Unit 3A - Inwood
The Inwood unit is characterized by low rise light industrial and older commercial uses towards its southern end. As it extends north towards Inwood Road, it is adjacent to additional light industrial and commercial uses, as well as two schools, Weichsel Park and a single-family residential neighborhood.

Unit 4 - Dallas Love Field
The Dallas Love Field unit is a low-rise industrial area that is indicative of development adjacent to many airports. Warehouses and aviation related offices lining the east side of the railroad corridor serve air cargo, maintenance and other functions at the airport itself. The single-family residential area to the west of the corridor faces toward the alignment and Dallas Love Field Airport.

Unit 5 - Northwest Highway/LBJ Freeway
The Northwest Highway to LBJ Freeway unit is predominantly railroad-served industrial uses, with low-rise buildings that back onto the corridor. In the vicinity of the Northwest Highway station, there are two- and three-story multi-family residential developments, as well as commercial and retail uses.

Unit 6 – Farmers Branch
The Farmers Branch Unit is best characterized as the town center. Residential and civic uses to the east of the corridor have tree-lined streets, and older homes and buildings house small businesses. The unit is also characterized by the presence of public offices and their architecture, which is indicative of their importance in the community.

Unit 7 - North Farmers Branch
The North Farmers Branch Unit is a suburban industrial corridor. The buildings, most of which are fenced in, are set back farther from the railroad corridor than in the more southerly segments of the line. Towards the northern end of the unit, multi-family housing faces the alignment with a view from balconies and patios across a parking lot.

Unit 8 – Downtown Carrollton
The Downtown Carrollton unit is unique to the suburban end of the line. The original railroad depot and downtown area are indicative of a turn-of-the-century farming settlement. While the character of the buildings, both old and new, is of varying aesthetic character, most are either rehabilitated or restored to add to the quality of the pedestrian environment in downtown.

Unit 9 – Carrollton/Frankford
At the northernmost end of the line, the Carrollton/Frankford unit is the most suburban, with newer industrial and warehouse uses set back from the line, many behind security and privacy fencing. There is a public park with small lakes just south of the Trinity Mills station. The line terminates at the Frankford station just south of the Elm Fork of the Trinity River.

3.8 CULTURAL RESOURCES AND PARKLANDS

This section describes the existing cultural resources including but not limited to historic resources, archeological resources, and Section 4(f) resources potentially affected by the proposed project. First the regulatory framework governing cultural resources is presented; next historic resources are presented and analyzed, followed by archeological resources and Section 4(f) resources.

3.8.1 Applicable Legal and Regulatory Requirements

Section 106

If projects are Federally permitted, licensed, funded or partially funded with Federal money, the project must comply with Section 106 of the National Historic Preservation Act of 1966, as amended through 1992 (16 U.S.C. § 470 et seq.). Section 106 requires that every Federal agency "take into account" the effect of an undertaking on historic properties. The process begins with inventorying and evaluating historic properties. For Section 106 purposes, any property listed in or eligible for the National Register of Historic Places (NRHP) is considered to be an historic property. The NRHP is a historic resources inventory and is maintained by the Secretary of the Interior. This list includes buildings, structures, objects, sites, and districts. Furthermore, Section 106 requires Federal agencies to consult with and seek comments from the State Historic Preservation Officer (SHPO), a representative of the independent federal reviewing agency, the Advisory Council on Historic Preservation (ACHP). The ACHP has developed a process for carrying out Section 106 responsibilities, which is defined in its regulations entitled Protection of Historic Properties, 36 CFR Part 800.

Texas Antiquities Code

Cultural resources may include archeological, historical, architectural sites, and places of particular significance to traditional cultures. Cultural resources located on land owned or controlled by the State of Texas, or one of its cities or counties, or other political subdivisions are protected by the Antiquities Code of Texas. Under the Antiquities Code, any historic or prehistoric property located on state land or land controlled by a political subdivision of the State of Texas may be determined eligible as a State Archeological Landmark (SAL). Conditions for formal landmark designation are covered in Chapter 26 of the Texas Historical Commission's (THC) Rules of Practice and Procedure for the Antiquities Code of Texas. All groundbreaking activities affecting public land must be reviewed by the THC's Archeological Division under the following circumstances: (1) if the project affects a cumulative area larger than five acres or disturbs a cumulative area of more than 5,000 cubic yards, whichever measure is triggered first, or (2) if the project is inside a designated historic district or recorded archeological site. Authorization to proceed includes a formal Antiquities Permit, which stipulates the conditions under which survey, discovery, excavation, demolition, restoration, or scientific investigations will occur.

State Historic Preservation Officer Coordination

The Texas Historical Commission coordinates state participation in implementing Section 106 as the Texas SHPO. In accordance with the ACHP's guidelines, DART and the Federal Transit Administration (FTA) are consulting with the Texas SHPO on this undertaking. In accordance with Section 106 and on behalf of FTA, DART identified those properties that are already listed in, were previously determined eligible for listing in, or appear eligible for listing in the NRHP, and requested SHPO's concurrence with these findings on February 5, 2002, by submitting the ***Request for Determination of Eligibility Report***. SHPO requests for supplemental information to support the eligibility determination were sent on April 26, June 11, and August 16, 2002. In addition, a tour of the project corridor for THC Staff was provided on April 5, 2002. The SHPO concurred with the findings of the Determination of Eligibility report in a letter to DART on August 21, 2002 (See Appendix D). Based on changes in Medical Center area to follow the UPRR alignment, a Supplemental Request for Determination of Eligibility and Effects was sent to SHPO on April 4, 2003, showing the revised Area of Potential Effects (APE). The SHPO concurred with the findings in a letter to DART dated May 21, 2003.

Section 4(f)

Section 4(f) of the Department of Transportation Act of 1966 (49 USC 303) requires that federal transportation projects consider the project's effects on certain protected resources. A Section 4 (f) resource is a publicly owned park, recreation area, wildlife/waterfowl refuge, or significant historic site. Regulations prescribing procedures for implementing the Section 4 (f) process are found in 23 CFR 771.135.

Texas Parks and Wildlife Code

Chapter 26 of the Texas Parks and Wildlife Code was established to protect parks, recreation and scientific areas, wildlife refuges, and historic sites from being used or taken by state or local agencies for public projects. Chapter 26 applies to all DART rail projects. Section 26.001 of Chapter 26 provides that:

> *(a) A[n] [agency] of this state may not approve any program or project that requires the use or taking of any public land designated and used prior to the arrangement or the program or project as a park, recreation area, scientific area, wildlife refuge, or historic site, unless the [agency], acting through its duly authorized governing body or officer, determines that:*
>
> *(1) there is no feasible and prudent alternative to the use or taking of such land; and*
>
> *(2) the ... project includes all reasonable planning to minimize harm to the land, as a park, recreation area, scientific area, wildlife refuge, or historic site, resulting from the use or taking.*

Chapter 26 is similar to Section 4(f) of the Department of Transportation Act of 1966 in its requirements, except that the Texas law requires a public hearing on any taking of public park land. Section 26.001 states that:

> *(b) A finding required by Subsection (a) of this section may be made only after notice and a hearing as required by this chapter.*
>
> *(c) The governing body or officer shall consider clearly enunciated local preferences, and the provisions of this chapter do not constitute a mandatory prohibition against the use of the area if the findings are made that justify the approval of a program or project.*

Chapter 26 excludes parks, recreation areas, or wildlife refuges in certain cases. Section 26.004 provides that a department, agency, board, or political subdivision having control of the public land is not required to comply with this chapter if:

> *(1) the land is originally obtained and designated for another public use and is temporarily used as a park, recreation area, or wildlife refuge pending its use for the originally designated purpose;*
>
> *(2) the program or project that requires the use or taking of the land being used temporarily as a park, recreation area, or wildlife refuge is the same program or project for which the land was originally obtained and designated; and*
>
> *(3) the land has not been designated by the department, agency, political subdivision, county, or municipality for use as a park, recreation area, or wildlife refuge before September 1, 1975.*

3.8.2 Cultural Resources

Survey Methodology

A field survey of all properties within the proposed project's Area of Potential Effects (APE) was undertaken according to standard Section 106 guidelines and related procedures. A qualified architectural historian[1] conducted field investigations in March 2001 and in March 2003. During

[1] This refers to a person who meets the Secretary of the Interior's Professional standards.

the field investigations, the boundaries of the preliminary APE were confirmed, and an assessment was made of all extant buildings, structures, objects and districts within the APE to determine if their age and integrity warranted application of National Register criteria. The National Register includes an age criterion of 50 years.

The field survey of historic and architectural resources included the following steps:

- A field survey consisting of a visual on-site examination of every parcel within the APE, including an assessment of integrity;
- Identification of the age of all buildings, structures, objects, and districts located within the APE;
- Photography of each district feature, major structure, building, or object within the APE constructed before 1953/4, which is 50 years prior to the proposed project construction; and,
- Field review of the findings of previous surveys and inventories of significant historic properties.

Following the field survey, site-specific research was conducted using the following:

- Dallas Public Library
- City Directories of Dallas, Texas
- City of Dallas Building Permits
- Dallas County Appraisal District
- TaxNet USA
- Sanborn Maps (City of Dallas and Carrollton)

In addition, historical information was requested from the following organizations:

- Dallas Landmarks Commission
- Dallas Historic Preservation League

The properties identified in this survey effort as being listed on or eligible for being listed on the National Register of Historic Places are outlined in the Historic Resources section below.

Definition Of The Area Of Potential Effects

As defined in the Section 106 guidelines, the Area of Potential Effects (APE) means “the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking” (36 CFR §800.16(d)).

In accordance with this definition, the APE for architectural and historical resources includes the parcels within one block of the proposed project alignment and parcels containing and adjacent to stations, traction power substations, and the Northwest Rail Operating Facility (NWROF). The APE for archeological resources includes the area of ground to be disturbed by construction of the proposed project.

Records Search

A records search was undertaken within the APE to determine the proximity of previously documented historic and architectural resources to the project and to help establish a context for resource significance. National, state and local inventories of architectural/historic resources were examined in order to update this previous information, and identify significant local historical events and personages, development patterns, and unique interpretations of architectural styles. The following inventories and sources were consulted:

- The National Register of Historic Places, National Register Information System, updated through December 2001;
- Registered Texas Historical Landmarks;

- Texas Historic Engineering Site Inventory;
- County of Dallas;
- City of Dallas Landmarks;
- The Handbook of Texas Online;
- Daniel Hardy (Hardy, Heck, and Moore), Phase Two: Historic Resources Survey of the City of Dallas, Part One, 1987 survey; and,
- Ron Emrich (Urban Prospects), City of Dallas Historic Resources Survey, 1985.

Consulting and Interested Parties
The Section 106 guidelines require that a Federal agency evaluate all properties within the APE and identify historic resources by seeking information from consulting parties, and other individuals and organizations likely to have knowledge of, or concerns with, historic properties in the area. The following organizations having interests, involvement, or concerns relating to historic preservation were contacted for the proposed project:

- City of Dallas, Planning & Development, Historic Preservation Division
- City of Dallas Landmarks Commission
- Dallas County Historical Commission
- Dallas Historical Society
- Preservation Dallas
- City of Carrollton, Department of Planning
- City of Carrollton, Public Library
- City of Farmers Branch, Department of Planning

In addition, public and agency involvement activities were held prior to the selection of the proposed project and have continued throughout the project development process. For more details, refer to Chapter 6.

Historic Resources
Four properties located within the project APE are listed in the National Register of Historic Places and are shown on **Table 3-20**.

TABLE 3-20
PROPERTIES LISTED IN THE NATIONAL REGISTER OF HISTORIC PLACES

Map No.	Address	Resource Name	Date Listed
1	Roughly bounded by Pacific Avenue, Market and Jackson Streets, and right of way of Dallas Right of Way Management Company	Dealey Plaza Historic District[1]	Listed: 04/19/1993 Listed also as a National Historical Landmark
2	Bounded by Lamar, Griffin, Wood, Market and Commerce Streets	West End Historic District[1]	Listed: 11/14/1978
3	1607 Lyte Street	Magnolia Petroleum Company City Sales and Warehouse[1]	Listed: 12/23/1994
5	3630 Harry Hines Boulevard	Turtle Creek Pump Station	Listed: 02/09/2001

[1]The Dealey Plaza and West End Historic Districts, along with the Magnolia Petroleum Company City Sales and Warehouse are located outside the APE for this undertaking but are in the vicinity.

Source: Myra L. Frank & Associates, 2001

One property within the project APE, the Letot School, was previously determined eligible for listing in the National Register of Historic Places. Then additional properties within the project APE have

been determined to be eligible for listing in the National Register of Historic Places as a result of the survey for the proposed project. These properties are shown on **Table 3-21**. The locations of these 15 resources on the proposed project alignment are illustrated in **Figures 3-26** through **3-28**.

TABLE 3-21
PROPERTIES DETERMINED ELIGIBLE FOR LISTING IN THE NATIONAL REGISTER

Map No.	Address	Resource Name	Year Built	Applicable National Register Criteria
4	Continental Avenue[3]	Continental Avenue Bridge/Lamar-McKinney Underpass	1933	A[4]: Local, state and federal significance. Contributing element of a discontinuous district associated with the Trinity River flood control measures from the 1930s.
6	6333 Denton Drive	Old Morton Food Headquarters	1951	C: Local significance. Good example of 1950s industrial architecture.
7	2929 Inwood Road	T.J. Rusk Middle School	1951	C: Local, state significance. Good early example of International style architecture used for school building.
8	2615 Anson Road	Obadiah Knight School	c. 1927	C: Local, state significance. Good example of 1920s public school architecture.
9	2605 Shorecrest Drive	Water Department Purification Plant	c. 1920	A, C[5]: Local, state and federal significance. Good example of 1920s utilities construction. Exemplifies the usage of the railroad corridor as a utility corridor.
10	2525 Shorecrest Drive	Water Department Pumping Station	c. 1920	A, C: Local, state and federal significance. Good example of 1920s utilities construction. Exemplifies the usage of the railroad corridor as a utility corridor.
11	9500 Denton Drive	Bachman Electric Gen. Station	c. 1930	A, C: Local, state and federal significance. Good example of 1930s utility construction. Exemplifies the usage of the railroad corridor as a utility corridor.
12	9911 Denton Drive	Club Schmitz	1930	A, B[6]: Identified as locally significant community resource. One of the few remaining 1930s commercial structures along the railroad corridor. Commercial variation of Art Deco/Moderne style.
13	2711 Storey Lane	Bingo Theater/ Circle Theater	1947	C: Local, state significance. Good example of late Moderne movie house architecture.
14	2727 Lombardy Lane	Letot School	c.1920	Identified as a locally significant educational resource.
15	1020 N. Broadway Street and MKT tracks	Carrollton Crossing Depot	c. 1925	A; Local, state and federal significance. The depot, which once served the three railroads in Carrollton, exemplifies the prominence of the railroad in the growth of the area.

[3] The Continental Avenue Bridge/Lamar-McKinney Underpass is addressed as part of the Categorical Exclusion for Line Section NW 1-A, which has independent utility.
[4] National Register Criteria A: Associated with events that have made a significant contribution to the broad patterns of our history.
[5] National Register Criteria C: Embodiment of 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.
[6] National Register Criteria B: Associated with the lives of persons significant in our past.

Note: Speaco Foods, Inc., 8668 Denton Drive was identified as an eligible property in the Draft EIS. The structure was demolished as part of Southwest Airlines expansion in 2002. Letot School has been added to this list of eligible properties since preparation of the Draft EIS and selection of the Northwest Rail Operating Facility site at Lombardy Lane and Denton Drive.

Source: Myra L. Frank & Associates, 2001

Figure 3-26 Historic Resources - South Section

Figure 3-27 Historic Resources - Middle Section

Figure 3-28 Historic Resources - North Section

3.8.3 Archeological Resources

Survey Methodology

The archeological survey was conducted in accordance with the Council of Texas Archeologists (CTA), the Texas State Historic Preservation Officer (SHPO), and the State of Texas Antiquities Code. The Department of Interior's Guidelines for addressing cultural resources are also considered. All archival research also followed accepted guidelines. Details can be found in the ***Existing Conditions Technical Memorandum*** (DART, 2001).

Archeological Resources Survey Results

The two objectives to be accomplished during the survey consisted of the examination of areas with potential for either historic or prehistoric archeological deposits and the examination of previously recorded site locations along the corridor that may be impacted through rail line or station construction. The following section presents the results of those objectives.

A site files search indicated that 22 sites have been previously identified within one-half mile of the proposed project and that six sites are within 1,000 ft of the survey segment (**Figures 3-29** and **3-30).** An attempt was made to relocate or reexamine the six sites (41DL14, 41DL52, 41DL250, 41DL279, 41DL362, and 41DL363) along the corridor, particularly those that might be impacted through rail or station construction.

Sites 41DL14 and 41DL52 were identified in the 1940s as surface sites of prehistoric age. Other than the early recordation of site 41DL14 and the notation that some surface collection of materials had taken place by "local people," no known archeological investigations were ever conducted. Site 41DL14 is situated on Rawhide Creek, just west of the rail line. The area of the site nearest the creek has been impacted by drainage channelization and straightening, but how much of the remainder of the site is still intact is unknown. Site 41DL52 has been impacted by urban development and no longer exists.

Sites 41DL250, 41DL279, 41DL362, and 41DL363 are historic sites located within the Central Business District (CBD) of downtown Dallas. Site 41DL250 is the old county courthouse, known as "Old Red," and the courthouse square. This building is currently listed on the National Register (NR). Site 41DL279 was excavated during the 1980s by the Archaeology Research Program of Southern Methodist University (Jurney and Andrews 1994) prior to the construction of a parking garage and elevator associated with the Sixth Floor Exhibit at the Dallas County Administration Building (formerly the Texas School Book Depository). This site encompassed a portion of CBD Block 10/13 and yielded information from backyard deposits of several homeowners and renters. Sites 41DL362 and 41DL363 were identified during investigations conducted for the South Oak Cliff Light Rail Line. AR Consultants, Inc., identified and excavated portions of a house site (41DL362) and a dump (41DL363) in 1994 (Skinner et al. 1996). Neither of these sites was found to be eligible for inclusion in NRHP and both were ultimately destroyed during rail line construction.

Transect Results

Based on the results of the archival research, some of the areas of the corridor were categorically excluded from intensive pedestrian survey. However, a total of six transects was closely examined through subsurface shovel testing.

Only one presumed residential site, 41DL404, was identified during Transect Survey. It was found in Transect 2. Site 41DL404 is not considered eligible for inclusion in the NRHP due to its lack of archeological integrity, its low artifact density, and its rather recent age.

Figure 3-29 Archeological Resources – Dallas CBD to Northwest Highway

Figure 3-30 Archeological Resources – Farmers Branch Lane to Frankford Rd.

Buried Site Potential

Except at its very southern end, the proposed corridor lies east of the current and pre-1930 channels of the Elm Fork of the Trinity River. The southern end of the corridor is in proximity to the pre-1930 channel of the Trinity east and downstream of the confluence of the Elm Fork and West Fork. Over half of this southern portion of the corridor is located within the modern flood plain of the Elm Fork; the rest is located on or immediately adjacent to the uplands just east of the Trinity. North of Knights Branch most of the corridor is located on fluvial terraces of the Elm Fork of the Trinity or on the modern flood plains of tributaries (Bachman Branch, Farmers Branch, Rawhide Branch, Hutton Branch, and Furneaux Creek) to the Elm Fork. Since the highest probability areas for locating buried, stratified cultural deposits are these flood plains, bore holes at Bachman Branch, Hutton Branch, and Furneaux Creek as well as previous studies in the nearby flood plain of the Elm Fork (Cliff et al. 1999; Peter et al. 2001) provide the data for buried site potential.

Based on the data currently available from the bore holes within the corridor as well as that from other studies conducted in this same area or immediately adjacent, it is clear that there is potential for buried, stratified cultural deposits in some portions of the corridor. Only those portions of the corridor located within the current or pre-1930 flood plains of the Elm Fork of the Trinity or its tributaries or on fluvial terraces composed at least in part of terminal Pleistocene or younger sediments have potential for buried cultural materials. However, given the extensive disturbance of the upper 2 to 3 meters of the existing sediments and/or the deposition of considerable amounts of foreign material on top of the natural, preexisting surface, the chance for finding an undisturbed cultural site in the upper few meters of sediment is remote at best. Further, locating any sites that may be buried more deeply than several meters would be extremely difficult. Thus, although the potential exists, any sites that were initially shallowly buried and hence easier to find have in all likelihood already been destroyed, while those that are still intact but more deeply buried would be exceedingly difficult and expensive to locate.

Site Potential Within Proposed Station Areas

The review of Sanborn maps, the 1918 soil map for Dallas County, 1938 aerial photographs, and the Sam Street map indicates that much of the area projected for each potential station area was not well developed until the mid-twentieth century or later. The available 1938 aerial photographs for the area between Motor Street and Mañana Drive indicate that the area was relatively undeveloped except for agricultural purposes. The 1918 Dallas County soil map indicates isolated pockets of development at Dallas Love Field, Letots (intersection of Mañana Drive and Missouri Kansas and Texas Railway), Farmers Branch, Carrollton, and Trinity Mills. Even in downtown Carrollton, the 1921 Sanborn maps indicate only an iron-clad warehouse, the Leeland Hotel (Block 25), and a telephone exchange immediately adjacent to the proposed corridor. Domestic housing and the downtown square comprise the remaining buildings within the area for the Carrollton Square Station.

Most of the stations are proposed on landforms that were originally Pleistocene terrace landforms that have been extensively built upon during the latter part of the twentieth century. Therefore, the potential for significant archeological deposits with contextual integrity is extremely limited. At the southern end of the project, the proposed Victory Station is projected for an area that likely contains massive fill deposits. As part of the Categorical Exclusion for this section of the corridor, a separate effort has addressed archeological resources. Only the presently proposed location for the Carrollton Square Station (north of Belt Line Road) contains potentially undisturbed areas that could contain archeological deposits with contextual integrity.

3.8.4 Parklands

A field survey was conducted in March 2001 to inventory parklands resources. These resources include community, regional, and historical parks, greenbelts, and a municipal golf course. No wildlife or waterfowl refuges that are protected under the regulating legislation were identified in the project Study Area.

All parklands resources within approximately 500 feet of the proposed alignment were included in the inventory. In the areas where the track would be elevated, resources within approximately 700 feet of the alignment were included, due to the expanded area of potential impacts resulting from elevated structures.

A total of 12 parks and recreational resources were identified as being within 500 to 700 feet of the proposed alignment. **Table 3-22** provides a list and descriptive characteristics of the resources identified during the field survey. **Figures 3-31** through **3-33** illustrate the location of parks and recreational lands in the Study Area.

TABLE 3-22
PARKS AND RECREATIONAL RESOURCES

Map No.*	Name	Type of Park[1]	Owner	Acres	Facilities
1	Dealey Plaza Annex	Special	City of Dallas	3.1	Urban open space, historical site.
2	Reverchon Park	Community	City of Dallas	41.26	Recreation center, picnic area, amphitheater, basketball, baseball.
3	Weichsel Park	Community	City of Dallas	13.77	Picnic area.
4	Bachman Lake Park	Regional	City of Dallas	205.5	Recreation center, picnic area, playground equipment, hike/bike trail, boating, boathouse.
5	LB Houston Park (LB Houston Nature Trail)	Regional	City of Dallas	476.06	Hike/bike trails (hard surface and soft surface), picnic area.
6	Farmers Branch Historical park	Special	City of Farmers Branch	22	Historical park containing multiple historic buildings, none of which are located within Cultural Resources APE.
7	Gussie Field Watterworth Park	Neighborhood	City of Farmers Branch	22	Baseball, basketball, playground equipment, tennis, picnic area/grills, horseshoes, museum
8	Francis Perry Park	Neighborhood	City of Carrollton	3	Picnic area, playground equipment, tennis, and rental facility.
9	Pioneer Park	Special	City of Carrollton	0.5	Historical site.
10	Downtown Square Park	Special	City of Carrollton	N/A	Picnic area/gazebo.
11	Ken Good Park	Community	City of Carrollton	20	Fishing, picnic area.
12	Indian Creek Municipal Golf Course	Regional	City of Carrollton	415	36-hole golf course, clubhouse.

* See **Figures 3-31** through **3-33**.

[1]As classified by the city in which the park is located

Source: Myra L. Frank & Associates, 2001

Figure 3-31 Park and Recreation Resources – South Section

Figure 3-32 Park and Recreation Resources – Middle Section

Figure 3-33 Park and Recreation Resources – North Section

3.9 ECOSYSTEMS

Existing ecosystems are described in the following section, including terrestrial and aquatic habitats, vegetation, and fish and wildlife resources. Supplemental literature reviews, agency contacts, and reconnaissance-level site investigations in the project area were conducted to characterize the vegetation and fish and wildlife resources. A 300-foot project area corridor was established along the proposed LRT line (150 feet on each side of the proposed alignment), to inventory the ecosystem components. A 0.25-mile radius area around proposed station areas was also inventoried for all ecosystem components. The potential effects of construction across existing drainage and wetland areas are addressed in Chapter 5.

3.9.1 Wetlands Inventory

Section 404 of the Clean Water Act (CWA) of 1977 (Public Law [P.L.] 95-217) and Executive Order 11990 authorizes the Secretary of the Army, acting through the U.S. Army Corps of Engineers (USACE), to issue permits for the discharge of dredged or fill materials into waters of the U.S., including wetlands. Waters of the U.S. (Section 328.3[2] of the CWA) are those waters used in interstate or foreign commerce, subject to ebb and flow of tide, and all interstate waters including interstate wetlands. Jurisdictional waters of the U.S. are further defined as all other waters such as navigable waterways, intrastate lakes, rivers, streams, intermittent streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds or impoundments of water, tributaries of waters, and territorial seas.

Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (Environmental Laboratory 1987). Wetlands are transitional lands between terrestrial and deep-water habitats. At the most general level of the classification system, wetlands are grouped into three ecological systems: palustrine, estuarine, and marine. Wetlands are then classified on the basis of their hydrology, vegetation, and substrate (soil).

The ***Soil Survey of Dallas County, Texas*** (Coffee et al. 1980); 7.5 minute U.S. Geological Survey (USGS) quadrangles of Dallas, Irving, and Carrollton (1:24,000 scale; USGS 1989a, 1989b, 1989c); National Wetland Inventory (NWI) maps of Dallas, Irving, and Carrollton (1:24,000 scale; U.S. Fish and Wildlife Service [USFWS] 1989a, 1989b, 1989c); and aerial photography (2000) were utilized to identify possible waters of the U.S. and areas prone to wetland development within the project area. Only areas within existing rail lines of the project area were field checked, and the delineation of potential waters of the U.S. was performed in accordance with the ***Corps of Engineers Wetlands Delineation Manual*** (Environmental Laboratory 1987). Remaining areas that could not be field verified, due to access restrictions, were delineated utilizing the above referenced literature.

During field surveys, 38 water bodies were identified: 24 channels, six wetlands, and eight small lakes/ponds. Detailed descriptions and photographs are included in the ***Existing Conditions Technical Memorandum*** (DART 2001). The size of these water bodies within the project corridor and around station areas is presented in **Table 3-23** and shown in **Figures 3-34** through **3-44.** A 0.25-mile radius around each station was analyzed, and any potentially jurisdictional waters of the U.S. were identified based upon the USFWS classification system (Cowardin et al. 1979).

In addition to the above-listed water bodies, several bar ditches run parallel to the existing rail line throughout most of the project area. These ditches were constructed to collect and remove storm water runoff and range from dry in spots to slowly flowing water in other areas. There is no classification assigned to these bar ditches.

TABLE 3-23
AREA OF POTENTIALLY JURISDICTIONAL WATERS OF THE U.S. LOCATED WITHIN THE PROJECT AREA

Map No.*	Name	Location	Area (acres)
RAIL LINE			
Selected LRT Alternative (Base Alignment with UPRR)			
1	Turtle Creek	Between Dallas North Tollway and Oak Lawn	0.153
2	Cedar Branch	Parallel to Harry Hines at Market Center	0.250
3	Unnamed tributary of Knights Branch	Between Mockingbird Lane and Inwood Road	0.170
3B	Unnamed tributary to Elm Fork	Between Wyman and Burbank Streets	0.077
4	Bachman Creek	South of Webb Chapel Road	0.348
5	Bachman Wetland	South of Webb Chapel Road	0.227
6	Joe's Creek	Between Lombardy and Nagle Roads	0.126
7	Unnamed Tributary of Joe's Creek	Between Congressman Lane and Anode Lane	0.109
8	Unnamed Tributary of Joe's Creek	Between Congressman Lane and Anode Lane	0.093
9	Unnamed Tributary of the Elm Fork	Between Indian Trail and Walnut Hill Lane	0.080
10	Unnamed Tributary of the Elm Fork	Between Indian Trail and Walnut Hill Lane	0.091
11	Farmers Branch of the Elm Fork	South of Valley View Lane	0.251
12	Farmers Branch of the Elm Fork	South of Valley View Lane	0.402
13	Rawhide Creek	South of Valley View Lane	0.369
14	Cook's Branch	Between Valwood Parkway and Richland Ave.	0.293
17	Wetland	Between Carroll Avenue and Crosby Road	0.395
18	Wetland	Between Carroll Avenue and Crosby Road	0.191
20	Hutton Branch of the Elm Fork	Between Vinylex and Beltline Roads	0.435
21	Unnamed Tributary of the Elm Fork	South of Jackson Road	0.104
22	Ken Good Park Lakes	Between Ismail Center Circle and Jackson Road	0.754
24	Furneaux Creek	North of Trinity Mills Road	0.185
15[1]	Unnamed Open Storm Drain	Between Burning Tree Lane and Valwood Parkway	0.080
16[1]	Unnamed Open Storm Drain	Between Burning Tree Lane and Valwood Parkway	0.090
19[1]	Unnamed Open Storm Drain	Between Carroll Avenue and Crosby Road	0.110
23[2]	Ken Good Park Lakes	Between Ismaili Center Circle and Jackson Rd.	0.506
23[2]	Ken Good Park Lakes	Between Ismaili Center Circle and Jackson Rd.	0.348
Other Alignments Considered (Harry Hines Base Alignment; Medical Center Design Options A, B,C, and D; and Love Field Design Option)			
2	Cedar Branch	Parallel to Harry Hines at Market Center	1.16
3A	Unnamed tributary to Knights Branch	Between Mockingbird Lane and Inwood Road	1.20
STATIONS			
Selected LRT Alignment (Base Alignment with UPRR)			
Victory			
None	--	--	--
Market Center/Oak Lawn (South)			
2	Cedar Branch	Parallel to Harry Hines Boulevard at Market Center	0.00
Parkland (UPRR)			
None	--	--	--
Inwood (South)			
3	Unnamed tributary to Knights Branch	Between Mockingbird Lane and Inwood Road	1.20
Brookhollow			
3B	Unnamed tributary of Elm Fork	--	0.30
Bachman			
None	--	--	--
Walnut Hill/Denton			
7	Unnamed tributary to Joe's Creek	Between Congressman Lane and Anode Lane	0.20
Royal Lane			
None	--	--	--

TABLE 3-23 (CONTINUED)
AREA OF POTENTIALLY JURISDICTIONAL WATERS OF THE U.S. LOCATED WITHIN THE PROJECT AREAS

Map No.*	Name	Location	Area (acres)
Farmers Branch			
13	Rawhide Creek	South of Valley View Lane	1.60
Carrollton Square			
20	Hutton Branch of the Elm Fork	Between Vinylex and Beltline Roads	3.10
Trinity Mills			
24	Furneaux Creek	North of Trinity Mills Road	0.80
PEM1A	Wetlands adjacent to Sandy Lake	South of Trinity Mills Road, West of Interstate 35E	4.70
POWHx	Sandy Lake	South of Trinity Mills Road, West of Interstate 35E	2.30
Frankford			
L1OWHx	Lakes adjacent to Trinity River	North side of Frankford Road	0.70
R2OWH	Trinity River and tributary	North side of Frankford Road	2.60
Other Alignments Considered (Design Options A, B, C, D, and Harry Hines Base Alignment)			
Market Center/Oak Lawn (North)			
2	Cedar Branch	Parallel to Harry Hines Boulevard at Market Center	1.20
Parkland (Design Options A, B, C, D, and Harry Hines Base Alignment)			
None	--	--	--
UTSW/Exchange Park (Harry Hines Base Alignment)			
3A	Unnamed tributary to Knights Branch	South of Exchange Pkwy.	0.30

*Refers to **Figures 3-34** through **3-44**.
[1] these are not considered to be jurisdictional because they were intentionally created to drain upland areas (i.e., they are storm drains), [2] two portions of the same lake

Source: Geo-Marine, Inc., 2002

3.9.2 Vegetation Inventory

Due to the urban development within the project area, only four plant communities were identified, which include urban, grassland, shrubland, and woodland. The plant communities identified had generally uniform species composition and canopy stratification. **Figures 3-34** through **3-44** show the location and **Table 3-24** identifies the approximate size of each plant community within the project area, from south to north. The following paragraphs provide a brief description of each plant community. More detailed species composition and stratification data for these community types are presented in the ***Existing Conditions Technical Memorandum*** (DART, 2001).

3.9.3 Wildlife Inventory

Overall, urban areas would potentially provide habitat for 97 bird species, 16 mammal species, 29 snake and lizard species, six turtle species, and three amphibian species (Johnston and Short 1989). During the field surveys, 35 bird species, seven mammal species, two reptile species, and one amphibian species were seen along the project corridor. In general, more bird and wildlife species were seen in the northern portion of the corridor (north of IH 635) where these types of remnant habitats occurred as opposed to the south, where there was greater urban land use.

Numbers and types of wildlife that would potentially use emergent wetlands include 76 species of birds, 10 species of mammals, 11 species of snakes and lizards, six species of turtles, and 11 species of amphibians (Johnston and Short 1989). No species-specific surveys were performed for wetland habitat areas; however, several wading birds (great egret [*Ardea alba*] and great blue heron [*Ardea heodias*]) and mallards (*Anas platyrhynchos*) were observed using wetland habitat.

Riparian woodland sites would potentially provide habitat for 130 species of birds, 27 species of mammals, 28 species of lizards and snakes, 13 species of turtles, and 16 species of amphibians (Johnston and Short 1989). During the 2001 field surveys, biologists noted that a greater diversity and higher number of bird species were observed at the creek crossings due to better quality habitat.

Figure 3-34 Jurisdictional Waters and Vegetation Cover – Map 1

Figure 3-35 Jurisdictional Waters and Vegetation Cover – Map 2

Figure 3-36 Jurisdictional Waters and Vegetation Cover – Map 3

Figure 3-37 Jurisdictional Waters and Vegetation Cover – Map 4

Figure 3-38 Jurisdictional Waters and Vegetation Cover – Map 5

Figure 3-39 Jurisdictional Waters and Vegetation Cover – Map 6

Figure 3-40 Jurisdictional Waters and Vegetation Cover – Map 7

Figure 3-41 Jurisdictional Waters and Vegetation Cover – Map 8

Figure 3-42 Jurisdictional Waters and Vegetation Cover – Map 9

Figure 3-43 Jurisdictional Waters and Vegetation Cover – Map 10

Figure 3-44 Jurisdictional Waters and Vegetation Cover – Map 11

TABLE 3-24
PLANT COMMUNITIES AND THEIR SIZES PRESENT WITHIN THE PROJECT AREA

Project Area	Urban (acres)	Grassland (acres)	Shrubland (acres)	Woodland (acres)	Total (acres)
RAIL LINE					
Selected LRT Alternative (Base Alignment with UPRR)	424.7	180.5	16.0	14.4	635.6
Other Alignments Considered					
Base Alignment (Harry Hines)	417.9	211.6	16.8	14.2	660.5
Base Alignment with Love Field Design Option	433.8	213.4	16.8	14.2	678.2
Base Alignment with Medical Center Design Option A	420.8	201.2	15.8	14.6	652.4
Base Alignment with Medical Center Design Option B	423.6	199.3	15.8	14.6	653.3
Base Alignment with Medical Center Design Option C	424.5	198.2	15.8	14.6	653.0
Base Alignment with Medical Center Design Option D	424.7	199.2	15.8	14.6	654.3
Base Alignment with Love Field and Medical Center Design Option A	436.6	204.1	15.8	14.6	671.1
Base Alignment with Love Field and Medical Center Design Option B	439.4	202.1	15.8	14.6	672.0
Base Alignment with Love Field and Medical Center Design Options C	440.3	201.0	15.8	14.6	671.7
Base Alignment with Love Field and Medical Center Design Option D	440.6	201.0	15.8	14.6	672.0
STATIONS					
Selected LRT Alignment (Base Alignment with UPRR)					
Victory	97.3	25.9	1.9	0.0	125.1
Market Center/Oak Lawn (South)	103.9	7.5	4.2	8.0	123.6
Parkland (UPRR)	110.4	12.1	0.0	2.7	125.2
Inwood (South)	87.3	18.1	2.6	14.6	122.6
Brookhollow	92.9	29.9	0.0	2.0	124.8
Bachman	98.9	17.9	0.0	8.1	124.9
Walnut Hill/Denton	101.6	22.0	0.0	1.1	124.7
Royal Lane	103.1	19.0	0.3	2.6	125.0
Farmers Branch	83.8	27.4	0.0	13.9	125.1
Carrollton Square	97.5	25.1	1.1	0.0	123.7
Trinity Mills	79.8	36.9	0.9	0.0	117.6
Frankford	23.6	86.7	8.5	3.2	122.0
Other Alignments Considered					
Love Field Design Option					
Love Field (Design Option)	0.0	N/A	N/A	N/A	0.0
Medical Center Design Options					
Parkland (Harry Hines Base Alignment)	118.1	7.0	0.0	0.0	125.1
Parkland (Design Options A, B, C)	118.1	7.0	0.0	0.0	125.1
Parkland (Design Option D)	119.7	5.6	0.0	0.0	125.3
Market Center/Oak Lawn (North)	103.9	7.2	3.2	9.3	123.6
Inwood (North)	85.9	19.5	2.6	14.6	122.6
UTSW/Exchange Park (Base Alignment)	96.4	25.4	3.0	0.0	124.8

Source: Geo-Marine, Inc., 2002

During field surveys conducted in 2001, signs and individuals of several wildlife species were observed within the project area, including eastern cottontail rabbit (*Sylvilagus floridanus*), raccoon (*Procyon lotor*), opossum (*Didelphis marsupialis*), eastern fox squirrel (*Sciurus niger*), coyote (*Canis latrans*), beaver (*Castor canadensis*), and armadillo (*Dasypus nevemcinctus*). Two reptile individuals (unidentified snake and turtle species) and one amphibian individual (unidentified frog

species) were observed. Thirty-five bird species were also observed. The common and scientific names of birds observed during 2001 field surveys, as well as the number of birds observed in each transect during field surveys, are presented in Appendix 10-D of the ***Existing Conditions Technical Memorandum*** (DART, 2001).

The most common bird in the project area was the European starling (*Sturnus vulgaris*). Other common species included rock dove (*Columba livia*), mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), great-tailed grackle (*Quiscalus mexicanus*), and house sparrow. Some species were only encountered in areas where water was present, such as near Ken Good Park and in or near Bachman Lake (i.e., herring gull [*Larus argentatus*] and Canada goose [*Branta canadensis*]).

Fewer birds were seen in the areas with predominant traffic noise (as observed by the biologists). More birds were seen to the north where there was slightly more habitat. The highest concentrations of birds and the most diverse species assemblages were found in the riverine and/or pond environments.

Correspondence with TPWD indicated that the Biological and Conservation Data System (BCD) data did not provide a definitive indication as to the presence, absence, or condition of special species, natural communities, or other significant features in the project area. TPWD also made note of two colonial waterbird rookeries as being documented within one mile of the proposed project route. Field verification showed the Carrollton site is more than one mile from the project, and the other is located near the UTSW Medical Center South Campus and is located more than ¾-mile from the proposed alignment.

3.9.4 Protected Species

A combined total of 19 federal and state-listed endangered, threatened, or rare species occurs or potentially occurs in the Dallas County area and project area. Information pertaining to the description and habitat requirements of the various species is presented in **Table 3-25**.

The Endangered Species Act (ESA) of 1973 (P.L. 93-205), as amended, was enacted to provide a program of preservation for federally listed endangered and threatened species and to provide protection for ecosystems upon which these species depend for their survival. An endangered species is a species that is in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Proposed species are those that have been formally submitted to Congress for official listing as threatened or endangered.

The State of Texas has separate laws governing the listing of animals as endangered or threatened. Endangered or threatened animal species on the state list are those species so designated according to Chapters 67 and 68 of the Texas Parks and Wildlife Code and Section 65.171-65.184 of Title 31 of the Texas Administrative Code (TAC). Animals that are not currently listed by the federal government may be listed as endangered or threatened by the state. The state does not have authority, at this time, to list invertebrates. In addition to listing threatened/endangered species, the state also lists rare species that have no regulatory listing status.

Besides the ESA, migratory birds and the bald eagle *(Haliaeetus leucocephalus)* are also protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 United States Code [U.S.C.] 703-712), as amended by the Fish and Wildlife Improvement Act of 1978 (P.L. 95-6-6) and the Bald Eagle Protection Act of 1940 (16 U.S.C. 668-668d), as amended.

Regulation 50 Code of Federal Regulations (CFR) Part 10.13 lists all migratory birds protected under the MBTA. The USFWS has a legal mandate under the Fish and Wildlife Conservation Act

of 1980, as amended (P.L. 100-653, Title VIII), to identify, monitor, and assess species, subspecies, and populations of all migratory non-game birds (USFWS 1995b).

TABLE 3-25
THREATENED, ENDANGERED, AND RARE SPECIES OCCURRING OR POTENTIALLY OCCURRING IN DALLAS AND DENTON COUNTIES

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Habitat Present
Arctic peregrine falcon	*Falco peregrinus tundrius*	DL	T	**yes**
Bald eagle	*Haliaeetus leucocephalus*	LT-PDL	T	no
Black-capped vireo	*Vireo atricapillus*	LE	E	no
Black-tailed prairie dog	*Cynomys ludovicianus*	C	--	no
Golden cheeked warbler	*Dendroica chrysoparia*	LE	E	no
Henslow's sparrow	*Ammodramus henslowii*	--	R	no
Interior least tern	*Sterna antillarum*	LE	E	possible
Migrant loggerhead shrike	*Lanius ludovicianus migrans*	--	R	**yes**
Mountain plover	*Charadrius montanus*	PT	R	no
Piping plover	*Charadrius melodus*	LT	R	no
Western burrowing owl	*Athene cunicularia hypugaea*	--	R	no
White-faced Ibis	*Plegadis chihi*	--	T	no
Whooping crane	*Grus americana*	LE	E	no
Wood stork	*Mycteria americana*	--	T	no
Black lordithon rove beetle	*Lordithon niger*	--	R	no
Plains spotted skunk	*Spilogale putorius interrupta*	--	R	no
Texas garter snake	*Thamnophis sirtalis annectens*	--	R	**yes**
Texas horned lizard	*Phrynosoma cornutum*	--	T	no
Timber/canebrake rattlesnake	*Crotalus horridus*	--	T	no
Warnock's coral root	*Hexalectris warnockii*	--	R	no

[1]Federal Status
LE = Listed endangered
LT = Listed threatened
PT = Proposed threatened
DL = Delisted
PDL = Proposed delisted

[2]State Status
E = Endangered
T = Threatened
R = Rare
C = Candidate

Source: Beaudry 1995; CMI 1996; Davis et al. 1994; TPWD 2001a, 2001b, 2002; USFWS 1995a, 1995b, 1996, 1999a, 2001, 2002; Wisconsin Department of Natural Resources, 2001; Dallas Audubon Society, 2002, Bird News.
Web site: http://www.dallasaudubon.org/bird_news.htm. Accessed 19 March, 2002.

As shown in **Table 3-25**, four species would have a low to moderate potential of occurrence within the project area based on habitat availability. The Arctic peregrine falcon (*Falco peregrinus tundrius)* normally nests in the Arctic tundra with a migration range from northern Alaska, Canada, and Greenland to Central and South America during the fall months (USFWS 1999b). This species has been delisted federally; however, it is still listed as threatened in Texas. A peregrine falcon (*Falco peregrinus*), probably of the Interior West population (not the Arctic breeding population), was observed in downtown Dallas during the field surveys on 7 March 2001. The falcon was observed flying over the project area in the direction of downtown Dallas. Food resources such as rock doves (pigeons) are abundant in the area for this bird. No known nesting sites for the falcons are documented in the downtown Dallas area (TPWD 2001a).

The state and federally endangered interior least tern (*Sterna antillarum*) is a rare to common transient to the north Texas area. In Dallas County, this species has been reported as early as 3 May and as late as 22 September. In Denton County, this species has been reported as early as 14 April and as late as 25 September (Pulich 1988). In recent years, a colony of interior least terns have been confirmed as occurring in southeast Dallas County at the Southside Wastewater Treatment Plant (Dallas Audubon Society 2002). During informal consultation with the USFWS, it was discovered that a colony of interior least terns have been discovered nesting in the proximity of the project corridor. Specifically, the colony was observed at the Valwood Improvement Authority [VIA] Cell B Pond in northwest Dallas County. Additionally, the USFWS believes that this species utilizes the Trinity River as a travel and nesting corridor on its migratory route. However, this species has not been observed during any of the numerous field surveys, nor has any suitable habitat been identified. Nesting sites for the interior least turn are salt flats, broad sandbars, and barren shores along wide, shallow rivers. Important breeding habitat characteristics include bare ground or nearly bare ground and alluvial islands or sandbars for nesting, the availability of food (primarily small fish), and favorable water levels during the nesting season. They usually nest on sites without vegetation, but have been found on sites with an average of 11-30 percent vegetative cover. These sites will be composed of grasses, shrubs, and trees and will range from 15 to 37 inches in height. As nesting sites become sparse, interior least turns have used dredge islands, dikefields, fly-ash lagoons, sandpits, and gravel levee roads as nesting sites (USFWS 1995a).

The northern population of the migrant loggerhead shrike (*Lanius ludovicianus migrans)* also has potential habitat present within the project area and is listed as rare in Texas. Five loggerhead shrikes were observed along the corridor – two were observed between IH 635 and Webb Chapel Extension and three were observed between Shorecrest Drive and Seelcco Street. Without seasonal surveys, it is difficult to ascertain whether the shrikes that were observed were migratory or nonmigratory. However, if present, migratory loggerhead shrikes would be transitory in the area and feeding resources are abundant (Dobkin 1994; Hamel 1992; Hunter 1990).

A fourth species, the Texas garter snake (*Thamnophis sirtalis annectens)*, is listed as rare in Texas and depends upon habitat consisting of wet or moist areas (Beaudry 1995). This species could potentially occur along riparian areas or near wetlands.

Migrating bird species potentially use the riparian areas, wetland areas, or forest stands in the project area as stopping points on their way to and from wintering grounds. During the surveys, several species of wading birds and ducks were observed utilizing the ponds at Ken Good Park and near Bachman Lake.

3.9.5 Aquatic Habitats

Aquatic communities in the project area are diverse and fall into two types of habitat classifications: ponds and streams. There are several water bodies (Ken Good Park ponds and an overflow pond off Bachman Lake) located adjacent to the project areas. These types of water bodies, usually ranging in size from 10 to 500 acres, are more likely to maintain water throughout the year and generally have a sustained fish population. Streams are classified based on their size and flow characteristics and range from small, intermittent-flowing channels to permanent flowing drainage ways.

Eleven streams/rivers and one water body (Ken Good Park ponds) were evaluated for the aquatic habitat component. A second water body, the Bachman Lake pond overflow, is discussed in Section 3.9.1 as part of the jurisdictional waters of the U.S. inventory. Of the 11 streams evaluated, most had little cover available for aquatic species due to channelization and concrete lining.

Habitats associated with ponds in the project area include open water and shoreline. Open water habitat not only supports a variety of fish species, but it also provides benefits for many species of birds, mammals, reptiles, and amphibians. Shoreline habitats provide feeding and resting areas

for shorebirds that migrate through the project areas (Johnston and Short 1989). The ponds at Ken Good Park contained habitat for fish, turtles, and many species of aquatic birds. The overflow at Bachman Lake had good quality habitat with large trees, cover, cattails, and evidence of beaver inhabitation.

3.10 GEOLOGY

3.10.1 Geologic Setting

The Study Area lies within the physiographic region known as the Blackland Prairie. This category consists of low rolling terrain with chalk and marl bedrock tilting to the south and east. The bedrock of Dallas County and southern Denton County is of Upper Cretaceous age. Thick sedimentary beds underlie the northwestern quadrant of Dallas County and southern Denton County and are covered with Quaternary terrace deposits consisting of sand, gravel, silt and clay, but no rock outcroppings. Surface geology is composed of the Austin, Woodbine, Eagle Ford and U. Washita Groups, which are all Cretaceous soils. The Study Area is located near the boundary of the Austin formation and the underlying Eagle Ford formation, both of which outcrop just northeast of Dallas Love Field. The Austin formation is composed of clayey limestone with calcareous shale and marl. The Eagle Ford formation is composed mainly of clay shale, with minor calcareous shale and shaly limestone beds and numerous thin bentonite beds. Additional information on the geologic setting in the Dallas Love Field area is contained in the report ***DART Love Field Airport Light Rail Access: Design Review of Tunnel Alignment and Underground Structures*** (September 2001, Dr. Sauer Corporation), incorporated as Appendix F.

Fossils are common throughout Dallas County and southern Denton County and include occasional gastropods (snails), pelecypods (clams and oysters), cephalopod (ammonite and squid) shells, crayfish, and shark and skate teeth.

3.10.2 Soil Types

The project corridor traverses many distinct soil types with varying patterns of drainage and relief. According to the U.S. Department of Agriculture *Soil Survey of Dallas County* and *Soil Survey of Denton County, Texas* there are 26 soil types found within the Study Area. **Table 3-26** lists the soil types intersecting the alignment, as well as characteristics, potential and limitations of each soil type.

TABLE 3-26
SOIL TYPES IN THE STUDY AREA

Soil Type	Soil Characteristics	Soil Potentials and Limitations
Arents (loamy, gently undulating)	Areas that have been mined for gravel and sand and are lower than the surrounding landscape. Mainly consist of sandy clay loam, clay loam, loam or fine sandy loam in the upper 80 inches.	These soils have medium potential as pastures and low potential for urban development. Hazards of flooding and corrosivity to uncoated steel are limitations.
Arents (loamy, hilly)	Consists of the overburden of mining operations, which has been left in ridges and mounds in the gravel pits. Slopes range from 10% to 30%. The soil is moderately alkaline to a depth of about 80 inches and it is a light, yellowish brown sandy clay loam.	Permeability is moderate, runoff rapid, and the hazard of erosion severe. These soils have a very low potential for urban development. The limitations are the hazard of flooding, the slopes of the ridges and mounds, and corrosivity to uncoated steel.
Arents (clayey, gently undulating)	Consists of clayey soil material removed from nearby road cuts, borrow pits, or drainage ditches. The soil is typically dark brown, calcareous clay, containing many clods and bodies of very dark brown and grayish brown fragments of surface soil.	Permeability is slow to very slow, runoff is medium, and sloping areas erode easily. These soils have a very low potential for urban development. Limitations are a high content of clay, wet spots and ponding

TABLE 3-26 (continued)
SOIL TYPES IN THE STUDY AREA

Soil Type	Soil Characteristics	Soil Potentials and Limitations
Axtell-Urban land complex (1% to 5% slopes)	Made up of deep, gently sloping, moderately well drained soils and areas of Urban land on uplands. The Axtell soil makes up about 50% of this complex, and Urban land makes up about 25%. The surface layer of Axtell soil is typically slightly acid to strongly acid, dark grayish brown to pale brown fine sandy loam with brown and red mottling to about 52 inches. To 80 inches, it is moderately alkaline, grayish brown sandy clay.	Permeability is very slow, runoff is medium, and the hazard of erosion is moderate. These soils have a medium potential for urban uses. The high shrink-swell potential, low strength, and corrosivity of the soil and the hazard of erosion are limitations
Bastsil fine sandy loam (0% to 3% slopes)	Deep, well drained, nearly level to gently sloping soil. The surface layer is typically medium acid, brown fine sandy loam to yellowish red sandy loam to about 34 inches. To 68 inches, it is mottled red, yellowish red, and light gray sandy clay loam.	Runoff is medium, the hazard of erosion is moderate, permeability is moderate, and the available water capacity is high. This soil has a high potential for urban development. Corrosivity to uncoated steel, and low soil strength are the limitations.
Bastsil-Urban land complex (0% to 2% slopes)	Nearly level to gently sloping, well drained soils and areas of urban land. The Bastsil soil makes up about 40% of the complex, while Urban land makes up 35%. Surface layer is typically moderately acid, brown fine sandy loam to yellowish red to red sandy clay loam to about 34 inches deep. To 68 inches, the soil is mottled dark red, yellowish red, and light gray sandy clay loam.	Permeability is moderate, runoff is medium, and the hazard of erosion is moderate. These soils have a high potential for urban development. The only limitation is corrosivity of uncoated steel.
Frio silty clay, frequently flooded	Deep, well drained, nearly level soil on floodplains. Surface layer is moderately alkaline, dark grayish brown to brown silty clay and silty clay loam, to 74 inches.	Permeability is moderately slow, runoff is slow, and the hazard of erosion is slight. This soil has a very low potential for urban uses, due to frequent flooding and low strength and corrosivity of the soil.
Gowen loam, frequently flooded	Deep, well drained, nearly level soil on floodplains. Typically, surface layers are neutral to moderately alkaline, brown to grayish brown clay loam and sandy clay loam, with thin strata of fine sand around 53 inches. To 80 inches, the soil is moderately alkaline, dark gray and dark yellowish brown sandy clay.	Permeability is moderate, runoff is slow, and the hazard of erosion is slight. This soil has a very low potential for urban and recreational purposes. The hazard of flooding and the corrosivity of the soil are the main limitations.
Houston Black-Urban land complex (0% to 4% slopes)	Deep, moderately well drained, nearly level and gently sloping soils and areas of Urban land. The Houston Black soil makes up about 40% of the complex, while the Urban land is about 35%. Surface layer is typically moderately alkaline, very dark gray, to black, to grayish brown clay to 70 inches, with the bottom 12 inches containing light olive brown mottles.	Permeability is very slow, runoff is medium, and the hazard of erosion is moderate. The soil has low potential for urban development, due to the high shrink-swell potential, corrosivity and low strength of the soil.
Lewisville-Urban land complex (4% to 8% slopes)	Deep, well drained, gently sloping soils and areas of Urban land. The Lewisville soil makes up about 60% of the complex, and Urban land about 30%. The surface layer is typically moderately alkaline, dark grayish brown to light yellowish brown silty clay, with mottles appearing towards the bottom.	Permeability is moderate, runoff is medium, and the hazard of erosion is severe. This soil has medium potential for urban uses. The high shrink-swell potential, low strength, and corrosivity of the soil, and the hazard of erosion are the limitations.
Pits and Dumps	Areas from which limestone or shale has been removed. The pits are several feet deep, and the mounds of rubble or shale are several to many feet high. The areas are generally 8 to 75 feet below the original surface.	A few areas have been smoothed for use as building sites.
Silawa-Urban land complex (2% to 6% slopes)	Deep, well drained, gently sloping and sloping soils and areas of Urban land. The Silawa soil makes up about 50% of the complex and Urban land makes up about 25%. The surface layer of Silawa soil is typically slightly to moderately to strongly acid, grayish brown fine sandy loam, and reddish brown and yellowish red sandy clay loam to 44 inches. To 80 inches, it is strongly acid, reddish yellow loamy fine sand.	Permeability is moderate, runoff is medium, and water and wind erosion are moderate hazards. This soil has a high potential for urban development. The erosion hazards and the corrosivity and low strength of the soil are the limitations.

TABLE 3-26 (continued)
SOIL TYPES IN THE STUDY AREA

Soil Type	Soil Characteristics	Soil Potentials and Limitations
Silstid loamy fine sand (0% to 3% slopes)	Deep, well drained, nearly level to gently sloping soil on uplands. Typically, the surface layer is neutral to moderately acid, brown to yellowish brown loamy fine sand, and yellowish brown sandy clay loam, to a depth of 44 inches. To 80 inches, it is strongly acid, reddish yellow loamy fine sand.	Permeability is moderate, runoff is slow, and water erosion is a slight hazard. Wind erosion is a severe hazard if the surface is bare. This soil has a high potential for urban uses. The corrosivity of the soil is a hazard to underground installations. The sandy texture of the soil is a limitation to recreational uses.
Trinity clay, frequently flooded	Deep, nearly level, somewhat poorly drained soil on floodplains. Typically, the surface layer is moderately alkaline, dark gray, grayish brown and very dark gray clay.	Permeability is very slow, runoff is slow, and the hazard of erosion is slight. This soil has a very low potential for urban uses. The frequent flooding and the wetness, corrosivity, very high shrink-swell potential, and clayey texture of the soil are limitations.
Trinity-Urban land complex	Deep, nearly level, somewhat poorly drained soils and areas of Urban land on floodplains. The Trinity soil makes up about 60% of the complex and Urban land makes up about 20%. The surface layer of the Trinity soil is typically moderately alkaline, very dark gray, black, and dark grayish brown clay, to a depth of 80 inches.	Permeability is very slow, runoff is very slow, and the hazard of erosion is slight. The soils in this complex have very low potential for urban uses, mainly because of the hazard of flooding. Other limitations include a very high shrink-swell potential, corrosivity, low strength, and wetness of the soil.
Wilson-Urban land complex (0% to 2% slopes)	Nearly level to gently sloping, deep, somewhat poorly drained soils and areas of Urban land. The Wilson soil makes up about 60% of this complex, while Urban land makes up 30%. The surface layer of the Wilson soil is typically mildly to moderately alkaline, dark grayish brown clay loam, and dark gray and olive brown to light olive brown clay.	Permeability is very slow, runoff is slow, and the hazard of erosion is slight. The Wilson soil has medium potential for urban uses. The high shrink-swell potential, corrosivity, and low strength of the soil are the main limitations to urban uses.

Source: NRCS Soil Survey for Dallas and Denton Counties, Texas: 1980.

Soils are moderate in extent due to the degree of urbanization in this area, but where present, consist mainly of clay soils with low slopes. The soils immediately intersecting the existing alignment consist of varying potential for urban development. Approximately 50 percent of the soils are of high or moderate potential for urban uses, and 50 percent are of low or very low potential. The soils of high and moderate potential are the most common along the length of the alignment, covering approximately 75 percent of the alignment. Soils of low potential most commonly occur within floodplains and thus, will generally be avoided.

3.11 HYDROLOGY / WATER QUALITY

3.11.1 Surface Water Quality

The surface water resources for most of the project area drain into the Lower Elm Fork region of the Trinity River, and flow in a west/southwest direction. Bachman Lake lies within the half-mile project Study Area, however the proposed LRT project is located downstream from the lake's outlet. No major river channels cross the proposed alignment; however, there are ten streams and creeks that cross the existing alignment. These resources are listed in **Table 3-27** and illustrated in **Figure 3-45**.

According to EPA's ***Index of Watershed Indicators***, the northern half of the project area is categorized as having better water quality with low vulnerability. Approximately 1/4-mile south of Bachman Lake, the water quality changes to more serious with low vulnerability. According to the ***State of Texas 1998 303(d) Listed Stream Segments***, the Elm Fork of the Trinity River is listed as a state stream segment not meeting water quality standards as required by Section 303(d) of the Federal Clean Water Act.

Figure 3-45 Floodplains and Watershed

TABLE 3-27
WATER BODIES INTERSECTING THE STUDY CORRIDOR

Map No.	Water Feature	Description of Location
1	Turtle Creek	Flows under the intersections of the Dallas North Tollway with McKinnon Street and Harry Hines Boulevard. Flows northeast to southwest and empties into the Lower Elm Fork of the Trinity River.
2	Cedar Branch of Turtle Creek	Approximately 350 feet west of Hondo Drive. Flows from north to south and empties into Turtle Creek, which then drains into the Lower Elm Fork of the Trinity River.
3	Knights Branch of Turtle Creek	Approximately 350 feet north of Inwood Road; forks north and northeast at the center of the alignment. Flows from north to south at the westernmost fork, and from northeast to south at the easternmost fork. It eventually empties into Turtle Creek, which drains into the Elm Fork of the Trinity River.
4	Bachman Creek	Approximately 350 feet northwest of Shorecrest. Flows from northeast to southwest and empties into the Elm Fork of the Trinity River.
5	Joes Creek	Crosses the alignment approximately 675 feet north of Nagle Road. Flows in a southwesterly direction into the Elm Fork of the Trinity River.
6	Farmers Branch of Rawhide Creek	Approximately 300 feet south of Farmers Branch Road. Flows east to west into the Elm Fork of the Trinity River.
7	Rawhide Creek	Approximately 725 feet south of Sable Lane. Flows northeast to southwest into the Elm Fork of the Trinity River.
8	Cooks Branch of the Elm Fork	Approximately 675 feet north of Havenhurst Road. Flows northeast to southwest into the Elm Fork of the Trinity River.
9	Hutton Branch Creek	Approximately 900 feet north of College Road. Flows northeast to southwest and empties into the Elm Fork of the Trinity River.
10	Furneaux Creek	Approximately 120 feet northwest of Trinity Mills Road. Flows west by southwest and drains into the Elm Fork of the Trinity River.

Source: NCTCOG, 1999.

3.11.2 Groundwater Resources

The only major aquifer that supplies both Dallas and Denton counties with groundwater is the Trinity aquifer. The Woodbine aquifer is a minor aquifer that is also located within the project area. The water-bearing units in Dallas County consist primarily of the Lower Cretaceous Trinity and Paluxy sands and the Upper Cretaceous Woodbine formation.

The water quality of the Trinity Group is acceptable for most municipal and industrial purposes and ranges from fresh to slightly saline, with salinity increasing with depth. The water table is low due to overdeveloping in the Dallas/Fort Worth metropolitan area, dropping as much as 1,200 feet below the surface. Currently, water supplied to the area comes from surface reservoirs built on the Trinity River.

The Woodbine aquifer, which also produces water in the upper part of the Trinity River Basin, consists of fine-grained sand and sandstone interbedded with clay. Lignite and sandy clay layers occur in the upper part of the aquifer with 50 percent commonly consisting of sand. Useable water quality is produced to a maximum depth of about 2,000 feet; however, water quality is relatively poor, exceeding 1,500 parts per million (ppm) dissolved solids in most areas. Salinity increases with depth.

The construction of tunnel or cut-and-cover structures along the project alignment would result in contact with ground water resources and may result in contact with underground hazardous material sites. The Selected LRT Alternative contains only one below grade segment, located under Mockingbird Lane. Four USTs have been identified within 200 feet of this portion of the Selected LRT Alternative (see Section 3.12 below).

3.11.3 Floodplains

The Federal Emergency Management Agency (FEMA) requires municipalities that participate in the National Flood Insurance Program to adopt floodplain ordinances that prohibit development in the existing 100-year floodplain. These flood zones have been established by FEMA and are shown on the agency's Flood Insurance Rate Maps (FIRM).

A floodplain is defined as any land area susceptible to inundation by floodwaters from any source. The 100-year floodplain is any area that has a one percent chance of being exceeded in magnitude in any given year. Portions of the Study Area lie adjacent to or cross the 100-year floodplain of the Elm Fork of the Trinity River and its tributaries. **Table 3-28** summarizes the locations at which the Study Area crosses or abuts the 100-year floodplain. All of these crossings are to be constructed at least two feet above the 100-year floodplain. **Figure 3-45** displays the areas of potential flooding along the Study Area as established by FEMA.

In the north, the floodplain extends from the northern edge of the proposed alignment to Hutton Branch Creek on the west side of the alignment. In the central region of the alignment, the area around Bachman Creek lies within the 100-year floodplain in approximately a two-mile radius from the creek itself.

All of the sites considered for the Northwest Rail Operating Facility had some portion of their area within the Bachman Branch 100-year floodplain. Approximately 20% of the selected site at Lombardy Lane lies within the 100-year floodplain for Joe’s Creek.

For the other candidate sites that were considered, but not selected, the Webb Chapel and Northwest Highway sites have only a small area within the 100-year floodplain of Joe’s Creek.

3.12 HAZARDOUS / REGULATED MATERIALS

3.12.1 Study Methodology

Using the state and federal regulatory databases, facilities and areas of concern were identified based on their location within the Study Area, particularly their proximity to the proposed alignment and station areas, and their proximity to existing track locations.

The Study Area was visually inspected between December 5, 2000 and December 22, 2000 via vehicle and pedestrian survey. Subsequent visual inspections of the proposed Northwest Rail Operating Facility at Lombardy and Denton Drive were conducted on July 31 and September 5, 2002. The purpose of the Study Area visit was to view the facilities and properties for signs of past or current field conditions.

TABLE 3-28
FLOODPLAIN LOCATIONS ADJACENT TO OR CROSSED BY THE PROPOSED PROJECT

Map No.	Water Feature and Base Elevation	Location	Width of Floodplain at Crossing (in feet)
1	Turtle Creek (406 feet)	North of Woodrow and south of Oak Lawn Ave.	~700 feet crossed once by alignment
2	Cedar Branch (409.7 feet)	West of Hondo Drive and east of Lucas Drive	~700 feet crossed once by the Selected Alignment ~1,000 feet crossed once by other alignments
3	Knights Branch (418.8 feet)	Just north of Inwood Road; forks north and northeast at the center of the alignment	~175 feet crossed once by Selected Alignment ~1,200 feet crossed twice by Harry Hines Base Alignment
4	Bachman Branch (430.3 feet)	Northwest of Shorecrest and southeast of Chapel Hill Road	~2,600 feet crossed once by alignment
5	Joes Creek (437.2 feet)	Crosses Harry Hines Blvd. at approx. 1/8 mile north of Nagle Road	~2,000 feet crossed once by alignment
6	Farmers Branch (457.1 feet)	South of Farmers Branch and north of Christian Parkway	~3,200 feet (includes Rawhide Creek) each crossed once by alignment
7	Rawhide Creek (459.2 feet)	Just north of Farmers Branch Lane and south of Sable Lane	(Rawhide Creek floodplain width included in Farmers Branch)
8	Cooks Branch (463.8 feet)	North of Havenhurst Road and south of Branch View Road	~600 feet crossed once by alignment
9	Hutton Branch Creek (453.4 feet)	North of College Road and south of Vinylex	~150 feet crossed once by alignment
10	Furneaux Creek (445.1 feet)	Just northwest of Trinity Mills Road and southeast of Dixon Road	~7,500 feet crossed once by alignment

Source: NCTCOG, 1999.

Information from federal and state regulatory databases, visual inspections, and topographic and soils information were combined and evaluated. This information is reported in the ***Phase 1 Environmental Site Assessment for the Northwest Corridor Light Rail Expansion,*** (Wendy Lopez & Associates, April 2001). Based on this data, facilities were categorized as having high, moderate, or low concern regarding hazardous materials and the potential for environmental liability. The three categories of concern are defined below:

- High Concern - These locations are found within 200 feet of the proposed alignment and are of high concern due to their likelihood of being contaminated. Those suspect facilities between 200 and 400 feet from the property with granular or sandy soils and surface gradient elevations sloping toward the property are given a high concern ranking as well. These locations consist of: National Priority List (NPL) facilities, Leaking Underground Storage Tank (LUST) facilities, Underground Storage Tank (UST) facilities, Aboveground Storage Tank (AST) facilities, State-equivalent Comprehensive Environmental Response, Compensation, and Liability Information System [CERCLIS] List (SCL) facilities, and Corrective Actions (CORRACTS) facilities.

- Moderate Concern - These locations are also found within 200 to 400 feet of the proposed alignment but are of lesser concern due to their current regulatory status, or the likelihood of encountering contamination during construction activities. However, each of these locations

may have contamination issues that could impact construction activities. Those suspect facilities between 400 and 1,320 feet from the property with granular or sandy soils and surface gradient elevations sloping toward the property are given a moderate concern ranking as well, unless identified as having a low concern. These locations consist of: LUST facilities, UST facilities, and SCL facilities.

- Low Concern - These locations are found within 400 to 1,320 feet of the proposed alignment and are of least concern. These facilities have a lower potential of being contaminated or, due to their distance from the property or type of contamination, of having any contamination associated with them that would impact construction activities. Locations of the sites can be found in the above referenced report.

Figures 3-46 and **3-47** show the locations of all of the facilities of high and moderate concern within the Study Area. **Tables 3-29** and **3-30** contain the name, address and type of hazard for each site of high concern and each site of moderate concern identified. The numbers on the figures correspond to the numbers in the tables.

Federal Regulatory Databases
To provide information regarding the hazardous materials present in the Study Area, the following Federal databases were searched:

- National Priority List (NPL) - This database includes a listing of all US EPA National Priority List sites. These sites fall under the EPA's Superfund program established to fund cleanup of contaminated sites that pose risk to human health and the environment. This database was searched to a 1-mile radius from the proposed project. No sites were discovered.

- RCRA permitted treatment, storage, disposal facilities (RCRA-TSD) - The RCRA Facilities database is a compilation by the EPA of facilities that report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA TSDs are facilities that treat, store and/or dispose of hazardous waste. Also searched to one mile, a search of this database resulted in no RCRA-TSDs sited.

- Sites under review by US EPA (CERCLIS) - This database contains an extract of sites nationally identified as hazardous sites that have been investigated or are in the process of investigation for contamination risk. This database was searched to 1/2-mile and resulted in the finding of one site (Low Concern).

- No Further Remedial Action Planned (NFRAP) CERCLIS - These are sites that have been removed from CERCLIS. After initial investigation, either no contamination was found, contamination was removed quickly, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. This database was also searched to 1/2-mile, and 18 sites were identified.

- RCRA Corrective Actions (CORRACTS) - A "corrective action order" is issued pursuant to RCRA Section 3008 (h) when there has been a release of hazardous waste or constituents into the environment from a RCRA facility. This database was also searched to a one-mile radius from the proposed project, with the result of six (6) sites found (two High Concern, four Low concern).

Figure 3-46 Hazardous Material Sites of Concern – Dallas CBD to Walnut Hill Lane

Figure 3-47 Hazardous Material Sites of Concern – Walnut Hill to Frankford

TABLE 3-29
HAZARDOUS MATERIALS FACILITIES OF HIGH CONCERN WITHIN THE STUDY AREA

Map No.	Facility	Address	Type of Hazards
7*	7-Eleven Store #1611-22009	5406 Harry Hines Boulevard	LUST, UST
15	Jones Blair Paint Company	2728 Empire Central	SCL, LUST, UST, AST, RCRIS, SPILLS
33	Glass Depot	10845 Denton Drive	LUST, UST
34	Lane Container Company	11180 Denton Drive	LUST, UST, RCRIS
50	Racetrac Petroleum	1001 North Broadway	LUST
68	David E. Oldfield Property	1011 South Broadway in Carrollton	LUST
78	Sigmor #750	2655 Royal Lane	LUST
240	Diamond Shamrock #782	1300 Belt Line Road	LUST
UM976	Abandoned Valwood Gas Station	2409 Valwood Parkway	LUST, UST
8*	UT Southwestern Medical Center	5151 Harry Hines Boulevard	UST
9*	University Medical Center	5323 Harry Hines Boulevard	UST
10*	Parkland Hospital	5201 Harry Hines Boulevard	LUST, UST, RCRIS
17	1 Stop Food Store	8460 Denton Drive	UST
19	TXI Aviation	8350 Denton Drive	UST, RCRIS
20	Varel Manufacturing Company	9230 Denton Drive	UST
28	Diamond Shamrock #775	3003 Lombardy Lane	UST
28	7-Eleven Store #21764	3003 Lombardy Lane	UST
31	J's Aircraft Engines & Parts, Inc.	10819 Denton Drive	UST
37	Royal Lane FINA	2681 Royal Lane	LUST, UST, SPILLS
46	241 Co. Chaps L7	13303 Denton Drive	UST
48	Carrollton/Farmers Branch Service Center	1505 Randolph	RCRIS
65	Archer Automotive	10603 Denton Drive	UST
66	Southwest Airlines Bulk Fuels Storage Facility	2734 Brookfield	RCRIS
78	Diamond Shamrock #750	2655 Royal Lane	UST
218	Hertz Rent-A-Car	7212 Cedar Springs Road	LUST, UST
UM17	Bragg Service Company	1937 Broadway	UST
117 [1]	Sigmond Property	NWC Summer Street and Broom Street	SCL
35	A B Aluminum Brass Foundry	11165 Denton Drive	CORRACTS
42	Wellmark International	12200 Denton Drive	CORRACTS, NFRAP, RCRIS
30	Glazer's, Inc	10750 Denton Drive	AST
173	unknown	6200 Denton Road	SCL
280**	Hewitt Garage, Inc.	5505 Maple Avenue	LUST
UM980**	Triple A Oil Company	5534 Denton Drive	LUST
12***	Exxon R/S #6-4579	3040 Mockingbird Lane	LUST, UST
218***	Hertz Rent-A-Car	7212 Cedar Springs Road	LUST, UST
229***	Jet Aviation Texas, Inc.	7363 Cedar Springs Road	UST

* Site of High Concern for Harry Hines Base alignment and Medical Center Design Options A, B, C, and D only.
** Site of High Concern for the Medical Center Design Options alignments: site #280 for A only, site #UM980 for A, B, C, and D. Both are High Concern for Selected LRT Alternative (UPRR).
*** Site of High Concern for the Love Field Design Option alignment
[1] Upon further examination, Site 117 was found not to meet the lateral distance requirements for a site of high or moderate concern, as described in Section 3.12; for this reason it has not been considered as a project impact .

Source: Wendy Lopez & Associates, 2002 & 2003

TABLE 3-30
HAZARDOUS MATERIALS FACILITIES OF MODERATE CONCERN WITHIN THE STUDY AREA

Map No.	Facility	Address	Type of Hazard
45	Dallas Area Rapid Transit ROW	13315 Elder	LUST
59	Francis Oil Company	2420 Valwood Parkway	LUST
36	Peerless Manufacturing Co.	2819 Walnut Hill Lane	UST
59	Highway Oil #751	2422 Valwood Parkway	UST
60	FINA	1013 East Belt Line Road	UST
77	Buddy's Texaco	2360 Valwood Parkway	LUST, UST
121	Healthsouth Dallas Rehab. Center	9713 Harry Hines Boulevard	UST
174	My-T-Quick Food Store	10002 Harry Hines Boulevard	UST
174	Friendly's Grocery	10025 Harry Hines Boulevard	LUST, UST
94	Exide Corporation	2040 Motor Street	SCL
173	Unknown	6200 Denton Road	SCL
73	Labor Force	4248 Harry Hines Boulevard	UST
141*	Saint Paul Medical Center	5909 Harry Hines Boulevard	UST, RCRIS
264*	Total Petroleum Station #2308	2121 West Mockingbird Lane	LUST
UM333*	SAIA Motor Freight Line, Inc.	1969 Record Crossing	UST
11**	Budget Rent-A-Car	6629 Aubrey	UST
11**	Thrifty Car Rental	3127 Mockingbird Lane	UST
89**	Sonny's Soft Touch Car Wash	3211 Mockingbird Lane	UST
96**	Avis Rent-A-Car	7020 Cedar Springs	UST
116 **	Former Dollar Rent-a-Car	3114 Hawes	UST
152**	Estate of Alyne B. Hayman	6417 Cedar Springs	SCL
13	Warehouse	6621 Denton Drive	UST
14	Williamson Printing Corp.	6700 Denton Drive	LUST, UST, RCRIS
56	Walraven Brothers Inc.	2023 Lucas	RCRIS
62	--	2703 W. Mockingbird Lane	Spill
102	Love Field Auto Service Center	6420 Denton Drive	UST
127	Southwest Snacks	6333 Denton Drive	UST

* Site of Moderate Concern only for Harry Hines Base Alignment in the Medical Center area.
** Site of Moderate Concern for the Love Field Design Option alignment only.

Source: Wendy Lopez & Associates, 2000 & 2003

- RCRA Registered small or large generators of hazardous waste (GNRTR) - The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities that report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA Large Generators are facilities which generate at least 1000 kg/month of non-acutely hazardous waste (or 1 kg/month of acutely hazardous waste). RCRA Small and Very Small generators are facilities that generate less than 1000 kg/month of non-acutely hazardous waste. These databases were searched to 1/8-mile around the proposed project, resulting in the finding of 72 sites.

- ERNS and State spills list (SPILLS) - Many states maintain a database of spills, reported under various legislative requirements. Frequently there is substantial overlap between spills reported in the State's system and spills reported in the Federal (US EPA) Emergency Response Notification System. This database was searched to 1/8-mile and resulted in 22 sites found (two High Concern, 20 Low Concern).

State of Texas Regulatory Databases

The state databases that follow were also examined to compile hazardous materials information about the Study Area. It should be noted that listing on these databases does not necessarily indicate that the sites are not in compliance with federal or state regulations. Rather, the sites are registered and are either in compliance, or are being monitored by regulatory agencies.

- State Equivalent Priority List (SPL) - Only classified as a State Priority if confirmed sites are included, and the state is involved in clean-up activities or is actively pursuing responsible parties. This database was searched to one mile; however, no sites were found.

- State Equivalent CERCLIS List (SCL) - Lists containing unconfirmed sites or sites where no further action is expected are classified as State Clean-up Lists (SCLs). Often SCLs will contain some priority sites as well. This database was searched to 1/2-mile and resulted in the finding of 47 sites.

- Leaking Underground Storage Tanks (LUST) - Leaking underground storage tanks are a major cause of soil and ground water contamination. Along with stricter regulation of USTs, most states now maintain lists of reported LUSTs. This 1/2-mile search identified 140 sites.

- Solid waste landfills, incinerators, or transfer stations (SWLF) - Depending on the state, these lists may include active landfills, inactive landfills, incinerators, transfer stations, recycling locations and other facilities where solid waste is treated or stored. Also searched to 1/2-mile, this database resulted in three sites found.

- Registered Underground Storage Tanks (UST) - Underground storage tanks regulated under Subtitle 1 of the Resource Conservation and Recovery Act (RCRA) must be registered with the state agency responsible for administering the UST Program. This database was searched to 1/4-mile, and 268 registered underground storage tanks were found.

- Registered Aboveground Storage Tanks (AST) - Some states require registration of Aboveground Storage Tanks (ASTs) as well as USTs (Underground Storage Tanks). Aboveground storage tanks serve the same function as underground storage tanks, which is to store various forms of hazardous wastes. This database was also searched to 1/4-mile, and 18 sites were found.

- State Spills List (SPILLS) - See SPILLS description under the federal regulatory database listed above, which contains all of the results of this database search.

3.12.2 Assessment of Probable Contamination Potential

The conclusions presented in this section are the result of information gathered from several sources of data, including site inspection, surrounding area visual reconnaissance, environmental regulatory databases, historical aerial photographs, and personal interviews. A total of 119 sites were found in the federal database–searches. No facilities were found on the EPA's National Priority List, nor were there any RCRA permitted treatment, storage, or disposal facilities found. A review of the state regulatory databases revealed 498 facilities of concern within the Study Area. However, no facilities were found on the state equivalent priority list. Thirty-six (36) locations are of high concern, and twenty-seven (27) locations are of moderate concern within the Study Area.

Those areas of high concern that are currently contaminated, or have the potential of being contaminated, may require a Phase II investigation before any construction activities begin in these areas in order to determine the possibility of encountering contamination, and the potential impact of this encounter. Those locations that are of moderate concern are not as likely to contribute to sources of contamination during construction as those of high concern. However, each of these areas may have associated onsite or offsite contamination that may impact construction activities.

DART has in place an on-going due diligence policy and program to assess the environmental condition of all properties contemplated for purchase as right-of-way or for the siting of transit facilities. Under this program, DART performs a separate Phase I Environmental Site Assessment (ESA) of each parcel or site under consideration for purchase in order to assess its specific probability for contamination. A Phase II ESA may also be undertaken to further identify and quantify existing hazardous/regulated material contamination so the resulting need for cleanup or mitigation (Phase III ESA) can be factored into the purchase price and/or the long-term environmental liability associated with acquiring the property.