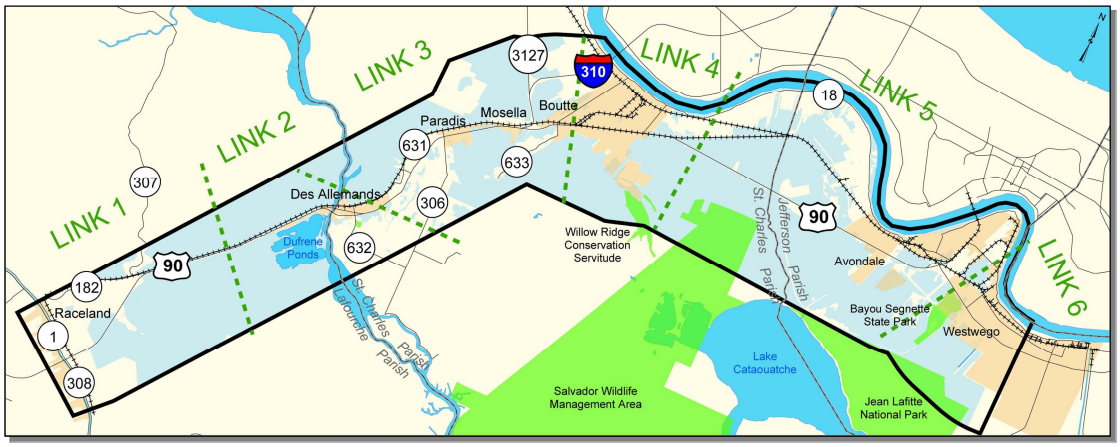
4.0 AFFECTED ENVIRONMENT

The study area boundary shown on **Exhibit 4-1** defines the geographic area of the affected environment associated with proposed I-49 South. The study area extends up to two-and one-half miles on either side of existing US 90 from LA 1 in Raceland, Lafourche Parish to Ames Boulevard in Marrero, Jefferson Parish. The project extends through the three parishes of Lafourche, St. Charles, and Jefferson and is divided into Links for analysis as described in Section 2.4.5. The data and exhibits in this FEIS are presented either by Parish or Link.

Exhibit 4-1
Project Study Area and Links



4.1 Land Use

Encompassing approximately 102,219 acres, the study area includes approximately 26,019 acres in Lafourche Parish, 45,348 acres in St. Charles Parish, and 30,852 acres in Jefferson Parish. The National Wetlands Inventory (NWI) indicates that wetlands comprise approximately 67,364 acres or 66% of the total study area. **Exhibits 4-2a through 4-2f** present the study area land use. Urbanized land use categories are restricted to the US 90 corridor west of LA 3127. Urban uses account for much of the study area in St. Charles Parish from LA 3127 to the Davis Pond Diversion Canal and in Jefferson Parish to the east of Live Oak Road.

In addition to these uses, the following areas have notable characteristics resulting from ownership, hydrology, or other special circumstances:

- Dufrene Ponds
- Sunset Drainage District
- Paradis Mitigation Bank
- Commercial properties along US 90 in St. Charles Parish
- Willowdale Conservation Servitude
- Davis Pond Diversion Ponding Area
- Salvador Wildlife Management Area
- The landfills near the Jefferson-St. Charles Parish Line
- Bayou Segnette State Park

4.1.1 Local Land Use Plans

4.1.1.1 Lafourche Parish

Lafourche Parish has no comprehensive land use plan and has not zoned unincorporated areas of the Parish. The South Central Planning and Development Commission (SCPDC), the regional planning organization, is not aware of any historical land use plans for Lafourche Parish. There is a regional economic development plan, *2002 Regional Comprehensive Economic Development Strategy*, and one of the goals in this plan is to "improve the overall capacity of the Region to make efficient land use decisions." Other goals of the plan provide for development of a more diversified economy and to protect and conserve natural resources and promote use of such resources for both business and recreation. Land use controls in Lafourche Parish include floodplain development, coastal management, derelict/unsafe buildings, wastewater disposal, drainage regulations, subdivision and mobile home regulations, and airport hazard zoning.

4.1.1.2 St. Charles Parish

There are two planning documents developed and used by St. Charles Parish: St. Charles Parish Comprehensive Land Use Plan (1990) and the St. Charles Overall Planning Effort, SCOPE, a Strategic Plan for Economic Development (2002). A primary infrastructure goal of SCOPE is to develop a transportation plan that moves people through and within St. Charles Parish, facilitates growth, and enhances the quality of life. The 1990 planning document recognizes US 90 as "a major transportation route for traffic on the west bank" that should experience an increase in commercial land use as a result of the completion of I-310.

4.1.1.3 Jefferson Parish

Jefferson Parish developed a comprehensive plan called *Envision Jefferson 2020* (2002), which states that the best opportunities for planned and mixed use development are found on the Westbank. To facilitate this growth, the Transportation Element of *Envision Jefferson 2020* identifies the completion of the I-49 corridor, and the widening of the Huey P. Long Bridge. Completion of I-49 from Ames Boulevard to the St. Charles Parish line also is named as one of five large, regional transportation projects that will have a positive impact on economic and future development of the Parish.

4.1.2 Agricultural

Sugarcane is the primary crop in the study area portion of Lafourche Parish. Between LA 308 and LA 182, US 90 traverses or borders an extensive sugar field. Cattle, horse grazing, and hay along US 90 and sugarcane along I-310 are common in St. Charles Parish. Agriculture accounts for less than 3 percent of the land within the hurricane protection levee system in Jefferson Parish.

Exhibit 4-2a Link 1

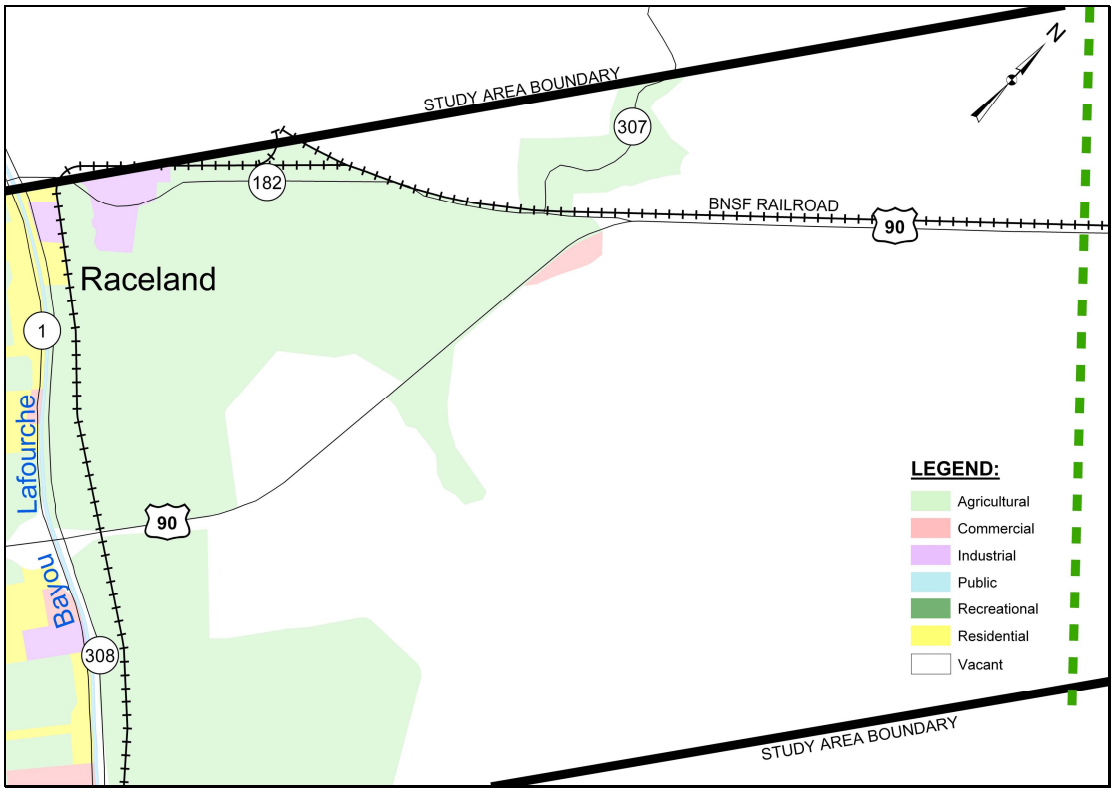


Exhibit 4-2b Link 2

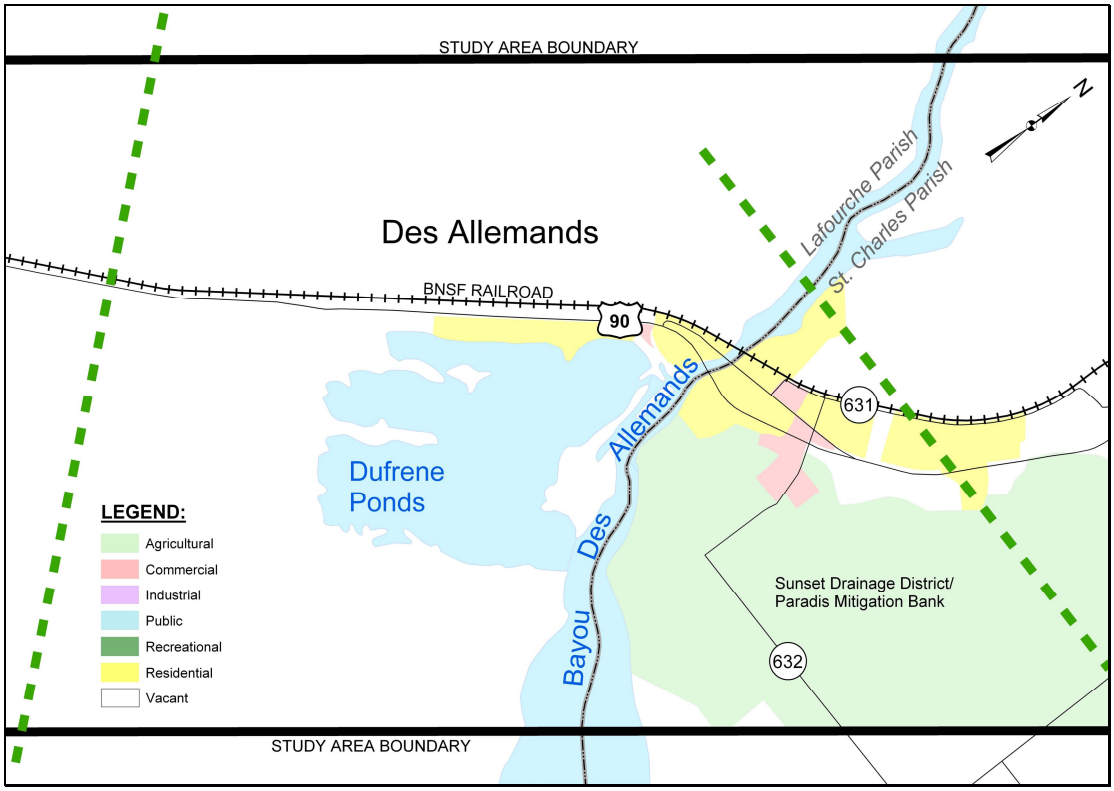


Exhibit 4-2c Link 3

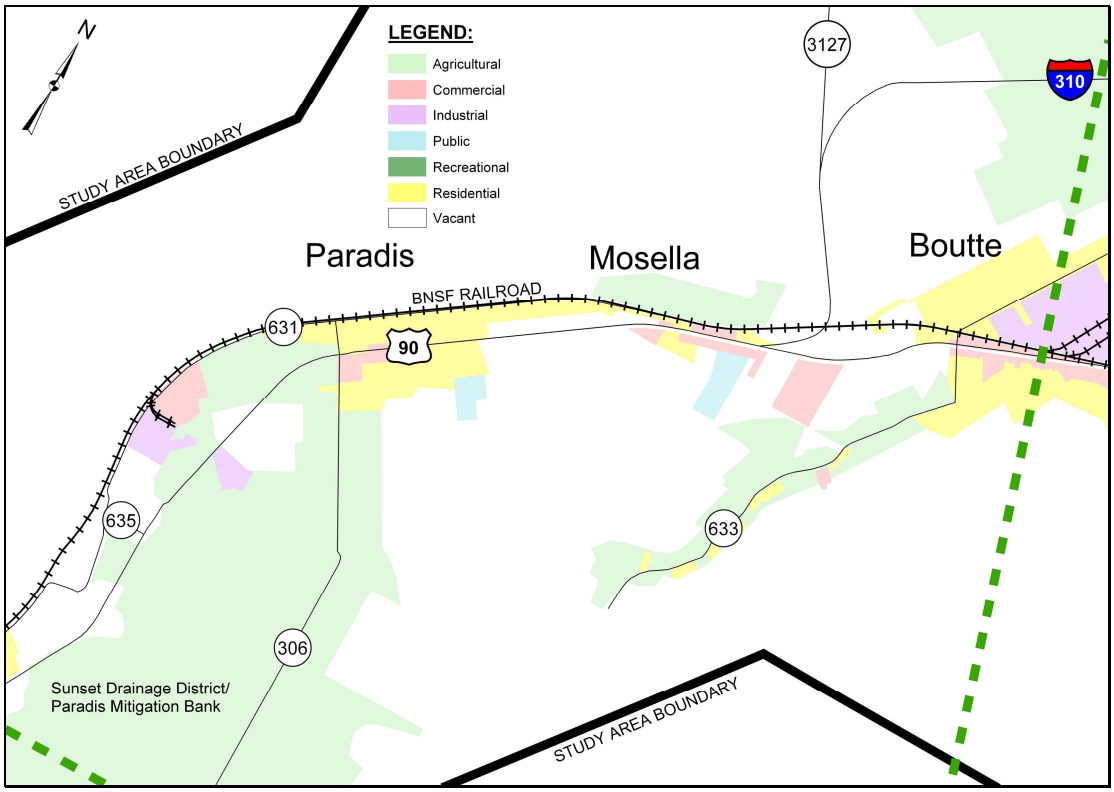


Exhibit 4-2d Link 4

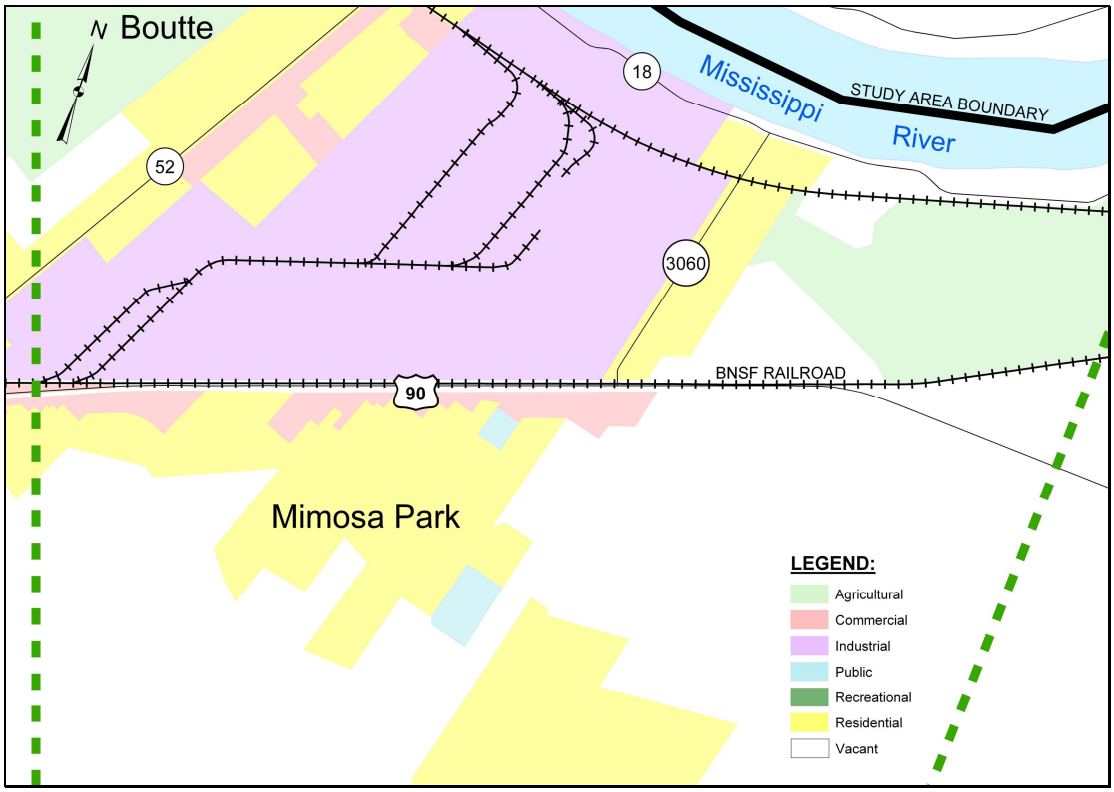


Exhibit 4-2e Link 5

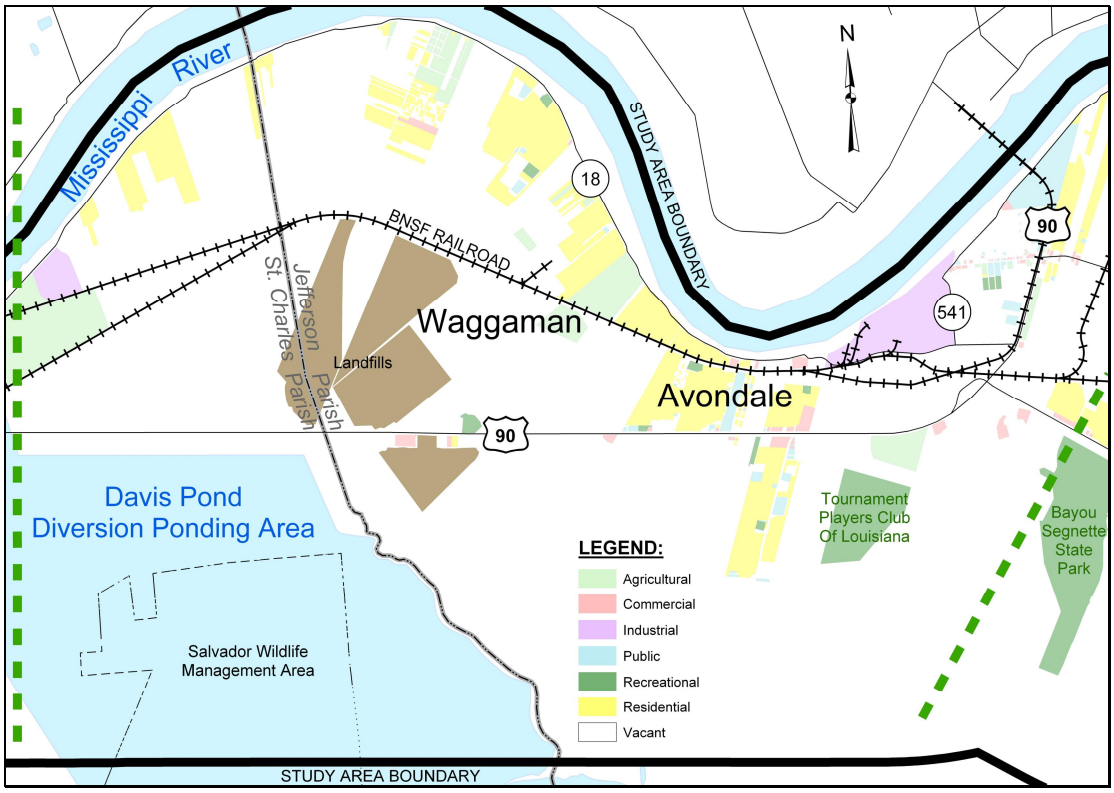
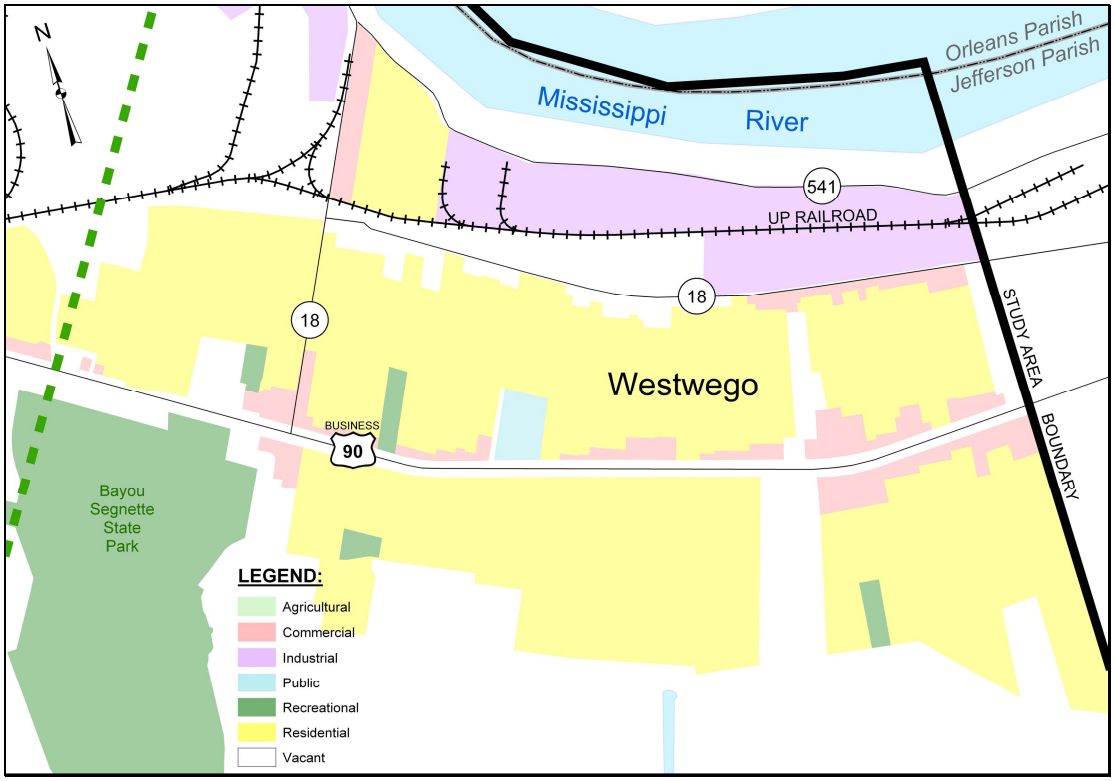


Exhibit 4-2f Link 6



4.1.3 Urbanized Land

Development of land for urban residential, commercial, and industrial use throughout the study area has occurred on higher ground near waterways or within areas drained and protected by levees. Some development also extends along major roadways that are not protected by levees.

In Lafourche Parish, on LA 1 and LA 308 along Bayou Lafourche, the study area contains primarily residential development mixed with schools, churches, cemeteries, and a hospital. There is commercial activity on US 90 at the intersection of LA 182 and commercial activity mixed with residential development in the area near Bayou Des Allemands. The only industrial activity is Raceland Raw Sugar's processing mill located on LA 182.

In St. Charles Parish, mixed use development is found in Des Allemands where US 90 crosses Bayou Des Allemands, in Paradis on US 90 within the Sunset Drainage District, and in Mosella, Hahnville, Boutte, and Luling. These towns extend along US 90, River Road (LA 18) and on the natural levee between them surrounding the Monsanto plant. Recent and proposed residential developments include Willowdale, Mimosa Park, and Ashton Plantation, a proposed subdivision located between I-310/LA 3127 and LA 18. The major commercial area stretches along US 90 between Paul Maillard Road (LA 52) and Barton Avenue (LA 3060).

Industrial facilities in St. Charles Parish within the study area include:

- Monsanto Company (Monsanto), occupying approximately 1,653 acres between LA 18 and US 90 in Luling; and
- Discovery Producer Services, occupying approximately 95 acres in Paradis.

A recent center for industrial and extraction activity was the Paradis Field occupying approximately 8,248 acres of former oil and gas wells within the Sunset Drainage District. Extraction activity has ended, and approximately 7,102 acres of the site, currently vacant or leased for various agricultural uses, has been approved as the Paradis Mitigation Bank discussed in Section 4.1.4.

In Jefferson Parish, residential and commercial land use is generally located along and within close proximity to US 90. Residential development makes up 32 percent of the land use within the hurricane protection levee system. Commercial and industrial development makes up approximately 16 percent of the land use. Undeveloped land makes up the majority of land in the study area. **Exhibits 4-2e and 4-2f** depict study area land uses in Jefferson Parish.

Recreational and institutional land uses are discussed in Section 4.2.3.

4.1.4 Mitigation Banks

At the initiation of the I-49 South planning process, two tracts of land within the study area were proposed by private entities to become wetland mitigation banks.

The larger of these as shown on **Exhibits 4-2b and 4-2c** is now the Paradis Mitigation Bank owned by Chevron USA, Inc. (Chevron) with approximately 7,102 acres protected by a Mitigation Banking Instrument that allows the reestablishment of a forested wetland ecosystem. Chevron will sell mitigation credits as they are

accrued by the Paradis Mitigation Bank, as approved by the USACE, to those required to conduct mitigation for loss of bottomland hardwood species or freshwater swamp. At the time of the publication of this FEIS, a conservation servitude has not been applied to any portion of the proposed at grade ROW. Phase I now under development contains 1547.22 acres.

The other proposed tract is located north of the BNSF Railroad in Mosella. As of the publication of this FEIS, no action had been taken by the Mitigation Bank Review Team (MBRT) relative to the Mosella bank proposal.

4.2 Community Environment

4.2.1 Demographics

The demographic data presented here was compiled using two methodologies, by Parish and by both Census Tracts and by Census Designated Place (CDP). The use of varying methodologies for different Links results from the early development of this project as two separate sections of independent utility.

The study area of Links 1 through 4 traverses nine Census Tracts, Tracts 209, 210, 216.01, and 218 in Lafourche Parish and Tracts 627, 628, 629, 631, and 632 in St. Charles Parish as illustrated in **Exhibit 4-3**. Tract 630 also is partly within the study area, but is excluded here because its population is outside the study area.

Exhibit 4-4 locates the CDP's in the study area of Links 5 and 6.

The 2000 population by race and ethnicity is presented by Parish in **Table 4-1**. The population by race in study area Links 1 through 4 in Lafourche and St. Charles Parishes is shown by Census Tract in **Table 4-2. Table 4-3** presents similar data for Links 5 and 6 of the study area in Jefferson Parish based on CDPs.

Table 4-1
Population by Race and Ethnicity
Lafourche, St. Charles and Jefferson Parishes, 2000

		White, Non-Hispanic	Black, Non-Hispanic	Hispanic and other	Totals
Lafourche	Population	74,666	11,486	3,822	**89,974**
	% of Parish	83.00%	12.80%	4.20%	
St. Charles	Population	34,238	12,161	1,673	**48,072**
	% of Parish	71.20%	25.30%	3.50%	
Jefferson	Population	302,648	104,957	54,028	**461,633**
	% of Parish	66.40%	23.00%	11.90%	
Three Parishes	Population	411,552	128,604	59,523	**599,679**
	% of Three Parishes	68.60%	21.40%	9.90%	
Louisiana	Population	2,856,161	1,451,944	160,871	**4,468,976**

Source: US Census 2000

Exhibit 4-3
Census Tracts in Links 1 through 4

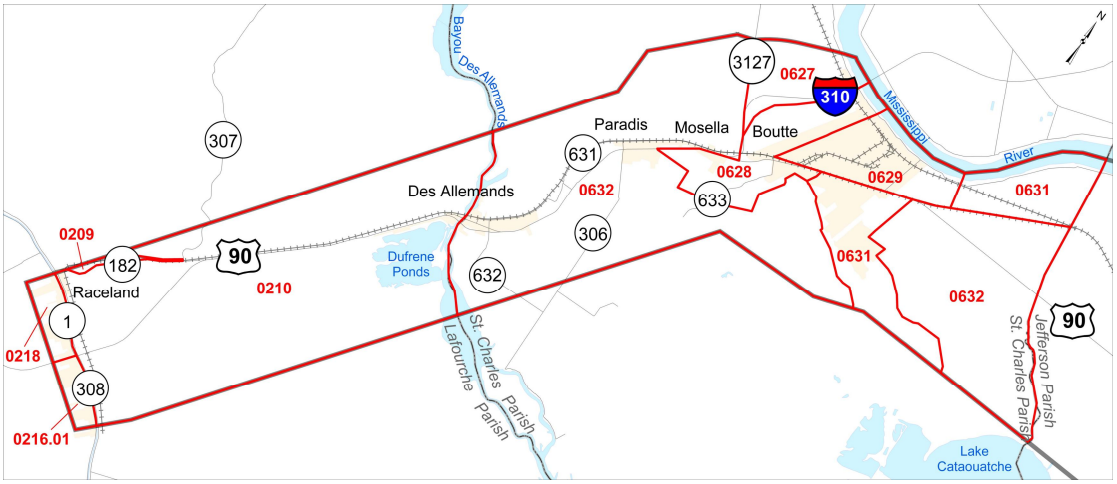


Exhibit 4-4
Census Defined Places (CDPs) in Links 5 and 6

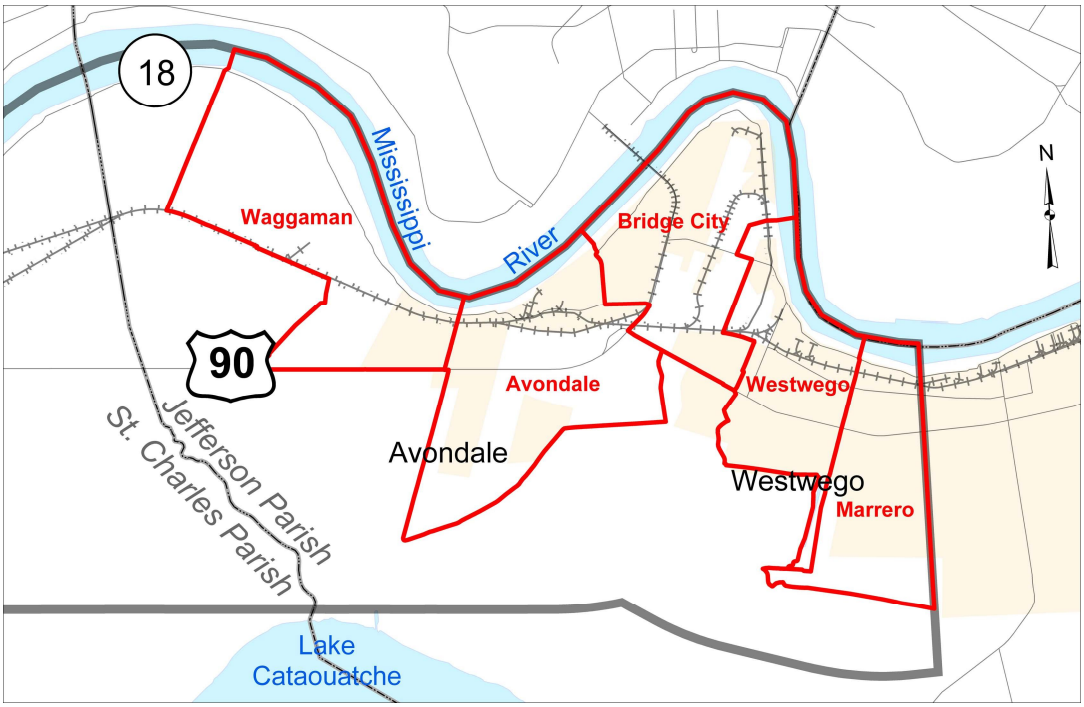


Table 4-2
Study Area Population by Census Tracts
Links 1 – 4, Lafourche and St. Charles arishes, 2000

Tract	White		Black		Other		Totals
	Number	%	Number	%	Number	%	
209	1,136	51.50%	1,033	46.80%	37	1.70%	2,206
210	2,547	87.70%	212	7.30%	144	5.00%	2,903
216.01	6,059	94.00%	147	2.30%	240	3.70%	6,446
218	3,623	70.20%	1,378	26.70%	157	3.00%	5,158
Total Lafourche	**13,365**	**80.00%**	**2,770**	**16.60%**	**578**	**3.50%**	**16,713**
627	1,406	39.00%	2,152	59.80%	43	1.20%	3,601
628	1,528	37.90%	2,411	59.90%	88	2.20%	4,027
629	2,342	85.90%	310	11.40%	73	2.70%	2,725
631	6,295	90.90%	461	6.70%	173	2.50%	6,929
632	4,792	88.30%	504	9.30%	128	2.40%	5,424
Total St. Charles	**16,363**	**72.10%**	**5,838**	**25.70%**	**505**	**2.20%**	**22,706**
Total of Census Tracts Links 1-4	**29,728**	**75.40%**	**8,608**	**21.80%**	**1083**	**2.70%**	**39,419**

Note: Populations are based on entire Tract population sizes.

Source: US Census 2000

Table 4-3
Study Area Population by CDP
Links 5 and 6, Jefferson Parish, 2000

CDP	White Alone		Black Alone		Hispanic and Other		Totals
Waggaman	3,749	39.7%	5,112	54.2%	574	6.1%	**9,435**
Avondale	3,328	61.2%	1,096	20.1%	1,017	18.7%	**5,441**
Bridge City	3,546	42.6%	3,950	47.5%	827	9.9%	**8,323**
City of Westwego	7,846	72.9%	2,137	19.9%	780	7.2%	**10,763**
Marrero, west of Ames	3,634	23.9%	10,835	71.4%	707	4.7%	**15,176**
Links 5 and 6	**22,103**	**45.0%**	**23,130**	**47.1%**	**3,905**	**8.0%**	**49,138**

Source:2000 US Census

Table 4-4 presents a summary of population projections based on the Statewide Intermodal Transportation Plan. Annualized population growth rates for Lafourche, St. Charles and Jefferson Parishes are 0.56%, 0.83% and 0.80%, respectively. The 2000-2010 and 2010-2030 projected population growth rates for Lafourche Parish are in line with Louisiana's projected population growth rates of 0.60% and 0.70% in the same time periods. St. Charles and Jefferson Parishes are projected to grow at twice the rate of the state in those time periods.

Table 4-4
Projected Population Growth
Lafourche, St. Charles and Jefferson Parishes, 2000, 2010 and 2030

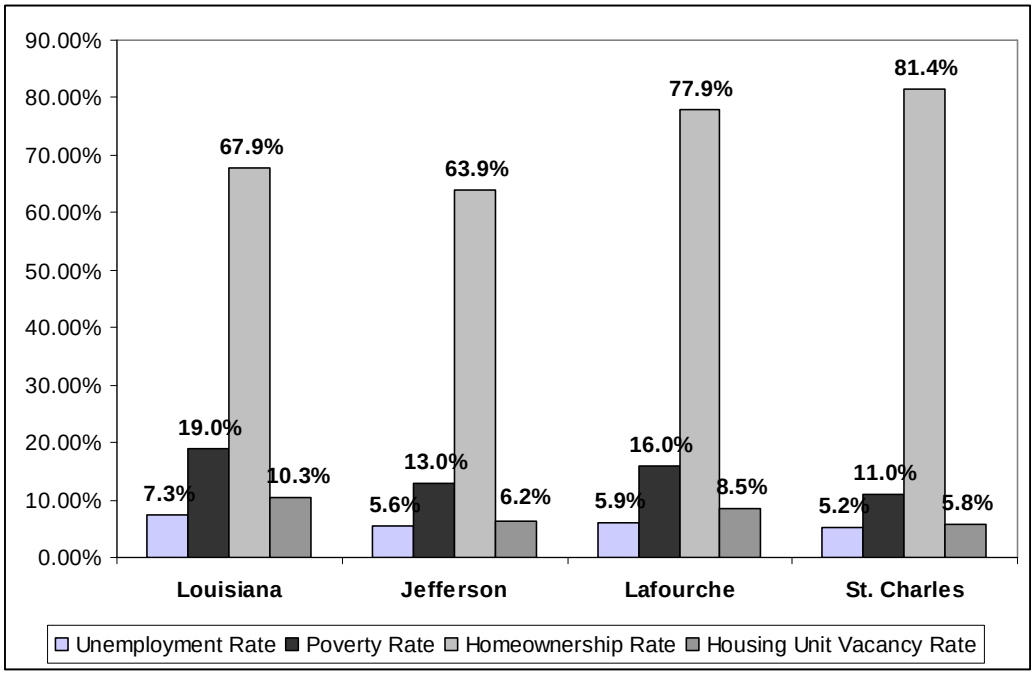
State, Parish, or Community	Population 2000	Projected Population 2010	Projected Annualized Growth Rate 2000-2010	Projected Population 2030	Projected Annualized Growth Rate 2010-2030
Lafourche Parish*	89,974	94,330	0.48%	106,350	0.64%
St. Charles Parish	48,072	52,630	0.95%	62,855	0.97%
Jefferson Parish	455,466	492,782	0.82%	579,739	0.88%
Louisiana	4,468,976	4,753,860	0.64%	5,437,145	0.72%

Source: Update to Statewide Intermodal Transportation Plan (SITP), LDOTD
*Lafourche Parish data sources are U.S. Census and W&P, 2004.

4.2.2 Community Characteristics

Exhibit 4-5 compares Unemployment, Poverty, Home Ownership, and Housing Unit Vacancy Rates for Louisiana with the three Parishes in the corridor. It is readily seen that the corridor Parishes compare favorably with the statewide figures. All rates in 2000 were more favorable with the exception of the home ownership rate in Jefferson Parish.

Exhibit 4-5
Unemployment, Poverty, Homeownership, and Housing Unit Vacancy
All Louisiana Parishes and Jefferson, Lafourche and St. Charles Parishes, 2000



Source: 2000 US Census

4.2.2.1 Housing

Exhibit 4-5 summarizes housing characteristics in Louisiana and in the Parishes in the study area in 2000.

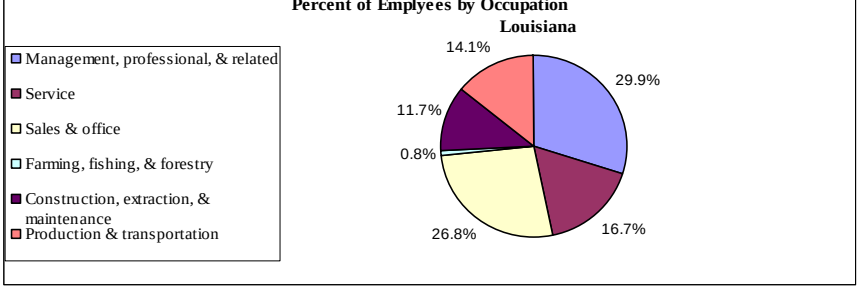
According to *Envision Jefferson 2020*, the Westbank of Jefferson Parish where the corridor is located had 74,106 total housing units in 2000 and the vacancy rate was 7.1 percent. *Envision Jefferson 2020* predicts that demand for housing on the Westbank will require another 8,000 units, a 14 percent increase by 2020.

Owner-occupied housing in St. Charles Parish was 17.5 percent higher than in Jefferson Parish in 2000. Owner-occupied unit median values in the corridor ranged from $53,200 in Bridge City to $124,800 in Luling. The oldest homes are in Westwego with the median year for construction of 1962. The newest homes are in Paradis with the median year of construction of 1979. Median rents asked are as low as $127 in Bridge City ranging up to $525 in Waggaman.

4.2.2.2 Employment

Using 2000 Census data, **Exhibit 4-6** includes pie-charts that illustrate the make-up of employment in the corridor Parishes as compared to the state, and **Table 4-5** indicates the unemployment circumstances in the corridor. Bridge City has the highest unemployment rate at almost twice that of the state, while Luling has the highest percentage of persons in the labor force and one of the lowest rates of unemployment. The annual employment growth rate for Lafourche and St. Charles Parishes is 1.33% and 0.88%, respectively. These employment growth rates are in line with Louisiana's statewide employment growth rate of 1.10%.

Exhibit 4-6
Percent of Emplyees by Occupation



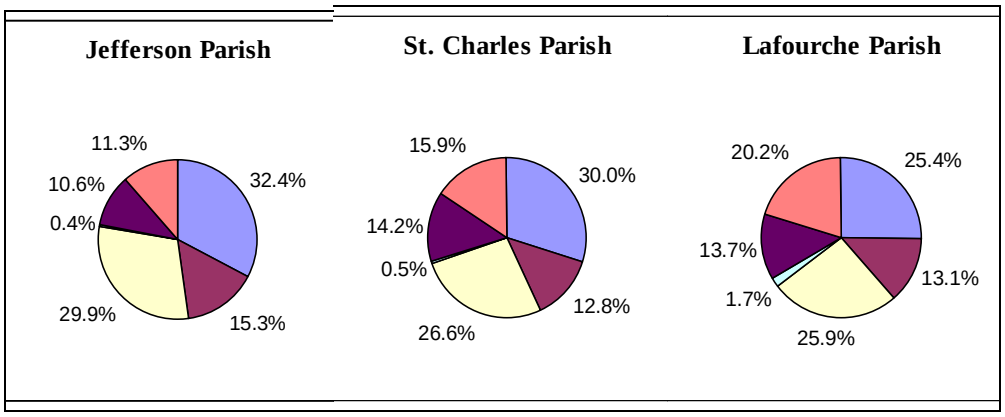


Table 4-5
Labor Force and Unemployment
for Louisiana and for Parishes and CDPs in Corridor, 2000

State, Parish or Community	Population 16+ Years				Civilian Labor Force Unemployed	
	In the Labor Force		In the Armed Forces			
Louisiana	2,016,114	59.4%	18,119	0.9%	146,218	7.3%
Lafourche Parish	39,587	57.9%	52	0.1%	2,328	5.9%
St. Charles Parish	22,818	63.9%	19	0.1%	1,189	5.2%
Jefferson Parish	226,332	64.6%	1,237	0.5%	12,618	5.6%
Raceland CDP	4,313	54.4%	0	0.0%	268	6.2%
Des Allemands CDP	954	53.9%	0	0.0%	42	4.4%
Paradis CDP	664	67.1%	0	0.0%	25	2.5%
Boutte CDP	1,135	74.0%	0	0.0%	117	7.6%
Luling CDP	6,649	78.1%	7	0.1%	241	2.8%
Waggaman CDP	4,129	59.5%	49	1.2%	346	8.4%
Avondale CDP	2,423	59.4%	1	0.0%	158	6.5%
Bridge City CDP	3,046	52.0%	0	0.0%	400	13.1%
City of Westwego	4,597	59.5%	0	0.0%	341	7.4%
Marrero CDP (part)	6,111	56.2%	29	0.5%	691	11.3%

Source: 2000 US Census

4.2.2.3 Educational Attainment

Education levels of individuals of working age, assumed to be 25 years of age, in the study area were determined using data from the 2000 Census. **Table 4-6** provides a summary of educational attainment data comparing the state with the three Parishes.

Table 4-6
Educational Attainment
Louisiana, Jefferson, Lafourche and St. Charles Parishes, 2000

	Population 25 + years	Education Level							
		Less Than High School		High School Graduate		Some College		Associate or Higher Degree	
		Number	%	Number	%	Number	%	Number	%
Louisiana	2,775,468	699,052	25.2	899,354	32.4	561,486	20.2	615,576	22.2
Jefferson	298,761	61,945	21.0	89,528	30.0	69,824	23.0	77,464	26.0
Lafourche	55,891	18,818	33.7	21,236	38.0	7,427	13.3	8,410	15.0
St. Charles	29,551	5,919	20.0	10,662	36.1	6,418	21.7	6,552	22.2

Source: 2000 US Census

4.2.3 Community Facilities

4.2.3.1 Schools and School Bus Routes

In Lafourche Parish, public schools located in the study area are Raceland Lower Elementary and Bayou Lafourche Marine Institute. Eight general student population

buses and one special education student bus travel through the study area to transport the students to Raceland Lower Elementary.

The Bayou Lafourche Marine Institute, located on US 90, is an alternative school for troubled/at risk youth aged of 12 to 17. Current enrollment is 44 students. Three buses operate six days a week on a route that utilizes US 90 to pick-up and return students to St. Charles, Lafourche, and Terrebonne Parishes.

In St. Charles Parish, eight schools listed below are located in or near the study area. Boutte Christian Academy is private. The others, as well as an Alternative Programs Center, are operated by the St. Charles Parish School Board.

A.A. Songy Primary, Luling
Allemands Elementary, Des Allemands
Boutte Christian Academy, Boutte
Hahnville High, Hahnville
J.B. Martin Middle, Paradis
Lakewood Elementary, Luling
Mimosa Park Elementary, Hahnville
R.J. Vial Elementary, Paradis

In St. Charles Parish, school buses travel on and across US 90 frequently as shown in **Table 4-7**. Public school buses operate between the hours of 6:30 am and 9:00 am and 2:00 pm and 4:30 pm. The Boutte Christian Academy operates three school buses between the hours of 6:30 am and 9:00 am and between 2:00 pm and 4:30 pm. These buses all use and/or cross US 90.

Table 4-7
US 90 Crossing Activity – School Buses in St. Charles Parish

Number of Buses	Number of Crossings Per Day	General Use Notes
37	148 Crossings	Public school buses cross or use 2 times in each two hour period
10	60 Crossings	Public school buses cross or use 3 times in each two hour period
3	12 Crossings	Private school buses cross 4 times per day
3	8 Crossings	Alternative school buses cross 4 times per day
53 Total Buses	**228 Total Number Crossings**	
Source: St. Charles Parish Public Schools Transportation Department		

Elementary and secondary schools in Jefferson Parish in the study area include:

Bridge City Elementary, Bridge City
Catherine Strehle Elementary, Avondale
Concordia Lutheran, Marrero
Henry Ford Junior High, Avondale
Joshua Butler Elementary, Westwego
Live Oak Manor Elementary, Westwego
L.W. Higgins High, Marrero
Lucille Cherbonnier Elem., Waggaman
Our Lady of Prompt Succor, Westwego
Stella Worley Junior High, Westwego
Vic A. Pitre Elementary, Westwego
Waggaman Special School, Waggaman
Westbank Alternative School, Marrero
Westwego Elementary, Westwego

No institutions of higher learning are located within the study area. Colleges and universities within commuting distance include Delgado Community College, Dillard University, Loyola University, University of New Orleans, Nicholls State University, Nunez Community College, Tulane University, and Xavier University.

4.2.3.2 Police and Fire

Ten government and public safety facilities are located in or serve the study area:

Avondale Independent Inc. Shipyard Division Fire Department	Luling Volunteer Fire Department
Avondale Volunteer Fire Company	Nine Mile Point Volunteer Fire Substation, Westwego
Des Allemands Volunteer Fire Department	Paradis Volunteer Fire Department
Hahnville Volunteer Fire Department	St. Charles Parish Courthouse
Herbert Wallace Memorial Volunteer Fire Station	St. Charles Parish Fireman's Association
Jefferson Parish Fire Alarm Department	St. Charles Parish Family Services Division
Jefferson Parish Sheriff's Department	St. Charles Parish Sheriff's Office
Lafourche Parish Sheriff's Office	Westwego Police Department
Lafourche Fire District #1 Volunteers	Westwego Volunteer Fire Department (Main and three auxiliary stations)

Four of these facilities, located in Hahnville, are outside of the study area: St. Charles Parish Sheriff's Office, St. Charles Parish Fireman's Association, St. Charles Parish Courthouse, and the Hahnville Volunteer Fire Department.

4.2.3.3 Hospitals and Emergency Management

Medical facilities serving the study area include St. Anne General Hospital in Raceland and St. Charles Parish Hospital. Both hospitals are located within the study area and use US 90 as the primary land route for patient transport. The West Jefferson Medical Center, the largest full-service hospital on the Westbank, is located just outside the study area in Marrero. Other regional medical centers are located on the Eastbank of Jefferson Parish.

Response to the medical emergency service 911 for Lafourche Parish is provided by Acadian Ambulance Service, a private company that serves 29 parishes. The company maintains 140 emergency medical service (EMS) vehicles, five helicopters, and two fixed-wing planes. The Acadian Ambulance Service is kept apprised by the DOTD of road closures and other activities affecting US 90.

St. Charles Parish EMS is a public entity that utilizes five paramedic units and one helicopter located in west Jefferson Parish that is available to provide an approximate seven-minute response time.

Medical emergencies in the Jefferson Parish portion of the study area are handled by West Jefferson Ambulance, a service affiliated with the West Jefferson Medical Center, and the City of Westwego emergency medical service with 2 EMS units, 6 full-time paramedics, and 20 part-time paramedics.

4.2.3.4 Public Libraries

The Raceland Branch Library is the only library in the Lafourche Parish Public Library System located in the study area.

The St. Charles Parish Library System has two facilities in the study area, the West Regional Branch in Luling and the Hahnville Branch. A bookmobile is available to people who are not able to visit the branch libraries. Internet access and electronic resources are available, as well as a planetarium associated with the West Regional Branch Library. Jefferson Parish libraries in the study area include the Live Oak Library in Waggaman and the Westwego Library operated by the Jefferson Parish Library System.

4.2.3.5 Transportation

Private motor vehicles constitute the primary mode of ground transportation in the study area. Existing and projected traffic conditions are discussed in Chapter 3.

Other modes, serving specific groups, are represented by school buses discussed in Section 4.2.3.1 and by the transportation services described below in this section. Public transit is not available in the study area.

The Lafourche Parish Council on Aging, Lafourche Parish Public Transit (LPCOA) provides transportation for Parish residents who are 60 years of age or older. Trips to New Orleans and those between Raceland and Des Allemands utilize US 90 as the primary transportation route.

The St. Charles Council on Aging (SCCOA) provides transportation services to elderly citizens. A fleet of nine 8- to 16-passenger vans is available to transport the elderly around St. Charles Parish and to New Orleans and Houma. US 90 is the primary transportation route.

The Association of Retarded Citizens of St. Charles (ARCSC) provides transportation to approximately 60 parish residents. It maintains seven vehicles that operate within the Parish utilizing US 90 as the primary transportation route.

In Jefferson Parish, Jefferson Transit (JeT) operates public transit routes on the Westbank that connect to the Eastbank in both Jefferson Parish and New Orleans. These routes operate from the Walkertown Terminal located at Ames Boulevard and the Gretna/Wilty Terminal located outside the study area in Gretna.

JeT also operates a Mobility Impaired Transportation System (MITS) that provides transportation to persons with disabilities who are unable to use fixed route service. MITS meets the requirements of the Americans with Disabilities Act (ADA). The Jefferson Parish Community Action Program (JeffCAP) provides transportation for low income and elderly citizens through its community centers in Avondale, Bridge City, and Marrero.

4.2.3.6 Public Parks/Recreation Areas

In the study area, there are both publicly owned recreation facilities and others that are made available for use by the public. The recreational facilities that qualify as Section 4(f) or Section 6(f) properties are noted as such in following descriptions.

Section 4(f) of the U.S. Department of Transportation Act (49 USC 303 and 23 USC 138) requires that a Section 4(f) evaluation be prepared for any federally funded transportation project that proposes to use property that is part of a publicly owned park, recreation area, or wildlife refuge, or land from a historic site eligible for inclusion on the National Register of Historic Places. The 4(f) statement must demonstrate that there is no prudent or feasible alternative.

Section 6(f) of the Federal Land and Water Conservation Fund (LWCF) Act requires coordination with and approval of federal projects by the U.S. Department of Interior if land acquired and/or developed using LWCF funds is to be impacted by a federal project. Commonly this requires replacement in kind of any acreage and/or facilities used by the project.

Lafourche Parish Emergency, Recreation, and Community Center

Lafourche Parish's Emergency, Recreation and Community Center is the hub of community activities for central Lafourche Parish. Outdoor facilities include 12 soccer fields, four baseball fields, a football field, lighted tennis courts, and a walking trail with hills and steps. The building is designed as an emergency shelter and also provides for basketball, indoor volleyball, and meeting space with bleachers that can accommodate 300 people. The site includes a senior citizen building and storage for sports equipment. During the preparation of this FEIS, the Lafourche Parish Emergency, Recreation and Community Center was assumed to be a Section 4(f) property.

Lafourche Parish Tourist Information Center

The Lafourche Parish Tourist Information Center is located on LA 1 between the US 90 eastbound entrance ramp and US 90. In addition to providing tourist information services, this facility provides an outdoor jogging track, sand volleyball courts, and an all-purpose field that is utilized for football, soccer, and baseball. The Lafourche Parish Tourist Information Center is not a Section 4(f) property as it is a joint use development on DOTD ROW.

West Bank Bridge Park

The largest recreational facility on the Westbank of St. Charles Parish is the West Bank Bridge Park under the Hale Boggs Bridge (I-310). This facility supports the offices of the St. Charles Parish Department of Parks and Recreation as well as multiple ball fields. West Bank Bridge Park is not a Section 4(f) property as it is a joint use development on DOTD ROW.

St. Charles Parish Schools

St. Charles Parish public schools provide indoor and outdoor recreational facilities to the St. Charles Parish Department of Parks and Recreation for public use. During the preparation of this FEIS, these facilities were assumed to be Section 4(f) properties.

Coronado Park

Coronado Park is a multiuse field maintained by St. Charles Parish but privately owned. The status of this facility was reviewed with FHWA, and it was determined that it is not a Section 4(f) property.

Pops Stroman Memorial Park

Pops Stroman Memorial Park is located at the US 90/US 90 Business interchange in the existing DOTD ROW. The Park was created by DOTD as a roadside rest area and a memorial. The status of this facility was reviewed with FHWA, and it was determined that it is not a Section 4(f) property.

Salvador/Timken Wildlife Management Area

The Salvador/Timken Wildlife Management Area (WMA) comprises 34,520 acres of wetlands, bayous, canals, and lakes along the northwestern shore of Lake Salvador and eastern shore of Lake Cataouatche in St. Charles Parish south of US 90. Managed by the LDWF, this WMA supports fishing, hunting, boating, birding, and other eco-tourism activities. Salvador/Timken Wildlife Management Area may qualify as a Section 4(f) property and is a Section 6(f) property.

Golf Courses

Golf courses in the study area include Sugarland Country Club in Lafourche Parish, Fashion Golf and Country Club and Willowdale Country Club in St. Charles Parish, and the Tournament Players Club (TPC) in Jefferson Parish. With the possible exception of the TPC, none of these facilities is a Section 4(f) property.

Jefferson Parish Recreation Areas

Recreation areas in Jefferson Parish include the Avondale Playground, Bridge City Playground, Bridge City G/A Center, Nicholson Playground, Harold McDonald Sr. Park, Kennedy Heights Playground and Waggaman Playground. All of these facilities are Section 4(f) properties.

City of Westwego Recreation Areas

Westwego operates Catfish Bourgeois Playground on the Westbank Expressway between Avenues C and D, and Marrero Park on 11th Street between Avenues B and D. Both of these facilities are Section 4(f) properties.

Bayou Segnette State Park and Sports Complex

Bayou Segnette State Park is owned and operated by the Louisiana Department of Culture, Recreation, and Tourism. Adjacent to the Park is the Bayou Segnette Sports Complex, which includes the John A. Alario, Sr. Event Center, the Alario Center Festival Grounds, and Segnette Field. Bayou Segnette State Park and Sports Complex is a Section 4(f) property.

4.2.3.7 Houses of Worship and Cemeteries

Numerous houses of worship, cemeteries, and properties belonging to religious organizations are located in the study area. These are listed in **Appendix 4-A.**

4.2.3.8 Pedestrian and Bicycle Facilities

No public bicycle routes or walking trails are found in Lafourche or St. Charles Parishes within the study area. Neither Parish has created and adopted a bicycle route master plan or multimodal facility. *The Year 2025 Metropolitan Transportation Plan for the New Orleans Region* (prepared by the Regional Planning Commission (RPC), however, addresses improvements in St. Charles Parish including:

- Sidewalks on Paul Maillard Road (LA 52), and
- A bicycle path on the Westbank levee of the Mississippi River.

In Jefferson Parish pedestrian walking paths are found at the Avondale Multi Purpose Center, a community center that abuts US 90; Catfish Bourgeois Playground; and Bayou Segnette State Park. There are no designated bicycle facilities.

4.2.4 Economics

Table 4-8 presents sales by sector in Louisiana and in the Parishes in the study area from the *2002 Economic Census* by the US Census Bureau.

Table 4-8
Sales reported in Louisiana and in
Jefferson, Lafourche and St. Charles Parishes, 2002 ($1,000)

Sector	Louisiana	Jefferson	Lafourche	St. Charles
Mining	$30,181,037	**not reported**	**not reported**	**not reported**
Utilities	**not reported**	**not reported**	**not reported**	**not reported**
Construction	$15,288,176	**not reported**	**not reported**	**not reported**
Manufacturing	$89,540,799	$ 2,601,859	$ 463,833	$10,564,620
Retail Trade	$41,885,192	$ 6,523,229	$ 656,241	$ 251,750
Transportation and Warehousing	$ 7,847,325	**not reported**	**not reported**	**not reported**
Information	**not reported**	**not reported**	**not reported**	**not reported**
Finance and Insurance	**not reported**	**not reported**	**not reported**	**not reported**
Real Estate	$ 3,942,696	660,380	$ 80,165	$ 32,127
Professional Services	$ 8,243,267	**not reported**	**not reported**	$ 44,325
Management	$ 403,345	**not reported**	**not reported**	**not reported**
Administrative/Waste Management/Remediation	$ 4,721,974	$ 965,301	$ 211,518	$ 86,002
Education	$ 230,627	$ 84,248	**not reported**	**not reported**
Health Care/ Social Service	$18,169,655	$ 2,186,482	$ 262,833	$ 56,201
Arts and Entertainment	$ 2,248,731	$ 581,802		$ 8,309
Lodging and Food Service	$ 7,411,702	$ 837,843	$ 59,326	$ 27,542
Other, not Public Administration	$ 3,579,861	$ 524,799	$ 57,480	$ 22,111

Source: US Census

The Jefferson Parish Economic Development Commission (JEDCO) reported that for the second quarter of 2003, approximately 20,000 of the 50,000 businesses in the Parish were located on the Westbank. Over 30 % of these are classified as service businesses and slightly fewer than 30 % are retail. Manufacturing and special trade construction businesses each account for approximately 1,500 on the Westbank.

4.2.4.1 Economic Development Plans and Incentives

The study area is located on the Westbank of the Mississippi River and is included in the southeastern regional economic development plans prepared by governmental and quasi-governmental organizations listed in **Table 4-9**. All of these plans recognize that connecting the study area to local, regional, national, and international markets is a key strategy for meeting economic development goals.

4.2.4.2 Economic Base

According to Greater New Orleans, Inc. (GNC), the top five economic sectors in the ten-parish southeastern region ranked by total basic earnings are as follows:

1. Oil and gas and petrochemical manufacturing
2. Business and professional services,

3. Shipbuilding and aerospace,
4. Maritime and port-related industries, and
5. Tourism.

Table 4-9
Economic Development Organizations and Plans

Organization	Area Covered	Economic Development Plan
Greater New Orleans, Inc. (GNC) - formerly the New Orleans Regional Chamber of Commerce and Metrovision	Orleans, St. Bernard, Plaquemines, Jefferson, St. Charles, St. John the Baptist, St. James, Tangipahoa, Washington, and St. Tammany Parishes	*The Power of Partnerships: Clusters and Collaborative Economic Development in Southeast Louisiana (Cluster Action Plan)*
New Orleans Regional Planning Commission (RPC)	Orleans, Jefferson, Plaquemines, St. Bernard, and St. Tammany Parishes	*Comprehensive Economic Development Strategy (CEDS)*
Jefferson Parish Economic Development Commission (JEDCO)	Jefferson Parish	*The Jefferson EDGE: Jefferson Parish Economic Development Strategic Plan*
St. Charles Parish Economic Development Strategic Planning Committee	St. Charles Parish	*SCOPE, St. Charles Overall Planning Effort: A Strategic Plan for Economic Development*
City of Westwego	City of Westwego	*City of Westwego Strategic Development Plan*

Of these, only shipbuilding and aerospace are substantially represented in the study area because of Northrop Grumman Ship Systems in Jefferson Parish. This company accounts for approximately 60 percent of the earnings in the sector, and it is the largest private employer in the region with 6,000 employees.

The *Cluster Action Plan*, prepared by Greater New Orleans, Inc. identified the most promising economic clusters for future development in the region. “Clusters” are groupings of related industries. Clusters with future growth potential and a solid presence in the region and the study area include the food (manufacturing, warehousing, and distribution), maritime, and petrochemical industries. Besides Northrop Grumman, major Cluster companies include Monsanto, Cytec Industries, and Chevron all in St. Charles Parish.

4.2.4.3 Industrial Activities

The dominant industrial activities abutting the Selected Alternative are petrochemical manufacturing at Monsanto and the transport and disposal of solid waste at major landfills east of the St. Charles-Jefferson Parish boundary. Two landfills are still active: the Jefferson Parish Landfill, a public disposal area owned by the Jefferson Parish Council and operated by Waste Management; and the River Birch Landfill, a private disposal site owned and operated by River Birch, Inc. Both landfills receive numerous truck deliveries of industrial, commercial, and residential waste from Jefferson Parish. River Birch also receives waste from other Parishes in southeastern Louisiana.

Besides heavy equipment sales and service and large junkyards, four companies are engaged in industrial activities on properties that abut the Selected Alternative. These are A&H Armature Works, Automatic Power, G&C Auto Painting Sales and Service, and Custom Built Torque Converter.

4.2.4.4 Employment Centers

Avondale is designated by the RPC as a regional employment center based on the presence of the Northrop-Grumman Ship Systems, a major ship building facility. Three other regional employment centers are located in the New Orleans metropolitan area, but outside the study area. These include the Elmwood area in Jefferson Parish directly across the Mississippi River via US 90; the Gretna area farther east along US 90 Business on the Westbank of Jefferson Parish; and the Central Business District of New Orleans farther yet along US 90 Business across the river via the Crescent City Connection. JeT operates fixed route transit service between the study area and these employment centers.

According to the U.S. Bureau of Economic Analysis, healthcare, retail, and accommodation and food service jobs associated with tourism provide approximately 40 percent of the jobs in St. Charles and Jefferson Parishes. Together with wholesale trade, these are the top economic sectors in the ten-parish region as ranked by GNC. None of the top employers for these sectors is located within the study area, but West Jefferson Medical Center is just east of the study area in Marrero.

Retail employment near the study area includes four Wal-Mart locations within a short commuting distance to the east along US 90 Business in Marrero, Harvey, and Gretna, and one across the Huey P. Long Bridge in Elmwood. Small businesses and other national chains are found along US 90 Business and in Elmwood.

While tourism jobs are predominantly found in New Orleans, food service employment is available throughout the region. The major wholesale trade employers are located in the Elmwood regional employment center. These include Sysco Foods, Dixie Produce, and Alvin C. Copeland, acting as distributor for the Copeland Restaurant chains.

Given the variety and number of jobs in the regional employment centers, the Westbank can be described as dependent upon the regional transportation network.

4.3 Air Quality

National and state ambient air quality standards (AAQS) were developed for specific (criteria) pollutants to protect public health, safety, and welfare as a result of the Clean Air Act of 1970. The Clean Air Act Amendments of 1990 (CAAA) mandated a program by which air quality must be improved and maintained so as to meet the National Ambient Air Quality Standards (NAAQS), with frameworks for state and regional agency jurisdictions, accountability, and an established time schedule. This program involves on-going monitoring and reporting, from which regions are classified as to their attainment status with regard to each criteria pollutant.

The USEPA and the LDEQ are responsible for the protection of air quality within Louisiana. The USEPA established NAAQS shown on **Table 4-10** for six air

pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO2), sulfur dioxide (SO2), ozone (O3), and particulate matter of 10 microns or less in size (PM-10 and PM-2.5). Two standards, primary and secondary define air quality. Primary standards refer to air quality levels required to protect public health within an adequate margin of safety. Secondary standards refer to air quality levels required to safeguard visibility, comfort, animals, and property from poor air quality.

Table 4-10
National Ambient Air Quality Standards (NAAQS).

Pollutant	Type of Standard	Averaging Time	Concentration ($\mu g/m^3$)	Concentration (ppm)
Carbon Monoxide (CO)	Primary	8-hour*	10,000	9
	Primary	1-hour*	40,000	35
Nitrogen Dioxide (NO_2)	Primary and Secondary	Annual Arithmetic Mean	100	0.05
Ozone (O_3)	Primary and Secondary	1-hour	235	0.12
		8-hour	-	0.08
Particulate Matter (PM-10)	Primary and Secondary	24-hour	150	
Particulate Matter (PM-2.5)	Primary and Secondary	Annual Arithmetic Mean	15.0	-
	Primary and Secondary	24-hour	35	-
Sulfur Dioxide (SO_2)	Primary	Annual Arithmetic Mean	80	0.03
	Primary	24-hour	365	0.14
	Secondary	3-hour	1,300	0.05
Lead (Pb)	Primary and Secondary	3-month	1.5	-

$\mu g/m^3$ = micrograms per cubic meter
ppm= parts per million
*Not to be exceeded more than once per year

4.3.1 Transportation Conformity

Transportation conformity is a process required of Metropolitan Planning Organizations (MPOs) pursuant to the CAAA, to ensure that federal funding and approval are given to those transportation activities that are consistent with air quality goals. CAAA requires that transportation plans, programs, and projects funded or approved by the FHWA be in conformity with the State Implementation Plan (SIP) which represents the state's plan to either achieve or maintain the NAAQS for a particular pollutant.

Subsequent to the CAAA, the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 included transportation planning provisions that stated that federal projects can be approved, funded, advanced through the planning process, or implemented if they are in a conforming Long Range Transportation Plan and Transportation Improvement Program (TIP).

Lafourche, St. Charles, and Jefferson Parishes are in attainment for all criteria pollutants. The attainment status indicates the current pollutant levels are below the NAAQS and consequently the conformity requirements do not apply to this project.

4.4 Noise

Noise is an undesirable or unwanted sound. It is emitted from many sources, including airplanes, factories, railroads, power generating plants, and highway vehicles. Highway noise, or traffic noise, is usually a composite of noises from engine exhausts, drive trains, and tire-roadway interaction. The degree of disturbance or annoyance from unwanted sound depends essentially on three factors:

1. The amount and nature of the intruding noise;
2. The relationship between the background noise; and
3. The intruding noise and the type of activity occurring when the intruding noise is heard.

The magnitude of noise is usually described by its sound pressure. Because the range of sound pressure varies greatly, a logarithmic scale is used to relate sound pressures to some common reference level, particularly the decibel (dB). Sound pressures described in decibels are called sound pressure levels and are often defined in terms of frequency-weighted scales (A, B, C, or D).

The weighted-A scale is used almost exclusively in vehicle noise measurements because it places the most emphasis on the frequency characteristics that correspond to a human's subjective response to noise (1,000 to 6,000 Hertz). Sound levels measured using A-weighting are often expressed as dBA. Throughout this report, references will be made to dBA, which means an A-weighted decibel level.

In referencing actual decibel levels, a 3 dBA difference in sound is not considered detectable by the human ear, while a 5 dBA difference is readily noticeable, and a 10 dBA increase is perceived as twice as loud. Attempts have been made to regulate many of these types of noises, including airplane noise, factory noise, railroad noise, and highway traffic noise. In relation to highway traffic noise, methods of analysis and control have developed rapidly over the past few years.

Noise studies present sound data in terms of an equivalent sound pressure level, L_{eq}. The L_{eq} is formulated in terms of an equivalent steady-state sound level, which in a defined period of time contains the same noise (acoustic) energy as a time-varying noise during the same period of time. In other words, the fluctuating sound levels of traffic noise are represented in terms of a steady noise level with the same energy content.

The FHWA Noise Standards and DOTD Highway Traffic Noise Policy include Noise Abatement Criteria (NAC) for different land use activity categories. **Table 4-11** presents these criteria. All of the receptors within the vicinity of the project limits were classified as B (residential) or C (commercial).

Study area noise measurements were obtained to characterize current conditions. Noise sensitive land uses identified based on FHWA criteria include: residences, schools, churches, hospitals, libraries, and parks and recreational areas. Based upon these identified uses, 52 representative noise measurement sites were selected. The

measurement location at each site was chosen to be a representative distance from the existing US 90 for the noise-sensitive receptors in the area. The locations of the noise measurement sites are shown on the Project Atlas plates in Chapter 2**.**

Table 4-11
Noise Activity Criteria for Each DOTD Activity Category
Hourly A-Weighted Sound Level - Decibels (dBA)

Activity Category	L_{eq} (h)	Description of Activity Category
A	56 (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	66 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	71 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	---	Undeveloped lands.
E	51 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: Highway Traffic Noise Policy, DOTD, March 2004

The measured noise levels at the 52 sites ranged from 48 to 77 dBA. Comparison of the noise measurement results with the NAC determined that approximately eleven percent of all existing noise-sensitive receptors are presently impacted by noise levels above the NAC for their respective activity categories.

The traffic noise model (TNM) calculated noise levels for existing conditions based on field-measured traffic volumes. For all sites, the calculated noise levels are within ±3 dBA of the measured noise levels. It is common practice that if the field measured and TNM calculated existing noise levels are within ±3 dBA, the TNM's results for future noise calculations will be acceptable.

4.5 Water Resources

4.5.1 Surface Water

Surface water in the study area takes the form of bayous, ponds, wetlands, canals and other drainageways. The study area is located within the Lower Mississippi Delta Alluvial Plain and the East Central Louisiana Coastal watershed. The Mississippi River forms the northern boundary of the study area, but it does not directly drain the study area. Its only hydrological connection is through the Davis Pond Freshwater Diversion Canal. For this reason, water quality within the river is not included in the discussion of study area surface water quality.

Other major waterbodies include Bayou Lafourche, Bayou Des Allemands, Petit Lac des Allemands, Dufrene Ponds, Bayou Verret, Grand Bayou, and Bayou Segnette. The latter three flow southward through the marshes, Lake Cataouatche, Lake Salvador, and Barataria Bay, and eventually into the Gulf of Mexico. Tributaries to

Lake Cataouatche flow through the study area, although the lake itself is outside the southern boundary.

Water quality in the study area is affected by both point source and non-point source discharges. Point sources include mainly industrial, municipal, and sewer discharges. Non-point sources include storm water runoff, industrial discharges, landscape maintenance activities, forestry, agriculture, and natural sources (LDEQ, 2004).

Section 303(d) of the Federal Clean Water Act (CWA) requires states to identify waterbodies that are not meeting water quality standards (WQS) and to develop total maximum daily loads (TMDLs) for those pollutants suspected of preventing the waterbodies from meeting their WQS. TMDLs are the maximum amount of a given pollutant that can be discharged into a water body from all natural and anthropogenic sources including both point and non-point source discharges.

In the study area, the state has identified subsegments 020201, 020301, 020303, 020401, 020501, and 020701 of the Barataria Water Quality Management Basin. The water quality of each was compared to standards in accordance with Section 303(d) of the Federal Water Pollution Control Act, also known as the CWA, to protect the public health and welfare. Water quality standards are also used in the assessment process to determine if a waterbody is supporting its designated uses. If it does not support all designated uses, the deficiencies must be identified and the suspected causes and sources of impairment must be identified and assessed. **Table 4-12** lists the information for waterbodies in the study area.

Dufrene Ponds was formed in the early 1900s when an agricultural field was converted to open water during a hurricane. No water quality data are available for Dufrene Ponds. Field investigation of Dufrene Ponds revealed that emergent wetlands along the edges of the ponds are impacted by wind and wave action. Additionally, the ponds do not currently support submerged aquatic vegetation.

The drinking water source for Jefferson and St. Charles Parishes is surface water from the Mississippi River. Currently, the water department provides water utility services to residences, businesses, and industries located within the study area

4.5.2 Groundwater

There are no sole source aquifers in the study area. The USGS *Ground Water Atlas of the United States* indicates that the only aquifer system in the study area is the Coastal Lowlands aquifer system, which is comprised of four aquifers. Aquifers of this system are composed of unconsolidated to poorly consolidated sedimentary rocks. Recharge occurs largely through precipitation. Saltwater is present in shallow aquifers in Lafourche, St. Charles, and Jefferson Parishes. A minor association with Mississippi Valley Alluvium is mapped in the northwestern-most portion of the study area; however, no recharge potential is present.

According to the USGS's year 2000 publication of *Water Use in Louisiana*, groundwater withdrawals amounted to 1.86 million gallons per day (MGD) in St. Charles Parish, 1.64 MGD in Lafourche Parish and 3.3 MGD in Jefferson Parish. Ninety-nine (99) percent of groundwater withdrawals in St. Charles Parish and 85 percent of groundwater withdrawals in Lafourche Parish in 2000 were for industrial

purposes. Eighty-seven percent of groundwater withdrawals in Jefferson Parish in 2000 were for industrial purposes. In Lafourche Parish, livestock watering and aquaculture make up the remaining measurable groundwater withdrawals.

Table 4-12
Waterbody Impairment Status

Waterbody (Segment)	Designated Uses and Level of Support	Suspected Causes of Impairment	Suspected Sources of Impairment
Bayou Lafourche/ (020401)	Primary contact recreation–NS	Fecal coliform	Septic systems and package plants
	Secondary contact recreation - FS	Invasive plants	Unknown
	Fish and wildlife propagation - NS		
Bayou Des Allemands (020201)	Primary contact recreation - FS	Chlorides, Sulfates and TDS	Drought related
	Secondary contact recreation - FS	Turbidity and TSS	Unknown
	Fish and wildlife propagation - NS	Invasive Plants	Unknown
Bayou Des Allemands (020301)	Primary contact recreation - FS	Chlorides, Sulfates and TDS	Drought related
	Secondary contact recreation - FS	Turbidity	Forced drainage and sediment resuspension
	Fish and wildlife propagation - NS	TSS, TDS, DO, Total Phosphorus, Nitrate-Nitrite	Forced drainage, industrial discharge and sediment resuspension
		Invasive Plants	Unknown
St. Charles Bayous and Canals (020501)	Primary contact recreation–FS	Chlorides, Sulfates, and TDS	Drought related
	Secondary contact recreation–FS	DO, Nitrate-Nitrite, and Total Phosphorus	Forced drainage and naturally occurring
	Fish and wildlife propagation–NS	Chlorides, Sulfates, and TDS	Drought related
Bayou Segnette (020701)	Primary contact–NS	Sulfates	Drought related
	Secondary contact recreation–FS	DO, Total Fecal Coliform, Nitrate-Nitrite, and Total Phosphorus	Storm sewer system discharges and forced drainage
	Fish and wildlife propagation–NS		
Lake Cataouatche and its Tributaries (020303)	Primary contact–FS	Chlorides, Sulfates, and TDS	Drought related
	Secondary contact recreation–FS		
	Fish and wildlife propagation–NS		

FS – Fully supports the designated uses of the waterway.
NS – Does not support the designated uses of the waterbody.
TDS – Total Dissolved Solids, TSS – Total Suspended Solids, DO – Dissolved Oxygen

Source: Water Quality Inventory Integrated Report, Section 305(b), LDEQ (2004)

A review of water wells registered with the Water Resources Section of DOTD showed that the following numbers of wells are located in the study area:

- 33 in Links 1 and 2,
- 243 in Links 3 and 4, and
- 7 wells in Links 5 and 6.

The water well registration data file contains only wells registered with DOTD. It is possible that in the study area additional wells have been drilled, but are not registered.

4.5.3 Scenic Streams

There is no federal designated Wild or Scenic River in the study area. The Louisiana Natural and Scenic River Act, enacted in 1970, established the Louisiana Natural and Scenic River System, a state river protection initiative, to limit impacts to those rivers, streams, and bayous afforded protection through the Act. The LDWF was charged with regulatory authority over the program.

Prohibited activities in or immediately adjacent to a designated scenic stream include: channelization, channel realignment, dredging, clearing and snagging, impoundments, and clear-cutting of timber within 100 feet of the low water mark. Other elements, such as bulkheads, piers, ramps, wastewater discharges, bridges, that may have a direct and significant ecological impact on the stream require a permit from LDWF.

Currently, the only state scenic stream receiving protection in the study area is Bayou Des Allemands that is crossed by the existing US 90. A letter from the LDWF regarding Bayou Des Allemands is found in **Appendix 4-B**.

4.6 Natural Communities

4.6.1 Vegetation Communities

Vegetation communities in the study area can be grouped into the following habitats: bottomland hardwoods, cypress/tupelo swamp, farmed/pasture, scrub/shrub, freshwater marsh, developed areas, and open water.

Bottomland hardwoods, cypress swamp, and marsh are all considered wetland habitats and are discussed in greater detail in Section 4.7. Plant species common to bottomland hardwood forests include bald cypress (*Taxodium distichum*), water oak (*Quercus nigra*), willow oak (*Quercus phellos*), overcup oak (*Quercus lyrata*), hackberry (*Celtis laevigata*), red maple (*Acer rubrum),* green ash (*Fraxinus pennsylvanica*), pecan (*Carya illinoensis*), American elm (*Ulmus americana*), box elder (*Acer negundo*), palmetto (*Sabal minor*), elderberry (*Sambucus canadensis),* and deciduous holly (*Ilex decidua*).

Swamps in the project area are predominantly comprised of bald cypress and tupelo (*Nyssa aquatica*) in the overstory, with the potential to support red maple, water locust (*Gleditsia aquatica),* and buttonbush (*Cephalanthus occidentalis*) as well as emergent wetland plants.

Fresh marsh and open water areas support emergent and submerged aquatic vegetation. Vegetation found in emergent wetlands includes smartweed (*Polygonum*), rushes (*Juncus and Eleocharis*), sedges (*Carex* and *Cyperus*), reeds (*Phragmites*), pickerelweed (*Pontederia cordata*), bulltongue (*Sagittaria lancifolia*), alligator weed, (*Alternanthera philoxeroides*), lizardtail (*Saururus cernuus*), wild rice (*Zizania aquatica*), and cattail (*Typha*). Wet ditches present on either side of US 90 in the study area support a preponderance of emergent vegetation. Open water areas can support emergent vegetation along banks and levees and floating and submerged

aquatic plants including pennywort (*Hydrocotyle ranunculoides*), American frog-bit (*Limnobium spongia*), water hyacinth (*Eichhornia crassipe*s), water lettuce (*Pistia stratiotes*), duck weed (*Lemna minor*), parrotfeather (*Myriophyllum aquatica*), waterweed (*Elodea*), and the invasive hydrilla (*Hydrilla verticillata*).

Agricultural lands in the study area primarily support sugar cane, cattle, and hay production. Sugar cane occupies the largest acreage. In addition to the crops, trees present on the agricultural lands include live oak (*Quercus virginiana),* pecan (*Carya illinoensis*), southern magnolia (*Magnolia grandiflora*), sweetgum (*Liquidambar styraciflua*), hackberry, and bald cypress. Native grasses that may be present in conjunction with crops or in pasture include barnyard grass (*Echinochloa walteri*), rye grass (*Elymus virginicus*), and switchgrass (*Panicum virgatum*).

In developed areas, naturally occurring vegetation has been disturbed as a result of construction of roadways, buildings, parking lots, utility rights-of-way (ROWs), and landscaped yards. Standard mixed vegetation associated with human communities is primarily kept in a low state of succession by regular mowing and/or maintenance. These areas tend to be populated by woody species that were present prior to clearing and certain invasive plant species and often tend to have a strong brush and herbaceous component.

4.6.2 Wildlife

The wildlife habitats, both terrestrial and aquatic, correspond to the vegetation types listed in Section 4.6.1. Characteristic wildlife species are presented below. No species is considered endemic to the study area.

4.6.2.1 Birds

The study area falls within the Central Migratory Flyway for migrant neotropical birds and supports a large number of other migrant and overwintering species of song birds, shorebirds, raptors, and waterfowl as well as resident avian populations. Habitat within the project study area supporting various species of birds includes forested, agricultural/open, and water. A listing of birds that breed or reside (either as residents or transients) in the study area is provided in **Appendix 4-C**.

Raptors, songbirds, and woodpeckers are common to the forested habitats of the study area (most of the study area forested habitat is considered forested wetlands). Agricultural sites in the study area provide open spaces for nesting and/or foraging for raptors and other species. Bayou Des Allemands, Bayou Lafourche, the Mississippi River, Dufrene Ponds, and numerous canals and smaller bayous provide habitat suitable for wading birds, fish-eating birds, and waterfowl populations.

4.6.2.2 Mammals

As the study area lies within the Barataria-Terrebonne Basin, which supports 48 species of nondomesticated mammals (BTNEP #21), there are game species, commercially important furbearers, smaller mammals that constitute prey species, and those that have adapted to life in more urban environments.

The two largest groups of mammals populating the study area are of the Orders Rodentia (rodents) and Chiroptera (bats). Commonly recognized rodents in the study

area include the gray squirrel (*Sciurus carolinensis*), fox squirrel (*Sciurus niger*), southern flying squirrel (*Glaucomys volans*), nutria (*Myocastor coypus)*, roof rat (*Rattus rattus*), Norway rat (*Rattus norvegicus*), house mouse (*Mus musculus*), fulvous harvest mouse (*Reithrodontomys fulvescen*s), and white-footed mouse (*Peromyscus leucopus*). Nutria is the only rodent considered a commercially important furbearer. While not often observed, the following bats are common to the basin and the study area: eastern pipistrelle (*Pipistrellus subflavus*), red bat (*Lasiurus borealis*), Seminole bat (*Lasiurus seminolus)*, Rafinesque's big-eared bat (*Plecotus refinesquii*), and the evening bat (*Nycticeius humeralis*).

Commercially important furbearers, other than nutria, present in the study area include mink (*Mustela vison*), river otter (*Lutra canadensis*), raccoon *(Procyon lotor),* and the beaver (*Castor canadensis*). Other furbearers, such as the striped skunk (*Mephitis mephitis*), long tailed weasel (*Mustela frenata*), Virginia opossum (*Didelphis virginiana),* and the bobcat (*Lynx rufus*), while not commercially harvested, are easily recognized species in the study area.

Game species utilizing the study area habitat include the fox and gray squirrels, eastern cottontail rabbit (*Sylvilagus floridanus*), swamp rabbit (*Sylvilagus aquaticus*), and white-tailed deer (*Odocoileus virginianus).*

Others mammals present in the study area in varying numbers include the coyote (*Canis latrans*), red fox (*Vulpes vulpes*), nine-banded armadillo *(Dasypus novemcinctus),* and the least shrew *(Cryptotis parva)*.

4.6.2.3 Reptiles and Amphibians

Large tracts of bottomland hardwood forests in the study area support a large variety of reptiles and amphibians. A complete listing of species of reptiles and amphibians that may be found in the vicinity of the study area is in **Appendix 4-D**. Snakes make up the largest taxonomic group; they are followed in decreasing order by turtles, frogs, salamanders, and lizards, respectively. Levees and bottomland hardwood habitat support the greatest diversity of reptiles and amphibians, followed by marsh.

4.6.2.4 Aquatic

Aquatic habitats in the study area include open water areas such as Bayou Lafourche, Bayou Des Allemands, Dufrene Ponds, Paradis Canal, Davis Pond Freshwater Diversion Canal, and the Mississippi River, as well as swamps and marshes, and numerous smaller canals and bayous. There is no Essential Fish Habitat in the project area. A listing of aquatic species with the potential to be present in the study area is located in **Appendix 4-E**. Species common to the study area include channel catfish (*Ictalurus punctatus*), blue catfish (*Ictalurus furcatus*), flathead catfish (*Pylodictis olivaris*), alligator gar (*Lepisosteus spatula*), black crappie (*Pomoxis nigromaculatus*), largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), and gizzard shad (*Dorosoma cepedianum*).

In the 1980s, salinities in the study area were typically below 0.5 parts per thousand (NRCS, 1989); however, pervasive drought conditions of the mid- to late-1990s and channelization of freshwater input have resulted in salinity increases, particularly in

Bayou Des Allemands. Should these water quality fluctuations become a normal circumstance, they may eventually impact the aquatic community of the study area.

4.7 Wetlands

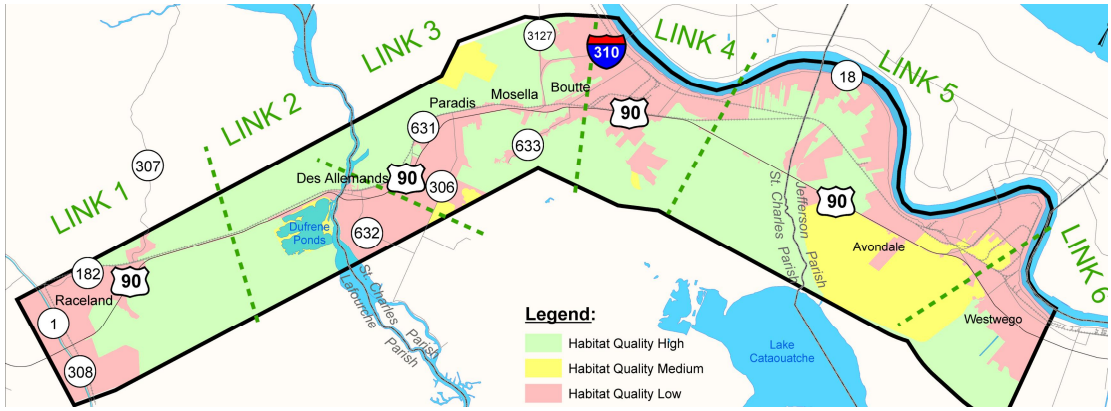
Wetlands are defined jointly by the USACE and the USEPA as "those areas that are inundated or saturated by surface or groundwater, at a frequency and duration sufficient to support, and that under normal circumstances, do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (40 CFR 230.3 and 33 CFR 328.3). Executive Order (EO) 11990 of May 1977 was enacted to slow the loss of the nation's wetlands. This EO established a policy "…to avoid to the extent possible, the long-term and short-term adverse impacts associated with the destruction or modification of wetlands…"

A preliminary wetland investigation was conducted on the existing and proposed ROW and selected adjacent properties. The purpose of this preliminary wetland investigation was to assess the potential for wetlands using the three technical criteria: vegetation, hydrology, and soils. All three criteria must be met to designate an area as a wetland.

On January 6, 2004, prior to the completion of the survey, and to assist in developing and screening alternative alignments, the project team met with representatives of USFWS, LDWF, and LDNR who were experienced in habitat quality assessments. The meeting purpose was to identify areas of varying habitat quality within the corridor. As discussed in Chapter 2 of this FEIS, this information and the National Wetlands Inventory (NWI) were used to screen Alternatives relative to potential natural resource impacts.

Exhibit 4-7 presents the outcome of this meeting. Habitat was determined to have high, moderate or low quality based on existing characteristics. Undeveloped, ostensibly unaltered land such as bottomland hardwoods was considered to be high quality habitat. Land that has been significantly altered by agriculture, draining, or development was considered to be low quality habitat. Land that has been altered but retains some natural functions was considered to be moderate quality habitat.

Exhibit 4-7
Habitat Quality in US 90 Corridor



The preliminary wetland investigation included limited field visits, during which sample locations (plots) were observed, and the use of supportive documentation such as National Wetlands Inventory (NWI) maps, infrared aerial photographs, and Parish soil surveys that were reviewed to assist in identifying areas of potential wetlands.

The primary potential wetlands observed include:

- Bottomland Hardwoods
- Cypress/Tupelo Swamps
- Farmed/Pasture
- Scrub/Shrub
- Marsh
- Other waters of the US (canals, bayous, and other waterways)

During the limited field visits, many areas exhibited visual wetland characteristics of vegetation and hydrology. The other characteristic of wetlands is the presence of hydric soils, which are described as a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation. The state of Louisiana and the NRCS maintain a list containing the hydric soils of Louisiana. The hydric soil types in the study area include some of the Allemands, Barbary, Commerce, Fausse, Harahan, Kenner, Larose, Rita, Sharkey, and Vacherie soil units. Hydric soils are discussed in greater detail along with general soil characteristics in Section 4.14.

A list of the plots that met the vegetation, hydrology, and hydric soil criteria identified during the preliminary wetland investigation is found in **Appendix 4-F**. Those areas that met all three criteria are classified as potential wetlands.

4.7.1 Bottomland Hardwood Forest

Bottomland forest habitat exists in the ROWs throughout the study area where naturally occurring overflow or drainage basins are found. In the bottomland hardwood forested potential wetlands, typical species include black willow, bald cypress *(Taxodium distichum)*, green ash *(Fraxinus pennsylvanica)*, tupelo (*Nyssa aquatica*), nuttall oak *(Quercus nuttallii)*, water oak (*Quercus nigra*), American elm (*Ulmus americana*), red maple *(Acer rubrum)*, elderberry *(Sambucus canadensis)*, palmetto *(Sabal minor)*, lizards tail (*Saururus cernuus*), trumpet creeper (Campsis radicans), cinnamon fern (*Osmunda cinnamomea*), poison ivy (*Toxicodendron radicans*), and sawgrass (*Cladium jamaicense*). The percentage of the proposed I-49 South ROW that is considered bottomland hardwood was not calculated in the preliminary wetland investigation.

4.7.2 Cypress/Tupelo Swamp

Swamp habitat exists in the proposed ROWs throughout the study area. Swamp habitat features semi-permanent inundation of large areas of land by shallow bodies of water, generally with a substantial number of dry-land protrusions. The vegetation composition of swamps typically includes bald cypress, tupelo, black willow, green ash, buttonbush, water lily (*Nymphaea odorata)*, pickerel weed (*Pontederia cordata*), smartweed (*Polygonum punctatum*), alligator weed (*Alternanthera philoxeroides*),

and duckweed (*Lemna minor*). The percentage of the proposed I-49 South ROW that is considered swamp was not calculated in the preliminary wetland investigation.

4.7.3 Farmed/Pasture

Wetlands that have been converted to use for agriculture or livestock production are considered to be farmed/pasture. The characteristics of these areas depend on the use. Farmed wetlands have been typically drained and/or filled and sustain crops. Wetlands converted to pasture have also been drained and/or filled but are maintained primarily in a cover of grasses and herbaceous plants.

4.7.4 Scrub/shrub

Scrub/shrub habitat exists in the proposed ROWs throughout the study area where power line, pipeline, and other ROWs are maintained. Typical species in these areas include alligator weed, cattail, arrow arum, lizards' tail, pickerelweed, and coffeeweed (*Sesbania exalta*). Scrub/shrub habitat occurs in the proposed ROWs in every Link for both the northern and southern routes; the percentage of the proposed I-49 South ROW that is scrub/shrub habitat was not calculated in the preliminary wetland investigation.

4.7.5 Marsh

Marsh habitat exists in the proposed ROWs in Link 2 in patches within Dufrene Ponds. Typical marsh species observed in Dufrene Ponds includes soft rush (*Juncus effusus*), spikerush (*Eleochoris spp*.), sedges (*Cyperus spp*.), bulltongue (*Sagittaria falcata*), pickerel weed, smartweed, alligatorweed, water hyacinth (*Eichhornia crassipes*), and deer pea (*Vigna luteola*).

4.7.6 Other Waters of the US

A portion of the vegetative habitat type located within the study area is composed of drainage ditches located to the south of US 90 and between the former abandoned US 90 and the current US 90. Cattails make up the majority of the vegetation in this habitat. These are classified as wet ditches receiving drainage from the current and former US 90. Some of the common species identified in this habitat were buttonbush (*Cephalanthus occidentalis*), black willow (*Salix nigra*), broad-leaf cattail (*Typha latifolia*), and arrow arum (*Peltandra virginica*). A significant portion of potential wetland areas that will be impacted within the existing and proposed ROW are drainage ditches located on either side of the existing US 90 lanes.

By their nature, the impacted vegetated wet ditches are generally three to eight feet in width and vary greatly in length. It has yet to be determined whether the USACE will take jurisdiction over the vegetated wet ditches.

Several water bodies intersect the existing US 90 ROW. These water bodies are ponds, canals, bayous, and drainage ditches and are classified as other waters of the US. Drainage ditches exist north and south of the US 90 travel lanes. These ditches generally traverse parallel to the travel lanes and flow into the coulees and bayous running perpendicular to the corridor. These water bodies include Bayou Lafourche in Link 1; Midway Canal, Dufrene Pond, and Bayou Des Allemands in Link 2; Paradis Canal and Eighty Arpent Canal in Link 3; and Ellington Canal, Cousin Canal, King

Canal, and Garland Canal in Link 4. The percentage of the total wetland acreage within the existing US 90 ROW and the proposed I-49 South ROW that is other waters of the US was not calculated in the preliminary wetland investigation.

4.8 Floodplains

Executive Order (EO) 11988 requires the identification of 100-year floodplains and the avoidance of impacts to the greatest extent possible. The NFIP administered by FEMA defines a floodplain as any land area susceptible to being inundated by water. The base, or 100-year flood, is defined as an event that has a 1 percent annual probability. The 100-year floodplain is the area between the floodway boundary and the 100-year floodplain boundary.

As seen in **Exhibit 4-8**, most of the study area is located in the 100-year floodplain. Bayou Lafourche and Bayou Des Allemands form the primary drainage basins in the western portion of the study area. Flooding occurs in the study area after locally heavy rainfall events that cause bi-directional flows in the coulee culverts and crossings and during catastrophic storm events (hurricanes) as a result of rainfall and backwater flooding. The rainfall pools in the nearly level floodways and floodplains, sometimes affecting developed land uses. Backwater flooding occurs after locally heavy rainfall events. Rainfall that pools in the nearly level floodways and floodplains can overburden drainage canals and ditches and impact existing developments. Roadway flooding of US 90 during average rainfall events seldom occurs because the roadway is higher than the surrounding land and drainageways, but there is a possibility of roadway flooding during a major storm event. In 1992, the eastbound and westbound outside lanes of US 90 were closed due to hurricane-related flooding, but no flood related road closures have been reported since then.

4.9 Levees

Land elevations in the study area, with the exception of natural ridges, levees, and man-made structures such as roads and railroads, are generally at or minimally above sea level. Portions of the study area have been declared a federal disaster area four times since 1985 and have received aid from the FEMA in response to flooding associated with localized storms. The study area is subject to heavy rainfall events, tidal surges from the Gulf of Mexico, and hurricane storm surges. To combat the impacts of these natural events, the construction of levees has been a common practice, both by private landowners and public authorities. **Exhibit 4-9** shows the alignments of levees that are existing, under construction, or proposed. The USACE currently is conducting a NEPA process to select an alignment for a hurricane protection levee referred to as the Donaldsonville to the Gulf Project. The USACE has participated as a cooperating agency on the preparation of this FEIS, which ensures that their project and proposed I-49 South are coordinated during the planning and environmental study phases. Four hurricane levee alignments are currently under consideration. Two of these alignments, the US 90 Levee Alignment and the Pipeline Canal Levee Alignment, run from Luling in St. Charles Parish to Larose in Lafourche

Exhibit 4-8
Floodplains in the Study Area

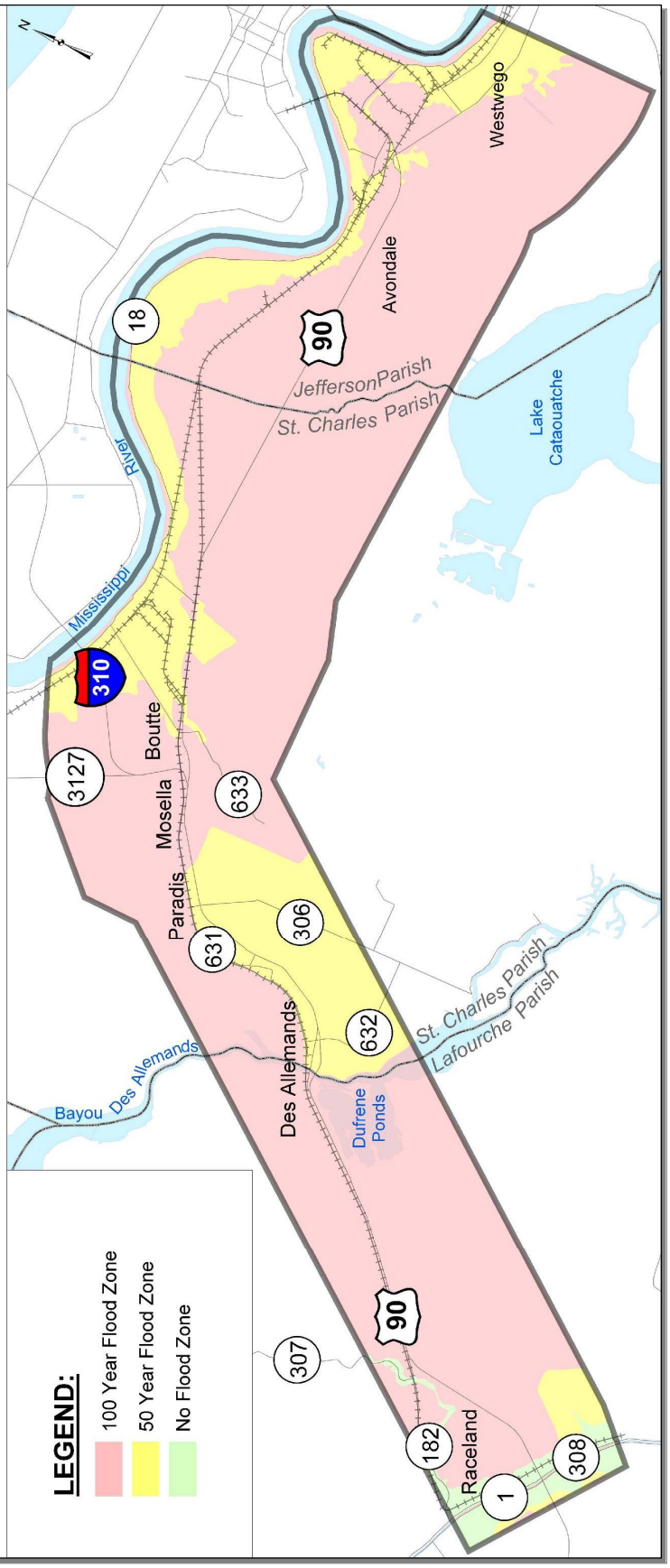
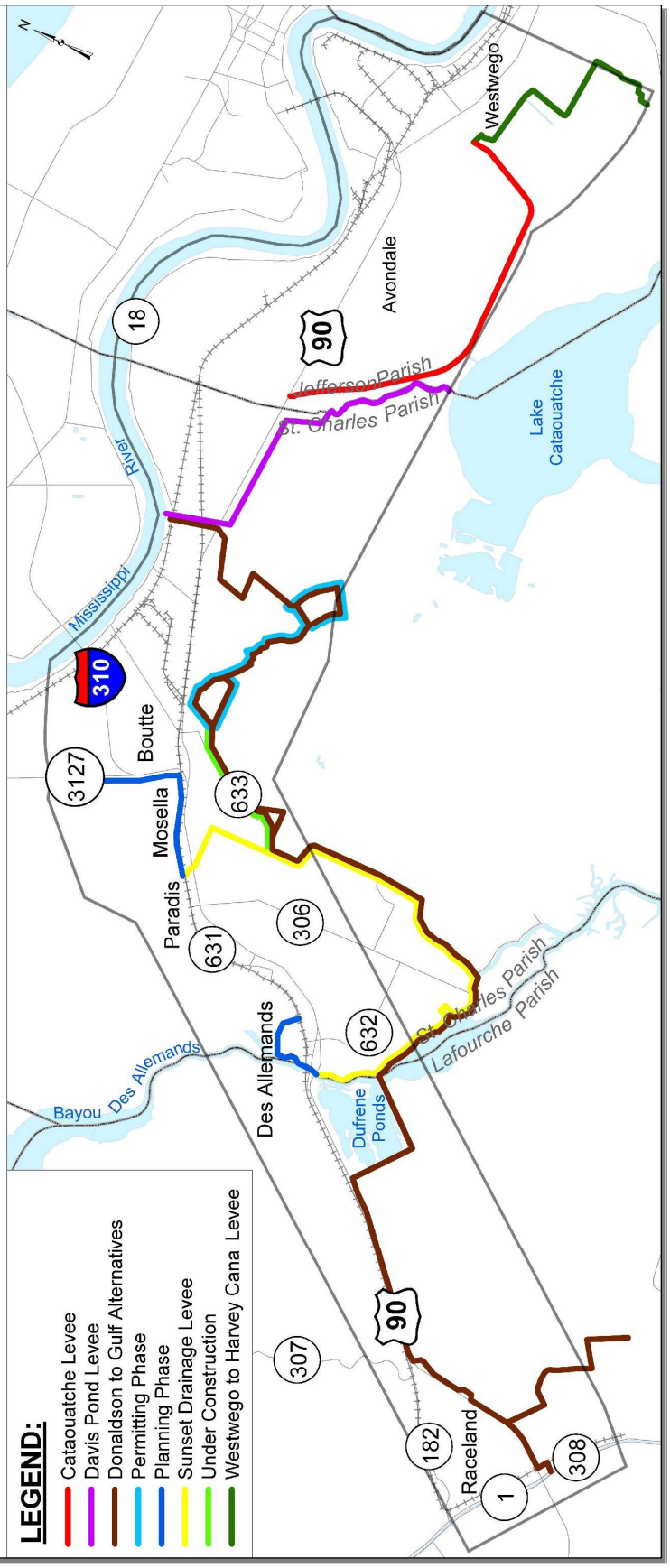


Exhibit 4-9
Existing and Proposed Levees in the Study Area



Parish partially within the study area. The Bayou Lafourche alignment is primarily parallel to Bayou Lafourche, but does incorporate the study area east of Bayou Des Allemands. A fourth alignment follows the Gulf Intracoastal Waterway outside of the study area. The other levee alignments shown include existing levees that have created fastlands and those proposed or under construction by St. Charles Parish.

4.10 Coastal Zone and Coastal Barriers

The Coastal Zone Management Act of 1972 provides coastal states with greater input in the regulation of coastal resources. Louisiana's Coastal Program was approved in 1978, and the Coastal Management Division (CMD) was established in 1982 within the LDNR. The purpose of coastal zone management is to balance conservation and development in the coastal zone. The State of Louisiana issues permits for dredge and fill type activities within the Coastal Zone boundary as established under Act 361 of the Louisiana Legislature. Outside the Coastal Zone, the USACE is the lead permitting agency. Permit handling within the CMD is similar to that of the 404 Program. The study area lies within the authorized coastal zone, and activities associated with the proposed I-49 are subject to CMZ authorization from LDNR and Jefferson Parish. St. Charles Parish does not have an approved local coastal zone program.

4.11 Protected Species and Habitats

There are approximately 22 threatened or endangered species of plants and animals that inhabit Louisiana as resident, migrant, and/or breeding species. The Endangered Species Act of 1973 (16 USC 1531 et seq.) protects these federally listed threatened and endangered species. Of the 22 listed species, nine are known or suspected to occur in Lafourche Parish and five are known or suspected to occur in St. Charles Parish. The bald eagle, a listed threatened species, is the only species of concern in the study area. Correspondence in this regard is found in **Appendix 4-B.** Bald eagles nest in Louisiana from October to May, typically in bald cypress trees near fresh to intermediate marsh, swamps, or open water areas. Nests are used by the same breeding pair from year to year and are inventoried by the LDWF on an annual basis. The LDWF recommends no activity within a 1,500-foot (457-meter) radius of the nest tree at any time and no major activities within one mile of a nest tree during nesting season.

In addition to threatened or endangered species, wading bird rookeries are protected during breeding season, which is March 15 to July 15 in Louisiana. Although rookeries are mobile, no activity is permitted within 984 feet (300 meters) of an active rookery during nesting season. Wading bird rookeries are known to exist throughout the study area.

4.12 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended on October 11, 1996, directs that all federal agencies whose actions would impact essential fish habitat (EFH) must consult with NMFS regarding potential adverse effects. The study area has not been designated by the Gulf of Mexico Fishery

Management Council as EFH for any federally managed species. Correspondence in this regard is found in **Appendix 4-G**.

4.13 Cultural Resources

Cultural resources include archaeological sites, standing structures greater than 50 years in age, and historic landscapes.

For the purpose of the archaeological survey, an Area of Potential Effect (APE) was defined as the area within the ROW of the Selected Alternative, and for the purpose of the historic preservation survey, an APE was defined as 200 m (656 ft) to either side of the centerline of the ROW. Right-of-entry was denied for a portion of the APE east of the Davis Pond Diversion Canal; this area will have to be surveyed subsequent to acquisition but prior to construction. In addition, the survey was not completed in Link 1 because of potential damage to the mature sugar crop. This area and an associated reroute were surveyed subsequent to the 2006 harvest. The report is in production and will serve as an addendum to the original cultural resources report.

Archaeological investigations consisted of shovel tests and pedestrian surveys within the APE. No shovel tests were excavated in areas that were inundated. Sites identified during field investigations were evaluated as being eligible or ineligible for nomination to the National Register of Historic Places (NRHP). Field investigations resulted in the identification of three new archaeological sites (16SC81, 16SC82, and 16JE29). Site 16SC81 was formerly referenced as Canal 22, and 16SC82 was formerly referenced as 4A-1. Site 16JE29, located during the survey of Link 5, is discussed below. In addition to these three sites, there were two isolated finds (G5 and G4B), two cultural loci (Locus 4A-2 and Locus 4A-3), and two scatters of modern debris (Canal 16 and Canal 18). In addition, because alternatives passed in close proximity to the NRHP eligible 16SC2 (the Sims Place site) and 16SC70, additional investigations were undertaken at these sites.

Cultural locus 4A-2 is the location of the Boutte Skirmish, generally at the intersection of US 90 and Paul Maillard Road. This is the site of the Boutte railroad station in September 1862 where Confederate forces ambushed and captured the New Orleans, Opelousas, and Great Western Railroad, which was retaken the next day by the Federal forces. No artifacts dating to the period of the skirmish were recovered, and no cultural deposits were observed. The locus is not an archaeological site. Furthermore, the locus is not an historic landscape because it lacks integrity of both setting and feeling. No sense of the period of potential historic significance is created by the project area in its present condition. While the Boutte Skirmish is arguably a locally if not regionally important event, the site is ineligible for nomination to the NRHP as either an archaeological site or an historic landscape.

Cultural locus 4A-3, the old Mt. Airy Cemetery, is located adjacent to an artificial pond/borrow pit at the end of Alexander Street in Boutte. Grave markers, above ground graves, and crypts were observed. The cemetery measures 50 x 20 m (164.04 x 65.62 ft). Twelve north/south oriented marked graves were observed dating from 1941 and to 1996. In addition to the marked graves, observable depressions indicate that there are unmarked graves within and around the cemetery.

The field investigations indicate that sites 16SC70, 16SC81, and 16SC82, as well as the isolated finds and modern debris scatters are ineligible for nomination to the NRHP. Site 16SC2 is eligible for nomination to the NRHP; however, the Selected Alternative does not impact the site. Both 16SC2 and 16SC70 are located on Bayou Saut d'Ours, an area known to be archaeological sensitive.

16JE29 was identified during the survey of Link 5. The site appears to be a twentieth-century dump rather than the domestic assemblage of a single residence. No subsurface testing was undertaken at the site because the landowner had not granted permission. Therefore, the site could not be fully evaluated in terms of NRHP criteria. Implementation of the Selected Alternative will require delineation and evaluation of Site 16JE29 after acquisition of the ROW and prior to construction.

All structures greater than 50 years of age within the APE were recorded utilizing Louisiana Historic Resource Inventory forms and digital photography. A total of 32 buildings greater than 50 years of age were recorded in St. Charles Parish and were evaluated using NRHP criteria (36 CFR60.4 [a-d]).

4.14 Geology, Topography, and Soils

4.14.1 General Geology and Topography

The study area is situated within the Mississippi River Deltaic Plain which is comprised of the natural levees of the Mississippi River, its distributaries, and vast expanses of swamps and marshes. Natural levees occur in one to three mile bands on either side of the Mississippi River and in much narrower bands along the river's distributaries and are composed primarily of firm, loamy, and clayey soils. The north and eastern portions of the study area, located in St. Charles and Jefferson Parishes, are composed primarily of natural levees, but as the study area approaches and enters Lafourche Parish, it is dominated by frequently flooded, mucky and clayey soils in marshes and swamps with the exception of the natural levees along Bayou Lafourche.

Elevations in the study area range from approximately 15 feet above sea level on the natural levees to about five feet above sea level in many urban areas. However, some areas are as low as seven to eight feet below sea level in areas of former marsh that have been drained. The general slope is to the southwest away from the Mississippi River with local relief typically less than five feet, excluding stream channels.

4.14.2 Soils

The modern soils in the study area developed through decomposition of plant remains and alluvium deposited by the Mississippi River and its tributaries and distributaries. The USDA Soil Surveys for Lafourche, St. Charles and Jefferson Parishes identify the study area as generally being comprised of Commerce-Sharkey soil associations on natural levees, Barbary-Fausse and Kenner-Allemands soil associations in freshwater marshes, and the Rita-Allemands soils association in former freshwater marshes. **Table 4-13** describes soil associations in the study area.

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (Cowardin et al. 1979). Within the study area,

Table 4-13
Soils Summary

Soil Name	General Characteristics
Allemands muck	A very poorly drained and semi-fluid organic soil of freshwater marsh; flooded by 6 to 12 inches of water most of the year.
Harahan clay	A poorly drained soil located in low positions on the natural levees of the Mississippi River and its distributaries with a very high shrink-swell potential; mostly developed for urban uses.
Barbary muck	A very poorly drained, semi-fluid mineral soil in swamps, flooded most of the year; shrink-swell potential is very high.
Commerce and Sharkey soils frequently flooded	A poorly drained and somewhat poorly drained, and a firm mineral soil.
Kenner muck	A very poorly drained and a semi-fluid organic soil in freshwater marsh; underlying layers have high shrink-swell potential.
Sharkey clay	A poorly drained, firm mineral soil; shrink-swell potential is very high and most acreage is in urban uses.
Sharkey silty clay loam	A poorly drained firm mineral soil; most is in urban use.
Vacherie silt loam, gently undulating	A somewhat poorly drained firm mineral soil; mostly in urban use.
Commerce silt loam	A somewhat poorly drained, firm mineral soil on high positions on the natural levees of the Mississippi River and its distributaries; mostly in urban use.
Larose muck	A poorly drained, semi-fluid mineral soil in freshwater marsh; very high shrink-swell potential.
Westwego clay	A poorly drained mineral soil in former swamps with a very high shrink-swell potential; mostly in urban use.
Allemands-Larose association	A very poorly drained, very fluid organic and mineral soil in freshwater marsh.
Commerce silty clay loam	A somewhat poorly drained soil; wetness, moderate shrink-swell potential; moderately slow permeability; low strength for roads.
Commerce silty clay loam, frequently flooded	A somewhat poorly drained soil.
Commerce-Harahan-Allemands complex, drained	Somewhat poorly drained soils in former freshwater swamps.
Convent and Commerce soils frequently flooded	A somewhat poorly drained soil association.
Fausse clay	A very poorly drained, firm mineral soil in frequently flooded back swamp areas.
Maurepas muck	A very poorly drained organic soil in swamps; ponded or flooded most of the time.
Urban land	Areas that are more than 85 % covered by asphalt, concrete, buildings, or other impervious surfaces.
Vacherie silt loam, frequently flooded	A gently undulating, somewhat poorly drained soil.
Cancienne silt loam; Cancienne silty clay loam	A moderately permeable soil located on natural levees of the Mississippi River; runoff potential is slow; suitable for urban development.
Rita muck	A slowly permeable soil characteristic of former swamps. Ponding is typical; water control is required.

Allemands muck, Harahan clay, Barbary muck, Commerce and Sharkey soils, frequently flooded, Kenner muck, Sharkey clay, Sharkey silty clay loam, Larose muck, Westwego clay, Allemands-Larose association, Commerce silty clay loam, frequently flooded, components of Commerce-Harahan-Allemands complex, drained,

Harahan clay, Convent and Commerce soils, frequently flooded, Fausse clay, Maurepas muck, and Vacherie silt loam, frequently flooded are listed as hydric soils.

4.14.3 Prime Farmland

The Farmland Protection Policy Act (7 CFR Part 658) establishes criteria for identifying and considering the effects of federal programs on the conversion of farmland soils to non-agricultural uses. The purpose of the legislation is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of prime, unique, and other statewide or locally important farmlands to non-agricultural uses. These three categories are defined by the U.S. Department of Agriculture, are shown in **Table 4-14.**

Prime and other important farmlands have been identified by the USDA because they are of major importance in meeting the nation's short and long range needs for food and fiber. Prime farmland, as defined by the USDA, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Prime farmland soils have properties that are favorable for the economic production of sustained yields of crops and produce the highest yields with minimal inputs of energy and other economic resources.

Table 4-14
Prime, Unique, or State and Locally Important Farmland

Category	Description
Prime Farmland	Land which has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor without intolerable soil erosion.
Unique Farmland	Land used for production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops when treated or managed.
State and Locally Important Farmland	Land of statewide or local importance for the production of food, fiber, forage, or oilseed crops as determined by the appropriate state or local government agency.

Prime farmland soils present in Lafourche Parish include Cancienne silt loam, Cancienne silty clay loam, Schriever silty clay loam, and Schriever clay. St. Charles Parish prime farmland soils include Commerce silt loam, Commerce silty clay loam, Harahan clay, Sharkey silty clay loam, Sharkey clay and Vacherie silt loam. Farmland Conversion Impact Rating Forms were submitted to NRCS for completion. Copies of the completed forms and correspondence are included in **Appendix 4-H**.

4.15 Mineral Resources

The primary mineral resources located in the study area are petroleum related. The location of petroleum wells in the study area was determined through a review of the oil and gas well records at the LDNR Office of Conservation. LDNR regulates the permitting, drilling, operation, and plugging of all oil and gas wells in Louisiana.

4.16 Hazardous Waste Screening

4.16.1 Methodology

An area of a one-mile area on either side of US 90 was surveyed to identify recognized environmental conditions, which are defined as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.

The survey involved a records review of state and federal regulatory agency databases of environmental information relative to the presence or absence of recognized environmental conditions. Databases included known hazardous waste sites, underground storage tanks (USTs), sewage treatment facilities, potable water services, stormwater pumping stations and oil and gas wells. The records review also included examination of historical aerial photography, soil survey information, and U. S. Geological Survey (USGS) 7.5 minute topographic maps. A search of appropriate state regulatory agency data relative to the environmental history of properties in the study area was undertaken.

Additionally, a reconnaissance of the Selected Alternative ROW and adjoining properties was undertaken using ASTM methodologies to identify potential areas of environmental concern ranging from mismanagement of hazardous materials to evidence of spills and/or contamination and to confirm information obtained from interviews and records reviews.

The screening followed the American Society for Testing and Materials (ASTM) format for Environmental Site Assessments to search for hazardous waste sites and underground storage tanks (USTs). This included the examination of standard environmental record sources identified within section 7.2.1.1 of ASTM Standard Practice E 1527-00, along with other appropriate agencies as deemed necessary. The databases searched include: Federal ASTM E 1527-00 Databases, Federal ASTM E 1527-00 Supplemental Databases, and State ASTM E 1527-00 Databases.

Additional detail regarding the hazardous waste screening work performed for I-49 South is found in the following documents: *Phase 1 Environmental Site Assessment Future I-49 South, Raceland to Westbank Expressway, Jefferson, Lafourche and St. Charles Parishes Links 1 through 4*, October 2006, and *Phase 1 Environmental Site Assessment Future I-49 South, Raceland to Westbank Expressway, Jefferson, Lafourche and St. Charles Parishes Links 5 and 6*, October 2006.

4.16.2 Findings

In Links 1 through 4, one recognized environmental condition was discovered during the performance of the hazardous waste screening. A 1966 aerial photograph clearly shows a landfill located at the intersection of US 90 with LA 182. The landfill appears to be closed in a 1974 aerial photograph. The current US 90 alignment is shown to be under construction in the photograph. Due to the lack of information pertaining to the apparent municipal landfill in the historic photographs, the landfill is considered to be a recognized environmental condition.

No environmental issues that would be considered historical recognized environmental conditions were discovered during the performance of this hazardous waste screening in these Links.

In Links 5 and 6, seventy-two sites with recognized environmental conditions are located in the study area of these links. These sites range from landfills and junkyards to equipment facilities, gas and automotive service stations, convenience stores, retail establishments, county properties, boat yards, communications towers and industrial facilities. **Appendix 4-I** provides a summary of all sites in the study area of Links 5 and 6.

4.17 Energy and Utilities

The energy needs of existing US 90 involve daily operations and facility maintenance including the highway section components, its structures, its supporting utilities, signs, drainage structures, and landscaped areas. Each element has been designed with specific maintenance schedules that are programmed into the DOTD's statewide manpower and cost budgets. Energy expenditure during daily operations is associated with vehicle operations on the highway. Costs in terms of fuel usage and vehicle wear are borne by the individual vehicle owners.

High voltage transmission lines traverse the study area. Power lines used for the electrical distribution tie into the transmissions lines and are primarily located in the vicinity of US 90. Energy personnel reported no current plans for construction of substations or transmission and distribution lines in the study area.

Several natural gas pipelines operated by Gulf South Pipeline and Atmos Energy Louisiana (formerly Louisiana Gas Service Company) are located within the study area. Additionally, natural gas service is provided to most of the residences and businesses by Atmos, which also acquired Trans Louisiana Gas Company. Maps and locations of these pipelines are not presented in this FEIS for reasons related to homeland security. Representatives from both gas suppliers will consult with project planners to minimize impacts to natural gas distribution and service pipelines.

4.18 Visual Resources

The study area contains substantial acreage of forested and emergent wetlands, which support a myriad of birds, mammals, fish, and reptiles. These wetland areas are high quality visual resources.

Wetland areas are most visible from US 90 in Link 1 east of LA 182, from the bridge over Bayou Des Allemands in Link 2, and in Link 4 between the intersection at Willowdale and the Davis Pond Diversion Canal. The view from US 90 in St. Charles and Jefferson Parishes in Link 5 includes the transition from wetlands to suburban to urbanized land use.

Bayou Des Allemands is a high quality visual resource and a state-protected scenic stream. Additionally, Dufrene Ponds, adjacent to Bayou Des Allemands, has been identified by local residents as a visual resource.

Other areas with moderate to high visual resources include LA 308 where a restored 19th century residence is surrounded by live oak trees and the sugar field between US

90 and LA 182 in Lafourche Parish. Other fields along the alignment support cattle, horses, and hay. All agricultural properties would be considered of moderate visual quality.