CHAPTER 3

AFFECTED ENVIRONMENT

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CHAPTER 3
AFFECTED ENVIRONMENT

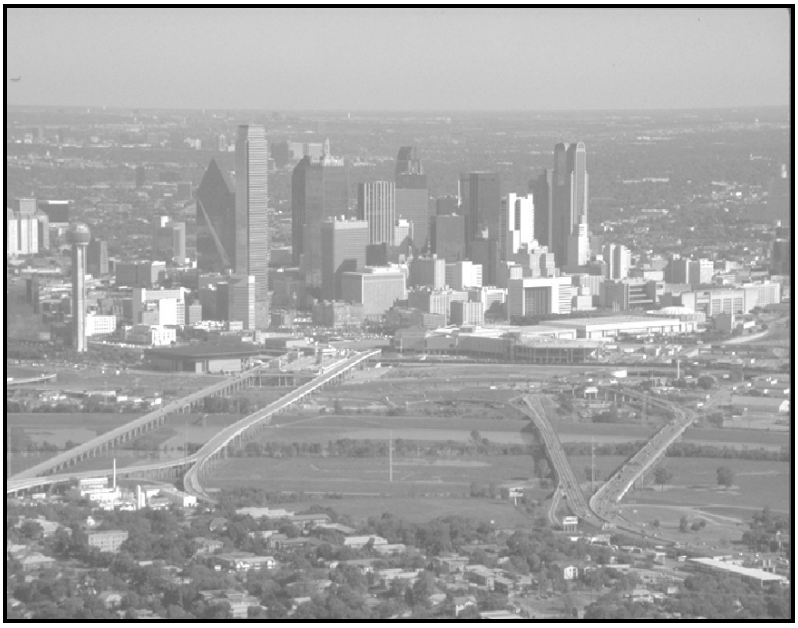
3.0 INTRODUCTION

This chapter of the Trinity Parkway FEIS describes the existing human, natural, and physical environmental conditions of the Trinity Parkway project area. Various subsections address myriad aspects of the historical development of resources and issues characterizing the project area, as well as trends and likely future developments based on existing municipal and regional plans and policies. In general, this chapter describes the project area as it is, as well as how likely it is to be in the future under the No-Build Alternative, and forms the baseline standard against which potential impacts of the Build Alternative may be assessed. Graphic plates illustrating data/information related to the existing environmental conditions and plans are located at the end of the chapter. Assessments of the potential impacts of the Build and No-Build Alternatives on the existing human, natural, and physical environment of the project area are presented in **FEIS Chapter 4**.

3.1 COMMUNITY SETTING

The Trinity Parkway project area is located south and west of the CBD in the City of Dallas, Dallas County, Texas. Dallas is the largest city in north central Texas, consisting of 246,849 acres of land with a year 2010 population of 1,197,816 (U.S. Census Bureau, 2010a). Dallas is a major distribution center and a gateway for trade resulting from NAFTA. **Plate 2-1** in **FEIS Chapter 2** provides an aerial view of the project area and surrounding land use. The project area includes the Dallas Floodway and areas located on either side of the Dallas Floodway that contain residential neighborhoods and a variety of commercial/industrial areas.

DALLAS CENTRAL BUSINESS DISTRICT - LOOKING NORTH



The focus of current land use planning efforts along the Trinity River Corridor, which includes the Trinity Parkway project area, is an attempt to revitalize the area with renewed recreation, economic development, flood control, environmental restoration, and transportation improvements. Accordingly, various projects are being planned and implemented by local, state, and federal government agencies within the project area. The major flood control and recreation projects within the Trinity River Corridor are discussed in **FEIS Section 1.6.1.2**. While the major flood control and recreation projects within the Trinity River Corridor are independent from the Trinity Parkway, they may require coordinated planning with the project.

The following sections provide an understanding of the social and economic conditions of the project area human environment. That is, **FEIS Sections 3.1.1** through **3.1.4** generally discuss the land use and amenities of the project area, followed by **FEIS Sections 3.1.5** and **3.1.6** that outline characteristics of the persons residing within the project area. Then, the local land use plans and policies that govern this human environment are discussed in **FEIS Section 3.1.7**.

3.1.1 Existing Land Use in the Project Area

Current land use is regulated through the Dallas City Council according to the City's Comprehensive Land Use Plan, zoning maps, and zoning ordinances. **FEIS Plates 3-1** and **3-2** show general land use and zoning within the project area. Comparatively, **FEIS Plate 3-3** shows the City of Dallas planned land use within the project area. The local land use plans and policies,

which have previously guided and will continue to influence the human environment, are discussed in **FEIS Section 3.1.7**.

The Dallas Floodway is the dominant land use feature in the central portion of the project area. This large grassy open space is classified as flood control parkland and accounts for approximately 50 percent of the land use in the project area.

DALLAS FLOODWAY AT THE IH-35E CROSSING OF THE TRINITY RIVER

Descriptions of the existing land use in the project area, outside the Dallas Floodway, are presented below.

Northwest Portion of the Project Area

Land situated along the northwest portion of the project area consists of office, retail, commercial, and industrial uses. The International Trade Center is located at Regal Road and IH-35E, and numerous multi-tenant office buildings, hotels, motels, and restaurants, as well as government offices are present along IH-35E to the south. Businesses along SH-183 consist of retail centers, TV/radio stations, The American Cancer Society, multi-tenant buildings, and small warehouses. The area referred to as the Trinity Industrial District also begins at the merge of IH-35E and SH-183.

Land situated along and surrounding Irving Boulevard consists of industrial and commercial uses. This area is dominated by small to large distribution facilities like Miller Brewing. The Hilton Anatole Hotel, one of the largest hotels in the Dallas area, occupies the west side of Wycliff

Avenue. An area of office and retail uses, occupied by Stemmons Place offices, ExxonMobil Oil Corporation, and Aetna Healthcare, is located along the northeast margin of the project area and along the northeast side of Irving Boulevard.

North-Central Portion of the Project Area

The north-central portion of the project area surrounding Irving Boulevard is comprised of industrial land use, some of which is being redeveloped as commercial and retail use in an area known as the Stemmons/Design District. North of Commerce Street and west of IH-35E are public facilities, including the Dallas County administrative buildings, the Lew Sterrett Justice facility, and the Frank Crowley Criminal Courts buildings, all of which are categorized as institutional land use.

Southwest Portion of the Project Area

Land use from Hampton Road, north of Singleton Boulevard to the Dallas Floodway, and east to the Continental Avenue Viaduct is predominantly single-family residential areas and is referred to as West Dallas. Two schools also exist in this area. This portion of the corridor contains multi-family use located just west of Sylvan Avenue along Canada Drive. In addition, the Trinity Groves headquarters is located north of Singleton Boulevard at the base of the Margaret Hunt Hill Bridge, which spans the Dallas Floodway, parallel to the Continental Avenue Viaduct. A small retail area is located on the east side of Sylvan Avenue north of Singleton Boulevard.

South-Central Portion of the Project Area

Land use from Singleton Boulevard and Sylvan Avenue to the Dallas Floodway, and south to Houston Street is primarily industrial. Industrial facilities located on Singleton Boulevard and on roads adjacent to Singleton Boulevard in this area include Ryder Truck Rental and Leasing, Pioneer Concrete of Texas, auto garages, auto parts facilities, and scrap metal facilities. Industrial facilities on Commerce Street and on streets adjacent to Commerce Street in this area include a building material supply company (Long Supply Company), a number of bail bond businesses, and Jim Smith Tools. Single-family neighborhoods are situated along Main Street and surrounding streets among commercial/industrial businesses. A Dallas County school bus parking and maintenance yard, Contractors Iron and Steel Company, and Burden Brothers Mechanical Contractors are a few of the industrial facilities near Beckley Avenue.

Southern Portion of the Project Area

The area south of IH-30 is referred to as Oak Cliff and is dominated by single-family residential areas with mixed commercial retail development. A townhome residential area is adjacent to the west levee just north of Houston Street. An older multi-family residential area is located between

the Houston Street and Jefferson Street Viaducts. This area is generally comprised of two-story apartment buildings approximately 20 to 30 years old. The former Burnett Field baseball site is a large vacant tract that is located adjacent to the west side of IH-35E. The Oak Farms Dairy is located in this neighborhood adjacent to Jefferson Boulevard.

Small wood-frame houses, vacant lots, and boarded-up houses occur east of IH-35E to the Corinth Street Viaduct in an area referred to as The Bottoms. The Eloise Lundy Recreation Center, located on the corner of Sabine Street and Denley Street, is a City of Dallas Park and Recreation Department (PARD) park and recreation center. The Townview Magnet School, also known as the Business Magnet Management Center, is located on 8th Street on the western margin of the single-family residential areas. The Santa Fe Trestle Trail is located east of Corinth Street.

Southeast Portion of the Project Area

An area in the southeast portion of the project area consists of high-density commercial/industrial land uses located along south Lamar Street, south to the Southern Pacific Railroad. This area consists of a high concentration of large, heavy industrial facilities including Willow Distributors, Dimco Steel/Duggar Industries, the DISD Transportation Department, Beall Concrete, Orbit Oxychem, and Brockway Standard, Inc. Companies also located in the area are Big City Crushed Concrete, Praxair Gas, Faubion, and ITEX. Land use north of Lamar Street generally consists of single-family residential areas characterized by small-frame houses and vacant lots.

Industrial facilities surrounding Industrial Boulevard and Rock Island Street include Dallas Metro Steel, Orr-Reed Wrecking, and Buckley Oil Company. Located adjacent to the Corinth Street Viaduct at Industrial Boulevard is Bighorn Core. Okon Metals and a large warehouse distribution facility are located on the northwest side of Industrial Boulevard. Also along Industrial Boulevard are several bail bond companies and beverage stores. These are in proximity to the Lew Sterrett Justice Center.

3.1.2 Utilities

Major components of an extensive urban utility infrastructure are situated throughout the project area. This includes major service lines for drinking water, stormwater, natural gas, telephone, television, sanitary sewer, and electricity. Major utilities located in the project area are shown on **FEIS Plates 3-4** through **3-6**. A brief summary of these major utilities is provided in the following paragraphs.

Because of the location of the project corridor with respect to the Dallas CBD, industrial, retail, and residential areas, nearly all types of modern urban utilities have been identified at various locations. The major existing utilities that have been identified include:

- Storm Drainage Facilities/Pump Stations;
- Sanitary Sewers;
- Water Lines;
- Gas/Petroleum Pipelines;
- Electrical Transmission Lines/Substations;
- Telephone Cable;
- Fiber-Optic Cable; and
- Television Cable.

3.1.2.1 Drinking Water

Drinking water in the project area is provided by Dallas Water Utilities (DWU), which serves the City of Dallas and 31 additional towns and cities throughout the region. The DWU water system consists of six storage reservoirs, three water purification plants, 22 pump stations, 21 water storage tanks, and 5,166 miles of water distribution mains (City of Dallas, 2013j). DWU has 14 major water distribution mains, ranging from 20 inches in diameter to 66 inches in the project area, along with an extensive network of smaller distribution mains (see **FEIS Plate 3-4**).

3.1.2.2 Sanitary Sewer

The sanitary sewer system in the project area is operated by the City of Dallas through DWU. The city has two major wastewater treatment plants including the Southside Wastewater Treatment Plant (SWWTP) and CWWTP; wastewater treatment capacity is approximately 260 million gallons a day. The city has 23 major sanitary interceptor sewer mains, ranging from 21 inches to 120 inches in diameter, along the corridor with an extensive network of smaller service lines located throughout the project area (see **FEIS Plate 3-5**). The 120-inch West Bank Interceptor sanitary sewer line (see **FEIS Plate 3-5**, Map ID #11) is located within the Dallas Floodway.

Cadiz Pump Station New Interceptor Sewer Line

The Cadiz pump station is located near the intersection of Industrial Boulevard and Cadiz Street. In the summer of 2000, the pump station experienced a power failure during a major weather event. As a result, several million gallons of untreated sewage was diverted to a bypass pipe that

discharged into the old Trinity River sump and was subsequently pumped into the Trinity River. To prevent future discharges, a new gravity sewer line has been designed to connect to the 120-inch West Bank Interceptor sanitary sewer line located on the west side of the Trinity River channel. The new sewer line is designed to cross under the east levee and river channel and would be constructed by tunnel boring (see **FEIS Plate 3-5**, Map ID #24). Once operational, the existing 60-inch interceptor line that parallels the west bank of the river channel may be abandoned in place.

3.1.2.3 Electricity

Electrical service in the project area is provided by Oncor. Oncor has nine major overhead transmission lines, ranging from 138 kilovolts (kV) to 345 kV in size, several electrical substations, and an extensive network of smaller underground and overhead service lines in the project area. From 2009 to 2010, Oncor constructed a 345 kV West Levee-Norwood transmission line between the West Levee switching station, located near the west levee south of Singleton Boulevard, to the Norwood switching station, located between Loop 12 and the Trinity River in Irving. The West Levee - Norwood 345 kV line was constructed underground along Canada Drive, crosses the Dallas Floodway above ground at Sylvan Avenue, and was placed on single poles in the median of Irving Boulevard (see **FEIS Plate 3-6**).

3.1.2.4 Oil and Natural Gas

Eight major natural gas distribution mains, ranging from 16 inches to 24 inches in diameter, and an extensive network of smaller distribution lines, are located throughout the project area (see **FEIS Plate 3-6**). Natural gas service in the area is provided by Atmos Energy. In addition, a jet fuel distribution main (leading to Love Field Airport), gasoline distribution main, and a refined petroleum product distribution main all pass through the north and western-most portions of the project area (see **FEIS Plate 3-6**).

3.1.2.5 Stormwater Drainage Facilities

Stormwater drainage in the project area is provided by City of Dallas and maintained by the Streets and Sanitation Department. This department utilizes a large network of integrated drainage systems to provide drainage service throughout the city. The Dallas Floodway contains six pump stations in the downtown Dallas area (A [Able], B [Baker], C [Charlie], D [Delta], Hampton, and Pavaho) (see **FEIS Plate 3-21**), and an additional pump station that serves the Rochester Levee (Rochester Pump Station located near the southern portion of the project area).

The Dallas Floodway also contains seven major pressure sewers that manage and distribute stormwater runoff (see **FEIS Plate 3-21**). Within the project area, stormwater runoff is eventually discharged to the Trinity River through adjacent tributaries, open drainage channels, and/or by large pressure sewers. For areas on the landside of the Dallas Floodway Levee system, stormwater is collected in large storage sumps (old Trinity River meanders) and transported, via several pump stations, through the levees to outfall channels within the Dallas Floodway. There are seven major storage sumps (see **Table 3-31** and **FEIS Plate 3-21**) and an extensive network of smaller drainage lines within the project area.

3.1.3 Major Activity Centers

Several major employers or activity centers are located within, or in proximity to, the project area and are considered major traffic generators. These include the Stemmons Industrial District and the Dallas CBD, which contain the largest concentration of businesses, hotels, and public facilities (e.g., schools, hospitals, and court/prison facilities) in the north central Texas region. These are summarized in **Table 3-1** and the locations are shown on **FEIS Plate 3-7**. Twenty-nine of these major employers are within the project area.

TABLE 3-1. MAJOR EMPLOYERS WITHIN AND IN PROXIMITY TO THE PROJECT AREA[1]

Plate ID Number[2]	Name	Address	Number of Employees
1	Health & Human Services	2377 Stemmons Freeway	250 - 499
2	ABF Freight Systems	4242 Irving Boulevard	250 - 499
3	Oak Farms*	1114 North Lancaster Avenue	250 - 499
4	Aramark Uniform & Career AP	1900 Empire Central Place	250 - 499
5	AT&T (Formerly SBC)	308 South Akard Street	250 - 499
6	Wyndham International, Inc.	1950 North Stemmons, Suite 6100	250 - 499
	Patriot American Hospitality	1950 North Stemmons Freeway	250 - 499
	Stream Energy	1950 North Stemmons Freeway, Suite 3061	250 - 499
7	Wal-Mart Optical Lab	9029 Directors Row	250 - 499
8	Atrium Windows & Doors – Texas	959 Profit Drive	500 - 999
9	American Airlines Center	2500 Victory Avenue	2,500 – 4,999
10	Ben E Keith Beers	1805 Record Crossing Road	250 - 499
11	Comerica Bank - Texas	1508 West Mockingbird Lane	250 - 499
12	Borden Milk Products*	5327 South Lamar Street	500 - 999
13	Child Protective Services*	8700 North Stemmons Freeway, #104	500 - 999
14	Trinity Industries, Inc.	2525 North Stemmons Freeway	500 - 999
15	Dallas Central Appraisal District*	2949 North Stemmons Freeway	250 - 499
16	Bank Of America	1201 Main Street, Suite 900	1,000 – 2,499
17	Hunt Oil Co.	1900 North Akard Street	250 - 499
18	Dallas Area Rapid Transit	1401 Pacific Avenue	1,000 – 2,499
19	Bank Of America	411 North Akard Street	500 - 999
20	Bank Of America	901 Main Street, Suite 100	2,500 – 4,999
	Jackson Walker LLP	901 Main Street, Suite 6000	250 - 499
	Strasburger & Price LLP	901 Main Street, Suite 4400	500 - 999
21	Yellow Pages	1440 Empire Central Drive	500 - 999
22	AT&T (Headquarters)	208 South Akard Street	2,500 – 4,999

TABLE 3-1. MAJOR EMPLOYERS WITHIN AND IN PROXIMITY TO THE PROJECT AREA[1]

Plate ID Number [2]	Name	Address	Number of Employees
23	Hyatt Regency Dallas at Reunion	300 Reunion Boulevard	500 - 999
24	Pilgrim's Pride Corp.	1900 S Cesar Chavez Boulevard	1,000 – 2,499
25	Aetna U.S. Healthcare	2777 Stemmons Freeway, Suite 300	250 - 499
	Quexco, Inc.	2777 North Stemmons Freeway	500 - 999
26	Friendly Chevrolet	2754 North Stemmons Freeway	250 - 499
27	Pinkertons Security Service*	7610 North Stemmons Freeway	250 - 499
28	United States Postal Service	401 DFW Turnpike	1,000 – 2,499
29	El Centro College	801 Main Street	250 - 499
30	Internal Revenue Service	1100 Commerce Street	1,000 - 2,499
31	George C. Allen Courts	600 Commerce Street	250 - 499
32	Neiman Marcus	1618 Main Street	250 - 499
33	Medco Construction (a Division of Baylor Health Enterprises, Inc.)	2625 Elm Street, Suite 216	250 - 499
34	Blockbuster, Inc.	1201 Elm Street	500 - 999
	First American (Transamerica Real Estate)	1201 Elm Street	500 - 999
	SWS Securities, Inc.	1201 Elm Street, Suite 3500	250 - 499
35	Federal Deposit Insurance Corp.	1601 Bryan Street	500 - 999
	Energy Future Holdings Corp. – HQ/Capgemini Energy LP (Luminant/Oncor/Texas Utilities (TXU))	1601 Bryan Street, Suite 37-142	1,000 - 2,499
36	Sheraton Dallas Hotel	400 Olive Street	1,000 – 2,499
37	Taylor Publishing Co.	1550 West Mockingbird Lane	250 - 499
38	UT Southwestern St. Paul Hospital (former St. Paul Medical Center)	5909 Harry Hines Boulevard	1,000 – 2,499
39	UT Southwestern Medical Center	5323 Harry Hines Boulevard	5000+
40	Parkland Health & Hospital System	5201 Harry Hines Boulevard	5000+
41	Dallas County Hospital Dst.	5000 Harry Hines Boulevard	1,000 - 2,499
42	Children's Medical Center	1935 Medical District Drive	5000+
43	Renaissance Dallas Hotel	2222 North Stemmons Freeway	250 - 499
44	Hilton Anatole Hotel	2201 North Stemmons Freeway	1,000 – 2,499
45	Federal Reserve Bank Of Dallas	2200 North Pearl Street	1,000 – 2,499
46	Chase Paymentech Solutions	1601 Elm Street, Suite 700	250 - 499
	Gardere Wynne Sewell LLP	1601 Elm Street, Suite 3000	250 - 499
	First USA Federal Savings Bank	1601 Elm Street	250 - 499
	Comerica Bank – Corporate Headquarters	1601 Elm Street, #100	250 - 499
47	Ernst & Young LLP	2200 Victory Avenue	2,500 – 4,999
48	Environmental Protection Agency	1445 Ross Avenue, Suite 1200	1,000 – 2,499
	Tenet Healthcare	1445 Ross Avenue, 5th Floor	500 - 999
	Hunton & Williams LLP	1445 Ross Avenue, Suite 3700	250 - 499
49	7-Eleven Inc	1722 Routh Street, #1000	500 - 999
	Thompson & Knight LLP	1722 Routh Street, #1500	500 - 999
50	AM-CAM Logistics*	1145 Empire Central Place	250 - 499
	Conwell Corporation*	1145 Empire Central Place	1,000 - 2,499
51	City of Dallas – Sanitation Services	3112 Canton Street	1,000 - 2,499
52	City Of Dallas	1500 Marilla Street	1,000 – 2,499
53	Dallas Morning News, LP	508 Young Street	500 - 999
54	Methodist Medical Center - Dallas	1441 North Beckley Avenue	2,500 – 4,999
55	Con-Way Freight*	5020 Calvert	250 - 499
56	Locke, Lord, Bissell, and Liddell LLP	2200 Ross Avenue, Suite 2200	250 - 499
	Trammelll Crow DFW, Inc.	2200 Ross Avenue, Suite 3700	250 - 499
	Fulbright & Jaworski LLP	2200 Ross Avenue, Suite 2800	250 - 499
	Deloitte & Touche LLP	2200 Ross Avenue, Suite 1600	1,000 – 2,499
	JP Morgan Chase Bank	2200 Ross Avenue, 6th Floor	500 - 999

TABLE 3-1. MAJOR EMPLOYERS WITHIN AND IN PROXIMITY TO THE PROJECT AREA[1]

Plate ID Number [2]	Name	Address	Number of Employees
57	Corgan Associates, Inc.	401 North Houston Street	250 - 499
58	Texas Industries (TXI)	1341 West Mockingbird Lane, Suite 700	250 - 499
59	Crosstex Energy, Inc.	2501 Cedar Springs Road, #100	250 - 499
60	Andrews Distributing Company*	2730 Irving Boulevard	500 - 999
61	Lew Sterrett Justice Center N & W Towers*	111 Commerce Street	1,000 – 2,499
62	Price Waterhouse Coopers	2001 Ross Avenue, Suite 1800	1,000 – 2,499
	Vinson & Elkins LLP	2001 Ross Avenue, Suite 3700	250 - 499
	Trammell Crow Company Delaware	2001 Ross Avenue, Suite 3400	500 - 999
	Baker Botts LLP	2001 Ross Avenue, Suite 700	250 - 499
63	Southwestern Financial Services Corp.	717 North Harwood Street, Suite 2100	250 - 499
	KPMG LLP	717 N Harwood Street, Suite 3100	1,000 - 2,499
64	Adolphus Hotel	1321 Commerce	250 - 499
65	Akin Gump Strauss Hauer & Feld	1700 Pacific Avenue, Suite 4100	250 - 499
	Penson Worldwide, Inc. (also Penson Financial Services, Inc.)	1700 Pacific Avenue, Suite 1400	250 - 499
66	Dallas Area Rapid Transit	1200 E Jefferson Boulevard	250 - 499
67	Automatic Data Processing	2735 North Stemmons Freeway	250 - 499
68	Bank One	1717 Main Street, Suite LL1	250 - 499
	Bonnet Resources Corporation	1717 Main Street, Suite 4300	250 - 499
	TXU Energy	1717 Main Street, Suite 2000	500 - 999
	Grant Thornton LLP	1717 Main Street, Suite 1500	250 - 499
	Orix USA Corp.	1717 Main, #900	500 - 999
	TM Advertising (formerly Temerlin McLain)	1717 Main Street	250 - 499
	Comerica Bank – Headquarters	1717 Main Street	1,000 - 2,499
69	Baylor Health Care System	2001 Bryan Street, Suite 2200	500 - 999
	Chubb Group of Insurance Company	2001 Bryan Street, #300	250 - 499
	Federal Insurance Company	2001 Bryan Street, Suite 3400	250 - 499
70	Dallas Area Rapid Transit	3021 Oak Lane	250 - 499
71	Belo Interactive, Inc.	900 Jackson Street, Suite 400	250 - 499
72	County of Dallas*	509 Main Street, 4th Floor, Suite 407	500 - 999
	Dallas County Records Building Complex*	509 Main Street, Floor 6	250 - 499
73	Crosstex (Headquarters)	2828 Harwood Street	250 - 499
	Money Gram International, Inc.	2828 N Harwood Street, #15	250 - 499
74	Buckner Retirement Services	600 North Pearl Street, Suite 2000	250 - 499
	American International Group	600 N Pearl Street	250 - 499
75	Cumulus Broadcasting, LLC	3500 Maple Avenue, Suite 1600	250 - 499
	Gables Residential Services	3500 Maple Avenue, Suite 1400	250 - 499
	Heritage Auctions, Inc.	3500 Maple Avenue, #17	250 - 499
76	Centex Construction Company	3100 McKinnon Street	250 - 499
	Balfour Beatty Construction	3100 McKinnon Street, 10th Floor	250 - 499
77	Citizenship Immigration Services Bureau*	7701 North Stemmons Freeway	500 - 999
78	Cowboy Cab Company, Inc.	1306 Wall Street	250 - 499
79	Crow Holdings	2100 McKinney Avenue, Suite 700	250 - 499
80	Dallas Central Public Library	1515 Young Street	500 - 999
81	Dallas County Sheriff's Office*	133 North Industrial Boulevard	1,000 – 2,499
	Dallas County Community Supervision*	133 North Industrial Boulevard	500 - 999
82	Dallas Housing Authority*	3939 North Hampton Road	250 - 499
83	Jones Day	2727 N Harwood Street	250 - 499
84	Dallas Museum Of Art	1717 North Harwood Street	250 - 499
85	Dallas Police Headquarters	1400 South Lamar Street	500 - 999

TABLE 3-1. MAJOR EMPLOYERS WITHIN AND IN PROXIMITY TO THE PROJECT AREA[1]

Plate ID Number [2]	Name	Address	Number of Employees
86	Dallas County DA Office*	133 North Riverfront Boulevard	500 - 999
87	Dawson State Jail*	106 West Commerce Street	250 - 499
88	Faubion Associates, Inc.*	1000 Forest Avenue	250 - 499
89	Firemans Fund Insurance Co.	500 North Akard Street	250 - 499
	Blanch Benfield Holdings, Inc.	500 North Akard Street, Suite 4500	500 - 999
	Luminant Energy – HQ (Business Unit of Energy Future Holdings – Formerly Part of TXU Corp.)	500 N Akard Street	500 - 999
	Great Southern Life Insurance	500 North Akard Street, Suite 1100	250 - 499
	TXU Electric Delivery	500 N Akard Street, Suite 13-121	250 - 499
90	Dean Foods Company	2515 McKinney Avenue, Suite 1200	250 - 499
91	First Southwest Company	325 N Saint Paul Street, Suite 800	250 - 499
92	Drive Financial Services LP*	8585 North Stemmons Freeway	250 - 499
	Santander Consumer USA, Inc.*	8585 North Stemmons Freeway, #1100N	1,000 - 2,499
93	Fairmont Hotel	1717 North Akard Street	500 - 999
94	Fox Television Stations , Inc. (KDFW)	400 North Griffin Street	250 - 499
	NW Communication Texas, Inc.	400 North Griffin Street	250 - 499
95	Freeman Co. (Formerly Freeman Decorating Co.)	8801 Ambassador Row	250 - 499
96	Rosewood Hotels (Headquarters)	100 Crescent Court, # 1700	1,000 – 2,499
97	Glasfloss Industries, LP	400 S Hall Street	250 - 499
98	Silverleaf Resorts, Inc.*	1221 River Bend Drive	500 - 999
99	Smith Alarm Systems*	7777 John W Carpenter Freeway	250 - 499
100	Greyhound Lines Inc.	350 North St. Paul Street	250 - 499
101	Tracy Locke Partnership	1999 Bryan Street, # 2800	250 - 499
102	Guaranty Bank	8333 Douglas Avenue	500 - 999
103	TVMAX, Inc.*	1111 Mockingbird Lane	500 - 999
	ACS Retail Solutions, Inc.*	1111 W Mockingbird Lane, Suite 1400	2,500 - 4,999
104	Jacobs Engineering Group, Inc. (formerly Carter & Burgess, Inc.)	7950 Elmbrook Drive, Suite 400	250 - 499
105	UT Southwestern Health Systems	8303 Elmbrook Drive	250 - 499
106	HKS, Inc.	1919 McKinney Avenue	500 - 999
107	Visiting Nurse Association of Texas	1440 W Mockingbird Lane	1,000 – 2,499
108	WFAA-TV, Inc.	606 Young Street	250 - 499
109	Haynes & Boone LLP	2323 Victory Avenue, Suite 700	500 - 999
	Plains Capital Corp.	2323 Victory Avenue, #1400	250 - 499
110	Lifecare Hospitals N Texas LP	6161 Harry Hines Boulevard	500 - 999
111	Lundy Services, Inc.	4050 Black Gold Drive	250 - 499
112	Mary Kay	1330 Regal Row	500 - 999
113	Metro One Telecommunications	1515 W Mockingbird Lane	250 - 499
114	Metrocare Services*	1380 River Bend Drive	500 - 999
115	Pulte Homes	2728 N Harwood Street, #200	1,000 - 2,499
116	Quest Diagnostics Clinical Labs	8000 Sovereign Row	250 - 499
117	Renaissance Hospital of Dallas	2929 S Hampton Road	250 - 499
118	Ritz-Carlton Hotel	2121 McKinney Avenue	250 - 499
119	Rosewood Crescent Hotel	400 Crescent Court	250 - 499
120	Rudy's Tortillas	9219 Viscount Row	250 - 499
121	Silverleaf Resorts, Inc.	1450 Empire Central Drive	500 - 999
122	Stoneleigh Towers Residential	2927 Maple	500 - 999
123	Sun Ports International, Inc. (USA Shade & Fabric Structures, Inc.)	8319 Chancellor Row	250 - 499
124	Target	212 Medallion Shopping Center	250 - 499
125	Texas Mail Service	1936 W Commerce Street	250 - 499
126	Texas Scottish Rite Hospital	2222 Welborn Street	500 - 999
127	Trans Healthcare, Inc.	7850 Brookhollow Road	250 - 499

TABLE 3-1. MAJOR EMPLOYERS WITHIN AND IN PROXIMITY TO THE PROJECT AREA[1]

Plate ID Number [2]	Name	Address	Number of Employees
128	U.S. Department of Labor	525 S Griffin Street, Room 707	500 - 999
129	UT Southwestern Medical Center North Campus	6000 Harry Hines Boulevard	2,500 - 4,999
130	SSA Global*	8777 North Stemmons Freeway	250-499
131	EXE Technologies, Inc.*	8787 North Stemmons Freeway	250-499
132	ABM Janitorial Service*	1450 Regal Row	1,000 – 2,499

Source: NCTCOG, 2012a.
Notes: * Sites within Project Area
1. Major employers within and in proximity to the project area include employment establishments with a minimum of 250 full-time and part-time workers as of August 16, 2012. An employment establishment may consist of a single building or a collection of adjacent buildings occupied by one employer, such as a college campus or business park.
2. Plate ID Numbers correspond to the locations shown on **FEIS Plate 3-7** at the end of this chapter.

3.1.4 Schools, Community Services/Facilities, and Places of Worship

Public schools in the project area are administered by the DISD. Community services and facilities consist of police and fire facilities, community and recreation centers, and numerous places of worship. The schools, community services/facilities, and places of worship in the project area are summarized in **Table 3-2** and the locations are shown on **FEIS Plate 3-8**.

TABLE 3-2. SCHOOLS, PLACES OF WORSHIP, AND COMMUNITY SERVICES

Plate ID Number [1]	Facility	Location
Police and Fire		
1	Lew Sterrett Justice Center/Frank Crowley Courts Building [2]	111 Commerce Street/133 N. Riverfront Boulevard
2	Sheriff Dept. Jail Commanders Academy Training Div.	521 N. Riverfront Boulevard
3	Fire Station No. 1	1901 Irving Boulevard
4	Fire Station No. 47	7161 Envoy Court
5	Jack Evans Police Headquarters	1400 S. Lamar Street
6	Dallas Police Department	8500 N. Stemmons Freeway #5040
School District Facilities		
7	DISD Storage and Maintenance Facility	3701 South Lamar
8	C.F. Carr Elementary School	1952 Bayside Street
9	Lorenzo de Zavala Elementary School	3214 Winnetka Avenue
10	Yvonde A. Ewell Townview Magnet School	1201 E. 8th Street, Suite 302
11	West Dallas Community School	2300 Canada Drive
12	H.S. Learning Center	5700 Bexar Street
Community and Recreation Centers		
13	Joseph McMillan Community Center	3730 Ladd Street
14	West Dallas Outreach	2215 Canada Drive, Building A
15	Bataan Community Center	3232 Bataan Street
16	Eloise Lundy Recreation Center	1229 Sabine Street
17	The Sarah Wilke Youth Center	1000 McBroom Street
18	Anita Martinez Recreation Center	3212 N. Winnetka Avenue
19	Philippine Community Center	1718 Bayside Street
20	Wesley-Rankin Community Center	3100 Crossman Avenue
21	Union Gospel Mission	3211 Irving Boulevard

TABLE 3-2. SCHOOLS, PLACES OF WORSHIP, AND COMMUNITY SERVICES

Plate ID Number [1]	Facility	Location
Places of Worship		
22	Trinity Valley Church of God in Christ	2043 Canada Drive
23	Dallas Free 7th Day Adventist	2050 Canada Drive
24	Galilee Church of God in Christ	4004 Ivanhoe Lane
25	Canada Drive Christian Church	2035 Canada Drive
26	Macedonia Baptist Church	1967 Canada Drive
27	Canada Drive Church of God in Christ	1833 Canada Drive
28	Leath Street Baptist Church	1831 Canada Drive
29	Homeland Street Missionary Baptist Church	3636 Navarro Street
30	Victory Mission Baptist Church	2313 Canada Drive
31	Abundant Faith Church of God in Christ	3930 N. Hampton Road
32	Mt. Nebo Baptist Church	Bayside Street at Harston Street
33	House of Refuge Pentecostal Church	1823 Bayside Street
34	Sweet Home Baptist Church	3810 Vilbig Road
35	New Mt. Gilead Baptist Church	115 Morgan Avenue
36	Shiloh Missionary Baptist Church	1114 Comal Street
37	Golden Gate Missionary Baptist Church	1101 Sabine Street
38	True Purpose Missionary Baptist Church	434 N. Moore Street
39	Christ's Willing Worker Baptist Church	2213 Lowery Street
40	New Hope Baptist Church	5002 S. Central Expressway
41	Harding Street Baptist Church	223 Harding Street
42	St. Paul Baptist Church	1600 Pear Street
43	Church of the Living God	2414 Bethurum Avenue
44	Holiness Church of God in Christ	2026 Calypso Street
45	Church of God in Christ	3331 Chihuahua Avenue
46	Iglesia De Dios Manantiales	3015 Bataan Street
47	Faith Outreach Family Church	2025 Irving Boulevard #215
48	Rhema Christian Fellowship	501 N. Stemmons Freeway #100
49	West Dallas Community Church	2215 Canada Drive
50	Greater Dreams Baptist Church	3649 Canada Drive
51	Victory Church of God in Christ	3305 Canada Drive
52	Luz Bethel	3715 Vilbig Road
53	St. Philippis Missionary Baptist	3609 Vilbig Road
54	Trinity Temple Church of God	3343 Crossman Avenue
55	First Indian Baptist Church Dallas	815 Nomas Street
56	Adult Rehabilitation Ministry	1128 Sabine Street
57	Joy Tabernacle A.M.E. Church	3203 Holmes Street
58	Family Faith Visual Hearts	2325 Valdina Street
59	New Beginnings Covenant Ministries	3305 Canada Drive

Source: City of Dallas, 2012a; City of Dallas, 2012b; City of Dallas, 2012c; City of Dallas, 2012d; DISD, 2012; Google Earth, 2013a, Google Earth, 2013b, Google Earth, 2013c, Google Earth, 2013d; USA Church, 2007.

Notes:

1. Plate ID numbers correspond to the locations shown on **FEIS Plate 3-8** at the end of this chapter.
2. The Frank Crowley Courts Building also contains the Dallas County Law Library. No other public libraries were identified in the project area.

3.1.5 Social and Economic Conditions

This section of the FEIS discusses the social and economic conditions within the project area, focusing on comparisons of its population, demographic, employment, and income characteristics with the City of Dallas and Dallas County. This socioeconomic information was collected from year 2010 census tracts (U.S. Census Bureau, 2010b) that are within or intersected by the project

area boundary. Reference to the "project area" in this section includes this collection of census tracts, including census tract block groups, which are shown in **FEIS Plate 3-9**.

3.1.5.1 Population and Demographic Characteristics

Population

Regional Population Growth

As shown in **Figure 1-4** in **FEIS Chapter 1,** population in this region has been steadily increasing since 1970. The DFW region was one of the fastest growing areas in the U.S. during the 1990s and 2000s. During the 2000s, over one million people were added to the region, with 46 percent of the growth occurring over the last five years of the decade. During this ten-year period, the average annual growth was an estimated at 123,067 persons (NCTCOG, 2011b). The region experienced growth of more than 150,000 residents per year for four consecutive years from 1999 through 2003 (NCTCOG, 2003c). The region added 131,000 new residents during 2007, marking the twelfth consecutive year to add over 100,000 residents (NCTCOG, 2008).

The four core counties (Collin, Dallas, Denton, and Tarrant) captured 84 percent of all regional growth, or 1,032,359 persons, during the 2000s (NCTCOG, 2011c). Tarrant County experienced the greatest population increase in the 2000s, adding a total of 362,815 persons. With 56 percent of its growth occurring during the last five years of the decade, Collin County nearly doubled its population by adding 290,666 persons. Dallas County added 149,240 persons and Denton County added 229,638 persons during this 10-year period. In 2011, these four counties captured 78 percent of all regional growth, adding 43,790 persons. Dallas County added 5,480 persons in 2011 and now has a population of 2,368,139 persons (NCTCOG, 2012c and U.S. Census Bureau, 2010c).

Regional Population Projections

As shown in **Table 1-2** in **FEIS Chapter 1,** population growth in the DFW metropolitan area is projected to increase steadily through the year 2035 (and beyond to 2040). During the 30-year period from 2005 through 2035, the DFW metropolitan area population is expected to increase from approximately 5.8 million in 2005 to approximately 9.8 million in 2035. This is an increase of approximately 4 million residents (about 135,000 persons per year) at a projected population growth of approximately 70 percent (NCTCOG, 2011d).

Population in the Project Area

The NCTCOG indicates that the population for the City of Dallas increased by 9,236 persons from 1,188,580 in 2000 to 1,197,816 in 2010, demonstrating an 0.8 percent growth rate over this 10-year time period (NCTCOG, 2011e). In comparison, population within the project area increased 7.4 percent (3,936 persons) from 52,917 in 2000 to 56,853 in 2010. **Table 3-3** shows population data for each of the 15 census tracts that encompass the project area for the years 2000 and 2010. The year 2010 project area census tracts, including census tract block-groups, are shown graphically on **FEIS Plate 3-9** at the end of this chapter. It is noteworthy that redistricting occurred for Census 2010; therefore, identification numbers and boundaries have changed since Census 2000. For this reason, the Census tracts identification numbers between 2000 and 2010 differ slightly.

TABLE 3-3. PROJECT AREA POPULATION BY CENSUS TRACT

Census Tract	2000 Census	2010 Census *	2000-2010 Total Change	2000-2010 Percent Change
20	7,271	5,741	-1,530	-21.0
33	2,066	N/A	N/A	N/A
34	1,460	1,146	-314	-21.5
39.02	2,099	1,860	-239	-11.4
40	1,496	1,082	-414	-27.7
41	1,440	1,155	-285	-19.8
42.01	5,449	3,970	-1,479	-27.1
43	2,860	2,375	-485	-17.0
86.03	1,687	1,237	-450	-26.7
89	2,730	2,713	-17	-0.6
100	9,614	11,780	2,166	22.5
101.01	3,766	4,549	783	20.8
101.02	3,460	3,178	-282	-8.2
102	2,356	N/A	N/A	N/A
106.01	5,163	5,729	566	11.0
204	N/A	5,518	N/A	N/A
205	N/A	4,820	N/A	N/A
Project Area Total	**52,917**	**56,853**	**3,936**	**7.4**
City of Dallas	**1,188,580**	**5,741**	**-1,530**	**-21.0**

Source: U.S. Census Bureau, 2000 and 2010d.
Abbreviation used in Table: N/A = Not Applicable
Note: * 2010 Census tracts include all or portions of 2000 tracts. Direct comparisons may not be exact.

3.1.5.2 Environmental Justice

Presidential EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) (1994), requires that each federal agency "shall make achieving environmental justice (EJ) part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental impacts of its programs,

policies, and activities on minority populations and low-income populations…" In a memorandum concerning EO 12898, the President states that federal agencies should collect and analyze information concerning a project's impacts on minorities or low-income groups when required by the NEPA. If such investigations identify that minority or low-income groups experience disproportionate adverse impacts, then avoidance or mitigation measures are to be taken.

The FHWA implements the requirements of EO 12898 through FHWA Order 6640.23A (FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) (1998). EO 12898 and FHWA Order 6640.23A are primarily a reaffirmation of the principles of Title VI of the Civil Rights Act of 1964, as amended ("Title VI") and related statutes, the NEPA of 1969, 23 U.S.C. Section 109(h), and other federal environmental laws emphasizing the incorporation of those provisions with the environmental and transportation decision making process.

The following definitions are contained in FHWA Order 6640.23A and are intended to be consistent with the draft definitions for EO 12898 that have been issued by the CEQ and the USEPA:

- Minority: A person who is (1) Black or African American (a person having origins in any of the black racial groups of Africa); (2) Hispanic or Latino (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race); (3) Asian American (a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent); (4) American Indian and Alaskan Native (a person having origins in any of the original people of North America, South America (including Central America), and who maintains cultural identification through tribal affiliation or community recognition); (5) Native Hawaiian and Other Pacific Islander (a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands).

- Minority Population: Any readily identifiable groups of minority persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed FHWA program, policy, or activity. Minority populations were identified based on the federal CEQ's guidance document *Environmental Justice: Guidance Under the National Environmental Policy Act* (CEQ, 1997a). Based on this guidance, "Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the

affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis…"

- Low-Income: A household income at or below the U.S. Department of Health and Human Services (HHS) poverty guidelines.

- Low-Income Population: Any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who would be similarly affected by a proposed FHWA program, policy, or activity.

- The 2013 poverty guideline is $23,550 for a four-person family as defined by the HHS.

- Adverse Effects: The totality of significant individual or cumulative human health or environmental effects, including interrelated social and economic effects, which may include, but are not limited to: bodily impairment, infirmity, illness or death; air, noise, and water pollution and soil contamination; destruction or disruption of man-made or natural resources; destruction or diminution of aesthetic values; destruction or disruption of community cohesion or a community's economic vitality; destruction or disruption of the availability of public and private facilities and services; vibration; adverse employment effects; displacement of persons, businesses, farms, or nonprofit organizations; increased traffic congestion, isolation, exclusion or separation of minority or low-income individuals within a given community or from the broader community; and the denial of, reduction in, or substantial delay in the receipt of, benefits of the FHWA programs, policies, or activities.

- Disproportionately High and Adverse Effect on Minority and Low-Income Populations: An adverse effect that (1) is predominately borne by a minority population and/or a low-income population; or (2) will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that would be suffered by the nonminority population and/or non-low-income population.

Unlike the CEQ guidance (1997a) on minority population, no EJ order or guidance document contains a quantitative definition of how many low-income individuals constitute a low-income population. In the absence of guidance for this analysis, one of the measures used to identify low-income populations was the average median household income for the inclusive census tracts and/or block groups. As described above, the FHWA defines low-income as "a person

whose household income level is at or below the Department of HHS poverty guidelines." In 2013, the HHS poverty guidelines for a family of four persons are $23,550.

Demographic Characteristics

Race/Ethnicity

As shown in **Table 3-4**, White residents make up approximately 29 percent of the population of the City of Dallas and the remaining residents consist of persons in other racial categories. In the project area, white residents make up approximately 15 percent of the population and the remaining 85 percent of the population consists of non-White persons. This includes persons in all non-White racial categories, including Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, some other race, or two or more races. The largest racial group in the project area is Black or African American, which accounts for 41.8 percent of the population. Hispanic or Latino persons account for approximately 42.4 percent and 41.5 percent of the City of Dallas and project area populations, respectively.

TABLE 3-4. 2010 RACE AND ETHNICITY

Census Geography		Total Project Area Popula-tion	Racial and Ethnic Distribution								
			Percent White Alone	Percent Black or African American Alone	Percent American Indian and Alaska Native Alone	Percent Asian Alone	Percent Native Hawaiian and Other Pacific Islander Alone	Percent Some Other Race Alone	Percent Two or More Races	Percent Hispanic or Latino	Percent Minority
City of Dallas		1,197,816	28.8	24.5	0.3	2.8	<0.1	0.2	1	42.4	71.2
Project Area Census Block Groups		37,907	14.9	41.8	0.2	0.8	0.1	0.1	0.6	41.5	85.1
Census Tract	**Census Block Group**	**Project Area Census Geography Demographics**									
20	---	5,741	10.3	16.4	0.4	0.6	<0.1	0.2	0.8	71.3	89.7
---	1	1,603	21.5	29.8	0.5	1.4	0.1	0.4	1.4	44.9	78.5
---	2	774	12.7	27.3	0.8	0.0	0.0	0.1	1.3	57.8	87.3
34	---	1,146	12.2	71.7	0.6	0.1	0.0	0.1	0.9	14.4	87.8
---	1	562	2.8	77.8	0.2	0.0	0.0	0.2	0.9	18.1	97.2
39.02	---	1,860	1.2	73.3	0.1	0.0	0.0	0.3	1.0	24.1	98.8
---	1	452	1.6	61.7	0.0	0.0	0.0	0.0	1.5	35.2	98.4
---	2	1,408	1.1	77.1	0.1	0.0	0.0	0.4	0.7	20.6	98.9
40	---	1,082	0.6	86.9	0.3	0.0	0.0	0.1	0.8	11.3	99.4
---	1	636	0.8	91.5	0.0	0.0	0.0	0.0	0.0	7.7	99.2
---	2	446	0.4	80.3	0.7	0.0	0.0	0.2	2.0	16.4	99.6
41	---	1,155	1.4	57.7	0.2	0.2	0.0	0.2	0.2	40.1	98.6
---	2	474	1.5	48.7	0.4	0.0	0.0	0.0	0.2	49.2	98.5
42.01	---	3,970	33.5	3.6	0.6	0.7	0.0	0.1	0.6	60.9	66.5
---	1	728	83.1	1.2	1.1	1.2	0.0	0.0	0.2	13.2	16.9
43	---	2,375	5.1	10.3	0.3	1.0	0.0	0.0	0.3	83.0	94.9
---	1	421	9.3	8.8	0.4	1.7	0.0	0.0	0.7	79.1	90.7
---	2	699	1.5	27.5	0.1	0.0	0.0	0.0	0.1	70.9	98.5
86.03	---	1,237	1.9	60.2	0.3	0.0	0.1	0.1	1.0	36.4	98.1
---	1	764	1.6	85.5	0.1	0.0	0.0	0.1	1.7	11.0	98.4
---	2	473	2.3	19.5	0.6	0.0	0.2	0.0	0.0	77.4	97.7
89	---	2,713	0.9	66.9	0.2	0.1	0.0	0.2	0.7	31.0	99.1
---	1	916	1.2	56.9	0.0	0.1	0.0	0.6	0.4	40.8	98.8
100	---	11,780	30.8	47.5	0.1	0.7	<0.1	0.1	0.3	20.5	69.2
---	1	9,658	34.4	46.5	0.1	0.7	<0.1	0.1	0.2	18.0	65.6
---	2	2,122	14.5	52.1	0.1	0.7	0.1	0.0	0.8	31.7	85.5
101.01	---	4,549	1.1	49.4	0.1	0.1	<0.1	0.1	0.5	48.7	98.9
---	1	1,445	2.6	44.9	0.2	0.1	0.0	0.1	1.0	51.1	97.4
---	2	1,245	0.2	60.9	0.1	0.0	0.0	0.0	0.2	38.6	99.8
---	3	1,859	0.5	45.1	0.1	0.0	0.1	0.2	0.4	53.6	99.5
101.02	---	3,178	1.8	4.8	0.2	0.0	0.0	0.3	0.1	92.8	98.2
---	1	958	2.4	2.1	0.2	0.0	0.0	0.5	0.0	94.8	97.6
---	2	1,406	1.2	7.8	0.1	0.0	0.0	0.3	0.1	90.5	98.8
---	3	814	2.2	2.7	0.3	0.0	0.0	0.0	0.1	94.7	97.8
106.01	---	5,729	2.0	3.8	0.1	0.1	0.0	0.1	0.1	93.8	98.0
---	2	3,056	2.1	6.6	<0.1	0.0	0.0	0.1	<0.1	91.2	97.9
204	---	5,518	44.0	28.8	0.5	3.0	0.1	0.2	1.9	21.5	56.0
---	1	1,148	48.9	26.9	1.0	1.7	0.2	0.3	2.4	18.6	51.1
205	---	4,820	3.1	57.9	0.1	4.0	0.2	0.1	1.3	33.3	96.9
---	2	3,840	2.5	56.5	0.1	4.6	0.3	0.1	1.4	34.5	97.5

Source: U.S. Census Bureau, 2010e.

The presence of racial and ethnic minorities in the project area is magnified at the census tract and block group levels, with some percentages in these categories above 90 percent. Racial or ethnic minority groups account for the majority of the population within all 15 census tracts and all but one of the 25 block groups in the project area. The distribution of race and ethnicity among 2010 census tracts in the project area is varied. A large majority of the residents in the project area (all of the project area on the north side of the Trinity River, and on the south side of the Trinity River between Westmoreland Road and Hampton/Inwood Road and east of SH-342) are Black or African American. In contrast, the majority of residents in the south-central portion of the project area (south of the Trinity River between Pluto Street and Westmoreland Road and between Hampton Road and SH-342) are of Hispanic or Latino descent. Additional information regarding minority populations within the Trinity Parkway project area is presented in **FEIS Section 3.1.6**

Age

A comparison of the ages in the population of the project area census tracts with those of Dallas County and the City of Dallas reveals a slightly higher proportion of residents ages 20 to 64 and a slightly lower proportion of younger residents (ages 19 and under) living in the census tracts that encompass the project area. **Table 3-5** shows that for all three geographic areas - the project area census tracts, city, and county - ages generally consist of about 27 to 30 percent of the population in the 19 and under range, 61 to 66 percent in the 20 - 64 range, and 7 to 9 percent of the population in the 65 and over range. The median age was similar for each of the areas, with the City of Dallas having a slightly lower median age.

TABLE 3-5. 2010 AGE COMPARISONS

Category	Project Study Area Census Tracts	City of Dallas	Dallas County
Total Population	56,853	1,197,816	2,368,139
Ages 19 and under	15,433	347,892	718,945
Percent of total	27	29	30
Ages 20 - 64	37,577	743,981	1,441,222
Percent of total	66	62	61
Ages 65 and over	3,843	105,943	207,972
Percent of total	7	9	9
Median Age	32.0*	31.8	32.5
Source: U.S. Census Bureau, 2010f. **Note:** *Average of median age for inclusive census tracts.			

3.1.5.3 Economic Conditions

The population and employment growth characteristics referenced in **FEIS Chapter 1** reflects the generally robust economy experienced throughout the DFW region. The City of Dallas continues to dominate regional employment. From 1990 through 2010, employment for the city grew 11.5 percent from 809,650 in 1990 to 902,893 in 2010. These figures represent the number of workers employed by businesses located within the City of Dallas, regardless of where the employees reside (U.S. Census Bureau, 2011a).

Table 3-6 shows growth in the labor force and a decline in the unemployment rate at the local and regional level between the years 1990 and 2000. More recently, however, **Table 3-6** shows a fluctuation in the unemployment rate at the local and regional level between 2000 and 2011 (most recent available). During this period, the unemployment rate for the City of Dallas fluctuated from 4.7 percent in 2000, to 8.9 percent in 2003, to 4.7 percent in 2007, to 8.5 in 2011. The annual average labor force also fluctuated at the local and regional level during this same period.

TABLE 3-6. LABOR FORCE STATISTICS

Location	Year	Annual Average Labor Force	Annual Average Employment	Annual Average Unemployment	Annual Average Unemployment Rate (Percent)
Dallas MSA[1]	1990	2,280,844	2,163,142	117,702	5.2
	2000	2,844,218	2,742,298	101,920	3.6
	2001	2,893,442	2,757,571	135,871	4.7
	2002	2,940,743	2,749,804	190,939	6.5
	2003	2,943,018	2,747,841	195,177	6.6
	2004	2,970,304	2,797,012	173,292	5.8
	2005	3,007,967	2,851,984	155,983	5.2
	2006	3,055,371	2,909,124	146,247	4.8
	2007	3,076,261	2,943,190	133,071	4.3
	2008	3,116,684	2,960,500	156,184	5.0
	2009	3,174,038	2,928,873	245,165	7.7
	2010	3,242,289	2,976,678	265,611	8.2
	2011	3,286,653	3,030,124	256,529	7.8
Dallas County[1]	1990	1,069,971	1,012,686	57,285	5.4
	2000	1,184,393	1,138,299	46,094	3.9
	2001	1,191,134	1,127,641	63,493	5.3
	2002	1,187,091	1,099,268	87,823	7.4
	2003	1,163,867	1,077,393	86,474	7.4
	2004	1,153,563	1,077,373	76,190	6.6
	2005	1,145,146	1,080,758	64,388	5.6
	2006	1,145,331	1,086,332	58,999	5.2
	2007	1,135,283	1,082,718	52,565	4.6
	2008	1,139,786	1,077,719	62,067	5.4
	2009	1,148,682	1,055,013	93,669	8.2
	2010	1,161,562	1,059,734	101,828	8.8
	2011	1,176,200	1,077,721	98,479	8.4
City of Dallas[1]	1990	574,614	538,104	36,510	6.4
	2000	619,245	590,136	29,109	4.7
	2001	627,393	587,165	40,228	6.4
	2002	630,892	574,977	55,915	8.9
	2003	621,096	565,884	55,212	8.9
	2004	616,901	568,267	48,634	7.9
	2005	584,113	550,880	33,233	5.7
	2006	592,522	561,399	31,123	5.3
	2007	585,170	557,626	27,544	4.7
	2008	586,443	554,188	32,255	5.5
	2009	589,713	542,005	47,708	8.1
	2010	569,611	518,877	50,734	8.9
	2011	576,850	527,684	49,166	8.5

Source: U.S. Department of Labor - Bureau of Labor Statistics, 2012a and 2012b.
Abbreviation used in Table: MSA = Metropolitan Statistical Area.
Note: 1. Data represent persons residing within the City of Dallas, Dallas County, and Dallas MSA (includes Dallas, Denton, Collin, Hunt, Rockwall, Kaufman, Ellis, and Henderson counties), regardless of workplace location.

Income and poverty data from the U.S. Census Bureau's American FactFinder reveal the economic conditions of communities in the project area. **Table 3-7** shows *2007-2011 American Community Survey (ACS) 5-Year Estimates* income and poverty data for the census tract and block groups that comprise the Trinity Parkway project area. The average of the median household income for the project area is $33,868.

TABLE 3-7. MEDIAN HOUSEHOLD INCOME AND POVERTY STATUS

Area		Median Household Income	Percent of Households Below Poverty Guideline
City of Dallas		$42,259	23.0
Project Area		$33,868 [1]	29.3 [2]
Project Area Census Tracts [3]	**Project Area Block Groups [4]**		
20	--	$34,886	25.0
	1	$53,789	1.5
	2	**$18,125**	**54.4**
34		$20,125	34.5
	1	**$16,371**	**37.3**
39.02	--	$20,828	32.4
	1	**$18,828**	**32.4**
	2	**$21,942**	**31.6**
40	--	$21,635	23.3
	1	**$22,390**	**29.5**
	2	$28,750	17.7
41	--	$13,870	50.1
	2	$35,972	34.7
42.01	--	$48,108	20.1
	1	$112,679	6.7
43	--	$37,575	33.4
	1	$25,714	42.3
	2	$38,125	28.9
86.03	--	$30,750	36.0
	1	**$22,647**	**45.8**
	2	$42,083	0.0
89	--	$21,667	41.3
	1	$28,750	33.2
100	--	$31,078	25.1
	1	$80,250	7.8
	2	$23,702	30.6
101.01	--	$23,899	33.8
	1	$24,286	37.4
	2	$25,741	29.6
	3	$23,734	33.3
101.02	--	$31,104	33.1
	1	**$21,917**	**26.6**
	2	$33,750	30.3
	3	**$19,659**	**50.6**
106.01	--	$38,287	27.1
	2	$37,731	33.8

Area		Median Household Income	Percent of Households Below Poverty Guideline
204	--	$52,461	7
	1	$62,917	2.9
205	--	$13,423	56.6
	2	**$14,074**	**53.2**

Source: U.S. Census Bureau, 2011b.
Notes: The U.S. Department of Health and Human Services Poverty Guidelines for a family of four in 2013 is $23,550 (HHS, 2013). The poverty thresholds are revised annually to allow for changes in the cost of living as reflected in the Consumer Price Index.
1. Average of median household income for project area block groups.
2. Average of percent of households below poverty guideline for project area block groups.
3. Census tracts partially or wholly encompassed by the project area boundary.
4. Individual block groups within census tracts that fall within the project area boundary.

At the block group level, median household incomes in the project area ranged from $14,074 to $112,679. Out of the 25 block groups within the project area, nine block groups (20/2, 34/1, 39.02/1, 39.02/2, 40/1, 86.03/1, 101.02/1, 101.02/3, and 205/2) had median household incomes below the 2013 poverty guideline ($23,550). Three out of the 25 block groups reported 50 percent or more households below the poverty guideline (20/2, 101.02/3, and 205/2). Additional information about low-income populations within the Trinity Parkway project area is presented in **FEIS Sections 3.1.6** and **4.3.2**.

3.1.5.4 Limited English Proficiency

EO 13166 *(*Improving Access to Services for Persons with Limited English Proficiency (LEP*))* (2000), requires federal agencies to examine the services they provide and identify any need for services to those with limited English proficiency. The EO requires federal agencies to work to ensure that recipients of federal financial assistance provide meaningful access to their LEP applicants and beneficiaries. Failure to ensure that LEP persons can effectively participate in or benefit from federally-assisted programs and activities may violate the prohibition under Title VI of the Civil Rights Restoration Act of 1987 and Title VI regulations against national origin discrimination.

LEP populations were determined using Census block group level data from the U.S. Census Bureau, 2007-2011 ACS data. Within the population that is five years of age and older, persons who speak English less than “very well” are considered to have a limited English proficiency. There are 25 block groups within the project area (see **FEIS Plate 3-9**). The populations that speak English less than “very well” according to ACS 2007-2011 5-year estimates data are presented in **Table 3-8**.

TABLE 3-8. PERCENT OF PROJECT AREA POPULATION THAT SPEAKS ENGLISH LESS THAN "VERY WELL"

Census Tract/Block Group	Total Population	LEP Population	Percent LEP *	Languages Spoken by LEP Populations % (No. of persons)			
				Spanish	Indo-European	Asian/Pacific Island	Other
20/1	1,385	210	15%	15% (210)	0	0	0
20/2	889	446	50%	49% (439)	1% (7)	0	0
34/1	588	23	4%	4% (23)	0	0	0
39.02/1	377	40	11%	11% (40)	0	0	0
39.02/2	1,293	93	7%	7% (93)	0	0	0
40/1	330	0	0	0	0	0	0
40/2	440	7	2%	2% (7)	0	0	0
41/2	395	66	17%	17% (66)	0	0	0
42.01/1	561	0	0	0	0	0	0
43/1	532	416	78%	78% (416)	0	0	0
43/2	456	53	12%	12% (53)	0	0	0
86.03/1	847	119	14%	14% (119)	0	0	0
86.03/2	344	94	27%	27% (94)	0	0	0
89/1	1,154	571	49%	49% (571)	0	0	0
100/1	9,684	289	3%	3% (279)	0.1% (10)	0	0
100/2	2,134	43	2%	2% (43)	0	0	0
101.01/1	1,517	548	36%	36%(548)	0	0	0
101.01/2	1,017	334	33%	33%(334)	0	0	0
101.01/3	1,393	274	19%	17% (243)	0	0	2% (31)
101.02/1	593	219	37%	37%(219)	0	0	0
101.02/2	1,914	999	52%	52% (999)	0	0	0
101.03/2	408	127	31%	31% (127)	0	0	0
106.01/2	3,568	1,636	46%	46%(1,636)	0	0	0
204/1	1,052	49	5%	5% (49)	0	0	0
205/2	3,239	407	12%	12% (392)	0	0.4% (15)	0

Source: U.S. Census Bureau, 2011d.
Note: * Rounded to the nearest whole percentage.

As shown in **Table 3-8**, the percentages of LEP populations in the individual block groups within the project area range from zero to 78 percent. Of the 36,110 persons within all of the block groups, approximately 19.6 percent of the population (7,063 persons) speak English less than "very well." Of this LEP population, the predominant language spoken is Spanish (approximately 99.1 percent). Other representative languages include 0.3 percent Indo European languages, 0.2 percent Asian/Pacific Islander, and 0.4 percent other languages. LEP persons were identified within the block groups throughout the majority of the project corridor, although higher percentages of LEP persons are concentrated in the West Dallas - East of Hampton, West Dallas - West of Hampton, North Oak Cliff, and East Oak Cliff neighborhood districts, as well as the La Bajada/La L'aceate and Lake Cliff HOA neighborhoods (see **FEIS Plate 3-10**). Additional information regarding the analysis of the residents within the project area with LEP is presented in **FEIS Chapter 4** (see **FEIS Section 4.3.2**).

3.1.6 Community Cohesion

Communities within the Trinity Parkway project area are characterized by varying degrees of cohesion. The FHWA defines community cohesion as patterns of behavior that individuals or groups of individuals hold in common. Residential subdivisions may develop a sense of community cohesion through social interaction or participation in neighborhood organizations. For instance, if a local church or school provides a location where residents of the community can assemble and associate with one another, or if a neighborhood association or neighborhood watch program is in place to serve the community and satisfy the residents' economic and social needs, then some sense of cohesion likely exists. Transportation and land use planning decisions can affect community cohesion by influencing the location of activities and the quality of the "public realm" (i.e., places where people naturally interact, such as sidewalks, local parks, and public transportation), and therefore affect the ease with which neighbors meet and build positive relationships (Litman, 2007). Cohesion may also be based on a common characteristic of interest shared by the members of the community, such as religion, ethnicity, or income level (FHWA, 1996a). Typically, cohesive communities have several generations of families, extended families, and strong informal (non-governmental) social support networks which can provide childcare, emergency assistance, and spiritual guidance, among many other possibilities. The discussion below describes the various neighborhood districts and neighborhoods where measurable impacts to community cohesion are likely to occur.

The project area includes many different neighborhood districts, which are shown on **FEIS Plate 3-10** at the end of this chapter. The neighborhood districts extending within the project area include the following:

- Middle Stemmons/Brookhollow;
- Lower Stemmons;
- Cedars/Fair Park/East Dallas;
- South Dallas;
- Magna Vista/Cedar Crest;
- East Oak Cliff;
- North Oak Cliff;
- West Dallas - East of Hampton; and
- West Dallas - West of Hampton.

A summary of the demographic characteristics associated with each neighborhood district of the project area is presented in **Table 3-9**. The primary source of demographic data was the 2007-2011 ACS because it is the most comprehensive, complete, and detailed data source currently available. Census block-group level statistics on housing characteristics, racial/ethnic composition, income level, and related information were obtained for each of the project area neighborhood districts that would be potentially affected by the Trinity Parkway. It should be noted that many of the neighborhood districts extend beyond project area boundaries.

TABLE 3-9. NEIGHBORHOOD DISTRICT SOCIAL CHARACTERISTICS

Location [1]	Households				Population				
	Percent Owner/ Renter Occupied	Median Value of Owner-Occupied Housing Units	Median Contract Rent [2]	Median Household Income [3]	Percent White	Percent Racial Minority [4]	Percent Ethnic Minority [5]	Total Percent Minority [6]	Percent Elderly [7]
Middle Stemmons/Brookhollow ND	28.7/71.3	$103,833	$912	$52,186	19.2	27.2	53.6	80.8	4.3
Lower Stemmons ND	27.0/73.0	$79,200	$933	$46,178	30.8	48.7	20.5	69.2	3.6
Cedars/Fair Park/East Dallas ND	24.1/75.9	$99,800	$740	$46,995	16.4	55.9	27.7	83.6	9.2
South Dallas ND	36.1/64.0	$53,440	$656	$24,324	2.6	81.5	15.9	97.4	15.8
West Dallas - West of Hampton ND	53.6/46.4	$73,775	$616	$38,474	2.1	32.6	65.3	97.9	7.0
West Dallas - East of Hampton ND	59.6/40.4	$65,700	$736	$31,039	2.7	22.5	74.9	97.4	6.1
North Oak Cliff ND	45.4/54.6	$126,946	$704	$64,557	20.0	7.5	72.6	80.1	7.2
East Oak Cliff ND	52.4/47.6	$66,860	$690	$32,169	2.4	48.3	49.3	97.6	11.4
Magna Vista/Cedar Crest ND	53.6/46.4	$66,860	$690	$31,501	1.8	70.0	28.3	98.3	13.4
City of Dallas	45.2/54.8	$129,600	$811	$62,463	28.2	28.8	42.4	71.2	8.8

Source: U.S. Census Bureau, 2011c.

Abbreviations used in Table: ND = Neighborhood district (boundaries do not correspond exactly with census tracts or block groups. A rough correlation has been established so that census data can be used to provide a general description of population, income, and housing characteristics).

Notes:

1. Census tracts/block groups are shown on **FEIS Plate 3-9** and neighborhoods/districts are shown on **FEIS Plate 3-10** at the end of **Chapter 3**.
2. Median contract rent is the monthly rent agreed to or contracted for, regardless of any furnishings, utilities, fees, meals, or services that may be included.
3. Income figures are at the census tract level. For neighborhoods/districts containing more than one census tract, the median of the tracts was reported.
4. Total of persons reporting in non-White racial categories, including Black or African American, American Indian, Asian, Native Hawaiian and other Pacific Islander, some other race, or two or more races.
5. Total of persons reporting as Hispanic or Latino ethnic origin. As race and ethnic origin are two separate and distinct concepts, these persons may be of any race.
6. Percent total minority population = percent racial minority + percent ethnic minority.
7. 65-years of age or older.

The majority of these neighborhood districts encompass all, or portions of, several distinct residential neighborhoods. Some districts also contain residential areas lacking distinct boundaries or identities. The project area neighborhood districts are discussed briefly below, and their inclusive neighborhoods are also identified (see **FEIS Plate 3-10** for neighborhood locations).

Middle Stemmons/Brookhollow Neighborhood District

This district is located on the north section of the project area east of the Dallas Floodway. It is bounded to the west by the Dallas Floodway east levee and to the south by the Lower Stemmons neighborhood district. The remaining portion to the north and east extends beyond the project area limits. It is predominantly commercial/light-industrial in character. One single-family residential area is located adjacent to the east of the IH-35E/SH-183 interchanges in the vicinity of Record Crossing and the old Elm Fork river channel. Portions of the Trinity Industrial District and Brookhollow Industrial Park are included within this section of the larger district.

As shown in **Table 3-9**, approximately 28.7 percent of the residences in this neighborhood district are owner-occupied and approximately 71.3 percent are renter-occupied. The median value of homes is $103,833 and the median contract rent is $912. The median household income is $52,186. This neighborhood district has an 80.8 percent concentration of minority residents, and the percentage of residents over the age of 65 is 4.3 percent.

Lower Stemmons Neighborhood District

This district is located on the east-central section of the project area between IH-35E and the Dallas Floodway. It is predominantly commercial/light-industrial in character. The Design District and Market/Technology Center are included within the larger district. These major business centers include a large concentration of market-support businesses (e.g., photography studios, design professionals, display designers) and market-related businesses (e.g., furniture dealers, antique dealers, interior decorators).

As shown in **Table 3-9**, the percentage of owner-occupied residences in the Lower Stemmons neighborhood district is approximately 27 percent and the percentage of renter-occupied residences is approximately 73 percent. The median value of homes is $79,200. The median contract rent is $933; the highest contract rent of the project area's neighborhood districts. Median household income is $46,178. Lower Stemmons has the highest percentage of White alone population at 30.8 percent for the project area's neighborhood districts, and the percent minority population is 69.2 percent. The percentage of elderly residents is 3.6 percent.

Cedars/Fair Park/East Dallas Neighborhood District

This district is located in South Dallas on the southeast section of the project area, adjacent to the south of the Dallas CBD. It is bounded to the west by the Dallas Floodway and to the east by MLK, Jr. Boulevard. The remaining areas to the east extend beyond the project area limits. It is predominantly urban residential in character with commercial/light-industrial facilities along Industrial Boulevard, Lamar Street, and IH-45. The majority of residential properties are located

between Lamar Street and IH-45. The Cedars neighborhood and a portion of the South Dallas Home Owners Association (HOA) are included within this section of the larger district.

Due to the prevalence of multi-family housing, the district has the highest renter-occupied percentage in the project area at 75.9 percent, as shown in **Table 3-9**. The owner-occupancy percentage is approximately 24.1 percent. Median house value is $99,800 and median contract rent is $740. Median household income is $46,995. The percent minority population within the neighborhood district is approximately 83.6 percent, and the percentage of elderly residents is 9.2 percent.

South Dallas Neighborhood District

This district is located in South Dallas on the southeast section of the project area. It is bounded to the south by Rochester Park and to the west by MLK, Jr. Boulevard and the Missouri Kansas and Topeka (MKT) Railroad. The remaining areas to the north and east extend beyond the project area limits. It is predominantly residential in character with commercial/light-industrial facilities along Lamar Street, IH-45, and near the US-175/SH-310 interchange. The majority of single-family homes are between Lamar Street and SH-310, and to the north and south of US-175. Portions of the South Dallas HOA, Rochester Park, and Ideal neighborhoods are included within this section of the larger district. The South Dallas HOA neighborhood encompasses the majority of the district. The Rochester Park neighborhood is located southeast of the US-175/SH-310 interchange and consists primarily of single-family homes. The Ideal neighborhood is located northeast of the US-175/SH-310 interchange and also consists primarily of single-family homes.

As shown in **Table 3-9**, the percentage of owner-occupied housing in South Dallas is approximately 36.1 percent. Approximately 64.0 percent is renter-occupied and the median contract rent is $656. The median house value ($53,440) and median income ($24,324) are the lowest of the project area's neighborhood districts. The percent minority population is approximately 97.4 percent, and it has the highest percentage of elderly residents within the project area's neighborhood districts at 15.8 percent.

West Dallas - West of Hampton Neighborhood District

This district is located in West Dallas on the west section of the project area. It is bounded to the north by the Dallas Floodway and to the east by Hampton/Inwood Road. The remaining areas to the south and west extend beyond the project area limits. It is predominantly residential in character with retail/commercial and light-industrial facilities located along Westmoreland Road, Singleton Boulevard, and other major/minor arterials throughout the district. This district includes

portions of the West Dallas HOA, a large neighborhood area located in both the East and West of Hampton neighborhood districts.

As shown in **Table 3-9**, the percentage of owner-occupied housing is 53.6 percent and the percentage of renter-occupied housing is 46.4 percent. The median house value is $73,775. The median contract rent ($616) is the lowest in the project area's neighborhood districts. The median household income is $38,474. This neighborhood district has the second highest percent minority population of all the project area's neighborhood districts at 97.9 percent; and 7percent of residents are over 65 years old.

West Dallas - East of Hampton Neighborhood District

This district is located in West Dallas on the west section of the project area. It is bounded to the north by the Dallas Floodway, to the east by Beckley Avenue, and to the west by Hampton/Inwood Road. The remaining portions to the south extend beyond the project area limits. It is predominantly residential in character with retail/commercial and light-industrial facilities located along Wycliff/Sylvan Avenue, Canada Drive, Singleton Boulevard, Commerce Street, and other major/minor arterials throughout the district. Portions of the West Dallas HOA and La Bajada neighborhoods are included within this section of the larger district. La Bajada is located on the east section of the district between Wycliff/Sylvan Avenue and Beckley Avenue. The Dallas West Mobile Home Park is located near the center of this neighborhood along Commerce Street.

As shown in **Table 3-9**, the neighborhood district's percentage of owner-occupied housing is 59.6 percent, which is the highest percentage of the project area's neighborhood districts; and in turn, the percentage of renter-occupied housing is 40.4 percent, which is the lowest percentage of the project area's neighborhood districts. The median house value, median contract rent, and median household income are $65,700, $736, and $31,039, respectively. The percent minority population is approximately 97.4 percent, which includes the highest percentage of persons reporting as Hispanic or Latino ethnic origin (74.9 percent). The percentage of elderly residents is 6.1 percent.

North Oak Cliff Neighborhood District

This district is located in Oak Cliff on the west-central section of the project area. It is bounded to the north by IH-30 and the Dallas Floodway and to the east by IH-35E. The remaining portions to the south and west extend beyond the project area limits. It is predominantly residential in character with retail/commercial facilities along IH-35E, IH-30, Beckley Avenue, and other major/minor arterials throughout the district. Portions of the Lake Cliff HOA and Kessler Park

neighborhoods are included within this section of the larger district. The Lake Cliff HOA is located between Beckley Avenue and IH-35E. Kessler Park is located between Beckley Avenue and IH-30.

The North Oak Cliff neighborhood district is the most affluent district in the project area. As shown in **Table 3-9**, the percentage of owner-occupied housing is 45.4 percent and the percentage of renter-occupied housing is 54.6 percent. The median house value of $126,946 is the highest of the project area's neighborhood districts. The median rent price in this neighborhood district is $704. The median household income ($64,557) is the highest of the neighborhood districts within the project area. The percent minority population is approximately 80.1 percent, of which approximately 72.6 percent are persons reporting as having Hispanic or Latino ethnic origin. The percentage of elderly residents is 7.2 percent.

East Oak Cliff Neighborhood District

This district is located in Oak Cliff on the southwest section of the project area. It is bounded to the north by the Dallas Floodway, to the east by MLK, Jr. Boulevard, and to the west by IH-35E. The remaining portions to the south extend beyond the project area limits. There is no identifiable neighborhood within this portion of the district. It is predominantly residential in character with retail/commercial and light-industrial facilities along IH-35E, Corinth Street, MLK, Jr. Boulevard, and other major/minor arterials throughout the district.

As shown in **Table 3-9**, approximately 52 percent of the homes in the East Oak Cliff neighborhood district are owner-occupied and approximately 48 percent are renter-occupied. The neighborhood district's median house value is $59,650 and the median contract rent value is $717. The median household income is $32,169. The percent minority population is approximately 97.6 percent and the percentage of residents over 65 is 11.4 percent.

Magna Vista/Cedar Crest Neighborhood District

This district is located in South Dallas on the south section of the project area. It is bounded to the north by MLK, Jr. Boulevard and the Trinity River and to the east by IH-45. The remaining portions to the south and west extend beyond the project area limits. A portion of the Cadillac Heights neighborhoods is included within the larger district. It is predominantly residential in character with retail/commercial facilities along MLK, Jr. Boulevard and other major/minor arterials throughout the district. The Dallas CWWTP is located on the eastern section of the district.

As shown in **Table 3-9**, the neighborhood district's percentage of owner-occupied housing is 53.6 percent and the percentage of renter-occupied housing is 46.4 percent. The median house value is $66,860 and the median renter value is $690. The median household income is $31,501. This neighborhood district has the highest percent minority population of all the project area's neighborhood districts at 98.3 percent; and 13.4 percent of residents are over 65 years old.

3.1.7 Local Land Use Plans/Policies

This section discusses the local land use plans and policies that influence the intensity, timing, and character of development affecting various aspects of the human environment, such as land use, socio-economic conditions, and the community cohesion of local neighborhoods/districts. A thorough understanding of these plans and mechanisms is necessary for the analysis of a transportation project's potential effect on the human environment.

The city has sponsored numerous studies for potential projects along the Dallas Floodway and the Trinity River Corridor in southern Dallas. In 1992, the Dallas City Council initiated *The Dallas Plan* to help establish a long-range planning policy for the city. *The Dallas Plan* identified the Trinity River Corridor as a core asset to the City of Dallas. In 1994, the City Council adopted general goals and policies for the Trinity River Corridor as one of six citywide strategic initiatives presented by *The Dallas Plan* (City of Dallas, 1994).

In late 1994, the Honorable Ron Kirk, former Mayor of Dallas, appointed two co-chairs to oversee a citizens' committee - the Trinity River Corridor Citizens Committee (TRCCC) - that would define specific goals and objectives for the Trinity River Corridor. In May 1996, the City Council adopted a TRCCC report from the 400-member committee that contained specific goals and objectives relating to flood control, transportation, recreation, economic development, and environmental restoration along the Trinity River Corridor. As a result, the City of Dallas has continued to promote the policy of multi-objective management (i.e., multiple uses that can occur within the floodplain) of the Dallas Floodway and the lower Trinity River Corridor.

The *Great Trinity Forest Master Plan* (TPWD, 1997) identified several specific initiatives for environmental restoration and recreation along the Trinity River Corridor. It proposed an overall plan to improve recreational access to this part of the Trinity River Corridor and to manage its environmental resources. The plan was completed for TPWD and adopted by Dallas City Council in March 1997. In September 1997, the Dallas City Council adopted TxDOT's *Trinity Parkway Corridor* MTIS (TxDOT, 1998a).

Subsequently, the aforementioned plans and studies led to a comprehensive Trinity River Corridor Bond Program that was approved by Dallas residents in May 1998 (City of Dallas, 1998a). The major initiatives for the Bond Program are listed below:

- Build the DFE;
- Create the Trinity Downtown Lakes;
- Build the Woodall Rodgers Freeway Extension;
- Redesign the Canyon/Mixmaster/Lower Stemmons;
- Develop, design, and build Trinity Trails;
- Develop the Great Trinity Forest;
- Construct the Elm Fork Levee; and
- Develop the Trinity Parkway (proposed action).

Table 3-10 presents additional studies and programs representing the diversity of planning efforts that have occurred over the last several years in the Trinity River Corridor. These studies and programs have tried to revitalize the area with renewed recreation, economic development, flood control, environmental restoration, and transportation improvements.

TABLE 3-10. LAND USE PLANS/PROGRAMS ASSOCIATED WITH THE TRINITY RIVER CORRIDOR

STUDY / PROGRAM	DESCRIPTION / KEY THEMES
Oak Cliff Gateway TIF District (City of Dallas, 1992a)	Created to improve the major entry into Oak Cliff from downtown Dallas and to support economic development and neighborhood revitalization.
The Cedars TIF District (City of Dallas, 1992b)	Created to promote development by utilizing public investments to attract private investment.
Oak Cliff Gateway TIF District (City of Dallas, 1997b)	Created to develop an attractive gateway between downtown Dallas and Kessler Park; term of the District has been extended an additional 10 years to increase the benefits for the Oak Cliff area. The City of Dallas expects the area to retain its distinctive historical character while providing places for people to work, live and shop.
West Dallas Comprehensive Land Use Study (City of Dallas, 1998b)	Provided an inventory of all West Dallas land uses/zoning and discussed strategic options to influence the positive redevelopment and stability of the area.
10th Street Land Use Study (City of Dallas, 1999b)	Provided strategies to revitalize and redevelop the neighborhoods in the project area (northern portion of this district located in the Trinity River Corridor).
Trinity River Corridor Master Implementation Plan MIP), Lake Design and Recreational Amenities Report (City of Dallas, 1999a)	Developed to coordinate the various parks, lake, and other recreational improvements within the Trinity River Corridor.

TABLE 3-10. LAND USE PLANS/PROGRAMS ASSOCIATED WITH THE TRINITY RIVER CORRIDOR

STUDY / PROGRAM	DESCRIPTION / KEY THEMES
A Renaissance Plan for Dallas Parks and Recreation in the 21st Century (City of Dallas, 2002)	Purpose was to develop an "innovative, interactive, creative, environmentally sensitive, and state-of-the-art" long-range development plan for the Dallas Park and Recreation Department (PARD) for 2012 to 2022.
A Balanced Vision Plan for the Trinity River Corridor (City of Dallas, 2003a)	Amended the MIP and focused on the "Trinity River Corridor" which includes the Dallas Floodway and adjacent residential and commercial/industrial areas, extending approximately 1 mile on either side of the Dallas Floodway. Initiated to take a new look at the possibilities for the future of the Trinity River Corridor. Recommends an urban design vision offering an appropriate balance among flood protection, environmental restoration, and management; parks and recreation transportation; and community and economic development (encourages new large-scale development at locations with enhanced access to recreation and transportation). The goal is for such public investments to lead to revitalization and redevelopment that support existing communities and create new business and mixed use areas.
Trinity River Corridor Comprehensive Land Use Plan (CLUP) - Final Report (City of Dallas, 2005a)	Adopted by the Dallas City Council in March 2005. Purpose is to guide coordinated infrastructure improvements, land use development, and economic development within the Trinity River Corridor. Presents seven planning districts and 23 land use opportunity areas within the Trinity River Corridor.
Design District TIF District (City of Dallas, 2005b)	Created to provide a source of funding for public infrastructure improvements that would assist in redeveloping the industrial/warehouse district into a pedestrian friendly, mixed-use neighborhood. District would create opportunities to take advantage of the expanding DART light rail system and promote TOD, and also improve access to the Trinity River.
Lake Configuration and Water Quality Study for the Dallas Floodway (City of Dallas, 2006a)	Initiated to analyze water quality of the Trinity River and reevaluate alternative lake configurations within the Dallas Floodway. Study performed to aid the Dallas City Council in evaluating lake design features in relation to other ongoing studies related to land use, transportation, and flood control plans. Work product included hydraulic modeling for the Dallas Floodway, water quality modeling for the river segment, water quality modeling of the off-channel lakes with respect to algae and dissolved oxygen.
Forward Dallas! Let's Build our Future (City of Dallas, 2006b)	City of Dallas comprehensive plan to guide growth and development. Plan outlines a long-range vision for the city that focuses on land use, transportation and mobility, and economic development. Related to the Trinity Parkway Corridor, the comprehensive plan incorporates many elements of the previously cited studies *Trinity River Corridor Comprehensive Land Use Plan* and *A Balanced Vision Plan for the Trinity River Corridor*.
Fort Worth Avenue TIF District (City of Dallas, 2008a)	Created to aid in the development/redevelopment of properties in the Fort Worth Avenue area, with the vision of creating an area that would be comprised of a sustainable mix of rental and for-sale residences. Represents the city's efforts to create a guide for redeveloping urban corridors to take full advantage of the Trinity River project, as well as the Santiago Calatrava bridges and undeveloped/underdeveloped land near downtown Dallas.

TABLE 3-10. LAND USE PLANS/PROGRAMS ASSOCIATED WITH THE TRINITY RIVER CORRIDOR

STUDY / PROGRAM	DESCRIPTION / KEY THEMES
Dallas Trail Network Plan (City of Dallas Park and Recreation Department, 2008b)	Created in response to the recommendation for a citywide regional trail network per the study *A Renaissance Plan for Dallas Parks and Recreation in the 21st Century* (discussed previously). Serves as a guide in decision making for trail development in Dallas. County- and region-wide trail plans were utilized to create a preliminary network of trails to be studied further and that would connect to existing trails in the city. Plan includes summary sheets for proposed and existing trails with trail names, descriptions, dimensions, and an aerial map showing existing and proposed facilities. Several trails are located within the project area including the Trinity Trail, Trinity Levee Trail, and Trinity Strand Trail.
Trinity River Corridor Comprehensive Land Use Plan. Trinity Corridor District Plans Study Area 14: **Oak Cliff Gateway** (City of Dallas, 2009)	Land Use Opportunity Plan for the Oak Cliff Gateway; envisions a walkable, mixed-use community surrounding a core residential area around Lake Cliff Park.
Transit Oriented Development (TOD) TIF District (City of Dallas, 2010)	Created to improve access/connections between area amenities (e.g., Trinity River and DART light rail stations). Includes the sub-district Cedars West, which is south of the existing Cedars TIF District and Cedars DART Station. According to the *TOD TIF District Project Plan*, redevelopment of this area as part of the Trinity River Corridor is a high priority, as is providing a connection to the Cedars DART Station.
2011 Dallas Bike Plan (City of Dallas, 2011a)	Updated the 1985 Dallas Bike Plan. Provides a master plan and enactment strategy for the Dallas Bikeway System, which will be created from select on- and off-street facilities. Mission is "To improve the safety, use and efficiency of the bicycle in the City of Dallas; and to better integrate the bicycle mode within the City and regional transportation system". Major goal includes the creation of a fully interconnected and safe bikeway system that connects to all areas of Dallas and adjacent jurisdictions. An objective to meet this goal is to address bicycling barriers, such as the Trinity River, major highways, and railroad tracks. The Trinity Corridor Levee-Top Pathway/Regional Veloweb Bicycle Highway is identified in the plan as a regionally significant and signature facility. This facility would be in line with and add to what is identified in the *Dallas Trail Network Plan* and *A Balanced Vision Plan for the Trinity River Corridor.*
Downtown Dallas 360 (City of Dallas, 2011b)	Purpose includes the creation of a shared vision for downtown Dallas' future and providing strategic implementation actions for achieving that vision. Main objectives are to provide guidance to overcome barriers (e.g., freeways, railroad tracks, frontage roads), strengthening connections between destinations and districts by enhancing transportation networks (e.g., rail, bicycle/pedestrian, vehicular), and enhance the character and identity of the many districts that comprise the greater downtown Dallas area. Although a toll road within the Trinity River Corridor is identified as a potential barrier, the need and development of creative ways to "break through" such barriers is discussed.

In summary, the goals and objectives of the plans/programs presented in **Table 3-10** are generally focused on the following common themes: (1) the compatibility of land uses and (2) the overall improvement of access and connections of the public to the Dallas Floodway and its planned amenities. City plans generally focus on the balanced development and redevelopment of areas located outside the Dallas Floodway, including, for example, the transition of the Design District from a primarily industrial/warehouse area to a pedestrian friendly and unique mixed-use neighborhood. Additionally, many of the plans and programs focus on the design vision for the Dallas Floodway itself, balancing its use for recreational, flood protection, and other urban design purposes (e.g., transportation), all the while ensuring that public access to such amenities is provided and protected. These common themes were reiterated by City of Dallas planners who accentuated the City's commitment to the aforementioned redevelopment of the Design District, as well as the strong commitment to provide connections and improved access for the public to the green spaces and associated recreational opportunities planned for the Dallas Floodway (City of Dallas, 2012j).

In addition, some of the major planning objectives for the city (or portions thereof), such as the BVP, as well as other planned projects previously discussed in **FEIS Chapter 1** (e.g., DFE and the Dallas Floodway Improvement Project), although independent, may be subject to coordinated planning and design along with the proposed Trinity Parkway. This is primarily due to the timing and geographic proximity of these plans and projects. This coordinated planning and design is discussed in **FEIS Section 1.6.1.2**.

3.2 TRANSPORTATION SETTING

This section describes the existing transportation setting within the project area. This includes a description of the existing transportation infrastructure, as well as important traffic generators that affect both the local and regional transportation system. Additional details were presented earlier in **FEIS Sections 1.2 through 1.5**.

3.2.1 Roads and Highways

The existing roadway system within and adjacent to the project area includes seven major freeways and a network of arterial roads and local streets. The principal freeways within the project area are IH-35E (Lower Stemmons Freeway and South R.L. Thornton Freeway) and IH-30. Other important highway facilities include IH-45 (Julius Schepps Freeway), SH-183 (John W. Carpenter Freeway), Spur 366 (Woodall Rodgers Freeway), US-175 (SM Wright Freeway/C.F. Hawn Freeway), SH-310 (Central Expressway), and the DNT[. Major interchanges are located at

IH-35E/SH-183, IH-35E/DNT, IH-35E/Spur 366, IH-35E/IH-30, and US-175/SH-310. As shown on **FEIS Plate 3-11**, this network of freeways and interchanges are a part of a system of highways that radiate from the freeway loop around downtown Dallas.

IH-35E STEMMONS FREEWAY

IH-35E is the major north-south corridor through the City of Dallas, connecting to densely populated suburban communities both north and south of the city. Major freeway interchanges associated with IH-35E occur at SH-183, the DNT, Spur 366, and IH-30. IH-35E provides direct north-south access to the Dallas CBD and other major population and employment centers located within and/or adjacent to the project area. These include the Stemmons Industrial District, the West End Historic District, and neighborhood communities in south and west Dallas.

In addition to serving the City of Dallas, IH-35E is also a nationally important Interstate Highway. IH-35E merges with IH-35W both north and south of the DFW metropolitan area to form a continuous IH-35 Corridor. It is the major north-south Interstate linking Texas to other states in the central U.S. and beyond. Due to NAFTA, IH-35 also serves as a freight transportation corridor, linking the U.S. with Mexico and Canada. The ability of IH-35 to fulfill its international, national, and statewide function is vital to the economy of the DFW metropolitan area as well as the State of Texas.

The major east-west highway in the project area is IH-30. The only major freeway interchange with IH-30 in the project area occurs at IH-35E (Mixmaster). IH-30 provides direct east-west access to the Dallas CBD and other major population and employment centers located within and/or adjacent to the project area. IH-30 serves as a connecting link to the cities of Arlington, Grand Prairie, and Fort Worth to the west, and neighborhoods and communities to the east, as well as other towns/cities east of the Dallas city limits.

IH-30 is also an important Interstate Highway and is the major east-west facility linking the DFW metropolitan area to the eastern and western U.S. Similar to IH-35, IH-30 also acts as a freight corridor for NAFTA-related truck traffic and serves an important role in the local, statewide, and national economies.

3.2.2 Public Transportation

DART LIGHT RAIL

A major network of DART bus routes, light-rail transit (LRT) and commuter rail, and Amtrak rail lines serves the project area. These are shown on **FEIS Plate 3-12**. DART provides bus, rail, on-call (shared-ride van service), paratransit (van service for the disabled), vanpool/carpool services, and also helps manage the HOV system in the Dallas area. Like most U.S. transit systems, most of DART's service is oriented toward a downtown regional hub. Overall, approximately 88 percent of DART's bus riders and 100 percent of DART's rail riders use routes that are oriented to downtown.

Currently, DART serves Dallas and 12 surrounding cities with more than 161 bus routes, 77 miles of LRT, 75 freeway miles of HOV lanes, 8 freeway miles of interim HOV lanes, and paratransit service for the mobility impaired. DART and the Fort Worth Transportation Authority (the T) jointly operate 34 miles of commuter rail transit (the Trinity Railway Express (TRE)), linking downtown Dallas and Fort Worth with stops in the mid-cities and DFW International Airport.

In 2011, annual system-wide (bus, rail, HOV, paratransit, on-call, and vanpool/carpool services combined) ridership was 111.8 million passenger trips; an increase of 1.5 percent from 2010 (110.1 million). Ridership for the light-rail system was approximately 22.3 million in 2012; an increase of 25.3 percent from 2010 (17.5 million) (DART, 2012).

Through 2019, the DART rail system is slated to increase 20.8 percent in size to 93 miles. Extensions currently in development include plans for the extension of the Blue Line and Orange Line Corridors. A 2.7-mile extension of the Blue Line from Ledbetter Station to the University of North Texas (UNT)-Dallas is scheduled to open in December 2019. The opening date for the 5-mile extension of the Orange Line from the Belt Line Station to Dallas/Fort Worth International Airport is December 2014. DART's transit system plan also includes expanding to 110 miles of HOV lanes.

Amtrak operates passenger rail service to the Dallas Union Station located in downtown Dallas. This service connects Dallas to other destinations nationwide. The *Texas Eagle* connects Dallas to points between San Antonio, Austin, and Fort Worth, Texas; St. Louis, Missouri; and Chicago, Illinois; providing twice a day service. In addition, Amtrak passengers may connect to the *Heartland Flyer* train in Fort Worth and the *Sunset Limited* train in San Antonio or Houston via bus service from Dallas.

In October 2000, the USDOT announced the designation of a new high-speed passenger rail corridor, the "South-Central Corridor." This new corridor would have DFW as its hub and may serve destinations in Oklahoma, Arkansas, and Texas. This designation was made pursuant to Section 1103(c) of TEA-21 and brings the total number of high-speed rail corridors in the U.S. to 10. The designations apply to corridor regions and not to specific routes; in some cases there are two or more existing routes. The designations are intended to provide flexibility to each region before key stakeholders make planning and financing commitments. The Federal Railroad Administration (FRA) awarded High-Speed Intercity Passenger Rail funds for the preliminary engineering and NEPA of the Dallas – Fort Worth to Houston Core Express service in May 2011. In 2012, TxDOT initiated an analysis of the statewide railroad network, which will support TxDOT's plan to connect the state's population centers on designated freight, intercity passenger, and high-speed rail corridors (TxDOT, 2012).

3.2.3 Passenger Airports

The majority of airline passengers in the DFW metropolitan area use two primary airport facilities: DFW International Airport and Dallas Love Field. Combined, these airports provide service by eight international and 19 domestic airlines, including DFW-based American Airlines and Dallas Love Field-based Southwest Airlines. Due to their central location in the southern U.S., flight time to any major city in the continental U.S. takes 4 hours or less. In addition, the DFW metropolitan area has a major industrial airport, Fort Worth Alliance Airport, as well as 12 reliever airports.

3.2.3.1 DFW International Airport

DFW International Airport is located approximately 11 miles west-northwest of downtown Dallas. Within the project area, the majority of traffic traveling to and from this airport uses IH-35E, which connects to SH-183 at the north terminus of the project area. DFW is the world's fourth busiest airport, handling almost 650,000 operations (takeoffs and landings) in 2011 and serving over 60 million passengers. Each day, DFW's seven runways handle an estimated 1,750 departures and arrivals with flights to over 191 domestic and international destinations (DFW International Airport,

2012). An eighth runway is planned for the near future as DFW prepares for future growth and the use of new, larger transcontinental aircraft. Known as the "engine" that drives the north Texas economy, DFW International Airport contributes approximately $16.6 billion annually to the DFW area. Businesses in the DFW area employ nearly 305,000 people because of jobs created directly or indirectly by the airport (DFW International Airport, 2012b). The airport completed a $2.7 billion capital development program in 2005. This included a Skylink airport train providing quick service between all terminals and a fifth terminal for international travelers.

3.2.3.2 Love Field Airport

Owned and operated by the City of Dallas, Love Field Airport is a central hub for regional business and commuter travel. This airport is located approximately 5 miles northwest of downtown Dallas and approximately 2 miles from the IH-35E/SH-183 interchange at the north terminus of the project area. The majority of traffic traveling through the project area to and from Love Field use IH-35E. To access Love Field from IH-35E, motorists use either the DNT or Mockingbird Lane. In 2011, over 7 million passengers were served at Love Field. The airport has approximately 20 operational gates and conducts an average of 491 aircraft operations each day. In 2006, Love Field directly or indirectly created more than 24,000 jobs in the area and had an annual economic impact in excess of $2.0 billion to the Dallas economy. The airport is undergoing a $519 million renovation, including a centralized terminal with 20 gates, a new lobby, and an expanded baggage claim area. Flight restrictions imposed by the Wright Amendment, which currently limit nonstop service on mainline jets to destinations in Texas and nearby states, will be lifted in 2014, allowing domestic long-haul service on any aircraft (Dallas Love Field, 2012).

3.2.4 Movement of Freight

The movement of goods and products is extremely important to the economic vitality of the region. North central Texas has one of the most extensive surface and air transportation networks in the world, providing extensive trade opportunities for the more than 600 motor/trucking carriers and almost 100 freight forwarders that operate out of the DFW area. The following sections describe the methods used to transport freight through the project area.

3.2.4.1 Trucking

The primary roadway facilities for truck movements include major highways/freeways and major/minor arterial facilities throughout the project area. The regional movement of trucking is

concentrated on IH-35 (IH-35E and IH-35W), IH-30, IH-45, and US-75. The IH-35 Corridor was identified in ISTEA as Corridor 23, which designates IH-35 as a national high- priority trade route. Currently, the IH-35 Corridor carries approximately 32 percent of all NAFTA-related traffic in relation to other major trade corridors in the state. Referred to as the NAFTA "Superhighway," this major north-south route also serves both the Dallas and Fort Worth CBDs. Ninety-eight percent of the U.S. population can be reached from the DFW region within 48 hours by truck (DFW International Airport, 2012).

The transportation of hazardous materials is controlled by ordinances adopted by the City of Dallas. The City of Dallas Ordinance on the Transportation of Hazardous Materials specifically identifies the following "Prohibited Hazardous Material Areas":

- IH-30 from IH-35E to Oakland Avenue;
- IH-45 from Lamar Street to US-75 elevated bypass;
- US-75 elevated bypass from IH-45 to Bryan Street;
- Woodall Rodgers Freeway; and
- Underground tunnel systems.

3.2.4.2 Freight Railroads

The DFW region is home to a national rail crossroads. Four major active freight railroad corridors are located within the project area. Several railroad companies own or control these ROWs and others operate trains on these tracks, including the Union Pacific (UP) Railroad Company; BNSF Railway Company; Dallas Garland, and Northeastern Railroad, Inc. (DGNO); DART; and Amtrak. The following is a summary of these major/minor active freight rail corridors:

- DART owns the railroad ROW on the northwest portion of the project area between the IH-35E/SH-183 interchange and Commonwealth Drive. This railroad corridor travels east-west and is used by BNSF and UP for freight train operations and by DART for the TRE commuter train service. Switching movements occur at a rail yard located adjacent to the west of the project area.
- UP owns the railroad ROW on the central portion of the project area. This railroad bridge crosses the Trinity River between Continental Avenue and Commerce Street. This railroad corridor is used by DGNO and UP to operate freight trains and by Amtrak. A UP-owned spur track splits from the main railroad near the Dallas Floodway east levee. The spur runs parallel with the levee and was used to access former spur tracks within the

Stemmons Industrial District. Currently, the spur is used by DGNO on a limited basis to serve one rail customer, Cargill.

- BNSF owns the railroad ROW on the southeast portion of the project area. This railroad bridge crosses the Trinity River between MLK, Jr. Boulevard and IH-45. This railroad corridor is used exclusively for freight transport by BNSF and UP. It merges with a UP-owned railroad ROW near the intersection of Lamar Street and MLK. It must be noted that the BNSF Rail Corridor is known locally as the "MKT Railroad," and as a result, is cited as the MKT Railroad in this FEIS.
- UP also owns the railroad ROW on the southeast portion of the project area. This railroad corridor travels southeast-northwest and is used by UP, BNSF, DGNO, and Amtrak. Spur tracks along this corridor serve a limited number of rail customers, including Texas Industries (TXI), Big City Crushed Concrete, and Oxychem. Switching movements occur along a large rail yard between the old AT&SF Rail Corridor and IH-30 near downtown Dallas.

DART owns additional railroad ROW in the southeast portion of the project area. In the early 1990s, DART acquired the former AT&SF Railroad ROW located at the southern end of the Dallas Floodway to build an LRT facility. The old AT&SF Railroad has been abandoned, the tracks removed, and the bridge structure across the Trinity River left in place. The old AT&SF bridge has been restored and incorporated as part of the Santa Fe Trestle Trail.

3.2.4.3 Intermodal Facilities

Intermodal transport involves more than one mode of transport (ocean vessel, rail, and truck) to move freight throughout the country (and between the U.S., Canada, and Mexico) without any handling of the freight itself when changing modes. Intermodal transport reduces cargo handling, improves security, reduces damages and loss, and allows freight to be transported faster and more efficiently. Goods are moved, transferred, and distributed to destinations across the U.S. and around the world via truck, rail, and air through the DFW region. The region is home to a variety of freight transportation facilities, which are strategically located to take advantage of access to the region's transportation system. These facilities include the UP Dallas Intermodal Terminal in Wilmer, the UP Auto Facilities in Mesquite, and BNSF Railway's Intermodal and Carload Transportation Center at Alliance Airport, as well as air cargo terminals at airports and a variety of private freight operations that generate substantial truck traffic. In addition, the City of Dallas plans to develop an Agile Port Center, potentially located near IH-45 and IH-20 in close proximity to the UP Dallas Intermodal Terminal south of the project area, which would facilitate the transition of container movement among trucks, rail, and ships at high velocities. The Agile

Port Center would take advantage of the region's intermodal facilities, Interstate system, rail service, airports, and warehousing facilities by serving as an inland processing and distribution hub for inbound and outbound containers arriving through seaports such as the Port of Houston.

3.2.4.4 Air Cargo

Surface transportation in the project area is also influenced by freight rail and trucking movements to and from major air cargo facilities located in the DFW region. These major air cargo facilities include DFW International Airport, Dallas Love Field, and Alliance Airport, which provide air cargo service to many regional, national, and international destinations.

DFW International Airport is the focal point of one of the nation's largest intermodal hubs, connecting air, rail, and Interstate Highway systems. From this airport, shipping companies can link easily with rail, regional superhighways, and coastal water ports. DFW is one of the largest freight airports in the world, handling 652,655 tons of cargo (freight and mail) in 2011 (DFW International Airport, 2012). The airport is also host to a 2,500-acre foreign trade zone and has plans to expand the airfreight capability even further. In addition, the airport is within four hours flight time, or 48 hours by truck, from 98 percent of the U.S. population (DFW International Airport, 2012).

Dallas Love Field also maintains air cargo facilities and handles approximately 20,000 tons of domestic cargo per year. Alliance Airport, located north of the City of Fort Worth, is one of the largest commercial/industrial airports in the nation, providing airfreight service for manufacturing, warehousing, and distribution firms throughout the region.

3.2.5 Pedestrian and Bicycle Facilities

The USDOT's Policy Statement on Bicycle and Pedestrian Accommodation (March 2010) provides guidance on incorporating pedestrian and bicycling facilities into transportation projects. Policy guidance encourages local planning and incorporates design features to facilitate increased pedestrian and bicycle activity. The proposed project would incorporate bicycle and pedestrian improvements in the Trinity Parkway Project where geometrically feasible.

Pedestrian circulation facilities in the project area are part of the roadway facility cross-section. Specific pedestrian circulation elements have been developed by the City of Dallas. In June 2011, the City of Dallas revised the Greater Dallas Bike Plan and Maps. The bicycle routes are on-street routes with some separate provisions for bicycles and off-street facility routes. The

Dallas Bikeway System network recommendations consider the following facility types: on-street facility types consisting of bike lanes, cycle track or buffered bike lanes, shared lane markings, and a paved shoulder; and off-street facility types consist of sidewalks that permit bicycles and shared use paths. Non-motorized facility recommendations located at cross streets/roadways of the project area are presented in **Table 3-11**.

TABLE 3-11. CITY RECOMMENDATIONS FOR NON-MOTORIZED TRANSPORTATION

Location	Shared Use Path [1]	Bike Lane [2]	Cycle Track or Buffered Bike Lane [3]	Shared Lane Markings [4]	Paved Shoulder [5]	Sidewalk with Bicycles Permitted	Needs Further Analysis
Old Trinity River Channel	✓						
Dallas Floodway	✓				✓		
Regal Row							✓
Mockingbird Lane						✓	✓
Ambassador Row							✓
Canada Drive	✓		✓				
Hampton/Inwood Boulevard				✓		✓	✓
Sylvan Avenue			✓	✓			
Continental Avenue	✓		✓				✓
Commerce Avenue			✓				✓
Beckley Avenue			✓				
Riverfront Boulevard		✓	✓				✓
Houston Street Viaduct	✓		✓				✓
Jefferson Boulevard Viaduct		✓					✓
Future Margaret McDermott (IH-30) Bridge [6]	✓						
Corinth Street Viaduct		✓	✓				
Martin Luther King, Jr. Boulevard			✓	✓			
SH-310					✓		
Lamar Street			✓		✓		
Pine Street				✓			
Hatcher Street				✓			
Bexar Street				✓			✓

Source: City of Dallas, 2011a.

Notes:

1. Shared Use Path – A bikeway physically separated from motorized vehicular traffic by an open space or barrier and within highway or independent ROW; May be used by pedestrians/other non-motorized users.
2. Bike Lane – A portion of a roadway designated by pavement markings (and possibly signs) for the preferential or exclusive use of bicyclists.
3. Cycle Track or Buffered Bike Lane – Same as a bike lane (see note #2); and cycle tracks are typically one-way, may or may not be raised above the roadway, and are separated from the motor vehicle lane by a barrier or buffer.
4. Shared Lane Marking – A pavement-marking symbol that includes an appropriate bicycle positioning in a shared lane (open to bicycle travel and vehicular use).
5. Paved shoulder – Portion of roadway contiguous with the traveled way, often used by cyclists where paved.
6. Provides connection between Riverfront Boulevard (east side) and Beckley Avenue (west side). Current design is for north side for pedestrians only, south side for bicycles only.

Several local agencies and organizations remain in the process of developing an extensive network of bicycle/pedestrian trail facilities within and adjacent to the project area (i.e., the Regional Veloweb with planned links to the Katy Trail, Santa Fe Trestle Trail, Trinity Strand Trail, and Great Trinity Trail). These planned trails include biking for transportation as well as recreation (see **FEIS Section 3.3.2.3**). This new bicycle network is designed to create a fully interconnected, seamless, and safe Dallas Bikeway System that connects all areas of the city and adjacent jurisdictions.

3.2.6 Other Transportation Projects

Several transportation improvement projects separate from this study have been implemented, planned, or are currently being constructed in the project area. The regional transportation plans that identify and guide the implementation of such transportation improvements (i.e., the MTP and TIP) area described in **FEIS Section 1.6.1.1**. **Table 3-12** provides a summary of the key transportation projects in the project area.

TABLE 3-12. KEY TRANSPORTATION PROJECTS IN THE PROJECT AREA

Project	Proposal	Status [1]
TxDOT - Dallas District		
Continental Avenue Viaduct	Bridge Rehabilitation with Conversion to Pedestrian and Bicycle Only Use	Under Construction
Horseshoe Project	Total Reconstruction of the Canyon/Mixmaster Interchange over the Trinity River	Under Construction
IH-35E from US-67 to South of IH-30 (Eighth Street)	Widen and reconstruct from 8 to 10 lanes with 2 Reversible HOV/Managed Lanes	Planning Phase
Jefferson Memorial Bridge	Bridge Replacement	Preliminary Design
SH-183 (Elm Fork Corridor Improvements)	Widen mainlanes and install a continuous managed lane system connecting to IH-35E.	Detailed Design
City of Dallas and Dallas County		
Beckley Avenue	Widen to Four Lanes	Detailed Design
Riverfront Boulevard	Widen to Six Lanes	Detailed Design
SM Wright/US-175 (SM Wright)/US-175 (CF Hawn)/IH-45 (Julius Schepps)	Reduce Vehicle Lanes/Reconstruction from Highway to Arterial/Reconstruction and New Location/Reconstruction and New Interchange	Planning Phase
Sylvan/Wycliff Bridge	Bridge Replacement	Under Construction
Union Station to Oak Cliff, Dallas Streetcar	Streetcar Rail Construction	Under Construction

Source: City of Dallas, 2008c and 2012c; TxDOT, 2012; TxDOT Project Tracker, accessed November 26, 2012; NCTCOG TIPINS (Transportation Improvement Program Information System), accessed November 27, 2012 (NCTCOG, 2012b); Dallas/Fort Worth District FY 2013-2016 TIP, August 2012.
Note: 1. The status indicated is as of December 2012.

As shown in **Table 3-12**, a number of transportation projects are being planned and implemented throughout the Trinity Parkway project area. The following paragraphs provide a descriptive overview of the key transportation projects in the project area.

3.2.6.1 Road and Bridge Projects

Continental Avenue Viaduct

The Continental Avenue Viaduct is currently under construction and will be converted to a pedestrian bridge with a variety of amenities to provide a useful pedestrian space across the Trinity River Corridor. The converted bridge could include a children's play area, outdoor chess tables, a fountain and misting area, a labyrinth, a stage and outdoor eating area, a skate park, and potential areas for vendors at either end. The Continental Avenue Viaduct has been determined to be eligible for the NRHP by the SHPO. More details concerning the Continental Avenue Viaduct are provided in **FEIS Section 3.3.1**.

Horseshoe Project

This project is currently under construction and includes the reconstruction of the IH-35E and IH-30 interchange (the Mixmaster), the reconstruction of the IH-30 lanes through the Canyon to include HOV lanes, and the construction of new bridges across the Trinity River (including the IH-30 and IH-35 Trinity Bridges). In addition to the mainlane bridge structures, the project includes adjacent collector-distributor bridges. Santiago Calatrava designed the bicycle and pedestrian facilities portion of the future IH-30 (Margaret McDermott) Bridge. A design concept for the bridge is shown below (City of Dallas, 2007d).

PROPOSED MARGARET MCDERMOTT BRIDGE (IH-30 SIGNATURE BRIDGE)

IH-35E Improvements

This project would widen and reconstruct IH-35E to include 10 general-purpose lanes and two reversible HOV/managed lanes between US-67 and 8th Street.

Jefferson Memorial Bridge

The existing Jefferson Bridge would be replaced with the proposed Jefferson Memorial Bridge, which would be shifted southeast from the current location. The bridge would include connections to and from IH-35E plus connections to Trinity Parkway.

SH-183 Improvements

This project addresses transportation deficiencies along the SH-183/Elm Fork Corridor. Project limits extend from IH-35E to SH-360 in eastern Tarrant County. Improvements to SH-183 include mainlane widening and the installation of a continuous managed lane system connecting SH-183 to IH-35E.

Beckley Avenue

The Beckley Avenue Improvement Project covers approximately 3 acres and would improve Beckley Avenue at Commerce Street by adding four new vehicle lanes, reinforced concrete sidewalks, a new major drainage system, and upgraded water and wastewater mains.

Riverfront Boulevard

Current plans for Riverfront Boulevard include reconstructing the roadway to become a six-lane divided roadway with directional cycle tracks from MLK, Jr. Boulevard to Commonwealth Boulevard. The goal of the project is to provide improved mobility while also upgrading pedestrian and bicycle movements, introducing sustainable landscaping, and providing drainage improvements.

SM Wright

The SM Wright Project consists of improvements to three roadways – US-175 (SM Wright Freeway), IH-45 (Julius Schepps Freeway), and US-175 (C.F. Hawn Freeway) – and a new direct connection interchange. SM Wright Freeway would become a lower speed urban arterial

roadway with at-grade intersections. C.F. Hawn Freeway would be realigned and reconstructed, which would require the new interchange at IH-45.

Sylvan/Wycliff Bridge

This project is currently under construction and is the replacement of an at-grade crossing of the Dallas Floodway with an elevated six-lane bridge. In addition to the bridge, the improvements include an access ramp leading to the new Trammell Crow Park access road, the relocation of the existing boat ramp at Trammel Crow Park, and improvements to the Trinity River northern and southern levees.

Union Station to Oak Cliff Streetcar

This project is currently under construction and would extend approximately 1.6 miles from Union Station over the Houston Street Viaduct, along Zang Boulevard to Colorado Boulevard, terminating at the Colorado Boulevard and Beckley Avenue intersection.

3.2.6.2 Trinity River Corridor MIP/BVP

The City of Dallas has proposed several transportation improvement projects, including the Trinity Parkway, as part of its Trinity River Corridor MIP/BVP (City of Dallas, 1997a and 2003a). The portion of the plan located within the Trinity Parkway project area is shown in **FEIS Plate 3-13**. A summary of the plan's proposed transportation improvements is provided in the following paragraphs.

The urban design study from the BVP has introduced a concept for transportation improvements referred to as the "Balanced Transportation Concept." This concept has four integrated components. All are described as necessary to meet the plan's objectives:

1. The Trinity Parkway (proposed action);
2. Riverfront Boulevard, which would serve as a collector/distributor and simplify the Trinity Parkway's role in providing access to downtown Dallas;
3. An Oak Cliff levee-top road which could serve as a collector/distributor and simplify the Trinity Parkway's role in providing access to downtown Dallas; and
4. Vehicular and pedestrian access to the planned park and lakes.

The plan identifies two primary objectives for the Trinity Parkway:

1. To serve as a permanent reliever route, a part of a remedy for the heavy traffic flows along the Lower Stemmons, Mixmaster, and Canyon; and
2. To fulfill the goal of providing access and visibility for the proposed Trinity River Park with context-sensitive solutions.

The "stakeholders" in this balanced transportation concept - the City of Dallas, TxDOT, NTTA, NCTCOG, and the Trinity River Urban Design team - agreed that the Trinity Parkway component of the concept should be evaluated in the Trinity Parkway EIS.

Major components proposed as part of the balanced transportation concept are listed below. The proposed Trinity Parkway is the only roadway component that is being evaluated in this EIS. The other initiatives are not NTTA projects, but may be implemented by others.

- Proposed Trinity Parkway
  - Alternative 3B (Combined Parkway - Modified), was identified as the Trinity Parkway component of this balanced concept (see **FEIS Section 2.3.1.2**).
  - Subsequently in February 2009, Alternative 3B was considered non-approvable by the USACE Fort Worth District due to impact concerns to the operations and maintenance requirements of the Dallas Floodway (see **FEIS Section 2.3.1.5**).
  - The FHWA and NTTA consultation with the USACE (see **FEIS Section 2.3.2.3**) produced a further modified version of this combined alternative, also called Alternative 3C (see **FEIS Section 2.3.2.4**), which is also the FHWA-recommended alternative.
- Proposed Riverfront Boulevard Improvements
  - Number of lanes: currently six lanes; proposed six lanes with bicycle lanes.
  - Speed limit: 35 mph.
  - Enhanced landscape and street trees.

- Proposed South Lamar Improvements
  - Number of lanes: currently four lanes; proposed six lanes with some additional turning lanes.
  - Speed limit: 35 mph.
  - Enhanced landscape and street trees.

- Proposed Downtown Levee-Top Road
  - Support development on properties near the levee on the downtown side.
  - Number of lanes: two travel lanes with on-street parallel parking.
  - Speed limit: 30 mph.
  - Lane widths: 10 feet vehicular lanes (with 11 feet outside lanes where used for parking and bicycling).

- Proposed Oak Cliff Levee-Top Road
  - Length of Oak Cliff Levee-top Road: 1.8 miles from Beckley to IH-35E.
  - Number of lanes: Four travel lanes with off-peak, on-street parallel parking.

- Proposed SM Wright Freeway
  - Reduce vehicle lanes.
  - Reconstruction from a highway to an arterial.
  - Extend CF Hawn Freeway to IH-45.
  - Reconstruct interchange.

- Proposed Public Transit
  - Trolley extensions along Olive Street, St. Paul Street and the Houston Street Viaduct.
  - Circulator Bus Routes - Bus connections: Two DART bus routes, 21 and 49, would be extended and buses rerouted to better serve movements from downtown Dallas to Oak Cliff and the Design District. Service frequency would be increased substantially.
  - Bus routes: Westmoreland, Hampton, Sylvan, and Irving Boulevard routes.
  - Bus routes cross Continental, Commerce, Houston, and Jefferson viaducts.

3.2.6.3 Trail Projects

The TxDOT - Dallas District (in cooperation with others) has several planned, programmed, and funded trails and bicycle routes (i.e., Regional Veloweb) within the Trinity Parkway project area. This system of trails and bicycle routes is described in the project planning documents: *The Trinity River Corridor MIP,* the *Dallas County Trail Plan* (Dallas County Commissioners Court, 1997a), and the 2011 *Dallas Bike Plan* (City of Dallas, 2011a). These and other planned bicycle/recreational trails are further described in **FEIS Sections 3.2.5** and **3.3.2.3**.

3.3 CULTURAL RESOURCES AND PARKLANDS

This section describes cultural resources (both archeological and historic architectural) and parklands within the project area and the regulatory requirements that apply to these resources. A description of the historical context of the area as it relates to cultural resources can be found in **Appendix J-1**.

3.3.1 Cultural Resources

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

For purposes of the evaluation of cultural resources in this FEIS, discussions have been subdivided into archeological resources and historic architectural resources. Also, the term "cultural resources" as used throughout this FEIS refers to those archeological and historic architectural resources that are either already listed in the NRHP or meet at least one of the eligibility criteria ("A – D") under 36 CFR 60.4 for NRHP listing. Therefore the term "cultural resources" equates to the term "historic properties" as defined by Section 106 of the NHPA [16 U.S.C. Section 470(f)], which is expanded on in the following section. In general, historic-age resources are typically 50 years of age or older, or would be, as of the time that construction is expected to be initiated for the proposed project. Therefore, the threshold age criterion used in this FEIS is 1966, which is 50 years prior to the expected date of construction contract letting for the proposed project (2016), if approved.

3.3.1.1 Regulatory Context

Section 106

The identification and consideration of cultural resources is required at the federal level by Section 106 of the NHPA [16 U.S.C. Section 470(f)]. Regulations implementing the policies of

Section 106 are found in 36 CFR Part 800: Protection of Historic Properties, which is administered by the Advisory Council on Historic Preservation (ACHP). Section 106 (in 36 CFR Part 800) defines historic properties as any prehistoric or historic district, site, building, structure, or object that is included in, or determined eligible for inclusion in the NRHP. As set forth in 36 CFR Section 800.1, a federal agency with jurisdiction over a federal undertaking, or an undertaking that is federally-assisted or federally-permitted/licensed, is required to take into account the effect the undertaking will have on any cultural resources. The Section 106 process, as defined in 36 CFR Part 800, requires the federal agency to identify and evaluate the significance of possible cultural resources that may be affected by the proposed undertaking, in consultation with the SHPO and any Indian tribe that might attach religious and cultural significance to properties within the area of potential effects (APE).

The following broadly defined criteria, as described in 36 CFR 60.4, are used to evaluate possible cultural resources for eligibility to the NRHP:

> *"The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and*
>
> *(A) that are associated with events that have made a significant contribution to the broad patterns of our history; or*
>
> *(B) that are associated with the lives of persons significant in our past; or*
>
> *(C) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or*
>
> *(D) that have yielded, or may be likely to yield, information important in prehistory or history."*

To be NRHP-eligible, and therefore regulated under Section 106, a possible cultural resource must demonstrate "significance" under at least one of the four criteria listed above.

If the lead federal agency, the SHPO, and any Indian tribe (if applicable) agree that a resource potentially affected by a proposed project is NRHP-eligible, then they are required to apply the Criteria of Adverse Effect found in 36 CFR Section 800.5 to the federal action. The Criteria of Adverse Effect states that an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of the cultural resource that make it eligible for the NRHP in a manner that would diminish the integrity of the cultural resource's location, design, setting,

materials, workmanship, feeling, or association. If an adverse effect is determined, then the regulations require the federal agency in consultation with the SHPO and other consulting parties to seek ways to avoid, minimize or mitigate the adverse effects. Such efforts may consist of alternative selection of minor alignment shifts, a reduced facility, or other modifications as appropriate. The analysis of avoidance and minimization measures may involve evaluating engineering constraints, potential safety or operational problems, costs, and potential social or environmental impacts that may result from avoiding the cultural resource. The importance of preserving the cultural resource is weighed against the magnitude of harm to other resources that would be caused by avoiding it.

Because the USACE is a cooperating agency for the proposed Trinity Parkway project, it is important to point out a legislative development that occurred following the publication of the 2009 SDEIS as it pertains to their situation in regards to cultural resources compliance under Section 106. Section 405(a) of the Supplemental Appropriations Act, 2010 (P.L. No. 111-212) included the following provision:

> *SEC. 405. (a) The Secretary of the Army shall not be required to make a determination under the National Historic Preservation Act of 1966 (16 U.S.C. 470, et seq.) for the project for flood control, Trinity River and tributaries, Texas, authorized by section 2 of the Act entitled "An Act authorizing the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes", approved March 2, 1945 [59 Stat. 18], as modified by section 5141 of the Water Resources Development Act of 2007 [121 Stat. 1253].*

The USACE has chosen not to make NHPA determinations for the Dallas Floodway Project (see **FEIS Section 1.6.1.2**) pursuant to the above legislation. Furthermore, because of the Congressional action, the USACE is not obligated to comply with the NHPA as part of their consideration of permitting for this project. However, the legislation did not waive the obligation of the FHWA to comply with the NHPA for the proposed Trinity Parkway, and therefore, this FEIS provides information regarding the examination of cultural resources in a manner intended to fulfill the requirements of Section 106 that must still be met by the FHWA and TxDOT.

Section 4(f)

For transportation projects, Section 4(f) of the USDOT Act of 1966 (49 U.S.C. Section 303 and 23 U.S.C. Section 138) provides an additional requirement addressing public parks; recreation areas; wildlife or waterfowl refuges; and historic sites of national, state or local significance. The

FHWA regulations implementing Section 4(f) are found at 23 CFR Part 774. The overarching policy statement in Section 4(f) (49 U.S.C. Section 303(a)) declares that "It is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Section 4(f) protections are triggered by the "use" of land from a protected resource. A "use" occurs when protected land is permanently incorporated into a transportation facility, when there is a temporary occupancy of land that is adverse in terms of the preservation purpose, or when there is a constructive use of a Section 4(f) property (23 CFR 774.17). The 2005 DEIS and 2009 SDEIS for the Trinity Parkway included a Draft Section 4(f) Evaluation. However, during the development of the LSS, events occurred that had implications for the proposed Trinity Parkway project in regards to Section 4(f). On July 29, 2010, the Supplemental Appropriations Act, 2010 was signed into law (P.L. No. 111-212). Section 405 of this federal legislation includes the following language:

> *SEC. 405. (b) The Federal Highway Administration is exempt from the requirements of 49 U.S.C Section 303 and 23 U.S.C Section 138 for any highway project to be constructed in the vicinity of the Dallas Floodway, Dallas, Texas.*

An evaluation of the applicability of this legislation in the case of the proposed Trinity Parkway project was performed, and the FHWA determined that the proposed project is exempt from the requirements of Section 4(f) pursuant to the federal legislation because the proposed project is considered to be "in the vicinity of the Dallas Floodway" (see **FEIS Appendix A-2**, Page 66).

Additional Regulations

Cultural resources are also protected by additional federal, state, and local legislation and regulations including: Texas Parks and Wildlife Code (Chapter 26, Section 26.001 to Section 26.004); Antiquities Code of Texas (Natural Resources Code Title 9, Chapter 191); and the City of Dallas Development Code (Chapter 51).

3.3.1.2 Survey Methodology

The process of identification, evaluation, and assessment used to address the requirements of Section 106 of the NHPA is outlined in the 2005 Programmatic Agreement for Transportation Undertakings (PA-TU) (FHWA, 2005c). Findings of NRHP eligibility and effects determinations under this process are made by TxDOT with concurrence from the SHPO. Other consulting

parties, as appropriate and in accordance with the PA-TU, have been involved in the Section 106 process for the proposed project and have included Indian tribes, the City of Dallas Landmark Commission, Preservation Dallas, the Dallas County Historical Commission, the Historic Bridge Foundation, and the interested public.

The initial cultural resources scoping meeting for the proposed project, which involved representatives from the FHWA, USACE, TxDOT, THC, NTTA, and the City of Dallas, was held on September 8, 1999. All attendants toured the project area with a focus on the proposed transportation improvements. In consultation with the SHPO and TxDOT, archeological site and historical architectural property APEs were established (pursuant to 36 CFR Section 800.4(a)). These APEs are generally described as follows:

- **APE for Archeological Resources** - The original APE included the areas of proposed physical disturbance. In 2013, the APE was expanded to address the merging/transition of the Trinity Parkway with the existing IH-35E and SH-183 facilities at the north end of the proposed project (see **Section 2.9.1**). The archeological resources APE is shown on **FEIS Plate 3-14**.

- **APE for Historic Architectural Resources** - A customized APE was developed by TxDOT in consultation with the SHPO in 2000. The configuration and size of the APE was based on the proposed ROW, anticipated traffic patterns along roadways that would connect to the proposed project, and the attributes of the surrounding areas. The APE was extended in some areas to include entire neighborhoods, districts, and blocks containing homogenous resources. A preliminary survey of the proposed ROW and the areas immediately adjacent to the ROW was performed in 2001 in order to identify historic architectural sites. Based on the results of the preliminary survey, the APE was expanded in 2009 to include areas around previously determined eligible properties to account for potential avoidance alternatives. Similar to the APE expansion for archeological resources, the APE for historic architectural resources was expanded again in 2013 to address the merging/transition of the proposed Trinity Parkway with IH-35E and SH-183. The APE was expanded to include the area within 150 feet from the existing and proposed ROW along IH-35E from the SH-183 interchange north to Regal Row, and along SH-183 from the intersection with IH-35E west to Empire Central Drive. The historic architectural resources APE is shown on **FEIS Plate 3-15**.

3.3.1.3 Archeological Resources

An assessment has been conducted to identify archeological resources within the established APE for the Build Alternative (see APE discussion in **FEIS Section 3.3.1.2**). Research has centered upon the identification of prehistoric and historic archeological sites. To date, the following detailed identification and evaluation reports have been prepared and are on file at TxDOT's Environmental Affairs Division, 118 E. Riverside, Austin, Texas 78704:

- *Cultural Resource Review for the Environmental Impact Statement Areas of Potential Effect of the Trinity River Parkway, Dallas, Texas* (Norman Alston Architects, 2000)
- *The Trinity River Parkway Archival and Archaeological Evaluation Report* (Skinner, 2003)
- *Archaeological Testing for the Trinity Parkway* (Skinner, 2006)
- *Archaeological Testing of Site 41DL441 for the Trinity Parkway in Dallas, Dallas County, Texas* (Skinner, 2008)

Information pertaining to listed and potentially eligible archeological sites was primarily identified through a background review of archival information and available state records. Because the APE is located in either heavily developed areas (residential, commercial, and industrial) or in areas disturbed by previous floodway and levee construction (areas of low archeological probability as defined by the THC [THC letter dated February 28, 1996]), no archeological field reconnaissance of the entire APE was conducted. However, a 2006 testing investigation was conducted within the Dallas Floodway in areas where old river meanders of the Trinity River are located and in the general area of potential borrow excavations for roadway embankment material. Subsequent testing of a potentially eligible archeological site was conducted in 2008. The findings of the background review and the testing investigations are included in the discussion below.

Recorded Archeological Sites

The review of archival material, state records, and investigative reports for other activities in the project area resulted in the identification of the following four known archeological sites in the immediate area, none of which are listed or determined eligible for listing in the NRHP:

- 41DL220 - recorded in 1981, this site was a historic (probably early 1900s) limestone-lined well and had an associated packed clay floor. No artifacts were found at the site. Attempts to relocate the site in 1998 failed, as it was likely destroyed during construction of a transmission line.

- 41DL320 - recorded in 1990, this site was an old City of Dallas dump with two areas dated to the 1930s and one area dated to the 1900s. The dump has been looted by bottle collectors.
- 41DL370 - recorded in 1996, this site was a brick-lined well and associated trash accumulation that has been dated to post-1940. The site was destroyed during the Phase I widening of the Dallas Floodway.
- 41DL371 - recorded in 1996, this site was a trash dump exposed in the side slope of the Phase I widening of the Dallas Floodway. Trash included oyster shells, cut animal bones, and thick earthenware along with drink and medicine bottle fragments. Most of the dated artifacts indicate that the use of the dump was in the early 1900s.

Additional archeological investigations were conducted in 2006 and 2008 in an effort to determine the likelihood of significant archeological resources being buried in floodplain sediments in places where borrow areas may be excavated for fill for the construction of the proposed project. The investigations were concentrated in areas along the old river channel where the presence of buried prehistoric site deposits would be most expected. The general areas investigated are shown on **FEIS Plate 3-14**. The investigations recorded two additional archeological sites near the APE and are listed below.

- 41DL440 - recorded in 2006, this site was an early 20th century trash accumulation. It was recommended to be ineligible for inclusion in the NRHP.
- 41DL441 - recorded in 2006, this site was a fire hearth that contained charcoal that dated to 230$\pm$40 before present (BP) and 170$\pm$40 BP. Further testing in 2008 determined that the site represents a single event with no datable artifacts or additional features. The site is ineligible for inclusion in the NRHP.

Pursuant to the PA-TU, TxDOT determined in January 2010, with concurrence from the SHPO, that the original APE does not contain archeological historic properties (36 CFR 800.16(l)) (see **FEIS Appendix B**). Although it has been over three years since archeological investigations concluded for the original APE, there would not have been any significant deposits made within the last three years. As such, further evaluation of areas that have already been investigated and assessed for potential impacts would not be expected to change the results; therefore, the findings of the investigations performed to date remain valid.

Due to the expansion of the APE in 2013, which was necessary to address the merging/transition of the proposed project with IH-35E and SH-183, the following previous archeological resources investigations conducted for other projects in the expansion area were evaluated:

- *Assessing the Potential for Intact Archeological Deposits Within the Project Pegasus: Reconstruction of the IH-30/IH-35E Corridor (Canyon/Mixmaster/Lower Stemmons) in Dallas County, Texas* (Green and Peter, 2003)
- *Cultural Resources Investigations within the SH-183 Corridor from SH-360 to IH-35E, Dallas and Tarrant Counties* (Kahl and Neel, 2004)

The above-referenced assessment for the former Project Pegasus included the portion of the expanded APE for Trinity Parkway from the intersection of IH-35E and SH-183 to Empire Central Drive on both existing facilities. The previous assessment determined that the APE expansion area contained no previously recorded archeological resources and has a low potential for significant pre-historic and historic-age archeological deposits. No additional investigations were recommended for the area relevant to the proposed Trinity Parkway project. The previous assessment for the SH-183 project also covered the area from the IH-35E/SH-183 interchange to Empire Central Drive. In accordance with the PA-TU, TxDOT determined with SHPO concurrence that no archeological historic properties are located in the SH-183 project area and no further work was recommended (see **FEIS Appendix B**).

A portion of the expansion area along IH-35E from Empire Central Drive to Regal Row was not previously investigated; therefore, a background review of recorded archeological historic resources and an assessment of the potential for archeological resources were conducted. The proposed improvements in the previously uninvestigated area would be entirely within the existing ROW that has been extensively disturbed and is mostly covered by pavement associated with IH-35E mainlanes and frontage roads. No previously recorded sites, properties listed in the NRHP, or cemeteries are present in this area, and the APE expansion area contains a very low probability of containing intact archeological historic properties. Based on the results of previous investigations and the amount of disturbances throughout the APE expansion area, no further archeological investigations are warranted for this area.

3.3.1.4 Historic Architectural Resources

An assessment has been conducted to identify historic architectural properties (i.e., sites, buildings, structures, objects or districts) potentially affected by the Trinity Parkway. The discussion in the following sections focuses entirely on historic architectural properties. To date, the following detailed identification and evaluation reports regarding historic architectural properties have been prepared and are on file at TxDOT's Environmental Affairs Division, 118 E. Riverside, Austin, TX 78704:

- *Cultural Resource Review for the Environmental Impact Statement Areas of Potential Effect of the Trinity River Parkway, Dallas, Texas* (Norman Alston Architects, 2000)
- *Historic Resource Survey of Building Displacements for the Trinity River Parkway, Dallas, Texas* (Norman Alston Architects, 2001)
- *Intensive Historic Resource Survey Report of the Former Procter & Gamble Manufacturing Plant Properties at 3701 South Lamar Street and 1301 McDonald Street, Dallas, Texas* (Halff Associates, 2009)
- *Non-Archeological Historic-Age Resource Reconnaissance Survey Report, Trinity Parkway* (Ecological Communications Corporation, 2009)
- *Intensive-Level Investigations in Support of Proposed Trinity Parkway Project, Dallas, Dallas County, Texas* (HHM, Inc., 2010)
- *Supplemental Non-Archeological Historic-Age Resource Survey Report, Trinity Parkway: From IH-35E/SH-183 to US-175/SH-310, Dallas County* (Ecological Communications Corporation, 2010)

A constrained "non-archeological historic-age" (i.e., a potentially eligible resource of 50 years of age or older at the time of the anticipated project letting) resources survey was completed for the proposed project in 2001 (Norman Alston Architects, 2000 and 2001). The survey was not comprehensive; it did not identify all historic-age resources within the APE, but only those that would be within the proposed ROW. All of the properties were photographed, mapped, described, and evaluated for architectural significance.

In 2009 and 2010, reconnaissance and intensive-level surveys and supplemental reports, which involved both archival and on-the-ground research, for "non-archeological historic-age resources" were completed for the full APE. The surveys included an examination of the Texas Historic Sites Atlas managed by the THC, earlier historical survey reports, and TxDOT/SHPO correspondence to identify any previously documented historic resources. Properties listed in the NRHP and those designated as Recorded Texas Historic Landmarks (RTHL) and State Archeological Landmarks (SAL) were identified (NRHP, 2013). Official Texas Historical Markers (OTHM) were also identified and entries in secondary sources were examined to gain a general knowledge of the area's historical background. Project historians also consulted historic maps produced by the Sanborn Fire Insurance Company, vertical and subject files housed at the Center for American History at the University of Texas at Austin, Dallas city directories housed at the Texas State Library and at the Texas/Dallas History and Archives Division at the Dallas Public Library, tax records held by the Dallas Central Appraisal District, historic county highway maps archived at the Texas State Library, and numerous reference books on the history and

development of Dallas. All pre-1966 buildings, structures, and objects located within the project APE were identified, and groupings of buildings, structures, objects, and sites were examined for potential historic districts or landscapes. The activities, features, and attributes contributing to the significance of historic architectural properties within the APE were identified and documented. The ROW area covered by the 2001 survey of potential building displacements was not resurveyed, but it was noted that one property previously determined to be eligible for listing in the NRHP (the Sportatorium at 1000 Industrial Boulevard) had been demolished. Although it has been over three years since the above-described survey efforts concluded, the threshold age criterion (i.e., 50 years of age or older at the time of the anticipated project letting) of 1966 has not changed; therefore, the surveys performed to date remain valid.

Section 106 coordination for the Dallas Floodway continued through March 2013. Historical information, including period of significance, floodway component descriptions, and historical significance, discussed in correspondence among the FHWA, TxDOT, and the SHPO were based on previous TxDOT studies listed above, as well as information provided by the USACE in the following reports:

- *The Dallas Trinity River Reclamation Project: An Exploratory Study of Historic Significance, Integrity and Potential National Register Eligibility for the USACE Comprehensive Analysis Environmental Impact Statement (USACE, 2009a)*
- *Intensive Engineering and Architectural Inventory of the Dallas Floodway, Dallas, Texas*
- *Intensive Engineering Inventory of the Dallas Floodway, Dallas, Texas (USACE, 2010a)*

TxDOT originally made a determination that the floodway was not eligible as a historic district and the THC responded that additional information was needed regarding the integrity of the resource. Based on an examination of additional data provided by the USACE and the City of Dallas, in conjunction with previous field work and research performed by TxDOT for the Trinity Parkway, the FHWA and TxDOT determined that alterations and additions affecting the majority of floodway components resulted in an overall diminished integrity for the resource to sufficiently convey significance under any NRHP criteria and reaffirmed that the Dallas Floodway was not eligible to the NRHP. However, the THC issued a letter to the FHWA on December 30, 2011, stating that the SHPO did not concur with this assessment and provided comments to support a conclusion that the Dallas Floodway is eligible for listing in the NRHP. Based on that response and further evaluation, the FHWA determined that the Dallas Floodway is eligible to the NRHP under Criterion A at the local level of significance for Community Planning and Development. The SHPO concurred with this determination on March 26, 2013 (see **FEIS Appendix B**).

Due to the expansion of the APE in 2013 to address the merging/transition of the proposed project with IH-35E and SH-183, the following previous historic resources reports for other projects in the expansion area were evaluated:

- *Project Pegasus Historic Properties Report: CSJ #'s 0009-11-191, 0196-03-199, 0196-03-205, 0442-02-132* (TxDOT, 2003)
- *Cultural Resources Inventory of SH-183 Study Corridor* (Halff, 2003)

The above-referenced reports included the portion of the expanded APE from the intersection of IH-35E and SH-183 to Empire Central Drive on both existing facilities. A total of 21 properties with structures built prior to 1966 were identified within the area relevant to the proposed Trinity Parkway project; however, there were no resources found to be listed or eligible for listing in the NRHP from the previous surveys (see **FEIS Appendix B**).

A portion of the expanded APE along IH-35E from Empire Central Drive to Regal Row was not previously investigated. As a result, a background review for previously recorded historic resources and an assessment of 2013 Dallas County Central Appraisal District data was conducted. The background study revealed that there are no properties listed in the NRHP, no properties designated as historic landmarks, and no historic-age resources in the area along IH-35E between Empire Central Drive and Regal Row. Based on the findings for the APE expansion area, no further historic resource surveys are warranted for this area.

Based on the results of all previous investigations and Section 106 eligibility consultation, a total of 25 properties (buildings, structures, objects, or districts) within the APE are currently listed in or have been determined eligible for listing in the NRHP. **Table 3-13** contains a list of all NRHP-listed and -eligible properties within the APE. The location of each property is shown on **FEIS Plate 3-15** at the end of this chapter.

TABLE 3-13. NRHP-LISTED AND -ELIGIBLE PROPERTIES IN THE APE

Plate ID Number [1]	Historic Property	NRHP Criteria (Area, Level)
1	Colonial Hill Historic District	A (Community Development, Local); C (Architecture, Local)
2	Houston Street Viaduct	A (Event, Local); C (Engineering, Local)
3	UPRR Bridge	C (Engineering, Local)
4	Corinth Street Viaduct	A (Community Development, Local); C (Engineering, Local)
5	AT&SF Railroad Bridge	C (Engineering, Local)
6	Missouri Kansas Texas (MKT) Railroad Bridge	C (Engineering, Local)
7	Continental Avenue Viaduct	A (Community Development, Local); C (Engineering, Local)
8	Commerce Street Viaduct	A (Community Development, Local); C (Engineering, Local)
9	2255 Irving Boulevard (City and County Levee Operations Pump Station B)	C (Architecture, Local)
10	3701 S. Lamar Street (Former Procter & Gamble Manufacturing Facility)	A (Community and Economic Development, Transportation, and Industrial Development, Local); C (Architecture, Local)
11	1715 Market Center Boulevard (Shipping/Warehouse Facility)	C (Architecture, Local)
12	1202 N. Riverfront (Industrial) Boulevard (Shipping/Warehouse Facility)	C (Architecture, Local)
14	1212 S. Riverfront (Industrial) Boulevard (Oak Cliff Box Company Office Building)	C (Architecture, Local)
15	Corinth Street Overpass	A (Transportation, Local); C (Engineering, Local)
16	Dealey Plaza Historic District	A (Government/Politics, National); B (John F. Kennedy, National); C (Architecture, National)
17	West End Historic District	A (Community Development, Local); C (Architecture, Local)
18	Lake Cliff Historic District	A (Community Development, Local); C (Architecture, Local)
CA-2	7138 Envoy Court (Salinas International Freight Building)	A (Commerce, Local); C (Architecture, Local)
DT-8	207 S. Houston Street (Terminal Annex Building)	C (Architecture, Local) Determined eligible by SHPO 1990
ES-1 (ES-1A, ES-1B, and ES-1C)	818 Singleton Boulevard (Atlas Metal Works)	C (Architecture, Local)
IN-47	959 Dragon Street (Clifton Carpets)	A (Commerce, Local); C (Architecture, Local)
MK-2 (MK-2C and MK-2D)	1000 Forest Avenue (Faubion Industries)	B (Samuel Guiberson, Local)
OC-5A	911 N. Lancaster Avenue (Apartments)	C (Architecture, Local)
WT-3A	613 Canada Drive at the Dallas Floodway west levee (Pavaho Pump Station)	A (Planning and Development, Local); C (Design and Construction, Local)
DF	Dallas Floodway	A (Community Planning and Development)

Note: 1. Plate ID Numbers correspond to the locations shown on **FEIS Plate 3-15** at the end of this chapter.

Descriptions of the NRHP-listed and -eligible properties located within the APE as shown in the above table are provided below.

NRHP-Listed Historic Districts

- **Colonial Hill Historic District** (**FEIS Plate 3-15**, ID #1) - The American Foursquare bungalows and cottages of the late 1910s, 1920s, and 1930s characterize the Colonial Hill Historic District. This long, narrow district is flanked by major freeways/roadways: SM Wright Freeway (US-175) on the northeast, and IH-45 and South Lamar on the west and southwest. The district incorporates approximately 13 blocks north to south, and contains 489 buildings. Of these, 353 (approximately 72 percent) are contributing properties (pre-1945 buildings that are essentially unaltered or have reversible alterations that have not drastically changed the character of the building). The district is a premier example of Dallas' streetcar suburbs along an original streetcar route. Contextually, the district relates to the influence of the streetcar on the development of suburban lands in South Dallas; therefore, the district was nominated under NRHP Criterion A in the area of Community Planning and Development as one of Dallas' largest intact and most illustrative examples of the classic streetcar suburban pattern. The district was also nominated under NRHP Criterion C in the area of architecture on the basis of its large grouping of intact historic domestic architecture, consisting primarily of one-story frame bungalows and two-story frame houses. The Colonial Hill Historic District, with its early 20th-century buildings and readily apparent traffic patterns, is a vivid architectural and cultural reminder of Dallas' early suburban streetcar development. It was listed in the NRHP on March 23, 1995.
- **Dealey Plaza Historic District** (**FEIS Plate 3-15**, ID #16) - Dealey Plaza is a section of the West End Historic District that has been designated as a separate district due to a singular historic event: the assassination of President John F. Kennedy on November 22, 1963. Although the buildings within the plaza have significance both as part of the West End Historic District and for the plaza's original intent as a memorial to George Dealey, they are singled out for their role and witness to the assassination, and include the School Book Depository Building, the grassy expanse of Dealey Plaza, and the Triple Underpass (Elm-Main-Commerce). Unlike the West End, which is significant on a local scale, Dealey Plaza Historic District is significant on the national level under Criteria A, B, and C for events, persons, and buildings related to the assassination of President Kennedy. Dealey Plaza is also listed as a National Historic Landmark. The boundaries of the historic district include Dealey Plaza and the buildings, structures, and landscapes directly adjacent to it, which together create a historic landscape surrounding the site of

the murder. Dealey Plaza Historic District retains its historic appearance outside of minor modifications that do not impact its integrity. It was listed in the NRHP on April 19, 1993.

- **West End Historic District** (**FEIS Plate 3-15**, ID #17) - The West End Historic District is one of the most complete collections of historic buildings in Dallas and played a vital role in the early economic development of the City. Composed primarily of commercial and governmental buildings, the West End facilitated the economic boom of the first two decades of the 20th century when the City of Dallas became a major shipping point. High style architecture contrasts with simpler styles in the district, such as the Richardsonian Romanesque courthouse and the warehouses nearby. The excellent rail connections provided by railroad companies such as the Texas & Pacific and the MKT, combined with Dallas' position among the rich Blackland Prairies of north Texas, turned the City into a manufacturing and distribution mecca for farm equipment and implements. The economic boom of the first two decades also drove a civic building program centered around the 1891 courthouse. The current boundaries reflect historic zoning patterns, and include features not related to the initial period of significance such as the JFK Memorial. The West End appears much as it did at the time of nomination, with changes in building tenants and associated signage being the primary difference. It was listed in the NRHP on November 14, 1978.
- **Lake Cliff Historic District** (**FEIS Plate 3-15**, ID #18) - Lake Cliff Historic District is a part of the community of Oak Cliff and contains most of the land that once served as an early 20th century amusement park developed to help draw residents to the once-independent community. The Llewellyn Club, a social club, constructed a lake and clubhouse as a retreat, and the land was later purchased and developed as an amusement park. Due to the expense of maintaining the facilities, the owners turned it into a natural park in the 1920s, encouraging residential development along its borders. Tudor Revival, Prairie Style homes, and Craftsman bungalows make up the majority of residences, along with the Cliff Towers Hotel north of Colorado Boulevard. Lake Cliff Historic District is significant on the local level under Criterion A for its role in attracting development to Oak Cliff, and Criterion C for its collection of 1920s architecture. The boundaries of the historic district include Lake Cliff, the natural environment around it, and the buildings directly abutting the park along the west, south, and eastern borders. Despite some recent development outside of its period of significance, Lake Cliff Historic District retains its historic integrity. It was listed in the NRHP on June 17, 1994.

NRHP Individually-Listed Resources

- **Houston Street Viaduct** (**FEIS Plate 3-15**, ID #2) - The Houston Street Viaduct extends across the Trinity River and is one of the longest viaducts ever built with reinforced concrete arches. The viaduct, completed in 1912, was built to re-establish the connection between the Dallas CBD and Oak Cliff after the disastrous 1908 flood. The viaduct, plus embankments, is 6,562 feet in total length with spans totaling 5,840 feet and a width of 56 feet. The viaduct spans the river and floodplain with 80-foot-wide arches and a 100-foot center steel span. The viaduct was listed on the Texas Historic Engineering Site Inventory in 1975 and in the NRHP in 1984. At the time it was constructed, the Houston Street Viaduct was the longest reinforced-concrete bridge in the world. The Houston Street Viaduct continues to serve as a major traffic artery. Newer bridges nearby spanning the river are higher, but none has the solidity or visual prominence of the Houston Street Viaduct. The northern downtown sections of the bridge begin at Union Terminal and continue over a network of railroad tracks, IH-30, and Reunion Arena. The context of the southern half of the bridge remains little changed, crossing the floodplain into an early and intact section of the Oak Cliff suburb.

NRHP-Eligible Resources

- **UP Railroad Bridge (formerly Southern Pacific Railroad Bridge)** (**FEIS Plate 3-15**, ID #3) - is significant as a good example of a Warren through-truss bridge (eligible under Criterion C, Engineering).
- **Corinth Street Viaduct** (**FEIS Plate 3-15**, ID #4) - is one of five reinforced-concrete bridges spanning the Trinity River built between 1910 and 1935. The bridge was designed and constructed in 1935 by F.D. Hughes and Jean H. Knox (eligible under Criteria A, Community Development, and C, Engineering).
- **AT&SF Railroad Bridge** (**FEIS Plate 3-15**, ID #5) - pre-dates the construction of the flood-control levees and is significant as a good example of a Pratt through-truss bridge dating from the period of 1890-1910. This steel truss and wooden trestle railroad bridge is a free span over the Trinity River which features approaches supported by wood piers and earthen embankments at each end. The central span across the river is supported on stone piers. It was determined eligible for inclusion in the NRHP in 1990 (eligible under Criterion C, Engineering).
- **MKT Railroad Bridge** (**FEIS Plate 3-15**, ID #6) - is a good example of a Parker through-truss bridge commonly used by railroads at the turn of the century (circa 1900) (eligible under Criterion C, Engineering).

- **Continental Avenue Viaduct** (**FEIS Plate 3-15**, ID #7) - is one of five reinforced-concrete bridges spanning the Trinity River and was constructed in 1930 (eligible under Criteria A, Community Development, and C, Engineering).
- **Commerce Street Viaduct** (**FEIS Plate 3-15**, ID #8) - is one of five reinforced-concrete bridges spanning the Trinity River and was designed and constructed in 1915 by F.D. Hughes and Jean H. Knox (eligible under Criteria A, Community Development, and C, Engineering).
- **2255 Irving Boulevard, City and County Levee Operations Pump Station B** (**FEIS Plate 3-15**, ID #9) - a 1925 facility eligible under Criterion C, Architecture, at the local level of significance.
- **3701 South Lamar, DISD Storage and Maintenance Facility** (**FEIS Plate 3-15**, ID #10) - a 1920 manufacturing facility (formerly Procter & Gamble) eligible under Criteria A, Community Development, and C, Architecture, at the local level of significance.
- **1715 Market Center Boulevard, Pettigrew Associates** (**FEIS Plate 3-15**, ID #11) - a 1954 shipping/warehouse facility eligible under Criterion C, Architecture, at the local level of significance.
- **1202 North Industrial Boulevard, ACF Corporation** (**FEIS Plate 3-15**, ID #12) - a 1947 shipping/warehouse facility eligible under Criterion C, Architecture, at the local level of significance.
- **1212 South Industrial Boulevard, Oak Cliff Box Company** (**FEIS Plate 3-15**, ID #14) - comprises a 1948 Art Moderne office building with an attached brick warehouse/shipping facility built in 1950 (eligible under Criterion C, Architecture, at the local level of significance).
- **Corinth Street Overpass** (**FEIS Plate 3-15**, ID #15) - a 1932 reinforced-concrete bridge overpass designed by engineers Rollins & Clinger and noted Texas bridge engineer F.D. Hughes (eligible under Criteria A, Community Development, and C, Engineering, at the local level of significance).
- **7138 Envoy Court** (**FEIS Plate 3-15**, ID #CA-2) - a 1956 commercial building eligible under Criteria A, Commerce, and C, Architecture, at the local level of significance.
- **207 South Houston Street** (**FEIS Plate 3-15**, ID #DT-8) - a 1937 large masonry building constructed in the Prairie style; designed during the Works Progress Administration (WPA) era (eligible under Criterion C, Architecture, at the local level of significance).
- **818 Singleton Boulevard (Atlas Metal Works)** (**FEIS Plate 3-15**, ID #ES-1 [ES-1A, ES-1B, and ES-1C]) - a well-preserved example of a pre-World War II industrial complex (eligible under Criterion C, Architecture, at the local level of significance).

- **959 Dragon Street** (**FEIS Plate 3-15**, ID #IN-47) - a late 1950s unique commerce/specialty building eligible under Criteria A, Commerce, and C, Architecture, at the local level of significance.
- **1000 Forest Avenue** (**FEIS Plate 3-15**, ID #MK-2 [MK-2C and MK-2D]) - a mid-1920s industrial property eligible under Criterion B, Association with Samuel A. Guiberson, Jr. (local inventor) in the area of Industry, at the local level of significance.
- **911 North Lancaster Avenue** (**FEIS Plate 3-15**, ID #OC-5A) - a 1927 two-story Georgian Revival-influenced duplex eligible under Criterion C, Architecture, at the local level of significance.
- **613 Canada Drive at the Dallas Floodway West Levee (Pavaho Pump Station)** (**FEIS Plate 3-15**, ID #WT-3A) - a 1954 board-formed concrete pump station eligible under Criteria A, Local Planning and Development and C, Design and Construction, at the local level of significance.
- **Dallas Floodway** (**FEIS Plate 3-15**, ID #DF) - a flood control system that extends roughly to Loop 12 at the Elm Fork to the north, IH-30 at the West Fork to the west, and the AT&SF bridge over the main stem of the Trinity River to the south. The resource contains four essential physical features including the levees, river channels, overbank, and structures (i.e., pumping plants, outlet gate structures, pressure sewers, intakes, sluices, culverts, sumps, and emergency control structures) that function together as part of the overall flood control system. The period of significance for the resource dates from 1928 to 1959. The Dallas Floodway is eligible under Criterion A at the local level of significance in the area of Community Planning and Development as an infrastructure system for its contribution to the physical growth and development of the City of Dallas.

3.3.2 Parklands and Recreational Areas

This section identifies the public parks and recreation areas (existing and planned) within the project area and provides an overview of regulatory requirements relating to such areas.

3.3.2.1 Regulatory Requirements

The regulatory provisions of Section 4(f), as outlined in **FEIS Section 3.3.1.1**, also apply to transportation projects that require use of any of the following resources: publicly owned land of a public park, recreation area, or wildlife/waterfowl refuge (49 U.S.C. Section 303). Additionally, the Texas Parks and Wildlife Code (Title 3, Chapter 26) contains language similar to Section 4(f) concerning the taking of park and recreational lands. TPWD restricts the use or taking of any public land designated and used as a park (recreation area, scientific area, wildlife refuge, or

historic site) unless the department, agency, political subdivision, county, or municipality determines that there would be no feasible and prudent alternative and that the project/program includes all reasonable planning to minimize harm to the land. As noted in **FEIS Section 3.3.1.1**, the FHWA determined that the proposed project is exempt from the requirements of Section 4(f) pursuant to the Supplemental Appropriations Act (P.L. No. 111-212) (signed into law on July 29, 2010).

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act (16 U.S.C. Section 460L) requires that any outdoor recreational facilities acquired with Department of Interior (DOI) financial assistance under the LWCF may not be converted to non-recreational use unless approval is granted by the National Park Service (see regulations at 36 CFR Part 59).

3.3.2.2 Existing Parks and Recreational Areas

Existing parks/recreational areas were identified based on coordination with the City of Dallas PARD, Dallas Housing Authority (DHA), and property ownership research (as necessary). Copies of correspondence from the City of Dallas PARD are provided in **Appendix A-1**. The locations of existing parks/recreational areas in and nearby the project area are shown on **FEIS Plate 3-16** (Plate ID Numbers 1 through 34). **Table 3-14** lists these existing parks/recreational areas along with a brief description of each. There are a number of other public and privately owned open space lands in the project area, but these do not meet the definition of Section 4(f) or Section 6(f) properties and therefore are not included.

TABLE 3-14. EXISTING PARKS AND RECREATIONAL AREAS

Plate ID # [1]	Name	Location	Property Owner	Acres	Description	Section 6(f)
1	Sleepy Hollow Park	1200 Sleepy Hollow Lane	City	0.6	Neighborhood urban park with picnic, playground, and multi-use court facilities. The park is located approximately 300 feet east of IH-35E.	No
2	Pegasus Park	3000 Pegasus Park Drive	City	7.4	Urban open space park with no recreational facilities.	No
3	Pegasus Park Trail	3000 Pegasus Park Drive	City	0.2	Neighborhood concrete trail, approximately 4 feet wide and 0.4 mile (2,112 LF) long.	No
4	Trinity River Greenbelt Park (identified as "Trinity Park" within the limits of the Dallas Floodway)	From Northwest Highway to AT&SF Rail-road Bridge	City	3,652	Urban open space park with 177 water acres and two soccer fields. Majority extends beyond project area boundaries. The Dallas Floodway encompasses approximately 2,000 acres of this park. A special feature is Crow Lake located adjacent to the south of Sylvan Avenue. The lake area includes sculptures, a volleyball court, and a 0.66-mile walking trail.	No
5	Trinity Levee Trail	Mockingbird to Sylvan	City	8.7	Major linear, crushed stone trail approximately 12 feet wide and 6 miles (31,680 LF) long.	No
6	Emma Carter Park	4100 Pluto	City	6.3	Neighborhood park (part of Bernal Greenbelt) with one basketball court, one playground, three picnic tables, and parking facilities.	No
7	Bernal Greenbelt	3600 Bernal St.	City	24.6	Linear greenbelt.	No
8	Bernal Trail	Westmorland to Norwich	City	1.0	Major linear, concrete trail; constructed in 2003. Trail is approximately 12 feet wide and 0.7 mile (3,696 LF) long.	No
9	Tipton Park	3607 Magdeline	City	23.3	Neighborhood park (part of Bernal Greenbelt) with one basketball court, two picnic tables, trails, and parking facilities.	No
10	Pointer Park	4100 Pointer	City	1.2	Neighborhood park with one playground and two picnic tables.	No
11	Fish Trap Lake Trail	2400 Toronto	DHA Lease	0.7	Major loop, concrete trail; approximately 8 feet wide and 0.7 mile (3,696 LF) long.	No
12	Nash/Davis Park	3700 N. Hampton	City	11.9	Community park with a community recreation center. Includes picnic, swimming pool, tennis, sandlot ball field, softball field, playground, and multi-use court facilities. The park is shared with Carr Elementary School. Extends beyond project area boundaries.	No
13	Bickers Park	1400 Bickers	City	2.9	Neighborhood park with softball field, playground, and multi-use court facilities.	No
14	Bickers Park Trail	1400 Bickers	City	0.2	Neighborhood, concrete trail; approximately 6 feet wide and 0.3 mile (1,584 LF) long.	No
15	Shaw Park	3600 Ladd Street	City	0.1	Neighborhood park with no recreational facilities.	No
16	Benito Juarez Park	3352 N. Winnetka	DISD	6.1	Neighborhood park with soccer field and picnic facilities. Extends beyond project area boundaries.	No
17	Benito Juarez Park Trail	3352 North Winnetka	DISD	0.4	Neighborhood, concrete trail; approximately 6 feet and 0.5 mile (2,640 LF) long.	No
18	Crow Lake Trail	Within the Trinity River Levees at Sylvan	City	0.6	Neighborhood, concrete trail; approximately 8 feet wide and 0.6 mile (3,168 LF) long.	No
19	Hattie R. Moore Park	3212 N. Winnetka	City	3.7	Community park with a community recreation center. Includes picnic, tennis, play-fields, playground, and multi-use court facilities. Park shared with DeZavala Elementary School.	No
20	Pueblo Park	3226 Bataan Street	City	0.6	Neighborhood park with picnic, playground, and multi-use court facilities.	No

TABLE 3-14. EXISTING PARKS AND RECREATIONAL AREAS

Plate ID # [1]	Name	Location	Property Owner	Acres	Description	Section 6(f)
21	Trinity Strand Trail (Park)	Stemmons Freeway to Medical District Dr.	City	57.5	Urban open space with proposed hike/bike trail and enhanced landscaping.	No
22	Kessler Parkway	1821 Kessler Parkway	City	22.2	Linear greenbelt.	No
23	Coombs Creek Trail	Junior to Sevens Park Golf Course	City	1.6	Major Linear, concrete trail; approximately 8 to 10 feet wide and 1.3 miles (6,864 LF) long.	No
24	Oak Cliff Founders Park	1300 North Zang	City	16.1	Urban open space park bounded on each side by Zang Boulevard and Marsalis Avenue (major city arterials). The park has a 0.25-mile hike/bike trail and several sitting benches. Extends beyond project area boundaries.	No
25	Oak Cliff Founders Trail	300 East Colorado Boulevard	City	0.5	Neighborhood, concrete trail; approximately 8 feet wide and 0.5 mile (2,640 LF) long.	No
26	Eloise Lundy Park	1200-1229 Sabine	City	3.4	Community park with a community recreation center. Includes picnic, swimming pool, tennis, softball field, playground, and multi-use court facilities.	No
27	Trinity Trails	IH-35E (R.L. Thornton Freeway) to Santa Fe Trestle Trail	City	2.1	Major linear, concrete trail; approximately 16 feet wide and 1.1 miles (5,808 LF) long.	No
28	Santa Fe Trestle Trail Park	8th Street to Riverfront Blvd.; within Trinity River Levees	DART	1.3	Major linear park that crosses the Trinity River. Portions of the Santa Fe Trestle Trail cross this park.	No
29	Santa Fe Trestle Trail	1837 E. 8th Street (Trail head at DART overflow parking lot)	City	1.3	Concrete trail approximately 12 feet wide and 0.9 mile (4,752 LF) long. Trail begins near the DART Rail Station at 8th Street and incorporates the Sana Fe Railroad Trestle at the Trinity River crossing.	No
30	Moore Park	1900 E. 8th Street	City	24.5	Community park with picnic, tennis, baseball and sandlot ball field, playground, swimming pool, and multi-use field and court facilities.	No
31	Forest Park	2906 Parnell	City	2.4	Neighborhood park with picnic, swimming pool, playground, and multi-use court facilities.	No
32	Forest Park Trail	2906 Parnell	City	0.1	Neighborhood, concrete trail approximately 6 feet wide and 0.2 mile (1,056 LF) long.	No
33	MLK, Jr. Median Park	1300 to 2300 MLK, Jr. Blvd.	City	1.8	Park located within a triangular-shaped landscaped median area near the intersection with Forest Avenue.	No
34	William Blair Jr. Park (formerly Rochester Park) - Great Trinity Forest	3000 Rochester / 2nd Avenue to the Trinity River	City	983.3	Includes a natural areas, trails, playground, picnic, softball, football, soccer, multi-use court facilities, fishing area and lake; the majority extends outside project area.	Yes

Source: City of Dallas, 2012; City of Dallas, 2013d; City of Dallas, 2013e
Abbreviations used in Table: LF = Linear Feet; DHA = Dallas Housing Authority; DISD = Dallas Independent School District; DART = Dallas Area Rapid Transit.
Note: 1. Plate ID Numbers correspond to the locations shown on **FEIS Plate 3-16**.

3.3.2.3 Planned Parks and Recreational Areas

The Dallas Floodway (Trinity Park) and other portions of the project area have been and currently are major focal points for the planned development of multiple large-scale recreational/open-space projects in Dallas. The majority of these planning efforts have been coordinated and conducted by local, state, and federal agencies, as well as community volunteers and organizations for many years. The following bulleted list provides an overview of past and current planning efforts that include proposed parks, recreational, and/or open-space elements within the project area. A more detailed description of the specific elements comprising each park and trail plan is provided in **Appendix J-2**. The following list presents the major park and trail plans within the project area:

- 1959 PARD;
- 1969 Coordinated Plan for Open Space Development of the Trinity River System (Dallas Parks Board);
- 1980 Dallas County Open Space Plan (Marvin Springer and Associates and Schrickel, Rolling, and Associates);
- 1991 Dallas County Open Space Plan (Dallas County Commissioners Court);
- Moore Park Master Plan (City of Dallas, 2001a);
- Great Trinity Forest Master Plan (TPWD, 1997);
- Trinity River Corridor MIP/BVP (City of Dallas, 1999a and 2003a);
- Recreation Master Plan included as a part of the Dallas Floodway Extension EIS (USACE, 2003a);
- Trinity Trails System (City of Dallas, 1997c);
- Dallas County Trail Plan (Dallas County Commissioners Court, 1997b);
- Regional Veloweb;
- Trinity River Boat Ramps, Access Roads, and Parking Areas;
- 2002 - A Renaissance Plan for Dallas Parks and Recreation in the 21st Century (City of Dallas, 2002); and
- Dallas Trail Network Plan (City of Dallas, 2008b).

The locations of planned parks/recreational areas within and adjacent to the project area are shown on **FEIS Plate 3-16** (Plate ID Letters A through K). **Table 3-15** lists these planned parks/recreational areas along with a brief description of each.

TABLE 3-15. PLANNED PARKS AND RECREATIONAL AREAS

Plate ID Letter [1]	Name	Property Owner	Acres	Description and Location
A	Elm Fork Creek Trail	City, Oncor, Private	5.1	Proposed concrete trail will follow along the Elm Fork Creek from the Trinity Meanders near IH-35E to south of Bachman Lake (outside the project area). Trail will connect to the Trinity Strand Trail and provide access to Sleepy Hollow Park and the Elm Fork Greenbelt through a connection to the Trinity Levee Trail. Trail proposed to be approximately 12 feet wide and 3.5 miles (18,480 LF) long.
B	Bernal Trail (Extension)	City	3.7	Proposed eastern and western extension of the existing concrete Bernal Trail. Will connect several parks including Trinity Park, Emma Carter Park, Tipton Park, and Fishtrap Lake Park. Trail expansion proposed to be approximately 12 feet wide and 2.51 miles (13,253 LF) long.
C	Trinity Strand Trail and Connector	City	11.9	Proposed trail located along the old Trinity River channel and winding through the Design District. The trail is proposed to be concrete surface on one side of the meanders and crushed granite on the other side. A connection is planned to the proposed Trinity Levee Trail. Trail proposed to be approximately 12 feet wide and 8.2 miles (43,243 LF) long.
D	Trinity Levee Trail (Extension)	City	32.9	Proposed concrete trail on the Trinity River levee system linking several parks (e.g., Trinity Park, Crow Park, Elm Fork Greenbelt, Emma Carter Park, Oak Cliff Founders Park, Moore Park, and the Great Trinity Forest) and trails (e.g., Elm Fork Trail, Bernal Trail, Coombs Creek Trail, and the Trinity Forest Trail) within the Trinity River Corridor. The existing levee top road (gravel) is open to the public for trail use and will be improved to concrete along with the expansion of the trail. Proposed trail to be approximately 12 feet wide and 22.6 miles (119,500 LF) long. The proposed bicycle and pedestrian facilities along the planned IH-30 (Margaret McDermott) Bridge (see **Table 3-11**) would potentially connect to the Coombs Creek Trail and proposed Trinity Levee Trail near or at Beckley Avenue.
E	Trinity Trails	City	7.9	Proposed concrete trail following the Trinity River, beginning at Westmoreland and tying into the existing Trinity Trail just south of IH-35E (R.L. Thornton Freeway) (see Plate ID #27 in **Table 3-14**). New trail areas are proposed to be approximately 12 feet wide and 5.3 miles (27,917 LF) long.
F	Continental Pedestrian Bridge	TxDOT	3.0	Proposed conversion of this NRHP-eligible bridge to a "pedestrian only" facility. The 'pedestrian park' is proposed to include paths for walking, running, and cycling; event and mist plazas; seating; chess panel; and shade trees. The pedestrian bridge is proposed to be 50 feet wide and approximately 0.5 mile (2,640 LF) long (within the footprint of the existing Continental Avenue Bridge).
G	Coombs Creek Trail (Extension)	City	0.1	Proposed extension of the existing Coombs Creek Trail in north Oak Cliff adjacent to Coombs Creek. Proposed trail to provide connection to the proposed Trinity Levee Trail. Trail extensions planned to the east to the proposed Trinity Trail, and to the west extending to Hampton Road (outside the project area). Trail proposed to be approximately 8 to 10 feet wide and extensions would total approximately 1.2 miles (6,336 LF) in length. The proposed bicycle and pedestrian facilities along the planned IH-30 (Margaret McDermott) Bridge (see **Table 3-11**) would potentially connect to the Coombs Creek Trail and proposed Trinity Levee Trail near or at Beckley Avenue.

TABLE 3-15. PLANNED PARKS AND RECREATIONAL AREAS

Plate ID Letter [1]	Name	Property Owner	Acres	Description and Location
H	Emerald Bracelet Trail	City, Private	7.6	Proposed concrete trail encircling downtown Dallas at its perimeter freeway loop (i.e., Woodall Rodgers Freeway, US-75, IH-30, and IH-35E). Trail proposed to be approximately 12 feet wide and 5.2 miles (27,456 LF) long.
I	Cedar Crest Trail	Oncor	6.8	Proposed concrete trail to directly link the Trinity River and Moore Park in the project area (and Tama Park and Renner Greenbelt located outside the project area). Proposed trail will also directly connect the proposed Trinity Levee Trail and the extension of the John C. Phelps Trail (located outside the project area). Trail connections to the DART Corinth Street, Morrell Street, and Illinois Stations will also be provided (all located outside the project area). Trail proposed to be approximately 12 feet wide and 4.7 miles (24,658 LF) long.
J	Great Trinity Forest Trail	City	34.3	Proposed concrete trail extending throughout the Great Trinity Forest; would link Trinity River Park and Moore Park located within the project area, and several more parks outside the project area (e.g., William Blair, Jr. Park, Pemberton Hill Park, and McCommas Bluff Park). This proposed trail would connect to the proposed Trinity Levee Trail within the project area. Trail proposed to be approximately 12 feet wide and 23.6 miles (124,690 LF) long.
K	Great Trinity Forest Expansion Area	City	537.4	Area of potential park expansion of the Great Trinity Forest, located between the DART Rail crossing and just south of IH-45.

Source: City of Dallas, 2012; City of Dallas, 2013d.
Abbreviation used in Table: LF= Linear Feet
Note: 1. Plate ID Letters correspond to the locations shown on **FEIS Plate 3-16**.

3.4 NATURAL RESOURCES

This section provides a description of the natural resources located within the project area. It includes baseline vegetation communities and associated wildlife, including special status plant and animal species, and waters of the U.S., including wetlands. The information presented in this section was derived from a variety of state and federal natural resource agencies, local governments, and from field reconnaissance visits. The primary tool for assessing environmental aspects of the project area was a geographic information system (GIS) database for which digital shapefiles were acquired regarding basic geographic features (i.e., roads and local government boundaries), geology and soils, topography, water and floodplain features, and vegetation and wildlife habitat.

3.4.1 Regulatory Setting

Many of the natural resources within the project area fall within the scope of various state and federal programs designed to protect specific types of resources. Key preservation policies regarding natural resources discussed in this subsection are rooted in a variety of environmental statutes and regulations, examples of which are included in the list of regulatory authorities below.

- Waters of the U.S., including wetlands: Section 404 of the CWA, 33 U.S.C. Section 1344; USACE regulations implementing Section 404 in 33 CFR Parts 323, 325, and 328; EO 11990 (Protection of Wetlands) (42 *Federal Register* 26961, May 24, 1977);
- Invasive species: EO 13112 (Invasive Species) (64 *Federal Register* 6183, February 8, 1999);
- Rare plant and animal species: ESA of 1973, 16 U.S.C. Sections 1531-1544;
- USFWS: Fish and Wildlife Coordination Act (FWCA), 16 U.S.C. Sections 661-666c; and
- Migratory birds: Migratory Bird Treaty Act (MBTA) of 1918, 16 U.S.C. Sections 703-712.

3.4.2 Regional Ecology

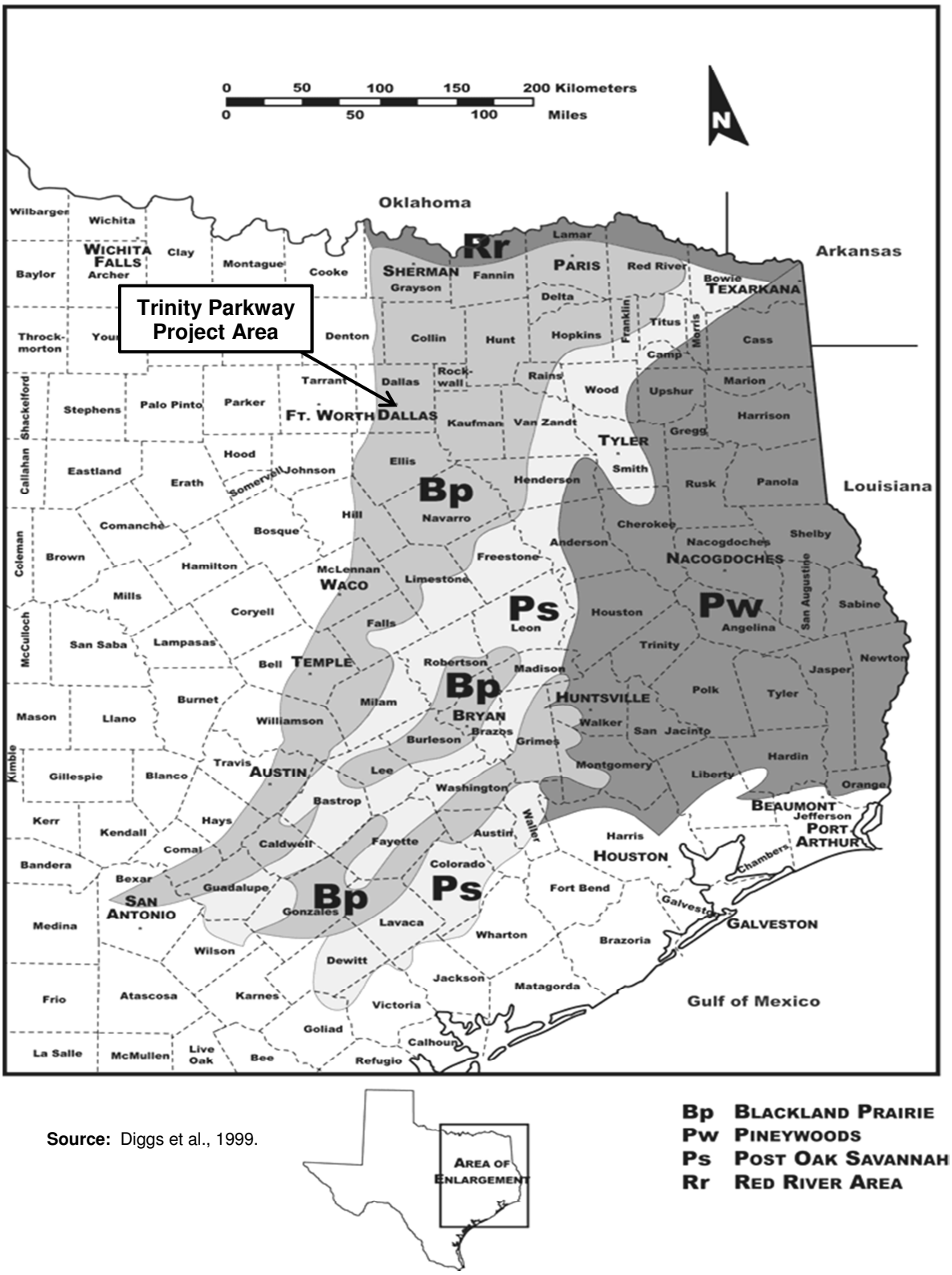
An understanding of regional ecology is important at the outset to provide a baseline reference for assessing the current ecological condition of vegetation communities within the project area. Regional ecology is the product of a complex interaction between climate, geology, topography, soil formation, and plant community succession over vast periods of time. In essence, describing the regional ecosystem provides insight into the types of plant communities that existed here prior to human settlement, which then becomes the model by which the existing plant communities may be evaluated. The description below of the range of pre-settlement ecological conditions represents what kind of plant communities would be expected in the absence of over 150 years of human activity in the project area.

The Trinity Parkway project area is found within the Northern Blackland Prairie ecoregion of Texas, which is part of the larger Blackland Prairie ecoregion that forms a band that extends northward from San Antonio nearly to the Red River (see **Figure 3-1**) (Diggs et al., 1999; TPWD, 2013b). Within this grass-dominated ecoregion, the project area is situated between forest-dominated ecoregions to the east and west; the East Cross Timbers ecoregion begins approximately 6 miles to the west and the Northern Post Oak Savannah ecoregion is found over 30 miles to the east (Griffith et al., 2007; NRCS, 2006). The juxtaposition of this prairie ecosystem relative to the forest-dominated ecoregion to the west is attributed primarily to

differences in local bedrock formations, which produced the heavy-textured calcium-rich soils of the prairie in contrast to the sandier, more shallow and acidic soils of the cross timbers (Diggs et al., 1999).

The Northern Blackland Prairie ecoregion was prehistorically characterized by nearly treeless plains broken up by the riparian forests that traced along stream courses. Within the floodplains of larger rivers such as the Trinity River, forested habitat prevailed but was interrupted by occasional openings dominated by herbaceous prairie species. Prior to modern human settlement, native prairie plant communities had a high level of species diversity, with varying mixes of herbaceous (primarily grass) species and woodland species. Prairie grasses that in prehistory dominated areas less favorable for general plant growth (e.g., relatively shallow soils) included short and mid grasses such as buffalo grass (*Buchloe dactyloides*), silver bluestem (*Bothriochloa laguroides*), hairy grama (*Bouteloua hirsuta*), sideoats grama (*Bouteloua curtipendula*), Texas winter grass (*Nassella leucotricha*), and white tridens (*Tridens albescens*). This tallgrass prairie ecosystem was dominated in upland areas by little bluestem (*Schizachyrium scoparium*), frequently in association with other tallgrasses such as big bluestem (*Andropogon gerardii*), yellow Indian grass (*Sorghastrum nutans*), and tall dropseed (*Sporobolus asper* var. *asper*) (TPWD, 2013b; Diggs et al., 1999; NRCS, 2006). In addition to a diverse number of grass species, Blackland Prairie areas in prehistory supported a high degree of species diversity of wildflowers, often with 200 to 300 species per acre.

FIGURE 3-1. ECOREGIONS OF EAST TEXAS



Source: Diggs et al., 1999.

The riparian forests of the primitive Northern Blackland Prairie ecoregion were dominated by the same trees observed today in relatively undisturbed portions of the project area growing near water sources. These include trees such as cedar elm (*Ulmus crassifolia*), American elm (*Ulmus americana*), hackberry (*Celtis laevigata*), pecan (*Carya illinoinensis*), green ash (*Fraxinus pennsylvanica*), bur oak (*Quercus macrocarpa*), cottonwood (*Populus deltoides*), and black willow (*Salix nigra*). Understory species were predominantly shrubs and woody vines, with scattered patches of shade-tolerant grasses. Understory shrubs or small trees typically included gum bumelia (*Sideroxylon lanuginosum*), yaupon holly (*Ilex vomitoria*), possumhaw (*Ilex decidua*), coralberry (*Symphoricarpos orbiculatus*), and Eve's necklace (*Sophora affinis*). Commonly-occurring woody vines in the understory included greenbrier (*Smilax bona-nox*), poison ivy (*Toxicodendron radicans*), wild grape (*Vitis* spp.), and Virginia creeper (*Parthenocissus quinquefolia*). The herbaceous component of the prehistoric bottomland forest understory consisted primarily of perennial grasses such as Virginia wildrye (*Elymus virginicus*) and wood oats (*Chasmanthium latifolium*) (Holcomb, 2001; Barry and Kroll, 1999; Diggs et al., 1999; NRCS, 2006 and 2008).

The Northern Blackland Prairie ecosystem was maintained in prehistory by the occasional wildfires that destroyed the ever-encroaching woodland trees and ensured continued grass dominance. In the absence of fire, prairie areas would eventually be replaced by dense forests in both uplands and bottomlands (Griffith et al., 2007; NRCS, 2006 and 2008; Diggs et al., 1999). As much of the project area is located within a broad floodplain area, it is not likely that the area was as affected by prairie wildfires as were upland areas to the east and west. However, any open areas within floodplain bottomlands were occupied by a mixture of the same mid and tall prairie grasses that would have been found in adjacent upland prairie areas. Forest openings in poorly drained lowland areas were dominated by tallgrasses such as switch grass (*Panicum virgatum*) and eastern gamma grass (*Tripsacum dactyloides*).

Surviving remnants of native tallgrass prairies of the Northern Blackland Prairie ecoregion are extremely rare, comprising less than 1 percent of the original extent (NPAT, 2013; Diggs et al. 1999; TPWD, 2013b). This ecoregion has been vastly altered by a variety of human activity, including agricultural use of prairies for cropland and pasture, urban development, and reservoir construction. Pristine bottomland forests of this ecoregion are also rare, but have been preserved to a far greater extent because of practical challenges to construction in flood-prone areas as well as more recent regulation of construction of structures within floodplains.

3.4.3 Waters of the U.S., including Wetlands

3.4.3.1 Definition of Waters of the U.S., including Wetlands

Wetlands are usually defined in terms of their physical, chemical, and biological characteristics such as hydrologic regime, soil type, and plant species composition. For example, in classifying wetlands for mapping and inventory, Cowardin et al. (1979) defined wetlands as "…lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water…" that are characterized by the presence of hydrophytic vegetation, hydric soils, and hydrology.

Section 404 of the CWA (hereinafter "Section 404") authorizes the Secretary of the Army, acting through the USACE, to issue permits for the discharge of dredged or fill material into waters of the U.S., including wetlands (33 U.S.C. Section 1344). USACE regulations implementing Section 404 (33 CFR Section 328.3) define waters of the U.S., including wetlands, as follows:

1. *All waters which are currently used, or were used in the past, or may be susceptible to use in Interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;*
2. *All Interstate waters including Interstate wetlands;*
3. *All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect Interstate or foreign commerce including any such waters:*
   - *i. Which are or could be used by Interstate or foreign travelers for recreational or other purposes; or*
   - *ii. From which fish or shellfish are or could be taken and sold in Interstate or foreign commerce; or*
   - *iii. Which are used or could be used for industrial purpose by industries in Interstate commerce;*
4. *All impoundments of waters otherwise defined as waters of the United States under the definition;*
5. *Tributaries of waters identified in paragraphs 1-4 above;*
6. *The territorial seas;*
7. *Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs 1-6 above.*

Wastewater treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (other than cooling ponds as defined in 40 CFR Section 123.11(m) which also meet the criteria of the above definition), are not waters of the U.S. and are not subject to Section 404 jurisdiction.

3.4.3.2 Jurisdictional Water Features in the Project Area

The Trinity River is a navigable waterway (see discussion in **FEIS Section 3.5.7**) and a water of the U.S. Various studies within the project area over the past 20 years have identified and mapped jurisdictional tributaries of the Trinity River, as well as adjacent wetlands, in accordance with USACE regulations and guidance, and are discussed below.

In April 1994, a wetland delineation was prepared for a Section 404 Individual Permit that was subsequently issued for the Dallas Floodway Channel Modification Project (Project No. 199300146). This earlier delineation was used as a reference and field verified in multiple field visits conducted during 1998, 1999, 2001, 2003, and 2005. Before field investigations were performed, aerial photographs, soil survey maps, and USFWS National Wetlands Inventory (NWI) maps were reviewed. Due to the large amount of available information, field verification consisted of the USACE routine determination method, as described in the 1987 *Wetland Delineation Manual* (USACE, 1987) in addition to the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Great Plains Region (Version 2.0)* (USACE, 2010d), and joint USACE-USEPA wetland delineation guidance (USACE-USEPA, 2007). Under USACE regulations and guidance documents, an area may be considered a wetland subject to Section 404 jurisdiction if there is adequate evidence of hydric soils, hydrophytic vegetation, and wetland hydrology within the area. The ordinary high water mark for a stream or other open water is the jurisdictional boundary for waters of the U.S., which was identified for project area open water features based on the presence of shelving and or destruction of terrestrial vegetation.

Potential waters of the U.S., including wetlands, in the project area were digitized based on year 2000 digital topographic engineering maps with a 2-foot contour interval and are listed in **Table 3-15** and shown on **FEIS Plate 3-17** and **Plates 4-7A** and **4-7B**. A preliminary jurisdictional determination was submitted to the USACE in March 2000 and the project was assigned USACE project number SWF-2000-00308. A field survey was conducted with the USACE in April 2002 and in February and August 2005. A proposed jurisdictional determination was submitted to the USACE in May 2006. The USACE concurred with the jurisdictional determination in a letter dated June 19, 2006. Following the expiration of the 2006 jurisdictional determination, a reverification

was submitted to which the USACE assigned the project a new project number: SWF-2011-00049. The USACE concurred with the revised jurisdictional determination in a letter dated March 24, 2011. This concurrence is valid until March 24, 2016. All of the water features within the project area that were part of the approved jurisdictional determination are included in the upper portion of **Table 3-16**. The acreage figures for several of the water features (ID Numbers 3, 15, 24, and 83) are smaller than the corresponding figures in the approved jurisdictional determination because the portion of the water feature outside the project area was excluded; the acreage for one water feature (ID Number 78) is greater than the approved jurisdictional determination because a portion of the feature is outside the limits of the jurisdictional determination but the entire feature is within the project area. In addition, **Table 3-16** includes seven water features (each noted at the bottom of the table) for consideration as waters of the U.S., including wetlands, under a preliminary jurisdictional determination. To date, the mapping of potentially jurisdictional water features has focused on areas that may be affected by the proposed project; unmapped potentially jurisdictional water features may exist in portions of the project area that would not be affected by the proposed project (e.g., aquatic features that may be in the riparian forest areas at the southern end of the project area).

TABLE 3-16. PROJECT AREA WATERS OF THE U.S., INCLUDING WETLANDS

ID. NO.	FEATURE TYPE/CLASS	AREA (ACRES)	LENGTH (LINEAR FEET)	FUNCTION INDEX[1]	TXRAM SCORE[1]	QUALITY RATING[2]
Water Features Included in the 2011 USACE-Approved Jurisdictional Determination						
3	Open Water – Perennial[3]	5.92	---	0.23	---	---
4	Emergent Wetland	11.83	---	0.54	58.91	medium
5	Emergent Wetland	0.20	---	0.40	55.91	low
6	Emergent Wetland	7.03	---	0.40	53.94	low
9	Emergent Wetland	4.17	---	0.45	59.50	medium
14	Emergent Wetlandl[3]	0.38	---	0.40	58.25	medium
15	Emergent Wetland	1.07	---	0.40	57.78	medium
16	Emergent Wetland	0.60	---	0.39	58.26	medium
17	Emergent Wetland	0.04	---	0.49	56.97	low
18	Emergent Wetland	1.45	---	0.49	60.56	medium
19	Emergent Wetland	1.66	---	0.50	57.87	medium
20	Emergent Wetland	3.73	---	0.51	60.97	medium
21	Emergent Wetland	0.08	---	0.37	58.46	medium
22	Emergent Wetland	1.42	---	0.39	57.44	medium
24	Trinity River (Perennial Stream)l[3]	136.08	38,960	0.53	68.52	high
25	Emergent Wetland	2.74	---	0.48	53.16	low
26	Emergent Wetland	1.29	---	0.58	55.63	low
27	Emergent Wetland	3.98	---	0.45	57.52	medium
28	Open Water - Intermittent	0.64	1,300	0.23	---	low
29	Emergent Wetland	7.98	---	0.48	57.76	medium
30	Open Water - Intermittent	2.18	1,850	0.23	---	low
31	Emergent Wetland	11.64	---	0.62	53.95	low
32	Emergent Wetland	6.49	---	0.44	55.27	low
33	Emergent Wetland	5.19	---	0.54	58.09	medium
34	Open Water - Intermittent	3.87	1,200	0.23	---	---
35	Open Water - Intermittent	2.58	1,240	0.23	---	---
36	Emergent Wetland	20.76	---	0.70	60.38	medium
37	Crow Lake (Open Water - Perennial)	6.72	---	0.20	---	---
42	Emergent Wetland	0.53	---	0.40	53.74	low
43	Open Water - Intermittent	1.58	1,035	0.23	---	---
44	Emergent Wetland	23.82	---	0.58	58.33	medium
46	Emergent Wetland	3.28	---	0.45	57.49	medium
47	Open Water - Intermittent	1.99	935	0.23	---	---
48	Emergent Wetland	2.61	---	0.43	55.46	low
49	Open Water - Intermittent	0.87	650	0.23	---	---
50	Emergent Wetland	0.15	---	0.40	59.60	medium
51	Open Water - Intermittent	1.75	950	0.23	---	---
52	Emergent Wetland	2.42	---	0.40	57.93	medium
53	Emergent Wetland	4.24	---	0.40	58.07	medium
54	Emergent Wetland	7.95	---	0.63	58.96	medium
55	Old Trinity River Channel (Open Water)	5.44	3,500	0.35	---	---
56	Emergent Wetland	0.95	---	0.39	56.26	low
57	Open Water - Intermittent	1.65	900	0.23	---	---
58	Open Water - Intermittent	1.62	975	0.23	---	---
59	Emergent Wetland	2.03	---	0.47	60.73	medium
60	Emergent Wetland	1.70	---	0.52	60.59	medium
61	Open Water - Intermittent	1.32	725	0.23	---	---
62	Open Water - Intermittent	2.32	750	0.23	---	---
63	Open Water - Intermittent	1.39	695	0.23	---	---
65	Emergent Wetland	6.80	---	0.63	58.18	medium
66	Emergent Wetland	8.20	---	0.51	58.26	medium
67	Emergent Wetland	6.30	---	0.65	56.98	low

TABLE 3-16. PROJECT AREA WATERS OF THE U.S., INCLUDING WETLANDS

ID. NO.	FEATURE TYPE/CLASS	AREA (ACRES)	LENGTH (LINEAR FEET)	FUNCTION INDEX[1]	TXRAM SCORE[1]	QUALITY RATING[2]
68	Emergent Wetland	8.88	---	0.63	56.63	low
69	Emergent Wetland	57.13	---	0.68	59.26	medium
70	Old Trinity River Channel (Open Water)	25.63	6,300	0.35	---	---
71	Emergent Wetland	0.86	---	0.43	54.82	low
74	Emergent Wetland	6.23	---	0.43	55.17	low
75	Emergent Wetland	2.21	---	0.46	53.42	low
76	Forested Wetland	2.77	---	1.00	70.67	high
77	Cedar Creek (Perennial Stream)	4.82	4,050	0.79	67.84	high
78	Intermittent Streaml[3]	0.43	400	0.56	65.33	high
79	Old Trinity River Channel (Open Water)	1.72	2,400	0.35	---	---
80	Old Trinity River Channel (Open Water)	10.57	8,400	0.35	---	---
81	Old Trinity River Channel (Open Water)	2.80	3,375	0.35	---	---
82	Old Trinity River Channel (Open Water)	8.25	9,650	0.35	---	---
83	Old Trinity River Channel (Open Water)l[3]	0.29	360	0.35	---	---
85	Emergent Wetland	1.82	---	0.39	62.61	medium
86	Emergent Wetland	0.48	---	0.52	66.78	high
87	Emergent Wetland	0.14	---	0.40	66.90	high
88	Emergent Wetland	0.07	---	0.58	64.53	medium
89	Emergent Wetland	0.07	---	0.70	67.53	high
Water Features Mapped/Included as Part of a Preliminary Jurisdictional Determination (i.e., since 2011)						
207	Old Trinity River Channel (Open Water)	0.08	64	0.35	---	---
215	Intermittent Stream	0.24	494	0.65	62.37	medium
216	Forested Wetland	0.16	---	1.00	67.59	high
217	Old Trinity River Channel (Open Water)	3.98	5,845	0.35	---	---
218	Emergent Wetland	27.82	---	0.81	56.23	medium
219	Open Water - Perennial	2.64	---	0.20	---	---
220	Open Water - Perennial	2.85	---	0.20	---	---
221	Open Water - Perennial	5.71	---	0.20	---	---
222	Trinity River (Perennial Stream)	27.71	10,145	0.53	68.52	high
	TOTAL	**548.99**	**107,048**			

Source: USACE 1995c and 2010b.
Notes: ID Numbers are shown in **FEIS Plates 4-7A** and **4-7B** in **Chapter 4**.
1. Refer to **FEIS Section 3.4.3.4** for a discussion regarding wetland quantitative assessment scores.
2. The Texas Rapid Assessment Method (TXRAM) condition index ranges associated with the quality rating are as follows: 0.00 to 56.99 = low, 57.00 to 64.99 = medium, 65.00 to 100.00 = high.
3. The acreage for this water feature differs from the USACE-approved jurisdictional determination because either that portion of the water feature located outside the Trinity Parkway project area was excluded (ID Numbers 3, 14, 24, and 83) or a portion of the feature is outside the limits of the jurisdictional determination but within the project area (ID Number 78).

Linear drainage sumps located along the exterior perimeter of the Dallas Floodway are not considered waters of the U.S., including wetlands, because these are man-made features constructed in an upland area and do not replace any functions of the old river meanders of the Elm Fork Trinity River and West Fork Trinity River. These linear sumps outside of the Dallas Floodway are generally open water features, but some of the features include areas of emergent wetland vegetation. These man-made linear sumps are listed in **Table 3-17**, and the locations of these sumps are shown in **FEIS Plates 4-7A** and **4-7B** in **FEIS Chapter 4**. However, drainage sumps that are portions of the old river channel were classified as waters of the U.S. (i.e., open water), and are included in the jurisdictional determination.

TABLE 3-17. AQUATIC FEATURES DETERMINED NOT TO BE WATERS OF THE U.S.

ID NO.	FEATURE TYPE	AREA (ACRES)
7	Man-Made Linear Sump	7.36
8	Man-Made Linear Sump	6.07
23	Man-Made Linear Sump	12.69
38	Man-Made Linear Sump	28.29
39	Man-Made Linear Sump	7.46
40	Man-Made Linear Sump	12.79
41	Man-Made Linear Sump	4.50
45	Man-Made Linear Sump	10.51
64	Man-Made Linear Sump	1.31
72	Man-Made Linear Sump	8.17
73	Man-Made Linear Sump	1.75
TOTAL		**100.90**
Notes: ID Numbers are shown in **FEIS Plates 4-7A** and **4-7B** in **FEIS Chapter 4**.		

Most of the wetland areas found within the project area are located in depressions or drainages between 396 and 400 feet above mean sea level (msl) on either side of the Trinity River channel (**FEIS Plate 3-17**). A few water features were delineated as open water instead of wetlands based on water depth and lack of emergent vegetation. Predominant aquatic habitat types within the project area include emergent or forested wetlands, stream channels of the Trinity River and its local tributaries, open water associated with old river channels, man-made linear drainage sumps, and other open water habitats such as drainage sumps within the Dallas Floodway. The areas covered by the jurisdictional water features (548.99 acres) within the project area are summarized in **Table 3-18**, which collectively comprise approximately 7.3 percent of the total project area (7,474 acres).

TABLE 3-18. SUMMARY OF AQUATIC FEATURES IN THE PROJECT AREA

FEATURE TYPE	WATERS OF THE U.S.	AREA (ACRES)
Emergent Wetland	Yes	270.42
Forested Wetland	Yes	2.93
River or Stream Channel	Yes	169.28
Old River Channel (Open Water)	Yes	58.76
Other Open Water	Yes	47.60
TOTAL		**548.99**

3.4.3.3 Wetland Functions and Values

The primary function of wetlands relates to the physical, chemical, and biological attributes that are associated with wetlands. Examples of functions include filtration, flood flow alteration, wildlife habitat, and groundwater discharge.

The term "values" may be used to describe those functions that are generally regarded as beneficial to society. Wetlands are especially valued by many members of society due to the variety of functions performed by wetlands, the location of wetlands within the landscape, and uniqueness of wetland plant and wildlife communities. Recreation and uniqueness are examples of values. Individual landowners and members of the general public also value wetlands for open space and aesthetic qualities, as locations of important historic and archeological sites, and as locations for conveying floodwaters. All or part of society may not value some wetland functions. For example, nutrient removal and transformation may not be considered a value if that function leads to algal blooms and noxious odors. **Table 3-19** provides a summary of typical wetland functions and values based on USACE guidance (USACE, 1995c).

TABLE 3-19. TYPICAL WETLAND FUNCTIONS AND VALUES

Functions Related to Hydrologic Processes	Value
Dynamic Surface Water Storage: capacity to detain moving water from overbank flow for short duration when flow is out of the channel.	On-Site: Replenish soil moisture, import/export materials, and conduit for organisms. Off-Site: Reduce downstream peak flows and volume, and help maintain and improve water quality.
Long-Term Storage of Surface Water: the temporary storage of surface water for long periods (i.e., after overbank flow retreats and water is present in the wetland for more than 7 days).	On-Site: Provide habitat and maintain physical and bio-geochemical processes. Off-Site: Reduce dissolved and particulate loading and help maintain and improve surface water quality.
Dissipation of Energy: the reduction of energy in moving water at the land/water interface.	On-Site: Contributes to nutrient capital of ecosystem. Off-Site: Reduced downstream particulate loading helps maintain or improve surface water quality.
Subsurface Storage of Water: availability of water storage beneath the wetland surface.	On-Site: Short- and long-term water storage, influence biogeochemical soil processes, and water retention for maintenance of biotic communities. Off-Site: Surficial groundwater recharge, maintain base flow and seasonal flow distribution.
Moderation of Groundwater Flow or Discharge: the moderation of groundwater flow or groundwater discharge.	On-Site: Maintain biogeochemical processes. Off-Site: Recharge surficial aquifers and maintain base flow and seasonal flow in streams.
Functions Related to Biogeochemical Processes	**Value**
Cycling of Nutrients: the conversion of elements from one form to another through abiotic and biotic processes.	On-Site: Contributes to nutrient capital of ecosystem. Off-Site: Reduced downstream particulate loading helps maintain or improve surface water quality.
Removal of Elements and Compounds: the removal of imported nutrients, contaminants, and other elements and compounds on a short-term or long-term basis through burial, incorporation into biomass, or biochemical reactions.	On-Site: Contributes to nutrient capital of ecosystem. Contaminants are removed, or rendered innocuous. Off-Site: Reduced downstream particulate loading helps maintain or improve surface water quality.
Retention of Particulates: the retention of organic and inorganic particulates on a short-term or long-term basis through physical processes.	On-Site: Contributes to nutrient capital of ecosystem. Off-Site: Reduced downstream particulate loading helps maintain or improve surface water quality.
Export of Organic Carbon: the export of dissolved or particulate organic carbon.	On-Site: Enhances decomposition and mobilization of metals. Off-Site: Supports aquatic food webs and downstream biogeochemical processes.
Functions Related to Habitat	**Value**
Maintenance of Plant and Animal Species: maintenance of species and community characteristics such as living plant biomass, detrital biomass, spatial structure of habitat, species interspersion and connectivity, distribution and abundance of animal species.	On-Site: Maintain habitat for plants and animals (e.g., endangered species and critical habitats), forest and agricultural products, and aesthetic, recreational, and educational opportunities. Off-Site: Maintain corridors between habitat islands and landscape/regional biodiversity.
Source: USACE, 1995c.	

3.4.3.4 Functions and Value Methodologies for Waters of the U.S., including Wetlands

Included in **Table 3-16** is a function rating for each aquatic feature based on a hydrogeomorphic (HGM) approach for riverine wetlands similar to that described by the USACE (1995c). This methodology involved an evaluation of specific functions and influencing variables that best represent the range of wetland functions within the project area, and that could be readily identified and evaluated in the field. The following functions and associated influencing variables were considered in the HGM approach:

- Dynamic surface water storage - determined by frequency of overbank flow, average depth of inundation, micro-depressions, shrub/sapling density, tree density, coarse woody debris, and tree basal area;
- Long-term surface water storage - determined by visual observation of surface water;
- Energy dissipation - determined by frequency of overbank flow, micro-depressions, coarse woody debris, and tree density;
- Retention of particulates - determined by frequency of overbank flow, surface inflow, herbaceous density, micro-depressions, shrub/sapling density, tree density, coarse woody debris, and tree basal area;
- Maintenance of characteristic plant communities - determined by species composition, shrub/sapling density, tree density, canopy cover, and tree basal area; and
- Maintenance of interspersion and connectivity - determined by frequency of overbank flow, duration of inundation, ground cover, surface hydraulic connections, and contiguous cover between habitats.

The HGM approach is an assessment tool developed by the USACE which assigns an objective quantitative index of function to wetlands based on comparison of ecological characteristics (e.g., landscape setting, water source, water movement through the system) to a wetland reference standard (USACE, 1995c). The HGM approach involves regional experts and agencies developing a unique model for a geographic region that is calibrated and tested before it is adopted for widespread use. In the absence of an HGM model in the USACE Fort Worth District, principles from the HGM guidebook for riverine systems (USACE, 1995c) were used to provide some quantitative index of aquatic function. Prior to evaluating the functions of the areas delineated as waters of the U.S., including wetlands, a reference wetland was identified in the project area that was determined to have the highest array of functions based on the list of variables shown above. The reference wetland standards represent the highest level of function in the regional landscape and formed the basis of comparison for other wetlands in the project

area. For each wetland, as well as other water features in the project area, variables were assigned a numerical index value between 0 and 1, and a final index per function was calculated. The index value presented in **Table 3-16** is the arithmetic mean of the individual function scores. Average index ranges were then assigned a qualitative designation (i.e., low, medium, or high) to simplify the comparison of wetland and other water features.

The results of the HGM index analysis suggest the following conclusions about the functions of water features within the project area:

- Long-term surface water storage received high values because each of the wetlands demonstrates the ability to store water for long periods comparable to the reference wetland.
- Functions and condition associated with plant communities received relatively low value resulting from the lack of vegetation development (due to annual floodplain maintenance) beyond the herbaceous layer.
- The remaining functions of dynamic surface water storage, energy dissipation, retention of particulates, and habitat interspersion and connectivity had values that averaged near or just below 0.5. These middle values are the result of vegetation variables that were departures from the reference wetland combined with hydrology and geomorphology variables that were quite similar to the reference wetland.

The Texas Rapid Assessment Method (TXRAM) was developed by the Regulatory Branches in the Fort Worth and Tulsa Districts of the USACE for evaluating the ecological condition of wetlands and streams (USACE, 2010b). The TXRAM manual contains two separate modules, one for wetlands and one for streams. Each module describes intended use, scope, background, procedures, and guidelines for the rapid assessment of streams and wetlands. The TXRAM approach does not evaluate non-stream open water bodies. The output from TXRAM is used for calculating adverse impacts and appropriate compensatory mitigation associated with USACE authorized activities under Section 404. The application of TXRAM provides consistent methods for the assessment of wetlands and streams, and supports the integrity of data collection and comparison.

TXRAM does not focus on specific functions or societal values provided by wetlands and streams, but rather provides rapid, repeatable, and field-based methods which generate a single overall score to represent the integrity and health of a wetland or stream. The TXRAM Wetlands Module contains 18 metrics for assessing observable characteristics of a wetland that are organized into the following five core elements: landscape, hydrology, soils, physical structure,

and biotic structure. The TXRAM Streams Module contains eight metrics for assessing observable characteristics of a stream that are organized into the following four core elements: channel condition, riparian buffer condition, in-stream condition, and hydrologic condition. These metrics are scientifically-based indicators of aquatic condition selected by the USACE for use as a rapid and consistent evaluation based on field observations or a combination of field observations and analysis in the office. The metrics are scored based on the selection of the best fit from a set of narrative descriptions or numeric tables that cover the full range of possible measurement resulting from aquatic condition.

The results of the TXRAM stream and wetland condition analysis are shown in **Table 3-16**. The TXRAM methodology indicates whether there are stream disturbances or man-made influences on the stream. To simplify the interpretation of the TXRAM condition index ratings, a Quality Rating based on relative comparisons of TXRAM scores is included in **Table 3-16**. The TXRAM score ranges associated with the three-level Quality Rating of stream/wetland condition are as follows: 0.00 to 53.99 = low, 54.00 to 58.99 = medium, 59.00 to 100.00 = high. Accordingly, relatively undisturbed water features such as Cedar Creek received a Quality Rating of high based on its TXRAM score, whereas several emergent wetland features (most disturbed) received a Quality Rating of low.

3.4.3.5 Descriptions of Aquatic Environments

Wetlands

DALLAS FLOODWAY LOOKING SOUTH TOWARD CORINTH STREET

Wetlands within the project area are predominantly found within the Dallas Floodway and consist primarily of shallow depressions that are seasonally flooded and dry out, becoming exposed mud flats during summer months. These areas contain a variety of emergent plant species such as water primrose (*Ludwigia peploides*), smartweed (*Polygonum* spp.), umbrella sedge (*Cyperus* spp.), flat sedge (*Carex* spp.), spikerush (*Eleocharis* spp.), and curly dock (*Rumex crispus*). When inundated with water, these depressions attract a variety of waterfowl

species and are popular foraging areas for shorebirds and wading birds as the depressions dry up and the mud flats become exposed.

Downstream of the Dallas Floodway, several isolated depressions varying in depth and size are intermixed with the elm-hackberry riparian forest, which is dominated by cedar elm and hackberry trees. Plant species are similar to those in an elm-hackberry forest (discussed in **FEIS Section 3.4.4**) but are dominated by relatively water-tolerant species such as green ash, swamp privet (*Forestiera acuminata*), buttonbush (*Cephalanthus occidentalis*), and black willow. One area of forested wetland (2.77 acres, **FEIS Plate 3-17**), or bottomland hardwoods, is found just south of the DART Bridge on the north side of the Trinity River.

Trinity River Channel

The jurisdictional limits of the Trinity River extend to the ordinary high water mark of the channel, which may be defined as the line on the bank established by fluctuations of water, and indicated by physical characteristics such as a clear natural line on the bank, shelving, destruction of terrestrial vegetation, presence of debris, or other appropriate means that consider the characteristics of the area. The bank-to-bank width of the ordinary high water mark of the Trinity River varies from approximately 100 to 200 feet throughout the Dallas Floodway. Associated with the river channel is a very narrow riparian buffer that consists mostly of cottonwood, black willow, American elm, hackberry, and green ash.

Downstream of the Dallas Floodway, the Trinity River generally retains its natural characteristics and has an ordinary high water mark width that varies from approximately 100 to 150 feet. Vegetation along this portion of the river is similar to the species listed above; however, the width of the riparian corridor is notably wider (1,500 to 2,000 feet). Cedar Creek is a jurisdictional tributary that enters the Trinity River between the AT&SF Railroad Bridge and MLK, Jr. Boulevard. Coombs Creek, another tributary of the Trinity River, enters the western portion of the project area just south of IH-30. Coombs Creek is a perennial stream and drains into the Dallas Floodway through the west levee by a pressure sewer and outfall channel. These riparian corridors may serve as migration corridors for wildlife present within the project area.

Old river meanders of the Elm Fork Trinity River and West Fork Trinity River channels are also located within portions of the project area. These meanders have been traversed and surrounded by development and are predominantly open channels with scattered tree growth in a maintained urban setting.

Open Water

Open water habitats were identified on the basis of depth of inundation and lack of rooted emergent or woody vegetation. These habitats are substantially deeper than the wetland depressions and are ponded throughout most of the year. Crow Lake, located within the Dallas Floodway near Sylvan Avenue, is a particularly hard-edged open water area and contains minimal emergent vegetation. Emergent vegetation in the few open water areas east of the MKT Railroad Bridge usually consists of isolated patches of cattail (*Typha latifolia*) along the immediate shoreline. In some of the shallower shoreline areas, pondweed (*Potamogeton* spp.) and spikerush are common.

Several steep-sloped drainage sumps collect local stormwater runoff, which eventually drains into the Dallas Floodway and empties directly into the Trinity River. The sumps originate as drainage ditches on the upland side of the levees and are often bordered by residential, commercial, or industrial development. The sumps vary in depth and are usually deep and steep-sloped, which limits the vegetative diversity. Cattail is the most dominant species found in these areas, and these plants often form a continuous stand around the sumps.

Stormwater runoff is conveyed through the Dallas Floodway to the Trinity River by several pump stations located along each levee. Stormwater is directed through steep-sloped channels aligned perpendicular to the levee and the river channel. These channels were classified as intermittent open waters in the jurisdictional determination of waters of the U.S. within the Dallas Floodway. As flood levels recede, these channels usually drain entirely with the exception of a few isolated pools. Black willow and cottonwood saplings represent the primary plant species that have become established on the steep side slopes of these channels. Isolated pools that remain after floodwaters recede may provide foraging opportunities for a variety of heron or egret species.

3.4.3.6 Executive Order 11990 – Protection of Wetlands

In addition to the regulation of wetlands which meet the criteria of Section 404 as waters of the U.S., Executive policy issued as EO 11990 (Protection of Wetlands) (42 *Federal Register* 26961, May 24, 1977) addresses a broader range of wetland environments. Under the EO, wetlands are defined as “those areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.” Unlike Section 404, the definition of wetlands in the EO does not consider the relationship of wetlands to any waters of the U.S. or tributaries to such, but applies to areas with vegetation adapted to wetland conditions wherever such areas may be found. Although this

definition of wetlands focuses only on hydrophytic vegetation, there are very few sites within the project area that would be subject to the EO (i.e., areas with vegetation that requires saturated soil conditions) that do not also meet the criteria as wetlands under Section 404. Such areas would include emergent wetlands associated with some of the man-made sump areas located outside the Dallas Floodway (see **Section 3.4.3.2**).

EO 11990 (Protection of Wetlands) requires federal agencies to minimize the destruction, loss, or degradation of wetlands, and preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities. A key element of the EO is the requirement for federal agencies to avoid adverse impacts to wetlands unless there is no practicable alternative. The EO does not prescribe a methodology for determining whether a proposed action alternative is practicable, but requires federal agencies to implement its policies by regulation and guidance. Because the proposed project considered multiple alternatives that would affect wetlands, an analysis pursuant to the EO was performed subsequent to the LSS in 2012, and a discussion of that analysis is included in **FEIS Section 2.8**.

3.4.4 Vegetation within the Project Area

The TPWD's map depicting the vegetation types of Texas shows nearly the entire project area within a region mapped as "Urban" land cover (TPWD, 1984). This mapping designation reflects the history of man-made actions within the project area, which have profoundly altered the original ecological conditions from the characteristics described above for regional ecology. Urbanization within the City of Dallas has been ongoing for over 150 years, but the creation of urban landscapes greatly accelerated with the construction of levees in the late 1920s to control flooding from the Trinity River. Dramatic modification of the Trinity River occurred when the Dallas Floodway was constructed by the USACE from 1953 through 1960, including the relocation of the river into a channelized drainage way and construction of other flood control features that are an inherent component to the urban center that now surrounds the floodway. Consequently, very few remnants of the original vegetation, which characterized prehistoric ecological conditions, remain in the project area.

In addition to the Urban land cover designation, TPWD's map shows the Water Oak-Elm-Hackberry Forest vegetation type in a small area located at the far southern terminus of the project area (TPWD, 1984). Commonly associated plants of the Water Oak-Elm-Hackberry Forest include cedar elm, American elm, willow oak (*Quercus phellos*), southern red oak (*Quercus falcata*), white oak (*Quercus alba*), black willow, cottonwood, sycamore (*Platanus occidentalis*), pecan, bois d'arc (*Maclura pomifera*), flowering dogwood (*Cornus florida*), dewberry (*Rubus trivialis*), coral-berry, dallis grass (*Paspalum dilatatum*), switch grass, rescue grass

(*Bromus catharticus*), Bermuda grass (*Cynodon dactylon*), eastern gama grass, Virginia wildrye, Johnson grass (*Sorghum halepense*), ragweed (*Ambrosia* spp.), yankeeweed (*Eupatorium compositifolium*), and Leavenworth's eryngo (*Eryngium leavenworthii*) (TPWD, 1984). In contrast to the area mapped as "Urban" by the TPWD, the forested areas downstream of the DART Bridge are generally consistent with the foregoing description of habitat for the Water Oak-Elm-Hackberry Forest.

The Trinity Parkway project area comprises a total of 7,474.1 acres which includes the following types of land cover based on the interpretation of recent aerial photography (U.S. Department of Agriculture (USDA), 2012) and field observations: urban landscape, grassland areas, riparian forests, forested wetlands, emergent wetlands, and open water features (including stream channels and ponds). A summary of the amounts of land cover within the project is provided in **Table 3-20**, which is followed by a general description of urban landscape, grassland, and woodland areas. The descriptions of habitat in this section are based on a review of current and historic aerial photography, topographic maps, field studies conducted by others, and site visits by qualified biologists on the Trinity Parkway study team to assess current habitat conditions within the Trinity Parkway project area. The most recent biological site visit was in November 2012, but the characterizations of habitat in this FEIS reflect the observations made during numerous field visits over a ten-year period (2002-2012). The descriptions of aquatic habitats are included in the discussion of water features in **FEIS Section 3.4.3**.

TABLE 3-20. SUMMARY OF LAND COVER TYPES IN THE PROJECT AREA

LAND COVER TYPE	ACREAGE	PERCENT OF PROJECT AREA
Urban Landscape	4,025.9	53.9
Grassland Area	2,208.2	29.5
Riparian Forest	590.1	7.9
Aquatic: Forested Wetlands	2.9	<0.1
Aquatic: Emergent Wetlands	270.4	3.6
Aquatic: All Open Water Features	376.6	5.0
TOTAL	**7,474.1**	**100**

3.4.4.1 Urban Landscape

Urban landscaped areas comprise over half of the project area and are located land side beyond the levees and outside the Dallas Floodway. These areas are characterized by the presence of buildings, roads, artificial surfaces, and associated ornamental landscapes. Vegetation is usually restricted to landscaped business parks or residential areas, and often includes nonnative plant species that are of limited use to wildlife. Such non-native species include lawn species such as Bermuda grass (*Cynodon dactylon*) and Saint Augustine grass (*Stenotaphrum secundatum*), as

well as exotic trees and shrubs such Chinaberry (*Melia azedarach*) and Chinese privet (*Ligustrum sinense*). For these reasons, in addition to proximity to the noise and motion of human activity in an urban environment, landscaped vegetation is not considered to be sensitive habitat for wildlife species.

3.4.4.2 Grasslands

TYPICAL FLOODPLAIN GRASSLAND

The majority of the vegetation within the Dallas Floodway is comprised of areas dominated by grass species. These grassland areas blanket both the broad floodplains and levees of the floodway. Within this grassland matrix, emergent wetland areas are scattered throughout the floodplain. Vegetation within these areas is characterized primarily by non-native perennial grasses such as Bermuda grass, Johnson grass, and dallis grass, as well as non-native annual grasses including rescue grass and Japanese brome grass (*Bromus japonicus*). Switch grass, a native tallgrass, may also be found in scattered clumps in areas with abundant soil moisture. Non-grass herbaceous plants (i.e., “forbs”) typical of this vegetation type include wood sorrel (*Oxalis* spp.), daisy fleabane (*Erigeron strigosus*), dollar weed (*Hydrocotyle umbellata*), giant ragweed (*Ambrosia trifida*), western ragweed (*Ambrosia psilostachya*), brown-eyed Susan (*Rudbeckia* spp.), snow on-the-prairie (*Euphorbia bicolor*), goldenrod (*Solidago missouriensis*), and balloonvine (*Cardiospermum halicacabum*) (USFWS, 2010).

The City of Dallas conducts mowing and other maintenance activities within the Dallas Floodway and on the levees to preserve the flood control function. Typically, the levees and adjacent 50-foot strips are subject to mowing on a frequent schedule. Other areas are subject to periodic mowing, but generally less frequently than the levees. This mowing program prevents the encroachment of woody plants onto the levees and into the floodplain, which is a natural ecological trend of this ecoregion. A few scattered trees may be found in grassland dominated areas which are inaccessible to mowers, such as in areas with steep slopes or with soils that are too wet to support the weight of a tractor. Because this area is subject to periodic disturbance from mowing it is not considered to be valuable habitat for plant species and for many wildlife species, except for those species, which are adapted to life under a regimen of periodic mowing (e.g., rabbits and the raptors, which prey on rabbits).

3.4.4.3 Riparian Forests

RIPARIAN FOREST ALONG TRINITY

Approximately 86 percent (506 acres) of the riparian forests within the project area are found downstream of the AT&SF Railroad Bridge (**FEIS Plate 3-17**). The remaining 14 percent of riparian forest is comprised mostly of a narrow (typically 50 to 100 feet wide) forested buffer along channelized portions of the river within the Dallas Floodway (70 acres, 12 percent), or outside the floodway in association with old Trinity River meanders (14 acres, 2 percent). Much of this woodland habitat is subject to occasional flooding from the Trinity River, and supports the growth of trees, which are generally associated with moist soil conditions or shallow depths to groundwater. Although this forested area has been field surveyed for wetlands, only a small area (2.9 acres) of forested wetland was observed southeast of the AT&SF Railroad Bridge and north of the Trinity River (see **FEIS Plate 3-17**). Riparian forest habitats are generally considered an important factor in maintaining biodiversity in wildlife populations by way of providing wildlife travel corridors, particularly through urban areas. The deciduous trees associated with the combined riparian or bottomland hardwood (i.e., forested wetland) areas also produce food and foraging cover for wildlife, as well as nesting habitat (USFWS, 2010).

A tree survey in 2009 provided representative information about the tree composition of the riparian forest downstream of the Dallas Floodway (Arborilogical, 2009). The survey covered approximately 25 acres of forest extending along the proposed Alternative 3C ROW from the DART Bridge southeasterly past the MKT Railroad track. Within this ash-hackberry-elm riparian forest, two areas of forested wetland have been delineated (2.9 acres). The riparian forest is dominated by green ash (*Fraxinus pennsylvanica*) and hackberry (*Celtis laevigata*), combined with abundant American elm (*Ulmus americana*) and cedar elm (*Ulmus crassifolia*) trees. The tree survey reported that 1,509 trees that were at least 6 inches in diameter at breast height (dbh) (Arborilogical, 2009). The estimated density of mature trees (i.e., greater than 6 inches dbh) within the surveyed area is approximately 60 stems per acre. Throughout this area, the forest is characterized by many water-tolerant woody species in addition to green ash and American elm, including black willow (*Salix nigra*), eastern cottonwood (*Populus deltoides*), box elder (*Acer negundo*), swamp privet (*Forestiera acuminata*), and buttonbush (*Cephalanthus occidentalis*).

This riparian forest is an uneven-age woodland, which includes approximately 147 unusually large trees (i.e., at least 20 inches dbh), most of which are green ash (33 trees), hackberry and black willow (29 trees each), cottonwood (24 trees), or American elm (15 trees). Also among the larger trees is a mix of trees in excess of 3 feet dbh, which include black willow, green ash, hackberry, and white mulberry (*Morus alba*).

A survey by the USFWS in 2010 examined the habitat throughout the Dallas Floodway. As reported in that study, commonly occurring trees within the riparian forest include cedar elm, hackberry, cottonwood, green ash, pecan, black willow, and box elder (*Acer negundo)* (USFWS, 2010). Other tree species present include bur oak and red mulberry (*Morus rubra).* Field surveys of the project area noted several large cottonwood and black willow trees along the river with a dbh ranging from 24 to 36 inches. Virginia wildrye, poison ivy, greenbrier, swamp privet, and box elder saplings are common components of the understory vegetation.

Riparian woodlands in the project area consist primarily of secondary growth forests, typically with most trees ranging in size from 6 to 10 inches in dbh. The forest canopy is generally less than 70 feet in height and has nearly complete (i.e., over 90 percent) canopy closure. The density of mature trees (i.e., larger than 6 inches dbh) is estimated to be approximately 15 trees per acre. An analysis of historical aerial photographs dating back to 1942 indicates that only about one-fourth (121 acres) of the areas mapped as riparian forest from modern aerial photography (i.e., 2012) supported mature riparian forest vegetation in 1942. Other areas within the Trinity River floodplain were apparently cleared of woody vegetation as of 1942, or were subsequently cleared of trees at some point in the 70 years between 1942 and 2012. The relatively 'old growth' riparian forests today include the largest trees within the project area, many of which likely exceed 100 years in age. These older-growth forested areas are generally in close proximity to the Trinity River and its tributaries and are concentrated on both sides of the river between the MTK Railroad and IH-45.

3.4.4.4 Invasive Species

EO 13112 (Invasive Species) (64 *Federal Register* 6183-6186, February 8, 1999) directs federal agencies to expand and coordinate their efforts to combat the introduction and spread of "invasive species" (i.e., plants and animals not native to the U.S.). Those species that are likely to harm the environment, human health, or economy are of particular concern. Non-native flora and fauna can cause significant changes to ecosystems, upset the ecological balance, and cause harm to agricultural and recreational areas. Transportation systems can facilitate the spread of plant and animal species outside their natural range, both domestically and internationally. The

FHWA has implemented guidance concerning the EO effective November 18, 1999 (FHWA, 1999).

Until the National Invasive Species Council defines an approved national list of invasive plants, known invasive plants are defined as those on the official noxious weed list of the state in which the activity occurs. In Texas, the Texas Department of Agriculture (TDA) defines and regulates prohibited and restricted noxious weed seeds pursuant to authority granted in the Texas Seed Law (Texas Agricultural Code [TAC] Title 5, Section 61.008). TDA regulations prohibit importing or distributing certain identified noxious or invasive plants in any live form because of the economic or ecological harm associated with such species (TAC Title 4, Rule 19.300). Noxious or invasive species that were observed in the project area include alligatorweed (*Alternanthera philoxeroides*), balloonvine, Chinese tallow (*Triadaca sebifera*), and Japanese dodder (*Cuscuta japonica*).

3.4.5 Habitat for Wildlife

The habitat for a given wildlife species is generally described in terms of the type of vegetation cover (i.e., plant community) that provides a combination of food, water, shelter, and other attributes necessary to sustain life for that species. Vegetation within the project area has been inventoried and described in accordance with a joint TxDOT-TPWD Memorandum of Agreement (MOA), which identifies types of high quality habitat that should be inventoried and described in environmental documents for proposed transportation projects (TxDOT and TPWD, 2001). This MOA implements an earlier TxDOT-TPWD MOU, which required the participating agencies to prepare a MOA to define the types of habitat that would warrant consideration for compensatory mitigation (TxDOT and TPWD, 1998). According to the TxDOT-TPWD MOA, environmental documents are required to include descriptions of the following types of “Unusual Vegetation Features”:

- Unmaintained vegetation;
- Trees or shrubs along a fence line (ROW) adjacent to a field (fencerow vegetation);
- Riparian vegetation (particularly where fields/cropland extends up to or abuts the vegetation associated with the riparian corridor);
- Trees that are unusually larger than other trees in the area; and
- Unusual stands or islands (isolated) of vegetation.

In addition to the above, the MOA requires environmental documents to include descriptions of any of the following "Special Habitat Features":

- Bottomland hardwoods;
- Caves;
- Cliffs and bluffs;
- Native prairies (particularly those with climax species of native grasses and forbs);
- Ponds (temporary and permanent, natural and man-made);
- Seeps or springs;
- Snags (dead trees) or groups of snags;
- Water bodies (e.g., creeks, streams, rivers, lakes); and
- Existing bridges with known or easily observed bird or bat colonies.

Based on the above descriptions of habitat from field surveys, unusual vegetation features in the project area include riparian vegetation and unusually large trees (i.e., trees greater than 20 inches dbh) (see **FEIS Section 3.4.4**). Special habitat features include the aquatic and wetland resources described in **FEIS Section 3.4.3**, including bottomland hardwoods (i.e., forested wetland), emergent wetlands, and open water bodies (i.e., the Trinity River and adjacent open water sumps or old river meanders). The Trinity Parkway project team's observations emphasized riparian habitat as offering the highest quality habitat for wildlife within the project area. Although grassland habitat is by far the most abundant type of habitat in the project area, field observations indicated that the grasslands in the project area are predominantly comprised of Johnson grass and other nonnative species, which greatly diminishes the value of grassland habitat for wildlife species adapted to native food sources.

The USFWS conducted an extensive study of the existing fish and wildlife habitat in the Dallas Floodway for the USACE and prepared its *Existing Habitat Conditions Planning Aid Report for the Dallas Floodway Project* (USFWS, 2010). Field data for the report was collected during 2004 – 2006 by an interagency team composed of personnel from the USFWS, TPWD, and USACE. The USFWS study area included all of the proposed ROW for the Trinity Parkway, with the exception of urban areas outside the floodway. In this study, the USFWS used a standardized procedure to systematically evaluate the various wildlife habitats within its study area outlined (USFWS, 1980). The procedure compared the ecological characteristics of the study area to the habitat characteristics that are optimum for selected representative species within each type of habitat examined. These ecological characteristics are comprised of measurable habitat features such as canopy cover, persistence of mast-producing trees, and available refuge sites that have been determined via habitat suitability models for each of the evaluation species. The USFWS investigators identified three terrestrial habitat types within its study area: riparian forests

(including bottomland hardwoods, or forested wetlands, and non-wetland forests), grasslands, and emergent (herbaceous) wetlands. The results of its habitat suitability analysis indicated that riparian forests and grasslands offer habitat within the "average" range of its evaluation model, but that emergent wetlands in the area were evaluated as "poor" habitat.

The proximity of wildlife habitat to a large urban center diminishes the overall quality and quantity of available habitat but also increases the value of any habitat for wildlife species adapted to live in an urban setting. To varying degrees, all of the project area is subjected to ongoing human disturbance such as commercial and residential activities, train and automotive traffic, recreational activities, and pollutants in stormwater runoff from urban facilities. Wildlife habitat quality appears to vary greatly throughout the project area, with some areas rendered virtually unsuitable due to small patch size and surrounding disturbance. Habitat is particularly scarce outside the Dallas Floodway and outside the Trinity River floodplain downstream of the floodway. Areas beyond the levees/floodplain have been developed for commercial, industrial, residential, and other urban uses, providing very limited habitat for wildlife. Consequently, the focal point for wildlife habitat is effectively limited to the vegetation within the Trinity River Floodway and nearby floodplain areas. Even within these relatively natural areas, ongoing human activity diminishes the quality of habitat available. Periodic mowing of vegetation on the levees and within the grass-dominated areas of the floodway greatly reduces the value of such areas for nesting or cover, although these areas may have limited value for foraging. Additionally, the presence of numerous bridges that cross the Trinity River, as well as noise and other human activity associated with these man-made structures, decreases the value of any nearby habitat. The limited areas not subject to regular mowing that contain marginally intact riparian forested patches and aquatic or wetland features represent the most favorable habitat for wildlife within the project area.

Pollutants in surface waters from storm water runoff and from contributions of flow from wastewater treatment facilities upstream have reduced the physical and chemical characteristics of the habitat and waters, which in turn has reduced the diversity and abundance of aquatic and terrestrial wildlife resources within the project area. Excluding the Elm Fork, the Trinity River (State Stream Segment 0805) in the project area has been placed on the State of Texas 303(d) List as a threatened or impaired water body based on bacteria, chlordane, and polychlorinated biphenyls (PCBs) in edible fish tissue (TCEQ, 2012; USFWS, 1997; USFWS, 2010). Although some improvement in water quality has been noted in recent years, the Trinity River in this area is still largely dominated by wastewater discharge, which strongly influences the biotic community within the river (USFWS, 1997). As the upland and tributary woodland habitats are diminished by urbanization, the remaining river channel, wetlands, open water areas, and forested bottomlands

become an increasingly valuable and necessary resource for wildlife. Accordingly, the area with the greatest potential for wildlife habitat is the relatively contiguous riparian forest and associated aquatic or wetland habitats within the Trinity River floodplain found downstream of the AT&SF Railroad Bridge.

3.4.6 Wildlife Resources within the Project Area

As mentioned in the **FEIS Section 3.4.2**, the project area is located within the Northern Blackland Prairie ecological region of Texas. This characteristic mosaic of tall grass communities with scattered upland forests and riparian corridors once provided habitat for a variety of wildlife species. However, fire suppression, urbanization, agriculture, and grazing have profoundly transformed the Blackland Prairie and associated wildlife communities by eliminating nearly all native tall grass prairies through urban or woody plant encroachment or by replacement of native species with row crops or non-native grass pastures/hay meadows. In addition, as the project area is subject to ongoing human activity, such as recreational use, frequent construction projects, and floodway maintenance, and is surrounded by heavily urbanized areas, it is used primarily by wildlife species that are tolerant of human activity. Small mammals and migratory and resident passerines may use riparian areas along the Trinity River for nesting, foraging, and as a dispersion corridor. Some common resident bird species that may be observed in the project area include sparrows (various species), northern mockingbird (*Mimus polyglottos*), American robin (*Turdus migratorius*), northern cardinal (*Cardinalis cardinalis*), blue jay (*Cyanocitta cristata*), common grackle (*Quiscalus quiscula*), scissor-tailed flycatcher (*Tyrannus forficatus*), barred owl (*Strix varia*), American crow (*Corvus brachyrhynchos*), American kestrel (*Falco sparverius*), Carolina chickadee (*Parus carolinensis*), and red-tailed hawk (*Buteo jamaicensis*). A variety of migrating waterfowl can also be observed during the winter months.

Mammal species that may utilize appropriate habitats in the project area include raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), eastern cottontail rabbit (*Sylvilagus floridanus*), fox squirrel (*Sciurus niger*), and small rodents. Various species of frogs and turtles may be found in reaches of the river that have been relatively unaffected by past sand/gravel mining or stream channelization, while lizards and snakes may also persist in viable terrestrial areas within the project area. This catalog of species is not intended to be all inclusive, but rather provides some of the more common species that may be seen in the project area which have adapted to life within an urban setting.

A list of wildlife species observed in the project area during the USFWS study (USFWS, 2010) and Trinity Parkway project team site visits is shown in **Table 3-21**. No rookeries or other significant nesting areas were identified within the USFWS study area and project area during the USFWS study or Trinity Parkway project team site visits.

TABLE 3-21. WILDLIFE SPECIES OBSERVED IN THE PROJECT AREA

COMMON NAME	SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME
Mammal		**Bird (continued)**	
Coyote (tracks observed)	*Canis latrans*	Eastern kingbird	*Tyrannus tyrannus*
Eastern cottontail rabbit	*Sylvilagus floridanus*	European starling	*Sturnus vulgaris*
Eastern fox squirrel	*Sciurus niger*	Great blue heron	*Ardea herodias*
Raccoon (tracks observed)	*Procyon lotor*	Great egret	*Ardea alba*
Reptile and Amphibian		Killdeer	*Charadrius vociferus*
Chorus frog	*Pseudacris triseriata*	Lesser yellowlegs	*Tringa flavipes*
Gulf coast toad	*Bufo valliceps*	Mallard	*Anas platyrhynchos*
Red-eared slider	*Trachemys scripta elegans*	Mourning dove	*Zenaida macroura*
Fish		Northern cardinal	*Cardinalis cardinalis*
Sunfish	*Lepomis* spp.	Northern flicker	*Colaptes auratus*
Spotted gar	*Lepisosteus oculatus*	Northern mockingbird	*Mimus polyglottos*
Freshwater drum (dead)	*Aplodinotus grunniens*	Snowy egret	*Egretta thula*
Bird		Red-bellied woodpecker	*Melanerpes carolinus*
American crow	*Corvus brachyrhynchos*	Red-tailed hawk	*Buteo jamaicensis*
American kestrel	*Falco sparverius*	Red-winged blackbird	*Agelaius phoeniceus*
Belted kingfisher	*Megaceryle alcyon*	Rock dove (pigeon)	*Columba livia*
Blue jay	*Cyanocitta cristata*	Tufted titmouse	*Baeolophus bicolor*
Carolina chickadee	*Parus carolinensis*	Turkey vulture	*Cathartes aura*
Carolina wren	*Thryothorus ludovicianus*	Warbling vireo	*Vireo gilvus*
Chimney swift	*Chaetura pelagica*	White-eyed vireo	*Vireo griseus*
Common grackle	*Quiscalus mexicanus*	White ibis	*Eudocimus albus*
Downy woodpecker	*Picoides pubescens*	Wood duck	*Aix sponsa*

3.4.7 Threatened and Endangered Species

The purpose of this section is to provide a brief summary of the listing and monitoring procedures for rare wildlife species employed by federal and state government agencies, a summary of federally- and state-listed threatened and endangered species that may occur in Dallas County, the potential for rare species to occur within the project area, and a brief ecological description of each species.

3.4.7.1 Listing and Monitoring Processes

Federal (USFWS)

The ESA of 1973 and subsequent amendments (16 U.S.C. Sections 1531-1544) grants the USFWS legislative authority to list and monitor the status of species whose populations are considered imperiled. Pursuant to USFWS regulations which implement the ESA (50 CFR Part

17), the federal process stratifies potential candidates based upon the species' biological vulnerability. The vulnerability decision is based upon many factors affecting the species and is linked to the best scientific data available to the USFWS at the time. Species listed as threatened or endangered by the USFWS are provided full protection. This protection includes a prohibition of indirect take such as destruction of critical habitat. Additionally, species that have been proposed for listing as threatened or endangered are granted limited protection under the ESA until a decision is reached. The ESA and accompanying regulations also encourage the individual states to establish regulatory programs, which complement the management and protection of threatened and endangered species under the federal program.

State (TPWD)

Since 1973, the State of Texas has authorized the TPWD to manage and protect species identified as threatened or endangered in the state (Texas Parks and Wildlife Code Chapters 67 and 68). This legislation protecting rare species authorizes the TPWD to formulate lists of threatened and endangered fish and wildlife species and to regulate the taking or possession of the species. Since 1981, the TPWD has also had the authority to designate plant species as threatened or endangered and to prohibit commercial collection or sale of these species without permits (Texas Parks and Wildlife Code Chapter 88). Under this combined statutory authority, the TPWD regulates the take, possession, transport, export, processing, selling or offering for sale, and shipping of threatened or endangered species of fish, wildlife, and plants. Neither specific criteria for the listing of plant and animal species, nor protection from indirect take (i.e., destruction of habitat or unfavorable management practices) are found in either of the above-mentioned statutes or in TPWD regulations which implement the state program (31 TAC Rules 69.1 – 69.9).

3.4.7.2 List of Threatened and Endangered Species

A summary of the federally- and state-listed threatened and endangered species which are believed to occur within Dallas County where suitable habitat exists is presented in **Table 3-22** (USFWS, 2013; TPWD, 2013a). Also included within **Table 3-22** are plant and animal species that the TPWD has designated as "species of concern" (SOC); TPWD's designation of a SOC does not create legal protection for the species, but is an indication that the species is considered rare and that the TPWD is acquiring additional information about the ecological requirements of the species. Information in **Table 3-22** includes the current federal/state regulatory status of each species, a brief description of preferred habitat requirements, and an indication as to whether the project area contains preferred habitat of sufficient quantity and quality to attract each species.

As stated in a detailed USFWS study of habitat and species requirements in the Dallas Floodway and nearby areas, "Due to the character of the habitats observed within the study area, it is unlikely that any federally-listed threatened or endangered species would be present" (USFWS, 2010). In addition, the USFWS study contained an assessment as to the availability of preferred habitat for bird species in the project area that is consistent with the information in **Table 3-22**.

TABLE 3-22. HABITAT REQUIREMENTS FOR RARE SPECIES IN DALLAS COUNTY

SPECIES	FED. STATUS	STATE STATUS	DESCRIPTION OF SUITABLE HABITAT	HABITAT PRESENT	NOTES RE HABITAT WITHIN PROJECT AREA
BIRDS					
American peregrine falcon *Falco peregrinus anatum*	DL*	T	Year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in U.S. and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	Yes	Limited potential for stopover during migration given the presence of preferred habitat elsewhere in the vicinity (e.g., Mountain Creek Lake) and lack of preferred water features in the project area.
Arctic peregrine falcon *Falco peregrinus tundrius*	DL*	SOC	Migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	Yes	Limited potential for stopover during migration given the presence of preferred habitat elsewhere in the vicinity (e.g., Mountain Creek Lake) and lack of preferred water features in the project area.
Peregrine falcon *Falco peregrinus*	DL*	T	Both subspecies migrate across the state from more northern breeding areas in U.S. and Canada to winter along coast and farther south; although *F.p. tundrius* is no longer listed in Texas, reference is generally made only to the species level because the subspecies are not easily distinguishable at a distance.	Yes	See explanation for both subspecies above.
Bald eagle *Haliaeetus leucoceohalus*	DL	T	Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds.	No	Lack of large water body/food source in project area and the availability of nesting habitat closer to large lakes in the region.

TABLE 3-22. HABITAT REQUIREMENTS FOR RARE SPECIES IN DALLAS COUNTY

SPECIES	FED. STATUS	STATE STATUS	DESCRIPTION OF SUITABLE HABITAT	HABITAT PRESENT	NOTES RE HABITAT WITHIN PROJECT AREA
Black-capped vireo *Vireo atricapilla*	E	E	Oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; returns to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer.	No	No suitable habitat containing oak-juniper woodlands was observed within the project area.
Golden-cheeked warbler *Setophaga chrysoparia*	E	E	Juniper-oak woodlands; dependent on Ashe juniper (also known as cedar, *Juniperus ashei*) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar breaks can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer.	No	No suitable habitat containing oak-juniper woodlands was observed within the project area.
Henslow's sparrow *Ammodramus henslowii*	—	SOC	Wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking. This bird is now believed to be extirpated throughout much of its former range but could be an unlikely migrant in the project area.	Yes	Open areas are predominantly sod forming Bermuda grass with few bare ground areas or vines and brambles in open areas. Habitat value of grassy areas is diminished by occasional mowing.
Interior least tern *Sterna antillarum athalassos*	E	E	Prefers salt flats, broad sandbars, and barren shores along reservoirs and wide, shallow rivers. Nests along sand and gravel bars within braided streams, rivers, but may also nest on man-made structures (e.g., inland beaches, wastewater treatment plants, gravel mines); eats small fish and crustaceans, when breeding forages near its colony.	Yes	The project area does not contain sand and gravel bars within braided streams or rivers, however, several man-made structures can be found near water and birds may be attracted to construction sites.

TABLE 3-22. HABITAT REQUIREMENTS FOR RARE SPECIES IN DALLAS COUNTY

SPECIES	FED. STATUS	STATE STATUS	DESCRIPTION OF SUITABLE HABITAT	HABITAT PRESENT	NOTES RE HABITAT WITHIN PROJECT AREA
Piping plover *Charadrius melodus*	T	T	Wintering migrant along the Texas Gulf Coast; beaches and bayside mud or salt flats, and sparsely vegetated sand and gravel coastlines are preferred for nesting. May also seek sparsely vegetated river sandbars.	Yes	This species is migratory through the area could temporarily use portions of the project area as stopover during migration.
Sprague's pipit *Anthus spragueii*	C*	SOC	Only in Texas during migration and winter, mid-September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.	Yes	Although the project area does not include any native upland prairie areas which would provide stopover habitat, birds may still use mowed grasslands as stopover.
Western burrowing owl *Athene cunicularia hypugaea*	—	SOC	Open grasslands, especially prairie, plains, and savannah, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows.	Yes	Although species may make use of grassland areas, habitat value would be diminished by occasional mowing.
White-faced Ibis *Plegadis chihi*	—	T	Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; winters and breeds in Gulf Coast marshes; feeds on small animals found in wet sand and roosts on low platforms of dead reed stems or on mud banks.	Yes	Suitable foraging and nesting areas exist within the project area.
Whooping crane *Grus americana*	E	E	Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties; stopover habitat includes freshwater marshes, tidal flats, barrier islands, and wet prairies.	Yes	This species is migratory through the area could temporarily use portions of the project area as stopover during migration.
Wood stork *Mycteria americana*	—	T	Forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960.	Yes	This species is migratory through the area could temporarily use portions of the project area as stopover during migration.

TABLE 3-22. HABITAT REQUIREMENTS FOR RARE SPECIES IN DALLAS COUNTY

SPECIES	FED. STATUS	STATE STATUS	DESCRIPTION OF SUITABLE HABITAT	HABITAT PRESENT	NOTES RE HABITAT WITHIN PROJECT AREA
INSECTS					
Black Lordithon rove beetle *Lordithon niger*	—	SOC	Historically known from Texas; mature or late successional forests, such as northern hardwood or mixed coniferous-deciduous forest below 2500' elevation.	No	Project area does not contain preferred forest habitat for this species.
MAMMALS					
Cave myotis bat *Myotis velifer*	—	SOC	Colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned cliff swallow (*Hirundo pyrrhonota*) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore.	Yes	The project area does not contain caves or rock crevices, but does contain potential man-made habitat (i.e., bridges). However, there is no recent evidence of this species in the project area.
Plains spotted skunk *Spilogale putorius interrupta*	—	SOC	Prefers open fields, prairies, croplands, fencerows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie.	Yes	The project area contains potential habitat, however, there is no recent evidence of this species in the project area.
MOLLUSKS					
Fawnsfoot *Truncilla donaciformis*	—	SOC	Small and large rivers especially on sand, mud, rocky mud, and sand and gravel, also silt and cobble bottoms in still to swiftly flowing waters; Red (old), Cypress (old), Sabine (old), Neches, Trinity, and San Jacinto River basins.	Yes	The Trinity River and its major tributaries provide potential habitat for this species.
Little spectaclecase *Villosa lienosa*	—	SOC	Creeks, rivers, and reservoirs, sandy substrates in slight to moderate current, usually along the banks in slower currents; east Texas, Cypress through San Jacinto River basins.	Yes	The Trinity River and its major tributaries provide potential habitat for this species.
Louisiana pigtoe *Pleurobema riddellii*	—	T	Streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and gravel; not generally known from impoundments; Sabine, Neches, and Trinity (old) River basins.	Yes	The Trinity River and its major tributaries provide potential habitat for this species.

TABLE 3-22. HABITAT REQUIREMENTS FOR RARE SPECIES IN DALLAS COUNTY

SPECIES	FED. STATUS	STATE STATUS	DESCRIPTION OF SUITABLE HABITAT	HABITAT PRESENT	NOTES RE HABITAT WITHIN PROJECT AREA
Texas heelsplitter *Potamilus amphichaenus*	—	T	Quiet waters in mud or sand and also in reservoirs. Sabine, Neches, and Trinity River basins.	Yes	The Trinity River and its major tributaries provide potential habitat for this species.
Texas pigtoe *Fusconaia flava*	—	T	Rivers with mixed mud, sand, and fine gravel in protected areas associated with fallen trees or other structures; east Texas river basins, Sabine through Trinity rivers as well as San Jacinto River.	Yes	The Trinity River and its major tributaries provide potential habitat for this species.
Wabash pigtoe *Fusconaia flava*	—	SOC	Creeks to large rivers on mud, sand, and gravel from all habitats except deep shifting sands; found in moderate to swift current velocities; east Texas River basins, Red through San Jacinto River basins; elsewhere occurs in reservoirs and lakes with no flow.	Yes	The Trinity River and its major tributaries provide potential habitat for this species.
REPTILES					
Alligator snapping turtle *Macrochelys temminckii*	—	T	Perennial water bodies; deep water of rivers, canals, lakes, and oxbows; also swamps and ponds near deep running water.	Yes	The project area contains perennial water bodies; however, there is no recent evidence of this species in the project area.
Texas garter snake *Thamnophis sirtalis annectens*	—	SOC	Wet or moist microhabitats are conducive to the species occurrence, but are not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August.	Yes	The project area contains potential habitat near the Trinity River and adjacent wet areas.
Texas horned lizard *Phrynosoma cornutum*	—	T	Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September.	No	There is a general absence of open habitat required by this species in the project area.
Timber/canebrake rattlesnake *Crotalus horridus*	—	T	Swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil, or black clay; prefers dense ground cover, i.e. grapevines or palmetto.	Yes	The project area contains riparian forests; however, there is no recent evidence of this species in this area.

TABLE 3-22. HABITAT REQUIREMENTS FOR RARE SPECIES IN DALLAS COUNTY

SPECIES	FED. STATUS	STATE STATUS	DESCRIPTION OF SUITABLE HABITAT	HABITAT PRESENT	NOTES RE HABITAT WITHIN PROJECT AREA
PLANTS					
Glen Rose yucca *Yucca necopina*	—	SOC	Texas endemic; grasslands on sandy soils and limestone outcrops; flowering April-June.	No	This species is not expected to be found in heavy-textured soils within floodplains.
Warnock's coral-root *Hexalectris warnockii*	—	SOC	In leaf litter and humus in oak-juniper woodlands on shaded slopes and intermittent, rocky creek beds in canyons; in the White Rock Escarpment (Dallas County); flowering June-September; individual plants do not usually bloom in successive years.	No	Oak-juniper woodlands of the White Rock Escarpment are located to the southwest of the project area.

Notes:
Key to Abbreviations Used to Indicate Species Listing Status:
E = State- or Federal-Listed Endangered
T = State- or Federal-Listed Threatened
C = Federal Candidate for Listing (USFWS has acquired data on biological vulnerability to support listing, but data is being gathered regarding critical habitat)
DL = Federally-Delisted (due to species recovery)
— = No designation occurring within identified county by the USFWS or TPWD, as applicable
SOC = Designated as a "species of concern" by the TPWD (rare, but with no regulatory listing status)
* = TPWD T&E species list indicates that species could be present in Dallas County; however, USFWS T&E species list does not indicate a listing status for the species in Dallas County

Sources: U.S. Fish and Wildlife Service (March 20, 2013), Texas Parks and Wildlife Department, Wildlife Division, Diversity and Habitat Assessment Programs, County Lists of Texas Special Species (Dallas County list acquired on March 20, 2013, which was last revised on January 22, 2013), and Field Biological Survey (October 30, 2012).

3.4.7.3 Texas Natural Diversity Database Search Results

Coordination with the TPWD for information from the Texas Natural Diversity Database (NDD) was conducted in April 2013 to obtain a list of known occurrences for any threatened, endangered, or rare species within or near the project area (TPWD, 2013b). The NDD includes individual records of occurrences for rare plant and animal resources that are based upon the best available information to TPWD. These records are referenced to geographic points and are provided as GIS shapefiles that facilitate overlaying records of species occurrences with the project area. The NDD data may assist in confirming the likelihood of rare species to occur within a specified area, but the absence of a record in the NDD data is not equated to the absence of a species in the project area.

According to the NDD, there is one Element Occurrence Identification (EOID) record for rare mollusks identified within the project area. EOID 9696 documented the observation on

September 22, 2011 of four live Texas pigtoe mussels at four sites located in close proximity to the IH-35E crossing over the Trinity River. Details regarding this observation record are contained in a habitat assessment survey prepared for a proposed TxDOT project (Zara, 2012).

Several other records from the NDD indicate the presence of rare mollusks in the vicinity of the proposed project. EOID 9494 is a recorded observation made in July 2012 of a Louisiana pigtoe mussel approximately 3.6 miles northwest of the proposed project near the California Crossing Bridge over the Elm Fork Trinity River. Also in July 2012, and at the same location, EOID 9695 recorded additional observations of the Texas pigtoe mussel. In this instance, 12 live mussels were collected, ten of which were relocated upstream; EOID 9694 documents the relocation site for the ten mollusk specimens collected under EOID 9695. The remaining two individuals were retained for a genetic and morphological study. This Elm Fork Trinity River site is located northeast of the intersection of W. Northwest Highway and O'Connor Boulevard. Also at this location is EOID 9771, which describes an observation of the sandbank pocketbook (*Lampsilis satura*). Two dead individuals were observed at this location in July 2012. The sandbank pocketbook, a state-listed threatened species, is not listed on TPWD's Annotated County Lists of Rare Species for Dallas County (TPWD, 2013a). This species is typically found in small to large rivers with moderate flows and swift current on gravel, gravel-sand, and sand-bottoms. The listed range is in east Texas, from Sulfur River south through the San Jacinto River basins and the Neches River. EOIDs 9694 and 9771 are located approximately 4 miles northwest of the proposed project. Although located more than 10 miles from the project, it is noteworthy that the state-threatened Texas heelsplitter mussel has been observed upstream of the project area in Grapevine Lake (EOID 9884).

Eight additional EOIDs for non-mollusk species are located within 10 miles of the proposed project. The closest of these is EOID 2952, which is an active rookery located approximately 0.4 mile north of the project area within the Southwestern Medical Center complex. Various egrets and heron species (*Egretta*, *Ardea*, *Bubulcus*, and *Nycticorax* spp.) utilize a 4-acre stand of trees maintained by the medical center. Vegetation features are typical of those found within many urban rookeries, and include hackberry, cedar elm, and bois d'arc species. The rookery is surrounded by urban development, effectively making it an island of habitat within the area. This location is widely known to be utilized each spring by the colonial species noted above.

EOID 1439 lists an egret and heron rookery northwest of Hutchins, approximately 4 miles south of the project area. The rookery, at the intersection of Simpson Stuart Road and Bonnie View Road, was identified in 1988 and last observed in 1990. Since then, residential and commercial development has occurred in the area, and correspondence with local wildlife rehabilitation

professionals indicated that no known rookery still exists. In addition, a field visit in July 2008 by the project team resulted in no observation of a rookery in the vicinity. While potential habitat does exist along the Five Mile Creek tributary nearby, it does not appear to be a current nesting site.

EOID 432 is located approximately 5.6 miles northeast of the proposed project along White Rock Lake. This listing resulted from the 1948 capture of a Texas garter snake for the Baylor University collection.

EOID 561 corresponds to a nesting colony of cattle egrets observed in 1981. This location is approximately 8.5 miles southwest of the proposed project.

EOID 6868, which is located approximately 9.4 miles southeast of the project area, corresponds with a fish hatchery adjacent to Log Cabin Road, south of Kleberg. The site was listed in 1990 as an egret and heron rookery.

EOID 2874 and EOID 7284 are identified nesting areas of the interior least tern in Dallas County. EOID 2874 is located at the Southside Water Treatment Plant approximately 9.1 miles southeast of the project area. EOID 7284 is located at a sand and gravel pit approximately 9.6 miles southeast of the project area. The two colonies are located within close proximity to each other.

EOID 3672 is a rookery located 9.7 miles north of the project area at the intersection of Josey Lane and Keller Springs Road in north Carrollton. Within the vicinity of this intersection are several ponds and streams. This record is of a nesting colony of egrets and herons observed in 1990.

According to the NDD, the nearest wildlife management areas to the project area are located over 10 miles away. The closest management areas are Joe Pool Lake and Cedar Hill State Park, located approximately 12 miles to the southwest. Grapevine Lake is located approximately 14 miles northwest of the project area.

3.4.7.4 Fish and Wildlife Coordination Act

With narrow exceptions, the FWCA (16 U.S.C. Sections 661-666c) requires federal agencies to coordinate with the USFWS regarding projects which propose to modify streams or other water bodies. The FWCA also requires coordination with the state agency responsible for wildlife resources (i.e., TPWD in Texas). The purpose of these consultations is to ensure that the

proponents of projects with federal sponsorship or oversight take into consideration the effect that water-related projects would have on fish and wildlife resources, take action to prevent loss or damage to these resources, and provide for the development and improvement of these resources.

3.4.7.5 Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (MBTA) makes it unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg in part or in whole, without a federal permit issued in accordance within the MBTA's implementing regulations (16 U.S.C. Sections 703-712). The MBTA applies to virtually all migratory birds, regardless of whether a species is common or rare. To comply with the MBTA, the planning of major construction projects should take steps to avoid harm to migratory birds, such as removal of trees or structures which may contain bird nests after nesting season, or take precautions to prevent birds from establishing nests in such areas prior to construction activity.

3.4.8 Wild and Scenic Rivers

The National Wild and Scenic Rivers System (NWSRS) was created by Congress in 1968 to preserve certain rivers with outstanding natural, cultural, or recreational features in a free-flowing condition for the enjoyment of present and future generations. According to the NWSRS Web site, a 191.2-mile stretch of the Rio Grande River from the Chihuahua-Coahuila border in Mexico to the Terrell-Val Verde County line is the only river segment in the State of Texas protected under the Wild and Scenic Rivers Act (NWSRS, 2013).

3.4.9 Prime and Unique Farmland

The Farmland Protection Policy Act (FPPA) seeks to preserve the agricultural use of soils that are particularly productive (7 U.S.C. Sections 4201-4209). The Natural Resources Conservation Service (NRCS) has implemented the FPPA through regulations promulgated in 7 CFR Part 658. Under these regulations, areas that are already in or committed to urban development do not meet the regulatory definition of farmland and are exempt from the FPPA. Accordingly, coordination with the NRCS is not required for the proposed project.

3.5 PHYSICAL ENVIRONMENT SETTING

This section provides a description of the physical environment within and around the project area. Topics include geography, topography, climatology, geology, soil types, hydrology, and water quality. Important governmental policies regarding the natural resources discussed in this subsection stem from environmental statutes and regulations, examples of which are included in the listing of regulatory authorities below.

- Water quality: State Water Quality Certification Program for Section 404 permits under authority of Section 401 of the CWA (33 U.S.C. Section 1341); and state water quality assessment and reporting under CWA Sections 303(d) and 305(b) (33 U.S.C. Sections 1313d and 1315b);
- Floodplains: EO 11988 (Floodplain Management) (42 *Federal Register* 26951, May 24, 1977);
- Bridges: Section 9 of the Rivers and Harbors Act of 1899 (33 U.S.C. Section 401), as modified by the General Bridge Act of 1946 (33 USC Section 525);
- Navigation: Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. Section 403); and
- Public works: USACE authority under Section 408 of the Rivers and Harbors Act of 1988 (33 U.S.C. Section 408) regarding modifications to federal public works projects in rivers and harbors.

3.5.1 Geography and Topography

The DFW metropolitan area is located in the North Central Texas region approximately 250 miles north of the Gulf of Mexico. The project area is within the Trinity River Valley and is surrounded by rolling hills that generally range from 500 to 700 feet in elevation above msl (USGS, 2010). The geographic location of the approximate center of the project area (i.e., the Margaret Hunt Hill Bridge over the Trinity River) is 32.8° North Latitude, 96.8° West Longitude.

The City of Dallas is located in Dallas County and serves as the county seat. Dallas is 35 miles east of Fort Worth and 245 miles northwest of Houston. Dallas is the Nation's ninth most populous city (1.2 million inhabitants), and the third largest city in Texas after Houston and San Antonio (U.S. Census Bureau, 2010c). The City of Dallas is a central component of the DFW area, which is the fourth largest metropolitan area in the country (after New York, Los Angeles, and Chicago) with a population of nearly 6.4 million (City of Dallas, 2013b). The City of Dallas is

a large inland regional and international transportation hub despite an absence of transportation access via a navigable water body.

The Trinity Parkway project area is located within an ancient floodplain and has nearly flat terrain throughout, with a range in elevation of only 100 feet between the highest and lowest elevations. The highest elevation is 476 feet above msl on the Big City Crushed Concrete property on Forest Avenue, and the lowest elevation is the Trinity River channel, which is 376 feet above msl, where it exits the southeast end of the project area (NCTCOG, 2009b). The Dallas Floodway levees, which form one of the most prominent topographical features in the project area, range in elevation from 426 to 436 feet above msl. The vertical relief between the tops of these levees and the typical water surface elevation of the Trinity River (i.e., 384 to 392 feet above msl in the project area) is approximately 44 feet (NCTCOG, 2009b).

3.5.2 Climatology

The DFW metropolitan area is located in a region of temperate climatological conditions, experiencing occasional extremes of temperature and precipitation of relatively short duration. According to the National Oceanic and Atmospheric Administration (NOAA) weather monitoring records for the DFW area, the 30-year average rainfall amount is 36.1 inches per year. However, precipitation varies considerably and ranges from 20 inches to more than 50 inches per year. Precipitation is nearly always received as rainfall; snowfall is rare in this area (NOAA, 2013). The mean relative humidity is 66 percent, and normal monthly humidity stays within the 60 to 70 percent range. A summary of monthly temperature and precipitation statistics for the City of Dallas is included in **Table 3-23**. The average first freeze occurs in late November while the average last freeze is mid-March.

TABLE 3-23. CLIMATE DATA FOR THE DALLAS/FORT WORTH AREA

Month	Normal Daily Temperature (º F)		Normal Monthly Precipitation (inches)
	Maximum	Minimum	
January	56	36	2.1
February	60	39	2.7
March	68	47	3.5
April	76	55	3.1
May	84	64	4.9
June	91	71	3.8
July	96	75	2.2
August	96	75	1.9
September	88	68	2.6
October	78	57	4.2
November	67	46	2.7
December	57	37	2.6
ANNUAL	**77**	**55**	**36.1**

Source: NOAA, 2013.

Most of the annual precipitation is the result of thunderstorms that move through the area, characterized by occasional bursts of heavy rainfall of short duration. These thunderstorms may occur at any time during the year, but are most common during the spring months. Hail may be associated with intense thunderstorms several times a year, but hail damage is generally slight and highly localized. In addition, high winds may occur during thunderstorm events that occasionally cause substantial property damage (NOAA, 2013).

The highest temperatures of summer are experienced during periods of relatively low humidity under fair skies with winds from the west. Summer daytime temperatures frequently exceed 100°F. Thunderstorms generally provide relief from heat waves that typically occur throughout the summer for 3 to 5 days at a time. Temperatures during the summer cool during the evening hours and there are few nights when the daily low temperature exceeds 80°F (NOAA, 2013).

According to the records of the National Weather Service, the predominant wind direction in the DFW area is from the south. Prevailing wind speed within the region rarely exceeds 21 knots (i.e., 24 miles per hour). Average wind speed/direction data for the DFW area are summarized in **Table 3-24**.

TABLE 3-24. AVERAGE WIND SPEED/DIRECTION DATA FOR THE DFW AREA

Wind Data	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean
Wind Speed (miles per hour)	10.8	11.2	12.2	12.1	11.2	10.4	9.9	8.6	8.7	9.7	10.6	10.4	10.5
Prevailing Direction (degrees from north)	190	170	170	170	170	170	190	170	170	170	190	190	170

Source: NOAA, 2013.
Notes: All data are based on records from 1981-2010. As the prevailing directions are relative to north (0°), south is 180°.

3.5.3 Geology and Soils

This subsection describes the physiographic setting, geology, mineral resources, and soil types within the project area.

3.5.3.1 Physiographic Setting

The project area is located along the western edge of the Blackland Prairies subregion in the Gulf Coastal Plains physiographic region (or 'province') (BEG, 1996). The Blackland Prairies subregion is characterized by calcareous limestones formed in marine environments during the Cretaceous period (66-144 million years ago) (Spearing, 1991; GTSF, 2012), and by sandstones and mudstones that formed along ancient coastal areas. Subsequent uplifting of the earth's crust and erosive forces led to the surface geologic patterns observable at or near the surface of the ground today. Throughout this subregion, Quaternary period geologic features also occur which are consolidated and unconsolidated deposits formed primarily from alluvial processes within major watershed drainages occurring over the past 2 million years. As the project area is located within the valley of a major regional river, nearly all of the project area is comprised of Quaternary alluvial deposits (USGS and TWDB, 2007).

3.5.3.2 Geology

Bedrock Materials

All bedrock features in the Blackland Prairies subregion of the Gulf Coastal Plains are of sedimentary origin. Exposed or near-surface bedrock is composed of near shore and shoreline marine sediments deposited at the edge of the Gulf Coast Embayment by a shallow Cretaceous sea that existed approximately 100 million years ago (Spearing, 1991). These Cretaceous sediments were deposited on top of the older Pennsylvanian and Permian sediments and were subsequently covered by Tertiary and Quaternary sediments of marine and continental origin. These formations dip gently to the southeast at a rate steeper than the land surface, producing a banded outcrop pattern with progressively younger formations outcropping in the downstream direction. The rate of dip and thickness of the individual formations increases in a gulfward direction.

Surface geologic material within the project area is comprised primarily (i.e., 93 percent) of Quaternary floodplain and channel alluvium (Spearing, 1991; USGS and TWDB, 2007). These alluvial deposits are associated with the Trinity River and are the result of transported sediments from a variety of limestones, marls, sandstones, and clay bedrocks found throughout the upper Trinity River watershed (BEG, 1972). These alluvial sediments, composed primarily of unconsolidated sand, gravel, silt, and clay, are found in and above the river and tributary creek floodplains. A typical floodplain alluvial sequence would consist of silt or clay underlain by sand and a basal gravel layer.

The alluvial deposits within the eastern two-thirds of the project area overlay Austin Chalk (limestone), and overlay Eagle Ford shale bedrock in the project area's western one-third. Also present along the fringes of the project area's eastern end, are much smaller areas comprised of fluviatile terrace deposits (4.6 percent), and Austin Chalk (2.4 percent). The highest terraces located at the outer edges of the ancient Trinity River floodplain generally represent the oldest floodplain remnants. As discussed above, outcropping bedrocks across Dallas County get progressively younger from west to east, as evidenced by the location of the Austin Chalk to the east of the older Eagle Ford shale. A summary of characteristics of the several types of geologic materials found within the project area is provided in **Table 3-25**.

TABLE 3-25. GEOLOGICAL FEATURES WITHIN THE PROJECT AREA

Rock Unit	Name	Description
Qal	Alluvium	Consists of floodplain deposits including indistinct low terrace deposits; gravel, sand, silt, silty clay, and organic matter; these unconsolidated deposits have variable thickness.
Qt	Fluviatile terrace deposits	Consists of gravel, sand, silt, and clay; unconsolidated deposits of variable thickness.
Kau	Austin Chalk	Chalk bedrock throughout, which is mostly microgranular calcite, with some interbeds of calcareous clay; 300-500 feet thick.
Kef	Eagle Ford Group undivided	Comprised of shale, sandstone, and limestone; 200-300 feet thick.
Sources: USGS and TWDB, 2007; BEG, 1972.		

The differing geologic units within the project area have distinct mineral properties and stability characteristics; therefore, the project area's suitability for urban development is varied. In general, limestone and calcareous cemented alluvial gravels exhibit strong stability, while clays show very weak stabilities. However, these very general characterizations are subject to variability. For instance, if a layer of limestone is underlain by clay, then the stability of the limestone is jeopardized by the weakness and plasticity of the clay. The Eagle Ford Shale is easily eroded and forms soft slopes. The most favorable substrate for urban development is the Austin Chalk. These soft limestones generally have very high foundation strength and form stable slopes.

Faults

According to the United States Geological Survey (USGS) Geologic Hazards Science Center data on Texas Quaternary faults, the project area lies west of and over 20 miles from the mapped limits of the Gulf-Margin Normal Faults region (USGS and BEG, 2011). This region contains a belt of mostly seaward-facing normal faults bordering the northern Gulf of Mexico in eastern and

southern Texas. The Gulf-Margin Normal Faults are known to have low seismicity and a low probability of generating significant seismic ruptures that could cause damaging ground motion.

Mineral Resources

Mineral resources in the project area are limited to near-surface deposits of sand and gravel that are used as aggregate for road-base fill and other construction uses. Previously, extensive areas of sand and gravel extraction occurred along the floodplain/terrace complexes of the Trinity River, as well as some of the smaller features in the project area. The extensive past mining of sand and gravel resources throughout the project area is recorded in aerial photography acquired as far back in time as 1929 (TNRIS, 1929-1984). Historic aerial photographs display the characteristic overburden spoil piles that form crop-like rows within most of the mining quarries. The well-sorted, clean gravel that is characteristic of the Trinity River floodplain was the target mineral resource of these mining operations, which usually consisted of stripping the overburden alluvial soils with heavy tractors or draglines and setting it aside, after which the gravel seam within the exposed trench was removed. The mining operation then continued by backfilling the exposed excavation trench with overburden soil from an adjacent area and repeating this process as mining activity moved across the floodplain (Probasco, 1971). The result was often the reshaping of the landscape into a pattern that resembled a giant washboard. Regardless of whether spoil piles were graded to create a smooth surface after gravel extraction, such areas were quickly recolonized by woody vegetation, thereby making it difficult to observe any remaining spoil piles.

Another potential rock/mineral resource along the corridor includes the Austin Chalk, which is quarried elsewhere in north central Texas as an ingredient in the manufacture of Portland cement. No active quarrying activities for these mineral resources occur within the project area at present.

3.5.3.3 Soils

This subsection describes the soil types found in the project area according to general characteristics and limitations relevant to the construction of the proposed tollway facility. Soils are a major component in ecological systems. Various physical, chemical, and biological processes filter water that percolates through soil. These include aeration, microbial digestion, ion exchange, and the uptake of nutrients by plants. Through these actions, low-quality runoff may be upgraded as it passes through the soil zone. The clay soils that are common throughout the project area are especially active in terms of chemical activity. As with plants, chemical

activity within the soil zone functions as an environmental buffer in which the quality of runoff from urban areas may be upgraded.

Soils data for the project area were obtained from the Natural Resources Conservation Service (NRCS) Soil Data Mart (NRCS, 2011), which is largely derived from the Dallas County Soil Survey (SCS, 1980). A total of 21 soil mapping units are present within the project area. A listing of soil types is shown in **Table 3-26**, which also provides the acreage and the percentage of each of the soil units within the project area. The soils in **Table 3-26** are segregated into primary soils and minor soils, based on the area of each soil type found within the project area. Each of the primary soils occupies 1 percent or greater of the project area and collectively this group of soils comprises 97.8 percent of the project area. Minor soils collectively represent only 2.2 percent of the project area, with each of the soils occupying less than 1 percent of the project area. Although not a soil type, the surface water area of the Trinity River is included among the soil types to account for 100 percent of the land/water within the project area. The locations of the various soil units within the project area are shown in **FEIS Plate 3-18**.

TABLE 3-26. MAPPED SOILS WITHIN THE PROJECT AREA

Soil Map Unit Symbol	Soil Map Unit Name	Acreage	Percentage
PRIMARY SOILS (each soil type is at least 1% of the project area)			
74	Trinity-Urban land complex	4,555.3	60.9
73	Trinity clay, frequently flooded	965.4	12.9
15	Bastsil-Urban land complex, 0 to 2 percent slopes	389.8	5.2
75	Urban land	386.6	5.2
13	Axtell-Urban land complex, 1 to 5 percent slopes	240.9	3.2
38	Frio-Urban land complex	222.3	3.0
65	Silstid-Urban land complex, 0 to 6 percent slopes	142.2	1.9
W	Water (i.e., Trinity River channel, existing and former)	134.4	1.8
3	Arents, loamy, hilly	117.9	1.6
2	Arents, loamy, gently undulating	79.8	1.1
63	Silawa-Urban land complex, 2 to 6 percent slopes	71.7	1.0
	Primary Soils Subtotal	*7,306.3*	*97.8*
MINOR SOILS (each soil type is less than 1% of the project area)			
49	Lewisville-Urban land complex, 0 to 4 percent slopes	45.2	0.6
32	Eddy-Urban land complex, 4 to 8 percent slopes	33.2	0.4
35	Ferris-Urban land complex, 5 to 12 percent slopes	21.9	0.3
4	Arents, clayey, gently undulating	18.7	0.3
80	Wilson-Urban land complex, 0 to 2 percent slopes	16.8	0.2
56	Pits and dumps	11.0	0.2
69	Stephen-Urban land complex, 1 to 4 percent slopes	6.5	<0.1
50	Lewisville-Urban land complex, 4 to 8 percent slopes	5.5	<0.1
29	Eddy-Brackett-Urban land complex, 8 to 15 percent slopes	4.7	<0.1
45	Houston Black-Urban land complex, 0 to 4 percent slopes	3.7	<0.1
8	Austin-Urban land complex, 0 to 2 percent slopes	0.6	<0.1
	Minor Soils Subtotal	*167.8*	*2.2*
	Project Area Total	**7,474.1**	**100.0**
Sources: SCS, 1980; NRCS, 2011.			

Key characteristics of the primary soil types are provided in **Table 3-27**, including descriptive information about depth, permeability, runoff, erosion, and potential for urban use and limitations (NRCS, 2011). Nearly all of the soils within the project area are a complex of both a named soil series and urban land. Although not a specific soil type, areas mapped as urban land had been altered by human activity or were covered by buildings as of the time of the soil survey, thus rendering soil mapping infeasible (SCS, 1980). Such areas would naturally have characteristics that were similar to the named soil units nearby, but site-specific descriptions of the original soil types are not available. Similarly, nearly all of the primary and minor soils occurring in the project area are a complex of a named soil series and urban land. In such cases, the fraction of the mapped area for the soil type that is urban land ranges from 15 to 40 percent. The characteristics of the minor soils listed above in **Table 3-26** are within the range of features described for the primary soils in **Table 3-27**. Virtually all soils in the project area have developed within a depositional environment, and exhibit medium to heavy textures that relate to derivation from the limestones, shales, and sandstones from local bedrocks and geologic materials transported downstream within the Trinity River watershed.

TABLE 3-27. CHARACTERISTICS OF PRIMARY SOILS WITHIN THE PROJECT AREA

Soil Unit Map Symbol and Soil Name	Descriptive Information	Potential for Urban Use and Limitations
2: Arents, loamy, gently undulating	This map unit represents area that have been mined for sand and gravel, and surface soil is characterized by discarded overburden which was apparently smoothed by grading, and most pits have been filled with soil. These areas are generally lower than the surrounding landscape. Most areas are subject to flooding unless protected by levees. Arents are generally deep (typically greater than 80” to bedrock) and, because of mixing during mining operations, there are no uniform soil layers and soil texture varies from sandy loam to clay loam. Permeability is moderate, and the water table is a depth of 10 to 25 feet.	Low potential for urban development due to flood hazard, unless protected by levees. Other limiting factors are low organic matter content and corrosivity to steel.
3: Arents, loamy, hilly	This map unit represents areas that have been mined for sand and gravel, and surface soil is characterized by discarded overburden that was left in mounds and ridges. Former gravel pits are generally lower than surrounding areas and tend to collect water. Most areas are subject to flooding unless protected by levees. Arents are generally deep (typically greater than 80” to bedrock) and, because of mixing during mining operations, there are no uniform soil layers and soil texture varies from sandy loam to clay loam. Permeability is moderate, available water capacity is medium, runoff is rapid, and erosion hazard is severe.	Very low potential for urban development due to flood hazard, unless protected by levees. Also, the slopes of the ridges and mounds are a limitation. Corrosivity to uncoated steel is a limiting factor.

TABLE 3-27. CHARACTERISTICS OF PRIMARY SOILS WITHIN THE PROJECT AREA

Soil Unit Map Symbol and Soil Name	Descriptive Information	Potential for Urban Use and Limitations
15: Bastsil-Urban land complex, 0 to 2 percent slopes	The Bastsil fine sandy loam component of this soil complex is a deep (typically greater than 68" to bedrock), well drained soil which is typically sandy clay loam below 12 inches. Bastsil soil has moderate permeability, high water capacity, medium runoff, and moderate erosion hazard. The Bastsil portion of this complex is 40 percent, urban land is 35 percent, and minor elements of other soils make up the remainder.	High potential for urban use. Low strength and corrosivity to uncoated steel are limiting factors.
13: Axtell-Urban Land Complex, 1 to 5 percent slopes	The Axtell fine sandy loam component of this soil complex is a deep (typically greater than 80" to bedrock), moderately well drained soil found on old high stream terraces. Axtell soil has very slow permeability, high water capacity, medium runoff, and moderate erosion hazard. The Axtell soil aspect of this complex is 50 percent and 25 percent is urban land, and minor elements of other soils make up the remainder.	Medium potential for urban use. High shrink-swell potential, low strength, corrosivity, and hazard of erosion are limiting factors.
38: Frio-Urban land complex	The Frio silty clay component of this soil complex is a deep (typically greater than 74" to bedrock), well drained soil that is subject to flooding during major storms unless protected by levees. Frio soil has moderately slow permeability, high water capacity, slow runoff, and slight erosion hazard. The Frio soil component of this complex is 70 percent and 15 percent is urban land, and minor elements of other soils make up the remainder.	Low potential for urban and recreational use. Flooding hazard, low strength, clayey texture, and corrosivity are limiting factors.
63: Silawa-Urban land complex, 2 to 6 percent slopes	The Silawa fine sandy loam component of this soil complex is a deep (typically greater than 80" to bedrock), well drained upland soil. Silawa soil has moderate permeability, medium water capacity, medium runoff, and moderate erosion hazard. The Silawa soil component of this complex is 50 percent and 25 percent is urban land, and minor elements of other soils make up the rest.	High potential for urban use. Limitations include low strength, corrosivity, and erosion hazard. There are few limitations to recreation uses.
65: Silstid-Urban land complex, 0 to 6 percent slopes	The Silstid loamy fine sand component of this soil complex is a deep (typically greater than 80" to bedrock), well drained upland soil. Silstid soil has moderate permeability, low water capacity, slow to medium runoff, and slight to moderate erosion. The Silstid soil aspect of this complex is 60 percent and 25 percent is urban land, and minor elements of other soils make up the remainder.	High potential for urban use. Corrosivity is a hazard to underground installations. The sandy texture is a limitation to recreation uses.
73: Trinity clay, frequently flooded	This is a deep (typically greater than 68" to bedrock) moderately alkaline, clayey soil that is typically flooded two or three times per year. Trinity clay has very slow permeability, high water capacity, slow runoff, and erosion hazard is slight.	Very low potential for urban uses and low potential for recreation uses. Frequent flooding, wetness, corrosivity, very high shrink-swell potential, low strength, and clayey texture are limiting factors.

TABLE 3-27. CHARACTERISTICS OF PRIMARY SOILS WITHIN THE PROJECT AREA

Soil Unit Map Symbol and Soil Name	Descriptive Information	Potential for Urban Use and Limitations
74: Trinity-Urban land complex	The Trinity clay component of this soil complex is a deep (typically greater than 68" to bedrock), moderately alkaline, clayey soil that is subject to flooding during major storms unless protected by levees. Trinity soil has very slow permeability, high water capacity, very slow runoff, and erosion hazard is slight. The Trinity clay component of this complex is 60 percent and urban landscape is 20 percent, with other soils making up the remainder.	Very low potential for urban uses because the soil occurs in flood prone areas. Soil wetness and flood hazard are the main limitations to recreation use. Other limiting factors include low strength, very high shrink-swell potential, and corrosivity.
75: Urban land	This unit consists of areas where 75 percent or more of the surface is covered with buildings, streets, or other paved/hard surfaces. These soils have been altered by construction or are covered by buildings, thus making it infeasible to study or provide meaningful descriptions of the soils in this mapping unit.	Soil properties are generally assumed to resemble the surrounding soils types mapped in the soil survey.
Sources: SCS, 1980; NRCS, 2011.		

Aside from the ecological values of these soils there are also engineering constraints, some of which are listed in **Table 3-27**. These constraints are related to the weak, plastic properties displayed by both soil and substrate across much of the terrain in the corridor. The engineering properties of soil, which must be considered in designing a highway, include compressive strength, shrink-swell potential, slope stability, permeability, excavation potential, and corrosion potential. The most abundant soils within the project area are clay Trinity soils, which are characterized by low compressive strength, low slope stability, low permeability, high shrink-swell potential, and high corrosion potential.

Studies have been conducted to characterize the geotechnical suitability of soil materials from the proposed borrow areas identified for the Trinity Parkway roadway embankment. A total of 421 geotechnical borings were installed at an approximate 200-foot grid in the proposed borrow areas located within the Dallas Floodway. The borings were drilled to varying depths that exceeded the planned depths of the borrow areas. The soils were evaluated for suitability for roadway embankment, and the soil data and analyses demonstrated that a sufficient volume of suitable material could be obtained from the proposed borrow areas (Terracon, 2009). Additional details are presented in **FEIS Section 2.7** and **FEIS Appendices F-2** and **H-2**.

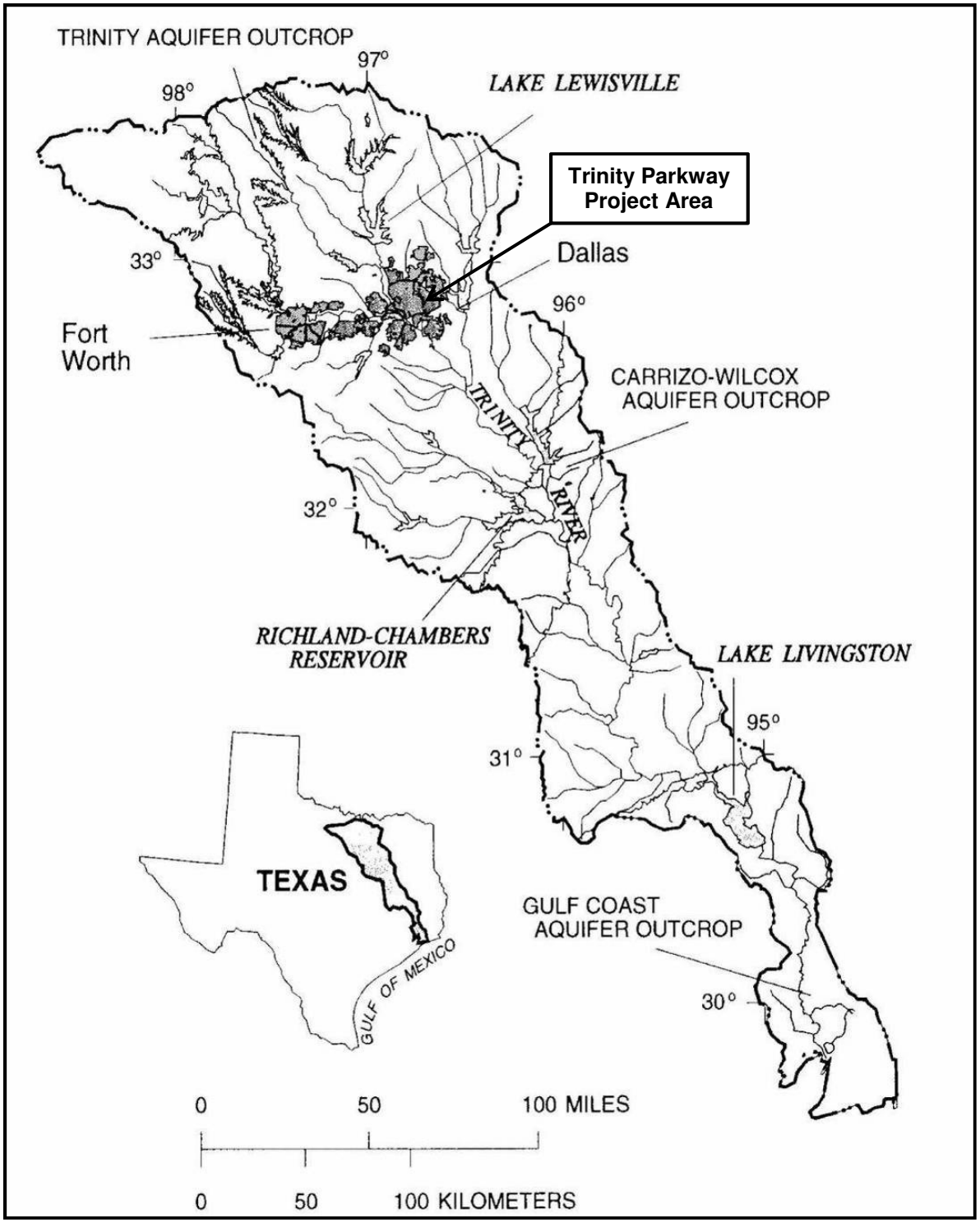
3.5.4 Hydrology and Water Quality

This section describes the existing hydrology and water quality characteristics in the project area. Subsections include descriptions of existing surface water and groundwater characteristics, floodplains and flood control features, and navigation characteristics.

3.5.4.1 Surface Water

The Trinity Parkway Project Area is located near the headwaters of the Trinity River Basin, one of the state's major watersheds. As shown in **Figure 3-2**, the Trinity River watershed drains approximately 18,000 square miles from just south of the Oklahoma border to Trinity Bay near Houston (TWDB, 2010; TCEQ, 1999). It is nearly 320 miles long from northwest to southeast and nearly 150 miles wide at its widest west-east point. River elevations range from over 1,200 feet above msl in the headwaters, to 376 to 392 feet above msl in the project area, to sea level at the mouth (USGS, 2010; NCTCOG, 2009b). The river, with its meanders, is nearly 470 miles long from Dallas to the river's mouth (USGS, 2007).

FIGURE 3-2. TRINITY RIVER BASIN



Source: Diggs, Lipscomb, and O'Kennon, 2002.

In the upper reaches of the Trinity River Basin, runoff is collected into the river's four major sub-watersheds, which include the Clear Fork, West Fork, Elm Fork, and Denton Creek. The headwaters of these four streams are located north, west, and east of the cities of Dallas and Fort Worth, and converge in or near the DFW area (Gard, 2013). The upstream area of the Trinity River Basin, which contributes flow to the Trinity River within the limits of the project area, covers approximately 6,121 square miles and includes the sub-basins for the Clear Fork/Lower West Fork (1,514 square miles), Upper West Fork (1,957 square miles), and Elm Fork (1,858 square miles) branches of the river; the Denton Creek watershed (719 square miles); the Turtle Creek sub-watershed (69 square miles); and minor areas (4 square miles) adjacent to the project area (USGS, 2007). The confluence of the Elm Fork and West Fork branches of the Trinity River occurs just to the west of the project area such that only the Trinity River main stem flows through the project area. The gradient of the Trinity River decreases from almost 4 feet per mile in the upper reaches of the watershed to approximately 0.8 foot per mile toward its southern end. Within the project area, the river gradient is approximately 1.6 feet per mile.

The majority of surface water bodies in the project area have been substantially modified from prehistoric natural conditions. These changes started in the late 1920s when the City of Dallas began a major effort to control flooding of the Trinity River in and around the downtown area. The most substantial change involved the diversion of the Trinity River (old river channel) to its current location within the Dallas Floodway in the 1950s. Within the project area, the old river channel, along with other major tributaries, provide additional flood control through a network of man-made storage sumps located on the landside of the Dallas Floodway levees. Details concerning the network of flood control features in the project area are provided in **FEIS Section 3.5.6**. The major surface water bodies in the project area are shown in shown on **FEIS Plate 3-19**, and a summary of these features is provided in **Table 3-28**.

TABLE 3-28. MAJOR SURFACE WATER BODIES IN THE PROJECT AREA

Name	Description
Trinity River Main Stem (within the Dallas Floodway)	Primary surface water feature in the project area. Main components include a man-made channel situated between flood control levees from the west end of the project area, just west of Westmoreland Road, to the AT&SF Railroad Bridge. The channelized river returns to the natural river channel at AT&SF Railroad Bridge. The Trinity River flows in a northwest-southeast direction through the project area.
Elm Fork Trinity River (Old Elm Fork River Channel)	This former channel of a branch of the Trinity River enters the northern portion of the project area near IH-35E/SH-183 Interchange. Channelization of the Elm Fork and construction of levees severed this water feature from the modern Elm Fork to the west. Most of the Old Elm Fork river channel is used for flood control, serving as a network of drainage storage sumps. Drainage from the sumps is discharged into the Dallas Floodway by pressure sewers and pump stations.
West Fork Trinity River (Old West Fork River Channel)	This former channel of a branch of the Trinity River enters the northwest portion of the project area near Westmoreland Road. The Dallas Floodway bisects the Old West Fork slightly upstream of its confluence with the Old Elm Fork near Hampton Road. The majority of the Old West Fork is used for flood control storage sumps on both sides of the Dallas Floodway. Drainage from the sumps is discharged into the Dallas Floodway by pressure sewers and pump stations.
Cedar Creek	This tributary enters the southwest portion of the project area near Corinth Street. Cedar Creek is a third-order, perennial stream and drains into the Trinity River just south of the AT&SF Railroad Bridge.
Coombs Creek	This tributary of the Trinity River enters the western portion of the project area just south of IH-30. Coombs Creek is a first-order, perennial stream and drains into the Dallas Floodway through the west levee by a pressure sewer and outfall channel.
Trammell Crow Lake	This small man-made lake is situated within the Dallas Floodway just east of Wycliff/Sylvan Avenue. Its primary use is for recreation.
Sources: USGS, 1981; FEMA, 2007.	

3.5.4.2 Groundwater

The Trinity Aquifer is the only major aquifer in the project area (TWDB, 1995, 2007b, and 2010). This aquifer is part of the Edwards-Trinity aquifer system forming a wide arc from central Texas to southeastern Oklahoma. The Trinity Aquifer portion of this aquifer system extends from the Red River southward to the San Antonio area. The aquifer is underlain by much older, low-permeability rocks that range in age from Precambrian to Jurassic, and typically occurs where it is confined above the Walnut Clay Formation and other younger sedimentary formations such as the Woodbine Formation (USGS, 1996). Water saturation within the sand and gravel comprising this aquifer may be as thick as 900 feet (TWDB, 1995). Water has been pumped for decades from this aquifer for municipal, livestock, and irrigation uses, and groundwater level declines of as much as 550 feet have been experienced (TWDB, 1995 and 2007a). This has led to greater reliance within the region on surface water sources (USGS, 1996). The recharge zone for this aquifer occurs in Montague and Wise Counties where the Antlers Sand Formation (conglomerate rock) outcrops, leaving the project area outside the aquifer recharge zone. The groundwater resources within the project area are overseen by the North Texas Groundwater Conservation District (TCEQ, 2009). In general, water

from this aquifer within the outcrop area is fresh but very hard (i.e., high in total dissolved solids), and salinity of the water varies from slightly to moderately saline with salinity increasing in greater depths (TWDB, 2007b). Although the water quality of this aquifer is acceptable for most municipal and industrial purposes, past overuse within the DFW area has resulted in substantial lowering of the depth of water within the aquifer. Currently, water supplied to the area comes from surface water reservoirs and other river systems generally located north and east of the City of Dallas.

The Woodbine Aquifer is a minor groundwater feature with a recharge zone that is co-extensive with the Woodbine Formation (TWDB, 2007b), a geologic feature found approximately 6 miles to the west of the project area. This Upper Cretaceous formation consists of permeable fine-grained sand and sandstone interbedded with clay. This aquifer overlies the Trinity Aquifer, and forms a wide (typically 40 to 60 miles) north-south band that extends from northern McLennan County to the Red River. The subsurface portion of this aquifer extends eastward, and is overlain by younger Cretaceous rocks. This aquifer consists of sandstone interbedded with shale and clay which form several distinct water-bearing zones (TWDB, 2007b). The maximum thickness for this aquifer is approximately 700 feet, and the quality of the water deteriorates below 1,500 feet where water is pumped from upper areas of the Woodbine Formation (TWDB, 1995). This aquifer has been used extensively for municipal, industrial, domestic, livestock, and small irrigation supplies, which have contributed to declines in water level in excess of 100 feet (TWDB, 1995 and 2007b).

Groundwater near the ground surface in floodplain terraces and deposits is in hydraulic connection with the Trinity River, its major tributaries, and larger local lakes. The primary source of this near-surface groundwater is rainwater infiltration on the surface of the alluvial terrace and floodplain deposits. Most water accumulating in floodplain deposits is discharged into surface water bodies, evaporated, or transpired from plants. Relatively shallow or “perched” groundwater conditions occur locally within the project area, especially in inactive creek channels present above the limestone bedrock. Several inactive creek beds are known to exist near and within the project area.

3.5.5 Water Quality

3.5.5.1 Background

The Trinity River Watershed upstream of the project area is highly urbanized within the DFW area and is predominantly agricultural and rangeland elsewhere. The level of urbanization within the watershed can have varied and profound effects on water quality. Urban stormwater runoff carries pollutants from many sources including automobiles, oil and grease on roads, atmospheric deposition, processing and salvaging facilities, wastewater effluent, chemical spills,

pet wastes, industrial plants, construction site erosion, and the disposal of chemicals used in homes and offices. Urban rivers inherit some problems from upstream, notably sediment, nutrients, and pesticides from non-point sources. However, cities can also add a variety of pollutants to rivers and other water bodies, including bacteria, oil and grease, heavy metals, toxic substances, and trash and debris. In the DFW area, challenges to water quality are linked to the use of pesticides, insecticides, and fertilizers for agricultural operations upstream, as well as point and non-point discharges from industrial and urban areas (USGS, 1998).

The TCEQ evaluates water bodies in the state and identifies in its biennial *Texas Integrated Report for CWA Sections 305(b) and 303(d)* (hereinafter "*Texas Integrated Report*") those water bodies that do not meet uses and criteria defined in the *Texas 2010 Surface Water Quality Standards* (TSWQS) (TCEQ, 2010). The TCEQ publishes in its *Texas Integrated Report* the Texas Water Quality Inventory and 303(d) List for the state. This portion of the report describes the status of water quality in all surface water bodies of the state that were evaluated for a given assessment period. The 2012 *Texas Integrated Report* was approved by the USEPA on May 9, 2013 (TCEQ, 2013a)

Data for the *Texas Integrated Report* are gathered by many different organizations that all operate according to approved quality control guidelines and sample collection procedures. The guidelines and sample collection procedures are developed by the TCEQ through a stakeholder process. Individuals representing diverse organizations and interests are invited to participate in the revision of current guidance and to develop, review, and comment on new draft guidance every three to five years. The stakeholder group includes, but is not limited to, state agencies such as the TPWD, environmental consultants, river authorities, environmental groups, industry and agricultural interests, and municipalities. After the evaluation is complete, USEPA guidance requires that all water bodies be placed into one of five categories as part of a strategy for overall management of water quality. The categories indicate the status of water quality in a given stream segment as defined in the TSWQS. Two of the categories (Categories 4 and 5, listed below) are further divided into subcategories that outline specific strategies that the state is currently using, or plans to use, to address surface waters that are not meeting the TSWQS. The five water quality status categories for segments are listed below (TCEQ, 2013a):

1. All standards are attained. There is no evidence that nonattainment of any standard will occur in the near future.
2. Some standards are attained. There is no evidence that nonattainment of any standard will occur in the near future; and insufficient or no data and information are available to determine if the remaining standards are attained.

3. Insufficient or no data and information to determine if any standard is attained.
4. One or more standard is not attained or nonattainment is predicted in the near future due to one or more parameters, but there is no requirement for a quantitative plan that determines the amount of a particular pollutant that a water body can receive and still meet its applicable water quality standards (i.e., Total Maximum Daily Load (TMDL)).
    a. All TMDLs have been completed and approved by USEPA.
    b. Other control requirements are reasonably expected to result in the attainment of all standards.
    c. Nonattainment of the standard for one or more parameters is shown to be caused by pollution, not by pollutants and that the water quality conditions cannot be changed by the allocation and control of pollutants through the TMDL process.
5. Standard is not attained or nonattainment is threatened in the near future for one or more parameters.
    a. TMDLs are underway, scheduled, or will be scheduled for one or more parameters.
    b. A review of the standards for one or more parameters will be conducted before TMDLs are scheduled.
    c. Additional data or information will be collected for one or more parameters before TMDLs are scheduled.

Strategies for water bodies in Categories 1, 2, and 3 include additional data collection and assessment, routine monitoring, and other preventive actions. Strategies for water bodies in Categories 4 and 5 are summarized in the subcategories ("a" through "c"), and generally include the following: review of water quality standards; development and implementation of projects to characterize the sources, extent, and severity of impairments; and projects to improve water quality or restore support of an impaired use. The strategies implemented for stream segments in Category 4 or Category 5 target individual stream reaches within the overall segment and the uses that are impaired. Each of these reaches is termed an Assessment Unit (AU) and designated water use categories identified by the TCEQ in the 2012 *Texas Integrated Report* include the following:

- Aquatic Life Use
- General Use
- Recreation Use
- Fish Consumption Use
- Oyster Waters Use
- Public Water Supply Use

All stream segments that receive a Category 5 ranking make up what is termed the Texas Section 303(d) List, signifying that those water bodies do not meet applicable water quality standards or are threatened for one or more designated uses by one or more pollutants. The Section 303(d) List is an important management tool produced as part of the *Texas Integrated Report* as it identifies waters for which preventive measures, such as permits that limit discharges of wastewater and the technology used by the dischargers, are not sufficient to achieve water quality standards.

3.5.5.2 Upper Trinity River (State Stream Segment 0805)

The project area includes State Stream Segment 0805 (Upper Trinity River) which extends throughout the project area's length (TCEQ, 2011a). As defined in the TSWQS and *Texas Integrated Report*, this segment extends 97.3 miles from a point immediately upstream of the confluence of the Cedar Creek Reservoir discharge canal in Henderson County/Navarro County northward to a point immediately upstream of the confluence of the Elm Fork Trinity River in Dallas County. As part of the 2012 *Texas Integrated Report*, Stream Segment 0805 has been subcategorized into the following five AUs (listed in sequence from downstream to upstream):

- 0805-01 – From the confluence of the Cedar Creek Reservoir discharge canal upstream to the confluence of Smith Creek (33.3 miles);
- 0805-02 – From the confluence of Smith Creek upstream to the confluence of Tenmile Creek (30.3 miles);
- 0805-03 – From the confluence of Fivemile Creek upstream to the confluence of Cedar Creek (10.6 miles);
- 0805-04 – From the confluence of Cedar Creek upstream to the confluence of Elm Fork Trinity River (7.8 miles); and
- 0805-06 - From the confluence of Tenmile Creek upstream to the confluence of Fivemile Creek (15.3 miles).

Within the project area, AU 0805-04 extends from just east of the project area to downstream of the Santa Fe Trestle Trail, connecting with AU 0805-03, which extends farther downstream.

As part of the 2012 *Texas Integrated Report*, the TCEQ has identified a "Level of Support" based on several measured parameters (i.e., pollutants or adverse physical/chemical conditions) for each designated use category associated with each AU (TCEQ, 2013a). The extent to which designated uses for the water body are supported by water quality as determined from sample testing (i.e., Level of Support) is provided in **Table 3-29**; although the results from testing multiple

samples are provided in the *Texas Integrated Report*, only the least favorable sampling result is shown in **Table 3-29**. For comparison purposes, **Table 3-29** also includes data for the two stream segments located immediately upstream of Segment 0805 (Segments 0822 and 0841). This information is included because water from these two segments flows into Segment 0805, thereby establishing the baseline for water quality conditions in the project area. The designated use "Oyster Waters Use" is not included in the table because it does not apply to any of the AUs within or near the project area.

TABLE 3-29. WATER QUALITY SUPPORT FOR DESIGNATED USES

Stream Segment -AU	Aquatic Life Use	Recreation Use	General Use	Fish Consumption Use	Public Water Supply Use	AU Category [1]
0805 (Upper Trinity River)						**5a**
0805-01	Not Assessed	Not Reported	Concern[2]	Not Supporting	N/A	5a
0805-02	No Concern	Fully Supporting	Concern[2]	Not Supporting	N/A	5a
0805-03	No Concern	Not Supporting	Concern[2]	Not Supporting	N/A	5a
0805-04	No Concern	Not Supporting	Concern[2]	Not Supporting	N/A	5a
0805-06	Not Assessed	Fully Supporting	Concern[2]	Not Supporting	N/A	5a
0822 (Elm Fork Trinity River Below Lewisville Lake)						**2[3]**
0822-01	Concern[2]	Fully Supporting	Concern[2]	Fully Supporting	No Concern	N/A[3]
0841 (Lower West Fork Trinity River)						**5a**
0841-01	No Concern	Not Supporting	Concern[2]	Not Supporting	N/A	5a

Source: TCEQ, 2013a.
Abbreviation used in Table: N/A = Not Applicable
Notes:
1. Individual AUs are assigned to categories and, based on given parameters, it is then decided whether or not that particular AU is supportive of a particular use. These determinations are then used to assign a category to the entire stream segment. **Category 5a** = A Total Maximum Daily Load (TMDL) assessment is either underway, scheduled, or will be scheduled.
2. Concern for screening levels for one or more measured parameters.
3. This stream segment is shown as Category 2, but the category for the AU is not specified in the 2012 *Texas Integrated Report*.

As indicated in **Table 3-29**, AU 0805-03 and AU 0805-04 (the areas of Stream Segment 0805 within the project area) are "Not Supporting" for recreation and fish consumption uses. These AUs (as well as downstream AUs 0805-01, 0805-02, and 0805-06) have led to the overall TCEQ designation of Stream Segment 0805 as a "Category 5a" stream segment. This means that the water body does not meet applicable water quality standards or is threatened for one or more designated uses by one or more pollutants, and that a TMDL is either underway, scheduled, or will be scheduled. Since Section 303(d) of the CWA requires the TCEQ to identify water bodies for which effluent limitations are not stringent enough to implement water quality standards, Stream Segments 0805 and 0841 are included on the Section 303(d) List in the 2012 *Texas Integrated Report* (TCEQ, 2013a). The specific reasons for listing the various AUs discussed above are summarized in **Table 3-30**; this table indicates the sampled parameter (i.e., pollutant) that screening procedures identified as exceeding water quality standards. In addition, analytical results for key parameters as provided by the TCEQ Texas Clean Rivers Program (CRP) from

water sampling in 2011 and 2012 of the Trinity River where it crosses Mockingbird Lane/Westmoreland Road are included in **Appendix J-3** (TCEQ, 2013b).

TABLE 3-30. REASONS FOR INCLUSION IN THE 2010 SECTION 303(D) LIST

Stream Segment-AU	Designated Use	Parameter Identified for Placing on Sec. 303(d) List
Segment 0805 (Upper Trinity River)		
0805-01: From confluence of Cedar Creek Reservoir discharge canal confluence of Smith Creek (33.3 miles)	Fish consumption	Dioxin in edible tissue PCBs in edible tissue
0805-02: From confluence of Smith Creek to confluence of Tenmile Creek (30.3 miles)	Fish consumption	Dioxin in edible tissue PCBs in edible tissue
0805-03: From confluence of Fivemile Creek to confluence of Cedar Creek (10.6 miles)	Fish consumption	Dioxin in edible tissue PCBs in edible tissue
	Recreation	Bacteria
0805-04: From confluence of Cedar Creek to confluence of Elm Fork Trinity River (7.8 miles)	Fish consumption	Dioxin in edible tissue PCBs in edible tissue
	Recreation	Bacteria
0805-06: From confluence of Tenmile Creek to confluence of Fivemile Creek (15.3 miles)	Fish consumption	Dioxin in edible tissue PCBs in edible tissue
0822 (Elm Fork Trinity River Below Lewisville Lake)		
0822-01: Lower 11 miles of segment	This AU is not on the Section 303(d) List.	
Segment 0841 (Lower West Fork Trinity River)		
0841-01: From confluence of Elm Fork Trinity River to the Tarrant/Dallas county line	Recreation	Bacteria
	Fish consumption	Dioxin in edible tissue PCBs in edible tissue
Source: TCEQ, 2011a and 2013a. **Abbreviations used in Table:** PCBs = polychlorinated biphenyls.		

3.5.6 Floodplains and Flood Control Features

3.5.6.1 Floodplains and Regulatory Authorities

A floodplain is a lowland area adjacent to a stream or river that is occasionally inundated when extreme weather events produce floodwaters. These features provide floodwater storage, reduce flood velocity and peaks, collect and filter both sediments and pollutants, and may assist in recharging groundwater sources. As discussed above, forested floodplains are valued as high quality habitat for a variety of flora and fauna, and serve as important travel corridors for migrating birds and wildlife. The discussion of this section, however, focuses exclusively on the management of floodplains to minimize the effects of flooding.

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) in which the City of Dallas and Dallas County are participating members. The

NFIP is centered on the FEMA's published Flood Insurance Rate Maps (FIRMs) which depict floodplain and floodway boundaries. These maps are based on the "base flood" which is the flooding event with a 1 percent probability of occurring in any given year (hereinafter "100-year flood"), and depict the "base floodplain" which is the area subject to flooding by the base flood (44 CFR Part 65). Maps prepared by the FEMA also typically show the floodway within each floodplain area, which is comprised of a stream channel, plus any adjacent floodplain areas that must be kept free of encroachment so that the base flood can be carried out without any substantial increases in flood elevations and areas inundated.

In 2007, preliminary county-wide Digital Flood Insurance Rate Maps (DFIRMs) were released for Dallas County through the FEMA Map Modernization Program. However, because of recent Dallas Floodway Levee accreditation issues (see **FEIS Section 2.7.1.1**), the DFIRM mapping affected by the Dallas Floodway levees has been placed on hold until (1) the final Levee Analysis and Mapping Procedures (LAMP) guidance from FEMA is released, (2) the levees are accredited, and (3) the mapping is revised based on the final LAMP guidance. For this reason, the official version of FEMA floodplain mapping along the Dallas Floodway levees is still the 2001 Dallas County Effective FIRMs, which is the base floodplain shown in **FEIS Plate 3-20** (FEMA, 2007). The FEMA-designated base flood zone areas (Zone AE) within the project area are summarized in **Table 3-31**.

TABLE 3-31. BASE FLOOD ZONES LOCATED IN THE PROJECT AREA

Flood Zone and Location [1]	Flood Zone Descriptions and Boundaries
Trinity River and Dallas Floodway	*Zone AE* [2]*:* The base flood elevation ranges from approximately 416 feet on the south part of the project area east of the Corinth Street Viaduct to 422 feet on the north part of the project area west of the Hampton Street Bridge.
Record Crossing Sump	*Zone AE:* The sump base flood elevation is approximately 404 feet. The Record Crossing Sump drains to the Hampton-Oak Lawn Sump.
Hampton-Oak Lawn Sump and Pumping Plant B Sump	*Zone AE:* The sump base flood elevation is approximately 405 feet.
Pumping Plant A Sump	*Zone AE:* The sump base flood elevation is approximately 393 feet.
Westmoreland-Hampton Sump	*Zone AE:* The sump base flood elevation is approximately 407 feet.
Pavaho Sump	*Zone AE:* The sump base flood elevation is approximately 409 feet.
Pumping Plant C Sump	*Zone AE:* The sump base flood elevation is approximately 404 feet.
Corinth Street Sump	*Zone AE:* The sump base flood elevation is approximately 400 feet.

Source: FEMA, 2007.
Notes:
1. Locations are shown on **FEIS Plate 3-21** at the end of the chapter.
2. Zone AE - Special flood hazard areas inundated by the 100-year flood.

Floodplains in the project corridor generally comprise the Trinity River main stem located in the Dallas Floodway and DFE, and drainage courses in the surrounding developed areas, most of which are protected by the Dallas Floodway levees (see **FEIS Plate 3-20**). The hydraulic conditions within the Dallas Floodway are controlled by the USACE in keeping with its ROD for the 1988 Trinity Regional Environmental Impact Statement (TREIS) (hereinafter "TREIS ROD"),

which provides specific criteria developed to reduce hydraulic impacts along the Trinity River floodplains. The City of Dallas has local operations and maintenance authority of the Dallas Floodway, and implements floodplain regulations contained in Sections 51A-5.101 through 5.107 of the City of Dallas Development Code. The hydraulic conditions within the surrounding developed areas are generally controlled by FEMA through the NFIP, and the City of Dallas through its municipal authority.

The protection of floodplains and floodways is required by EO 11988 (Floodplain Management) (42 *Federal Register* 26951, May 24, 1977), which establishes a national policy "… to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative." The EO further requires agencies to consider alternatives to constructing a development within a floodplain that is incompatible with the purposes of the floodplain. However, the EO authorizes impacts to floodplains in situations where the agency finds that the only practicable alternative requires siting a project in a floodplain, but requires the agency to design the project to minimize potential harm to the functions of the floodplain.

The FHWA has satisfied EO 11988 (Floodplain Management) by implementing regulations in 23 CFR Part 650, Subpart A – *Location and Hydraulic Design of Encroachments on Floodplains*. The intent of these regulations is to avoid or minimize highway encroachments within base floodplains where practicable, and to avoid supporting land use development that is incompatible with floodplain values. To comply with the EO, the project must be designed to avoid significant and/or longitudinal floodplain encroachments where practicable and to adequately mitigate unavoidable impacts. Other transportation-related regulations pertaining to floodplains include USDOT Order 5650.2, *Floodplain Management and Protection*, and FHPM 6-7-3-2, *Location and Hydraulic Design of Encroachments on Floodplains*. The analysis of alternatives under the EO was performed subsequent to the LSS in 2012, and a discussion of that analysis is included in **FEIS Section 2.8**.

3.5.6.2 Flood Control Features

The primary flood control feature in the project area is the Dallas Floodway, which protects areas along both sides of the Dallas Floodway levees. The Dallas Floodway has several adjacent storage sumps, shown in **FEIS Plate 3-21** along with other flood control features, which were created from the drainage basins bisected from construction of the Dallas Floodway (e.g., West Fork and Elm Fork). These sumps represent a wide variety of storage capacities, drainage area,

and land use. There are seven sump areas in the project area with six having pumping stations that consist of both high- and low-rate pumps. These pump stations, in addition to seven pressure sewers, drain most of the areas on the landside of the levees.

Sumps in the project corridor intercept and temporarily store stormwater before eventual release to the river by a gravity sluice, pumping over the levees, or gravity flow through the sump system until it reaches the river. The pumps start operating when sump water levels reach pre-programmed elevation values. In some instances, the sumps are drained in part by gravity sluices. Although the flow of stormwater through the sump system is regulated solely by flood control requirements, the sumps may function as sedimentation basins that potentially provide purification of stormwater. **Table 3-32** provides a description of the major flood control features in the project area.

TABLE 3-32. MAJOR FLOOD CONTROL FEATURES IN THE PROJECT AREA

Plate ID Numbers[1]	Name	Description/Location
1E	Record Crossing Sump	The Old Elm Fork River Channel intersects the project area south of the IH-35E/SH-183 interchange. It flows west to the Record Crossing Sump and then to the intake structure at the Hampton Road Pump Station.
H	Hampton Pump Station	
2E	Hampton-Oak Lawn Sump	Cedar Springs Branch intersects the project area north of Oak Lawn and flows south under IH-35E to join the Hampton-Oak Lawn Sump. Turtle Creek overflows that do not enter the Turtle Creek pressure sewer intersect the project area near the intersection of IH-35E and the Dallas North Tollway and flow west before entering the Hampton-Oak Lawn Sump. The sump flows to the intake structure at Pumping Station B.
B	Pump Station B (Baker)	
3E	Pumping Plant A Sump	The Pumping Plant A Sump parallels the east levee and is located generally west of Riverfront Boulevard. It flows to the intake structure for Pumping Station A, which is located between Houston Street and Jefferson Boulevard.
A	Pump Station A (Able)	
1W	Westmoreland-Hampton Sump	The Old West Fork River Channel intersects the project area south of Industrial Boulevard and flows west to east joining the Old Elm Fork River Channel to begin the Dallas Floodway. The old channel meanders in areas south of the west levee to form sump storage for the Westmoreland-Hampton Sump. The Westmoreland-Hampton Sump parallels the west levee and is located south of the west levee between Westmoreland Avenue and Hampton Road. It flows to the intake structure for Pumping Station D located just west of Hampton Road.
D	Pump Station D (Delta)	
2W	Pavaho Sump	The Pavaho Sump parallels the west levee and is generally located on the north and south side of Sylvan Avenue. It flows to the intake structure at Pavaho Pump Station.
P	Pavaho Pump Station	
3W	Pumping Station C Sumps	Pumping Station C Sumps parallel the west levee from north of the Houston Street Viaduct extending south to R.L. Thornton Freeway. These sumps flow to the intake structure at Pumping Station C. The Corinth Street Sump parallels the west levee north of Corinth Street. The storm sewer pipe carries Corinth Street Sump water to an outfall north of IH-35E unless the river stage is too high, in which case it drains to the sump for Pumping Station C.
4W	Corinth Street Sump	
C	Pump Station C (Charlie)	

TABLE 3-32. MAJOR FLOOD CONTROL FEATURES IN THE PROJECT AREA

Plate ID Numbers[1]	Name	Description/Location
PS1	Turtle Creek Pressure Sewer	The Turtle Creek Pressure Sewer intersects the project area along the east levee midway between Sylvan and Continental Avenues; capacity is more than 1.7 million gallons per minute (gpm). Turtle Creek flows between 4,000 and 5,000 cubic feet per second (cfs) reach the Trinity River via the Turtle Creek Pressure Sewer. The pressure sewer diverts flows through the east levee into the Dallas Floodway that would otherwise have to be pumped. A gated outlet prevents river flows from entering protected areas behind the east levee at higher river storages.
PS2	Woodall Rodgers Pressure Sewer	The Woodall Rodgers Pressure sewer intersects the project area along the east levee south of Continental Avenue and north of the Margaret Hunt Hill Bridge. The pressure sewer discharges through the east levee into the Trinity River just north of the Margaret Hunt Hill Bridge.
PS3	Dallas Branch Pressure Sewer	The Dallas Branch Pressure Sewer intersects the project area via 12-foot circular conduit. It flows southwest to the Trinity River diverting runoff to the Dallas Floodway. The pressure sewer enters through the east levee just south of the Woodall Rodgers Pressure Sewer and above the UP Railroad Bridge. Capacity for the Dallas Branch Pressure Sewer is 256,731 gpm.
PS4	Bellevue Pressure Sewer	The Bellevue Pressure Sewer (formerly the Mill Creek Pressure Sewer) intersects the project area along the east levee south of the IH-35E Bridge and north of the Corinth Street Viaduct. The pressure sewer takes flows from the Mill Creek Watershed and areas north of the MKT Railroad switchyard and Industrial Boulevard south through the east levee. Capacity of the Bellevue Pressure Sewer is more than 2.6 million gpm.
PS5	Old Coombs Creek Pressure Sewer	The Old Coombs Creek Pressure Sewer intersects the project area south of IH-30 as a 6-foot diameter storm sewer. The old pressure sewer takes flows from IH-30 and the Kidd Springs diversion sewer, as well as overflow from Coombs Creek through the west levee. Capacity for the Old Coombs Creek Pressure Sewer is approximately 3.1 million gpm. The Coombs Creek Pressure Sewer intersects the project area south of IH-30 as an 18.5-foot semi-elliptical conduit and takes flows from Coombs Creek for floods less that then 1-percent-annual-chance storm. The outfall is located about 300 feet south of the old pressure sewer outfall and about 800 feet south of IH-30.
PS6	Coombs Creek Pressure Sewer	
PS7	Lake Cliff Pressure Sewer	The Lake Cliff Pressure Sewer intersects the project area along the west levee just north of the Houston Street Viaduct. It contains a gated outlet structure, sluices, and intake structure with an associated 6-foot by 8-foot conduit. This pressure sewer has a 396,317 gpm capacity. Flows from the Lake Cliff area drain north and through the west levee above Houston Street.

Sources: FEMA, 2007 and USACE, 2013a.
Abbreviation used in Table: gpm = gallons per minute.
Note: 1. Plate ID numbers correspond to the locations shown on **FEIS Plate 3-21** at the end of **Chapter 3**.

3.5.6.3 History of Flooding and Control Measures

Consideration of flood control in the project area began in earnest after the record flood of May 25, 1908 and has been a driving force in local planning efforts ever since (USACE, 2010a). This flood event caused the deaths of 11 persons and extensively damaged the Dallas CBD and other industrial areas. The flood dramatized the need for protective planning and construction, which have continued to the present. The following discussion provides an overview of the extensive flood control measures implemented by the City of Dallas within the project area.

Historical Flood Data

DALLAS COUNTY COURTHOUSE DURING 1908 FLOOD

Major floods in the City of Dallas originate from precipitation occurring in a drainage area of 6,121 square miles upstream from the city. At present, USACE reservoirs regulate runoff from a total of 3,016 square miles of this area. Reservoirs owned by others also affect, to a limited degree, runoff flow from an additional 2,274 square miles, leaving a completely uncontrolled drainage area of 831 square miles, much of which is urbanized area.

The Trinity River frequently exceeds its channel capacity and floods its banks. A number of major floods have been recorded in the project area prior to and since 1900. The USGS maintains a stream gage on the Commerce Street Viaduct where continuous stream flow measurements for the Trinity River have been kept since 1904. A summary of the annual peak stream flow at this gaging station is provided in **Table 3-33**.

TABLE 3-33. HISTORICAL TRINITY RIVER ANNUAL PEAK STREAM FLOW IN DALLAS

Year	Stream Flow (cfs)[1]	Year	Stream Flow (cfs)	Year	Stream Flow (cfs)	Year	Stream Flow (cfs)
1904	7,630	1932	44,000	1960	21,400	1987	12,400
1905	22,600	1933	17,500	1961	12,200	1988	8,650
1906	21,400	1934	10,000	1962	13,200	1989	58,700
1907	10,200	1935	76,700	1963	13,200	1990	82,300
1908	184,000	1936	25,900	1964	32,600	1991	11,700
1909	8,220	1937	10,100	1965	26,900	1992	62,200
1910	5,800	1938	67,500	1966	42,100	1993	23,600
1911	8,600	1939	10,800	1967	7,800	1994	20,400
1912	8,680	1940	18,100	1968	25,000	1995	30,500
1913	5,300	1941	77,000	1969	67,000	1996	5,970
1914 [2]	44,500	1942	111,000	1970	20,000	1997	27,600
1915	39,600	1943	21,300	1971	5,650	1998	28,100
1916	54,700	1944	22,700	1972	33,400	1999	14,800
1917	8,600	1945	52,900	1973	32,900	2000	13,200
1918	9,710	1946	38,900	1974	15,100	2001	31,200
1919	50,300	1947	34,000	1975	27,000	2002	32,400
1920	54,000	1948	46,300	1976	22,400	2003	27,200
1921	18,200	1949	82,500	1977	36,800	2004	28,900
1922	69,600	1950	28,800	1978	4,540	2005	16,100
1923	37,900	1951	9,350	1960	21,400	2006	43,800
1924	43,100	1952	7,570	1979	29,800	2007	38,700
1925	17,700	1953	16,600	1980	8,480	2008	27,600
1926	11,500	1954	4,640	1981	14,600	2009	31,100
1927	14,000	1955	6,010	1982	37,400	2010	44,200
1928	11,200	1956	7,320	1983	9,010	2011	12,600
1929	34,800	1957	75,300	1984	13,000	2012	27,500
1930	34,200	1958	23,200	1985	12,400		
1931	9,210	1959	7,590	1986	19,600		

Source: USGS, 2013.
Notes:
1. All measurements in cubic feet per second (cfs).
2. All 1914 and beyond discharges were affected by either water regulations or water diversion.

Dallas Floodway

Flood control levees near the Dallas CBD were constructed following the creation of the Dallas City and County Levee Improvement District in 1926. Construction of the initial levee improvements occurred from 1928 through 1932, and the Dallas Flood Control District was formed in 1945 to operate and maintain the Trinity River levees. The USACE completed additional flood control improvements from 1953 through 1960 to create the Dallas Floodway, which included the following: strengthening of the levees; clearing of the Dallas Floodway on the West Fork and Elm Fork; increasing the existing pump and sump capacities at pumping stations

A, B, C, and D; and construction of pressure sewers, additional pumping stations, diversions, and gravity outlets to improve the interior drainage. The present river channels were excavated as part of the Dallas Floodway project and portions of the old river channels are contained within the reclaimed areas. The Dallas Floodway original design discharge, the SPF produced by a design storm centered on the uncontrolled area of the West Fork, is 226,000 cfs with 4 feet of freeboard at the Dallas Floodway levees.

The Dallas Floodway improvements consist of parallel levees, approximately 2,000 feet apart, located near the center of the Trinity River floodplain from a point upstream of the AT&SF Railroad to the confluence of the West Fork and Elm Fork. From the confluence, the left bank or east levee extends upstream along the Elm Fork approximately 4 miles to IH-35E. The right bank or west levee extends upstream on the West Fork about 2 miles. The levee system also includes a portion of an original agricultural levee, the northwest levee, which was constructed by the Dallas County Levee Improvement District Number 5. The northwest levee is located on the right bank of the Elm Fork from Grauwyler Road to upstream of SH-183. Cities bordering the Elm Fork, such as Carrollton, Irving, and Farmers Branch, also have constructed levees along this branch of the river.

The downstream end of the Dallas Floodway levees is located at the abandoned AT&SF Railroad Bridge. The east levee has a terminal section extending perpendicular to the river along the AT&SF Railroad tracks and directly beneath the newly constructed DART Bridge to high ground. A portion of this extension of the east levee is an earthen embankment with a design crest elevation of 425.2 feet, while the remainder is a concrete floodwall up to 7 feet in height extending to the high ground limit. The concrete floodwall portion of the levee has a design crest elevation of 423 feet and includes two integral stop-log closure sections. One of these stop-log structures provides passage for a dual-track SP Railroad line. The other stop-log structure formerly served the same purpose, but the tracks have been removed as part of the construction of the DART Bridge.

3.5.6.4 Additional Floodway Related Efforts and/or Projects

Since the construction of the levee system, a variety of USACE projects have been undertaken throughout the years to reinforce the levees and improve the Dallas Floodway. The project has reclaimed 10,500 acres of floodplain, most of which is now highly developed industrial property. On several occasions, federal, state, and municipal agencies have proposed the use of Dallas Floodway land for navigation, recreation, and/or transportation.

Trinity Regional Environmental Impact Statement Record of Decision

The TREIS was prepared by the USACE Fort Worth District in the mid-1980s to address extensive floodplain development that was occurring along the Trinity River within the region. The TREIS was essentially a study of the hydrology of the Upper Trinity River Basin and hydraulics of the Trinity River and its tributaries, with particular emphasis on the DFW Metroplex. Among other things, this EIS focused on urban development impacts and valley storage losses in the Trinity River basin upstream of the Dallas Floodway. The study concluded that SPF levels had increased over the years and threatened to overtop the Dallas Floodway levees. The TREIS focused on actions requiring permits under Section 10 of the River and Harbors Act and Section 404 of the CWA, with emphasis on addressing cumulative impacts of granting multiple permits. Major flood control measures addressed in the 1988 TREIS ROD are summarized below, and a copy of the TREIS ROD is included in **Appendix E**.

A central flood control element of the TREIS ROD are its provisions pertaining to valley storage, which is the volume of water contained in a reach of a river during a storm event, typically measured in acre-feet. Valley storage is important to flood conditions because a flood crest moving down a river is attenuated and lowered if the river has room to store floodwater in its "valley" or overbank areas. Conversely, if the valley storage is reduced by encroachments, such as levees or embankments, the flood depths can increase. The effect of valley storage loss is particularly critical in urban areas as unchecked development and floodplain encroachment in an upstream community can increase flood heights in a downstream community, thereby increasing the flood threat over time.

Most notably, the TREIS ROD developed three specific criteria to apply to future projects along the Trinity River main stem and major tributaries (hereinafter the "ROD criteria"), which are summarized below:

- There should be no rise in the 100-year or SPF elevation for the proposed condition.
- The maximum allowable loss in valley storage capacity for the 100-year discharge is 0 percent, and for the SPF discharge is 5 percent.
- Alterations of the floodplain may not create or increase an erosive velocity on or off-site.
- The floodplain may be altered only to the extent permitted by equal conveyance reduction on both sides of the channel.

The TREIS ROD applies to all project actions requiring a permit under either Section 10 or Section 404 within the SPF floodplain. In general, the criteria developed to reduce hydraulic

impacts include the provision for no rise in the 100-year flood or SPF water surface elevations from dredging and/or fill activities along the Trinity River main stem, West Fork, and Elm Fork and tributaries with drainage areas in excess of 100 square miles. The criteria require a maximum loss in storage capacity for the 100-year flood and SPF of 0 percent and 5 percent, respectively, within the same area. For projects proposed on tributaries with drainage areas of 100 square miles or less, criteria allow for up to 15 percent reduction of valley storage within the 100-year floodplain and up to 20 percent reduction of the SPF floodplain valley storage. Requested projects on tributaries that would increase water surface elevations to a point of inducing additional flooding or damage to others are not to be permitted.

The TREIS ROD also established guidelines for mitigation of environmental habitat losses caused by projects in floodplain areas covered by the TREIS. The criteria of the TREIS ROD apply only to navigable waters under Section 10 and waters of the U.S., including wetlands, subject to Section 404 jurisdiction. The ROD criteria do not apply to projects that fall outside USACE regulatory authority. The TREIS raised awareness that a large area of floodplain lands within the Upper Trinity River Basin could be developed outside the jurisdiction of the USACE, and that if developed following only FEMA requirements, significant increases in flooding frequency and extent would continue to occur in adjacent and downstream areas. Subsequently, the CDC process was established as a means to address those floodplain actions that were not associated with activities effecting waters of the U.S., including wetlands, administered by the USACE.

Trinity River Corridor Development Certificate Process

The CDC process was developed by the joint efforts of nine participating cities and three counties along the Trinity River corridor, in coordination with the NCTCOG, to further implement the ROD criteria discussed above (NCTCOG, 2002). This formalized the review/permitting process for new projects in the affected floodplains to comply with the intent of the TREIS ROD. Under the CDC, each city retains development permit authority within its jurisdiction, but bases its permit decisions on a set of common permit criteria. Local government agencies with development permitting authority within the river corridor continue to implement the CDC process. Technical aspects of the CDC process are managed by the USACE Fort Worth District.

The CDC process ensures that a development's effects, including cumulative impacts, on future flooding are considered in floodplain permitting decisions. Floodplain development can continue, but specific standards ensure that development does not exacerbate flooding. For properties located within the 100-year floodplains of the Trinity River, the Elm Fork, and portions of Lower

White Rock Creek and Lower Fivemile Creek (the "Regulatory Zone" under the CDC process), the applicant is required to apply for a CDC permit in addition to typical local agency fill permits. The process involves technical review by the USACE, and a CDC permit must be obtained from the local agency prior to approval of a fill permit. For property located within the "Review Zone," which is the area between the 100-year and the SPF flood boundaries (including FEMA Zone X), no CDC permit is required. However, the applicant must apply to the CDC/Floodplain Administrator(s) to inform them of proposed plans and activities.

The CDC process incorporates common permit criteria developed to ensure a consistent design level of protection and minimal adverse impacts on flooding, upstream or downstream of the project, unless granted a variance. In order to receive a CDC permit, the applicant is required to evaluate and comply with the criteria established for the following elements: hydraulic impacts (water surface elevations, valley storage capacity, velocities, and conveyance); cumulative impacts (upstream, adjacent, and downstream impacts); and preservation of adjacent project storage (i.e., respect the valley storage provided by adjacent projects by ensuring that their hydraulic connection to the river is maintained). In addition, other permitting and design criteria must also satisfy the requirements of the USACE, FEMA, TCEQ, and any other local criteria for pertinent flood events. CDC criteria are very similar to and often linked with the original ROD criteria. The CDC criteria include a requirement that no "significant" rise is allowed in SPF water surface elevations (compared to zero rise in the ROD criteria).

Final Programmatic EIS - Upper Trinity River Basin

The USACE signed the ROD for the Final Programmatic EIS (FPEIS) for the Upper Trinity River Basin in September 2000. The FPEIS included an examination of past actions of the USACE and other entities within the project area. It defined the baseline conditions within the basin and examined reasonably foreseeable actions of the USACE and of others (including the proposed action) that may affect water and related land resources.

Upper Trinity River Feasibility Study - Dallas Floodway EIS

The USACE, working in cooperation with the NCTCOG and 14 local governments in the North Central Texas region, initiated the Upper Trinity River Feasibility Study in 1990 (City of Dallas, 2007a). The purpose of this study is to identify and carry forward potential projects to address flood damage reduction, water quality, environmental enhancement, recreation, and other related needs throughout the Trinity River Corridor. The Dallas City Council authorized the city's participation in the study for the Dallas Floodway in 1996.

Within the existing Dallas Floodway, the following initiatives are being investigated for federal interest by the USACE: raising the levees where needed based on the SPF (i.e., a flow of 277,000 cfs); lake development; channel meandering; tree plantings; modification to the AT&SF Railroad Bridge; and recreation facilities (e.g., trails and parking). These initiatives would address additional flood protection, environmental restoration, and recreation for the existing Dallas Floodway. Any USACE project that emerges from this ongoing feasibility study would be compatible with the selected alignment of the Trinity Parkway (the proposed action) and the city's BVP for the Dallas Floodway. In 2009 the USACE issued a NOI to initiate an EIS for the Dallas Floodway Project (74 *Federal Register* 52212, October 9, 2009), which is being conducted in concert with this FEIS for the Trinity Parkway. Several of the initiatives identified in the joint feasibility study have been planned further, with several already being initiated (e.g., the Trinity Lakes design is underway, and project design for the river relocation and lake amenities is underway). The USACE will continue with its Dallas Floodway feasibility study and EIS preparation. This FEIS will establish federal interest (cost participation) in a project for the Dallas Floodway in concert with the city.

Trinity River Corridor MIP/BVP

In 2002 and 2003, a privately funded urban design study was conducted to reassess the MIP for the Dallas Floodway that was completed in 1999 (City of Dallas, 1999a and 2003a). The BVP for the Trinity River Corridor was produced in late 2003 with the Dallas City Council adopting the final report that same year as a modification to the 1999 MIP for the Dallas Floodway (City of Dallas, 2003a). As previously described in **FEIS Section 3.2.6.2**, the city's MIP/BVP includes various flood control measures as part of the plan. A portion of these planned flood control improvements are considered projects that could be subject to coordinated planning and design along with the Trinity Parkway. These flood protection features are a continuation of several ongoing projects. The major components of the flood protection plan include:

- Construction of the Lamar Levee extension (3.1 miles) to SPF protection;
- Removal of 417 acres of low-lying lands (mostly occupied by industrial uses) from the 100-year floodplain;
- Construction of the Cadillac Heights levee extension (2.2 miles) to SPF protection level;
- Removal of 205 acres of low lying lands (mostly composed of residential uses) from the 100-year floodplain;
- Realignment of the river channel at IH-45;

- Raising of the existing CWWTP levee - Improves flood protection from current 140-year flood protection to 500-year flood projection;
- Raising of the existing Rochester Park Levee - Improves flood protection from current 110-year flood protection to the SPF protection level;
- Construction of a chain of wetlands to replace approximately 230 acres of bottomland hardwoods with wetlands. Year round water supply for wetlands if provided by the CWWTP;
- The Elm Fork Flood Protection Project - The Elm Fork of the Trinity River converges with the main stem of the Trinity River at the western end of the Dallas Floodway;
- The existing Dallas Floodway - The proposed combination of roadways, lakes, and river meandering within the Dallas Floodway will be designed to maintain the current flow characteristics of the Dallas Floodway;
- Dallas Floodway Levee Modifications - This includes:
    - Increasing the levee height to provide up to an additional 2 feet of freeboard above the SPF elevation.
    - Design of the recommended method for raising the flood protection height to ensure that the integrity of the flood protection works under all operating conditions. USACE design guidelines will be utilized.
- Environmental Restoration and Management - Proper reconstruction of the Dallas Floodway will protect the investments in the Great Trinity Forest. Several hundred acres of new wetlands at the pumped stormwater outfalls and additional screening of stormwater will provide additional water quality improvements, stormwater cleaning, and removal of floating trash and sediment. The habitat created by new wetlands in the Dallas Floodway will expand the ecosystem of the Great Trinity Forest and reconnect it to the West and Elm Forks. Inclusion of two off-channel lakes will create additional diversity for natural habitat and recreational choices within the Dallas Floodway, potentially including fishing and other outdoor activities.
- Major components of the Environmental Restoration and Management activities include:
    - Reestablishing meanders or sinuosity to the Trinity River within the Dallas Floodway.
    - Proposed stormwater wetlands:
        - Areas of proposed sump-fed wetlands – Pavaho and Hampton
        - Proposed headwater wetlands (70 acres):
        - CWWTP water needed to move through these wetlands: 5 million gallons/day.
        - CWWTP water to be used to supply lakes: 50 million gallons/day.

- Proposed Habitat for Wildlife:
  - Total acres within the Dallas Floodway: approximately 2,000 acres.
  - Amount of proposed wetlands within Dallas Floodway: 495 acres.
  - Amount of open water for aquatic species and bird sanctuary: 205 acres.

Congress requested that the USACE review the City of Dallas' Trinity River Corridor BVP in Title V, Section 5121 of the Water Resources Development Act of 2007 (P.L. 110-114). This legislation authorizes various flood control, navigation, and environmental projects and studies by the USACE and provides federal funds subject to annual congressional appropriations for conservation and development of water and related resources. If the project elements of the BVP are determined by the Secretary of the Army to be technically sound and environmentally acceptable, the Act authorizes the USACE to construct the Dallas Floodway projects at a total cost of $459 million.

Trinity River Desiltation Project

This project involved desilting (or removing excess sediment) from the existing Trinity River channel from just downstream of the AT&SF Railroad Bridge to approximately 1,500 feet upstream of Westmoreland Road. The design criteria specified that the existing channel bottom should be excavated to produce a width of 70 feet and the channel side slopes should be excavated to a 6:1 slope, with a gentler benched slope on alternating sides of the river. This project received a Section 404 permit (USACE Permit No. 199300146) and the first phase of the project occurred in 1997 at a cost of $4.5 million and extended from the AT&SF Railroad Bridge to 2,300 feet upstream of the Corinth Street Viaduct. Phase two of the project was completed in 2000 at a cost of $3.8 million and extended to the Houston Street Viaduct. The primary purpose of the project was to restore the original flood conveyance capacity of the river channel and improve interior drainage within the existing levees.

The silt removed from the channel bottom was deposited in borrow pits located within the Dallas Floodway. The excavated clay from the silt disposal areas was used to strengthen and raise the existing Dallas Floodway levees to their original design grade. The levees have been raised approximately 2 feet and the riverside of the levee has been flattened to an approximate 4:1 slope. This levee work occurred from the downstream end of the Dallas Floodway to the vicinity of IH-30. All of the riparian vegetation from the AT&SF Railroad Bridge to the Houston Street Viaduct (primarily black willow) was removed from the channel banks as the result of this construction project.

USACE - Old Trinity River Channel Wildlife Restoration

The USACE is designing an ecosystem restoration project for the West Dallas River Meanders Conservation Area. This project includes flood control improvements along remnants of the West Fork channel. This would be accomplished through modification of the Pavaho (formerly Bickers Street) Sump, construction of a water surface elevation control structure at the Westmoreland Road crossing, and restoration of the lower Shadrack Creek channel by construction of an overbank wetland. In addition, the USACE is designing a trail component compatible with planned trail systems in the project area.

Dallas Floodway Extension

As previously described in **Section 1.6.1.2**, the DFE is a flood control project proposed by the USACE with the City of Dallas as the local sponsor. Originally authorized in 1965 under the Rivers and Harbors Act of 1965 (P.L. 89-298), the DFE Project was modified by the Water Resources Development Act of 1999 (P.L. 106-053) to include environmental restoration and recreation as project purposes. Additionally, a flood control credit for advanced construction costs for comparable portions of previously constructed non-federal levees (Rochester Park and CWWTP) was authorized in accordance with Section 351 of the Water Resources Development Act of 1996 (P.L. 104-303). **FEIS Plate 3-22** shows the major features of the DFE Authorized Plan.

The DFE Project area is located along the main stem of the Trinity River from the end of the existing Dallas Floodway levees downstream to IH-20, including the lower end of White Rock Creek. The DFE Project has authorized purposes of flood damage reduction, ecosystem restoration, recreation, and environmental mitigation. Features of the project include a “chain of wetlands,” a realignment of the river channel at the IH-45 Bridge, construction of a levee in the Lamar Street area, the construction of a levee near the Cadillac Heights subdivision, recreation features, and environmental mitigation. Recreation amenities would be compatible with the regional recreation master plan and would include linear hike/bike trails, equestrian trails, nature trails, and pavilions.

The original plan, which included channels and levees along the river and some tributaries, was never executed due to lack of funding and local support. Due to the flood events in 1989 and 1990, the City of Dallas requested that the USACE reevaluate the recommendations of the plan and assess structural as well as non-structural alternatives.

On August 28, 1996, the Dallas City Council approved the “chain of wetlands” concept. On March 26, 1997, protective levees for the Lamar and Cadillac Heights neighborhoods were also approved by the City Council as the preferred plan for the DFE Project. The City of Dallas plans to use the voter-approved $24.7 million in General Obligation Bonds for its share of the $127 million project.

The preferred plan, developed jointly by the City of Dallas and USACE, consists of a 170-acre chain of wetlands extending from Cedar Creek to Loop 12 (a distance of approximately 4 miles), a provision for 1,179 acres of land for environmental mitigation, and the construction of protective levees along Lamar Street and Cadillac Heights. These levees would link the existing Dallas Floodway levees from the CBD to the Rochester Park levee on the east, and would extend a levee from Cedar Creek to the CWWTP on the west. This would increase the level of protection for the CBD from the present 300-year flood event to the 500-year SPF and improve protection for Rochester Park from the present 110-year flood event to the SPF. The protection level for the Lamar Street and Cadillac Heights areas would also be the SPF.

Construction of the Cadillac Heights and Lamar Street levees at the SPF level would provide protection for approximately 2,500 structures within the DFE Project area, increase flood protection for over 10,000 structures within the existing DFE Project area, preserve an estimated 7,863 jobs in the Lamar Street area, and increase flood protection for the CWWTP to the 500-year flood event. The DFE Project also involved realignment of the Trinity River channel at IH-45 to protect the bridge structure, which is a designated National Defense Highway. In addition, the plan would provide for ecosystem restoration, recreational facilities, and trail linkages between the proposed Great Trinity Forest Park, the Dallas Floodway (Trinity Park), neighborhoods, and high-density employment areas.

The USACE finalized the ROD for the DFE’s General Re-Evaluation Report and Integrated EIS in December 1999. Currently, the project is in the engineering design and real estate acquisition phases. Construction of portions of the chain of wetlands project has commenced, and realignment of the Trinity River at IH-45 has been completed. Other portions of the project, including the Lamar Street and Cadillac Heights levees, will be scheduled in future years based on availability of federal funding.

3.5.7 Navigation

Federal law regulates proposed structures with the potential of affecting navigable waters of the U.S., which are those waters that are subject to the ebb and flow of tide and/or are presently

being used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce (33 CFR Sections 2.36 and 329.4). Navigable waters also include lakes and other on-channel impoundments of navigable streams. The Trinity River (i.e., West Fork Trinity River and Trinity River Main Stem) is navigable from the bridge at Riverside Drive in the City of Fort Worth, extending downstream to the intersection of Houston, Madison, and Walker counties which is approximately 15 miles north of Huntsville (USACE, 1999). Accordingly, the Trinity River within the project area falls within the scope of both Section 9 of the Rivers and Harbors Act of 1899 (33 U.S.C. Section 401), as modified by the General Bridge Act of 1946 (33 U.S.C Section 525) (hereinafter "Section 9"), and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C Section 403) (hereinafter "Section 10"). Moreover, as the FHWA-recommended Build Alternative includes the potential construction of bridges over the Trinity River and/or the introduction of structures within the Dallas Floodway, both Sections 9 and 10 are relevant to planning the proposed project.

A key aspect of Section 9 is its regulation of bridges constructed over navigable waterways. This federal authority over bridge construction is primarily delegated to the U.S. Coast Guard (USCG). However, Congress created an exemption from the USCG permit requirement of Section 9 in those instances where the FHWA determines that a federal-aid bridge would be constructed across a water under specified circumstances identified in the Surface Transportation Authorization Act (23 U.S.C. Section 144(g)). As applied to the project area, the criteria which would allow exemption from Section 9 are as follows: (1) the water is not currently being used to transport interstate or international commerce; (2) the water is not susceptible to use for navigation in its natural condition or through the construction of reasonable improvements; and (3) the water is not tidal (see 23 CFR Section 650.805). Pursuant to the foregoing statutory and regulatory authorities, the FHWA has determined that the proposed project meets these criteria and qualifies for exemption from USCG bridge permit requirements. The FHWA coordinated the proposed undertaking with the USCG, and the USCG concurred with the applicability of the Section 9 permit exemption, as well as the inapplicability of the lighting and signal requirements imposed under 33 CFR Section 118.40(b) (see **FEIS Appendix A-1**).

The USACE oversees the issuance of permits under Section 10 for proposed projects that could potentially obstruct the navigable waterways, such as the construction of a pier, weir, or breakwater. Section 10 also requires a permit for any activity that would excavate or fill any portion of a navigable water of the U.S., or which could otherwise alter the course or condition of any navigable water channel. As the FHWA-recommended Build Alternative includes a proposed tollway in proximity to the Trinity River and excavation within the river's floodplain, a Section 10 permit may be required for the project.

3.5.8 Modification of Federal Public Works Projects

As discussed in **FEIS Section 1.6.5**, the USACE has the responsibility under 33 U.S.C. Section 408 to authorize a proposed alteration, permanent occupation, or use of a federal flood control project only after finding that the proposed action would neither be injurious to the public interest nor impair the usefulness of the federal flood control facility (USACE, 2006). If a Build Alternative is selected in the FEIS ROD, then the project will be evaluated in accordance with Section 408 prior to construction.

3.6 AIR QUALITY

Air quality is a regional concern with numerous contributing factors. Sources of air pollution are divided into five categories: (1) area, (2) point, (3) on-road mobile, (4) off-road mobile, and (5) biogenic. The following provides a summary of these air pollution sources.

1. *Area* sources are defined as commercial, small-scale industrial, and residential sources too numerous and too small to identify individually (e.g., printing, house paints, industrial coatings, degreasing solvents, leaking underground storage tanks, vehicle refueling, fossil fuel combustion at residences and businesses, outdoor burning, structural fires).
2. *Point* sources are defined as industrial, commercial, or institutional plants/operations responsible for generating higher levels of volatile organic compounds (VOCs), nitrogen oxides (NO_x), and/or carbon monoxide (CO).
3. *On-road mobile* sources consist of automobiles, trucks, motorcycles, and other internal combustion engine powered vehicles traveling on roadways.
4. *Off-road mobile* sources include machines such as aircraft, marine vessels, recreational boats, trains, construction equipment, and lawn mowers.
5. *Biogenic* sources are essentially all types of plant life in the biosphere including forests, crops, grass, and other types of vegetation.

The remainder of this section describes the regional compliance requirements, air quality priority pollutants, and DFW attainment status.

3.6.1 Regulatory Context

The CAA is the regulatory compliance basis for transportation conformity and applies in nonattainment/maintenance areas. The CAA established National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants to protect the public health and welfare from air pollution. The criteria air pollutants are carbon monoxide, lead (Pb), nitrogen dioxide, ozone (O_3), particulate matter (PM_{10} and $PM_{2.5)}$, and sulfur dioxide (SO_2). To meet conformity, the proposed project must meet the following provisions due to its location in a nonattainment area:

- Must not cause or contribute to any new violations of the NAAQS;
- Must not increase the frequency or severity of existing NAAQS violations; and
- Must not delay timely attainment of the NAAQS.

The CAA requires that proposed projects be found to conform to the SIP before they are adopted, accepted, approved, or funded by the FHWA or FTA. Developed at the state level, a SIP is an enforceable plan that explains how the state will comply with the air quality standards according to the CAA.

This project is located within Dallas County, which is part of the DFW area that has been designated by the USEPA as a moderate nonattainment area for the eight-hour standard for the pollutant ozone; therefore, conformity rules apply. The proposed action is consistent with the area's financially constrained *Mobility 2035 – 2013 Update* and the 2013-2016 TIP, as amended, which were initially found to conform to the TCEQ SIP by the FHWA on July 19, 2013 and November 1, 2012, respectively. Conformity with 40 CFR Sections 51 and 93 (i.e., conformity rule) must be demonstrated as part of the project approval process.

NEPA is the regulatory compliance basis for the CO Traffic Air Quality Analysis (TAQA) and the Mobile Source Air Toxics (MSAT) analysis. Federal agencies are required by NEPA to assess the impact of proposed projects on the quality of the human environment (National Park Service Air Resources Division, 2011). All proposed projects involving federal funding and/or approval are subject to NEPA. According to NEPA, the proposed project must not violate any NAAQS and the project must incorporate all practicable means to avoid or minimize expected exceedances of NAAQS (University of California Davis, 1997). If a project will create or make worse a CO violation, it cannot proceed to federal funding or approval (Caltrans, 2007).

The CAA Amendment of 1990 identified 188 hazardous air pollutants which are known to cause or suspected to cause serious health issues. The USEPA identified a subset of seven compounds as having the greatest influence on health. These priority MSAT are acrolein, benzene, 1,3-

butidiene, diesel PM plus diesel exhaust organic gases (DEOG), formaldehyde, naphthalene, and polycyclic organic matter. MSAT do not have a NAAQS as the previously discussed criteria air pollutants do.

Federal law relating to federal-aid highways (23 U.S.C. Section 134(m)) addresses additional planning requirements for certain nonattainment areas, and is the statutory compliance basis for the Congestion Management Process (CMP). This statute states that in general, "Notwithstanding any other provisions of this title or chapter 53 of title 49, for transportation management areas classified as nonattainment for ozone or carbon monoxide pursuant to the Clean Air Act, Federal funds may not be advanced in such area for any highway project that will result in a significant increase in the carrying capacity for single-occupant vehicles unless the project is addressed through a congestion management process." This subsection applies to a nonattainment area within the MPA boundaries determined under the criteria in 23 U.S.C. Section 134(e) (FHWA, 2012b).

The following actions to be taken when developing a CMP must be implemented to comply with federal guidelines (FHWA, 2011):

- Action 1: Develop Regional Objectives for Congestion Management
- Action 2: Define CMP Network
- Action 3: Develop Multimodal Performance Measures
- Action 4: Collect Data / Monitor System Performance
- Action 5: Analyze Congestion Problems and Needs
- Action 6: Identify and Assess CMP Strategies
- Action 7: Program and Implement CMP Strategies
- Action 8: Evaluate Strategy Effectiveness

According to Section I – Overview of the Dallas-Fort Worth CMP, the CMP goals and objectives are in accordance with *Mobility 2035 - 2013 Update* goals. The MTP goals support and advance the evolution of a transportation system that contributes to the region's mobility, quality of life, system sustainability, and continued project implementation (NCTCOG, 2013b). The three CMP goals are to:

- Identify quick-to-implement, low-cost strategies and solutions to better operate the transportation system.
- More evenly distribute congestion across the entire transportation corridor.
- Ensure that corridors have options and available alternate routes/modes to relieve congestion during incident and accidents.

The results of conformity analysis, TAQA, MSAT analysis, and CMP analysis are presented in **FEIS Chapter 4**.

3.6.2 Existing Project Area Air Quality

The Trinity Parkway project area is located in Dallas County, which is part of the USEPA designated ten-county moderate non-attainment area for the 8-hour standard (2008 standard) for the pollutant ozone. The area is currently in attainment for all other NAAQS except for a portion of Collin County, which has been designated by the USEPA as a non-attainment area for the 2008 Lead NAAQS, effective December 31, 2010.

3.6.2.1 Transportation-Related Pollutants

The main air pollutants emitted from motor vehicles are VOCs, NOx, CO, and PM. VOCs and NOx can react in the air under sunlight to form ground-level O_3, a toxic pollutant. Because the reactions take place over several hours, maximum concentrations of O_3 are often far downwind of the precursor sources. Thus, O_3 is a regional problem and not a local condition.

Hydrocarbons in motor vehicle emissions are created by incomplete combustion. Some of these hydrocarbons contribute to O_3 and smog formation, while others, such as benzene and formaldehyde, are toxic or carcinogenic. Trucks and older cars emit much more hydrocarbons than newer cars. VOCs are a class of hydrocarbons that are especially reactive in O_3 and smog formation.

NOx is created inside the combustion chambers of motor vehicles when, under high heat and pressure, nitrogen molecules in air are split into reactive nitrogen atoms which then combine with oxygen. NOx also reacts with oxygen and organic compounds in the atmosphere to form O_3 and smog. Motor vehicles produce the least emissions of NOx per mile, between 20 and 30 miles per hour. NOx emissions per mile increase as vehicles go slower or faster, so both increasing or decreasing average traffic speed can increase NOx emissions.

CO is a very reactive gas that can cause asphyxiation. Because of its high reactivity, it does not persist in the air long after it is emitted, and therefore, CO is a local problem where it occurs.

PM consists of tiny particles that are emitted by vehicle engines (especially the diesel engines of trucks), brake pads, tires, and other moving parts of motor vehicles. These particles contribute to

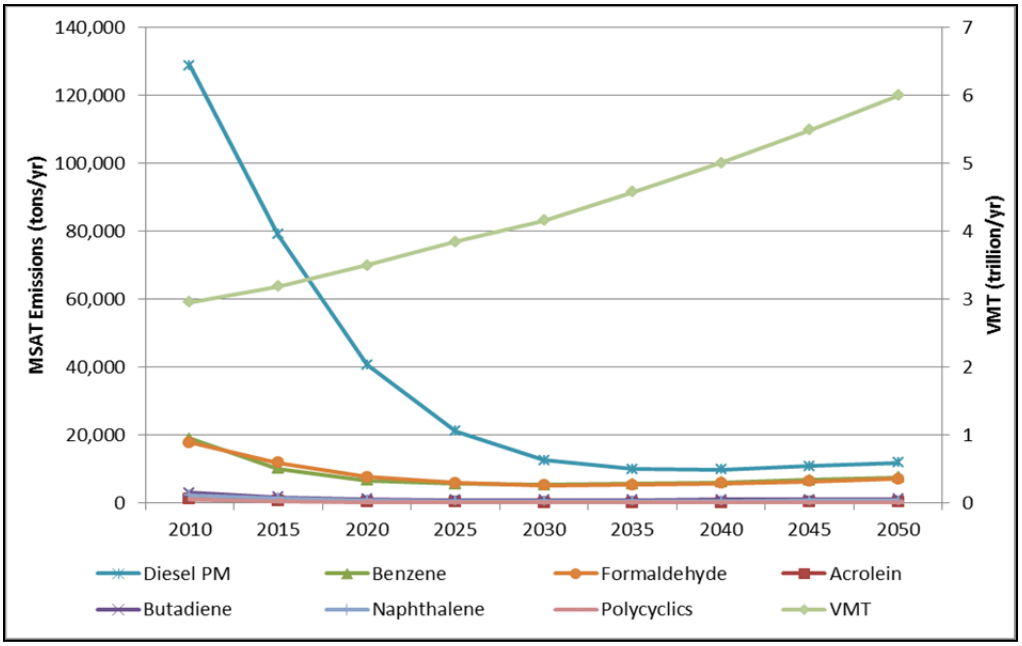
smog and haze, and at certain levels may be dangerous to human health, especially to people with respiratory conditions. The USEPA provides health criteria for particles smaller than ten microns (about one-seventh the width of a human hair) and for particles smaller than 2.5 microns (PM_{10} and $PM_{2.5}$, respectively).

3.6.2.2 Mobile Source Air Toxics (MSAT)

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the USEPA regulate 188 air toxics, also known as hazardous air pollutants. The USEPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (*Federal Register*, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (http://www.epa.gov/iris/). In addition, USEPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA) (http://www.epa.gov/ttn/atw/nata1999/). These are acrolein, benzene, 1,3-butidiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While the FHWA considers these the priority MSAT, the list is subject to change and may be adjusted in consideration of future USEPA rules.

The 2007 USEPA MSAT rule discussed above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and engines. Based on an FHWA analysis using USEPA's MOVES2010b model, as shown in **Figure 3-3** and **Table 3-34,** even if VMT increases by 102 percent as assumed from 2010 to 2050, a combined reduction of 83 percent in the total annual emissions for the priority MSAT is projected for the same time period.

FIGURE 3-3. PROJECTED NATIONAL MSAT EMISSION TRENDS 2010 – 2050 FOR VEHICLES OPERATING ON ROADWAYS USING USEPA'S MOVES2010B MODEL



Source: Table 3-34.

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

TABLE 3-34. PROJECTED NATIONAL MSAT EMISSION TRENDS 2010 – 2050 FOR VEHICLES OPERATING ON ROADWAYS USING USEPA'S MOVES2010B MODEL

Pollutant / VMT	Pollutant Emissions (tons) and Vehicle-Miles Traveled (VMT) by Calendar Year									Change
	2010	2015	2020	2025	2030	2035	2040	2045	2050	2010 to 2050
Acrolein	1,244	805	476	318	258	247	264	292	322	-74%
Benzene	18,995	10,195	6,765	5,669	5,386	5,696	6,216	6,840	7,525	-60%
Butadiene	3,157	1,783	1,163	951	890	934	1,017	1,119	1,231	-61%
Diesel PM	128,847	79,158	40,694	21,155	12,667	10,027	9,978	10,942	11,992	-91%
Formaldehyde	17,848	11,943	7,778	5,938	5,329	5,407	5,847	6,463	7,141	-60%
Naphthalene	2,366	1,502	939	693	607	611	659	727	802	-66%
Polycyclics	1,102	705	414	274	218	207	219	240	262	-76%
Trillions VMT	2.96	3.19	3.5	3.85	4.16	4.58	5.01	5.49	6	102%
Source: USEPA MOVES2010b model runs conducted during May – June 2012 by the FHWA.										

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

associated with highway projects. The FHWA will continue to monitor the developing research in this emerging field. **FEIS Section 4.15.5** provides the project-specific analysis for MSAT.

3.7 EXISTING NOISE ENVIRONMENT

This section provides a brief overview of noise characteristics, describes the existing land use in the project area, and identifies major noise sources in the project area.

3.7.1 Introduction

Sound travels through the air as waves of air pressure fluctuations. In general, sound waves travel away from the source as an expanding spherical surface. Thus, the energy contained in a sound wave is spread over an increasing area as it travels away from the source, resulting in a decrease in loudness at greater distances from the source. Sound from highway traffic is generated primarily from a vehicle's tires, engine, and exhaust. Sound is commonly measured in decibels and is expressed as "dB."

Sound occurs over a wide range of frequencies. However, not all frequencies are detectable by the human ear. Therefore, an adjustment is made to the high and low frequencies to approximate the way an average person hears traffic sounds. This adjustment is called A-weighting and is expressed as "dB(A)."

Table 3-35 provides a listing of sound levels related to common indoor/outdoor sources.

TABLE 3-35. COMMON SOUND/NOISE LEVELS

Outdoor	dB(A)	Indoor
Air Horn	110	Rock / Blues Band
Jet Flyover at 1000 feet		Baby Crying
Leaf Blower	100	Subway
Gas Weed Eater		Fire Alarms
Riding Lawn Mower	90	Blender
Gas Edger		Crowded Restaurant
Police Whistle	80	Disposal at 3 feet
Air Conditioner Compressor		Shouting at 3
	70	
		Normal Conversation
Normal Conversation at 3 Feet	60	Clothes Dryer at 3 feet
Babbling Brook		Large Business Office
Quiet Urban (Day Time)	50	Refrigerator
Quiet Urban (Night Time)	40	Quiet Office, Library
Wilderness	30	
	20	Recording Studio
	10	Threshold of Hearing

Source: TxDOT, 2011.

The term “loudness” is used to describe the manner in which humans perceive the intensity of sound. The human ear is a far better detector of relative (comparative) differences in sound levels than absolute levels. **Table 3-36** summarizes the relationship between changes in sound levels and the perceived loudness.

TABLE 3-36. SOUND LEVEL CHANGE VS. LOUDNESS

Sound Level Change	Relative Loudness
1 dBA	No perceptible change
3 dBA	Barely perceptible change
5 dBA	Readily perceptible change
10 dBA	Perceived to be twice as loud
Source: TxDOT, 2011.	

Highway-related noise is dependent on traffic volumes, vehicle types, speed, roadway geometry, and distance from the roadway to a receiver. Noise from highway traffic is generated primarily from a vehicle's tires, engine, and exhaust. The majority of highway noise created by cars and light trucks is generated by the sound of tires on pavement. Medium- and heavy-duty trucks produce tire noise along with engine and exhaust noise. Because highway traffic noise levels are never constant due to the changing number, type, and speed of vehicles, a single value is used to represent the average or equivalent sound level. The FHWA uses a peak one-hour noise measurement; that is, the hour with the highest noise level. This is described in terms of the Leq(h). Leq(h) is the equivalent steady-state sound level, which in a stated period of time (i.e., one-hour) would contain the same acoustical energy as a time-varying sound level during the same period (TxDOT, 2011a).

3.7.2 Land Use in the Project Area

The project area is characterized as a heavily developed and urbanized area extending from south of downtown Dallas, northwest past the IH-35E/SH-183 interchange in northwest Dallas. Along with major commercial and retail areas, there are major freeways, high-volume arterial roadways, railroads, and other transportation facilities located within the project area. A dominant feature in the central portion of the project area is the Dallas Floodway.

3.7.3 Existing Noise Levels

Sources of noise contributing to the existing noise levels in the project area include commercial and industrial facilities, passenger/freight trains, flyover aircraft using Dallas Love Field, and extraneous noise generally associated with urbanized areas such as air conditioners, barking dogs, and traffic on city streets. The major contributors of noise, however, are the existing major highways and high-volume arterial roadways within the project area.

The existing noise conditions can be summarized as follows:

- Noise levels are highest near and adjacent to existing high-volume arterial roadways and highways, such as Hampton Road, Jefferson Street, Houston Street, IH-35E, IH-30, SH-183, and US-175.
- Noise levels within the Dallas Floodway are highest near the high-volume highways crossing the floodway and lowest in areas that are secluded and far away from crossing roads.

The traffic noise analysis in **FEIS Section 4.16** presents the existing and predicted traffic noise levels at receiver locations that represent the land use activity areas adjacent to Alternative 3C that might be impacted by traffic noise and may potentially benefit from feasible and reasonable noise abatement.

3.8 VISUAL AND AESTHETIC CONDITIONS

The NEPA regulations identify aesthetics as (1) the perception of an element of the environment that is apprehended through the senses of sight, taste, smell, sound, and touch, and (2) as one of the components of the environment to be considered in evaluating the effects of a project. In addition, Section 136 of the Federal-Aid Highway Act of 1970 (P.L. 91-605) requires consideration of aesthetic values in the highway planning process. Although aesthetic perceptions generally require the consideration of all of the senses simultaneously, visual perception or sight is perhaps the most dominant. Activities that cause changes to the existing visual characteristics of a place, therefore, affect aesthetics by changing the human sensory perception of that environment.

Actions or activities can alter the distinguishable characteristics or quality of the perceived environment in many ways, and the magnitude of these changes can vary from person to person based on each individual's visual perceptions and preferences. Visual perception and preference are strongly influenced by spatial properties (an area's expansiveness and the scale and arrangement of landscape features or structures), content (whether an area appears human-influenced or natural and the presence of landmarks and features of symbolic importance), and an individual's previous experiences. Visual character of environments associated with roadways may be altered by actions associated with construction, transportation, and other activities that modify the landscape and the appearance of that landscape. Views toward as well as views from a given location in the landscape can be affected by these modifications.

In order to assess the impact on the project area's aesthetics through changes in visual character, the current visual character of the project area must first be examined. This analysis will (1) identify specific user groups who would each experience changes in visual character differently, (2) describe the visual typologies in the project area, (3) deconstruct the project area into specific landscape units, (4) provide observations of the overall visual characteristics of the project area, and (5) rate the visual quality of each landscape unit based on the visual quality assessment methodology found in the FHWA's *Visual Impact Assessment for Highway Projects* (FHWA, 1988). This methodology observes a view-shed's visual vividness, intactness, and unity, and applies a numerical rating to depict the combined quality of these three factors. Finally, the perception and visual preferences of individual viewer groups will be discussed and a set of goals for preserving and enhancing the visual quality of the project area will be outlined.

3.8.1 Viewer Groups

As mentioned above, visual perception and preference affect how an individual perceives changes in visual character. Therefore, visual quality is evaluated with regard to specific viewer groups. Viewers are categorized into groups based on activities and function (or purpose) within the project area. Viewers within the project area can be classified into the two general groups: (1) those with a view *of* the proposed roadway and (2) those with a view *from* the proposed roadway. Viewers with a view from existing and proposed roadways, or motorists, will all generally experience the visual landscape similarly. Those with views of the proposed roadway, however, could potentially respond to visual changes differently. This second group can be split into sub-groups of viewers that have varying types of views and impressions of the proposed roadway or surrounding landscape. Therefore, the following four primary viewer groups are used throughout the visual analysis:

Groups with a view from surrounding roads	***Groups with a view of the proposed road***
Motorists	Residents
	Recreational Users
	Business Employees/Patrons

3.8.2 Project Area

A description of the existing land use characteristics of the Trinity Parkway project area was provided earlier in **FEIS Section 3.1.1**. The existing aesthetic attributes of the project area can be characterized as a substantially developed urban area interspersed with man-made features, vegetation, open space, and expansive views. Development consists primarily of commercial/industrial facilities, residential neighborhoods (see **FEIS Section 3.1.6**), parks and

open space (see **FEIS Section 3.3.2**), transportation corridors (see **FEIS Section 3.2**), and public utilities (see **FEIS Section 3.1.2**).

The vegetation, level topography, and existing development within the project area limit long-range distant views in many areas. Yet areas such as road crossings over the open landscape of the Trinity River floodplain and the tops of the levees provide expansive views of neighborhoods, industrial districts, and downtown Dallas, which serves as a backdrop or focal point for many views within the area. Virtually the only topographical relief within the project area is that associated with the flood control levees, which parallel the Trinity River and frame the Dallas Floodway. Other long-range distant views of note are views as seen from high-rise buildings within and outside the project area. The greatest concentrations of views of this type are from the downtown Dallas area.

3.8.3 Landscape Units and Visual Image Typologies

Land use categories provide a convenient and logical method for dividing the project area into smaller, more manageable areas for visual consideration. The Trinity Parkway project area has several unique visual typologies. **Table 3-37** provides a general description of the major land use typologies established for the project area to illustrate the existing visual setting of the landscape.

TABLE 3-37. SUMMARY OF LAND USE TYPOLOGIES

Land Use/Typology	Description
Commercial/Industrial	Aged, closely-spaced, low-lying buildings (typically one story) having either shallow set-backs from the road or a parking lot between the building and the road. Power lines, billboards, and loading bays are common sites, as are graffiti and chain-link fences. Vegetation is not prevalent. Includes the portion of the project area adjacent to Irving/Riverfront Boulevard and South Lamar Street and the area to the north and northeast of the east levee.
Residential	Typically consists of neighborhoods of small houses clad in wood siding (often with peeling paint) on small lots. Empty lots are prevalent in many areas, as are mature trees and shrubs. Newer neighborhood areas are characterized by larger, brick masonry houses and newer infrastructure. The newest residential development includes mid-level apartment and condominium buildings. Small-scale retail and numerous religious institutions pepper residential areas. Includes the portion of the project area to the south and west of the floodplain, and the southeast tip of the project area. Also includes the Design District, northeast of the floodplain.
Transportation Corridors	This focuses on the transportation corridors that traverse the Trinity River floodplain and the major transportation corridors located in the project areas that do not cross the floodplain. This includes the MLK, Jr. Boulevard overpass; the DART Bridge; the Commerce Street and Continental Avenue Bridges; the Corinth Street Viaduct; the Houston and Jefferson Street Viaducts; the Hampton/Inwood Bridge; the Westmoreland Bridge; Wycliff/Sylvan Avenue; the UP and MKT Railroad Bridges; the IH-30, IH-35E, and IH-45 Bridges; the new Margaret Hunt Hill Bridge; and the Irving/Riverfront Boulevard and South Lamar Street Corridors.
Parkland/Open Space Areas	Includes areas within the boundaries of the east and west Trinity River levees (this area extends from Westmoreland to the DART Bridge), and parks and open areas outside the Dallas Floodway. Parkland within the Dallas Floodway consists of areas of riparian vegetation along the river channel, large un-manicured grasslands with tall grasses and wildflowers, and ponds of varying sizes. Parks (as well as churchyards) outside the Dallas Floodway are typically mown and include recreational amenities such as picnic tables, recreational fields, and playgrounds. Residual open space around the flood-control sumps and original river meanders consists of un-manicured and native grasses, shrubs, some trees, and generally contains large amounts of litter.
High-Rise Buildings	Though not located adjacent to the Trinity Parkway alignment, many high-rise residential and office buildings are visible from within the Dallas Floodway, as well as from the industrial and residential areas that surround it. From within the Dallas Floodway, these tall buildings appear to sit atop the levees, as views of low-lying surrounding development are obscured by the levees themselves. Though often functionally different, these buildings all exhibit similar visual characteristics such as size and massing - the height of each building is typically three to four times its width. These buildings are mostly located on the northeast side of the Dallas Floodway and are concentrated around the Market/Technology Center, Uptown, The Cedars, and especially downtown Dallas.

Landscape units, which are based on shared land use, age of existing structures, and functional typology of the area were defined for the project area in order to provide clarity, facilitate classification, and aid in the visual description of the project area. Each landscape unit, defined in **Table 3-38** below, aligns with one of the first four typologies described in **Table 3-37**.

TABLE 3-38. SUMMARY OF LANDSCAPE UNITS

Landscape Unit	Location	Land Use[1]
Commercial/Industrial		
Brookhollow Industrial Park	North of the UP Railroad and west of the Dallas Market Center. This area is bisected by SH-183 and IH-35E.	Office, Institutional, Industrial, Hotel, Retail, Flood Control, Vacant, Parking, Utilities
Trinity Industrial District	South of the IH-35E/SH-183 interchange. This area is bordered by IH-35E to the north, the northeast levee to the south, and Wycliff Avenue to the west. An additional portion extends from Wycliff Avenue, south of Farrington Street, to Cole Street.	Industrial, Flood Control, Office, Retail, Parking, Transportation, Vacant, Parks, Group Quarters, Utilities, Hotel, Single-Family, Institutional
Market/Technology Center	From Irving Boulevard, just north of the Irving/Riverfront Boulevard merge, past IH-35E to Harry Hines Boulevard. Bounded by Motor Street to the north and Oak Lawn Avenue to the south.	Industrial, Flood Control, Hotel, Parks, Parking, Office, Retail, Institutional
Design District	Boundaries include Turtle Creek Boulevard to the north; IH-35E to the east; Irving/Riverfront Boulevard, Cole Street, and the east levee to the west; and Continental Avenue to the south.	Industrial, Retail, Office, Institutional, Residential, Vacant, Utilities
Mixmaster/Riverside	Positioned between the east levee and IH-35E/IH-30 Mixmaster; bounded by Continental Avenue to the north and the IH-35E to the south.	Industrial, Institutional, Parking, Retail, Flood Control, Vacant, Utilities, Group Quarters, Parks, Transportation
CBD (Downtown Dallas)	Boundaries include US-75 to the east, IH-30 to the south, IH-35E to the west, and Woodall Rodgers Freeway to the north.	Office, Institutional, Parking, Retail, Hotel, Parks, Transportation, Multi-Family, Industrial, Utilities
Cedars West	Bounded by the UP Railroad on the north, the east levee on the south, IH-35E on the west, and the DART Rail Line on the east.	Industrial, Flood Control, Vacant, Utilities, Parks, Transportation, Water
Southern Lamar	The corridor along South Lamar Street and the UP Railroad south of the DART Rail Line, and extending past IH-45 to join with SM Wright Freeway.	Industrial, Vacant, Transportation, Retail, Flood Control, Office, Single-Family, Utilities, Water
West Commerce Riverside	Boundaries include the UP Railroad on the north, IH-30 on the south, Sylvan Avenue on the west, and the west levee on the east.	Industrial, Single-Family, Flood Control, Mobile Homes, Institutional, Transportation, Vacant
Residential Neighborhood		
West Dallas	Boundaries include the west levee to the north, IH-30 to the south, North Hampton Road to the west, and Sylvan Avenue to the east.	Single-Family, Multi-Family, Vacant, Institutional, Parks, Industrial, Office, Flood Control, Mobile Home

TABLE 3-38. SUMMARY OF LANDSCAPE UNITS

Landscape Unit	Location	Land Use[1]
La Bajada (also includes Trinity Groves and Los Altos)	Bounded by Sylvan Avenue to the west, the UP Railroad to the south, the levee to the north, and Beckley Avenue to the east.	Industrial, Single-Family, Transportation, Retail, Vacant, Flood Control
Oak Cliff	Boundaries include IH-35E to the east, SH-180 to the south, Beckley Avenue to the west, and Dealey Avenue to the north.	Single-Family, Multi-Family, Parks, Retail, Industrial, Vacant, Transportation, Institutional, Parking, Flood Control, Office, Utilities, Water
Kessler Park	Bounded by IH-30 to the north, Beckley Avenue to the east, Sylvan Avenue to the west, and Colorado Boulevard the south.	Single-Family, Retail, Institutional, Vacant, Parks, Multi-Family, Industrial
South Dallas/Forest Heights/Ideal/Colonial Hill Historic District	Bordered by South Lamar Street to the south, Grand Avenue to the west, and the UP Railroad to the east.	Multi-Family, Single-Family, Retail, Vacant, Industrial, Parks, Institutional, Office, Hotel
Colonial Hill Historic District	Bordered by Pennsylvania Avenue to the north, IH-45 to the west, SM Wright Freeway to the east, and Hatcher Street to the south.	Single-Family, Retail, Vacant, Multi-Family, Industrial
Rochester Park	Bordered by US-175 to the north, SM Wright Freeway to the west, and the Rochester Park levee to the south and east.	Single-Family, Multi-Family, Industrial, Park, Institutional, Transportation, Flood Control, Vacant, Utilities
Cadillac Heights	Surrounded by Cedar Crest to the northwest, the UP Railroad to the east, and Southerland Boulevard to the southeast.	Industrial, Single-Family, Retail, Vacant, Utilities, Multi-Family, Transportation, Water
Skyline Heights	Includes Moore Park on the north and is bordered by Corinth Street to the west, Morrell Avenue to the south, and Cedar Crest Boulevard to the east.	Parks, Industrial, Vacant, Single-Family, Retail, Institutional, Office, Multi-Family, Group Quarters, Transportation, Utilities
The Bottoms	Bounded by the west levee to the north, Corinth St. to the east, 8th Street to the south, and IH-35E to the west.	Single-Family, Flood Control, Institutional, Multi-Family, Office, Retail, Industrial, Parks, Vacant, Transportation
Westmoreland Heights/ Dallas Housing Authority	Boundaries include the west levee to the north, Westmoreland Road to the west, the UP Railroad to the south, and Hampton Road to the east.	Single-Family, Multi-Family, Vacant, Institutional, Retail, Industrial, Office, Mobile Home, Flood Control, Transportation, Parks
Arlington Park	Bordered by Record Crossing Drive to the north, IH-35E to the west, Lee Hall Drive to the east, and the Trinity Railway Express to the south.	Single-Family, Vacant, Utilities, Institutional, Retail, Industrial, Motel, Office, Multi-Family, Transportation, Parks, Flood Control, Expanded Parking
Park/Open Space		
North Trinity River Greenbelt	Located between the levees with the Westmoreland Road Bridge to the west and the Sylvan Avenue Bridge to the east.	Parks, Flood Control, Utilities, Vacant, Water
Crow Lake Area	Located east of the Sylvan Avenue Bridge and between the east levee and the Trinity River channel.	Parks, Flood Control, Utilities, Vacant, Water
Central Trinity River Greenbelt	Bordered by the Crow Lake Area/Sylvan Avenue to the west, the IH-35E Bridges to the east, and the levees to the north and south.	Parks, Flood Control, Transportation, Vacant, Water

TABLE 3-38. SUMMARY OF LANDSCAPE UNITS

Landscape Unit	Location	Land Use[1]
South Trinity River Greenbelt	Boundaries include the IH-35E Bridges to the west, the DART Rail Line to the east, and the levees to the north and south.	Parks, Flood Control, Transportation, Water
Secondary Succession	Located between the DART Rail Line to the west, the MLK, Jr. Boulevard Bridge to the east, and the levees to the north and south.	Parks, Flood Control, Vacant, Industrial, Transportation, Utilities, Water
Great Trinity Forest	These areas are located south of the MLK, Jr. Boulevard Bridge and extends south past the IH-45 overpass.	Vacant, Parks, Industrial, Transportation, Utilities, Water
Old Trinity River Meanders	These areas are located between the Dallas Floodway and IH-35E and run from the SH-183/IH-35E interchange to approximately Oak Lawn Ave. Additional areas are located south of the Dallas Floodway, west of Hampton Road.	Flood Control, Vacant, Parks, Water
Transportation Corridors		
IH-45	IH-45 merges with US-75 and connects Dallas with Houston. For the purposes of this study, the section of IH-45 under consideration begins at its intersection with MLK, Jr. Boulevard and extends south through the Southern Lamar Street area to the Great Trinity Forest.	Roadway
SH-310	Also known as SM Wright Freeway, this roadway merges with IH-45 just north of MLK, Jr. Boulevard. It runs south and parallel to IH-45, through South Dallas, Colonial Hill, the Ideal Neighborhood, and Rochester Park.	Roadway
US-175	Also referred to as C.F. Hawn Freeway, US-175 is the eastern-most major transportation corridor affected by the proposed action. The portion of US-175 that falls within the project area includes the area to the west of the SP Railroad to its merge with SH-310, and continues north to the intersection with Hatcher St. to the north.	Roadway
MKT Railroad	Southeast of the MLK, Jr. Boulevard overpass bridge.	(None Listed)
Martin Luther King Blvd.	Connects East Oak Cliff and Cadillac Heights with South Dallas.	Roadway
DART overpass	The DART light rail overpass is northwest of the MLK, Jr. Boulevard overpass.	(None Listed)
Corinth Street Viaduct	The Corinth Street Viaduct is north of the DART light rail overpass and connects Oak Cliff with the Lower Cedars Industrial Area.	Roadway

TABLE 3-38. SUMMARY OF LANDSCAPE UNITS

Landscape Unit	Location	Land Use[1]
IH-35E	The IH-35E overpass connects both sides of the Trinity River, serving as a link between Oak Cliff and downtown Dallas. The northbound bridge is the original Cadiz St. bridge; the southbound bridge is a standard concrete beam bridge.	Roadway
Houston/Jefferson Street	The Houston/Jefferson Street Viaducts are two separate bridges that connect the Oak Cliff Neighborhood with downtown Dallas.	Roadway
IH-30	IH-30 is located north of the Houston/Jefferson Street Viaducts and connects downtown Dallas with Kessler Park, Arlington, and downtown Fort Worth.	Roadway
Commerce Street	The Commerce Street Bridge spans the Trinity River north of IH-30. It has historic character and connects downtown Dallas with West Dallas.	Roadway
UP Railroad	Crosses the Dallas Floodway between the Commerce Street and Continental Avenue Bridges.	(None Listed)
Margaret Hunt Hill Bridge	The Margaret Hunt Hill Bridge, which began construction in 2009, was completed in 2012 and connects Woodall Rogers Freeway with Singleton Boulevard. It links West Dallas and La Bajada neighborhoods with the Mixmaster/Riverside area and the CBD.	Roadway
Continental Avenue	The Continental Bridge shares a similar design and profile to both the Commerce Street and Houston Street Bridges and is a potential historic bridge. It connects West Dallas and La Bajada to the Design District and downtown Dallas.	Roadway
Sylvan Road	Sylvan Road is the only "at-grade" crossing through the Trinity Corridor. The road terminates at an elevated bridge structure on either side of the floodplain. It connects Oak Cliff, Kessler Park, and La Bajada neighborhoods with the Trinity Industrial District and the Market/Technology Center.	Roadway
Hampton/Inwood Road	This bridge is currently being upgraded as part of a separate project. It connects West Dallas with the Trinity Industrial District and Uptown.	Roadway
Westmoreland Road	The Westmoreland Road/Mockingbird Bridge is the northernmost bridge in the project area. It connects West Dallas with the Trinity Industrial District, Brookhollow Industrial Park, and Love Field Airport.	Roadway

TABLE 3-38. SUMMARY OF LANDSCAPE UNITS

Landscape Unit	Location	Land Use[1]
Irving/Riverfront Boulevard and South Lamar Street	Runs parallel to (and is in between) the Dallas Floodway and IH-35E. This corridor connects the Trinity Industrial District, the Market/Technology Center, the Design District, Lower Cedars, and the Southern Lamar Street area.	Roadway
Source: [1] NCTCOG, 2005b.		

The location of each landscape unit is shown on **FEIS Plate 3-23**. These landscape units will be used in describing the existing visual character and existing visual quality of the landscape, which will form the visual baseline condition for the project area. To create this baseline, the following methodology (FHWA, 1988) is used in documenting existing visual resources in a project area:

- *Description of the character of the surrounding area* - A descriptive assessment of the area that states what is present without evaluating the area's visual quality (see **FEIS Section 3.8.4**);
- *Description of the existing visual quality* - An evaluative assessment of the area that applies a rating to the quality of the existing visual environment (see **FEIS Section 3.8.5**);
- *Concern of viewer groups for visual quality* - Considering the varying perceptions and preferences of differing user groups when describing existing visual quality (see **FEIS Section 3.8.6**); and
- *Goals or objectives for protecting and enhancing visual quality* - Identifying areas of existing visual quality which should be protected or enhanced and goals for protecting and enhancing visual quality for individual viewer groups (see **FEIS Section 3.8.7**).

3.8.4 Existing Visual Character

The overall visual character of the project area is illustrated by dividing the area into three landscape bands and describing each. These landscape bands include (1) the *Irving/Riverfront Boulevard and Lamar Street Corridor*, (2) the *Dallas Floodway*, and (3) the *band of residential areas south of the Dallas Floodway.*

The *Irving/Riverfront Boulevard and Lamar Street Corridor*, which constitutes the northern part of the project area, stretches parallel to the Dallas Floodway. It constitutes the majority (but not all) of commercial and industrial land use in the project area, and is largely made up of aged industrial and commercial development and some residential areas on the southeast end of the corridor. Much of the development along the corridor predates the citywide landscaping and sign

regulations enacted in the 1970s, which consequently did not influence the visual character of the project area, thereby allowing a cluttered environment to evolve. In addition, many existing utilities along the corridor are situated above ground, including utility poles and transmission towers, which add to the visual clutter. Low-lying buildings constitute the majority of structures along the corridor; these buildings have irregular set-backs, yet are of uniform scale and massing.

View looking north-northwest toward the Irving/ Industrial/Market Center Boulevard intersection from approximately 1300 Industrial Boulevard.

The *Dallas Floodway* at the center of the project area visually differs greatly from the areas surrounding it. This parkland lacks significant topographic variation other than the presence of levees on the northeast and southwest. The Dallas Floodway itself is an expansive flat area relieved by strands of trees along the river channel and bridges crossing the floodplain. The combination of the Dallas Floodway and levees creates a valley and meadow-like feel to someone standing in the Dallas Floodway. Several transportation links cross the Dallas Floodway; these links range in intensity from a two-lane road which crosses the Dallas Floodway at-grade (Wycliff/Sylvan Avenue) to major Interstate Highway bridges. Many of the bridges that cross the Dallas Floodway are stark concrete-beam structures typical of most highway interchanges, while some bridges are of historic character and include unique design components such as arches and decorative railings. With its unique arched form, cable-stays, and striking white color, the new Margaret Hunt Hill Bridge is a prominent icon within the area. The most apparent visual characteristic of this parkland is its uniqueness in an area that is so highly urbanized. When considered in relation to the surrounding land use, the park provides a visual break between the urban environment of the Dallas CBD and industrial areas to the northeast, as well as the neighborhoods to the southwest. In a similar fashion, the Dallas Floodway serves as

a buffer for the neighborhoods that lie to the southwest of the floodplain and facilitates the transition from an urban environment to a less intense land use. A unique visual characteristic of the Dallas Floodway is the manner in which it "sets the stage" for dramatic views toward the skyline of downtown Dallas during both day and night.

View looking along Dallas Floodway toward the Sylvan Avenue Bridge.

The band of *residential areas south of the Dallas Floodway* constitutes the third general band of development in the project area. This area typically consists of neighborhoods of small houses on small lots; generally the houses are visibly aged but not dilapidated (though in some areas, the houses have fallen into disrepair). In many areas, however, empty lots are as prevalent as lots with houses. Mature trees and shrubs are abundant in this area, which allows a greater diversity of color and visual texture than that found in the industrial corridor to the north. The new Trinity Groves development along Singleton Boulevard, spurred by the construction of the Margaret Hunt Hill Bridge, is beginning to dramatically change the visual character of the area. This redevelopment includes retail, restaurants, arts and entertainment, and public space. Small-scale retail and numerous religious institutions of scales and massing consistent with the nearby houses are spread throughout the area. The southwest levee is visible from many of these neighborhoods, which increases the amount of green space visible from these areas, but introduces a visual barrier to the Dallas Floodway.

View looking north on Avenue F near East 11th Street.

3.8.5 Visual Quality Rating for Landscape Units

The landscape units identified and discussed in **Table 3-39** were rated for visual quality based on the FHWA's (1988) methodology. This methodology generates a visual quality rating for each landscape unit, based on visual qualities like vividness, intactness, unity, and uniqueness of each area. There are seven visual quality values applicable to each landscape unit based on these three criteria:

1 = very low - the area does not display vividness/intactness/unity;
2 = low;
3 = moderately low;
4 = moderate;
5 = moderately high;
6 = high; and
7 = very high - the area is visually extremely vivid/completely intact/unified.

Each landscape unit was assigned a visual quality value ranging from 1-7. **Table 3-39** identifies the landscape unit, provides brief descriptions, and indicates the assigned visual rating.

TABLE 3-39. VISUAL RATING FOR LANDSCAPE UNITS

Landscape Unit	Description	Visual Rating
Commercial/Industrial		
Brookhollow Industrial Park	• This area contains a mixture of large, tall buildings - set off of tree-lined streets and surrounded by parking lots - and smaller, low buildings set in a denser pattern that includes smaller-scale parking areas.	4
Trinity Industrial District	• Generally large, non-descript buildings without any unique visual characteristics fronting the roadway. • Truck rental and sales (as well as other outdoor vehicle storage spaces, billboards, and overhead power lines) create visual clutter throughout the district.	3
Market/Technology Center	• Contains a high concentration of properties with landscaping surrounding structures and parking lots. • The area consists of several large-scale buildings and large expanses of parking lots.	4
Design District	• Eclectic mix of old and new development. • Structures exhibiting historical character that may be prime locations for redevelopment.	6
Mixmaster/Riverside	• Decayed industrial/commercial area with high amounts of visual clutter and litter. • Though the commercial buildings are old and poorly constructed, the State Jail/Criminal Justice Center dominates the landscape.	2

TABLE 3-39. VISUAL RATING FOR LANDSCAPE UNITS

Landscape Unit	Description	Visual Rating
CBD (Downtown Dallas)	• Densely developed area. • Large concentration of high-rise buildings. • Focal point for Dallas Floodway, transportation corridors, and community spaces. • Icon of Dallas.	6
Cedars West	• Isolated pockets of small industry between the levee and flood control sumps. • Large vacant parcels (formerly industrial).	2
Southern Lamar	• Heavy-industry corridor. • Some vacant and dilapidated industrial businesses. • Recycling and scrap metal lots.	1
West Commerce Riverside	• Includes a wide variety of commercial and industrial building types, sizes, and ages as well as several salvage and truck storage yards which contributes to an un-unified, cluttered appearance of the area.	3
Residential Neighborhood		
West Dallas	• Single-Family residences; cluttered front yards; disrepair of property. • Consistency in building type. • Variety of exterior sheathing materials.	2
La Bajada (also includes Los Altos)	• Attractive single-family residences behind unattractive, aged, decaying commercial and industrial buildings. • A large amount of open space present in the neighborhood.	5
Oak Cliff	• Higher percentage of multifamily, industrial, and commercial land uses than other residential districts. • Housing types are less consistent. • Contains a mixture of older housing units (lower-quality houses and apartments, redeveloped housing (houses and housing tower), and new housing (apartments and condos).	4
Kessler Park	• Low residential densities. • Mature canopy vegetation adds unity and character to the neighborhood. • Higher quality of housing. • Topographic variation adds visual interest.	7
South Dallas/Forest Heights/Ideal/Colonial Hill Historic District	• Most areas are characterized by aged, decayed residences, un-managed yards, trash, and other visual clutter. • A few, isolated areas of old, yet higher-quality housing exist; in these areas, building style, size, and age is uniform.	2
Rochester Park	• This area includes a mixture of multi-family housing that is repetitive and reminiscent of Soviet-era construction, single-family houses of low-quality and poor condition, and a large Dallas Water Utilities plant that dominates the area.	2
Cadillac Heights	• Small, generally well-kept houses on small lots in an area of abundant, mature vegetation. • Neighborhood streets are narrow and without curb and gutter; there are many cars and trucks in front of houses (sometimes they are parked in front yards). • Surrounding the residential portion of the neighborhood is a high concentration of industrial/manufacturing businesses.	3
Skyline Heights	• Topographically varying area affording views of downtown high-rises • Houses are small and uniform in appearance with typically well-kept yards and facades.	3
The Bottoms	• Small houses on small lots set in a low-lying area; several lots are empty, but the area still maintains a sense of cohesion.	3

TABLE 3-39. VISUAL RATING FOR LANDSCAPE UNITS

Landscape Unit	Description	Visual Rating
Westmoreland Heights/ Dallas Housing Authority	• Tall, mature trees along original river meander; large lots, small houses; feels like a small town neighborhood. • Uniform houses/duplexes/apartments in open fields; few trees, little character to the neighborhood; higher quality housing, though.	3
Arlington Park	• Quaint neighborhoods with typically well-kept yards and facades; houses are all of similar size, style, and age.	4
Park/Open Space		
North Trinity River Greenbelt	• Key characteristics of this area include marshes, riparian trees lining the river channel, and open meadows of mostly native turf grasses, sedges, herbaceous perennials, annuals, and isolated woody persistents peppered with second-growth mature trees. • Because of the height of the levees, structures exterior to the floodplain including electric transmission towers and buildings located in the Trinity Industrial District, Brookhollow Industrial Park, and the CBD, become a part of the park experience. • The Westmoreland/Mockingbird, Hampton/Inwood, and Wycliff/Sylvan Bridges are located in this area and visually frame and divide the landscape. None of the bridges are aesthetically unique.	6
Crow Lake Area	• This area includes a lake affording expansive views toward Downtown, as well as a quiet walk/jog trail around the lake and a parking area adjacent to Sylvan Avenue. • Dramatic views of CBD Dallas/Oak Cliff. • Flat, Horizontal expanse of native grasses with several mature trees.	6
Central Trinity River Greenbelt	• This area is narrower than other parts of the Greenbelt and is characterized by open meadows consisting of vegetation similar to that found in the North Trinity River Greenbelt, riparian trees along the river channel, and nine sump outfalls which appear as long, narrow coves that extend from the river channel to one levee or the other. • This portion of the Greenbelt appears more urban than other areas; the CBD is much more visually prominent here than elsewhere in the Dallas Floodway, as are power transmission lines and numerous bridges. • Nine bridges cross or border this portion of the Dallas Floodway (Wycliff/Sylvan Avenue, the Continental Avenue Viaduct, the Margaret Hunt Hill Bridge, Commerce Street, IH-30, the Houston and Jefferson Street Viaducts, and two separate IH-35E bridges. Four of these structures (Continental, Commerce, Houston, and the northbound IH-35E bridge [formerly the Cadiz Street bridge]) exhibit historic character in terms of construction style and material. The Margaret Hunt Hill Bridge is a contemporary design that has become a visual icon for the area. Other bridges in this landscape unit are not visually unique.	6

TABLE 3-39. VISUAL RATING FOR LANDSCAPE UNITS

Landscape Unit	Description	Visual Rating
South Trinity River Greenbelt	• This portion of the Greenbelt is noticeably dissimilar to other areas in the Dallas Floodway; the river channel is much closer to the northeast levee than the southwest levee in this area and is largely devoid of riparian vegetation which allows almost uninterrupted views of the levee on the opposite side of the Dallas Floodway. This area also has the largest amount of marshlands in the project area, which varies from the predominately meadow-like nature of other parts of the Dallas Floodway. • The CBD and Reunion Tower are both visible from this area, but are not as prominent as the large open area between the levees. • The northbound IH-35E Bridge and the Corinth Street Bridge are visually prominent due to the small number of trees in the area; these bridges, built in the early part of the 20th century, exhibit a simple yet elegant design. Just south of the DART Rail Bridge (a simple, modern concrete bridge) lies the abandoned wooden Santa Fe Railroad bridge and trestle. This bridge has vegetation growing up its sides, which adds to its rustic appearance.	6
Secondary Succession	• The most visually prominent feature of this area is the large amount of dense, established hardwood tree growth, which spreads across the entire portion of the Dallas Floodway. • Other visual features include the beginnings of the river channel meanders and the MLK, Jr. Boulevard Bridge, which is abutted by trees through its entire traverse across the Dallas Floodway. Because of its location within the trees, the bridge is not a prominent visual focus to viewers in the Dallas Floodway. Similarly, viewers from the bridge (primarily motorists) see only tree canopy.	5
Great Trinity Forest	• Climax dominant woodland species indigenous to the Trinity floodplain. • The dense trees and understory shorten the view and create a series of intimate, personal spaces. The trees serve as a visual buffer, blocking the views of land uses exterior to the floodplain.	6
Old Trinity River Meanders	• Green strands through the Trinity Industrial District and Market/Technology Center areas, which provide visual relief from the grey urban environment of the industrial area. • Vegetation consists largely of un-manicured and native grasses, shrubs, and some trees which typically catch and hold litter from the storm drainage that flows through the area.	4
Transportation Corridors		
IH-45	• Continuous, six-lane steel girder bridge constructed in the late 1960s to early 1970s. Substructure is a series of exposed steel "I" beams supported by grouped piers. There are 36 spans. • Passes through the Great Trinity Forest, Southern Lamar, Forest Heights, and Colonial Hill landscape units and affords views of downtown Dallas.	4
SH-310	• Four-lane divided "at-grade" highway, which is a principal arterial for the City of Dallas, built to standard TxDOT specifications. • Passes through or near the Colonial Hill, South Dallas, Ideal, Rochester Park, Southern Lamar, and Great Trinity Forest Landscape Units.	3
US-175	• Four-lane, undivided at-grade alignment, which serves as a principal arterial through South Dallas. • Passes through the Ideal Neighborhood landscape unit.	2

TABLE 3-39. VISUAL RATING FOR LANDSCAPE UNITS

Landscape Unit	Description	Visual Rating
MKT Railroad	• Steel plate girder bridge constructed in the late 1920s with 32 spans and a 200-foot steel truss over the Trinity River. • The bridge is not widely visible because if its location in the Great Trinity Forest.	4
MLK, Jr. Blvd.	• Four-lane divided principal arterial roadway. • Passes through Skyline Heights and Cadillac Heights, serves as a border between the Secondary Succession and the Great Trinity Forest, passes over Southern Lamar, and cuts through Forest Heights.	4
DART overpass	• Constructed in the 1990s, the bridge's main spans over the Trinity River are continuous welded steel plate girder bridges, clothed in a concrete fascia with a steel guardrail. • Passes by Skyline Heights, between the South Trinity River Greenbelt and the Secondary Succession, and between Cedars West and Southern Lamar.	4
Corinth Street	• A low-speed four-lane undivided roadway in need of repair; the bridge over the Dallas Floodway was constructed with a simple, classic design, and is an NRHP-Eligible Resource. • Crosses the South Trinity River Greenbelt and passes through Cedars West; expansive views of downtown Dallas.	5
IH-35E	• This is one of the busiest highways in Dallas and in the nation. The bridge consists of two distinct structures with dissimilar construction styles; northbound traffic travels across a structure built in the 1920s as the Cadiz Street Bridge while southbound lanes travel across a more modern steel plate girder bridge. • Passes between Oak Cliff and the Bottoms, crosses between the Central Trinity River Greenbelt and the South Trinity River Greenbelt, and passes between the Mixmaster/Riverside and Cedars West areas; views of downtown.	4
Houston/Jefferson Street	• These are two separate roads which run parallel to each other. The bridges are of two different eras and two different styles; the Jefferson Street Bridge was constructed in 1975 as a steel plate girder bridge with a concrete deck and is generally unattractive while the Houston Street Bridge was constructed in the early 1900s with 51 individual concrete arches and is designated as an historic structure and an ASCE National Civil Engineering Landmark. • These streets pass through Oak Cliff, across the Central Trinity River Greenbelt, through the Mixmaster/Riverside area; downtown is prominent to northbound motorists.	5
IH-30	• Another high-traffic highway, this is a modern Interstate Highway with a continuous plate girder bridge spanning over 2,200 feet across the floodplain. • Passes between Kessler Park and West Commerce Riverside, crosses the Central Trinity River Greenbelt, and passes through the Mixmaster Riverside area; downtown is prominent to eastbound motorists.	5
Commerce Street	• 1929 construction as a part of the Kessler Development Plan; the bridge was developed contemporaneously with the Continental Avenue and Cadiz Street Bridges. • Cuts through West Commerce Riverside, the Central Trinity River Greenbelt, and the Mixmaster Riverside area; downtown is visible to eastbound motorists, though it is partially obscured by the State Jail/Criminal Justice Center.	5

TABLE 3-39. VISUAL RATING FOR LANDSCAPE UNITS

Landscape Unit	Description	Visual Rating
UP Railroad Bridge	• This is a concrete pier bridge with a rusted, steel trestle crossing the river channel. Many of the concrete piers are covered with graffiti. • This bridge is visible from the Central Trinity River Greenbelt, the Continental Avenue Viaduct, and the Commerce Street Bridge.	3
Margaret Hunt Hill Bridge	• This bridge was designed by internationally-known architect Santiago Calatrava. It is generally perceived as a “signature” piece and possibly a tourist attraction. • The bridge is made of steel and concrete and features a single white arch connected by many cable-stays to the bridge deck. This creates a bridge design unique within Texas and the broader region. • This bridge is highly visible throughout the project area, as well as from points elsewhere in the city. One example is its visibility for many miles for motorists traveling south on the Dallas North Tollway.	7
Continental Avenue	• Constructed as a part of the triad of "C" bridges (Commerce, Continental, and Cadiz), this road crosses the floodplain via a concrete span bridge with a haunched-cantilever steel girder. • Passes through West Dallas, La Bajada, the Central Trinity River Greenbelt, and between the Design District and the Mixmaster Riverside area; downtown is very prominent to eastbound motorists.	5
Sylvan Road	• This two-lane undivided roadway is the only "at-grade" crossing of the Trinity River; it does not have barriers, paved shoulders, or landscape improvements during its crossing of the floodplain. Bridges at the east and west levees are continuous steel plate girder bridges. On either side of the Dallas Floodway, this road expands to four lanes with medians. • Passes between West Dallas and La Bajada and the North Trinity River Greenbelt, Crow Lake Area, and the Central Trinity River Greenbelt, runs through the Trinity Industrial District, and skirts the Market/Technology Center; downtown is visible from portions of the road, but is not entirely prominent.	4
Hampton/Inwood Road	• A four-lane principal arterial for the City of Dallas. The bridge, constructed in 1951, is a continuous steel plate girder bridge with an exposed steel "I" beam substructure and galvanized metal railing over flush concrete curbs. • Runs between the Dallas Housing Authority area and West Dallas, crosses the North Trinity River Greenbelt, and passes through the Trinity Industrial District.	4
Westmoreland Road	• This is a high-volume, six-lane road that is a principal arterial for the city; the bridge over the floodplain is an unattractive concrete structure with a steel railing along the edges. • This road passes through Westmoreland Heights, the North Trinity River Greenbelt, and the Trinity Industrial District.	4
Irving/Riverfront Boulevard and South Lamar Street	• The roadways which make up this corridor are typically four to six lanes wide and alternate between having medians, center turn lanes, and no division between directions of travel. • Passes through the Trinity Industrial District, Market/Technology Center, Design District, the Mixmaster Riverside area, Cedars West, and Southern Lamar.	3

3.8.6 Perceptions and Preferences of Viewer Groups

As discussed in **FEIS Section 3.8.1**, there are four viewer groups that are prominent in the project area: *motorists, residents, recreational users, and business employees/patrons*. Each of these viewer groups visually experiences the landscape of the project area differently based on the user's function in the area and whether the user is viewing the landscape in motion or from a more or less fixed point. Each of these groups will have differing visual preferences and perceptions of visual information and should, therefore, be considered individually.

Though all user groups perceive the visual quality of the landscape differently, *motorists* have their visual perception further altered by the speed with which they move through the landscape and their necessary focus on driving responsibilities and the road ahead of them. Because of this, motorists typically see less than other users. That is, rather than focusing on the detail of the landscape, motorists focus on objects in front of them in the distance (which are focal points, such as a tall building or hill). Motorists perceive less of the landscape on either side of the road, only noticing the massing, size, use, and general color of the landscape rather than individual pieces of vegetation, rock formations, or architectural details of buildings. Continuous roadside details, however, such as how overhead power lines and billboards are positioned in such a way that they are more visually prominent to motorists, can result in additional visual clutter of the landscape. Examining changes to the visual quality of an environment from the perspective of a motorist should focus on determining whether a proposed action would result in the loss of long-range views towards focal points in-line with motorist direction of travel, or increases in visual clutter (such as through the addition of fly-over ramps).

Visual preferences for this group favor the creation of focal points for the road (such as downtown), installing clear, visible signage, and avoiding a cluttered visual environment along and above the roadway. Architectural treatments of bridges and ramps crossing over the proposed and existing roadways would reduce the sense of clutter and disorder, and many of the existing, historic-character bridges exhibit these qualities.

Residents are one of the more vulnerable user groups with regard to visual changes because of their permanency within the area. While other user groups visit the project area occasionally or work within the area, residents come home to this area every day, spend their weekends here, and recreate here. No other user group spends as much time in the project area as residents. There are likely differences within this user group based on individual preference for the quality of the area's visual environment. For example, a resident from Kessler Park might have a different

perception of the visual quality of The Bottoms Neighborhood than would a resident of that neighborhood. The perception of visual quality change from a resident may be heavily influenced by other factors related to a roadway project, such as increased noise and local pollution, traffic on side streets, and indirectly lowered property values. Because residents perform many activities in their neighborhoods, the changes in visual quality should be considered not only from residential properties, but also from local streets, community spaces, parks, and religious institutions. It should also be considered that while some residents might view the affected landscape actively (such as while sitting on the front porch), residents are typically more likely to experience views in passing during their day-to-day activities.

With regard to transportation facilities, the visual preferences of residents favor small-scale, low-speed streets rather than high-speed facilities, which imply changes in property values and increased noise, traffic, and air pollution. Such high-speed facilities also act as barriers (visual and otherwise) between neighborhoods or between a neighborhood and a park.

Recreational users, or those individuals using one or more of the parks or trails within the project area, will also be sensitive to changes in the visual character of the landscape. A considerable portion of time spent by recreational users in this area focuses on actively viewing the landscape, often while positioned in one location. They also view farther than other viewer groups because of the nature of recreational activities. Therefore, changes in visual information and visual quality will be more apparent to this group than to other groups. However, the recreational user viewer group is currently the smallest of the four viewer groups and the majority of recreational activity happens at the Crow Lake Area, the Santa Fe Trestle Trail, on the river channel (by canoe), and on the levee-top trails (the latter of these two linear areas span considerable portions of the Dallas Floodway). Therefore, while future recreational users may be more numerous and may view more portions of the project area, changes in visual quality as seen by the current viewer group will be experienced in specific locations by a limited number of individuals. Measuring changes in visual quality should be focused on these areas.

While visual preferences among this group favor architecturally unique bridges (as well as open spaces, varied landscape patterns, and expansive views of downtown Dallas), they likely do not favor transportation facilities that alter the visual landscape along the entire Dallas Floodway. The appearance of a roadway along the Dallas Floodway, which is currently characterized by bridges crossing the Dallas Floodway, not roads lining the Dallas Floodway, would seem out-of-place and invasive.

Business employees and patrons, like those in the residential viewer group, typically view the landscape in passing during their daily activities, though some users are likely to view the landscape actively such as someone with a window office in a high-rise building. Whether viewed actively or passively, changes in visual quality are still important to this user group as visual quality implies the quality of the business itself. Changes in visual quality for business employees and patrons should be considered from the point of view of whether views of the business are obscured or enhanced and whether the roadway will indirectly improve or degrade the image of the business.

Visual preferences within this group favor nearby high-volume transportation facilities because of the increased perception of accessibility to businesses (and therefore increased sales) and the potential for better business visibility to motorists.

3.8.7 Goals for Protecting and Enhancing Visual Quality

Protecting visual quality in the project area should be of prime concern. Enhancing visual quality where possible should also be a priority. Specific portions of the project area have been rated highly for visual quality and this quality should be protected. In addition, the varying needs of the four viewer groups should be considered in protecting visual quality. Therefore, the following two sets of goals have been established for the protection and enhancement of visual quality in the project area: (1) visual resource goals and (2) user group goals. Some of these goals can be accomplished through choosing an alternative alignment sensitive to high-quality areas and viewer group needs, while other goals can be accomplished through mitigation.

Visual Resource Goals:

Protect the visual quality of the following landscape units:

- *Commercial/Industrial*
  - Design District
  - CBD
- *Residential*
  - Kessler Park
  - Arlington Heights
  - Oak Cliff
- *Parks/Open Space*
  - Trinity River Greenbelt
  - Crow Lake Area
  - Great Trinity Forest

- *Transportation*
  - Corinth
  - Houston/Jefferson
  - IH-30
  - Margaret Hunt Hill Bridge

While the focus of most of these goals is on protecting the visual quality of the landscape within the landscape unit, some goals are aimed at protecting a slightly different type of visual resource. The goal of protecting the visual quality of the CBD does not mean, for this project, that the street-level visual quality of the CBD should be protected. Rather, this goal focuses on protecting longer-distance views of the CBD from the project area, as the tall buildings in the CBD provide a focal point and serve as an icon of Dallas. Goals for preserving visual quality for users of the four transportation corridors listed focus on preserving the views from the roadway, though three of the bridges found along these corridors (the Corinth Street and Houston Street Viaducts, as well as the Margaret Hunt Hill Bridge) are themselves visually interesting, with the former two having historical character (see **FEIS Section 3.3.1.3**).

User Group Goals:

- *Motorists*
  - Road clutter should be avoided; overpasses or ramps over existing bridges and roads should be minimized and/or architecturally interesting.
  - Ramps and overpasses should not be placed in such a way as to confine existing views of downtown, architecturally-unique bridges, or any other focal point for motorists.
- *Residents*
  - Road should not create visual barriers between neighborhoods or between a neighborhood and a park area or the CBD.
  - The roadway should not have prominence in views from neighborhoods.
- *Recreational Users*
  - Road should not be visible to park users; special care should be given around the Crow Lake Area, river channel, Santa-Fe Trestle Trail, and the Levee-top trail, as these are currently used for recreational activities.
  - Do not obscure views from the Dallas Floodway toward the CBD, Margaret Hunt Hill Bridge, or bridges that are historically and architecturally unique.
- *Business Employees/Patrons*
  - Road should not obscure view of business; rather, it should increase business visibility.

- Road design should be attractive, which would improve the image of existing businesses and business properties.

3.9 HAZARDOUS/REGULATED MATERIALS

A search of publicly available records to identify potential hazardous waste/material sites was conducted for the project area. The search focused on hazardous waste/material sites located within 500 feet either side of the proposed alignment. **FEIS Sections 3.9.1** and **3.9.2** list the USEPA and TCEQ regulatory databases reviewed for this study, followed by the identification of hazardous waste/material sites considered to have a high probability for contamination located within or nearby the proposed project ROW in **FEIS Section 3.9.3.**

3.9.1 USEPA Regulatory Databases

Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Database - CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and contains sites that are either proposed to be added or are on the National Priority List (NPL), and sites in the screening and assessment phase for possible inclusion on the NPL.

NPL - The NPL is a subset of CERCLIS and is a list of priority sites that the USEPA has determined to pose a threat to human health and/or the environment and where remedial action is required.

Resource Conservation and Recovery Information System (RCRIS) Treatment, Storage or Disposal (TSD) Database - RCRIS, under the Resource Conservation and Recovery Act (RCRA), provides information concerning facilities that generate, transport, treat, store, and/or dispose of hazardous waste as federally-defined. The RCRIS TSD is a subset of the RCRIS list, which tracks facilities that treat, store, and/or dispose of hazardous waste.

RCRIS Generators Database - The RCRIS generators database tracks facilities that generate or transport hazardous waste. A conditionally exempt small quantity generator (CESQG) is a facility that produces less than 220.5 pounds of hazardous waste per month; a small quantity generator (SQG) is a facility that produces at least 220.5 pounds per month, but less than 2,204.7 pounds of hazardous waste per month; and a large quantity generator (LQG) is a facility that produces more than 2,204.7 pounds of hazardous waste per month.

RCRIS Corrective Action (CORRACTS) Database - The RCRIS CORRACTS database lists sites with RCRA corrective action activity.

RCRA Administrative Action Tracking System (RAATS) Database - The RAATS database tracks facilities that have had administrative enforcement and civil actions issued by the USEPA prior to September 1995 pertaining to major RCRA violators.

Integrated Compliance Information System (ICIS) - The ICIS supports the needs of the national enforcement and compliance program. Currently, the ICIS database contains all federal administrative and judicial enforcement actions.

Emergency Response Notification System (ERNS) - The ERNS records and stores information on reported releases of oil and hazardous substances.

3.9.2 State of Texas Regulatory Databases

Texas State Superfund List - The Texas State Superfund database is a list of sites that the State of Texas has identified for investigation or remediation.

Solid Waste Facilities/Landfills (SWF/LF) Database - The TCEQ requires municipalities and counties to report known active and inactive landfills. The SWF/LF database is a listing of solid-waste facilities, transfer stations, and processing stations registered and tracked by the TCEQ Solid Waste Division.

Petroleum Storage Tank (PST) Database - The PST database is a list of facilities with registered underground storage tanks (USTs) and/or aboveground storage tanks (ASTs).

Leaking Petroleum Storage Tank (LPST) Database - The LPST database is a list of facilities with known releases from a petroleum storage tank system.

Voluntary Clean-Up Program (VCP) Database - The VCP database is a list of sites participating in the TCEQ VCP, which was established to provide administrative, technical, and legal incentives to encourage the clean-up of contaminated sites.

Innocent Owner/Operator Program (IOP) Database - The IOP database is a list of sites contaminated as a result of a release or migration of contaminants from an off-site source or

sources, and where the facility owner and/or operator did not cause or contribute to the source or sources of contamination.

Closed Landfill Inventory (CLI) - The CLI database is a list of permitted as well as closed, abandoned, and unauthorized landfill sites.

Enforcement (ENF) Report - The ENF database is a notice of violations that includes a listing of permit violations and administrative orders issued to municipal solid waste, petroleum storage tank, and multi-media sites.

Spills - The TCEQ Spills database records and stores information on reported releases of hazardous substances.

Activity Use Limitations (AUL) - The TCEQ AUL database identifies sites that have institutional controls.
Drycleaners - The TCEQ Drycleaners database identifies registered drycleaners in the state.

Priority Cleaners - The TCEQ Priority Cleaners database identifies dry cleaner related contaminated sites.

Industrial Hazardous Wastes (IHW) - The IHW database contains summary reports by waste handlers, generators, and shippers in Texas.

Groundwater Contamination Cases (GCC) - The GCC database contains information concerning groundwater monitoring activities conducted or required at regulated facilities or associated with regulated activities. The report is required to contain a description of each case of groundwater contamination documented during the previous calendar year. The report also includes descriptions of each case of contamination during previous periods for which voluntary cleanup action was incomplete at the time the preceding report was issued and indicates the status of enforcement action for each listed case.

3.9.3 Assessment of Contamination Potential

Identified hazardous waste/material sites considered to have a high probability for contamination are shown on **FEIS Plate 3-24**. Examples of these sites include landfills, active Superfund sites, RCRA sites with reported violations, and reported VCP and LPST sites that have not attained closure status. **Table 3-40** provides a summary of database information pertaining to these sites and/or facilities.

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TABLE 3-40. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID Number	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
1	RCRIS-SQG LPST PST IOP VCP Spills IHW AUL	-USEPA No. TXD007331788 -LPSTLPST No. 94610 -IOP No. 291 -VCP No. 975	Flint Ink Corporation 3120 Halifax Street	• Former ink manufacturing facility. • VCP Site - 1.9 acres; received into the VCP in 1999; TPH/phase-separated hydrocarbons affected soils/groundwater; VCP Certificate of Completion issued in 2005 with restricted groundwater use as an institutional control. • IOP Site - 1.9 acres; received into the IOP in 2002; VOCs affected soils and groundwater; IOP Certificate issued in 2003. • Violations concerning RCRA generator requirements. • One UST removed from the ground, two USTs abandoned in place. • LPST Status1 - Final concurrence issued, case closed. • LPST Priority2 - Assessment incomplete, no apparent threats or impacts to receptors. • Spills – 50 gallons of oil-based carbon ink reported released in 1987 to the Elm Fork of the Trinity River.	No
2	RCRIS-SQG LPST PST	-USEPA No. TXD086273554 -LPSTLPST No. 103984	Hylift, Inc. 2928 Irving Boulevard	• Violation of the Texas Solid Waste Rule. • Wastes included spent halogenated solvents used in degreasing. • Two USTs removed from the ground. • LPST Status - Final concurrence issued, case closed.	Yes
3	RCRIS-SQG IHW	-USEPA No. TXD981914310	The Printing Place, Inc. 3160 Commonwealth Drive	• Violations of the Texas Solid Waste Rule.	Yes
4	LPST PST	LPST No. 112718	Bright Truck Leasing 3020 Irving Boulevard	• Two USTs removed from the ground. • LPST Status – Final concurrence pending documentation of well plugging. • LPST Priority - Impacted groundwater within 500 feet - 0.25 mile to surface water used by human, endangered species.	Yes
5	LPST PST	LPST No. 113975	Aladdin Car Wash (Inwood Best Car Wash) 1449 Inwood Road	• Four USTs removed from the ground, one 12,000-gallon gasoline UST in use. • LPST Status - Monitoring. • LPST Priority - Impacted groundwater within 500 feet - 0.25 mile to surface water used by human, endangered species.	Yes
6	RCRIS-SQG CERCLIS	USEPA Nos. TXR000019042 and TX0000605431	Motor Works/Dallas Battery, Inc. 2743-5 Irving Boulevard	• Former retail store (Dallas Battery) that rebuilt and distributed lead-acid batteries, vacated in 1991, subsequently occupied by an automotive engine parts repair shop (Motor Works). • Wastes included spent solvents (i.e., tetrachloroethylene). • Non-NPL status - Preliminary Assessment start needed. • Several violations of the Texas Solid Waste Rule and RCRA generator requirements.	Yes

TABLE 3-40. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID Number	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
7	IOP LPST PST	IOP Nos. 244 and 329 LPST No. 115329	Pioneer Concrete of Texas/Hanson Aggregate Central 2151 Irving Boulevard	• Former concrete plant. • VOCs affected soils and groundwater documented at the site (5.5 acres). • IOP Certificates of Completion issued in 2002 and 2003. • Two USTs removed from the ground. • LPST Status – Pre-assessment/release determination. • LPST Priority - Groundwater impacted no apparent threats or impacts to receptors.	Yes
8	LPST PST	LPST No. 114546	Hargrove Electric Co. 1522 Market Center Boulevard	• One UST permanently filled in-place. • LPST Status - Final concurrence pending documentation of well plugging. • LPST Priority - Assessment incomplete, no apparent threats or impacts to receptors.	Yes
9	RCRIS-SQG	USEPA No. TXD050136290	Manders Premier, Inc. 327 Cole Street	• Printing ink manufacturing facility. • Violations of RCRA generator requirements and the Texas Solid Waste Rule. • Wastes included pigment sludge and wastewater containing organics and metals.	No
10	RCRIS-LQG	USEPA No. TXD980810279	Lone Star Wire, Inc. 1310 Dragon Street	• Steel wire and related products manufacturing facility. • Violation of the Texas Solid Waste Rule recorded for the facility. • Wastes included trichloroethylene sludge	No
11	RCRIS-SQG	USEPA No. TXD026267591	Manhattan Laundry and Dry Clean 1345 E. Levee Street	• Inactive facility. • Wastes included spent halogenated solvents (i.e., tetrachloroethylene) and spent non-halogenated solvents (i.e., xylene, acetone, and ethyl acetate). • No violations listed.	No
12	LPST PST	LPST No. 110529	Auto Detail and Service 1101 N. Industrial Boulevard	• Three USTs removed from the ground, one UST in use. • LPST Status - Pre-assessment/release determination. • LPST Priority - Assessment incomplete, no apparent threats or impacts to receptors.	Yes
13	LPST PST	LPST No. 101987	Payless Convenience Store 1000 N. Industrial Boulevard	• Three USTs removed from the ground. • LPST Status – Final concurrence issued, case closed. • LPST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	Yes
14	IOP	IOP No. 125	3 Vaughan Company 918 Dragon Street	• Distribution warehouse. • VOCs and metals affected soils and groundwater identified at the site (0.6 acres). • Entered the IOP in 1999. • IOP Certificate of Completion issued February 2000.	No

TABLE 3-40. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID Number	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
15	RCRIS-SQG ICIS IHW	USEPA No. TXD000836460 and 110005030778	TU Electric Payne Street Service Center (Dallas Power and Light Materials Reclaim) 100 Payne Street	• Violation concerning RCRA generator requirements. • Violations resulting in enforcement action under the Toxic Substances Control Act (TSCA) • Wastes include halogenated (e.g., chlorinated) solvents, PCB-contaminated solids, wet cell batteries, lubricating oil, oil skimmings, PCB capacitors, asbestos, paint solvents, lead waste, metal scrap, PCB transformer oil, and used ethylene glycol. • IHW - Ignitable hazardous waste, caustic wastes, reactive wastes, cadmium, chromium, lead, mercury, silver, spent halogenated solvents, and spent non-halogenated solvents.	Yes
16	RCRIS-SQG LPST PST	-USEPA No. TXD006438626 -LPST No. 102415	Greyhound Lines, Inc. 315 Continental Avenue	• Violation of the Texas Solid Waste Rule recorded for the facility. • Wastes included spent halogenated solvents (i.e., tetrachloroethylene) and paint waste. • Eight USTs removed from the ground. • Three USTs in use. • LPST Status - Final concurrence issued, case closed.	No
17	RCRIS-SQG	USEPA No. TXD050836170	AUM, Inc./Silver Services Recycler 324 Singleton Boulevard	• Violations of the Texas Solid Waste Rule.	No
18	LPST PST	LPST No. 113012	Star Grocery (GLOCO [Good Luck Oil Co.] #40) 353 Singleton Boulevard	• One 4,000-gallon and two 8,000-gallon gasoline USTs in use. • LPST Status - Final concurrence pending documentation of well plugging. • LPST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	No
19	RCRIS-SQG	USEPA No. TXD007322530	Oak Cliff Plating Co. 2330 N. Beckley Avenue	• Inactive facility. • Former electroplating, polishing, anodizing, and coloring facility. • Wastes included spent cyanide electroplating bath solutions. • Violations concerning RCRA generator requirements.	Yes
20	LPST PST	LPST No. 106272	Jacks Service Station 322 Cadiz Street	• Five USTs removed from the ground. • LPST Status - Final concurrence pending documentation of well plugging. • LPST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	No
21	LPST PST GCC	LPST No. 101691	Kwik Stop (Diamond Shamrock) (Dearing David) 418 Corinth Street	• Three gasoline USTs in use. • LPST Status - Final Concurrence Issued, Case Closed. • LPST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	Yes
22	LPST PST GCC	LPST No. 97465	Chevron/Texaco/Gulf/Metro Cost Plus 201 Corinth Street	• Four USTs removed from the ground. • Two 10,000-gallon gasoline USTs in use. • LPST Status - Monitoring. • LPST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	Yes

TABLE 3-40. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID Number	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
23	RCRIS-LQG LPST PST VCP ENF ICIS	-USEPA No. TXD026213769 -LPST No. 95395 -VCP No. 999	Buckley Oil and Chemical 1809 Rock Island Street	• Chemical storage/distribution facility. • Application to enter the VCP submitted in 1999. • Media affected and contaminant categories not reported. • VCP Phase - Withdrawal. • Wastes included spent halogenated (chlorinated) solvents (i.e., tetrachloroethylene), non-halogenated solvents, glycol, and sorbent used for solvent and oil spills. • Violations of RCRA generator requirements and the Texas Solid Waste Rule. • Violations resulting in enforcement action under the Clean Water Act. • One UST removed from the ground, one UST permanently filled in-place. • LPST Status - Cross-reference to another LPST number. • LPST Priority - Groundwater other than 1B, site characterization incomplete.	No
24	VCP AUL Spills	VCP No. 402	Atlas Scrap Iron and Metal Company 2209 S. Industrial Boulevard	• Scrap metal yard. • VCP Site - 1.9 acres • Soils impacted by metals, total petroleum hydrocarbons, and VOCs. • Excavation/removal of affected media and a surface cap were implemented to satisfy Risk Reduction Standard No. 3 requirements. • Conditional certificate of completion issued in 1999.	Yes
25	RCRIS-SQG PST ENF	USEPA No. TXD000836494	Faubion Associates, Inc. (Dresser Industries Guiberson Division) 1000 Forest Avenue	• SIC Code - 2541, Wood partitions and fixtures manufacturing. • Registered wastes included ignitable wastes (e.g., lacquer thinner) and spent non-halogenated solvents. • Violations concerning RCRA generator requirements and the Texas Solid Waste Rule. • Three USTs removed from the ground.	Yes
26	RCRIS-SQG RCRIS-TSD RAATS PST LPST ICIS	-USEPA No. TXD071376404 -LPST No. 92660	Praxair, Inc. (Union Carbide Corp./Linde Gases of the South/Airgas Southwest) 1001 Forest Avenue	• Industrial gases manufacturing facility. • Violations concerning RCRA generator requirements and the Texas Solid Waste Rule. • Violations resulting in enforcement action under the Clean Water Act. • Wastes included trichloroethane, caustic cleaning solution, waste oil, and waste propylene glycol • Three USTs removed from the ground. • LPST Status - Final concurrence issued, case closed.	Yes

TABLE 3-40. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID Number	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
27	RCRIS-LQG LPST PST	-USEPA No. TXD096813969 -LPST No. 104774	Brockway Standard Southwestern Steel Plant 3301 S. Lamar Street	• Metal barrels, drums, and pails manufacturing facility. • Wastes generated on-site included tetrachloroethylene, used oil, inks, waste petroleum naphtha, and spent solvents and paint sludge. • Violations concerning RCRA generator requirements and the Texas Solid Waste Rule. • Six USTs removed from the ground. • LPST Priority - Groundwater impacted, no apparent threats or impacts to receptors • LPST Status - Final concurrence issued, case closed.	Yes
28	RCRIS-SQG LPST PST	-USEPA No. TXD007327166 -LPST No. 104373	Procter and Gamble Manufacturing Co. (Dallas Public Schools Transportation Dept. facility) 1301 McDonald/3701 S. Lamar Street	• Former shortening/cooking oils manufacturing facility. • Violations of the Texas Solid Waste Rule. • LPST Status - Final concurrence issued, case closed. • Land filling and elevated concentrations of metals, total petroleum hydrocarbons, and acids documented at the site.	Yes
29	LPST PST RCRIS-SQG VCP ICIS IHW ERNS	-LPST No. 109854 -USEPA No. TXD000609578 -VCP No. 227	Beall Concrete (Tri-Gas Corp. / Chemetron Corp.) 3301 S. National Street	• Tri-Gas described as a welding supply operation with empty acetylene cylinders listed as wastes. • Chemetron described as an industrial gases manufacturing facility. • Violations resulting in enforcement action under the Clean Water Act. • One acetone UST and one used oil UST in use. • LPST Status - Cross-reference to another LPST number • LPST Priority - Groundwater impacted, no apparent threats or impacts to receptors. • VCP Site - 2.28 acres. • Soils/groundwater affected by lime and acetylene condensate. • VCP Certificate of Completion issued in 2006 • Remedy type - excavation/natural attenuation. • Risk Reduction Standard No. 2 requirements satisfied for the site.	Yes

TABLE 3-40. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID Number	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
30	RCRIS-LQG PST ERNS ENF Spills IHW GCC IOP CERC-NFRAP	USEPA No. TXD078383056	Occidental Chemical Corporation Dallas Plant (Diamond Shamrock Corp. Dallas Silicate/Oxychem) 1100 Lenway Street	• Industrial inorganic chemicals manufacturing facility - produces sodium silicate. • Wastes include sump sludge containing miscellaneous chemicals, used oil, lead, corrosive wastes, mercury, benzene, and spent solvents that included tetrachloroethylene. • Preliminary assessment and site inspection conducted by the USEPA in 1979. • Inactive landfill identified at the facility. • Landfill in operation from 1941 to 1971 - contains alkaline product waste, floor sweepings, empty caustic containers, asbestos piping, and empty paint thinner cans. • A notice of violation issued in 2008 for failure to comply with permit representations for the sand silo. The violation was listed as moderate, status resolved. • 150 pounds of chlorine reported released from a storage container December 18, 2007. The status of the release was listed as “open.” • Heavy metals contaminated groundwater confirmed by the TCEQ in September 2008. • Received into the IOP database September 2008. IOP Phase listed as “Investigation.”	Yes
31	RCRIS-LQG PST	USEPA No. TXD007347875	Okons Iron and Metal Co. (Trinity Recycling) 4801 S. Lamar Street	• Elevated lead concentrations identified in soil and groundwater at the site. • One diesel AST registered	Yes
32	CLI	TCEQ #34259	Herman Gibbons 5003 S. Lamar Street	• Closed landfill site (11.4 acres). • Closed 1994; final cover has been applied. • Facility accepted household trash, construction/demolition debris, tires, and brush.	Yes
33	LPST PST GCC	LPST No. 114954	Vacant Station 5006 S. Lamar Street	• Four USTs removed from the ground. • LPST Status - Monitoring. • LPST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	Yes
34	LPST PST ICIS	LPST No. 97460 USEPA No. 110000504874	Bordens/Meadow Gold Dairy 5327 S. Lamar Street	• Violations resulting in enforcement action under the Emergency Planning and Community Right to Know Act. • Wastes included solvents, waste petroleum naphtha from cleaning/degreasing, and cleanout of carbon/sand from a water filtration tank. • Five USTs removed from the ground. • LPST Status - Final concurrence issued, case closed. • LPST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	No

TABLE 3-40. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID Number	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
35	RCRIS-SQG VCP IOP PST SWF/LF GCC	-USEPA No. TXR000012641 -VCP No. 230 and No. 1775 -IOP No. 1 and No. 431 -SWF/LF Permit No. 65023	Brookhollow Warehouse (RS Used Oil Svcs., Inc. and Kroger Distribution Warehouse) 3191 Commonwealth Drive	• Industrial storage facility. • VCP Site No. 230 - 7.23 acres received into the VCP in 1996; chlorinated hydrocarbons, metals, and total petroleum hydrocarbons affected soils and groundwater; transferred from the VCP to the IOP. • VCP Site No. 1775 - 7.17 acres received into the VCP in 2004; VOCs, semi-volatile organic compounds (SVOCs), metals, chlorinated solvents, and TPH affected soils/groundwater; investigation ongoing under TRRP. • IOP Site No. 1 - 7.23 acres received into the IOP in 1997; chlorinated solvents affected soils/groundwater; IOP Certificate issued in 1998. • IOP Site No. 431 - 7.33 acres received into the IOP in 2004; VOCs affected groundwater; awaiting signed affidavit. • Violations of the Texas Solid Waste Rule. • One UST removed from the ground. • SWF/LF status - not constructed; permit status - pending.	Yes
36	SWF/LF	Permit No. 128	City of Highland Park Landfill 1261 Conveyor Lane	• Sanitary landfill, daily cover required. • Grandfather site (in operation prior to 1974). • Permit Status - closed site permit issued (final cover complete).	Yes
37	Not Registered	Not Registered	Artistic Furniture Craftsmen 1820 Irving Boulevard	• UST system vent pipe and fill port observed at the site. • Potential USTs abandoned in place.	Yes
38	Not Registered	Not Registered	Abandoned Gas Station 1129 N. Industrial Boulevard	• Three UST system vent pipes and two former dispenser islands observed at the site. • Potential USTs abandoned in place.	Yes
39	RCRIS-TSD CORRACTS RCRIS-SQG LPST PST	-USEPA No. TXD982813156 -LPST No. 113336	Allied Radiator Service (Vacant Lot/Dealy Ltd.) 2006 N. Beckley Avenue	• Violations concerning RCRA TSD and generator requirements. • Three USTs removed from the ground. • LPST Status - Final concurrence pending documentation of well plugging. • LPST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	No
40	CLI	Unknown	Unnamed Landfill E. Side of Trinity River, S. of MLK	• Site closed during 1930s. • Origin and use of site unknown. • During the mid-1980s, the City constructed a clay berm between the site and the Trinity River to stop seepage.	Yes
41	Not Registered	Not Registered	Former Wrecking Company 4901 S. Lamar Street	• UST vent pipe observed at the site. • Potential USTs abandoned in place.	Yes
42	Not Registered	Not Registered	Forest Avenue Landfill North of MLK on east side of Trinity River	• Inactive municipal solid waste landfill. • Closed ca. 1900.	Yes

TABLE 3-40. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID Number	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
43	NPL CERCLIS RCRIS-SQG/TSD CORRACTS	USEPA No. TXD079348397	Murmur Corporation Site (Murph Metals, Inc./RSR Corporation) 2727 Westmoreland Road	• NPL site encompasses 13.6 square miles and consists of areas of contaminated soil located in West Dallas, south of the Dallas Floodway West Levee. • A lead smelting facility, in operation from the 1930s until 1984, was located near the center of the NPL site at Westmoreland Road and Singleton Boulevard. • Soil sampling identified contamination in areas around the smelter where fallout occurred and where battery chips/slag were used as fill in yards/driveways. • In 1995, the site was added to the NPL. • The site was divided into five operable units (OUs) consisting of residential areas (OU-1), a DHA public housing area (OU-2), slag piles/landfills (OU-3), the former smelter facility (OU-4), and a battery wrecking facility (OU-5). • Removal actions have been performed in OU-1 for soil/debris containing concentrations of the metals lead, arsenic, and cadmium in excess of cleanup levels. • In 1994-1995, the DHA conducted removal actions under USEPA supervision at OU-2. • Records of Decision have been issued for OU-1 and OU-2, which are the only operable units that extend into the project area. • Investigation and remediation activities have also been performed for OU-3, OU-4, and OU-5, which are located outside the project area. • A five-year review was completed in 2005, which determined that the remedy for the NPL site is protective of human health and the environment provided certain actions are taken, including creation of institutional controls to maintain the integrity of protective soil covers and caps. The next five-year review is scheduled for completion by September 2010.	Yes
44	VCP IOP AUL GCC	VCP No. 455 IOP No. 167	Dover Elevator 7017-7021 Carpenter Freeway	• VCP site (1 acre) described as inactive concrete vaults (oil/water sumps). • Received into the VCP in 1997. • TPH and VOCs affected soils/groundwater documented at the site. • VCP Certificate of completion issued in 2002 with institutional control of non-residential use; satisfied Risk Reduction Standard No. 3 requirements. • Remedy for VCP site - Excavation/removal to off-site landfill. • IOP site described as a retail business. • Received into the IOP in 2000 due to VOCs affected groundwater. • IOP Phase - Completed; IOP certificate issued in 2004.	Yes
45	RCRIS-LQG LPST PST	USEPA No. TXD981054828 LPST No. 108633	DSI Transports, Inc./Red Ball Shop 3151 Halifax Street/15600 John F. Kennedy Boulevard	• Motor freight transport terminal and truck maintenance facility. • Violations of the Texas Solid Waste Rule. • LPST Status - Final concurrence issued, case closed. • LPST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	No

TABLE 3-40. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID Number	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
46	PST LPST	LPST No. 102035	Gascard/Conway Southern Express 3130 Halifax Street/5020 Calvert Street	• Five USTs removed from the ground. • Two 30,000-gallon diesel USTs in use. • LPST Status - Final concurrence pending documentation of well plugging. • LPST Priority - No groundwater impact, no apparent threats or impacts to receptors.	No
47	RCRIS-SQG VCP	USEPA No. TXD987997673 VCP No. 1069	The Allen Group 3184 Quebec	• Audio and video equipment manufacturing facility. • Wastes include perchloroethylene, lubricating grease, waste mineral spirits, waste Freon, adhesive/epoxy waste, paint waste containing toluene and chromium, waste mixtures containing metals, and waste oil. • Received into the VCP in 1999 due to perchloroethylene affected soils and groundwater at the site (3.5 acres). • VCP Phase - Investigation.	No
48	RCRIS-SQG ENF	USEPA No. TXD981046170	United Recyclers, LP (Quemetco Metals Ltd.) 1340 Manufacturing Street	• Facility processes and separates used automotive oil filters. • Violations concerning the Texas Solid Waste Rule. • 500 gallons of motor oil spilled in 1993.	No
49	RCRIS-SQG VCP LPST	USEPA No. TXD988040572 VCP No. 1960 LPST No. 104064	North Texas Tollway Authority (NTTA Maintenance Facility/Texas Turnpike Authority) 405 S. Industrial Boulevard	• Received into the VCP in August 2006 due to VOCs, SVOCs, metals, and chlorinated solvents affected soils and groundwater at the site (4 acres). • VCP Phase - Investigation. • Wastes include stripping solution. • LPST Status - Final concurrence issued, case closed.	Yes
50	VCP RCRIS-SQG	VCP No. 1252 USEPA No. TXD000835124	Commerce Center (Hunt Philip A Chemical Co.) 3310 Quebec Street	• Chemical storage facility. • Received into the VCP in 2000 due to chlorinated solvents and TPH affected soils and groundwater at the site (2 acres). • VCP Phase - Remediation. • Remedy types include excavation, hydrogen release compound (HRC) injection, and monitored natural attenuation.	No
51	LPST	LPST No. 116933	Jim Lake Co. Property 166 Howell Street	• LPST Priority - Assessment incomplete, no apparent threats or impacts to receptors. • LPST Status - Final concurrence issued, case closed.	Yes
52	RCRIS-SQG ENF LPST	USEPA No. TXD981604887 LPST No. 95212	Volvo & GMC Trucks of Dallas (Summit Wite GMC Trucks/Paint and Body Shop) 2959 Irving Boulevard	• Truck sales and service. • Wastes include spent antifreeze, paint waste, spent solvents, benzene, cadmium, tetrachloroethylene, and trichloroethylene. • Violation of TCEQ air monitoring requirements. • Three USTs removed from the ground. • LPST Status - Final concurrence issued, case closed.	Yes
53	RCRIS-SQG	USEPA No. TXR000046649	Creative Type and Graphics 1201 Oak Lawn Avenue	• Commercial printing facility. • Wastes include ink solution, used oil, tetrachloroethylene, and benzene.	Yes

TABLE 3-40. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID Number	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
54	RCRIS-SQG LPST	USEPA No. TXD981902869 LPST No. 95209	Moody Day (Crescent Machinery Co.) 2323 Irving Boulevard	• Construction and mining machinery wholesale. • Wastes include spent solvents, tetrachloroethylene, and cresols. • Three USTs removed from the ground • LPST Status - Final concurrence issued, case closed.	Yes
55	RCRIS-SQG	USEPA No. TXD988018131	The Drive Shaft Shop 530 S. Industrial Boulevard	• Motor vehicle parts and accessories shop. • Wastes include metal cleaning wastes, tetrachloroethylene, immersion cleaner, and spent non-halogenated solvents.	Yes
56	ICIS PST IHW	USEPA No. 110014421679	Ram Automotive (First Choice, Greenleaf) 5311 S. Lamar Street	• Used auto parts distribution/salvage yard. • Violations resulting in USEPA enforcement action. • Wastes include tetrachloroethylene and spent non-halogenated solvents. • Three USTs removed from the ground and one UST filled in-place.	Yes
57	ICIS RCRIS-SQG LPST PST	USEPA No. TXD987998416 and 110000457112 LPST No. 91794	Oak Farms Dairy (Southern Foods Group) 1114 N. Lancaster Avenue	• Manufacturing of dairy products. • Violations resulting in enforcement action under the Clean Air Act. • Facility reports air emissions, discharges to surface water (i.e., Trinity River), and off-site treatment of chemicals including ammonia, chlorine, phosphoric acid, sodium hydroxide solution, nitric acid, benzene, toluene, and xylenes. • Wastes also include parts washing solvent from on-site auto repair. • Three USTs removed from the ground, three USTs filled in-place, and one UST in use. • LPST Status - final concurrence issued, case closed.	Yes
58	ENF ICIS	TCEQ Air Account No. 925858R USEPA No. 77700651 and 110001995306	Big City Crushed Concrete (Recycle Concrete Plant, Downtown Dallas Ready Mix) 1005 Forest Avenue	• Concrete recycling and manufacturing facility. • Evidence of fill activities. • Violations resulting in formal enforcement actions under the Clean Water Act. • Violations concerning compliance with special conditions contained in a permit for construction or modification of an air pollution source. • Aboveground petroleum storage tanks on-site.	Yes
59	RCRIS-SQG ICIS	USEPA No. TXD990798662	Southwest Industrial Gases 538 S. Industrial Boulevard	• Violations resulting in enforcement action under the Clean Water Act.	Yes
60	ICIS PST	USEPA No. 110010779032	Knox Oil of Texas, Inc. (Knox Super Stop) 2221 Irving Boulevard	• Violations resulting in enforcement action under the Clean Water Act. • Eight USTs in use.	Yes
61	ICIS	USEPA No. 110005010683	Ace Brass and Aluminum Co. 1203 S. Industrial Boulevard	• Aluminum foundry (manufacturing of brass and aluminum castings). • Violations resulting in enforcement action under the Clean Water Act.	Yes
62	ICIS	USEPA No. 110010791321	Okon Metals, Inc. 2110 S. Industrial Boulevard	• Violations resulting in enforcement action under the Clean Water Act.	Yes

TABLE 3-40. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID Number	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
63	ICIS LPST PST	USEPA No. 110010722254 LPST No. 103437	Valvoline Direct Market Dallas (Parrott Oil Corp.) 3116 Quebec	• Bulk storage and distribution of lubricating oils and automotive chemicals. • Wastes included sorbent material contaminated with lubricating oil from spills/leaks. • Violations resulting in enforcement action under the Clean Water Act. • Seven USTs removed from the ground. • Two USTs filled in-place or out of use. • LPST Status – Final concurrence issued, case closed.	No
64	LPST	LPST No. 118432	Commonwealth Center 3141 Irving Boulevard	• LPST Status – Preassessment/Release Determination	Yes
65	IHW PST RCRA	Facility ID # 62478	Dallas Freightliner – Western Star The ATC Freightliner Group, L.P. 3040 Irving Boulevard	• Listed as an inactive, conditionally exempt small quantity generator of wastes that included solvents, paint waste, ignitable materials, cadmium, chromium, lead, benzene, chloroform, 1,2-dichloroethane, tetrachlorothene, trichloroethene, and spent non-halogenated solvents. • No violations were reported at the facility. • One 2,000-gallon steel AST installed in 1992 and reported out of use in 1998.	Yes
66	VCP GCC	Facility ID # 0233	Star Wholesale Florists (0233) 8383 North Stemmons Freeway	• 5.5-acre site with VOCs affected groundwater. Accepted into the VCP in 1996, phase listed as “withdrawn” and status listed as “terminated.”	Yes
67	AUL VCP GCC	Facility ID # 2059	Star Wholesale Florists 8223 North Stemmons Freeway	• 5.5-acre site with VOCs (chlorinated solvents) affected groundwater. A Municipal Setting Designation (MSD) institutional control placed on the Property in 2009.	Yes

Sources: Environmental Data Resources, Inc. (EDR), 2012; USACE, 1999.
Notes: Plate ID Numbers correspond to the locations shown on **Plate 3-24**.
LPST Status indicates the phase of the site within the TCEQ’s risk-based corrective action process as of the date of the database information.
LPST Priority indicates the scenario that is determined to be relevant to the site based on release investigation activities as of the date of the database information.

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In October 1999, a geotechnical and environmental investigation was conducted as part of the Trinity River Corridor MIP for the City of Dallas. The purpose of this study was to evaluate soil and sediment quality within the Dallas Floodway. The project limits extended from the Hampton/Inwood Bridge to just southeast of the Corinth Street Viaduct. The investigation included the collection of 26 soil samples from 13 soil borings completed within the project limits. The soil samples were submitted for laboratory analysis of pesticides, herbicides, SVOCs, VOCs, and total RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). The study also included a review of previous environmental investigations conducted by others within the Dallas Floodway. A total of three sediment samples and 47 soil samples collected from 41 different locations within the Dallas Floodway over a 16-year period between 1984 and 1999 were evaluated as part of this study. No herbicides, PCBs, VOCs, or semi-volatile organic compounds (SVOCs) were identified at concentrations above laboratory detection limits. The study identified detectable concentrations of the pesticides aldrin, dieldrin, dichloro-diphenyl-trichloroethane (DDT), dichloro-diphenyl-dichloroethane (DDD), and dichloro-diphenyl-dichloroethylene (DDE) in soils. In addition, detectable concentrations of total RCRA metals and the metals copper, manganese, nickel, and zinc were identified. However, the study concluded that soils within the Dallas Floodway did not appear to contain hazardous levels of contaminants (Terra-Mar, Inc., 1999).

More recent environmental investigations were conducted within the Dallas Floodway from October 2007 to February 2008 as part of the USACE Upper Trinity River Interim Feasibility Study. The investigation activities included the collection of 192 soil samples from 96 boring locations for analysis of VOCs, SVOCs, pesticides, PCBs, RCRA metals, and herbicides. The investigation identified detectable concentrations of constituents of concern at various locations throughout the floodway (USACE, 2008). An additional environmental investigation was conducted in October 2008 within the Dallas Floodway as part of the City of Dallas' Trinity Bridges and Utilities Project. The investigation activities included the collection of 58 soil samples from 29 soil borings within the proposed borrow areas for analysis of VOCs, PAHs, RCRA metals, and pesticides. The investigation identified detectable concentrations of constituents of concern within the borrow areas (HVJ, 2008).

Based on an evaluation of the data from the more recent investigation activities, the identified concentrations of constituents of concern in the soils appear to be the result of past human activity in or near the Dallas Floodway with the exception of isolated areas with elevated concentrations of constituents of concern. The investigation results, potential impacts for the proposed project, and the mitigation measures to address elevated concentrations of constituents of concern in the borrow areas proposed for roadway embankment are further discussed in **FEIS**

Chapter 4 (see **Sections 4.18** and **4.21**) and **Appendix G-1**, which includes a detailed Technical Memorandum as an attachment.

[END OF CHAPTER EXCEPT FOR PLATES]