Environmental Protection Agency and Texas Commission on Environmental Quality	¼ mile	2
Texas State Superfund	Texas Commission on Environmental Quality	1 mile	0
Registered Petroleum Storage Tanks	Texas Commission on Environmental Quality	¼ mile	18
Leaking Petroleum Storage Tanks	Texas Commission on Environmental Quality	½ mile	11
Municipal Solid Waste and Landfills	Texas Commission on Environmental Quality	1 mile	0
Texas Voluntary Cleanup Program List	Texas Commission on Environmental Quality	½ mile	0

- IAS Air Services Pesticide Spill at George Bush Intercontinental Airport (EPA No. TXN000606821). This spill occurred on the airport grounds north of the project corridor and was fully cleaned up by the responsible party. No date for the spill is in the U.S. Environmental Protection Agency (EPA) database. The site was not proposed to be placed on the Superfund list and presents no hazard to the project corridor.
- Greenspoint Industrial Park (EPA No. TXN000606823). A rail car released a hazardous substance in the Greenspoint Industrial Park, southwest of the project corridor. The spill was cleaned up by the responsible party. No date is given for the spill. This site was also not proposed to be placed on the Superfund list and presents no hazard to the project corridor.

One site is listed by the EPA as having had a corrective action under RCRA within one mile of the project corridor:

- Halliburton Energy Services, 3000 North Sam Houston Parkway (EPA No. TXD097310338). No description of the hazardous materials involved or the outcome of this corrective action is provided by the EPA. Nonetheless, this site is one mile down-gradient of the project corridor and is very unlikely to have caused contamination of the project lands.

Two sites are listed in the EPA's Emergency Response Notification System:

- Texaco Gas Station, Aldine-Westfield Road and Greens Road (EPA No. 600256). On October 8, 1998, an aboveground diesel tank hose leaked an undisclosed quantity of diesel fuel onto the paved ground surface and into the underground storm drain system, probably discharging to Greens Bayou to the south. The site of this spill is at the western end of the project corridor. The database reports that the owner repaired the leak. Since the fuel did not contact the ground surface, it is very unlikely that it would have contaminated the project corridor.
- Emery Worldwide Freight, 15905 Morales Road (EPA No. 602887). On November 12, 1998, a small quantity of a hazardous chemical was released at this facility. There is no record that the spill caused environmental contamination, and the facility is located down-gradient of the project corridor. It is unlikely that this spill would have contaminated the project corridor.

There are 18 sites with registered underground petroleum product storage tanks within ¼ mile of the proposed project right-of-way, mostly for gasoline and diesel fuel at gas stations, industrial sites, airport parking lots and bus maintenance facilities in the project corridor. All appear to be operating properly and no outstanding violation has been reported by the Texas Commission on Environmental Quality (TCEQ).

There is no registered petroleum storage tank within the proposed project right-of-way. The site survey and research into the historical land use reveals no abandoned or active gasoline service station within the proposed project right-of-way.

The TCEQ reports that 11 sites within ½ mile of the proposed project right-of-way have had underground petroleum product storage tanks that were reported as leaking. Of these 11 sites, ten do not appear to pose a risk of contamination to the corridor. Seven of these sites are far enough down-gradient from the project corridor that they would not. Three sites are not down-gradient but are no longer a contamination risk:

- Former National Convenience Store No. 1255, 15929 Aldine-Westfield Road (TCEQ No. 112404). This site was reported on June 9, 1997 to have leaked motor fuel from two tanks, and groundwater was reported to have been contaminated. The tanks and contaminated soil and groundwater were removed, and the site was issued a final concurrence from the TCEQ and closed the case. This site is on the west side of Aldine-Westfield Road, about 100 feet from the proposed project land. Since contamination was removed from the site in 1999, and Aldine-Westfield Road has been reconstructed since then, it is likely that any contamination that migrated from the site would have been intercepted and removed by the previous project. Furthermore, right-of-way acquisition is not required near this site for this project, and no excavation would occur near the site. Therefore, it is not anticipated that petroleum contamination would be encountered during construction. This site would have no potential impact to the project right-of-way.
- Mobil No. 12LIC, 15930 John F. Kennedy Blvd. (TCEQ No. 102642). This site was reported on March 30, 1992, for one leaking underground tank. Although the leak had affected groundwater, a Phase 2 site assessment at the site indicates that contamination remained within the property boundary of the site. The leaking tanks were removed and the site was cleaned up in 1993, and the TCEQ has issued final concurrence and closed the case. Since right-of-way acquisition is not required at this site for this project, no excavation would occur within the site. Therefore, it is not anticipated that petroleum contamination would be encountered during construction. This site would have no potential impact to the project right-of-way.
- Federal Aviation Administration, 16600 John F. Kennedy Blvd. (TCEQ No. 107425). This site is a fueling and service station for fleet vehicles that reported leakage on November 4, 1993 from at least one of its five diesel tanks or one used oil underground tank. Three of the diesel tanks have been removed from the ground, and the other tanks are still in use. The contaminated soil has been removed, and the TCEQ has issued its final concurrence and closed the case.

The remaining site is a potential source of contamination to the project right-of-way:

- Exxon No. 62878, 15931 John F. Kennedy Blvd. (TCEQ No. 111648). This site was reported on September 24, 1996, as having leaked fuel from one or more of its four underground tanks that are still in use. TCEQ conducted a release determination whether groundwater is affected in 1996 and reached a preliminary conclusion that no receiver was apparently affected. The record was updated on May 5, 2006, with no change. No further information can be found in the TCEQ database, as the record has since been removed. Since this site is adjacent to the project corridor, further investigation would be needed to determine whether it has contaminated the proposed project right-of-way.

Since the proposed project would require displacements, excavation greater than three feet, storm sewers and utility adjustments, the files for 18 petroleum product storage tank sites adjacent or within 500 feet of the project limits were reviewed. According to the priority and status indicated in the list search, only minor soil contamination was indicated in 11 of the 18 adjacent tank sites. TCEQ issued the final concurrence for 10 of these 11 sites and the cases are closed. The remaining site, TCEQ No. 111648, is located near the east end of the project. The status and priority of the site indicates that groundwater may have been affected. In this area, a storm water drainage

structure would be installed below the ground surface. Further assessment would be needed to determine if groundwater in the project limits has been affected.

The project corridor was examined on December 23, 2009, for visible evidence of contamination such as surface stains or slicks, stressed vegetation, piles of debris and used drums in the proposed right-of-way. No such evidence was found on project lands.

The proposed project includes the demolition and relocation of building structures and the renovation of one bridge. The buildings and bridge may include asbestos-containing materials. Asbestos inspections, specification, notification, license, accreditation, abatement and disposal, as applicable, would comply with federal and state regulations. The bridge would be inspected to verify presence or absence of asbestos-containing materials. Asbestos issues would be addressed during the right-of-way acquisition process before construction.

If any hazardous substance were encountered during construction, it would be handled according to federal, state and local regulations.

### **K. Visual Quality**

The project would replace the current 2-lane undivided roadway with a 4-lane divided roadway, but would not otherwise affect the visual environment of the corridor. The proposed detention basin would introduce a pond-like feature to the landscape, but since it would be built about 700 feet south of Greens Road, it would be hardly visible to motorists or businesses.

### **L. Floodplains**

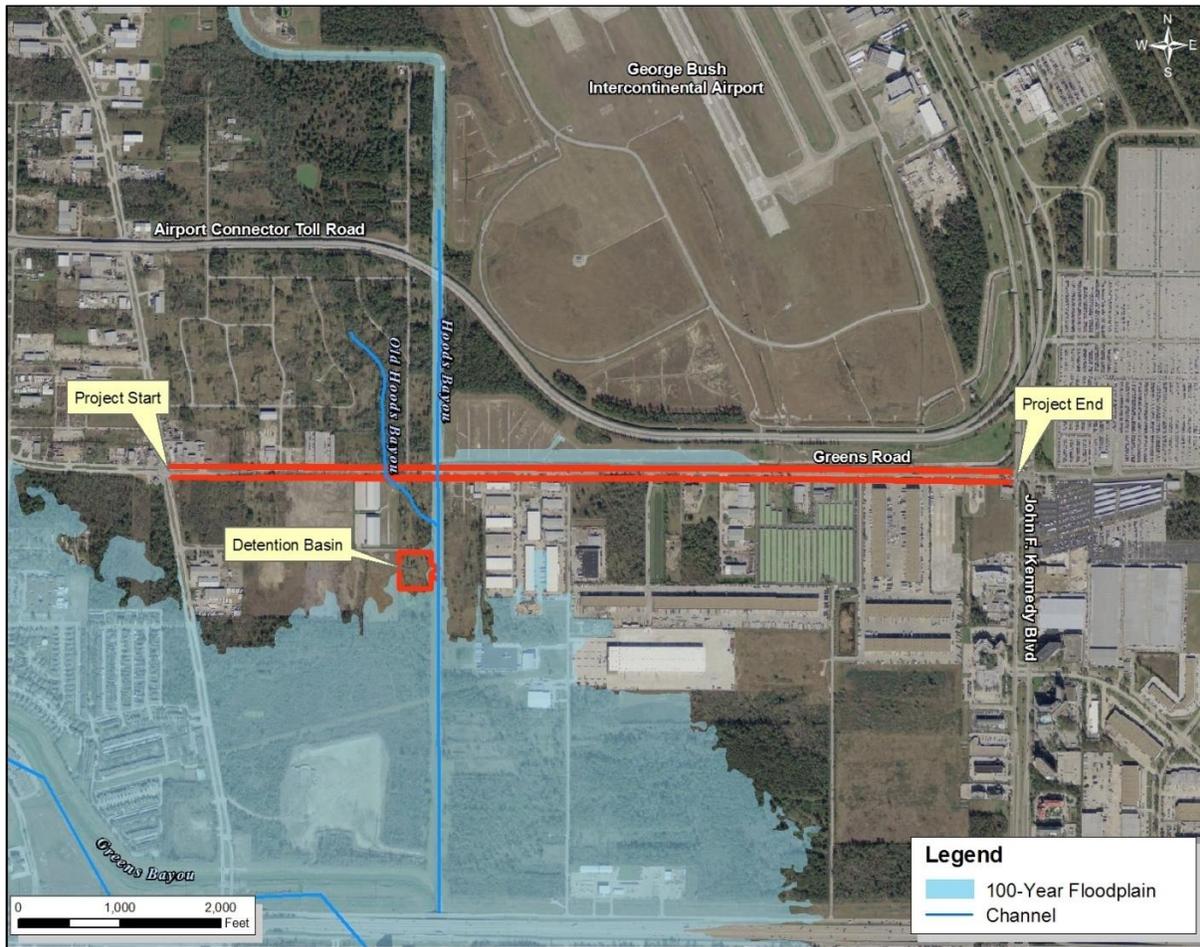
The 100-year floodplain is the area with a one percent chance of inundation by floods each year on average. Greens Road crosses Old Hoods Bayou and Hoods Bayou, which flow together south of the project corridor (Figure 11). The banks of Hoods Bayou fully contain the 100-year floodplain. Greens Road crosses these bayous above the 100-year floodplain,<sup>12</sup> and the proposed project is not in a Federal Emergency Management Agency-designated 100-year floodplain.

The proposed 12.5-acre-foot detention basin at the east end of Peyton Road on the west side of Hoods Bayou would detain the expected runoff water from the expanded roadway of Greens Road. The resulting runoff rates from the roadway would remain at current levels and flooding would not be increased because of the proposed action.

The hydraulic design of the proposed project would be in accordance with current TxDOT and Federal Highway Administration design standards. The proposed project would not increase the base flood elevations to a level that would violate floodplain regulations. The proposed project would permit the conveyance of the 100-year flood, inundation of the roadway being acceptable, without causing severe damage to the roadway, stream or properties. The proposed project would not change either the extent of the 100-year floodplain or the frequency or severity of flooding.

Alternatives D and E cross over the floodplain inside the channel of Hoods Bayou perpendicularly, as would any reasonable action alternative. Since the project would not affect the base flood elevation with this crossing, and since it would conform to local design policies, the project would not cause a significant encroachment to the floodplain according to the *Code of Federal Regulations*, Volume 23, Section 650.

**Figure 11: Floodplains**



Source: Federal Emergency Management Agency, Flood Insurance Rate Map 48201 C 0480 L, June 18, 2003.

## M. Coastal Management

This project is in Harris County, but is not within the Texas Coastal Management Program boundary. Therefore, a consistency determination is not required.

## N. Wildlife

The No Action alternative would not affect wildlife. The proposed action would cause the loss of 0.3 acre (Alternative D) or 0.4 acre (Alternative E) of forested land and 73 ornamental trees. Some of these trees provide food, cover and roosting habitat for the urban-adapted birds and arboreal mammals that are found in the project corridor, and therefore the project would cause a minor impact to these species.

### 1. Endangered and Threatened Species

Endangered species are species of plants or animals that are in imminent danger of extinction. Threatened species may soon become endangered. The U.S. Fish & Wildlife Service and the Texas Parks & Wildlife Department maintain lists of endangered and threatened species. Species of concern are not endangered or threatened, but are rapidly dwindling, often due to habitat loss.

The Texas Parks & Wildlife and the U.S. Fish & Wildlife Service were contacted on January 24, 2007 about this project. The U.S. Fish & Wildlife Service, in a letter dated July 2, 2004, indicates

that no listed or proposed threatened or endangered species is likely to occur in the project corridor. Their letter is reproduced in Appendix D. Table 13 is a list of all endangered and threatened species, and species and habitats of concern that may occur in Harris County.

**Table 13: Endangered Species of Harris County**

<i>Common Name</i>	<i>Scientific Name</i>	<i>State Status</i>	<i>Federal Status</i>	<i>Habitat Description</i>	<i>Habitat Present?</i>	<i>Project Effect?</i>
<b>Amphibians</b>						
Houston toad	<i>Bufo houstonensis</i>	E	E†	Sandy soil, breeds in ephemeral pools	No	No
<b>Birds</b>						
American peregrine falcon	<i>Falco peregrinus anatum</i>	T	DM†	Potential migrant, nests in west Texas	No	No
Arctic peregrine falcon	<i>Falco peregrinus tundrius</i>	SOC	DM†	Potential migrant	No	No
Bald eagle	<i>Haliaeetus leucocephalus</i>	T	DM	Near water areas, in tall trees	No	No
Black rail	<i>Laterallus jamaicensis</i>	SOC		Freshwater marshes and grassy swamps	No	No
Brown pelican	<i>Pelecanus occidentalis</i>	E	DM†	Island near coastal areas	No	No
Henslow's sparrow (wintering)	<i>Ammodramus henslowii</i>	SOC		Weedy fields, fields with bunch grass, vines, and brambles, need bare ground	No	No
Mountain plover	<i>Charadrius montanus</i>	SOC		Short grass plains and bare dirt (plowed fields)	No	No
Snowy plover	<i>Charadrius alexandrinus</i>	SOC		Coastal winter migrant	No	No
Southeastern snowy plover	<i>Charadrius alexandrinus tenuirostris</i>	SOC		Winter migrant on Texas coast beaches, bayside mud or salt flats	No	No
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	E†	Nest in 60+ year pine, forages in 30+ pine	No	No
White-faced ibis	<i>Plegadis chihi</i>	T	†	Freshwater marshes, but some brackish or salt marshes	No	No
White-tailed hawk	<i>Buteo albicaudatus</i>	T	*	Coastal prairies	No	No
Whooping crane	<i>Grus americana</i>	E	E†	Winters in Aransas NWR	No	No
Wood stork	<i>Mycteria americana</i>	T	E†	Prairie ponds and flooded pastures	No	No
<b>Fishes</b>						
American eel	<i>Anguilla rostrata</i>	SOC		Coastal waterways below reservoirs to gulf	No	No
Creek chubsucker	<i>Erimyzon oblongus</i>	T	*	Variety of small rivers and creeks, prefers headwaters	No	No
Smalltooth sawfish	<i>Pristis pectinata</i>	E	E†	Various water depths	No	No
<b>Mammals</b>						
Louisiana black bear	<i>Ursus americanus luteolus</i>	T	T†	Bottomland hardwoods; large, undisturbed forest areas	No	No
Plains spotted skunk	<i>Spilogale putorius interrupta</i>	SOC	†	Wooded, brushy areas and tall-grass prairie	No	No

<i>Common Name</i>	<i>Scientific Name</i>	<i>State Status</i>	<i>Federal Status</i>	<i>Habitat Description</i>	<i>Habitat Present?</i>	<i>Project Effect?</i>
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>	T	†	Cavity trees in hardwood forest, concrete culverts, abandoned buildings	No	No
Red wolf	<i>Canis rufus</i>	E	E†	Extirpated, brushy, forested areas, coastal prairies	No	No
Southeastern myotis bat	<i>Myotis austroriparius</i>	SOC		Cavity trees in hardwood forest, concrete culverts, abandoned buildings	No	No
<b>Mollusks</b>						
Little spectacle-case	<i>Villosa lienosa</i>	SOC		Creeks, rivers, and reservoirs, sandy substrates, slight to moderate currents, along banks in slower currents	No	No
Louisiana pigtoe	<i>Pleurobema riddellii</i>	T		Streams and moderate-sized rivers, mud, sand and gravel	No	No
Pistol-grip	<i>Tritogonia verrucosa</i>	SOC		Rock, hard mud, silt, and soft bottoms, often buried deeply	No	No
Rock pocketbook	<i>Arcidens confragosus</i>	SOC		Mud, sand and gravel substrates in standing or slow flowing water	No	No
Sandbank pocket-book	<i>Lampsilis satura</i>	T		Rivers with moderate to swift flows, gravel-sand and sand	No	No
Texas pigtoe	<i>Fusconaia askewi</i>	T		Rivers with mixed mud, sand and fine gravel in protected areas	No	No
Wabash pigtoe	<i>Fusconaia flava</i>	SOC		Creeks to rivers, mud, sand, and gravel, moderate to swift currents	No	No
<b>Reptiles</b>						
Alligator snapping turtle	<i>Macrochelys temminckii</i>	T	*	Deep water of rivers and canals	No	No
Green sea turtle	<i>Chelonia mydas</i>	T	T†	Gulf and bay system	No	No
Gulf salt marsh snake	<i>Nerodia clarkii</i>	SOC		Saline flats, coastal bays, and brackish river mouths	No	No
Kemp's Ridley sea turtle	<i>Lepidochelys kempii</i>	E	E†	Gulf and bay system	No	No
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E	E†	Gulf and bay system	No	No
Loggerhead sea turtle	<i>Caretta caretta</i>	T	T†	Gulf and bay system	No	No
Smooth green snake	<i>Liochlorophis vernalis</i>	T	*	Gulf coastal prairies, prefers dense vegetation	No	No
Texas horned lizard	<i>Phrynosoma cornutum</i>	T	†	Open, semi-arid regions, with bunch grass	No	No
Timber or cane-brake rattlesnake	<i>Crotalus horridus</i>	T	*	Swamps and floodplains of hardwood and upland pine	No	No
<b>Plants</b>						
Coastal gay-feather	<i>Liatris bracteata</i>	SOC		Coastal prairie grasslands	No	No
Giant sharpstem umbrella-sedge	<i>Cyperus cephalanthus</i>	SOC		Deep prairie depressions on saturated, fine sandy loam soils or on heavy black clay	No	No
Houston daisy	<i>Rayjacksonia aurea</i>	SOC		Barren, sparsely vegetated saline slicks, pimple mounds, on sandy to sandy loam	No	No
Texas meadow-rue	<i>Thalictrum texanum</i>	SOC		Woodland margins on sandy loam, on pimple mounds, clay pan savannahs	No	No

<i>Common Name</i>	<i>Scientific Name</i>	<i>State Status</i>	<i>Federal Status</i>	<i>Habitat Description</i>	<i>Habitat Present?</i>	<i>Project Effect?</i>
Texas prairie dawn	<i>Hymenoxys texana</i>	E	E	Poorly drained areas in open grasslands; pimple mounds	No	No
Texas windmill-grass	<i>Chloris texensis</i>	SOC		Sandy to sandy loam soils in bare areas	No	No
Threeflower broomweed	<i>Thurovia triflora</i>	SOC		Low vegetation, on light colored silt or fine sand over saline clay	No	No

\* These species occur on the Texas list of endangered or threatened species, but they are not listed at this time by the federal U.S. Fish & Wildlife Service.

† These species are listed by the U.S. Fish & Wildlife Service, but they are not listed to occur in this county by the Clear Lake office of the U.S. Fish & Wildlife Service.

E = endangered; T = threatened; SOC = species of concern; DM = delisted taxon, recovered, being monitored first five years

In addition, the Texas Parks & Wildlife Department's Natural Diversity Database (April 2, 2008 version) was consulted on August 19, 2009 and May 15, 2010, for any record of endangered and rare species and habitats in the Humble and Aldine quadrangles, which includes the area within 1½ mile of the project corridor. The Natural Diversity Database presents historical records only and does not determine the presence or absence of a species.

The Natural Diversity Database has records of Texas windmill-grass (*Chloris texensis*), a Texas threatened species, occurring within one mile of the project corridor (EOID No. 4284). The project corridor was surveyed for Texas windmill-grass in August 2009, but none was seen near the project corridor. Therefore, the project would not have an impact on Texas windmill-grass.

The Natural Diversity Database also has records of Plains spotted skunk (*Spilogale putorius interrupta*), a species of concern in Texas, about eight miles northwest of the project corridor (EOID No. 473), which is beyond the designated search radius for this project. The project corridor was surveyed for Plains spotted skunks and their habitat in August 2009. The skunk lives in old fields and in abandoned barns, but these features are not observed in the project corridor, and no skunk was observed. Therefore, the proposed project would not have an impact on the Plains spotted skunk.

The endangered Texas prairie-dawn (*Hymenoxys texana*) is recorded in the Natural Diversity Database about nine miles southwest of the project corridor (EOID No. 17), which is also beyond the designated search radius for this project. Texas prairie-dawn habitat is sandy mima mounds emerging from grasslands, and the plant is only visible in the field during March. The project corridor was surveyed in March 2004 for Texas prairie-dawn, but neither plants nor their characteristic habitat was found. The project area was re-surveyed for Texas prairie-dawn habitat in August 2009, and none was found. Therefore, the project would have no effect on the Texas prairie-dawn.

## 2. Migratory Birds

The Migratory Bird Treaty Act of 1918 states it is unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, or egg, in part or in whole, without a federal permit issued in accordance with the Act's policies and regulations. A cursory nest survey was conducted in August 2009 in the areas proposed for clearing. No active nest was observed at the time of the site survey, but migratory birds were observed within the project limits. In accordance with the Migratory Bird Treaty Act, no tree or bridge structure containing nests, eggs or young would be removed by project construction during the nesting and breeding season (March 1 through August 31).

### **3. Bald and Golden Eagle Protection Act**

The Bald and Golden Eagle Protection Act of 1940 prohibits taking Bald and Golden Eagles, destroying their nests or taking their eggs. This law protects eagles from commercial exploitation and promotes their survival. The proposed project would neither disturb nor endanger Bald or Golden Eagles, since there is no suitable habitat in the area for nesting Bald or Golden Eagles.

### **4. Essential Fish Habitat**

The Manguson-Stevens Fishery Conservation and Management Act, as amended on October 11, 1996, directs that all Federal agencies, whose actions would affect essential fish habitat, must consult with the National Marine Fisheries Service regarding potential adverse effects. Since tidal waters are not in the proposed project area, the proposed action would not affect essential fish habitat.

## **O. Air Quality**

This project is in Harris County, which is part of the Houston-Galveston-Brazoria area that has been designated by the U.S. Environmental Protection Agency (EPA) as a marginal non-attainment area for ozone (under the 8-hour standard); therefore, the transportation conformity rule applies.

All projects in the Houston–Galveston Area Council’s *2013-2016 Transportation Improvement Program (TIP)* that are proposed for federal or state funds are consistent with federal guidelines in Section 450 of Title 23, Code of Federal Regulations and Section 613.200, Subpart B of Title 49. The TIP considers energy, environment, air quality, cost and mobility. The U.S. Department of Transportation (Federal Highway Administration and Federal Transit Administration) found the *2035 Regional Transportation Plan (RTP) Update* to conform to the State Implementation Plan on January 25, 2011, and the *2013-2016 TIP* to conform to the State Implementation Plan on November 1, 2012.

Excerpts from the *2035 Regional Transportation Plan Update* and the *2013-2016 TIP* are presented in Appendix A.

TxDOT forecasts that average annual daily traffic (AADT) on Greens Road in the design year 2029 will be 36,450 vehicles per day. A prior TxDOT modeling study and previous analyses of similar projects demonstrate that it is unlikely that the carbon monoxide standard would ever be exceeded by any project with AADT below 140,000. The AADT projection for the project does not exceed 140,000 vehicles per day; therefore, a Traffic Air Quality Analysis is not required.

### **1. Congestion Management Process**

The Congestion Management Process (CMP) is a systematic process for managing congestion that provides information on transportation system performance and on alternative strategies for alleviating congestion and enhancing the mobility of people and goods to levels that meet state and local needs. The proposed project was developed from H-GAC’s operational CMP, which meets all requirements in Section 500.109 of Title 23 of the Code of Federal Regulations. The CMP was instituted by H-GAC in 2009 and revised in 2013.

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; they are included in the financially constrained RTP, and future resources are reserved for their implementation. The CMP element of the plan carries an invento-

**Table 14: Congestion Management Strategies**

<i>Location</i>	<i>Congestion Mitigation Measure</i>	<i>Completion Date</i>
John F. Kennedy Blvd. from Beltway 8 to Aldine Mail Route	Access Management Improvements	2023
John F. Kennedy Blvd. from Will Clayton Parkway to Beltway 8	Access Management Improvements	2023
Will Clayton Parkway from John F. Kennedy Blvd. to US 59	Access Management Improvements	2023

Source: Houston-Galveston Area Council

ry of all project commitments (including those resulting from major investment studies) that details type of strategy, implementing responsibilities, schedules and expected costs. At the project's programming stage, travel demand reduction strategies and commitments will be added to the regional TIP or included in construction plans. The regional TIP programs these projects at appropriate times for single-occupancy vehicle (SOV) facility implementation and project-specific elements. Committed congestion reduction strategies and operational improvements near the project corridor consist of projects listed in Table 14.

In an effort to reduce congestion and the need for SOV lanes in the region, TxDOT and H-GAC will continue to promote appropriate congestion reduction strategies through the Congestion Mitigation Air Quality (CMAQ) program, the CMP and the RTP. The congestion reduction strategies considered for this project would help alleviate congestion in the project corridor, but would not eliminate it.

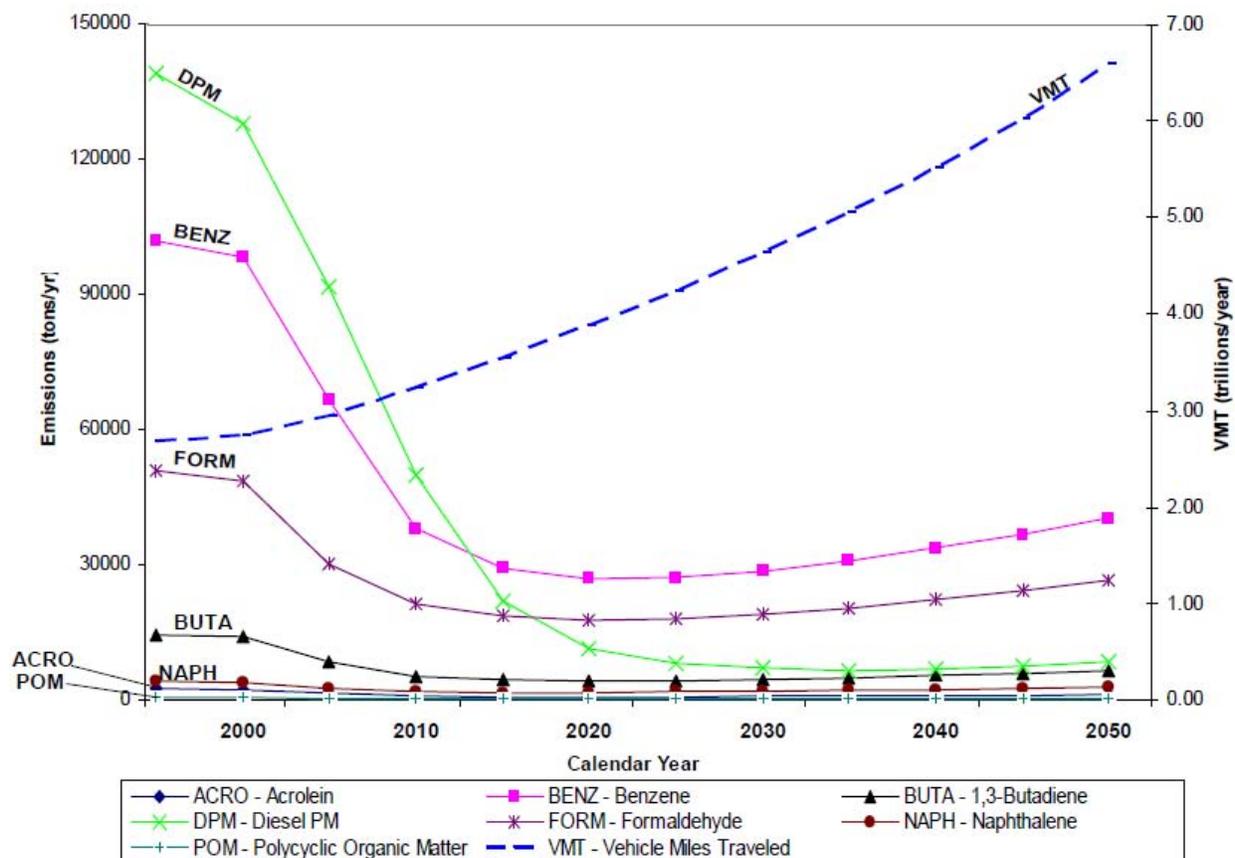
Therefore, the proposed project is justified. The congestion mitigation analysis for added SOV capacity projects in the H-GAC area is on file and available for review at the Houston-Galveston Area Council, 3555 Timmons Drive, Houston, Texas.

## **2. Mobile Source Air Toxic Pollutants**

Controlling toxic air emissions became a national priority with the passage of the Clean Air Act Amendments of 1990, whereby Congress mandated that the EPA regulate 188 air toxins, also known as hazardous air pollutants. The EPA assessed this expansive list in their rule on the control of hazardous air pollutants from mobile sources<sup>13</sup> and identified 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 in their 1999 *National Air Toxics Assessment* (<http://www.epa.gov/ttn/atw/nata1999/>). These are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxins, the list is subject to change and may be adjusted in consideration of future EPA rules.

The 2007 EPA Mobile Source Air Toxic Pollutants (MSAT) rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's MOBILE 6.2 model, even if vehicle activity (vehicle miles travelled, or VMT) increases by 145 percent from 1999 to 2050, annual emissions of MSATs will be reduced by 72 percent, as shown in Figure 12.

Air toxins analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxins, many questions remain unanswered. In particular, the tools

**Figure 12: National Trends in Toxic Air Pollutant Emissions****Notes:**

1. Annual emissions of polycyclic organic matter are projected to be 561 tons/yr for 1999, decreasing to 373 tons/yr for 2050.
2. Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology and other factors.

Source: U.S. Environmental Protection Agency MOBILE 6.2 run, 20 August 2009.

and techniques for assessing project-specific health outcomes from lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision-making in the context of the National Environmental Policy Act. The FHWA, EPA, the Health Effects Institute and others have funded and conducted research studies to define potential risks from MSAT emissions from highway projects more clearly. The FHWA will continue to monitor the developing research in this emerging field.

**Project-Specific MSAT Information.** A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions from project 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](http://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemissions.pdf).

For each alternative in this document, the amount of MSAT emitted would be proportional to 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 No Action be-

cause 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 MOBILE 6.2 emissions model, emissions of all priority MSATs except for diesel particulate matter decrease as speed increases. The extent to which these speed-related emissions decreases would offset VMT-related emissions increases cannot be projected reliably due to the inherent deficiencies of technical models. Because the estimated VMT under each of the build alternatives are the same, it is expected there would be no appreciable difference in overall MSAT emissions among build alternatives. In addition, regardless of the alternative, 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 72 percent between 1999 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.

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

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures and risks posed by air pollutants. They maintain IRIS, which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (<http://www.epa.gov/ncea/iris/index.html>). 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 2009 Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents, which can be found at [http://www.fhwa.dot.gov/environment/air\\_quality/air\\_toxics/policy\\_and\\_guidance/100109guidmem.cfm](http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/100109guidmem.cfm). This appendix also discusses a variety of FHWA research initiatives related to air toxins. 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 are the adverse human health effects of MSAT compounds at current environmental concentrations (<http://pubs.healtheffects.org/view.php?id=282>) or in the future as vehicle emissions substantially decrease (<http://pubs.healtheffects.org/view.php?id=306>).

The methods for forecasting health impacts include emissions modeling, dispersion modeling, exposure modeling and final determination of health impacts. Each step in the process builds 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 project alternatives.

These difficulties are magnified for lifetime (*i.e.*, 70-year) assessments, particularly because unsupported assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that timeframe, since such information is unavailable. The results produced by the EPA's MOBILE 6.2 model, the California EPA's Emfac2007 model, and the EPA's MOVES model in forecasting MSAT emissions are highly inconsistent. Indications from the development of the MOVES model are that MOBILE 6.2 significantly underestimates diesel particulate matter emissions and significantly overestimates benzene emissions.

Regarding air dispersion modeling, an extensive evaluation of EPA's guideline CAL3QHC model was conducted in an NCHRP study ([http://www.epa.gov/scram001/dispersion\\_alt.htm](http://www.epa.gov/scram001/dispersion_alt.htm)), which documents poor model performance at ten sites across the country: three where intensive monitoring was conducted and seven with less intensive monitoring. The study indicates a bias of the CAL3QHC model to overestimate concentrations near highly congested intersections and underestimate concentrations near less congested intersections. The consequence of this is a tendency to overstate the air quality benefits of mitigating congestion at intersections. Such poor model performance is less difficult to manage for demonstrating compliance with national ambient air quality standards for relatively short time frames than it is for forecasting individual exposure over an entire lifetime, especially given that some information needed for estimating 70-year lifetime exposure is unavailable. It is particularly difficult to forecast MSAT exposure reliably near roadways, and to determine the time periods that people are actually exposed.

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

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

could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework.

Because of the limitations in the methods 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.

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

### **3. Construction Impacts**

Construction equipment would temporarily raise dust and emit air pollutants in their exhausts. Impacts would be minimized by the following measures:

- Fugitive dust would be controlled by sprinkling water on construction haul roads and work areas when this becomes a problem.
- Air pollutant emissions in construction equipment exhaust would be minimized by maintaining equipment engines as necessary and shutting off idling equipment where possible.

### **P. Indirect Impacts**

Indirect impacts result from the project causing other, reasonably predictable actions that have associated environmental impacts. These impacts may occur later or farther away than impacts caused directly by the proposed action. The most common indirect impacts of highway projects are the environmental impacts due to private land development along new highways. Indirect impacts are determined by estimating the amount and use of land developed in part because of the project (other than the proposed project right-of-way), and assessing the potential environmental impacts of that induced development.<sup>14 15</sup> Because induced development is the result of the project providing greater access to land, it is most likely to occur in the land parcels directly adjacent to the proposed right-of-way, and less likely to occur with increasing distance from the project corridor.

The assessment of indirect impacts follows the steps below:

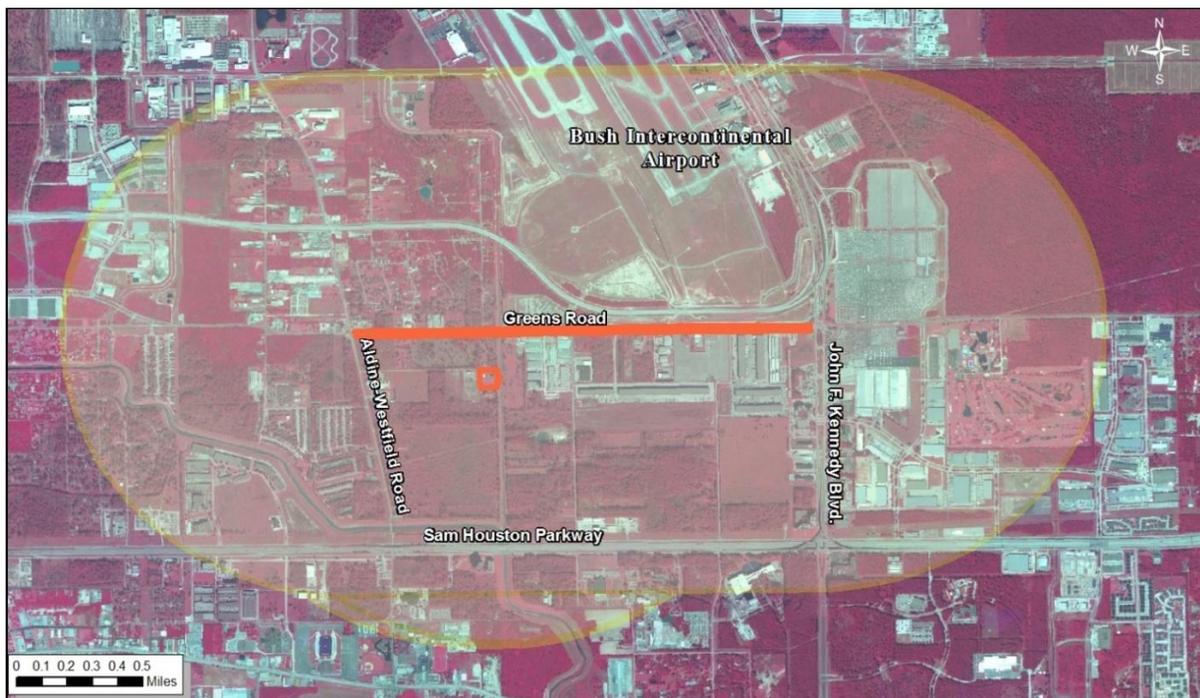
1. Scoping;
2. Identify the study area's goals and trends;
3. Inventory the study area's notable features;
4. Identify impact-causing activities of proposed action and alternatives from among the following categories:
  - Modification of regime
  - Land transformation and construction
  - Resource extraction

- Processing
  - Land alteration
  - Resource renewal activities
  - Changes in traffic
  - Waste emplacement
  - Chemical treatment
  - Access alteration
5. Identify potentially substantial indirect effects for analysis from among the following categories:
    - Encroachment-alteration effects
    - Induced growth effects
    - Effects related to induced growth
  6. Analyze indirect effects and evaluate results; and
  7. Assess consequences and develop mitigation as appropriate.

### 1. Scoping

Scoping for this project (Step 1) was performed at the onset of the Environmental Assessment process. This step resulted in setting the area of influence of indirect impacts due to induced development to the land parcels directly adjacent to the proposed right-of-way, up to one mile from the project lands. Figure 13 is a map of the area of influence for indirect effects analysis. The reason the area of influence is set at one mile is because the proposed project could open access to adjacent lands for residential and commercial development, and incremental residential and commercial developments tend to be built in square-mile or smaller units. The area of influence is about 4,000 acres. Forested areas are visible in Figure 13 as dark areas with no buildings.

**Figure 13: Area of Influence for Indirect Effects Analysis**



The time horizon for induced development is 2035, the planning horizon of the *2035 Regional Transportation Plan Update*. All the development induced by the project would be expected to occur by then.

## **2. Identify the Study Area's Goals and Trends**

The study area's goals and trends (Step 2) are as follows. Commercial and residential land development has been occurring near Greens Road over the last 50 years with no direct land use control until 2007, when the City of Houston passed a land use ordinance for lands near Bush Intercontinental Airport. Figure 7 shows the current uses of land within the area of influence. Of the 4,000 acres in the project's area of influence, about 1,000 acres is undeveloped and potentially developable land (this tally excludes George Bush Intercontinental Airport and the Houston Police Department land on the north side of Greens Road). About 60 percent of this land is forest and 40 percent is old field.

Hoods Bayou and Greens Bayou flow through the area of influence. Greens Bayou, and most likely Hoods Bayou as well, are impaired by high levels of bacterial contamination. Water quality is not expected to improve over the planning period due to the lack of controls on non-point source pollution.

A Master Plan for George Bush Intercontinental Airport was prepared in 2005. The Master Plan does not show the airport extending south or otherwise affecting Greens Road between John F. Kennedy Boulevard and Aldine-Westfield Road. In addition, the City of Houston approved an ordinance controlling land use around the airport in 2007. This ordinance allows all existing land uses to continue, but prohibits new residential subdivision development within the 65  $L_{dn}$  noise contour of the airport. Greens Road crosses the 65  $L_{dn}$  noise contour, generally south of Runways 15L/33R and 15R/33L in the central part of the project corridor. Land within the project's area of influence that is also within the 65  $L_{dn}$  noise contour is not permitted to have new residential subdivisions.

The current air quality in the area of influence is poor because it is in the Houston-Galveston-Brazoria area, which has not attained the national ambient air quality standard for ozone. Most of the project corridor and adjacent areas were developed by the 1960s. The *2035 Regional Transportation Plan* by the Houston-Galveston Area Council defines transportation systems and services in the area of influence. The plan forecasts future travel demand from which regional transportation needs are identified. It then develops and evaluates system alternatives and selects options to meet the mobility needs of the region. The proposed expansion of Greens Road is in the *2035 Regional Transportation Plan*.

## **3. Inventory the Study Area's Notable Features**

Notable features in the study area (Step 3) include Hoods Bayou and George Bush Intercontinental Airport. Greenmeadows Subdivision was a residential neighborhood that was acquired for noise mitigation by the Houston Airport System. Homes in this neighborhood have been abandoned and mostly demolished, and the land is not available for redevelopment. Commercial and light industrial development occurs along the south side of Greens Road. Hoods Bayou and the old channel of Hoods Bayou cross the area of influence from north to south. There are small woodlots and abandoned fields on both sides of Greens Road.

#### ***4. Identify Impact-Causing Activities of Proposed Action and Alternatives***

The impact of the proposed action (Step 4) is “Changes in Traffic.” The wider roadway would increase traffic capacity and allow more traffic to use Greens Road. Businesses that depend on their convenience to motorists or ease of truck access would thus have a greater incentive to locate along Greens Road. Property owners would be expected to respond to this incentive by developing unused land and re-developing some under-performing businesses in the area of influence of the Greens Road project. In this way, about 0.3 acre of forest and 5.3 acres of old fields would be converted to highway land.

The air quality in the area of influence is currently considered in poor or declining health, because it is within the Houston-Galveston-Brazoria nonattainment area for ozone. In addition, the proposed project will increase mobility within the project corridor by relieving congestion along Greens Road. All such actions can result in changes of traffic patterns and thus have the potential to indirectly impact air quality in the area.

#### ***5. Identify Potentially Substantial Indirect Effects for Analysis***

The likely result of the new access provided by the proposed action (Step 5) would be “Induced Growth Effects:” new commercial and light industrial development spurred by the higher traffic capacity and traffic volume along Greens Road. Induced development and re-development may occur along the south side of Greens Road and on the north side near Aldine-Westfield Road, with a small amount of induced development extending to lands along the cross streets south of Greens Road. There is no land use control on commercial or industrial use of this area. About 35 acres of undeveloped forest and 77 acres of undeveloped old field grassland would be induced to develop if Greens Road were widened to four lanes. This land would probably contain the same commercial and light industrial uses that are currently in the project area. The induced development and re-development could affect plant communities, endangered species and air quality.

Although the area of influence includes Hispanic and low-income populations, no direct effect to these communities is predicted, because the Greenmeadows Subdivision was acquired for noise mitigation and the remaining residences would not be affected by the project or induced development. Therefore, the project would have no disproportionate adverse impact to these populations, and further evaluation of environmental justice in Steps 6 and 7 is not necessary.

Endangered species are not likely to be present in the area of influence for this project and would not be affected by induced development. Further evaluation of endangered species in Steps 6 and 7 is not necessary.

The area of influence is part of the EPA designated eight-county nonattainment area for ozone. The area of influence is currently in attainment for all other criteria pollutants; please refer to Section 4.E. Based on the results of Steps 1 through 4 that evaluated the possible project-related actions that can indirectly impact air, it was determined that the proposed project would be anticipated to cause indirect air quality impacts in the area of influence. As the proposed project is anticipated to result in indirect air quality impacts, air quality and MSATs are evaluated further in Steps 6 and 7.

#### ***6. Analyze Indirect Effects and Evaluate Results***

The environmental effects of this induced new development (Step 6) would possibly include the loss of up to 35 acres of forest and 77 acres of old fields in the undeveloped tracts along Greens

Road and some adjacent land to the south. The affected forest area would potentially include about one acre of riparian habitat along Old Hoods Bayou.

Direct impacts on air quality and MSATs from the project are primarily those associated with the increased capacity, as well as the resulting projected increases in VMT. EPA's new fuel and vehicle standards are projected to reduce emissions of air pollutants and MSATs and are expected to offset emissions from the increase in VMT. The net emissions reductions are expected to contribute to continued maintenance and improvement of air quality and MSAT levels in the area of influence.

The potential indirect impacts on air quality and MSATs are primarily related to any expected development and redevelopment resulting from project's increased vehicle capacity. The project would be expected to result in increased development in the area. Potential types of development are commercial and light industrial uses, and area sources such as gas stations.

### ***7. Assess Consequences and Develop Mitigation as Appropriate***

The overall direct and indirect consequences of the proposed action (Step 7) are the loss of 35 acres of oak-pine forest (including one acre of riparian forest) and 82 acres of old fields. Future land development would be subject to environmental laws and regulations that protect water quality, and therefore water quality would not be substantially affected by induced development. No mitigation is proposed for the minor impacts of the project and its indirect impacts.

Any increased air pollutant or MSAT emissions resulting from the potential development or redevelopment of the area must meet regulatory emissions limits established by the TCEQ and EPA, as well as obtain appropriate authorization from the TCEQ. Regulatory emission limits set by TCEQ and EPA are established to attain and maintain the NAAQS by assuring any emissions sources resulting from new development or redevelopment will not cause or contribute to a violation of those standards.

No change in attainment status is anticipated in the AOI due to emissions resulting from the proposed project. For the region to achieve ozone attainment, a variety of strategies to reduce emissions of point, non-point, and mobile sources must be done in the entire Houston-Galveston-Brazoria area, as outlined in the State Implementation Plan. Indirect air quality impacts from MSATs are unquantifiable due to limitations on determining pollutant emissions, dispersion, and impacts to human health. MSAT emissions would likely be lower than present levels in future years because of the EPA's national control regulations (*i.e.*, new light-duty and heavy-duty on-road fuel and vehicle rules, and the use of low-sulfur diesel fuel). Even with an increase in VMT and possible temporary emission increases during construction, the EPA's vehicle and fuel regulations, coupled with fleet turnover, will cause substantial reductions of emissions, MSATs and the ozone emissions over time. The proposed project is not anticipated to result in indirect air quality impacts.

### **Q. Cumulative Impacts**

Cumulative impacts are the incremental consequences of an action added to those of other past, present and foreseeable future actions. Cumulative impacts would occur if other infrastructure projects near the proposed project have similar environmental impacts, so that the cumulative result of all projects may be significant even though the individual impact from one project is not. An example of cumulative impacts may be an incremental take of a wetland, first with minor

amounts of wetland filled for highway use, potentially followed by further loss of the wetland area by other projects.

Determination of cumulative impacts for this project follows this procedure:

1. Identify the resources to consider in the analysis;
2. Define the study area for each affected resource;
3. Describe the current health and historical context for each resource;
4. Identify direct and the indirect impacts that may contribute to a cumulative impact;
5. Identify other reasonably foreseeable actions that may affect resources;
6. Assess potential cumulative impacts to each resource;
7. Report the results; and
8. Assess and discuss mitigation issues for all adverse impacts.

### ***1. Identify the Resources to Consider in the Analysis***

The environmental resources that may have incremental consequences for this project (Step 1) are plant communities and air quality (ozone and MSATs – mobile source air toxic pollutants). These resources are included because they are potentially affected by the proposed action. Cumulative impact assessments are presented below for each resource.

### ***2. Define the Study Area for Each Affected Resource***

#### ***a. Plant Communities***

The study area (Step 2) for plant communities is the watershed of Hoods Bayou, because the watershed is the natural unit dividing ecosystems by energy and nutrient flow, and because the Hoods Bayou watershed is a relatively large area (about six square miles) that includes areas of similar land use.

Temporal boundaries for cumulative impacts to plant communities and land use are 60 years in the past and 20 years in the future. The reason for the 60-year retrospective view is that aerial photographs are available from the project areas since the mid-1940s. The reason for looking 20 years into the future is that the project horizon year is 20 years from construction.

#### ***b. Air Quality***

Evaluating Air Quality in relation to cumulative impacts (Step 2) requires looking at three distinct resource study areas (RSAs), as described below:

- Ozone – The RSA for evaluating the ozone National Ambient Air Quality Standard (NAAQS) was designated as the Houston-Galveston-Brazoria eight-hour ozone nonattainment area, which includes Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller.
- Carbon Monoxide (CO) – The RSA for CO was based on the right-of-way line, which represents the locations with the highest potential for CO concentrations. However, the nature of the proposed project does not warrant a Traffic Air Quality Analysis. Therefore, CO levels resulting from this project would not be expected to exceed the NAAQS for CO and negatively impact air quality in this area.

- Mobile Source Air Toxics (MSATs) – The RSA for MSATs is the boundaries of Montgomery County. Unlike the other resources evaluated, air quality impacts from MSATs have been evaluated qualitatively in this proposed project by TxDOT and the Federal Highway Administration. MSATs are regulated by the U.S. EPA on a national basis through requirements for fuels and vehicle technology. The MSAT RSA qualitatively evaluated emission changes based upon the proposed project and national trends.

### ***3. Describe the Current Health and Historical Context for Each Resource***

#### *a. Plant Communities*

The current health and historical context (Step 3) is as follows. Plant communities in the Hoods Bayou watershed are much reduced since the 1940s and are still declining in area due to urban development. Most of the Hoods Bayou watershed was in agricultural use before 1960 and was developed for residential, commercial, industrial and airport use in the 1960s and 1970s, reducing the forest area to small fragments. A few remaining forests have matured. Within the watershed of Hoods Bayou are small patches of grassland and forest in an urban setting of commercial and industrial land uses. Residential subdivisions are gradually being converted to office, retail or industrial use in the watershed. Currently, forests are less than five percent of the land in the Hoods Bayou watershed.

#### *b. Air Quality*

The current health and historical context (Step 3) for air quality is as follows. The EPA establishes limits on atmospheric pollutant concentrations through enactment of the NAAQS for six principal, or criteria, pollutants. The EPA designated eight counties in the Houston-Galveston-Brazoria area as non-attainment for ozone. The region is currently in attainment for all other criteria pollutants. Although there have been year-to-year fluctuations, the ozone trend continues to show improvement. The trend of improving air quality in the region is attributable in part to the effective integration of highway and alternative modes of transportation, cleaner fuels, improved emission control technologies and Houston-Galveston Area Council regional clean air initiatives.

On July 20, 2012, EPA designated the Houston-Galveston-Brazoria (HGB) area as non-attainment for the 8-hour ozone standard that the agency revised in 2008. Counties affected under this status are Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery and Waller. The region is currently classified as marginal non-attainment of the 8-hour ozone standard with a maximum attainment date of December 31, 2015.

### ***4. Identify Direct and Indirect Impacts Contributing to Cumulative Impact***

#### *a. Plant Communities*

The direct impact of the proposed action (Step 4) on plant communities is the permanent removal of 0.3 acre of forest and 5.3 acres of grassland (Alternative D) or 0.4 acre of forest and 4.6 acres of grassland (Alternative E). The indirect impact of either proposed action alternative on plant communities is the permanent removal of up to 35 acres of forest (including one acre of riparian forest) and 77 acres of grassland. The forests provide food, cover and roosting habitat for the urban-adapted birds and arboreal mammals that are found in the project corridor, and therefore the project would cause a small reduction in the habitat for these species. Since no endangered species or their critical habitat is present in the project lands or vicinity, the project would not cause impacts to endangered species.

*b. Air Quality*

The direct and indirect impacts of the proposed action (Step 4) are as follows. Direct impacts on air quality and MSATs from the project are primarily those associated with the increased capacity, accessibility and the resulting projected increases in VMT. Emission reductions as a result of EPA’s new fuel and vehicle standards are anticipated to offset impacts associated with VMT increases.

Indirect impacts on air quality and MSATs are primarily related to any expected development resulting from project’s increased accessibility or capacity to the area. Any increased air pollutant or MSAT emissions resulting from the potential development of the area must meet regulatory emissions limits established by the TCEQ and EPA as well as obtain appropriate authorization from the TCEQ and therefore are not expected to result in any degradation of air quality or MSAT levels.

**5. Identify Other Reasonably Foreseeable Actions That May Affect Resources**

*a. Plant Communities*

Other past, current and reasonably foreseeable projects in the project area (Step 5) include the currently programmed widening of Greens Road from John F. Kennedy Boulevard to US 59 from two to four lanes, by the City of Houston in the next five years, and the proposed expansion of George Bush Intercontinental Airport over the next ten years. No public information is available on planned development on lands near the project corridor, but about 80 acres of undeveloped land could potentially develop as commercial and industrial land over the next 20 years, if the region continues its recent growth rate. Table 15 is a list of other projects in the project area.

*b. Air Quality*

Other past, current and reasonably foreseeable projects in the project area (Step 5) are as follows. Increased development and urbanization can result in increased air pollutant or MSAT emissions resulting from these actions. These must meet regulatory emissions limits established by the TCEQ and EPA as well as obtain appropriate authorization from the TCEQ and therefore are not expected to result in any degradation of air quality or MSAT levels. Reasonably foreseeable actions that could impact air quality within the RSA are shown in Table 16.

**6. Assess Potential Cumulative Impacts to Each Resource, and**

**7. Report the Results**

*a. Plant Communities*

The cumulative impact of this and other projects (Steps 6 and 7) is as follows. The proposed action and the proposed expansion of Greens Road between John F. Kennedy Boulevard and US 59 would widen transportation corridors four miles long by 100 feet wide and create a 2-acre detention basin. Based on estimates from aerial photographs, the two projects and building on all the undeveloped land in the project corridor would remove 116 acres of forest and 82 acres of

**Table 15: Other Projects in the Project Area**

<i>Project</i>	<i>Location</i>	<i>Sponsor</i>	<i>When Built</i>
Greens Road from John F. Kennedy Boulevard to US 59: expansion to four lanes	East of project corridor	City of Houston	2012
George Bush Intercontinental Airport: addition of one or two new runways	North and east of the project corridor	City of Houston	2020

**Table 16: Reasonably Foreseeable Actions**

<i>Project Name</i>	<i>Project Sponsor</i>	<i>Summary Description</i>
Greens Road from John F. Kennedy Boulevard to US 59	City of Houston	Expansion to four lanes, proposed to be built in 2012
George Bush Intercontinental Airport	City of Houston	Expansion by one or two runways, proposed to be built in 2020

mowed and old field grassland. The airport expansion could potentially add 1,928 acres of forest (most of which would be converted to grassland) to this total. Most of this forest is the pine-oak or oak-sugarberry type described earlier in this chapter, and about 35 acres of the forested land that could be cleared by airport expansion is riparian forest. Neither the pine-oak nor the oak-sugarberry forest type is a special habitat type as defined by the Texas Parks & Wildlife Department. However, the loss of 2,044 acres of forest and associated wildlife habitat would be a large proportion of the remaining forest in the Hoods and Rinehart Bayou watersheds, a substantial environmental impact. The loss of 36 acres of riparian habitat, a special habitat under the Memorandum of Agreement between TxDOT and Texas Parks & Wildlife, would also be a substantial loss. Since endangered species are not present at the project area, the project and other actions would not have a cumulative effect on endangered species.

*b. Air Quality*

The cumulative impacts of these other projects (Step 6) are as follows. Any increased air pollutant or MSAT emissions resulting from increased capacity, accessibility and development are projected to be more than offset by emissions reductions from EPA’s new fuel and vehicle standards or addressed by EPA’s and TCEQ’s regulatory emissions limits programs. Projected traffic volumes are expected to result in minimal to no impacts on air quality; improved mobility and circulation may benefit air quality. Increases in urbanization would likely have a negative impact on air quality. However, planned transportation improvements in the project area as listed in a conforming RTP and TIP, coupled with EPA’s vehicle and fuel regulations and fleet turnover, are anticipated to have a cumulatively beneficial impact on air quality.

The results of the cumulative impact analysis for air quality (Step 7) are as follows. The cumulative impact on air quality from the proposed project and other reasonably foreseeable transportation projects are addressed at the regional level by analyzing the air quality impacts of transportation projects in the 2035 RTP update and the 2011-2014 TIP, as amended. The proposed project and the other reasonably foreseeable transportation projects were included in the 2035 RTP update, and the 2011-2014 TIP, as amended, and have been determined to conform to the SIP. When combined, planned transportation improvements, revised EPA fuel and vehicle regulations, and fleet turnover are anticipated to have a cumulatively beneficial impact on air quality.

**8. Assess and Discuss Mitigation Issues for All Adverse Impacts**

*a. Plant Communities*

Mitigation for these cumulative impacts (Step 8) could include planting trees along Greens Road to provide wildlife habitat and migration corridors as well as aesthetics and shade. The City of Houston has a program to encourage private developers to plant trees along roads, which would provide the impetus for this measure on newly developed land. Mitigation for the loss of forest from the expansion of George Bush Intercontinental Airport may include establishment of compensatory forests and riparian habitat.

*b. Air Quality*

Mitigation for these cumulative impacts on air quality (Step 8) is as follows. A variety of federal, state, and local regulatory controls as well as local plans and projects have had a beneficial impact on regional air quality. The CAA, as amended, provides the framework for federal, state, tribal, and local rules and regulations to protect air quality. The CAA required the EPA to establish NAAQS for pollutants considered harmful to public health and the environment. In Texas, the TCEQ has the legal authority to implement, maintain, and enforce the NAAQS. The TCEQ establishes the level of quality to be maintained in the state's air and to control the quality of the state's air by preparing and developing a general comprehensive plan. Authorization in the Texas Clean Air Act (TCAA) allows the TCEQ to do the following: collect information and develop an inventory of emissions; conduct research and investigations; prescribe monitoring requirements; institute enforcement; formulate rules to control and reduce emissions; establish air quality control regions; encourage cooperation with citizens' groups and other agencies and political subdivisions of the state as well as with industries and the federal government; and to establish and operate a system of permits for construction or modification of facilities. Local governments having some of the same powers as the TCEQ can make recommendations to the commission concerning any action of the TCEQ that may affect their territorial jurisdiction, and can execute cooperative agreements with the TCEQ or other local governments. In addition, a city or town may enact and enforce ordinances for the control and abatement of air pollution not inconsistent with the provisions of the TCAA or the rules or orders of the TCEQ.

The CAA also requires states with areas that fail to meet the NAAQS prescribed for criteria pollutants to develop a SIP. The SIP describes how the state would reduce and maintain air pollution emissions in order to comply with the federal standards. Important components of a SIP include emission inventories, motor vehicle emission budgets, control strategies to reduce emissions, and an attainment demonstration. The TCEQ develops the Texas SIP for submittal to the EPA. One SIP is created for each state, but portions of the plan are specifically written to address each of the non-attainment areas. These regulatory controls, as well as other local transportation and development initiatives implemented throughout the Houston-Galveston-Brazoria area by local governments and other entities provide the framework for growth throughout the area consistent with air quality goals. As part of this framework, all major transportation projects, including the proposed project, are evaluated at the regional level by the H-GAC for conformity with the SIP.

The cumulative impact of reasonably foreseeable future growth and urbanization on air quality within this area would be minimized by enforcement of federal and state air quality regulations by the EPA and TCEQ. These agencies are mandated to ensure that such growth and urbanization would not prevent attainment with the ozone standard or threaten the maintenance of the other air quality standards.

**R. Summary and Comparison of Potential Effects**

Table 17 is a summary of the predicted environmental impacts of the alternatives, arrayed in a matrix for ease of comparison.

**Table 17: Matrix of Environmental Impacts, by Alternative**

<i>Environmental Area</i>	<i>Alternative A: No Action</i>	<i>Alternative D: Expansion to Both Sides</i>	<i>Alternative E: Expansion to the South</i>
Plant Communities	No impact.	Direct loss of 0.3 acre of forest and 5.3 acres of grassland (no riparian habitat). Indirect loss of 35 acres of forest (including 1 acre of riparian forest) and 77 acres of grassland.	Direct loss of 0.4 acre of forest and 4.6 acres of grassland (no riparian habitat). Indirect loss of 35 acres of forest (including 1 acre of riparian forest) and 77 acres of grassland.
Land Use and Community Cohesion	No impact on community cohesion. Vacant land adjacent to Greens Road would be expected to be developed for commercial and industrial uses.	No impact on community cohesion. Vacant land adjacent to Greens Road would be expected to be developed for commercial and industrial uses.	No impact on community cohesion. Vacant land adjacent to Greens Road would be expected to be developed for commercial and industrial uses.
Air Quality	No direct impacts to air quality are anticipated as a result of this project (see Chapter 4, Section O). In addition, the cumulative impact of reasonably foreseeable future growth and urbanization on air quality within this area would be minimized by enforcement of federal and state regulations, which are mandated to ensure that such growth and urbanization would not prevent compliance with the ozone standard or threaten the maintenance of the other air quality standards.	No direct impacts to air quality are anticipated as a result of this project (see Chapter 4, Section O). In addition, the cumulative impact of reasonably foreseeable future growth and urbanization on air quality within this area would be minimized by enforcement of federal and state regulations, which are mandated to ensure that such growth and urbanization would not prevent compliance with the ozone standard or threaten the maintenance of the other air quality standards.	No direct impacts to air quality are anticipated as a result of this project (see Chapter 4, Section O). In addition, the cumulative impact of reasonably foreseeable future growth and urbanization on air quality within this area would be minimized by enforcement of federal and state regulations, which are mandated to ensure that such growth and urbanization would not prevent compliance with the ozone standard or threaten the maintenance of the other air quality standards.
Noise	No impact.	Impact to a restaurant/bar; mitigation of impact is not feasible.	Impact to a restaurant/bar; mitigation of impact is not feasible.

## **Chapter 5: Public Involvement**

A public meeting was held for the proposed expansion of Greens Road on October 26, 2004, in the cafeteria at Calvert Elementary School, 1925 Marvell Drive, from 5:30 pm to 7:30 pm. Sixteen citizens attended the meeting and six written comments were received. All attendees were in favor of widening Greens Road, but some raised concerns about median openings. One business owner requested a median opening at the business entrance that would allow for large delivery trucks. Another business owner raised concerns regarding the sewer service in the area. Several citizens requested copies of the information presented at the meeting. Adjacent landowners and the vice-president of Continental Airlines expressed support for the project.

Before this Environmental Assessment is approved, TxDOT will announce the opportunity to hold a public hearing on the environmental impacts of the proposed action and alternatives. Citizens will have the opportunity to request a public hearing, and if a hearing is requested, the public hearing will be advertised and held at least 30 days later. All interested people would be invited to comment on the project, orally or in writing, and these comments would become part of the project's official record.

## **Chapter 6: Recommendation of the Preferred Alternative**

### **A. Preferred Alternative**

Alternative E is the preferred alternative. It meets the project goal of reducing traffic congestion and improving traffic safety on Greens Road without causing displacements or significant social or environmental impacts.

### **B. Support Rationale**

Alternative E meets the project objectives at a reasonable cost without significant social or environmental impacts. Alternative D would encroach on a drainage ditch serving George Bush Intercontinental Airport, but would otherwise have the same social and environmental impacts as Alternative E. The No Action alternative would fail to meet the need for traffic capacity and congestion reduction on Greens Road.

### **C. Mitigation and Monitoring Commitments**

The following measures would mitigate environmental impacts at the proposed site:

- The City of Houston would minimize the time that business access points would be interrupted, and provide alternative access points when feasible.
- The contractor would be required to follow applicable regulations and ordinances to reduce construction impacts in the area, including:
  - Dust suppression procedures in construction and layover areas when necessary;
  - Mufflers on construction equipment to reduce noise impacts;
  - Construction equipment used only during daylight hours;
  - Construction equipment shut down when not in use to reduce both noise and air pollution; and
  - Temporary traffic control in accordance with the *Manual of Uniform Traffic Control Devices*.
- To reduce water pollution during construction, the contractor would also use silt fences, rock filter dikes and temporary vegetation to control erosion and sedimentation from the project during construction, and vegetation filter strips to control suspended solids after construction.
- In accordance with the Migratory Bird Treaty Act, no tree or bridge structure containing nests, eggs or young would be removed by project construction during the nesting and breeding season (March 1 through August 31).

### **D. Coordination Requirements**

If the project were not built, no further coordination is required. If the project were built, TxDOT would coordinate with one other government agency:

- The Texas Commission on Environmental Quality would require a Notice of Intent and a Storm Water Pollution Prevention Plan during construction. The Commission regulates storm water discharges from construction sites that disturb more than one acre of land under the Texas Pollutant Discharge Elimination System General Permit for Industrial Activity. The City of Houston would file a Notice of Intent to comply with guidelines of the Texas Com-

mission on Environmental Quality and prepare a Storm Water Pollution Prevention Plan before construction.

The U.S. Army Corps of Engineers has jurisdiction over waters of the United States, including wetlands and other special aquatic sites, under Section 404 of the Clean Water Act of 1972. The proposed project would affect a jurisdictional water of the United States. The proposed action would fill less than 0.1 acre of Old Hoods Bayou and Hoods Bayou, which are waters of the United States, and it would be covered under Nationwide Permit 14 (Linear Transportation Projects) without pre-construction notification. Coordination with the Corps of Engineers under Section 404 is not required. Furthermore, coordination with the Texas Commission on Environmental Quality under Section 401 of the Clean Water Act is not required.

### **E. Conclusion**

This Environmental Assessment concludes that the proposed project is necessary for safe and efficient travel within the project corridor. The project will have no significant adverse social, economic or environmental impacts of a level that would warrant an environmental impact statement. Alternative selection will occur following the completion of the public period, which could 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 will be prepared for this proposed action as a basis for federal-aid corridor location approval.

## REFERENCES

- <sup>1</sup> Houston-Galveston Area Council. 2012. *2013-2016 Transportation Improvement Program*. Houston-Galveston Area Council, Houston, Texas, adopted April 27, 2012.
- <sup>2</sup> Houston-Galveston Area Council. 2012. *2035 Houston-Galveston Regional Transportation Plan Update*. Houston-Galveston Area Council, Houston, Texas, January 25, 2011, updated December 21, 2012.
- <sup>3</sup> AECOM. 2009. *Expected and Projected Traffic Volumes for the Greens Road Corridor*. AECOM, Houston, Texas, August 2009.
- <sup>4</sup> Transportation Research Board. 1994. *Highway Capacity Manual, Special Report 209*. U.S. Department of Transportation, Washington, D.C.
- <sup>5</sup> Houston-Galveston Area Council. 2004. *Safety on Greens Road: 1999-2001*. Houston-Galveston Area Council, Houston, Texas.
- <sup>6</sup> Texas Commission on Environmental Quality. 2008. *2008 Texas Water Quality Inventory and 303(d) List*. Texas Commission on Environmental Quality, Austin, Texas, December 18, 2008. <http://www.tceq.state.tx.us/compliance/monitoring/water/quality/data/08twqi/twqi08.html>.
- <sup>7</sup> Natural Resources Conservation Service. 1976. *Soil Survey of Harris County, Texas*. U.S. Department of Agriculture, Natural Resources Conservation Service, Washington, D.C. <http://soils.usda.gov/>.
- <sup>8</sup> Texas Parks & Wildlife Department. 1984. *Vegetation Types of Texas*. Austin, Texas.
- <sup>9</sup> U.S. Army Corps of Engineers. 2004. *Code of Federal Regulations*, “Navigation and Navigable Waters.” Title 33, part 328.3. U.S. Government Printing Office, Washington, D.C. <http://www.gpoaccess.gov/ecfr/>.
- <sup>10</sup> U.S. Environmental Protection Agency. 2002. *Draft National Management Measures to Control Nonpoint Source Pollution from Urban Areas*. Washington, DC. <http://www.epa.gov/owow/nps>
- <sup>11</sup> Texas Commission on Environmental Quality, 2008, *op. cit.*
- <sup>12</sup> Federal Emergency Management Agency. 1996. Flood Insurance Rate Map 48201 C 0480 J. Houston, Texas. November 6, 1996.
- <sup>13</sup> *Federal Register*, Volume 72, Page 8427, under the Code of Federal Regulations, Title 40, Parts 59, 80, 85 and 86, February 26, 2007.
- <sup>14</sup> Texas Department of Transportation. 2010. *Guidance on Preparing Indirect and Cumulative Impact Analyses*. Texas Department of Transportation, Texas, September, 2010.
- <sup>15</sup> Transportation Research Board. 2002. *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects*. National Cooperative Highway Research Program Publication 466. National Academy Press, Washington, D.C.

## APPENDIX A: EXCERPTS FROM 2035 RTP UPDATE AND 2013-2016 TIP

<b>Harris County Projects in the 2035 RTP Update - 'US 290/SH 288' Conformity</b>				
MPOID	Street	Project Description	Total Project Cost	
Fiscal Yr	CSJ #	From Limit	Conformity Year	
Status	CIP ID	To Limit	Length	
Sponsor			Lanes*	
9355	<b>GREENS BAYOU TRAIL</b>	CONSTRUCT SEG. 1 OF 12' CONCRETE HIKE & BIKE TRAIL W/ ASSOCIATED PED BRIDGES, SEATING AND LANDSCAPING	\$2,109,270	
2022 RTP	ELLA BLVD IH 45 N		N/A	1.4
GREATER GREENSPOINT MANAGEMENT DISTRICT			(0, 0)	(0, 0)
10347	<b>GREENS BAYOU TRAIL</b>	12' WIDE CONCRETE SHARED USE PATH IN GREATER GREENSPOINT MANAGEMENT DISTRICT	\$1,544,090	
2013 TIP	0912-71-797 KNOBCREST DR TO GREENS RD IMPERIAL VALLEY DR TO BRADFIELD RD		N/A	2.181
GREATER GREENSPOINT MANAGEMENT DISTRICT			(0, 0)	(0, 0)
5030	<b>GREENS RD</b>	right-of-way acquisition, design and construction of a four-lane divided concrete roadway with storm drainage, curbs, sidewalks, driveways, street lighting, traffic control and underground utilities.	\$11,400,000	
[2011] Let	N-000664 JFK BLVD US 59		2014	2.5
CITY OF HOUSTON			(2, 4)	(0, 0)
7936	<b>GREENS RD</b>	<b>WIDEN TO 4-LANES, CURBS AND GUTTERS WITH UNDERGROUND FACILITIES</b>	<b>\$19,167,953</b>	
2015 TIP	0912-72-158 ALDINE-WESTFIELD JOHN F KENNEDY BLVD		2017	1.6
CITY OF HOUSTON			(2, 4)	(0, 0)
78	<b>GREENS RD W</b>	CONSTRUCT 4-LANE CONCRETE DIVIDED SECTION W/ CURB & GUTTER & STORM SEWERS	\$4,723,669	
2023 RTP	HOLLISTER DR BAMMEL N HOUSTON		2025	0.625
HARRIS COUNTY			(0, 4)	(0, 0)
10104	<b>GREENS RD W</b>	CONSTRUCT 4-LANE CONCRETE BLVD SECTION W/ STORM SEWER	\$13,300,000	
[2011] Let	B40054 CUTTEN RD HOLLISTER DR		2014	0.5
HARRIS COUNTY			(0, 4)	(0, 0)
8062	<b>GREENS RD W</b>	CONSTRUCT 4-LANE CONCRETE DIVIDED SECTION W/ CURB & GUTTER AND 4-LANE BRIDGE	\$9,392,598	
[2013] Let	0912-71-895 SH 249 (700' W OF HCFC DITCH) CUTTEN RD		2017	0.665
HARRIS COUNTY			(0, 4)	(0, 0)
7773	<b>HALLS BAYOU HIKE &amp; BIKE TRAIL</b>	HIKE & BIKE TRAIL	\$3,606,381	
2023 RTP	EASTWARD FROM TIDWELL PARK THE MESA TRANSIT CENTER AND BROCK PARK		N/A	0.001
HARRIS COUNTY			(, )	(, )
15208	<b>HARDY TOLL RD</b>	CONSTRUCT 4-LANE TOLL ROAD TO COMPLETE HARDY "TOLL" ROAD	\$250,000,000	
2018 RTP	IH 610/SP 548 US 59		2025	3.6
HCTRA			(0, 4)	(0, 0)
15587	<b>HARDY TOLL RD</b>	WIDEN FROM 4 TO 6 LANES	\$43,700,000	
2014 TIP	SH 99 FM 1960		2017	5
HCTRA			(4, 6)	(0, 0)
81	<b>HARRIS AVE</b>	DESIGN, ACQUIRE ROW & WIDEN TO 4-LANE UNDIVIDED ROADWAY, INCLUDING DRAINAGE, SIGNALS & LEFT TURN LANES AT MAIN & SHAVER	\$8,273,170	
2019 RTP	SCARBOROUGH PASADENA BLVD		2025	1.61
CITY OF PASADENA			(2, 4)	(0, 0)
14313	<b>HARRIS COUNTY</b>	CAPITAL EXPENDITURES FOR PUBLIC TRANSPORTATION FOR HARRIS COUNTY METRO TRANSFER (FY 2011)	\$2,383,662	
[2011] Let	VA VA		N/A	0
HARRIS COUNTY			(0, 0)	(0, 0)

\* (Existing, Proposed) Main Lanes then Frontage Roads.

Sorted by: Street, CSJ Number, then MPOID

Friday, April 27, 2012

HOUSTON-GALVESTON MPO  
 FY 2013-2016 TRANSPORTATION IMPROVEMENT PROGRAM  
**AS ADOPTED - 4/27/2012**

3-67

HOUSTON DISTRICT  
 FY 2015 (SEPT - AUG)

Projects grouped by TxDOT District and Fiscal Year,  
 sorted by County, Hwy, Street and CSJ/MPOID

DISTRICT	COUNTY	CSJ	HWY	PHASE	CITY	PROJECT SPONSOR	YOE COST
HOUSTON	HARRIS		CS	C,E,R	PASADENA	CITY OF PASADENA	\$5,859,599
STREET: CENTER ST LIMITS FROM: FAIRMONT PKWY LIMITS TO: GENOA-RED BLUFF RD TIP: DESIGN, ACQUIRE ROW & CONSTRUCT 4-LANE DIVIDED ROADWAY INCLUDING DRAINAGE DESCRIPTION: AND SIGNALS AT GENOA-RED BLUFF REMARKS:							

Project History:

Total Project Cost Information:		Cost of Approved Phases:	Authorized Funding by Category/Share:					Funding By Category	
			Federal	State	Regional	Local	Local Contribution		
Preliminary Engineering:	\$191,439	\$5,859,599	3-LOCAL:	---	---	---	\$5,859,599	---	\$5,859,599
Right Of Way:	\$976,730		Funding by Share:	---	---	---	\$5,859,599	---	\$5,859,599
Construction:	\$3,906,920								
Construction Engineering	\$195,346								
Contingencies:	\$390,692								
Indirects:	\$198,472								
Bond Financing:	---								
<b>Total Project Cost:</b>	<b>\$5,859,599</b>								

DISTRICT	COUNTY	CSJ	HWY	PHASE	CITY	PROJECT SPONSOR	YOE COST
HOUSTON	HARRIS		CS	C,E,R	HOUSTON	HCTRA	\$32,798,690
STREET: COLLINGSWORTH ST LIMITS FROM: ELYSIAN ST LIMITS TO: JENSEN DR TIP: CONSTRUCT RAILROAD GRADE SEPARATION AT EXISTING CROSSING DESCRIPTION: REMARKS:							

Project History:

Total Project Cost Information:		Cost of Approved Phases:	Authorized Funding by Category/Share:					Funding By Category	
			Federal	State	Regional	Local	Local Contribution		
Preliminary Engineering:	\$1,078,759	\$32,798,690	3-TOLL:	---	---	---	\$32,798,690	---	\$32,798,690
Right Of Way:	\$5,503,875		Funding by Share:	---	---	---	\$32,798,690	---	\$32,798,690
Construction:	\$22,015,499								
Construction Engineering	\$880,620								
Contingencies:	\$2,201,550								
Indirects:	\$1,118,387								
Bond Financing:	---								
<b>Total Project Cost:</b>	<b>\$32,798,690</b>								

DISTRICT	COUNTY	CSJ	HWY	PHASE	CITY	PROJECT SPONSOR	YOE COST
HOUSTON	HARRIS	0912-72-158	CS	C	HOUSTON	CITY OF HOUSTON	\$14,861,000
STREET: GREENS RD LIMITS FROM: ALDINE-WESTFIELD LIMITS TO: JOHN F KENNEDY BLVD TIP: WIDEN TO 4-LANES, CURBS AND GUTTERS WITH UNDERGROUND FACILITIES DESCRIPTION: REMARKS:							

Project History:

Total Project Cost Information:		Cost of Approved Phases:	Authorized Funding by Category/Share:					Funding By Category	
			Federal	State	Regional	Local	Local Contribution		
Preliminary Engineering:	\$728,189	\$14,861,000	3-LOCAL:	---	---	---	\$14,861,000	---	\$14,861,000
Right Of Way:	---		Funding by Share:	---	---	---	\$14,861,000	---	\$14,861,000
Construction:	\$14,861,000								
Construction Engineering	\$743,050								
Contingencies:	\$1,486,100								
Indirects:	\$754,939								
Bond Financing:	---								
<b>Total Project Cost:</b>	<b>\$18,573,278</b>								

## **APPENDIX B: PLAN VIEW OF ALTERNATIVE ACTIONS**

### **Alternative D (3 sheets)**

Sheet 1: from Station 0+00 to Station 36+00  
Sheet 2: from Station 36+00 to Station 66+00  
Sheet 3: from Station 66+00 to Station 94+00

### **Alternative E (3 sheets)**

Sheet 1: from Station 0+00 to Station 36+00  
Sheet 2: from Station 36+00 to Station 66+00  
Sheet 3: from Station 66+00 to Station 94+00

### **Proposed Detention Basin (1 sheet)**



**Legend**

-  Noise Receivers
-  Proposed Roadway
-  Proposed ROW
-  Proposed Detention Basin



**Alternative D**  
**Greens Road**  
 from Aldine-Westfield Road  
 to John F. Kennedy Blvd.  
 Sheet 1 of 3



**Legend**

-  Noise Receivers
-  Proposed Roadway
-  Proposed ROW
-  Proposed Detention Basin



**Alternative D  
Greens Road**  
from Aldine-Westfield Road  
to John F. Kennedy Blvd.  
Sheet 2 of 3



MATCH LINE STATION 66+00

END PROJECT

Rankin Road

Milner Road

John F. Kennedy Blvd.

**Legend**

-  Noise Receivers
-  Proposed Roadway
-  Proposed ROW
-  Proposed Detention Basin



**Alternative D  
Greens Road**  
from Aldine-Westfield Road  
to John F. Kennedy Blvd.  
Sheet 3 of 3



**Legend**

- Noise Receivers
- Proposed Roadway
- Proposed ROW
- Proposed Detention Basin



**Alternative E**  
**Greens Road**  
 from Aldine-Westfield Road  
 to John F. Kennedy Blvd.  
 Sheet 1 of 3



**Legend**

- Noise Receivers
- Proposed Roadway
- Proposed ROW
- - - Proposed Detention Basin



**Alternative E**  
**Greens Road**  
 from Aldine-Westfield Road  
 to John F. Kennedy Blvd.  
 Sheet 2 of 3



**Legend**

- Noise Receivers
- Proposed Roadway
- Proposed ROW
- Proposed Detention Basin



**Alternative E  
Greens Road**  
from Aldine-Westfield Road  
to John F. Kennedy Blvd.  
Sheet 3 of 3



**Legend**

- - - Proposed Detention Basin
- - - Alternative D ROW
- - - Alternative E ROW



Detention Basin  
 Alternatives D and E  
**Greens Road**  
 from Aldine-Westfield Road  
 to John F. Kennedy Blvd.

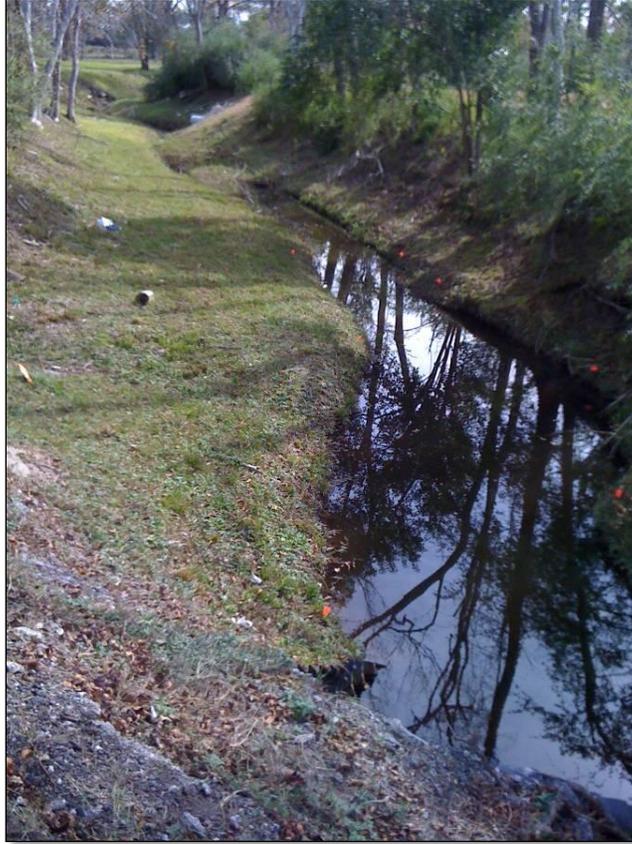
## **APPENDIX C: PHOTOGRAPHS OF PROJECT AREA**



*Photo 1: Greens Road west of Hoods Bayou, looking east.*



*Photo 2: Hoods Bayou, looking toward the Greens Road Bridge to the north.*



*Photo 3: Old Hoods Bayou from the culvert under Greens Road, looking southeast.*



*Photo 4: Old field vegetation in proposed detention basin site, looking south.*

## **APPENDIX D: AGENCY CORRESPONDENCE**

Letter from U.S. Fish & Wildlife Service, July 2, 2004

Letter and Form AD-1006 from Natural Resources Conservation Service, October 19, 2004

Letter from U.S. Fish & Wildlife Service, August 25, 2009

Letter from the Alabama-Coushatta Tribe of Texas, July 23, 2010

Letter from TxDOT to Harris County Historical Commission, September 21, 2010

Memorandum from TxDOT Environmental Affairs Division, Historic Resources Department,  
January 12, 2011



7322 SW Freeway, Suite 470  
 Houston, TX 77074  
 Tel 713.779.2990  
 Fax 713.779.3727  
 Email qci@qconsultants.com  
 Website www.qconsultants.com

**QUADRANT**  
 CONSULTANTS INC.

JUL - 2 2004

**A review of U.S. Fish and Wildlife Service files and your project information indicate that no federally listed or proposed threatened or endangered species are likely to occur at the project site. The project site is not located within officially designated critical habitat.**

July 1, 2004

Edith Erfling  
 Fish & Wildlife Biologist  
 U.S. Fish & Wildlife Service  
 17629 El Camino Real  
 Suite 211  
 Houston, Texas 77058

**This review does not constitute our approval for wetlands, sensitive habitats, migratory birds or any other environmental requirements.**

Approved July 28 2004  
 Date Edith Erfling

**Clear Lake Ecological Services Field Office**

Subject: Environmental Assessment for the **U.S. Fish and Wildlife Service** Widening  
 From Aldine-Westfield to JFK Boulevard **17629 El Camino Real, Suite 211**  
 Harris County, Texas **Houston, Texas 77058-3051**

Dear Ms. Erfling:

The Texas Department of Transportation is planning to widen Greens Road, in Houston, Harris County, Texas, from a two-lane roadway to a four-lane roadway. The proposed widening will extend from Aldine-Westfield to John F. Kennedy (JFK) Boulevard approximately 1.6 miles of road improvements. Quadrant Consultants Inc. (QCI) is responsible for the environmental services required to complete the proposed project. The purpose of the widening project is to relieve congestion on Greens Road as Houston continues to develop. We anticipate that the project will require approximately 120 feet of right-of-way. Project corridor location and vicinity maps are enclosed for your reference.

In order to help us adequately address wildlife and endangered species issues relating to this project, we would appreciate your input on the presence or absence of threatened and endangered species in the vicinity of the project corridor. We would also appreciate any information about current and/or previous environmental studies in the region that may be relevant to this project.

If you have any questions or need additional information, please call me at (713) 779-2990. Thank you so much.

Sincerely,

Courtney E. Goecker  
 Environmental Scientist

**RECEIVED**  
 JUL 30 2004

Enclosed: Project Vicinity Map  
 Project Location Map



Natural Resources Conservation Service  
101 South Main Street  
Temple, TX 76501-7602

RECEIVED  
OCT 22 2004

October 19, 2004

Quadrant Consultants Inc.  
7322 SW Freeway, Suite 470  
Houston, Texas 77074

**Attention: Courtney Goecker, Environmental Scientist**

Subject: LNU-Farmland Protection-  
Greens Road Widening  
Harris County, Texas

We have reviewed the information provided concerning the proposed widening of Greens Road from Aldine-Westfield Road to John F Kennedy Blvd in Harris County, Texas as outlined in your letter of October 13, 2004. This is part of NEPA evaluation for FWHA and TxDOT. We have evaluated the proposed site as required by the Farmland Protection Policy Act (FPPA).

The proposed project does not contain Important Farmland Soils and is exempt from the FPPA law. The FPPA law excludes from the definition of "farmland" areas that contain more than 30 structures per 40 acres. This area would be considered as previously converted to urban land. We have completed the CPA-106 form for this project that you submitted indicating the exemption.

I have attached the completed CPA-106 (Farmland Conversion Impact Rating) form for this project. Thanks for the resource materials you submitted to evaluate this project. If you have any questions please call James Greenwade at (254)-742-9960, Fax (254)-742-9859.

Thanks,

A handwritten signature in cursive script that reads "James M. Greenwade".

James M. Greenwade  
Soil Scientist  
Soil Survey Section  
USDA-NRCS, Temple, Texas

## FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

<b>PART I</b> (To be completed by Federal Agency)	3. Date Of Land Evaluation Request: 10-13-2004	4. Sheet 1 of _____
1. Name of Project: Greens Road Widening	5. Federal Agency Involved: FHWA/TxDOT	
2. Proposed Land Use: Highway	6. County and State: Harris County, Texas	

<b>PART II</b> (To be completed by NRCS)		1. Date Request Received By NRCS10-19-2004	2. Person Completing Form: James Greenwade
3. Does the corridor contain prime, unique, statewide or local important farmland? (If no, the FPPA does not apply - do not complete additional parts of this form)		YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	4. Acres Irrigated _____ Average Farm Size _____
5. Major Crop(s)	6. Farmable Land In Government Jurisdiction Acres: _____ % _____	7. Amount of Farmland As Defined in FPPA Acres: _____ % _____	
8. Name of Land Evaluation System Used	9. Name of State or Local Site Assessment System	10. Date Land Evaluation Returned by NRCS	

<b>PART III</b> (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			
	B. Total Acres To Be Converted Indirectly			
C. Total Acres In Site				

<b>PART IV</b> (To be completed by NRCS) Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide Important or 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				

<b>PART V</b> (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)				
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<b>PART VI</b> (To be completed by Federal Agency) Corridor Assessment Criteria (Criteria are explained in 7 CFR 658.5 b & c. For Non-Corridor project use form AD-1006)		Maximum Points	Corridor A	Corridor B	Corridor C	Corridor D
1. Area In Non-urban Use		(15)				
2. Perimeter In Non-urban Use		(10)				
3. Percent Of Corridor Being Farmed		(20)				
4. Protection Provided By State and Local Government		(20)				
5. Size Of Present Farm Unit Compared To Average		(10)				
6. Creation Of Non-farmable Farmland		(25)				
7. Availability Of Farm Support Services		(5)				
8. On-Farm Investments		(20)				
9. Effects Of Conversion On Farm Support Services		(25)				
10. Compatibility With Existing Agricultural Use		(10)				
<b>TOTAL CORRIDOR ASSESSMENT POINTS</b>		160				

<b>PART VII</b> (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)		100			
Total Corridor Assessment (From Part VI above or local site assessment)		160			
<b>TOTAL POINTS (Total of above 2 lines)</b>		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? YES <input type="checkbox"/> NO <input type="checkbox"/>
5. Reason For Selection:			

Name of Federal agency representative completing this form:	Date:
---	-------

**NOTE:** Complete one form for each segment with more than one Alternate Corridor  
(See Instructions on reverse side)



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Division of Ecological Services  
17629 El Camino Real #211  
Houston, Texas 77058-3051



December 2008

This responds to your request for threatened and endangered species information in the Clear Lake Ecological Services Field Office's area of responsibility. According to Section 7(a)(2) of the Endangered Species Act and the implementing regulations, it is the responsibility of each federal agency to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any federally listed species. Therefore, we are providing information to assist you in meeting your obligations under the Endangered Species Act.

A county by county listing of federally listed threatened and endangered species that occur within this office's work area can be found at <http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm>. You should use the county by county listing and other current species information to determine whether suitable habitat for a listed species is present at your project site. If suitable habitat is present, a qualified individual should conduct surveys to determine whether a listed species is present.

After completing a habitat evaluation and/or any necessary surveys, you should evaluate the project for potential effects to listed species and make one of the following determinations:

**No effect** – the proposed action will not affect federally listed species or critical habitat (i.e., suitable habitat for the species occurring in the project county is not present in or adjacent to the action area). No coordination or contact with the Service is necessary. However, if the project changes or additional information on the distribution of listed or proposed species becomes available, the project should be reanalyzed for effects not previously considered.

**Is not likely to adversely affect** – the project may affect listed species and/or critical habitat; however, the effects are expected to be discountable, insignificant, or completely beneficial. Certain avoidance and minimization measures may need to be implemented in order to reach this level of effects. You should seek written concurrence from the Service that adverse effects have been eliminated. Be sure to include all of the information and documentation you used to reach your decision with your request for concurrence. The Service must have this documentation before issuing a concurrence.

**Is likely to adversely affect** – adverse effects to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. If the overall effect of the proposed action is beneficial to the listed species but also is likely to cause some adverse effects to individuals of that species, then the proposed action "is likely to adversely affect" the listed species. An "is likely to adversely affect" determination requires formal Section 7 consultation with this office.

Regardless of your determination, the Service recommends that you maintain a complete record of the evaluation, including steps leading to the determination of affect, the qualified personnel conducting the evaluation, habitat conditions, site photographs, and any other related articles.



The Service's Consultation Handbook is available online to assist you with further information on definitions, process, and fulfilling Endangered Species Act requirements for your projects at <http://endangered.fws.gov/consultations/s7hndbk/s7hndbk.htm>.

If we can further assist you in understanding your obligations under the Endangered Species Act, please contact Moni Belton, David Hoth, Charrish Stevens or Catherine Yeargan at 281/286-8282.

Sincerely,

A handwritten signature in blue ink that reads "Stephen D. Parris". The signature is written in a cursive style with a large, prominent "S" at the beginning.

Stephen D. Parris  
Field Supervisor, Clear Lake Field Office



# ALABAMA-COUSHATTA TRIBE OF TEXAS

571 State Park Rd 56 • Livingston, Texas 77351 • (936) 563-1100

July 23, 2010

Scott Pletka  
Texas Department of Transportation  
Archaeological Studies/Environmental Affairs  
125 East 11<sup>th</sup> Street  
Austin, TX 78701-2483

**TXDOT-ENV**

**JUL 23 2010**

**CRM**

Dear Dr. Pletka:

On behalf of Mikko Oscola Clayton Sylestine and the Alabama-Coushatta Tribe, our appreciation is expressed on your efforts to consult us regarding CSJ 0912-71-739; Greens Road improvement proposal in Harris County.

Our Tribe maintains ancestral associations throughout the state of Texas despite the absence of written documentation to completely identify Tribal activities, villages, trails, or burial sites. However, it is our objective to ensure significances of Native American ancestry, especially of the Alabama-Coushatta Tribe, are administered with the utmost considerations.

Upon review of your July 13, 2010 submission, no impacts to religious, cultural, or historical assets of the Alabama-Coushatta Tribe of Texas should occur in conjunction with this proposal. The proposed location does contain extensive ground disturbances and therefore, we concur with your "No Historic Properties Affected" recommendation.

In the event of inadvertent discovery of human remains and/or archaeological artifacts, activity in proximity to the location must cease and appropriate authorities, including this office, notified without delay for further consultation. Should you require additional assistance, please do not hesitate to contact us.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Bryant J. Celestine".

Bryant J. Celestine  
Historic Preservation Officer

**DISTRIBUTION:**

Theresa Claxton, FHWA Env Coord  
Sue Theiss, Env Coord, Houston District  
David Najvar, ENV-PD  
Allen Bettis, ENV-ARCH  
ENV-ARCH Project File  
ETS Scan



# Texas Department of Transportation

P.O. BOX 1386 • HOUSTON, TEXAS 77251-1386 • (713) 802-5000

September 21, 2010

CONTACT: DPD

Harris County  
Greens Road: Aldine-Westfield to JFK Blvd.  
Control 0912-71-739

Mr. Patrick Van Pelt, Chair  
Harris County Historical Commission  
1218 Webster Street  
Houston, Texas 77002-8841

Dear Mr. Van Pelt:

The Texas Department of Transportation is in the process of obtaining environmental approval to widen Greens Road from Aldine-Westfield to JFK Boulevard. The bridge at the 2900 block of Greens Road and Unnamed Drainage Ditch will be replaced. Additional right-of-way will be required to implement the proposed project. The attached vicinity map indicates the location of the project.

Your knowledge concerning the location of any historically or archaeologically significant properties in the subject area which might be eligible for inclusion in, or under nomination to, the National Register of Historic Places will be appreciated. If the project area under consideration contains no historical or archaeological sites to the best of your knowledge, your signature below will be sufficient verification.

If we have not received a response from you within 30 days, we will assume that you have no comments on this proposed project. If you should need further information concerning this project, please contact Ms. Sarah Wyckoff at (713) 802-5262.

Sincerely,

Pat Henry, P.E.  
Director of Project Development  
Houston District

SW:ljh  
Attachments  
cc: Ms. Sarah Wyckoff

SCANNED

SEP 21 2010

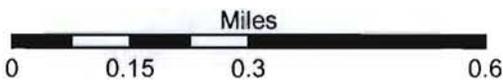
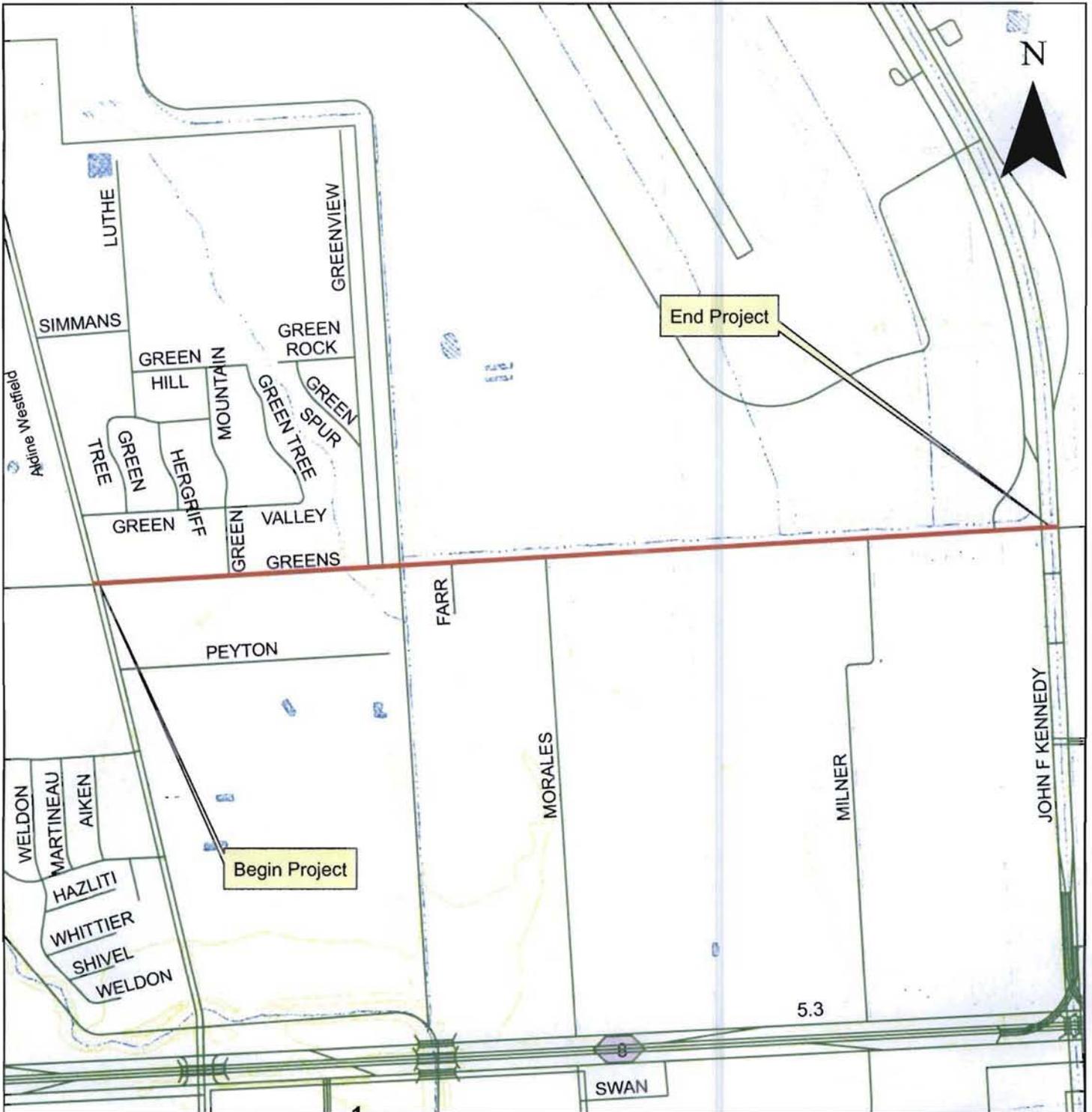
PROJECT DEVELOPMENT SECTION

\_\_\_\_\_  
Harris County Historical Commissioner

\_\_\_\_\_  
Date

THE TEXAS PLAN  
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USGS Topography Quad  
Humble #2995-434

**CS: Greens Road**  
**From Aldine Westfield (CL) to JFK**  
**CSJ: 0912-71-739**  
**Harris County**  
**July 2004**



Aldine Westfield Road

Drainage Ditch at  
2600 Block of  
Greens Road





# MEMORANDUM

TO: 850 File, HIST Project file

District: HOU  
County: Harris  
CSJ #: 0912-71-739  
Highway: Greens Road  
Project Limits: From Aldine-Westfield to JFK Boulevard

**Project Description: Stipulation VI, Appendix 4: Widen existing roadway and construct detention basin, no historic properties present, 4 acres new ROW**

FROM: Alexis A. Reynolds *AR* DATE: January 12, 2011

SUBJECT: Internal review under the Programmatic Agreement (PA) 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 (THC) and the Texas Department of Transportation

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The Texas Department of Transportation (TxDOT), Houston District, proposes to widen a 4.6-mile segment of Greens Road and construct a detention basin in Harris County, Texas. The proposed project would widen the existing 23' two-lane undivided roadway to a 100' four-lane divided roadway with four 12' lanes, a 32' raised median, 4' curb and gutter and 5' sidewalks. The project would also construct a 2.5-acre detention pond on the south side of the road. **4 acres of new right-of-way** will be required for the proposed project.

## 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 State Historical Markers (OSHM). The record search revealed no previously recorded NRHP properties, SALs, RTHLs or OSHMs located within the project APE, which for this project was determined to be 150 feet from the existing and proposed right-of-way. *A reconnaissance survey undertaken in 2009 revealed that there are five historic-age resources (built in or prior to 1965) in the project APE.* At the time the survey was conducted, two alternatives were being considered for the project: Alternatives D and E. Alternative D would widen both sides of the existing roadway and Alternative E would widen only the south side. The survey accounted for both of these alternatives when determining the APE. Since that time, Alternative E has been identified as the preferred alternative.

## DETERMINATIONS OF NATIONAL REGISTER ELIGIBILITY

TxDOT Historians evaluated the historic-age resources through application of the Criteria of Eligibility for listing in the National Register of Historic Places, and determined that all five resources are **not eligible** for inclusion in the NRHP, either individually or as a whole. They 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 a type, period, method of construction, work of a master, or high artistic value to qualify as eligible under Criterion C. Additionally,

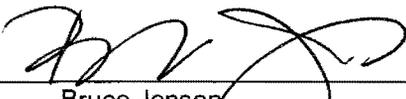
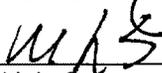
unsympathetic alterations such as replacement windows, siding, porch supports, and rear additions compromised the buildings' integrity of materials, design, workmanship, and feeling.

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 city-owned 1965 pan girder bridge to establish its historical significance. In accordance with the registration evaluation criteria established by THC and TxDOT for the 1999 Non-Truss Bridge Inventory, this bridge was determined not eligible for the National Register. The bridge lacks sufficient engineering complexity or uniqueness of design to be eligible for the NRHP under Criterion C: Engineering at the state level of significance.

Because the bridge may have local significance, TxDOT consulted with the county historical commission (CHC) concerning the historic significance of the bridge. Since the Harris County Historical Commission did not respond within the agreed 30-day time period, TxDOT has assumed that the CHC has concurred that the bridge has no known historical significance at the local level under National Register of Historic Places Criteria A or B. A copy of the letter, dated September 21, 2010, is attached.

**CONCLUSION**

Pursuant to Stipulation VI "Undertakings with Potential to Affect Historic Resources" of the First Amended Statewide Programmatic Agreement for Cultural Resources (PA) between FHWA, SHPO, the Advisory Council on Historic Preservation, and TxDOT and the MOU between TxDOT and THC, TxDOT Historians have determined that there are no historic properties within the proposed project's APE and that individual project coordination with SHPO is not required.

Approved by  for TxDOT 1-27-11  
Bruce Jensen Date  
Lead Reviewer  for TxDOT 1/26/11  
Initials Only Date

Attachment

cc: District: Houston Attn: Sarah Wyckoff  
ENV/PM: David Najvar Re: 850 File  
ENV/HIST: Reading File  
THC: Adrienne Campbell