NORTH TEXAS TOLLWAY AUTHORITY

# Environmental Evaluation (EE)
# Approval Form

## PROJECT INFORMATION

| | |
|---|---|
| Project Name: | Dallas North Tollway (Phase 4B/5A Extension) |
| Project Limits: | FM 428 to FM 121 |
| Project Description: | New location six-lane tollway with three-lane frontage roads |
| PAL & Justification: | PAL 3 – Analysis of Build Alternatives on new location, major amounts of ROW acquisition, public involvement, and strong potential for controversy due to environmental impacts |

## PUBLIC INVOLVEMENT

| | | |
|---|---|---|
| ☒ | Stakeholder Meetings | Executive Workgroup: 10/23/09, 12/4/09, 1/29/10, 5/21/10<br>Technical Workgroup: 10/30/09, 12/11/09, 1/22/10, 5/17/10, 12/10/10<br>Dates |
| ☐ | Meetings with Affected Property Owners | N/A<br>Dates |
| ☒ | Public Meetings | 3/9/10 (Pilot Point), 3/11/10 (Celina)<br>Dates |
| ☒ | Public Hearing | 4/19/11<br>Dates |

## APPROVAL

| | |
|---|---|
| Director of Project Delivery | Date |
| Assistant Executive Director of Project Delivery | Date |
| Executive Director | Date |
| Chairman, Board of Directors | Date |

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## SECTION 1 – PROJECT DESCRIPTION

- Project Name
- Project Limits
- Project Length
- Type of Work
- Counties
- Estimated Let Date
- Estimated Cost
- Funding Sources
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- Traffic Volumes
- Alternatives Analysis
- ROW/Easements and Utilities
- Construction Phasing

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  - Floodplains
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  - Vegetation and Wildlife
  - Threatened and Endangered Species
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  - Historic-age Resources
  - Archeological Resources
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  - Traffic Noise
  - Hazardous Materials
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  - Socioeconomics
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- Section 10(a) Permits
- Marl, Sand, Gravel, Shell, or Mudshell Permits
- Texas Antiquities Permits

Mitigation

- Waters of the U.S., Including Wetlands
- Storm Water
- Floodplains
- Vegetation and Wildlife
- Historic Resources
- Archeological Resources
- Traffic Noise
- Public Lands

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- Vegetation
- Wildlife / Threatened and Endangered Species
- Cultural Resources
- Hazardous Materials
- Noise Abatement
- Public Lands

## SECTION 5 – AGENCY COORDINATION

Federal

- U.S. Army Corps of Engineers (USACE)
- U.S. Fish and Wildlife Service (USFWS)
- Federal Emergency Management Agency (FEMA)
- U.S. Environmental Protection Agency (EPA)
- U. S. Coast Guard (USCG)

State

- Texas Commission on Environmental Quality (TCEQ)
- Texas Parks and Wildlife Department (TPWD)
- Texas Historical Commission/State Historic Preservation Officer (THC/SHPO)
- Texas Department of Transportation (TxDOT)

Local

- North Central Texas Council of Governments (NCTCOG)
- City
- County
- Dallas Area Rapid Transit (DART)
- Fort Worth Transportation Authority (The T)
- Denton County Transit Authority

Other

## SECTION 6 – PROJECT AGREEMENTS

- Interlocal Agreement
- Memorandum of Understanding
- Letter of Intent
- Two-Party Agreement
- Three-Party Agreement
- Multi-Party Agreement

## APPENDICES

# SECTION 1
# PROJECT DESCRIPTION

| | |
|---|---|
| Project Name: | Dallas North Tollway (Phase 4B/5A Extension) |
| Project Limits: | FM 428 to FM 121 |
| Project Length: | 11.9 miles |
| Type of Work: | New location six-lane tollway extension with three-lane frontage roads |
| Counties: | Collin, Denton, and Grayson |
| Estimated Let Date: | 2020 - 2023 |
| Estimated Cost: | $677,819,000 (2011 dollars, Level E estimate including construction, ROW and easements, utilities, and soft costs) |
| Funding Sources: | NTTA System Financing |

## Existing Facility

No portion of the proposed Dallas North Tollway Extension Phase 4B/5A (DNT 4B/5A) has been completed. However, portions of several two-lane county roads, the majority of which run parallel to the proposed tollway, are included within the DNT 4B/5A proposed right-of-way (ROW). These roads include County Road (CR) 9, CR 10 (County Line Road), and Scharff Road, all of which are gravel roads. The access and capacity of these existing roads would be absorbed by frontage road lanes (i.e., three lanes in each direction) of the proposed DNT 4B/5A. The amount of existing road ROW within the proposed DNT 4B/5A ROW is 28 acres.

## Proposed Facility

The proposed DNT 4B/5A facility would extend north from Farm to Market Road (FM) 428 in Collin County for approximately 11.9 miles to provide connectivity with east-west traffic on FM 121 in Grayson County (see **Exhibits 1-1** and **1-2**). The tollway would include a combination of land within Collin and Denton counties (Phase 4B) as well as Grayson County (Phase 5A). This controlled-access toll road would ultimately have six tolled mainlanes, three lanes in each direction, and three-lane nontolled northbound and southbound frontage roads. Proposed typical cross sections are shown in **Exhibit 1-3**, and project design features in plan view are shown in **Exhibit 1-4**.[1] This facility is proposed as an urban tollway with a design speed of 70 miles per hour.

In addition to connecting to the cross streets that define the termini for this project, the facility would connect to other planned north-south tollways. The southern terminus of the proposed

[1] Note that existing design plans include cross drainage structures for major cross drainages for areas with contributing watersheds of approximately 50 acres or greater. Final design will include cross drainage pipes and culverts for minor cross drainage features.

DNT 4B/5A would connect with the planned DNT Extension Phase 4A, for which two lanes of the northbound frontage road were completed in 2008. The northern terminus would connect with a tollway currently under study by the Texas Department of Transportation (TxDOT) and the Grayson County Regional Mobility Authority, which would ultimately connect to U.S. Highway (US) 75 in the City of Denison, Texas.

## Land Use

Existing land use within the proposed DNT 4B/5A project area is predominantly agricultural and consists of land which is intensively farmed for forage crops (e.g., corn and sorghum) and wheat, as well as hay meadows and pastures for livestock. Non-farmed areas include riparian forests within floodplains and occasional residences associated with farms or ranches. Photographs of representative sites within the project area are shown in **Exhibit 1-5**. The proposed DNT 4B/5A is included in the thoroughfare plans for both the City of Celina and the City of Gunter, and zoning for both municipalities supports its construction. Current development within the project area is primarily residential with some commercial development near other major thoroughfares.

## Need and Purpose

The proposed DNT 4B/5A is needed to address current and projected increases in transportation demands and to provide a safe and efficient thoroughfare to deliver goods and services in the northeastern portion of the Dallas/Fort Worth (DFW) metropolitan area. The primary purpose of the proposed DNT 4B/5A is to address this need by constructing a facility that would increase mobility, transportation carrying capacity, and safety in the area in response to forecasted population and employment growth north of the planned DNT Phase 4A terminus at FM 428 in Collin County, Texas. Supporting information and more details regarding the project need and purpose (i.e., population and employment statistics, existing transportation network information, and traffic projections) are provided in **Sections 1-2** and **1-3** of **Appendix 1-1.**

The primary goal of this Environmental Evaluation (EE) is to allow the NTTA and interested local government entities to preserve a route and associated ROW and drainage easements for the future DNT 4B/5A extension. This approach allows all interested parties to coordinate the eventual phased construction of the proposed facility with regional and municipal transportation and land use plans, thereby avoiding or minimizing future disruptions to residences or businesses when the NTTA authorizes construction of the tollway extension.

## Traffic Volumes

In considering the design for the proposed DNT 4B/5A, estimates for traffic volumes were obtained and are summarized in **Table 1-1** for selected segments of the proposed DNT 4B/5A. The average daily traffic (ADT) capacity of a rural freeway with six lanes (three lanes in each direction) as referenced by the North Central Texas Council of Governments' (NCTCOG) Metropolitan Transportation Plan (MTP)[2] ranges from 73,000 to 110,000 vehicles per day (vpd).

[2] *Mobility 2030 – 2009 Amendment*, Exhibit 17-4: System Warrants; see http://www.nctcog.org/trans/mtp/2030/2009Amendment.asp.

All of the proposed DNT 4B/5A mainlanes are projected to be under capacity. Additional detailed information regarding a 2010 traffic volume study is included in **Appendix 1-2.**

**Table 1-1. DNT 4B/5A Projected Traffic Volume Summary**

| Mainlane Segment | Estimated ADT for 2030 (vpd) | |
|---|---|---|
| | Northbound | Southbound |
| FM 428 to FM 455 | 10,600 | 10,600 |
| FM 455 to CR 60 | 4,800 | 4,800 |
| CR 60 to FM 121 | 2,700 | 2,700 |
| **SOURCE:** Traffic Study for DNT 4B/5A (Wilbur Smith Associates, Inc., September, 2010); see Appendix 1-2. | | |

## Alternatives Analysis

The development of alternatives for the future extension of the DNT into Grayson County has been underway for over a decade. Multiple DNT 4B/5A alternative alignments were developed in the initial corridor studies for Collin County and Grayson counties in 2000 (see detailed discussion of these studies in **Appendix 1-1**). One of those alignments, which follows the Collin/Denton county line throughout most of its length, was approved in January 2005 in resolutions adopted by both Collin County and Denton County commissioners courts. Subsequently in 2008 and 2009, this county line alignment was adopted in similar resolutions by the cities of Gunter and Pilot Point and by the Grayson County Commissioners Court. In 2008, however, Collin County rescinded its resolution endorsing the county line alignment as its preferred route. A copy of these county and city resolutions pertaining to the proposed DNT 4B/5A alignment are included in **Appendix 5-2**.

The NTTA has worked with county and city elected officials and their staffs, as well as the public, in the development and evaluation of various alignment alternatives. In stakeholder meetings held from October 2009 to May 2010, the NTTA met with civic leaders and staff to report on the progress of adapting the proposed DNT 4B/5A design to meet local needs and to receive recommendations from stakeholders. This process resulted in the identification of three conceptual Build Alternatives for the proposed facility (**Table 1-2** and **Appendix 1-1**, **Figure 2-1**). Two public meetings were held on March 9 and March 11, 2010 to provide information to members of the community and receive community/stakeholder feedback via the comment process regarding the proposed Build Alternatives.

**Table 1-2. DNT 4B/5A Conceptual Build Alternatives**

| Build Alternative | Description |
|---|---|
| Green (West) | Travels northwest to Pilot Point; connects to US 377 |
| Yellow-Red (Middle) | Southern portion follows Collin/Denton county line; connects to FM 121 |
| Orange-Red (East) | Southern portion is all within Collin County; connects to FM 121 |

All aspects of this study were facilitated by initially preparing digital constraints maps of natural resources and man-made features (see **Exhibits 1-6** and **1-7**) that both guided the routing of alternative tollway alignments and served as the basis for comparing and evaluating the

alternatives. These constraints maps were used by project stakeholders in developing the Build Alternatives that were evaluated, in addition to the No-Build Alternative. An evaluation matrix was utilized to compare the specific design characteristics and estimated costs associated with each alternative, as well as socioeconomic impacts, environmental impacts, level of stakeholder and community support, and compatibility with existing regional transportation planning. In addition to the above major evaluation factors, conceptual level traffic projections for the alternatives were analyzed but found to be comparable for all Build Alternatives based on available data. The alternatives analysis indicated all proposed Build Alternatives would likely result in commercial development along frontage roads, yielding potential economic benefits including new jobs and a general increase in community commerce, real estate values, and tax revenues. A copy of the Conceptual Alternatives Evaluation Report for the proposed DNT 4B/5A is included as **Appendix 1-1**.

After further briefings by staff and local government stakeholders, the NTTA Board approved a resolution July 21, 2010, to move forward with the schematic design and environmental evaluation of the Yellow-Red (Middle) or county line alignment Build Alternative (**Appendix 1-1**, **Page 2**). Final selection of a preferred alternative by the NTTA Board will occur after the engineering and environmental studies have been finalized; all stakeholder and public comments have been evaluated; and feasibility studies have been concluded.

**ROW/Easements and Utilities**

Approximately 583.5 acres of ROW and 33.9 acres of drainage easements would be required to construct the proposed DNT 4B/5A. This includes approximately 28 acres of existing road ROW, which would not need to be acquired. The remaining 589.4 acres of combined ROW and easements would be acquired from 17 different land owners along the proposed Build Alternative alignment (see **Exhibit 1-4**, and **Appendix 1-1**, **Pages 87-90**). The proposed DNT 4B/5A would have a typical ROW width of 400 feet, would not require any displacements of commercial or residential structures, and would not affect any public land or facilities other than existing public roads.

Utilities such as water lines, sewer lines, gas lines, telephone and fiber optic cables, electrical lines, and other subterranean and aerial utilities may require minor adjustments as a result of the proposed DNT 4B/5A. Other than potential temporary interruptions in service, no adverse impacts (i.e., termination of service or long-term interruptions) to utilities, such as electrical, gas, phone, water, or sewer are expected to occur from the construction of the proposed DNT 4B/5A. Schedules for any utility adjustments would be closely coordinated to minimize disruptions and inconvenience to the utility customers.

**Construction Phasing**

Construction of the frontage roads for the proposed DNT 4B/5A would occur first, followed by the mainlanes. Detailed plans for construction phasing have not been developed to date. However, as the proposed DNT 4B/5A is on new location, detours and complex construction sequencing are not anticipated.

**Exhibits:**

Exhibit 1-1: Regional Context of the Proposed Project
Exhibit 1-2: Project Vicinity Map
Exhibit 1-3: Proposed Typical Cross-Sections
Exhibit 1-4: Plan View of Project Design Features
Exhibit 1-5: Project Area Ground Photographs
Exhibit 1-6: Constraints Map: Natural Features
Exhibit 1-7: Constraints Map: Man-Made Features

**Appendices:**

Appendix 1-1: Conceptual Alternatives Evaluation Report
Appendix 1-2: Traffic Analysis for Highway Design

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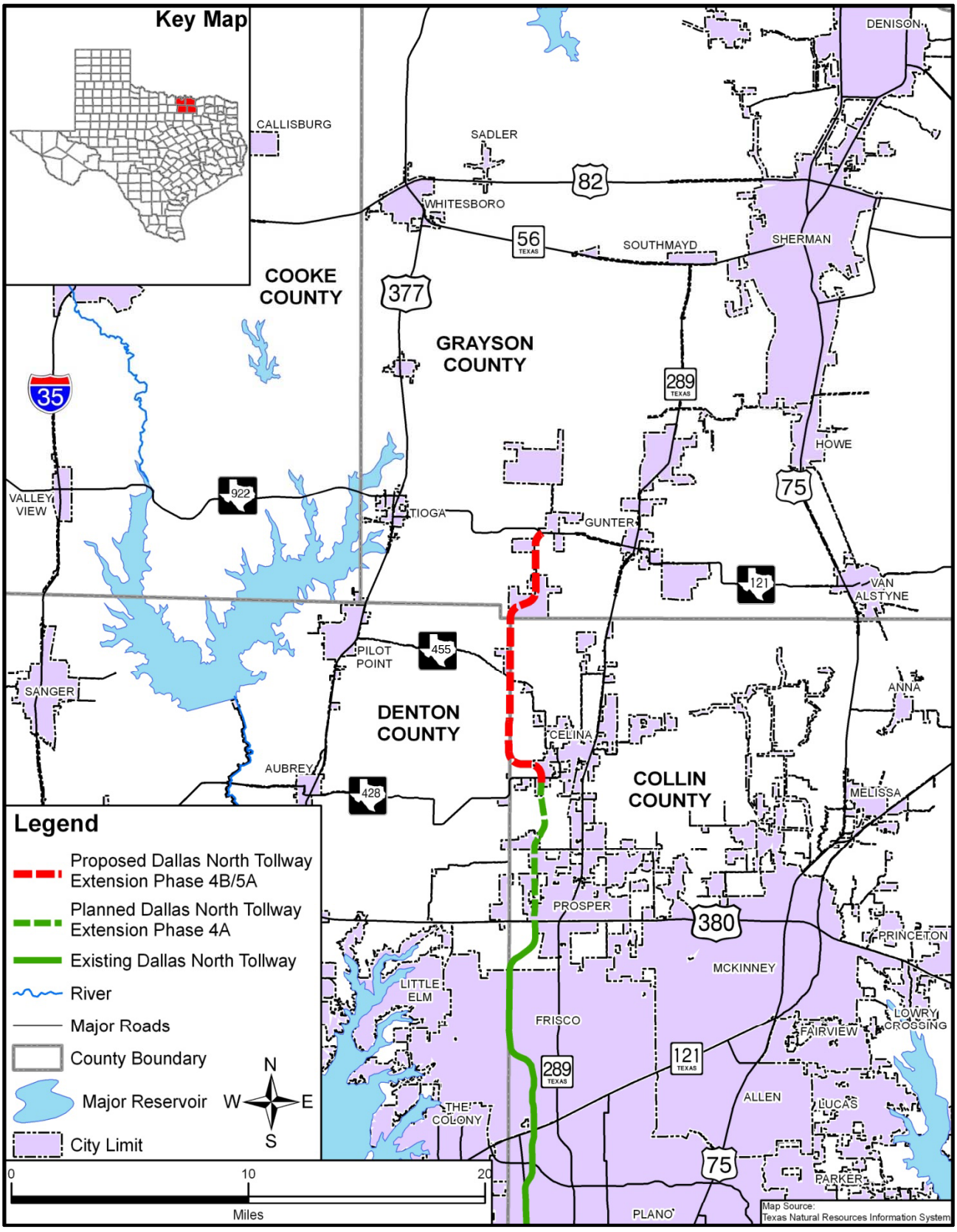
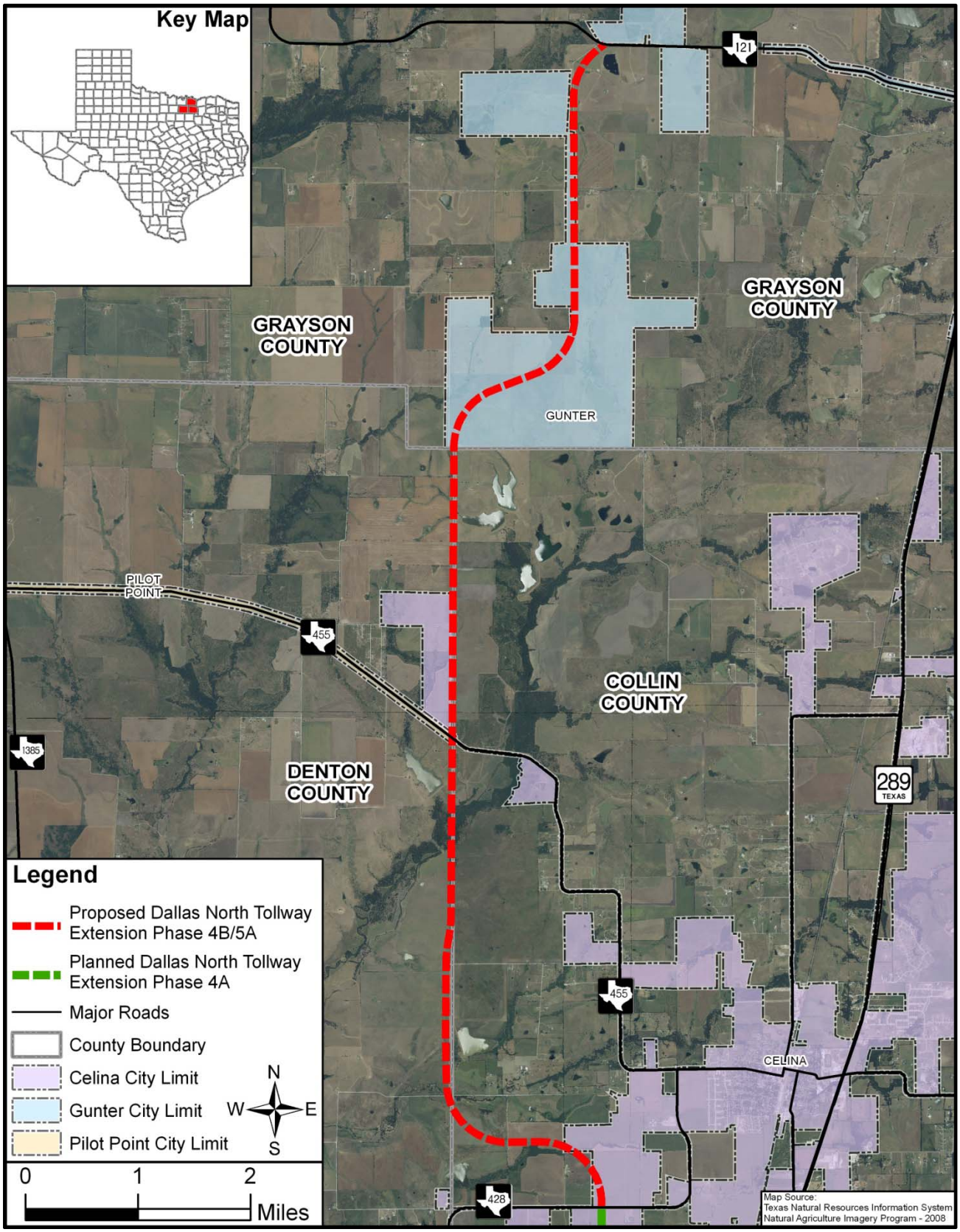



## Regional Context of the Proposed Project

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

NTTA NORTH TEXAS TOLLWAY AUTHORITY

Exhibit 1-1

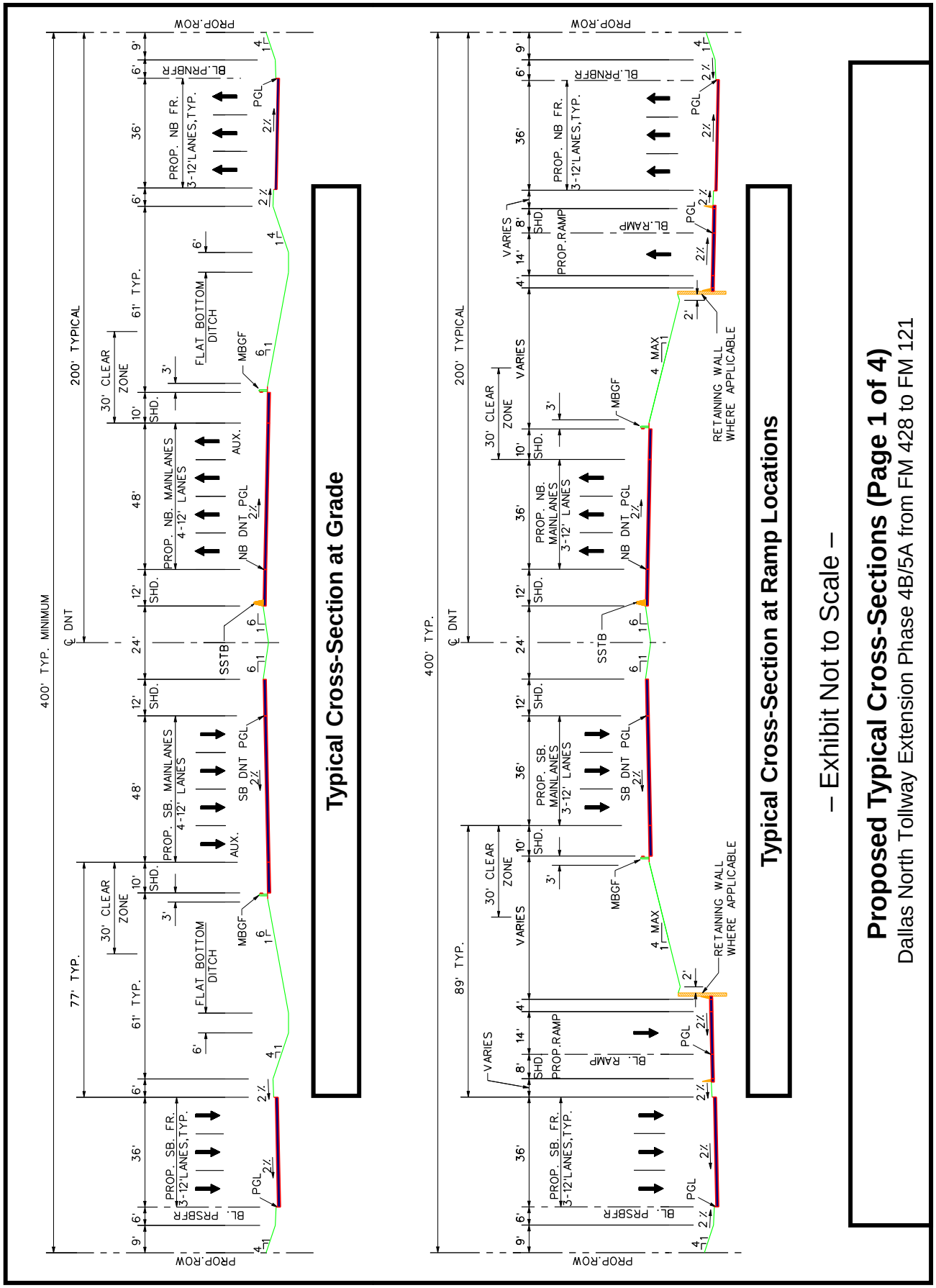


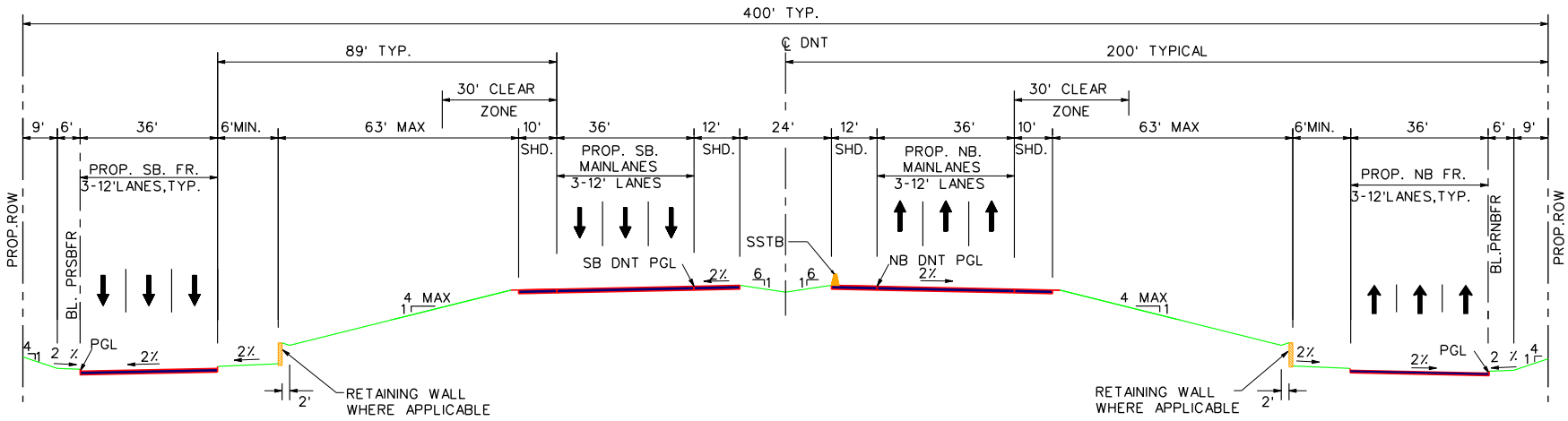

**Project Vicinity Map**

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

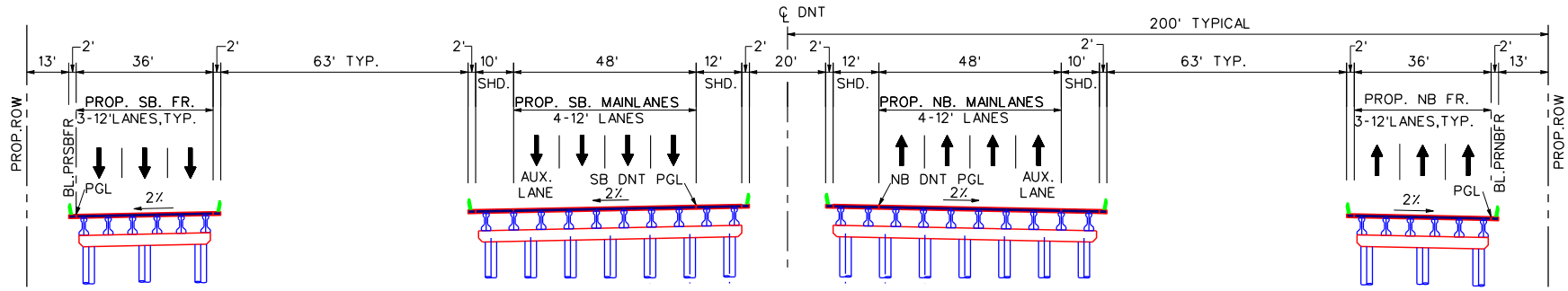
Exhibit 1-2

NTTA NORTH TEXAS TOLLWAY AUTHORITY


Typical Cross-Section at Grade
Typical Cross-Section at Ramp Locations
– Exhibit Not to Scale –
Proposed Typical Cross-Sections (Page 1 of 4)
Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121
Exhibit 1-3, Page 1




**Typical Cross-Section near Intersections**

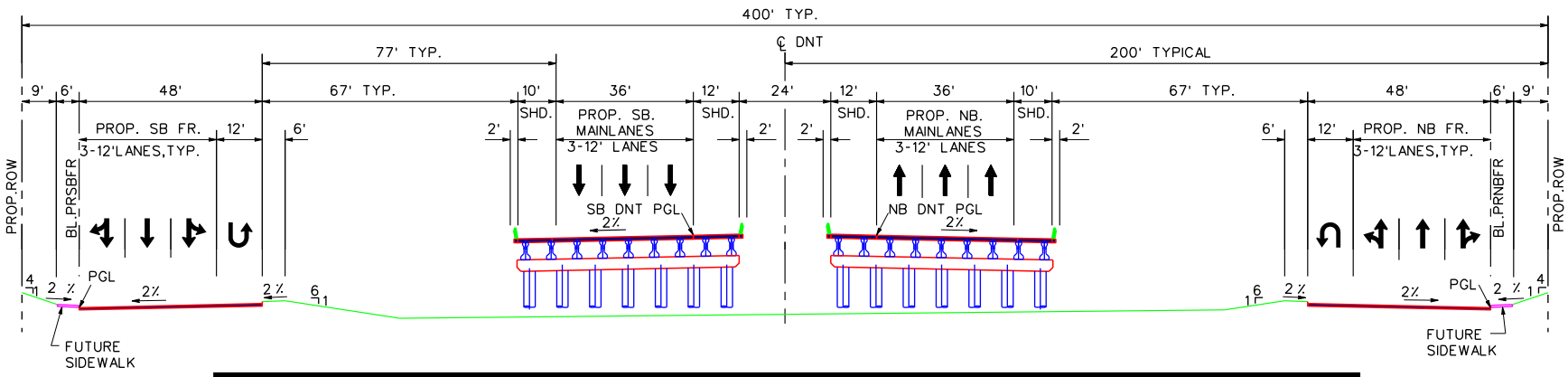



**Typical Bridge Cross-Section over Water**

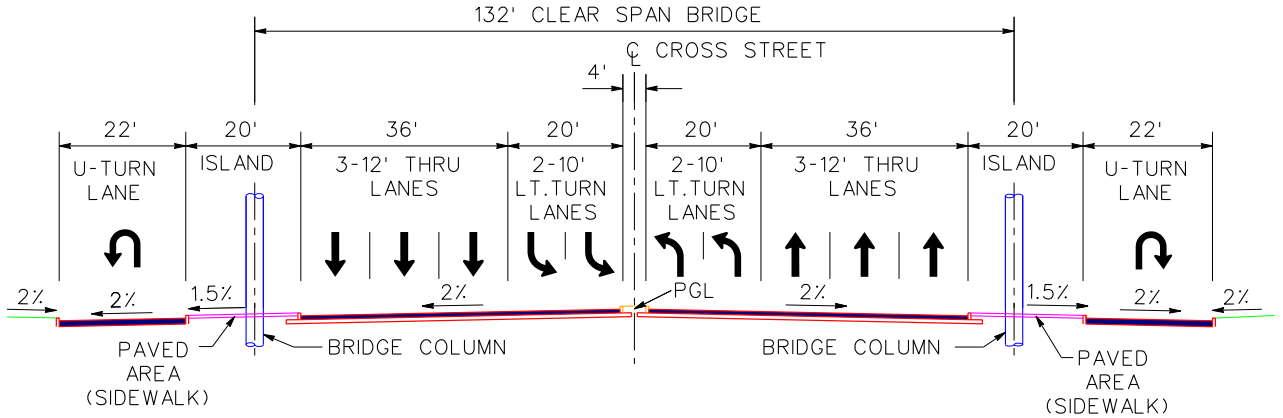
– Exhibit Not to Scale –

## Proposed Typical Cross-Sections (Page 2 of 4)

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121




**Typical Bridge Cross-Section at Intersections**




**Typical Cross-Section for Streets Crossing under DNT 4B/5A**

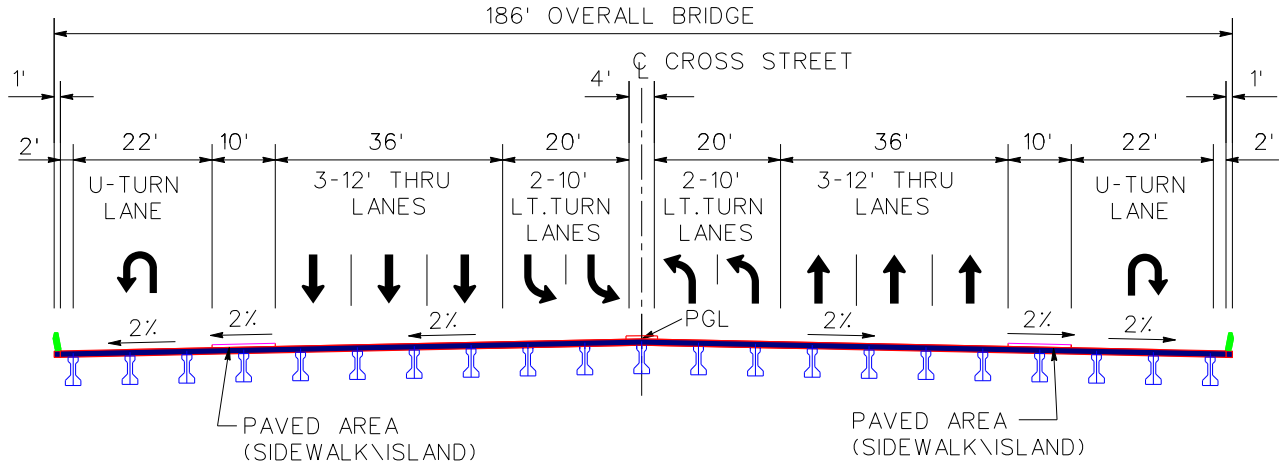
– Exhibit Not to Scale –

## Proposed Typical Cross-Sections (Page 3 of 4)

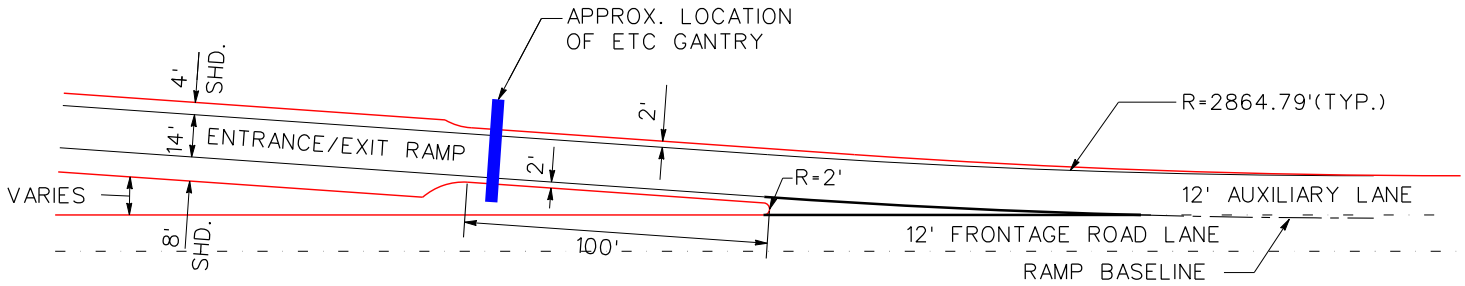
Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121



Exhibit 1-3, Page 3




**Typical Cross Street Overpass of DNT 4B/5A**
**(Occurs at these intersections: CR 54, FM 455, and Stiff Chapel Road)**




**Typical Ramp Frontage Road Gore and Toll Gantry Location**

– Exhibit Not to Scale –

## Proposed Typical Cross-Sections (Page 4 of 4)

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

# Index

## to Plan View Design Maps (Pages 2 – 13)

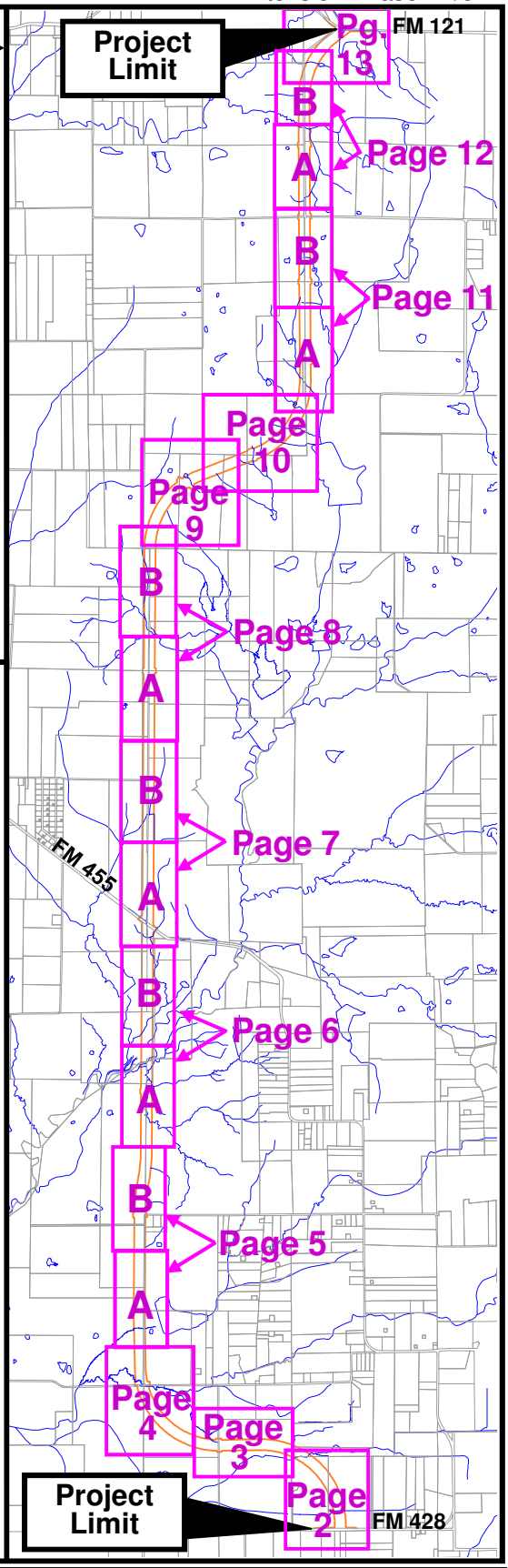
The purple frames in the map index outline areas covered by individual maps in Pages 2 – 13 of this exhibit.

The proposed right-of-way (ROW) is shown in orange.

Major streams and lakes/ponds (blue), property boundaries (gray), and major road names are also shown for reference.

The index diagram is not to scale.

**Notes:** The design maps on pages 2 – 13 of this exhibit show only the main proposed design features; please see project schematic for design details.



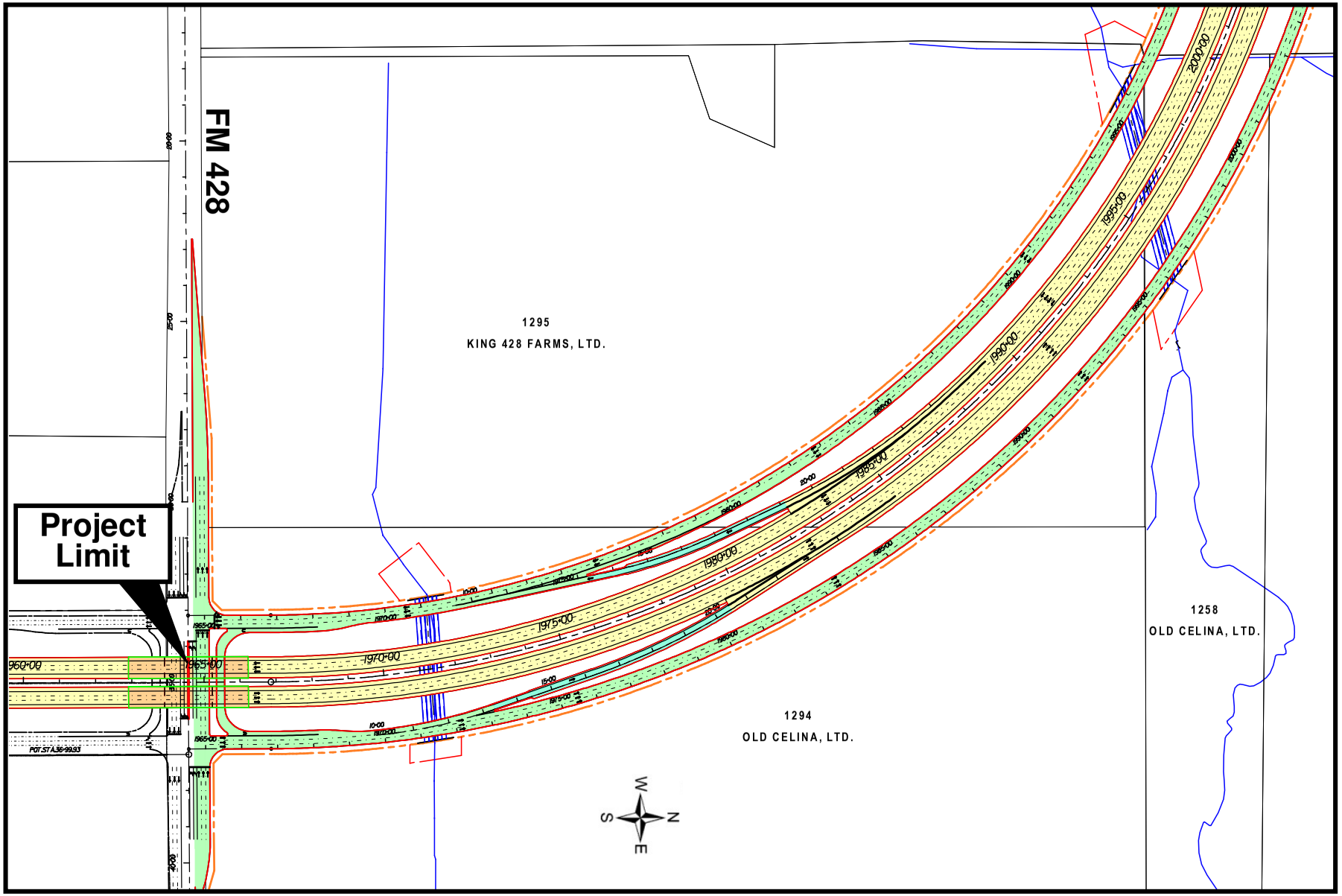

# Legend

## for Plan View Design Maps

- Proposed right-of-way
- Proposed drainage easement
- Existing right-of-way
- Proposed main lanes
- Proposed ramps
- Proposed frontage roads
- Proposed cross street bridge
- Proposed DNT 4B/5A bridge
- Proposed storm drainage
- Stream channel or pond/lake outline
- Property parcel boundary


**Plan View of Project Design Features (Map Index and Legend)**

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121



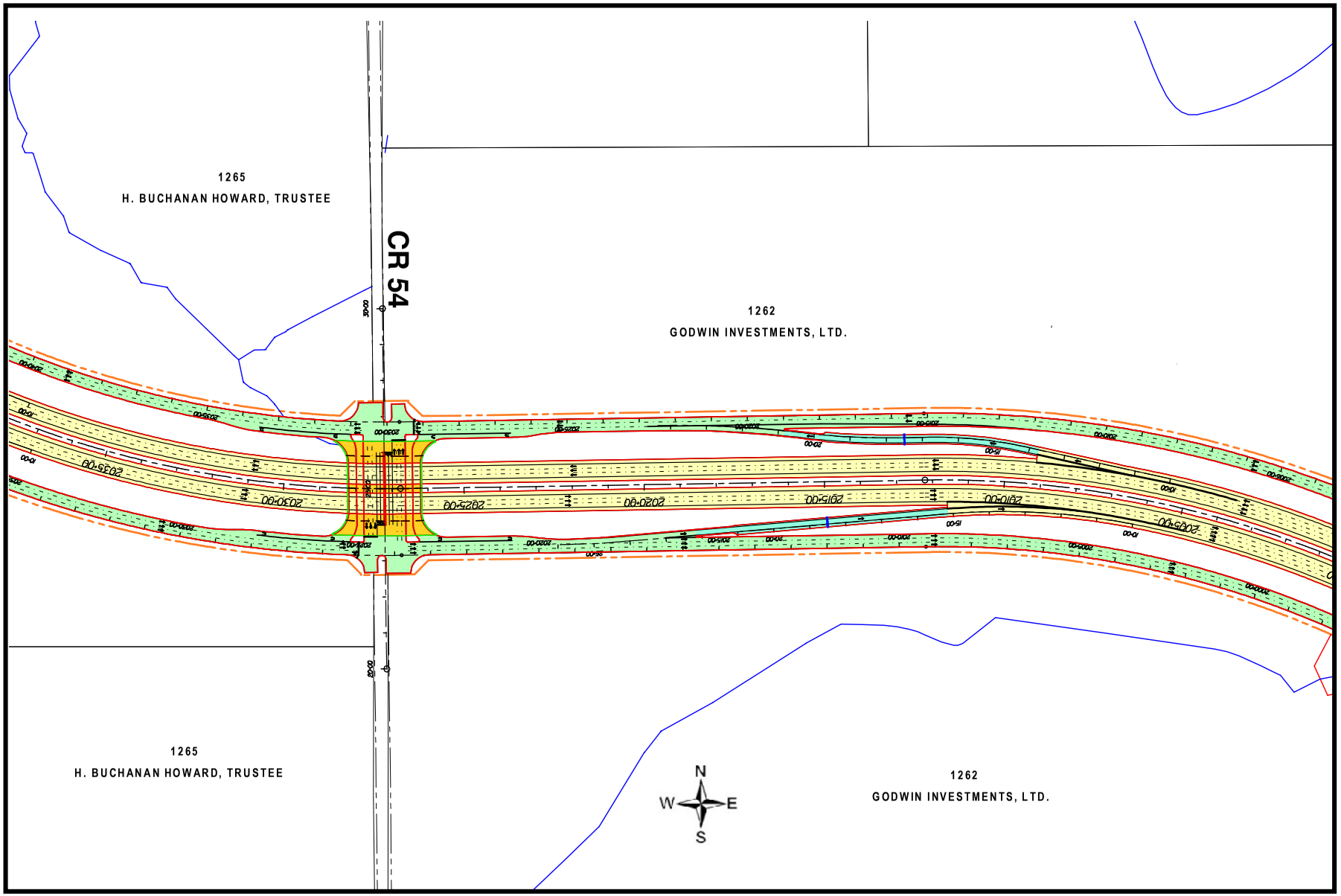

**NOTES:**

1. Legend is shown in Exhibit 1-4, Page 1.
2. Map shows main proposed design features; see project schematic for design details.

0 100' 200' 400' 600' 800'

## Plan View of Project Design Features
**(Page 2 of 13)**

DNT Extension Phase 4B/5A from FM 428 to FM 121

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0 100' 200' 400' 600' 800'

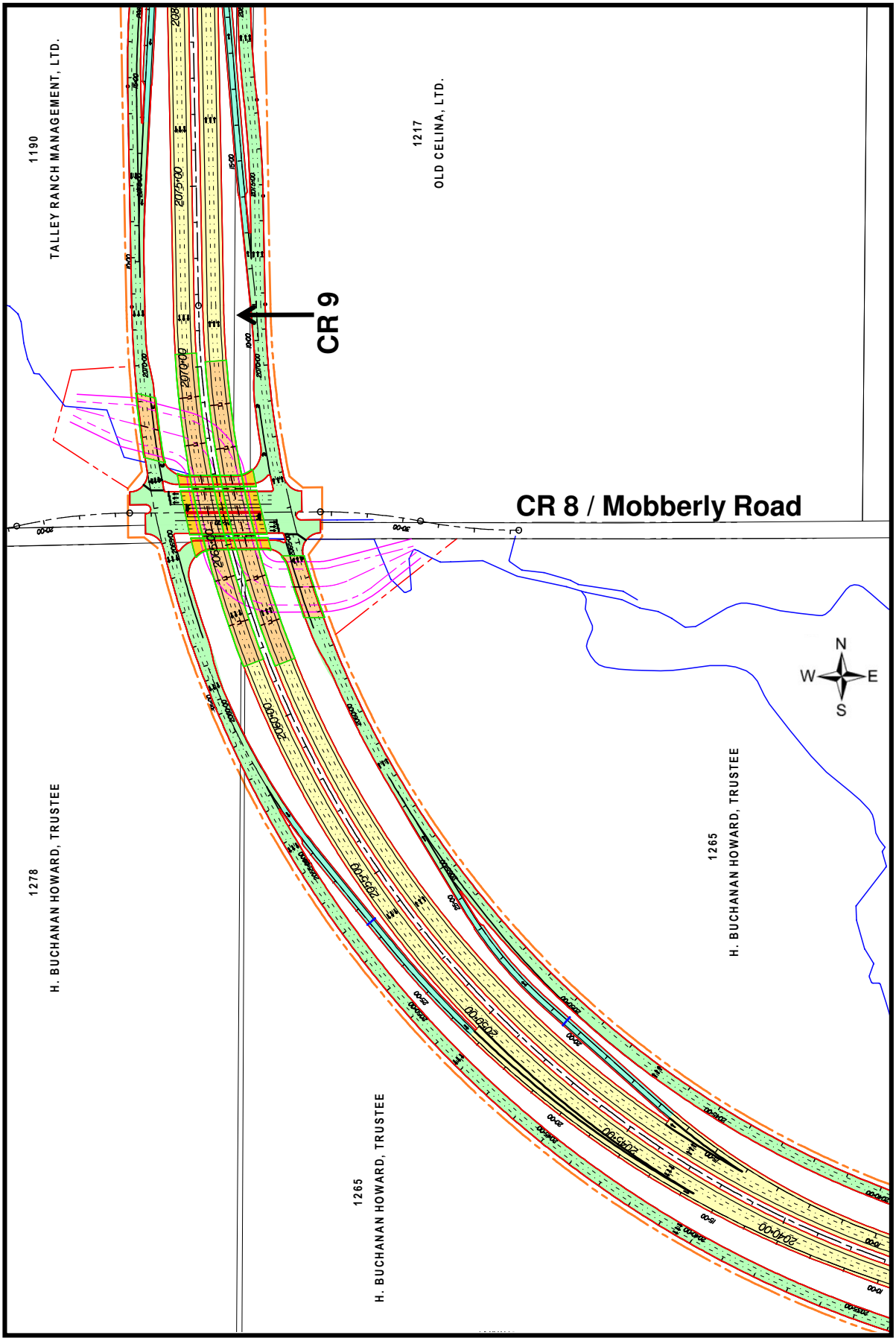
## Plan View of Project Design Features
**(Page 3 of 13)**

DNT Extension Phase 4B/5A from FM 428 to FM 121





Exhibit 1-4, Page 3




**Plan View of Project Design Features**
**(Page 4 of 13)**
DNT Extension Phase 4B/5A from FM 428 to FM 121

**NOTES:**
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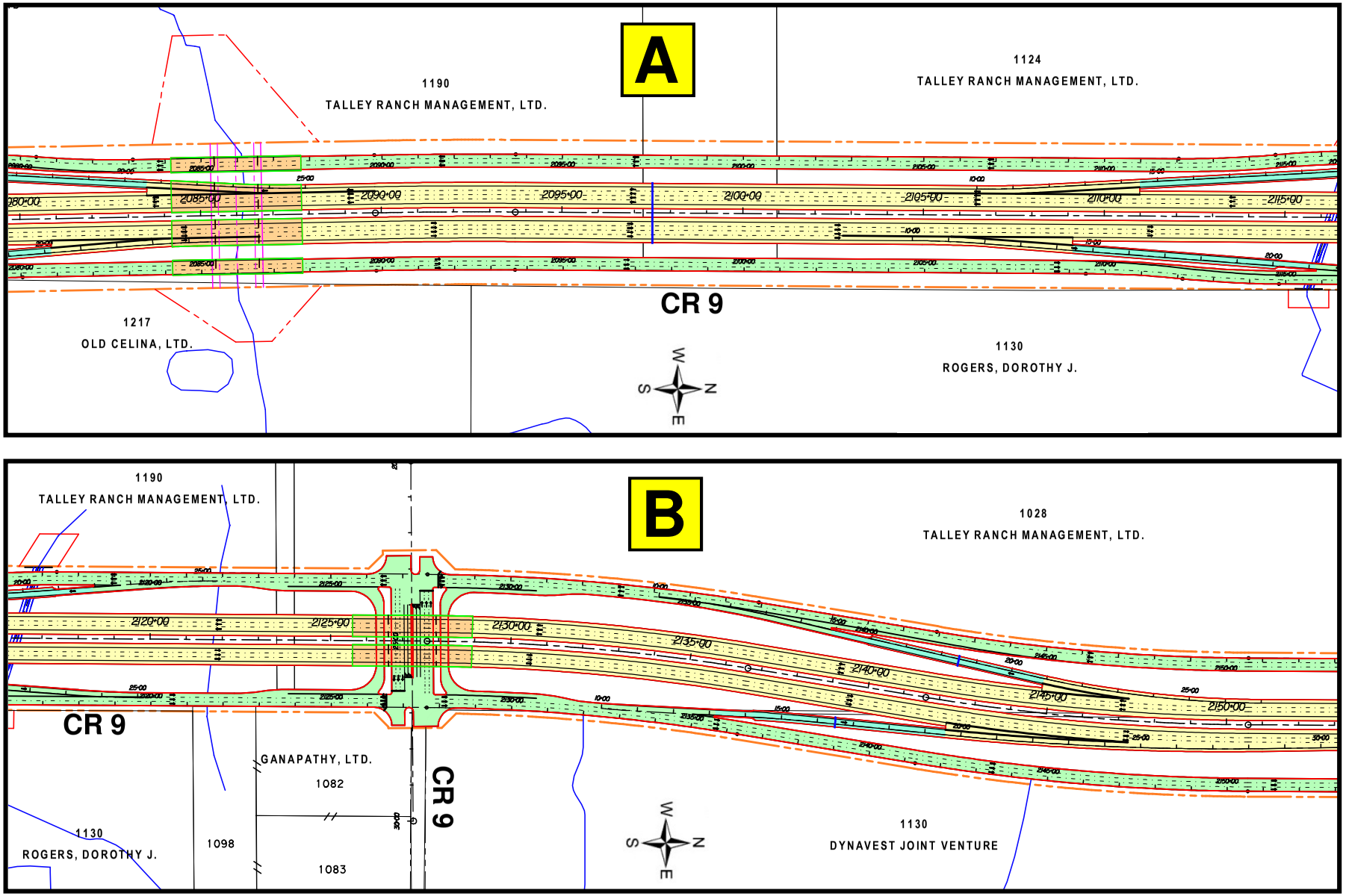
Exhibit 1-4, Page 4



NTTA NORTH TEXAS TOLLWAY AUTHORITY




0 100' 200' 400' 600' 800'

**NOTES:**

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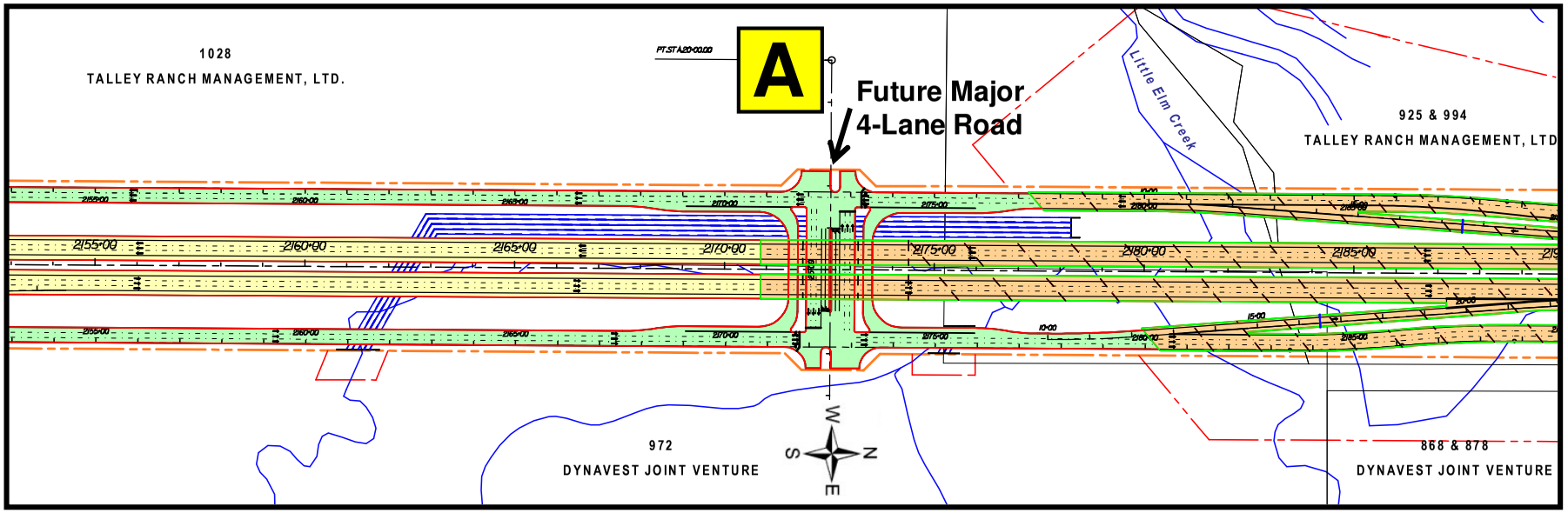
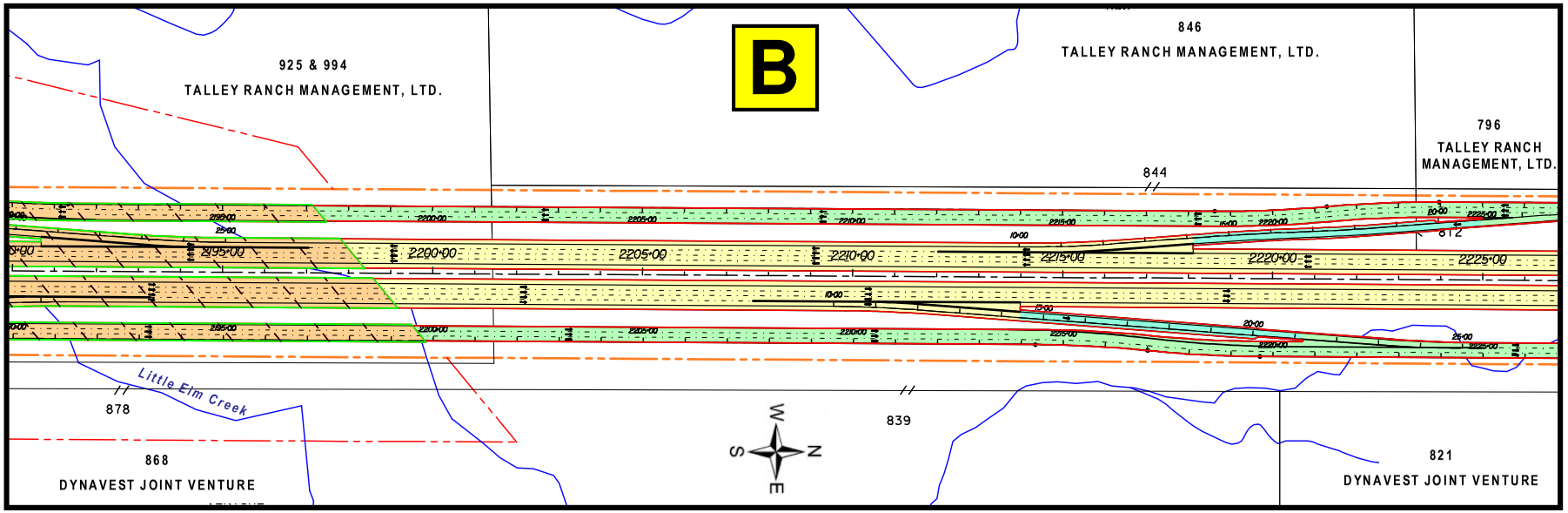
## Plan View of Project Design Features
**(Page 5 of 13)**

DNT Extension Phase 4B/5A from FM 428 to FM 121




0 100' 200' 400' 600' 800'

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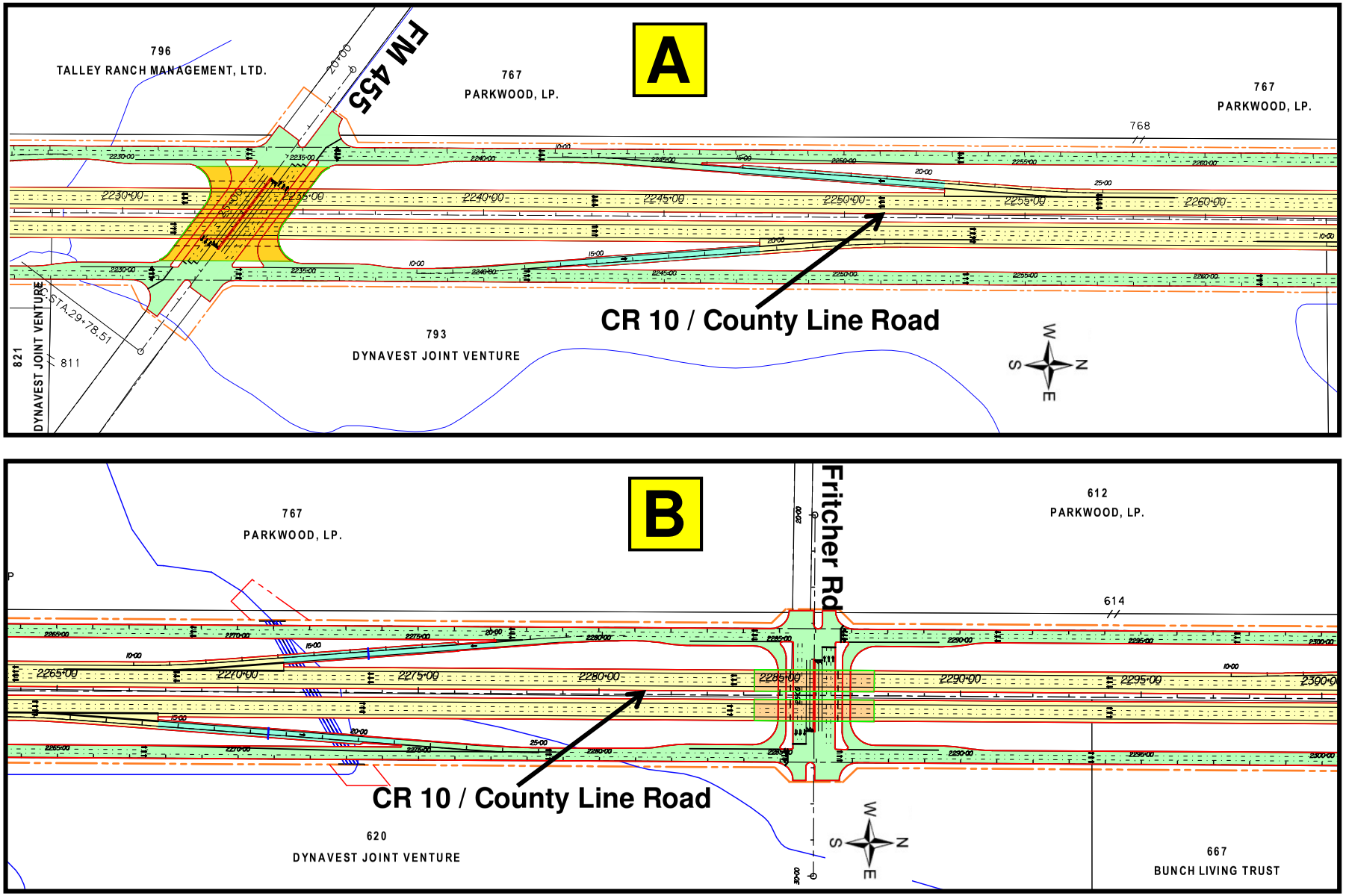
## Plan View of Project Design Features
**(Page 6 of 13)**

DNT Extension Phase 4B/5A from FM 428 to FM 121




0 100' 200' 400' 600' 800'

**NOTES:**

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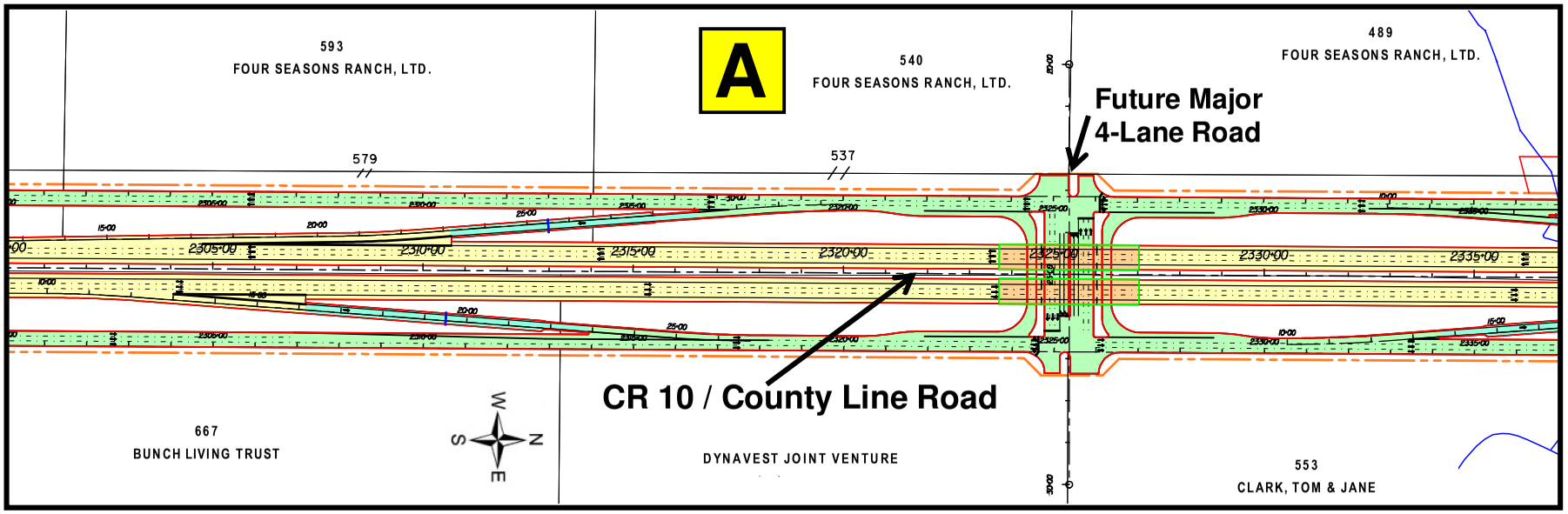
## Plan View of Project Design Features
**(Page 7 of 13)**

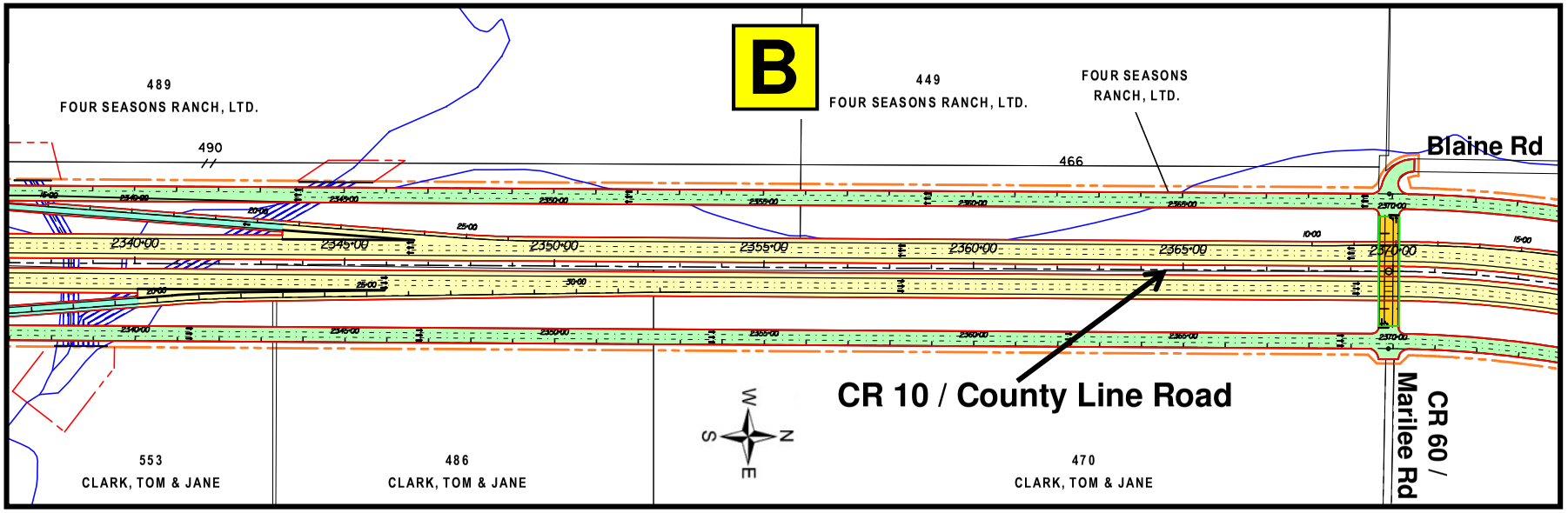
DNT Extension Phase 4B/5A from FM 428 to FM 121





Exhibit 1-4, Page 7




0 100’ 200’ 400’ 600’ 800’

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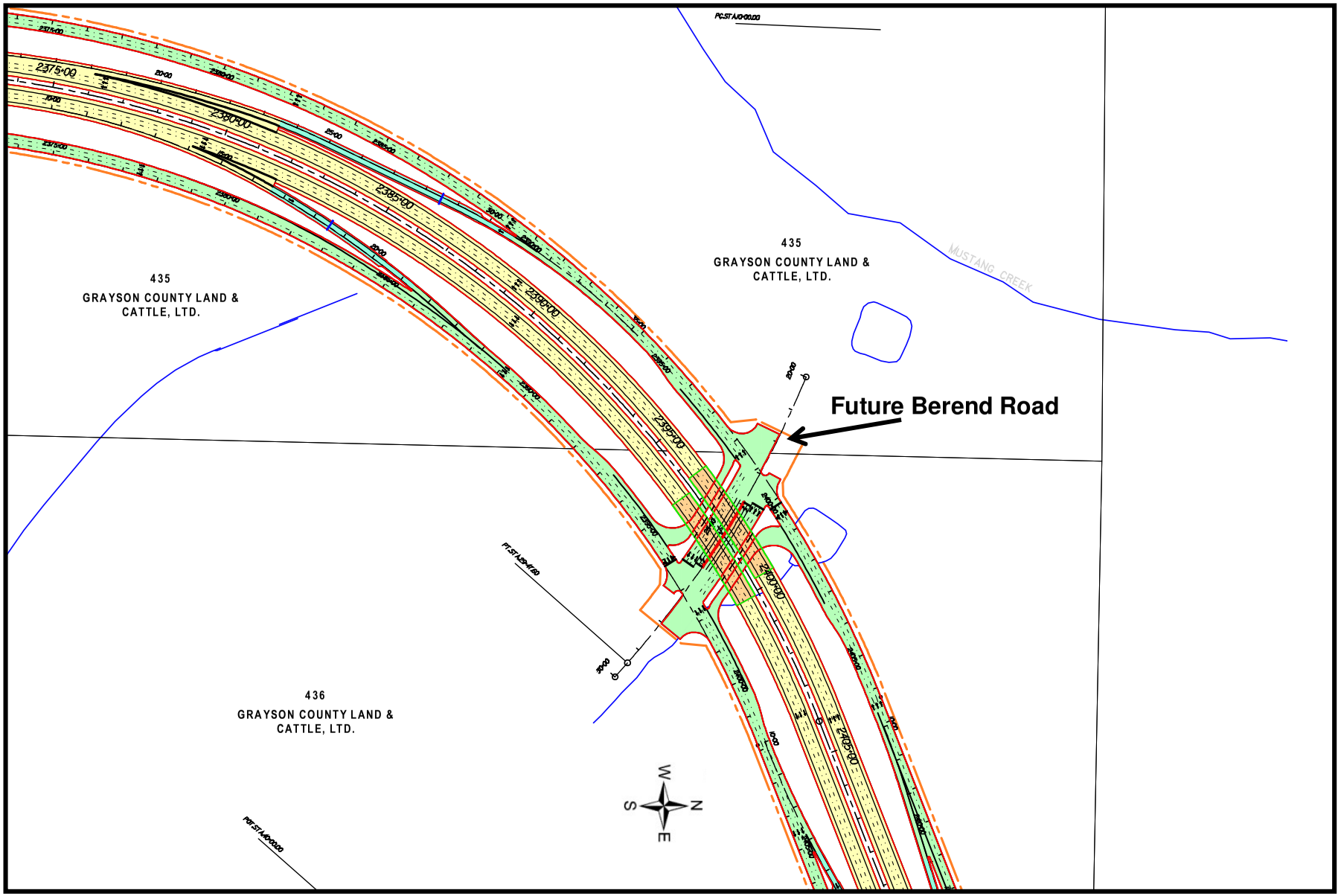
## Plan View of Project Design Features
**(Page 8 of 13)**

DNT Extension Phase 4B/5A from FM 428 to FM 121

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0 100' 200' 400' 600' 800'

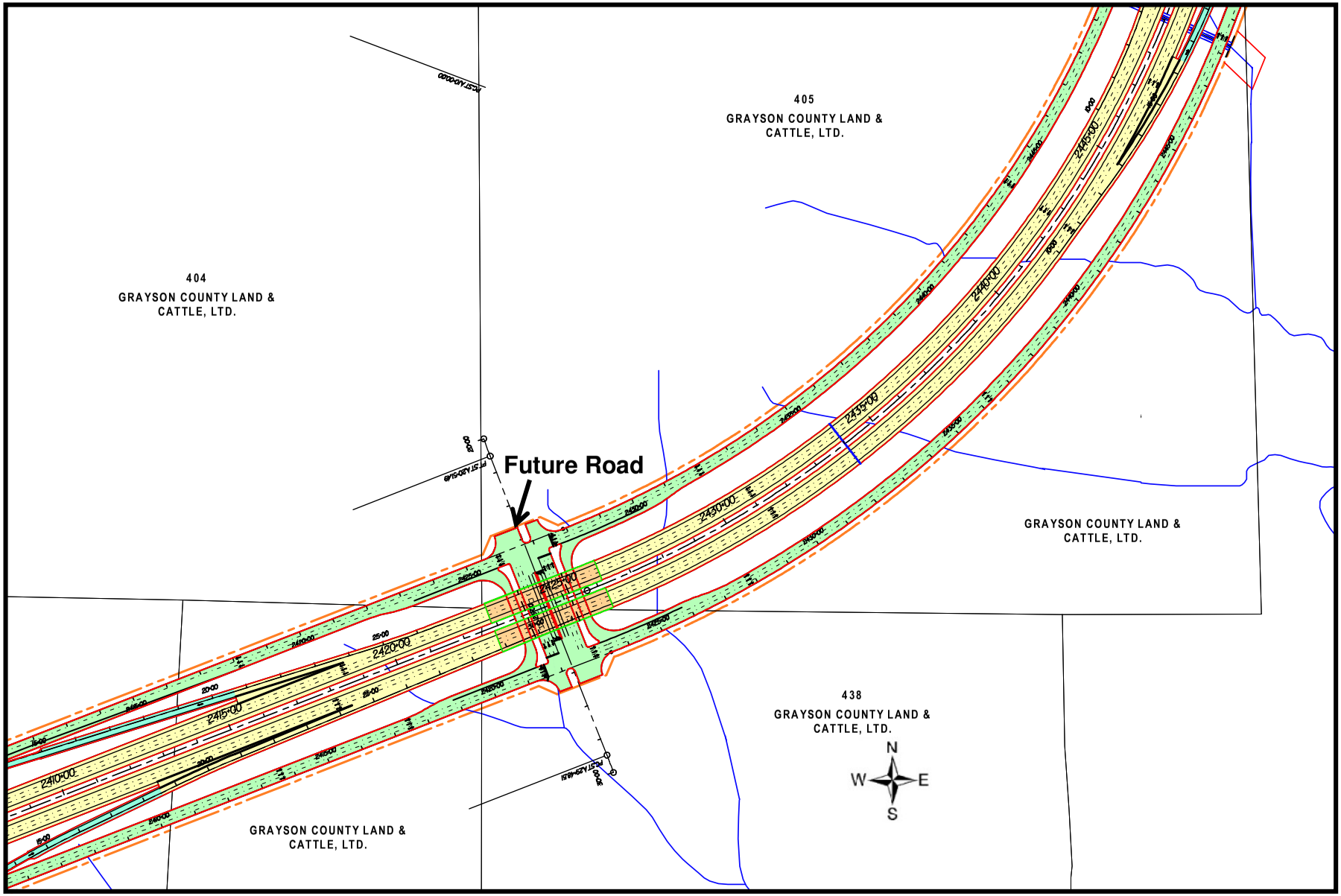
## Plan View of Project Design Features
**(Page 9 of 13)**

DNT Extension Phase 4B/5A from FM 428 to FM 121





Exhibit 1-4, Page 9



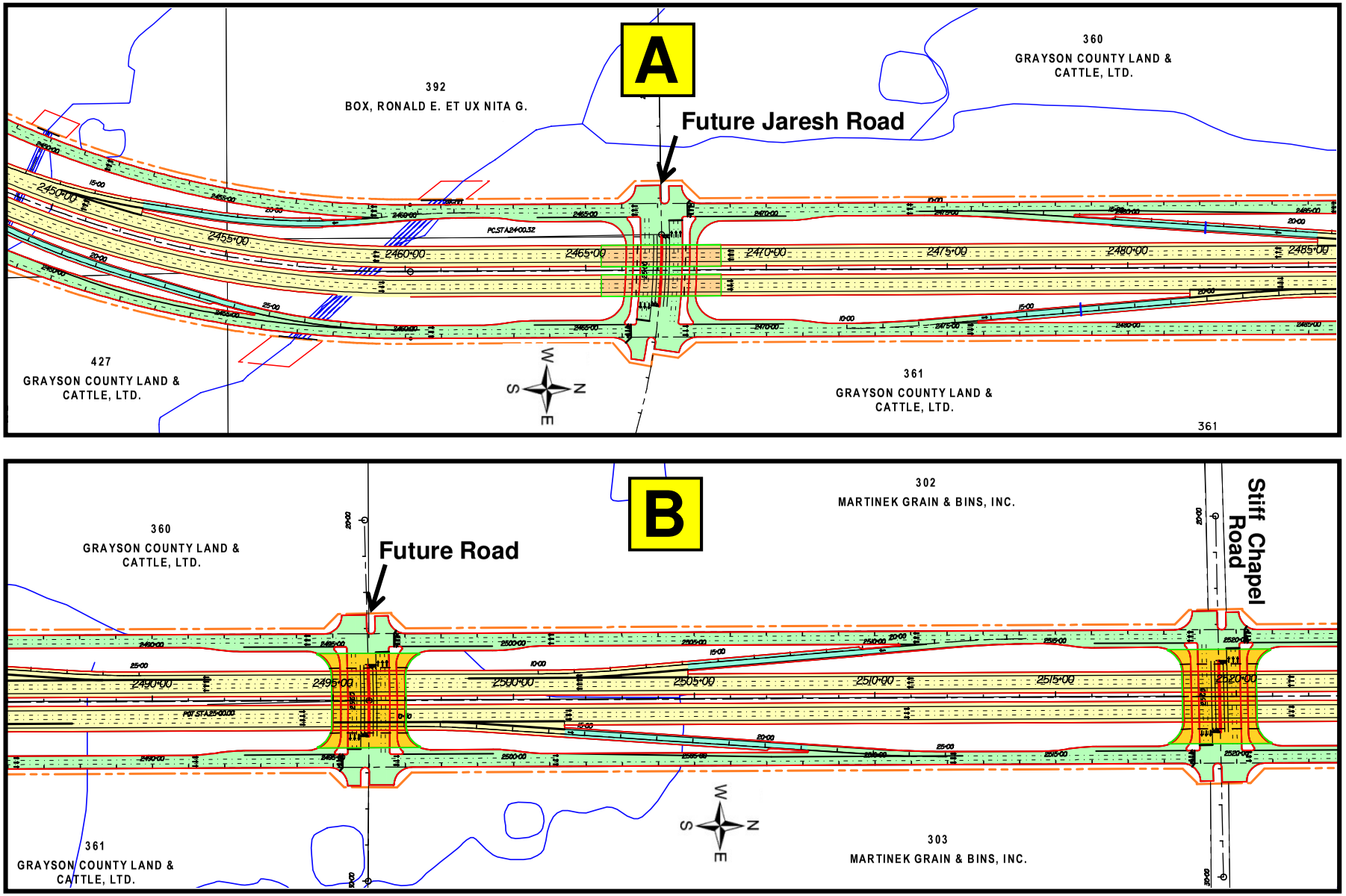

**NOTES:**

1. Legend is shown in Exhibit 1-4, Page 1.
2. Map shows main proposed design features; see project schematic for design details.

0 100' 200' 400' 600' 800'

## Plan View of Project Design Features
**(Page 10 of 13)**

DNT Extension Phase 4B/5A from FM 428 to FM 121




**NOTES:**

1. Legend is shown in Exhibit 1-4, Page 1.
2. Map shows main proposed design features; see project schematic for design details.

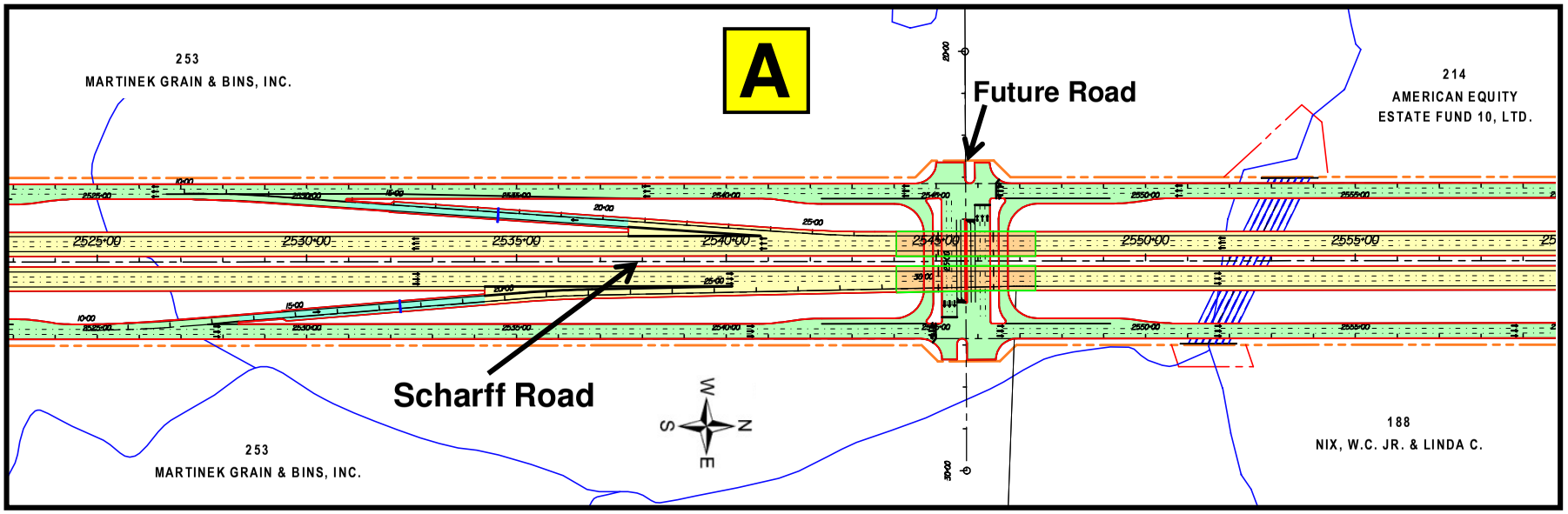
## Plan View of Project Design Features
**(Page 11 of 13)**

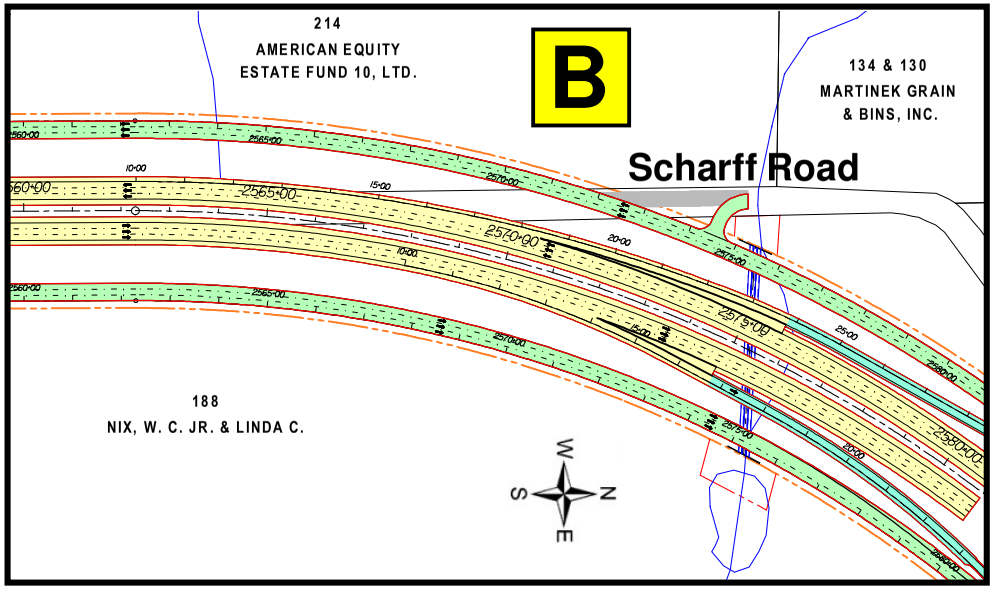
DNT Extension Phase 4B/5A from FM 428 to FM 121





Exhibit 1-4, Page 11



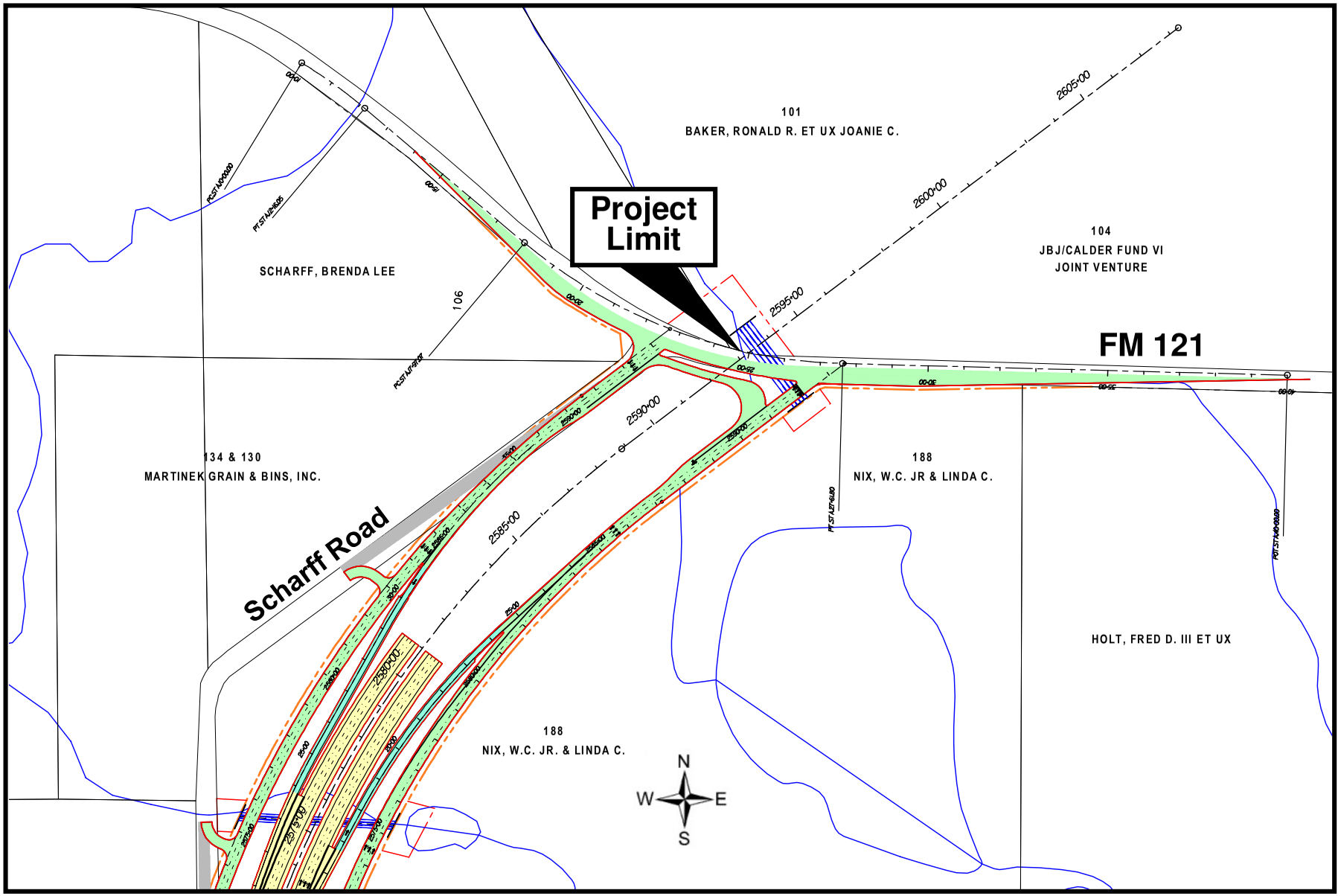

0 100' 200' 400' 600' 800'

**NOTES:**

1. Legend is shown in Exhibit 1-4, Page 1.
2. Map shows main proposed design features; see project schematic for design details.

## Plan View of Project Design Features
**(Page 12 of 13)**

DNT Extension Phase 4B/5A from FM 428 to FM 121




**NOTES:**

1. Legend is shown in Exhibit 1-4, Page 1.
2. Map shows main proposed design features; see project schematic for design details.

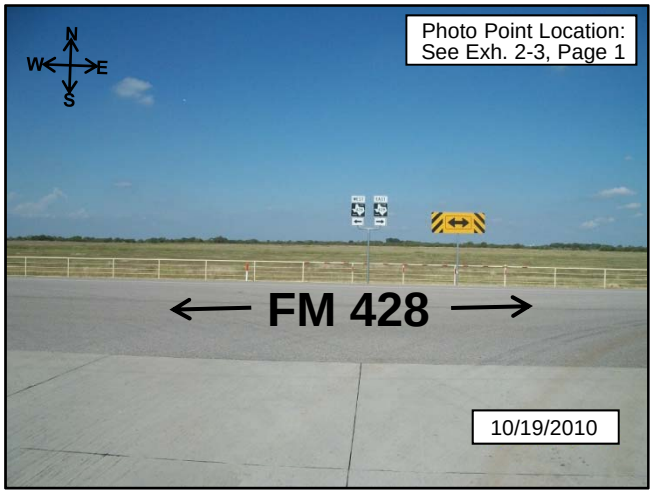
0 100' 200' 400' 600' 800'

## Plan View of Project Design Features
**(Page 13 of 13)**

DNT Extension Phase 4B/5A from FM 428 to FM 121

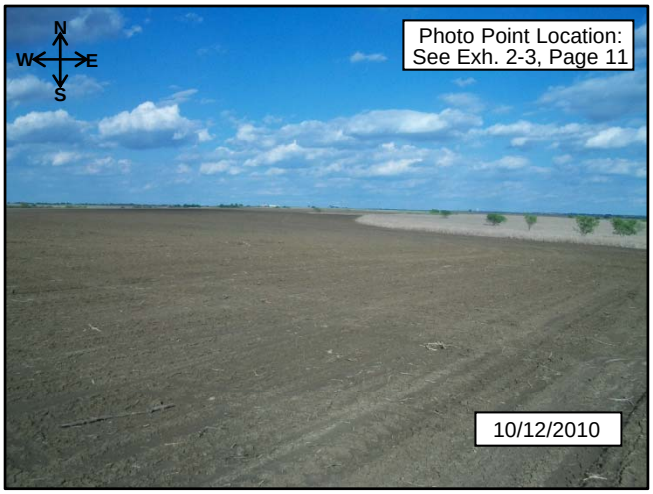


Exhibit 1-4, Page 13

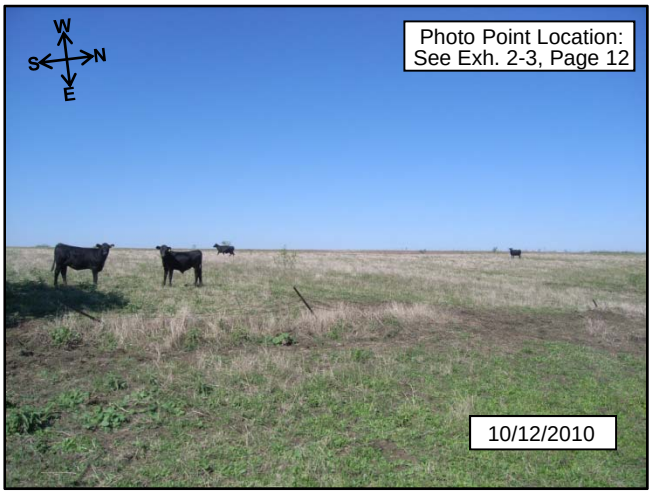



Photograph 1. Southern terminus of the proposed project in Collin County, at the intersection of FM 428 and the Dallas Parkway (future DNT Phase 4A) to the south.


Photograph 2. Northern terminus of the proposed project in Grayson County, at the intersection with Scharff Road.

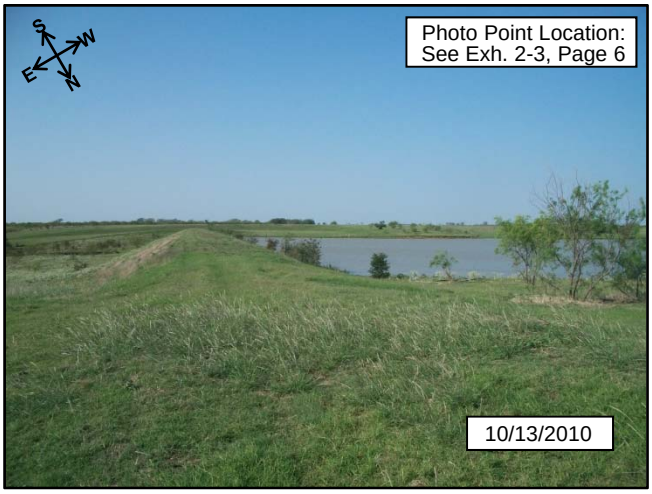



Photograph 3. Cropland representative of pervasive agricultural land use within the study area, showing a field of harvested grain sorghum.




Photograph 4. Livestock pasture typical throughout the project area is predominantly non-native grasses.


Photograph 5. This field of King Ranch bluestem is representative of non-native grass hay meadows within the project area.




Photograph 6. This is the impoundment and reservoir for one of the two NRCS flood control lakes near the proposed project.

## Project Area Ground Photographs

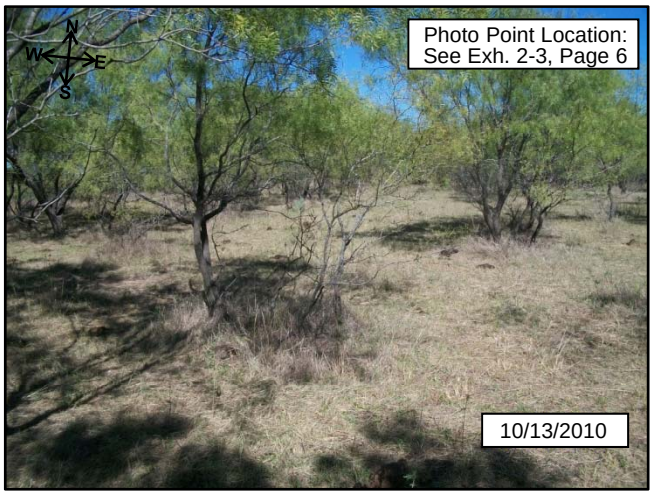
Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

**See Exhibit 2-3 for the Locations of Photo Points**

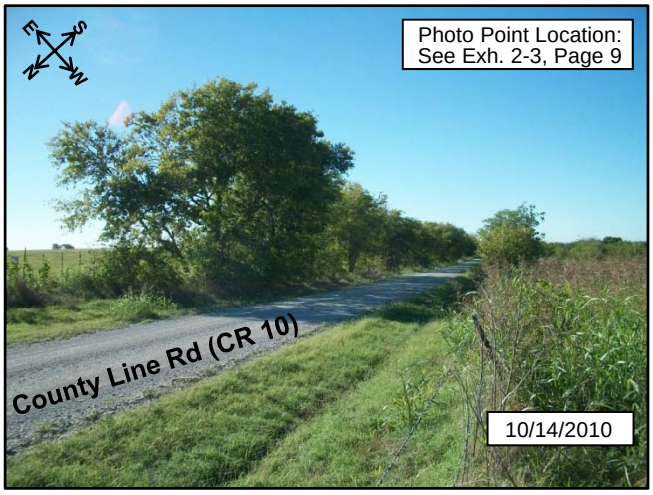

Photograph 7. Typical view of Little Elm Creek and associated riparian forests within the project area, the only stream crossing the project that flows year round.


Photograph 8. View of emergent wetland within the Little Elm Creek floodplain, which is dominated by ravenfoot sedge and typical of four more floodplain wetlands nearby.

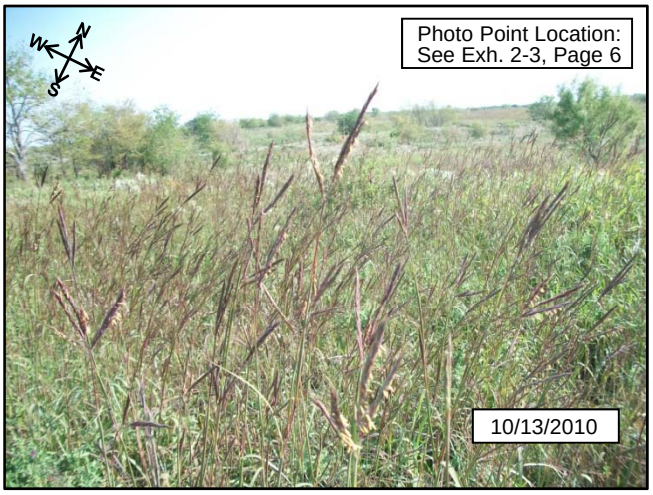

Photograph 9. Riparian forests within the Little Elm Creek floodplain (Woodland Data Point 4) are typically dominated by cedar elm and other hardwood trees.




Photograph 10. Agricultural clearing has removed nearly all upland forests except where woody plants move into pastures (e.g., mesquite trees in Woodland Data Point 7).




Photograph 11. Typical hackberry dominated fencerows occur throughout the project corridor, primarily along roadsides such as this.




Photograph 12. Small areas of native tallgrass prairie, such as this patch of big bluestem, occur south of FM 455. Such prairie remnants are quite rare in the area.

## Project Area Ground Photographs

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

**See Exhibit 2-3 for the Locations of Photo Points**



NTTA NORTH TEXAS TOLLWAY AUTHORITY

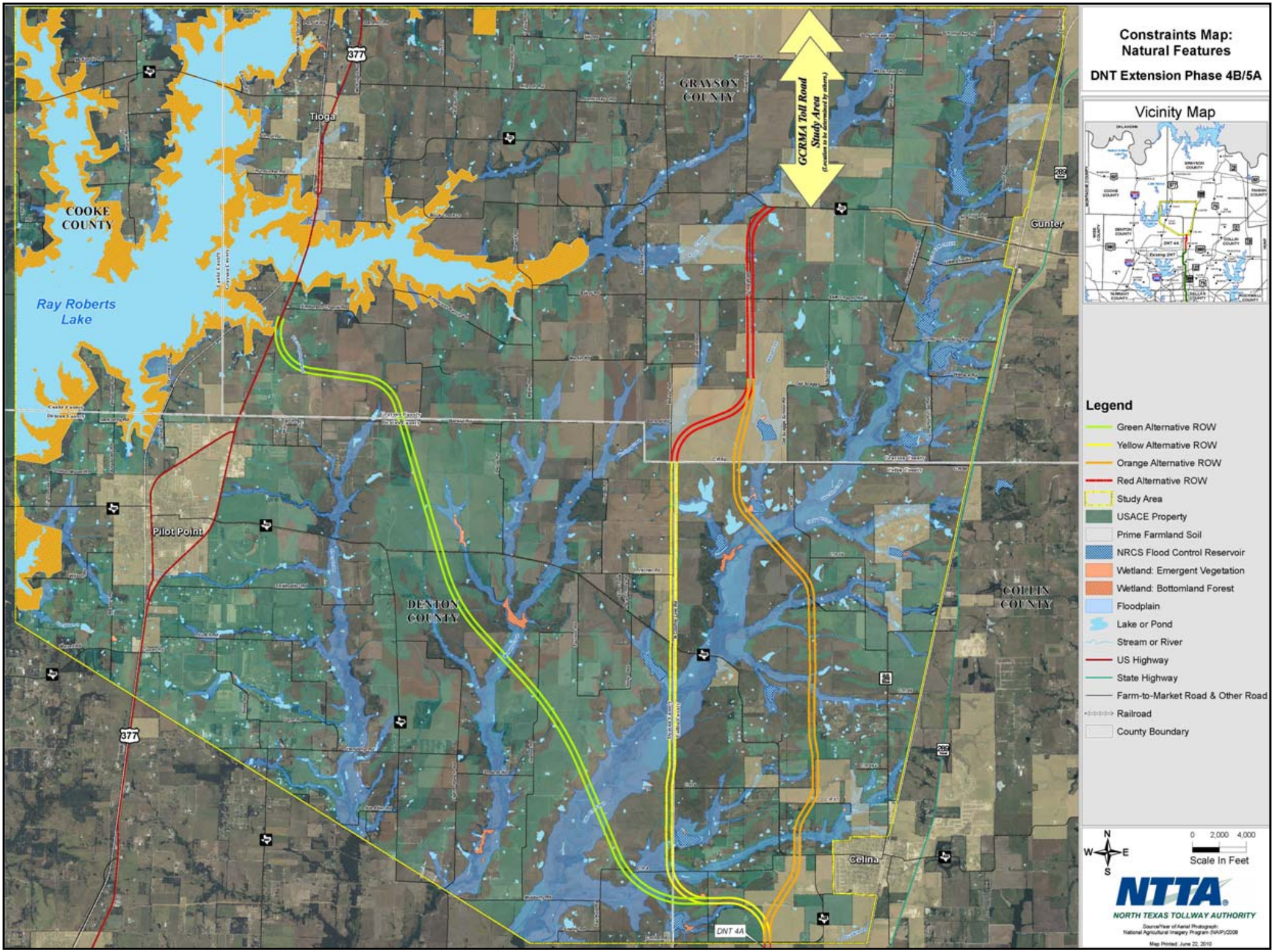

Constraints Map:
Natural Features
DNT Extension Phase 4B/5A
Vicinity Map
GCRMA Toll Road
Study Area
(Location to be determined by others)
GRAYSON COUNTY
COOKE COUNTY
DENTON COUNTY
COLLIN COUNTY
Tioga
Gunter
Pilot Point
Celina
Ray Roberts Lake
DNT 4A
377
289
Legend
Green Alternative ROW
Yellow Alternative ROW
Orange Alternative ROW
Red Alternative ROW
Study Area
USACE Property
Prime Farmland Soil
NRCS Flood Control Reservoir
Wetland: Emergent Vegetation
Wetland: Bottomland Forest
Floodplain
Lake or Pond
Stream or River
US Highway
State Highway
Farm-to-Market Road & Other Road
Railroad
County Boundary
N
W
E
S
0 2,000 4,000
Scale In Feet
NTTA
NORTH TEXAS TOLLWAY AUTHORITY

Exhibit 1-6

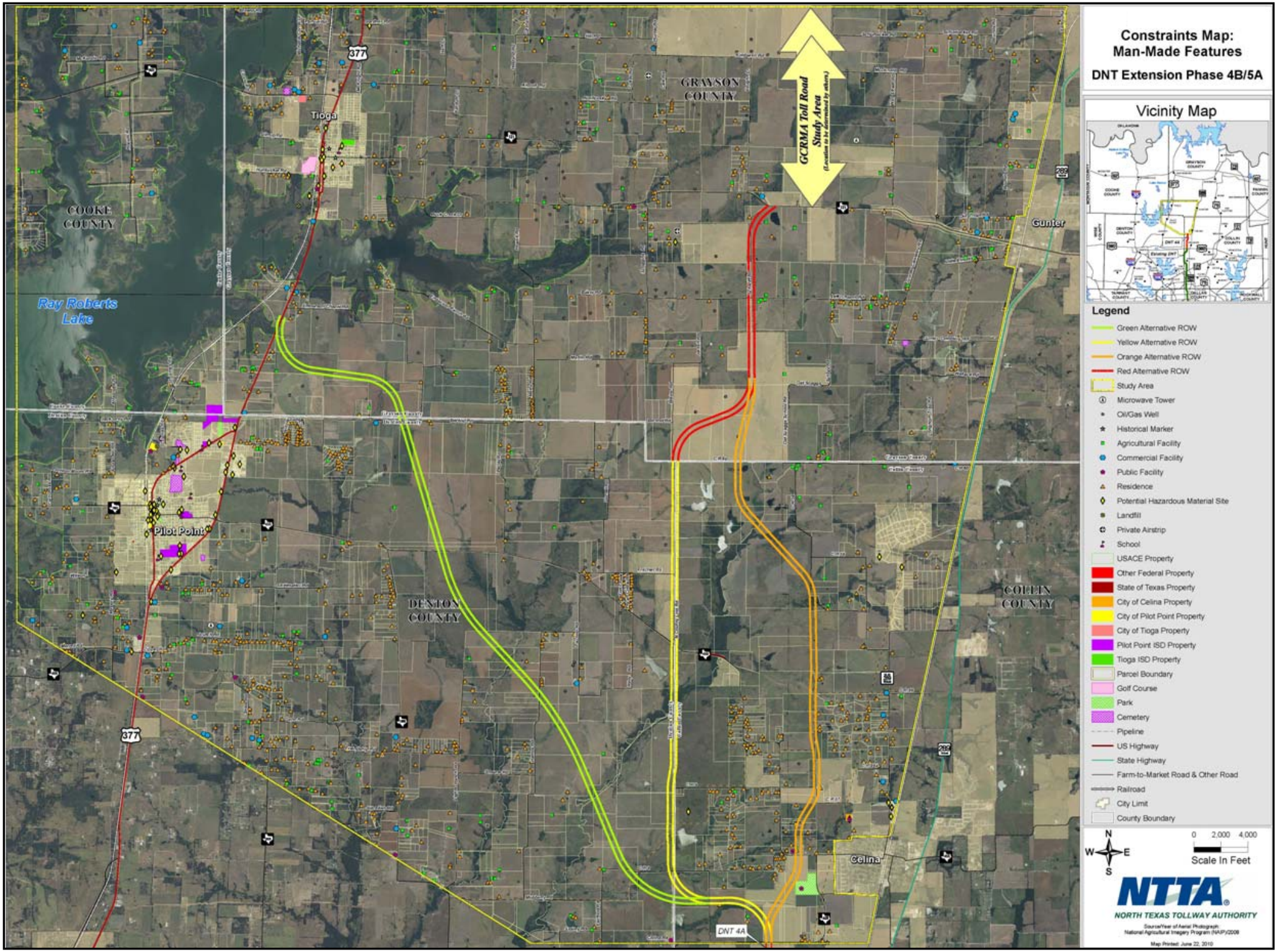

Constraints Map:
Man-Made Features
DNT Extension Phase 4B/5A
Vicinity Map
Legend
Green Alternative ROW
Yellow Alternative ROW
Orange Alternative ROW
Red Alternative ROW
Study Area
Microwave Tower
Oil/Gas Well
Historical Marker
Agricultural Facility
Commercial Facility
Public Facility
Residence
Potential Hazardous Material Site
Landfill
Private Airstrip
School
USACE Property
Other Federal Property
State of Texas Property
City of Celina Property
City of Pilot Point Property
City of Tioga Property
Pilot Point ISD Property
Tioga ISD Property
Parcel Boundary
Golf Course
Park
Cemetery
Pipeline
US Highway
State Highway
Farm-to-Market Road & Other Road
Railroad
City Limit
County Boundary
GCRMA Toll Road Study Area
(Location to be determined by others.)
GRAYSON COUNTY
COOKE COUNTY
DENTON COUNTY
COLLIN COUNTY
Tioga
Gunter
Pilot Point
Celina
Ray Roberts Lake
DNT 4A
377
289
N
W
E
S
0 2,000 4,000
Scale In Feet
NTTA
NORTH TEXAS TOLLWAY AUTHORITY
Source/Year of Aerial Photograph:
National Agricultural Imagery Program (NAIP)/2008
Map Printed: June 22, 2010

Exhibit 1-7

# SECTION 2
# IMPACT ASSESSMENT SUMMARIES

## Water Resources

### Waters of the U.S., Including Wetlands

Waters of the United States (U.S.), including wetlands, refer to those waterways which fall within the jurisdictional authority of the U.S. Army Corps of Engineers (USACE) according to the Clean Water Act (CWA). The proposed DNT 4B/5A crosses 22 potential waters of the U.S., including Little Elm Creek, 17 tributaries to Little Elm Creek, one stream channel remnant of Little Elm Creek, one tributary to Walnut Fork, one tributary to Buck Creek, two abutting wetlands, two adjacent wetlands, one solitary wetland, and one open water. Pursuant to Executive Order 11990 (Protection of Wetlands) and Section 404 of the CWA, a field reconnaissance was conducted October 12-14, 2010 and December 9, 2010 to identify potential waters of the U.S. (wetland or stream waters) within the proposed DNT 4B/5A ROW and easements. In addition, U.S. Department of Agriculture soil surveys (for Collin, Denton, and Grayson counties), U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory maps (Celina and Marilee quadrangles, Texas), U.S. Geological Survey (USGS) 7.5-minute topographic maps (Celina [USGS ID 33096-C7, 1960] and Marilee [USGS ID 33096-C7, 1961] quadrangles, Texas), National Climatic Data Center precipitation data, Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Maps (Collin FM48085C015J, June 2, 2009; Denton FM48121C0150E, April 2, 1997; Denton FM48121C0280E, April 2, 1997; and Grayson FM48181C0500F, September 29, 2010), and current aerial photographs (Aerials Express, 2008 and Landiscor, 2009) were used to assist in the identification of water and wetland features.

The characteristics of potentially jurisdictional waters of the U.S., including wetlands, within the proposed DNT 4B/5A project area were documented in the Preliminary Jurisdictional Determination of Waters of the U.S. report (**Appendix 2-1**) which will be coordinated with the USACE for review and approval. This appendix includes information collected from wetland data points, the locations of which are also shown in **Appendix 2-1** (see Figure 3). A stream data form for each stream water feature is provided in **Appendix 2-2**.[3]

**Table 2-1** contains a summary of the potentially jurisdictional water bodies within the proposed DNT 4B/5A project area (listed south to north along the proposed DNT 4B/5A alignment). **Exhibit 2-1** depicts anticipated water crossing locations on a topographic map, and **Exhibit 2-2** depicts the same locations on an aerial photograph. **Exhibit 2-3** provides a more detailed view of the locations for the 22 potentially jurisdictional water features in combination with an outline of the design plan for the proposed DNT 4B/5A. Detailed mapping of potentially jurisdictional water features, including wetlands, are shown in Figures 3 and 4 of **Appendix 2-1**.

[3] Stream data form numbers correspond with the numbering for potentially jurisdictional streams; however, no stream data forms are provided for Crossing-13 and Crossing-14 because these are wetland features or a floodplain channel remnant that do not include an active stream channel.

**Table 2-1. Impacts to Potentially Jurisdictional Waters of the U.S., Including Wetlands**

| Crossing Number | Water Feature Number | Name | OHWM [1] (linear feet) | Permanent Impacts (acres and linear feet) | |
|---|---|---|---|---|---|
| | | | | Open Waters | Wetlands [2] |
| Crossing-1 | Water-1 | Intermittent tributary to Little Elm Creek | 8 | 0.21 acre 1,131.90 feet | --- |
| Crossing-2 | Water-2 | Ephemeral tributary to Little Elm Creek | 4 | 0.05 acre 542.63 feet | --- |
| Crossing-3 | Water-3 | Perennial tributary to Little Elm Creek | 12 | 0.41 acre 1,484.21 feet | --- |
| Crossing-4 | Water-4 | Intermittent tributary to Little Elm Creek | 5 | 0.11 acre 926.13 feet | --- |
| Crossing-5 | Water-5 | Intermittent tributary to Little Elm Creek | 2 | 0.03 acre 564.91 feet | --- |
| Crossing-6 | Water-6 | Intermittent tributary to Little Elm Creek | 15 | 1.06 acre 3,085.77 feet | --- |
| Crossing-7 | Water-7 | Ephemeral tributary to Little Elm Creek | 3 | 0.02 acre 264.47 feet | --- |
| Crossing-8 | Water-8 | Ephemeral tributary to Little Elm Creek | 5 | 0.08 acre 655.90 feet | --- |
| Crossing-9 | Water-9 | Little Elm Creek (perennial stream) | 25 | 1.67 acre 2,762.20 feet | --- |
| Crossing-10 | Water-10 | Ephemeral tributary to Little Elm Creek | 25 | 0.22 acre 459.06 feet | --- |
| | Wetland-10 | Abutting wetland | --- | --- | 0.06 acre |
| Crossing-11 | Water-11 | Intermittent tributary to Little Elm Creek | 6 to 15 | 0.24 acre 998.30 feet | --- |
| | Wetland-11 | Adjacent wetland | --- | --- | 0.12 acre |
| Crossing-12 | Water-12 | Ephemeral tributary to Little Elm Creek | 6 to 20 | 0.12 acre 386.06 feet | --- |
| Crossing-13 | Water-13 | Stream channel remnant | 25 | 0.06 acre 104.54 feet | --- |
| | Wetland-13 | Adjacent wetland | --- | --- | 0.05 acre |
| Crossing-14 | Wetland-14 | Solitary wetland | --- | --- | 0.03 acre |
| Crossing-15 | Water-15 | Intermittent tributary to Little Elm Creek | 6 to 10 | 0.21 acre 1,246.49 feet | --- |
| | Wetland-15 | Abutting wetland | --- | --- | 0.04 acre |
| Crossing-16 | Water-16 | Ephemeral tributary to Little Elm Creek | 12 | 0.22 acre 1,050.95 feet | --- |
| Crossing-17 | Water-17 | Ephemeral tributary to Little Elm Creek | 5 | 0.05 acre 393.21 feet | --- |
| Crossing-18 | Water-18 | Intermittent tributary to Little Elm Creek | 1 to 3 | 0.03 acre 612.85 feet | --- |
| Crossing-19 | Water-19 | Intermittent tributary to Little Elm Creek | 2 | 0.02 acre 533.97 feet | --- |
| Crossing-20 | Water-20 | Intermittent tributary to Little Elm Creek | 5 to 22 | 0.18 acre 642.17 feet | --- |
| | Open Water-20 | On-channel pond | --- | --- | 0.06 acre |
| Crossing-21 | Water-21 | Intermittent tributary to Walnut Fork | 6 | 0.11 acre 813.45 feet | --- |
| Crossing-22 | Water-22 | Intermittent tributary to Buck Creek | 3 | 0.12 acre 685.79 feet | --- |
| | | | **Total** | **5.28 acres 19,345 feet** | **0.30 acre** |

1. OHWM – Ordinary High Water Mark.
2. Locations of wetland data points are provided in Appendix 2-1, Figure 3.

As shown in **Table 2-1**, anticipated impacts to jurisdictional streams or stream remnants, including wetlands, would include permanent impacts to approximately 5.28 acres (19,345 linear feet) of open water and 0.30 acre of wetlands. There would be no temporary impacts. Waters of the U.S. beyond the proposed ROW and drainage easements were not included in the calculations of impacts, as no impacts are expected. The permanent impacts would include culvert placement, fill, bridge column installation, and stream grading activities.

### Navigable Waterways

There are no navigable waterways within the proposed DNT 4B/5A project area.

### Water Quality

#### *Storm Water*

As the proposed DNT 4B/5A will disturb more than 5 acres of land, the NTTA is required to comply with the Texas Commission on Environmental Quality (TCEQ) permit requirements discussed in Section 3 of this EE. No permanent water quality impacts are expected as a result of the proposed DNT 4B/5A.

#### *Impaired Waters*

According to recent water quality reports maintained by the TCEQ,[4] none of the aquatic features crossed by the proposed DNT 4B/5A are designated as either threatened or impaired and the proposed DNT 4B/5A is not within 5 miles upstream of a threatened or impaired water segment.

### Floodplains

Digital Flood Insurance Rate Maps (FIRM) depicting 100-year floodplains in Collin, Denton, and Grayson counties were obtained from the FEMA[5] and examined for the proposed DNT 4B/5A project area. All three counties within the project area participate in the National Flood Insurance Program. The floodplains intersected by the proposed DNT 4B/5A ROW are shown in **Exhibit 2-2**. The proposed DNT 4B/5A ROW crosses approximately 71.76 acres of established 100-year floodplains at the five locations shown in **Table 2-2**.

**Table 2-2. Project ROW Included within Floodplains**

| Water Feature Associated with the FEMA 100-Year Floodplain | General Location of Floodplain Crossing by DNT 4B/5A | ROW Included within Floodplain |
|---|---|---|
| Three unnamed tributaries to Little Elm Creek | Near the intersection of CR 8/CR 9 | 19.86 acres |
| Little Elm Creek | 0.5 mile south of FM 455 | 44.58 acres |
| Unnamed tributary to Walnut Fork | 0.5 mile south of Marilee Road (CR 60) | 3.10 acres |
| Two unnamed tributaries to Walnut Fork | 1 mile north of Marilee Road (CR 60) | 1.05 acres |
| Unnamed tributary to Buck Creek | 0.75 mile south of FM 121 | 3.17 acres |
| | **Total ROW within Floodplain** | 71.76 acres |

[4] 2008 Texas Water Quality Inventory and 303(d) List (approved July 2008) and Draft 2010 Texas Integrated Report for Clean Water Act Sections 305(b) and 303(d) (pending approval) (see TCEQ Web site, http://www.tceq.state.tx.us/compliance/monitoring/water/quality/data/wqm/305_303.html).

[5] Digital floodplain data were downloaded from the Map Service Center on the FEMA Web site: http://msc.fema.gov. The data shown in Exhibit 2-2 correspond with the 100-year floodplain boundaries reflected in the following FEMA FIRMs: 48085C015J, June 2, 2009; 48121C0150E, April 2, 1997; 48121C0280E, April 2, 1997; and 48181C0500F, September 29, 2010. The floodplain mapping studies were published in the following years for the three counties affected by the proposed project: Collin County, 2009; Denton County, 2002; and Grayson County, 2010.

The hydraulic design for the proposed DNT 4B/5A will be in accordance with current NTTA design policies and procedures. The proposed DNT 4B/5A would permit the conveyance of the design year flood without causing substantial[6] damage to the tollway, stream, or other property. Drainage easements associated with three bridge crossings of floodplains have been included in the DNT 4B/5A schematic design to mitigate the effects of placing bridge abutments within floodplains. Areas within the floodplain from upstream to downstream of these bridges will be modified to ensure bridge construction does not substantially affect flood water surface elevations. The proposed DNT 4B/5A will not increase the base flood elevation to a level that would violate applicable floodplain regulations or ordinances. Furthermore, in cooperation with the FEMA, the NTTA will conform to the standard for temporary and permanent fill set by the FIRMs.

## Biological Resources

### Vegetation and Wildlife

The DNT 4B/5A corridor is located within the Blackland Prairie natural region of Texas, which is characterized by generally deep and fertile dark clay soils. This ecoregion once supported predominantly tallgrass prairie communities that were protected from forest encroachment by occasional wildfires. The plant communities formed a mosaic of open prairie with densely wooded riparian areas along the creeks and streams within the region. According to the Texas Parks and Wildlife Department (TPWD) statewide vegetation map,[7] the southern half of the project corridor is located in the "Crops" physiognomic region, and the northern half of the corridor is designated as "Other Native or Introduced Grasses." Plants commonly associated with the "Crops" vegetation type include cultivated cover crops or row crops providing food and/or fiber for either man or domestic animals. The "Other Native or Introduced Grasses" land cover category represents areas that may have once become forested but which were cleared of woody vegetation.

Several field reconnaissance visits during October 2010 verified that the existing vegetation within the proposed DNT 4B/5A project area is consistent with the TPWD description above. Nearly all land throughout the project corridor is used for agricultural purposes and is divided in roughly equivalent amounts of either cropland or pastures and hay meadows. Cropland areas are plowed annually for the production of grain sorghum (*Sorghum* sp.), corn (*Zea mays*), and wheat (*Triticum* sp.). Pastures for livestock and hay meadows vary widely in terms of species composition and range condition, but the most common species found in these areas are non-native grasses such as Bermuda grass (*Cynodon dactylon*), King Ranch bluestem (*Bothriochloa ischaemum*), and Johnson grass (*Sorghum halepense*). Native prairie grasses (**Exhibit 1-5**, **Photo 12**) occur occasionally throughout the project area but are rarely dominant plants within the landscape. Woodlands within the project corridor are generally riparian forests (**Exhibit 1-5**, **Photos 7** and **9**) associated with the larger stream crossings of the proposed ROW. Upland

[6] In this context, "substantial" refers to damage beyond what would be considered minor. As applied to the tollway, for example, minor damage would not place any of the facility's mainlanes, ramps, bridges, or frontage roads out of service to effect repairs. At this stage of the design process, precise design characteristics tailored to specific site conditions have not been developed but will be part of the final design for the proposed DNT 4B/5A.

[7] *The Vegetation Types of Texas* map published by TPWD (1984).

woodlands are rarely found within the project area and are limited to either fencerows or mesquite trees (*Prosopis glandulosa*) which often invade pastures and are an indicator of previous heavy grazing by livestock.

Based on wildlife sightings and evidence of wildlife (e.g., animal scat and tracks) observed during field surveys, the proposed DNT 4B/5A project area provides habitat to a variety of animals common to the region. A variety of songbirds occur within the area, and observations of other bird species included barred owl (*Strix varia*), turkey vulture (*Cathartes aura*), great blue heron (*Ardea herodias*), and woodpeckers (*Melanerpes* sp. and *Picoides* sp.). Evidence of armadillo (*Dasypus novemcinctus*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*), and eastern cottontail rabbit (*Sylvilagus floridanus*) were observed. Evidence of ground disturbance associated with feral hogs (*Sus scrofa*) was observed in many of the riparian areas.

The proposed DNT 4B/5A is expected to have an overall footprint of approximately 617.40 acres representing all ROW (583.52 acres) and drainage easements (33.88 acres). Temporary ground disturbance would affect all areas within the DNT 4B/5A footprint during road construction, which includes 15.10 acres of existing roads (paved and gravel surface) and 602.30 acres of vegetated or water surfaces. Permanent impacts would result from the creation of 326.27 acres of new paved surfaces within the DNT 4B/5A footprint. Areas of temporary impacts to vegetation (276.03 acres) that are not ultimately paved will be revegetated with grass-dominated ground cover maintained by periodic mowing (i.e. “maintained grass”).

The construction-related conversion of existing vegetation to either paved surfaces or maintained grass is expected to affect 548.53 acres of combined cropland and pastures within the construction footprint of the proposed DNT 4B/5A. Impacts would also occur to 53.77 acres of vegetation and water features with particular importance as wildlife habitat. The inventory of habitat types described in **Appendix 2-3** follows the guidelines established by the TPWD[8] for assessing and mitigating impacts to wildlife habitat for transportation projects and includes the following habitat within the ROW: riparian forest (44.86 acres); upland forest (4.49 acres); fencerow trees (3.39 acres); several unusually large trees within riparian and fencerow areas; non-jurisdictional stock ponds (0.62 acre); and several small remnant patches of high-quality native tallgrass prairie (0.41 acre) dominated by big bluestem (*Andropogon gerardii*) and Texas cupgrass (*Eriochloa sericea*). The location and acreage of these areas of proposed vegetation impacts are shown in **Exhibit 2-3**, and details regarding proposed forest impacts are provided in Woodlands Data Forms in **Appendix 2-4**. Proposed impacts to habitat associated with major water features occur within the areas mapped as riparian forest and were discussed above under the heading of **Waters of the U.S., Including Wetlands**.

Based on the above mentioned impacts to habitat and vegetation, construction of the proposed DNT 4B/5A is expected to affect approximately 4,510 trees greater than 6 inches diameter at breast height (dbh) occurring on 52.74 acres of combined riparian forest, upland forest, and fencerows. Impacts to forested areas are unavoidable in light of the design constraints for

[8] *TxDOT-TPWD Memorandum of Agreement for the Finalization of the 1998 Memorandum of Understanding Concerning Habitat Descriptions and Mitigation* (2001).

constructing a six-lane tollway with frontage roads and ramps along the proposed Build Alternative alignment. Similarly, impacts to the habitat represented by water features and remnant tallgrass prairie areas are unavoidable for the same reason.

In accordance with the TPWD guidelines for TxDOT transportation projects cited previously, the NTTA has considered mitigation for the expected losses to habitat as described. The proposed DNT 4B/5A will not affect habitat for federal candidate threatened or endangered species or any rare vegetation series that is habitat for a state-listed species. The proposed DNT 4B/5A will also not affect any S1 or S2 listed vegetation communities. Thus, the habitats for which the TPWD generally requires compensatory mitigation are not affected. However, as TPWD guidelines require consideration of compensatory mitigation for impacts to bottomland hardwoods, native prairies, and riparian sites, the need for compensatory mitigation for the loss of riparian forest habitat and native prairie remnant areas will be coordinated with the TPWD. The amount and quality of upland forest, fencerow, and stock pond habitat are not sufficient to warrant mitigation, particularly in light of the relative abundance of these types of features throughout the proposed DNT 4B/5A project area.

During project development, the NTTA will design, use, and promote construction practices that minimize adverse effects on both regulated and unregulated wildlife habitat. Existing vegetation, especially native trees, will be avoided and preserved wherever practicable. Every effort will be made to preserve trees within the ROW and other areas where they neither compromise safety nor substantially interfere with construction of the proposed DNT 4B/5A.

***Migratory Birds***

The Migratory Bird Treaty Act (MBTA) states that it is unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg in part or in whole, without a federal permit issued in accordance with the MBTA's policies and regulations. Migration patterns would not likely be affected by the proposed DNT 4B/5A. However, as riparian habitat and creeks are affected by the proposed DNT 4B/5A, a survey of these areas will be conducted prior to any construction, demolition, or clearing activities (as stated in Section 4 of this EE) to verify if any migratory birds are found within the proposed DNT 4B/5A project area.

**Threatened and Endangered Species**

The presence or absence of state-listed threatened and endangered species was researched via the TPWD Web site. The potential presence of federally listed species was also checked with Internet information maintained by the USFWS. In addition, a database search was conducted using the TPWD Texas Natural Diversity Database (TXNDD, see **Appendix 5-1**). The TPWD maintains the TXNDD to track known occurrences of special species on public land throughout Texas. The TPWD and USFWS Web sites listed several threatened or endangered species that may occur within Collin, Denton, and Grayson counties. The listed status and anticipated impacts to each of these species are included in **Appendix 2-5**.

The timber/canebrake rattlesnake, listed as threatened by the TPWD, is the only species that may potentially possess habitat within the proposed DNT 4B/5A project area. Preferred habitat for the timber/canebrake rattlesnake exists within forested areas with dense ground cover. The

distribution of the timber/canebrake rattlesnake stretches from the East Coast westward into Texas and as far north as New England. In the southern portions of its range, this species prefers to make its den in somewhat swampy, wetland habitats. The DFW Metroplex represents the far western edge of its range and is characterized by drier conditions than generally preferred for this species. Populations tend to be higher in eastern Texas where greater concentrations of wetlands and humid forests are found. Forested areas located near permanent water sources are also utilized as fallen debris from trees can act as refugia for the rattlesnake. The timber/canebrake rattlesnake is a shy animal that prefers to live in areas with high amounts of cover and available refuge. This type of habitat is the most likely within the DFW Metroplex to be suitable for this species. In addition, the home range of this species is large, at times encompassing in excess of 100 acres. Within the proposed DNT 4B/5A project area, possible habitat includes forested areas within the floodplain for Little Elm Creek. The proposed DNT 4B/5A is not likely to adversely affect this species because the amount of affected habitat (nearly 45 acres) is a small portion of the rattlesnake's range, and there is a general lack of preferred brushy habitat within the project area. To ensure a minimization of effects, the forested habitat near Little Elm Creek and its tributaries will be surveyed for signs of this species prior to construction activities.

No federally-listed or state-listed threatened or endangered species would be adversely affected by the proposed DNT 4B/5A. During project development, the NTTA would design, use, and promote construction practices that minimize adverse effects on both regulated and unregulated wildlife habitat. Existing vegetation, especially native trees, will be avoided and preserved wherever practicable.

## Cultural Resources

### Historic-age Resources

A reconnaissance survey of non-archeological historic-age resources was conducted for the proposed DNT 4B/5A. The area of potential effects (APE) was defined as 300 feet beyond the proposed ROW for this survey.

The Secretary of the Interior's Guidelines for National Register of Historic Places (NRHP) eligibility requires the consideration of 50-year old properties for inclusion in the NRHP. However, a 45-year cutoff (45 years prior to the estimated let date) is suggested to allow for unforeseen delays in construction contract letting. Although a projected let date for the proposed DNT 4B/5A has not been established, the year 2023 was assumed for purposes of establishing a historic-age limit. Thus, 1978 was the cutoff date used for determining which resources meet the historic-age criteria.

A review of the NRHP, the list of State Archeological Landmarks, and the list of Recorded Texas Historic Landmarks indicates that no historically significant resources have been previously documented within the project APE. A field survey revealed 30 historic-age resources (built prior to 1978) located on eight different farmsteads within the project APE. The survey concluded that none of the historic-age resources should be recommended to be NRHP-eligible. Furthermore, there are no Official Texas Historical Markers within the project APE.

Because no properties within the APE and/or ROW are recommended as NRHP-eligible, the proposed DNT 4B/5A would have no effect to historic resources. The complete historic-age resources due diligence report for the proposed DNT 4B/5A is provided as **Appendix 2-6**.

**Archeological Resources**

The NTTA conducted an archeological evaluation of archival records relevant to the project corridor area in September 2010 (**Appendix 2-7**). The evaluation included a windshield survey and did not involve on-the-ground field inspections. No prehistoric or historic sites were previously recorded within the APE, which extended 100 feet beyond the ROW (i.e., total width of 600 feet) for this survey.

The archeological evaluation examined the proposed DNT 4B/5A project area for areas with high probability for containing archeological resources. This assessment was based on site patterning derived from the findings of previous investigations, the assessment of historic settlement along the proposed DNT 4B/5A corridor, and field observations. Based on this information, the archeological evaluation recommended trenching in the floodplain of Little Elm Creek to determine if buried site deposits are present. In addition, it recommended a pedestrian survey and shovel testing for upland edges and terraces of Little Elm Creek, as well as areas where the proposed DNT 4B/5A ROW crosses or parallels historic roads. This report was submitted to the Texas Historical Commission (THC) in September 2010 for coordination regarding the recommendations for further survey work.

After reviewing the archeological evaluation, the THC recommended on October 28, 2010 (see **Appendix 5-1**) that a pedestrian survey to be performed for the entire DNT 4B/5A corridor. The THC has issued a Texas Antiquities Permit (TAP) (**Appendix 5-1**) for a pedestrian survey of the proposed DNT 4B/5A project area which was completed during February through April 2011 (**Appendix 2-8**).

The research design for the archeological survey identified areas of highest potential for prehistoric and historic archeological resources. The Little Elm Creek floodplain was considered the area with the greatest likelihood of encountering prehistoric resources, in addition to the terraces of smaller stream channels. A review of historic maps of the project area indicated that historic resources would most likely be encountered on hill tops, ridges, or knolls overlooking the surrounding landscape and near historic roads. Field teams surveyed the entire proposed DNT 4B/5A ROW and drainage easements, and performed shovel testing throughout. Soil removed during shovel testing was examined for cultural materials, which were photographed and described. Backhoe trenching at four locations within the Little Elm Creek floodplain was also completed, the results of which are discussed in **Appendix 2-8.**

A total of 73 shovel tests were completed during the archeological survey. No prehistoric resources were found within the shovel tests or on the ground surface, yet four historic sites were recorded (41DN577, 41DN578, 41DN579, 41GS221). Two of the four historic sites appear to represent abandoned farmsteads that were occupied from approximately the 1880s to as late as the 1960s. A third site has a concrete trough most likely in use during the first half of the 20$^{th}$ century, and the fourth site reflects historic trash scatter from the same time period. None of the historic sites is recommended as eligible for listing on the NRHP.

In addition to extensive shovel testing of the area within and adjacent to the Little Elm Creek floodplain, backhoe trenching was also performed. Four trenches were excavated to a depth of 3 meters (9.8 feet) to explore for buried sites near the present drainage channel, to look for sites associated with an older channel farther north, and to test the upland edge for occupation. These deep testing efforts did not uncover any prehistoric archeological sites.

Two aspects of the area where the proposed DNT 4B/5A would cross the Little Elm Creek floodplain may account for the lack of prehistoric resources in this high potential area. First, this area is in an upland setting relative to areas farther downstream. Previous investigations south of the proposed DNT 4B/5A project area, particularly the Lewisville Lake studies, recorded numerous prehistoric sites adjacent to Little Elm Creek. This high density area falls within the East Cross Timbers, the higher biotic diversity of which may have served as a significant draw for more intensive use and occupation. Second, soil characteristics observed in the profiles of floodplain trenches indicate a history marked by intermittent aggradation and degradation. This phenomenon of both deposition and erosion of floodplain soils would create a situation that would be less ideal for site preservation when compared to more actively and reliably aggrading settings.

Investigations performed during both the archival research and field survey have contributed more information to the understanding of historic settlement in Collin, Denton, and Grayson counties. In all four of the historic sites documented in the archeological survey report, the lack of site integrity is a principal basis for the recommendation that further investigations of these sites are unwarranted. In addition, extensive exploration for prehistoric sites found none to exist within the proposed DNT 4B/5A project area, and the archeological survey report included a recommendation that further investigations for prehistoric archeological sites are unnecessary.

## Physical Environment

### Air Quality

The southern portion of the proposed DNT 4B/5A is located in Collin and Denton counties, which are within the Environmental Protection Agency's (EPA) designated nine-county serious nonattainment area for the 8-hour standard for the pollutant ozone ($O_3$); therefore, the transportation conformity rule applies to this portion of the proposed DNT 4B/5A project area. The northern portion of the proposed DNT 4B/5A is in Grayson County, which has been designated by the EPA as exhibiting attainment of National Ambient Air Quality Standards (NAAQS) for all criteria pollutants under the Clean Air Act. The proposed DNT 4B/5A is included in the financially constrained *Mobility 2030 – 2009 Amendment* consisting of highway segments FT1 1900 and FT1 1910. The MTP received a favorable air quality conformity determination by the U.S. Department of Transportation in August 2009. The proposed DNT 4B/5A is not listed in the 2011-2014 Transportation Improvement Program (TIP) for the DFW area because the proposed construction is not within the 4-year planning horizon for the TIP. Once a letting date is scheduled, the NTTA will coordinate with the NCTCOG to include the proposed DNT 4B/5A in the appropriate TIP. Project MTP pages depicting the proposed DNT 4B/5A are included in **Appendix 2-9**.

***Traffic Air Quality Analysis***

The primary pollutants from motor vehicles are volatile organic compounds (VOC), carbon monoxide (CO), and nitrogen oxides ($NO_x$). VOC and $NO_x$ can combine under the right conditions in a series of photochemical reactions to form $O_3$. Because these reactions take place over a period of several hours, maximum concentrations of $O_3$ are often found far downwind of the precursor sources. Thus, $O_3$ is a regional problem and not a localized condition.

The modeling procedures of $O_3$ require long term meteorological data and detailed area wide emission rates for all potential sources (industry, business, and transportation) and are normally too complex to be performed within the scope of an environmental analysis for a highway project. Accordingly, concentrations of $O_3$ for the purpose of comparing the results of the NAAQS are modeled by the regional air quality planning agency for the State Implementation Plan. However, concentrations for CO are readily modeled for highway projects and are required by federal regulations.

Topography and meteorology of the area in which the proposed DNT 4B/5A is located would not seriously restrict dispersion of the air pollutants. The interim year 2025 ADT is estimated to be 12,600 vpd and the design year 2030 ADT is estimated to be 21,200 vpd. CO concentrations for the proposed DNT 4B/5A were modeled using CALINE3 and MOBILE6.2 and factoring in adverse meteorological conditions and sensitive receptors at the ROW line in accordance with the TxDOT 2006 *Air Quality Guidelines*. Although the projected ADT for the proposed DNT 4B/5A would not exceed the 140,000 vpd threshold identified by TxDOT as the requirement for a traffic air quality analysis (TAQA), a TAQA was conducted in order to maintain a consistent approach to the air quality analyses. As it was determined that a quantitative mobile source air toxics analysis was appropriate because the proposed DNT 4B/5A is a new location six-lane tollway, conducting a TAQA is consistent with this approach. Local concentrations of CO are not expected to exceed national standards at any time. The results of the analysis are summarized in **Table 2-3**.

**Table 2-3. Traffic Air Quality Analysis Results**

| Year | Traffic Volume [1] | | Emission Factor (g/mile) [2] | CO Concentration [3] (ppm) | | % NAAQS [4] | |
|---|---|---|---|---|---|---|---|
| | ADT (vpd) | DHV (vpd) | | One-Hour | Eight-Hour | One-Hour | Eight-Hour |
| 2025 | 12,600 | 1,147 | 5.54 | 3.9 | 2.42 | 11.1% | 26.9% |
| 2030 | 21,200 | 1,929 | 5.49 | 4.0 | 2.48 | 11.4% | 27.6% |

1. Traffic data used in the analysis was prepared by Wilbur Smith Associates. DHV is design hourly volume of traffic.
2. Emission factor applies at a speed of 65 mph for general purpose and managed lanes, and at a speed of 45 mph for frontage roads; g/mile = grams per mile.
3. Includes an ambient concentration of 3.7 ppm for the one-hour averaging time and 2.3 ppm for the 8-hour averaging time; ppm = parts per million.
4. Data is relative to the one-hour NAAQS of 35 ppm and the 8-hour NAAQS of 9 ppm.

***Congestion Management Process***

The congestion management process (CMP) is a systematic process for managing congestion that provides information on transportation system performance and on alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet state and local needs. The proposed DNT 4B/5A was developed from the NCTCOG's operational CMP which meets all requirements of amended 23 U.S. Code (USC) Section 134(k)(3) and 49 USC 5303(k)(3), amendments incorporating the transportation planning requirements of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users. Information regarding the CMP is found in **Appendix 2-10**.

***Mobile Source Air Toxics Analysis***

In addition to the criteria air pollutants for which there are NAAQS, the EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

Mobile source air toxics (MSAT) are a subset of the 188 air toxics defined by the CAA. The MSAT are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

A quantitative MSAT analysis was conducted for the proposed DNT 4B/5A. The analysis indicates a decrease in MSAT emissions can be expected for both the Build and No-Build Alternatives for the interim year 2025 and design year 2030, as compared with the 2009 base year. Emissions of total MSAT are predicted to decrease by 56% in 2030 compared with 2009 levels for the Build Alternative. If emissions are plotted over time, a decreasing level of MSAT emissions can be seen even though overall vehicle miles traveled (VMT) continues to rise. The projected decrease in MSAT emissions, despite expected increases in VMT, is attributable to decreases in MSAT expected from a variety of EPA air pollution control programs. A discussion of EPA programs targeting MSAT and the complete quantitative MSAT analysis is included in **Appendix 2-10**.

The examination of MSAT included consideration of areas with human populations that may be particularly vulnerable to a reduction in ambient air quality. These "sensitive receptors" include public facilities most likely to contain large concentrations of the more sensitive population (e.g., hospitals, schools, licensed daycare facilities, and elder care facilities). Research has shown that MSAT pollutant levels drop off substantially as the distance from the roadway increases. Dispersion studies have shown within 1,640 feet (500 meters) from the DNT 4B/5A, it is very difficult to distinguish the roadway emissions from background air toxic levels in any given area. No sensitive receptors were identified within 1,640 feet (500 meters) from the proposed DNT 4B/5A.

During the construction phase of the proposed DNT 4B/5A, there could be temporary increases in air pollutant emissions from construction activities, equipment, and related vehicles. The

primary construction related emissions are particulate matter (fugitive dust) from site preparation and construction, and non-road MSAT from construction equipment and vehicles. The primary MSAT emission related to construction is diesel particulate matter from diesel powered construction equipment and vehicles.

These emissions are temporary in nature (only occurring during actual construction) and it is not reasonably possible to estimate impacts from these emissions due to the limitations of the existing models. However, the potential impacts of particulate matter emissions would be minimized by using fugitive dust control measures such as covering or treating disturbed areas with dust suppression techniques, sprinkling, covering loaded trucks, and other dust abatement controls, as appropriate. The MSAT emissions would be minimized by encouraging use of EPA required cleaner diesel fuels, limits on idling, increasing use of cleaner burning diesel engines, and other emission limitation techniques, as appropriate.

However, considering the temporary and transient nature of construction related emissions as well as the mitigation actions to be utilized, it is not anticipated that emissions from construction of the proposed DNT 4B/5A would result in adverse impacts on air quality in the area.

**Traffic Noise**

A traffic noise analysis was conducted for the proposed DNT 4B/5A in accordance with the Federal Highway Administration (FHWA) approved guidelines for analysis and abatement for highway traffic noise. Because the DNT 4B/5A is proposed to be a new-location tollway, existing noise levels were measured using an ANSI S1.4, Type 2 Extech (Model 407780) integrating sound level meter at representative receivers along the corridor. The FHWA traffic noise modeling software (TNM 2.5) was used to calculate predicted traffic noise levels at receiver locations that represent the land use activity areas adjacent to the proposed DNT 4B/5A that might be affected by traffic noise and potentially benefit from feasible and reasonable noise abatement. The modeling software primarily considers the following factors: number, type, and speed of vehicles; highway alignment and grade; cuts, fills, and natural berms; surrounding terrain features; and the locations of activity areas likely to be affected by the associated traffic noise.

A total of five noise receivers, all single family residential, were identified and modeled within the proposed DNT 4B/5A project area. Only one of these receivers was sufficiently near the proposed tollway to be representative of land use activity areas directly adjacent to the proposed DNT 4B/5A and was carried forward through the traffic noise analysis. **Table 2-4** summarizes the measured existing noise level and predicted design year noise level at the representative noise receiver, which indicates the proposed DNT 4B/5A would not result in a traffic noise impact. **Exhibit 2-3** (**Page 14**) identifies the location of this representative noise receiver. **Appendix 2-11** provides additional details about this traffic noise analysis, including a discussion of the unit of measurement (i.e., dBA Leq) used for assessing traffic noise impacts and FHWA Noise Abatement Criteria (NAC) for various types of land uses.

**Table 2-4: Traffic Noise Levels (dBA Leq)**

| Representative Receiver | Land Use Category | NAC Level | Existing 2010 | Predicted 2030 | Change (+/-) | Noise Impact |
|---|---|---|---|---|---|---|
| Noise Receiver (NR)1 – Single Family Residential | B | 67 | 55 | 58 | 3 | No |

Land use activity areas along most of the proposed DNT 4B/5A are currently Category D—undeveloped land. There is no NAC for undeveloped land; however, to avoid noise impacts that may result from future development of properties adjacent to the project, local officials responsible for land use control programs should ensure, to the maximum extent possible, no new activities are planned or constructed along or within the following predicted (2030) noise impact contour:

| Land Use | Impact Contour | Distance from ROW |
|---|---|---|
| Category B | 66 dBA | 10 feet |

A copy of this traffic noise analysis will be available to local officials to ensure, to the maximum extent possible, future developments are planned, designed, and programmed in a manner that avoids traffic noise impacts. On the date of approval of this document (Date of Public Knowledge), the NTTA is no longer responsible for providing noise abatement for new development adjacent to the proposed DNT 4B/5A.

**Hazardous Materials**

In accordance with the American Society for Testing and Materials (ASTM) Standard Practice for Phase I Environmental Site Assessment (ASTM-1527-05), a state and federal regulatory database search was conducted to identify potential hazardous materials sites within the proposed DNT 4B/5A project area. This search identified potential hazardous/regulated materials sites and facilities located within 1 mile of either side of the proposed DNT 4B/5A. The database identified three sites at two locations. The identified sites consist of one Municipal Solid Waste Landfill (MSWLF) site (1.3 miles southwest of the CR 9/FM 455 intersection in Collin County, MSWLF was not constructed) and two Tier II Chemical Reporting Program Facility sites at one location (17099 Celina Road, Celina). None of these sites are considered to be a high risk for construction worker safety or ROW acquisition.

On October 12-14, 2010, a site reconnaissance was conducted throughout the proposed DNT 4B/5A project area in accordance with ASTM procedures. No Recognized Environmental Conditions were observed during the site reconnaissance. The identified potential hazardous/regulated materials sites are shown on **Exhibit 2-4**.

## Community Impacts

A Community Impact Assessment was conducted to identify the limits of the local community and provide an understanding of how the proposed project will impact, both positively and negatively, the local community. The assessment included research into the history of the local area, identification of local and regional population trends, and analysis of how traffic patterns, tolling, and other potential direct impacts could affect specific racial, ethnic and economic populations in the area. The Community Impact Assessment is provided in **Appendix 2-12** and summaries from the assessment are presented in the following sections.

### Socioeconomics

To determine potential social and economic effects on the community, Limited English Proficiency (LEP) populations, community cohesion, and potential displacements/relocations associated with the proposed DNT 4B/5A project area were identified. The elements discussed below were evaluated and supporting information is located in **Appendix 2-12**.

#### *Regional and Community Growth*

According to the *Census 2000*, the North Central Texas region added nearly 1.2 million residents since the 1990 census, accounting for nearly one-third of the total population growth in Texas. The regional and community growth in and around the cities of Celina and Gunter is expected to continue along present trends.

#### *Community Cohesion*

Although each county in the project area exhibits an agricultural community, no defined community based on shared agricultural experiences is present along the proposed DNT 4B/5A corridor. Many adjacent properties are owned by investors who have expressed an intent to donate a portion of their land to the NTTA for the proposed DNT 4B/5A ROW and to develop the remainder. The proposed alignment primarily follows the Denton/Collin county line until passing into Grayson County where it follows an existing roadway. The majority of adjacent properties would not be divided by the proposed DNT 4B/5A.

Public meetings were held throughout the planning process to receive feedback from residents in the area. Based upon the comments received at the meetings, the residents of Celina, Pilot Point, and Gunter are generally in favor of the proposed DNT 4B/5A, and substantial support was expressed for the proposed DNT 4B/5A alignment as described in this EE. The primary reason stated by the residents for favoring this alignment is the potential economic benefit that would be realized by Collin, Denton, and Grayson counties.

Impacts to community cohesion are not expected. Impacts to each county's agricultural community would occur on the periphery of each community because the proposed DNT 4B/5A is located along the county line. No distinct neighborhoods, ethnic groups, or other specific groups have been identified along the proposed DNT 4B/5A limits.

Future benefits to community cohesion are anticipated because of potential employment opportunities, improved commercial, retail, and entertainment facilities, and an increase in tax revenue and real estate values.

***Limited English Proficiency***

In accordance with Title VI of the Civil Rights Restoration Act of 1987 and Executive Order 13166, the NTTA has examined the services and planning processes associated with the proposed DNT 4B/5A to ensure that persons with LEP were not excluded or underserved during the project planning process. Public involvement thus far has included two public meetings held on March 9 and 11, 2010. Notices for the public meetings were published in area newspapers, including the widely-circulated Spanish publication, *Al Día*. The public meeting notice informed citizens of the opportunity to request an interpreter be present at the public meetings for language or other special communication needs. Such steps will continue to be taken throughout the public involvement process to ensure that LEP persons have meaningful access to the programs, services, and information that the NTTA provides.

***Relocations and Displacements***

The proposed DNT 4B/5A would not require any single-family residential or business relocations. There are two S-curves present along the proposed DNT 4B/5A alignment: one at the southern end and one at the northern end. The S-curve in the southern portion of the project area allows the proposed DNT 4B/5A alignment to shift west from the planned northern terminus for DNT Phase 4A to follow the Denton/Collin county line. The northern S-curve was designed to avoid or limit impacts to important water features and reduce the number of affected property owners. Because of these shifts in the proposed DNT 4B/5A alignment, the number of potentially divided parcels is substantially less than if a direct north-south alignment was proposed. Additionally, this proposed DNT 4B/5A alignment eliminates all potential displacements and relocations.

***Tollway Access***

Access to the mainlanes of the proposed DNT 4B/5A would be limited to those who either elect to or can only on occasional basis afford to pay the toll. The proposed DNT 4B/5A would be a limited-access facility.

- Non-Toll Alternatives
  Frontage roads with three lanes in each direction would be available along the entire length of the proposed alignment. Motorists utilizing these frontage roads may experience longer travel times than motorists using the tolled facility due to a lower posted speed limit and signalization.

- Transit Usage
  Operating the proposed DNT 4B/5A as an electronic toll collection facility is not expected to adversely affect transit usage because no mass transit system exists within the proposed DNT 4B/5A project area. The Dallas Area Rapid Transit (DART) system utilizes the existing DNT facility in the cities of Dallas, Farmers Branch, Carrollton, Plano and the Town of Addison. However, the cities of Celina and Gunter are not members of DART at this time.

- Toll Rate
  The toll rates for DNT 4B/5A would be consistent with other toll rates in the region. The exact toll rate for the proposed facility would be determined prior to the facility opening.

- Methods of Toll Charge Collection
  The NTTA proposes to incorporate an electronic toll collection system with ZipCash® along the DNT 4B/5A facility. The Dallas area TollTag® (transponder), TxTag® stickers, and the Houston area EZ TAG® (transponder) would be accepted on the proposed facility. Toll charges could be automatically deducted from a prepaid credit account or would be mailed as a monthly statement to the driver if the ZipCash® method is utilized. If the driver has a TollTag® or other toll transponder account, the tolls would automatically be deducted from the account when the facility is used. The account would be a prepaid account which means the driver must maintain sufficient funds to cover incurred toll charges, such as for accounts currently in use for existing toll roads.

- Comparison of Payment Methods
  Not maintaining a prepaid account would impact any user, including low-income users, because the cost of paying the accumulated toll charges without an account would represent a higher toll rate than toll charges affiliated with a prepaid account. Cash payment options are available for each payment method; however, only those users who maintain prepaid accounts would benefit from reduced toll rates. In summary, toll rates are one-third to one-half more for drivers who do not have an electronic toll transponder to offset the costs related to processing the license plate information associated with ZipCash®. Although certain toll transponder account holders are required to pay up-front fees or deposits for toll transponders ($9.65 fee per transponder for TxTag® accounts and $25 deposit for TollTag® “cash users” accounts), the toll transponder account holders would benefit from reduced toll rates compared to the total toll rates associated with ZipCash®.

**Environmental Justice**

Based on the analysis provided in **Appendix 2-12**, no significant direct environmental justice effects would result from the proposed DNT 4B/5A. The 18 Census blocks that comprise the minority study area contain a total minority population of 12.2%. The three Census block groups that comprise the low-income study area contain a total low-income population of 6.3%. These populations are not present within the proposed DNT 4B/5A project area as readily identifiable groups, but are scattered throughout the project area. No defined communities are present within the environmental justice study area; however, Census data and field investigations reveal a homogenous rural population.

Based on previous representations by many of the current property owners, much of the proposed ROW would be donated, and no displacements or relocations would be associated with the proposed DNT 4B/5A. Mitigation would be conducted for vegetation and water quality impacts. No air quality, noise, or hazardous materials impacts are expected. Benefits to local minority and low-income populations from the proposed DNT 4B/5A would include increased mobility, access to the region, transportation carrying capacity, and safety in the area. Additionally, the improved access to the area would enable new development leading to job growth, improved land values and better access to goods and services.

***Tolling Impacts***

To analyze "user impacts" of the proposed DNT 4B/5A extension on low-income and minority populations, origin-destination (O&D) data was requested from the NCTCOG. Studying O&D data can determine travel patterns of traffic along a transportation facility during a typical day. This form of analysis is useful in assessing user impacts because the number of trips associated with specific population characteristics can be analyzed to provide general travel assumptions of those specific populations. Trips are defined as a one-way movement from a starting point (origin) to an arrival point (destination).

The O&D data obtained from the NCTCOG was not sufficient to analyze user impacts associated with the proposed DNT 4B/5A because of technical limitations and a lack of sufficient input data for the model. After population forecasts are determined based on *Census 2010* data and an improved transportation network is available for the proposed DNT 4B/5A project area, an accurate O&D analysis could be conducted. However, this will not occur for at least two more years.

**Indirect Impacts**

An indirect impacts analysis was conducted for the proposed DNT 4B/5A in accordance with TxDOT's seven-step analytical process[9] and guidance found in National Cooperative Highway Research Program Report 466 for assessing indirect impacts. Indirect impacts differ from the direct impacts associated with the construction and operation of the proposed DNT 4B/5A and are caused by other actions that have an established relationship or connection to the proposed DNT 4B/5A. These induced developments are those that would not or could not occur except for the implementation of the proposed DNT 4B/5A.

The indirect impacts analysis considered the area of influence (AOI), or area in which the impacts of the DNT 4B/5A would be felt. Based on stakeholder input and historic development patterns, the AOI established for the proposed DNT 4B/5A extends north from FM 428 to FM 121 and 0.5 mile east and west of the proposed ROW. In certain areas the AOI extends beyond the 0.5-mile mark to include identified induced development. This area encompasses 8,607 acres and is shown in **Exhibit 2-5**. This analysis concluded there would be substantial encroachment-alteration effects related to economic gains in the AOI, but they would not have an adverse effect on notable features in the AOI. Other substantial encroachment-alteration effects (e.g., habitat fragmentation and changes to local travel patterns) as a result of constructing the proposed DNT 4B/5A would not likely occur. Substantial induced urban development (i.e., 2,434 acres) in the cities of Celina and Gunter would be associated with the proposed DNT 4B/5A, which is illustrated for the AOI in **Exhibit 2-5**. This induced development would impact an estimated 2,305 acres of undeveloped land, fenceline vegetation, bottomland hardwoods, and wetlands along with 42,641 linear feet of streams. Mitigation would be the responsibility of the developer and specific mitigation would be determined when the development is planned. A full discussion of the indirect impacts analysis is in **Appendix 2-13**.

[9] *TxDOT Guidance on Preparing Indirect and Cumulative Impact Analyses* (June 2009); *http://www.txdot.gov/txdot_library/consultants_contractors/publications/environmental_resources.htm.*

**Cumulative Impacts**

Federal Council on Environmental Quality regulations (40 Code of Federal Regulations 1508.7) define cumulative impacts (i.e., effects) as "the impact on the environment which results from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions." As this regulation suggests, the purpose of a cumulative impacts analysis is to view the direct and indirect impacts of the proposed DNT 4B/5A within larger contexts of time and space. An analysis of cumulative impacts was conducted following the eight steps outlined in TxDOT guidance,[10] which is designed to be consistent with controlling case law.[11]

Cumulative impacts analysis considers cumulative impacts for resources that are expected to receive adverse direct and/or indirect impacts from the proposed project. For the proposed DNT 4B/5A, this analysis evaluated cumulative impacts to waters of the U.S., vegetation and wildlife habitat, as well as air quality. The resource study areas (RSA) considered in this analysis are shown in **Exhibit 2-6** (vegetation/habitat and waters) and **Exhibit 2-7** (air quality). A summary of the individual and combined direct impacts, indirect effects, impacts from reasonably foreseeable projects, and cumulative impacts for the proposed DNT 4B/5A is provided in **Table 2-5**. Cumulative impacts to vegetation and wildlife habitat would affect approximately 4% of habitat resources within the RSA and are not considered substantial. Cumulative impacts to streams and wetlands within the RSA would impact 4.8% and 1.7% of these resources, respectively, and are not considered substantial. The examination of air quality indicates that a net cumulative benefit to regional air quality is expected. A detailed discussion of the cumulative impacts analysis is included in **Appendix 2-14**.

[10] TxDOT *Guidance on Preparing Indirect and Cumulative Impact Analyses* (June 2009).
[11] See, for example, *Fritiofson v. Alexander*, 772 F.2d 1225, 5th Circuit, 1985.

**Table 2-5. Summary of Resource Impacts**

| Resource | Direct Impacts | Indirect Effects | Reasonably Foreseeable Projects | Cumulative Impacts |
|---|---|---|---|---|
| **Waters of the U.S.** | Approximately 19,345 linear feet of streams and 0.3 acre of wetlands | Approximately 42,641 linear feet of streams and 4 acres of wetlands | Approximately 0.15 acre of stream | Approximately 61,986 linear feet of streams, and 4.3 acres of wetlands |
| **Vegetation/ Wildlife Habitat** | Approximately 45 acres of riparian forests, 3 acres of fencerow trees, 549 acres of crops/pasture, 0.4 acre of native grasses, and 5 acres of upland forest | Approximately 2,297 acres of undeveloped land, including unmaintained herbaceous and crops/pasture | Approximately 0.2 acre of riparian forests, 0.68 acre of fencerow trees, 7.9 acres of crops / pasture, and 77.6 acres of maintained herbaceous vegetation | Approximately 2,986 acres of vegetation impacts |
| **Air Quality** | Minimal to no impacts. | No anticipated effects | Impacts from on-road mobile sources associated with transportation actions would not adversely affect the regional $O_3$ standard compliance or maintenance of the other air quality standards. | Any increased air pollutant or MSAT emissions resulting from increased capacity, accessibility and development are projected to be more than offset by emissions reductions from EPA new fuel and vehicle standards or addressed by EPA and TCEQ regulatory emissions limits programs. Projected traffic volumes are expected to result in no impacts on air quality; improved mobility and circulation may benefit air quality. Increases in urbanization would likely have a negative impact on air quality. However, planned transportation improvements within the project area as listed in a conforming MTP and TIP coupled with EPA vehicle and fuel regulations fleet turnover, are anticipated to have a cumulatively beneficial impact on air quality. |

**Public Lands**

The proposed DNT 4B/5A would not require the use of or substantially impair the purposes of any publicly owned land from a public park, recreation area, wildlife/waterfowl refuge, or any historic sites of national, state, or local significance. Therefore, the requirements of Chapter 26 of the Texas Parks and Wildlife Code would not apply to this locally-funded proposed DNT 4B/5A.

## Other

### Local Tree Ordinances

Municipal governments have the authority to avoid, minimize, and mitigate the impacts of private property development to habitat within their jurisdictions through the application of regulations that guide the intensity, type, and location of new development. The City of Celina has a tree preservation ordinance (as of December 2010) which defines protected tree species and requires mitigation for protected trees greater than 6 inches dbh.[12] The City of Gunter does not have a tree preservation ordinance, but prohibits the planting of undesirable trees and shrubs in its zoning ordinance.[13] The City of Pilot Point does not have an ordinance addressing tree preservation. Local ordinances and processes that regulate development and preserve natural resources will be followed as required.

### Airway-Highway Clearance

Airway-highway clearance regulations do not apply to the proposed DNT 4B/5A because federal funding is not being utilized. There are no airports within the proposed DNT 4B/5A vicinity; therefore, coordination with local airports is not required.

### Visual Quality and Aesthetics

The visual landscape near the proposed DNT 4B/5A project area is characterized by primarily farmland, vacant land, and floodplains with a limited number of residences and farmsteads. The proposed DNT 4B/5A is in compliance with, and would facilitate, local development plans. The implementation of the NTTA's Design Guidelines for the proposed DNT 4B/5A would allow the user to experience system continuity, corridor identity, consistent and attractive gateways, a high quality driving experience, and enhanced safety along the corridor. In this regard, the proposed DNT 4B/5A would not result in a negative aesthetic impact for views of and from the road.

[12] City of Celina Code of Ordinances, Chapter 160—Zoning, Section 160.096—Landscape Requirements, Subsection J—Tree Preservation.
[13] City of Gunter Zoning Ordinance, Appendix II—Prohibited Plant List, *http://ci.gunter.tx.us/index.pho?id=8VVRI6752.*

## Summary of Impacts

Features of the proposed DNT 4B/5A and its potential impacts are summarized in **Table 2-6**.

**Table 2-6. Summary of Project Features and Impacts**

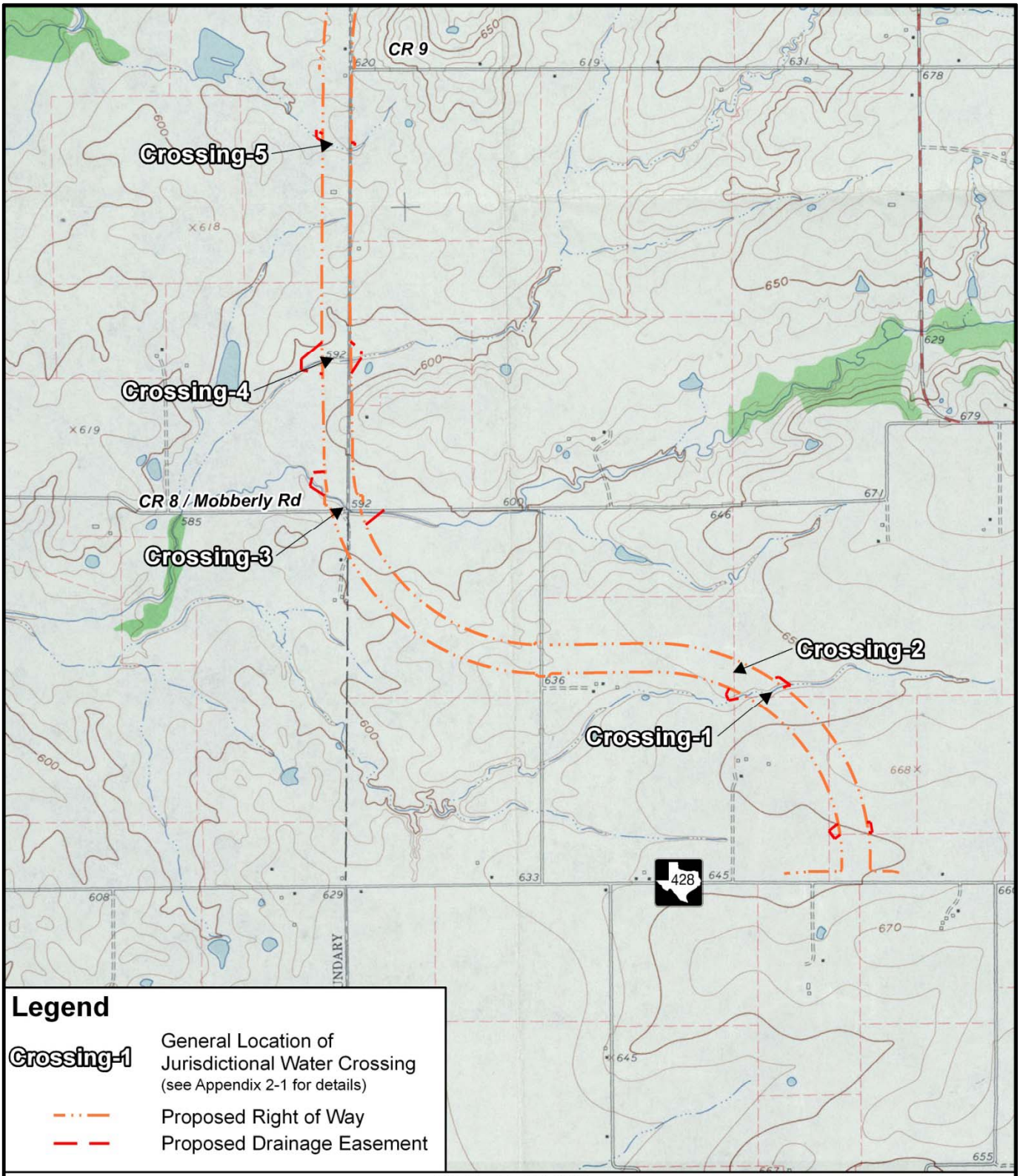
| Comparison Factors | Unit of Measure | No-Build Alternative | Build Alternative |
|---|---|---|---|
| **Project Description** | | | |
| Total Length | miles | --- | 11.9 |
| Total Proposed ROW | acres | --- | 583.5 |
| Total Proposed Drainage Easements | acres | --- | 33.9 |
| Estimated Cost (2011 dollars) | $ (in millions) | --- | 677.8 |
| **Water Resources** | | | |
| Waters of the U.S., Wetlands | acres | 0 | 0.3 |
| Waters of the U.S., Streams | acres | 0 | 5.3 |
| Navigable Waterways | acres | 0 | 0 |
| Impaired Waters | Y/N; if Y (acres) | N | N |
| Floodplains* | acres | 0 | 71.8 |
| **Biological Resources** | | | |
| Riparian Forest Habitat | acres | 0 | 44.9 |
| Upland Forest Habitat | acres | 0 | 4.5 |
| Fencerow Vegetation | acres | 0 | 3.4 |
| Large Trees | number | 0 | 6 |
| Native Prairie Habitat | acres | 0 | 0.4 |
| Ponds | acres | 0 | 0.6 |
| Total Wildlife Habitat | acres | 0 | 53.8 |
| Threatened or Endangered Species | Y/N | N | N |
| **Cultural Resources** | | | |
| NRHP-Eligible Historic-age Resources | number | 0 | 0 |
| Archeological Resources | number | 0 | 0 |
| **Physical Environment** | | | |
| MSAT Sensitive Receptors | number | 0 | 0 |
| MSAT Emissions | increase/decrease | decrease | decrease |
| Noise Receivers with Traffic Noise Impacts | number | 0 | 0 |
| High Risk Hazardous Materials Sites | number | 0 | 0 |
| **Community Impacts** | | | |
| Change in Community Cohesion | Y/N | N | Y |
| Residential Displacements | number | 0 | 0 |
| Commercial Displacements | number | 0 | 0 |
| Community and Public Facility Displacements | number | 0 | 0 |
| Environmental Justice Issues | Y/N | N | N |
| Public Lands | acres | 0 | 0 |
| Indirect Impacts | Y/N | N | Y |
| Cumulative Impacts | Y/N | N | Y |
| * Floodplains are included as a descriptive feature, as no impacts are expected to floodplain hydraulic functioning. | | | |

**Exhibits:**

Exhibit 2-1: Project on Topographic Map
Exhibit 2-2: Project on Aerial Photograph
Exhibit 2-3: Project Design on Aerial Photograph
Exhibit 2-4: Hazardous Materials Site Map
Exhibit 2-5: Indirect Effects Area of Influence (AOI) Map
Exhibit 2-6: Cumulative Impacts Resource Study Area (RSA) for Vegetation/Habitat
Exhibit 2-7: Cumulative Impacts Resource Study Area (RSA) for Air Quality

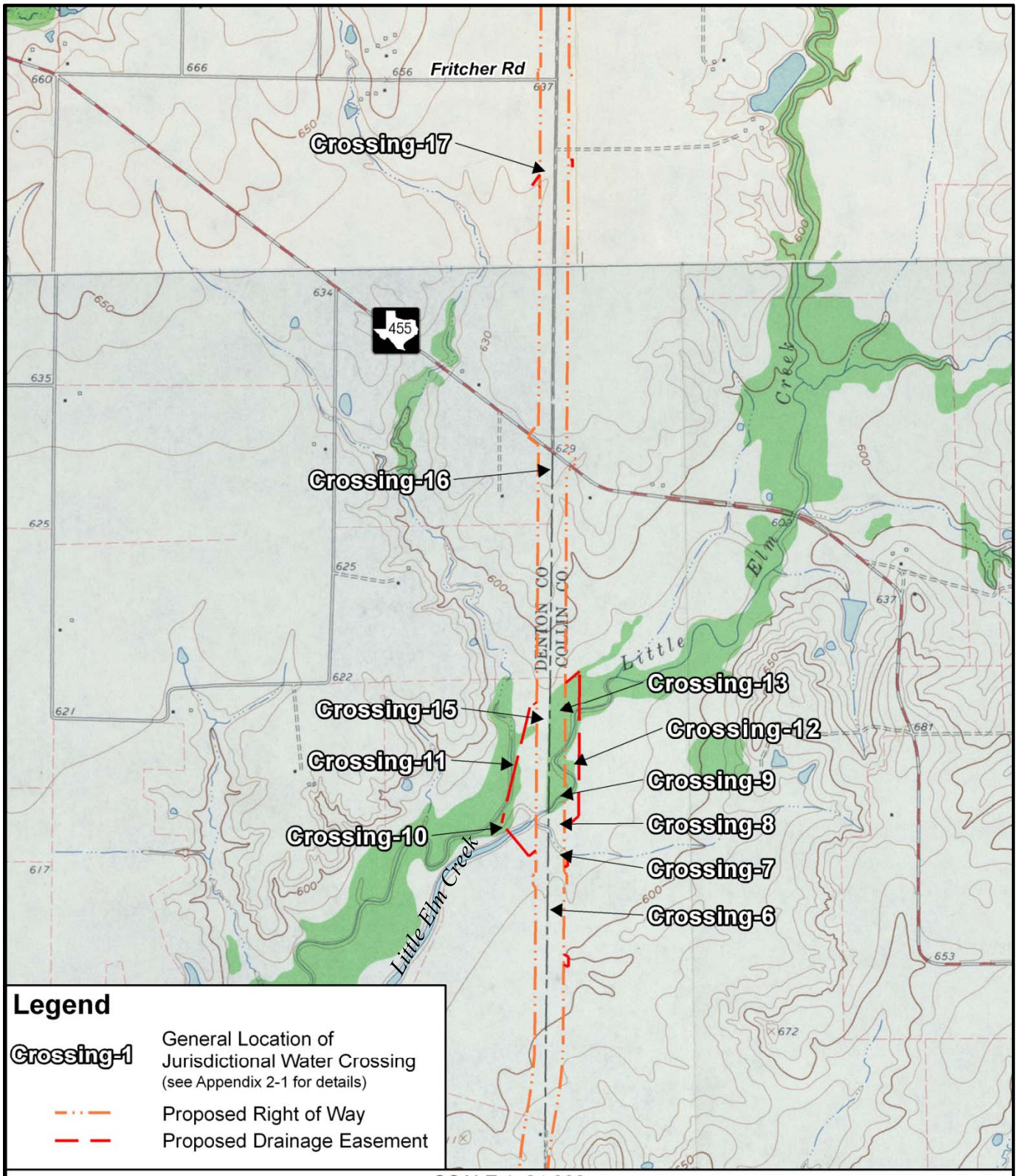
**Appendices:**

Appendix 2-1: Preliminary Jurisdictional Determination of Waters of the U.S.
Appendix 2-2: NTTA Stream Data Forms
Appendix 2-3: Inventory of Habitat Resources Supporting Information
Appendix 2-4: NTTA Woodlands Data Forms
Appendix 2-5: List of Federal and State Threatened and Endangered Species
Appendix 2-6: Historic-age Resources Due Diligence Report
Appendix 2-7: Archeological Evaluation Report
Appendix 2-8: Archeological Survey Report
Appendix 2-9: Excerpts from *Mobility 2030 – 2009 Amendment*
Appendix 2-10: Air Quality Analysis Supporting Information
Appendix 2-11: Traffic Noise Analysis Supporting Information
Appendix 2-12: Community Impact Assessment Supporting Information
Appendix 2-13: Indirect Impacts Analysis Supporting Information
Appendix 2-14: Cumulative Impacts Analysis Supporting Information



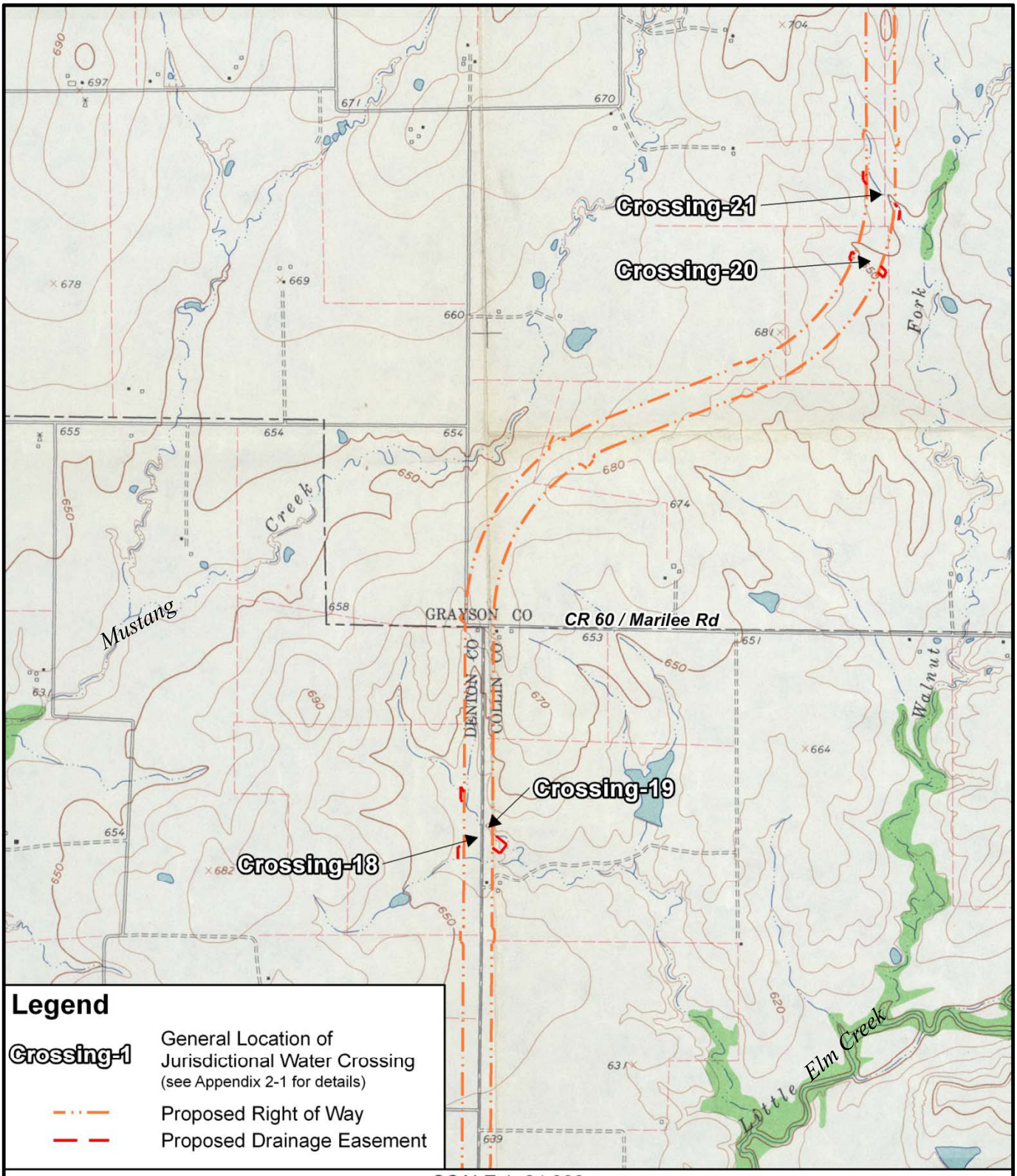

# Project on Topographic Map (Page 1 of 4)

Dallas North Tollway Extension Phase 4B/5A, Collin, Denton, and Grayson Counties, Texas




# Project on Topographic Map (Page 2 of 4)

Dallas North Tollway Extension Phase 4B/5A, Collin, Denton, and Grayson Counties, Texas

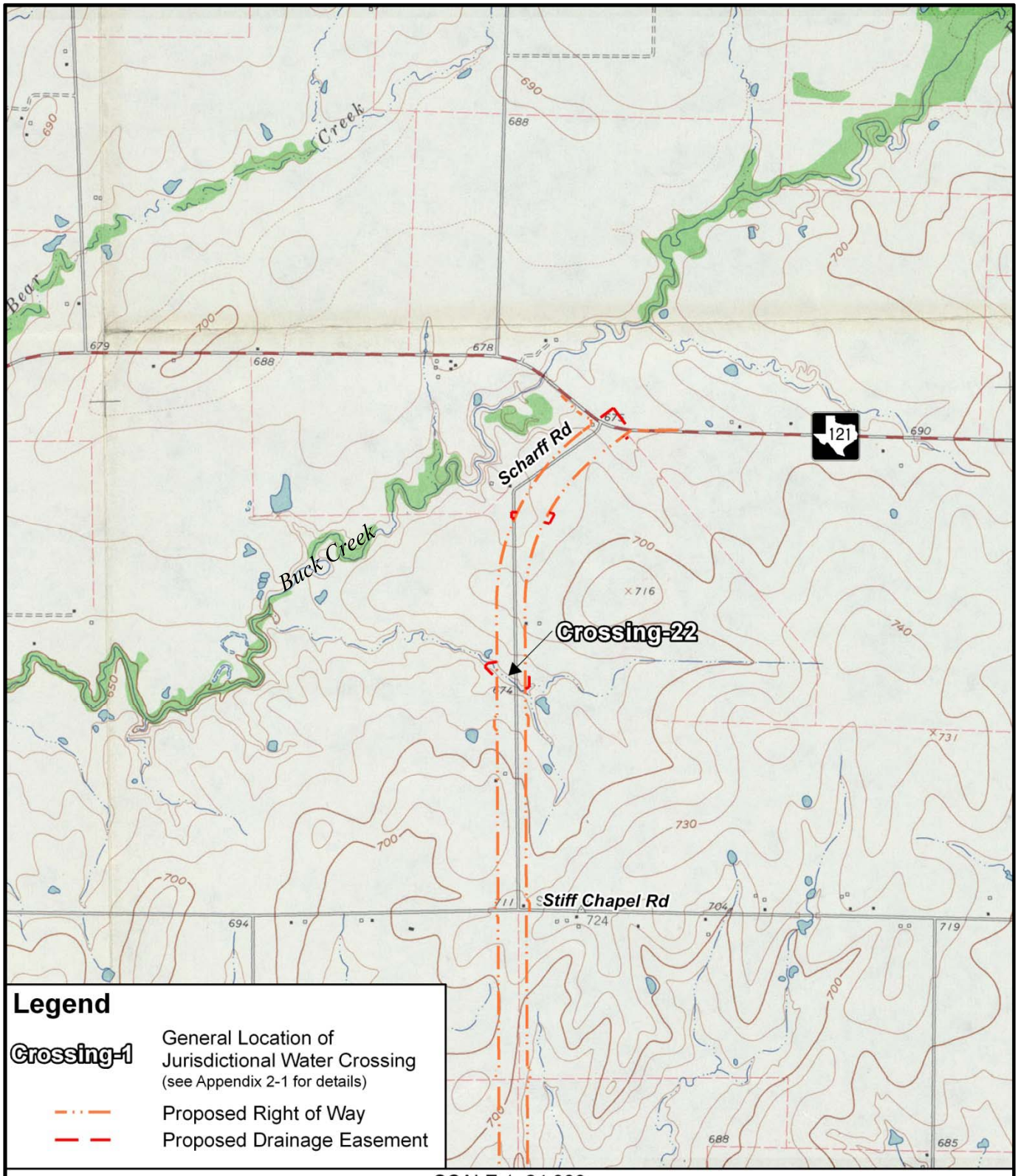



BASE MAP: CELINA & MARILEE QUADRANGLES, TX
USGS# 33096-C7 (CELINA) & 33096-D7 (MARILEE), 7.5 MINUTE SERIES (TOPOGRAPHIC)

CONTOUR INTERVAL 10 FEET
MAP YEAR: CELINA 1960; MARILEE 1961

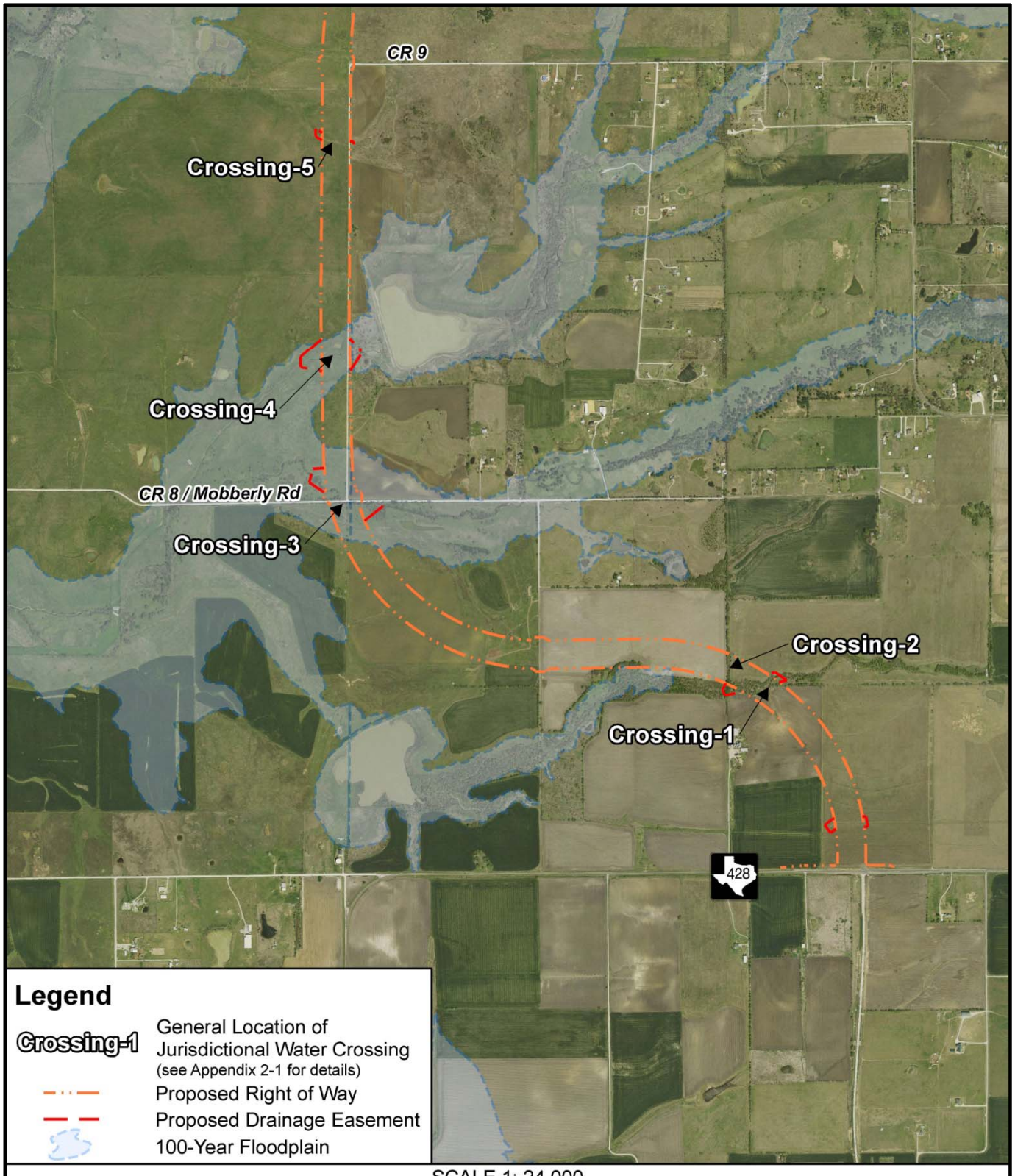
# Project on Topographic Map (Page 3 of 4)

Dallas North Tollway Extension Phase 4B/5A, Collin, Denton, and Grayson Counties, Texas




## Project on Topographic Map (Page 4 of 4)

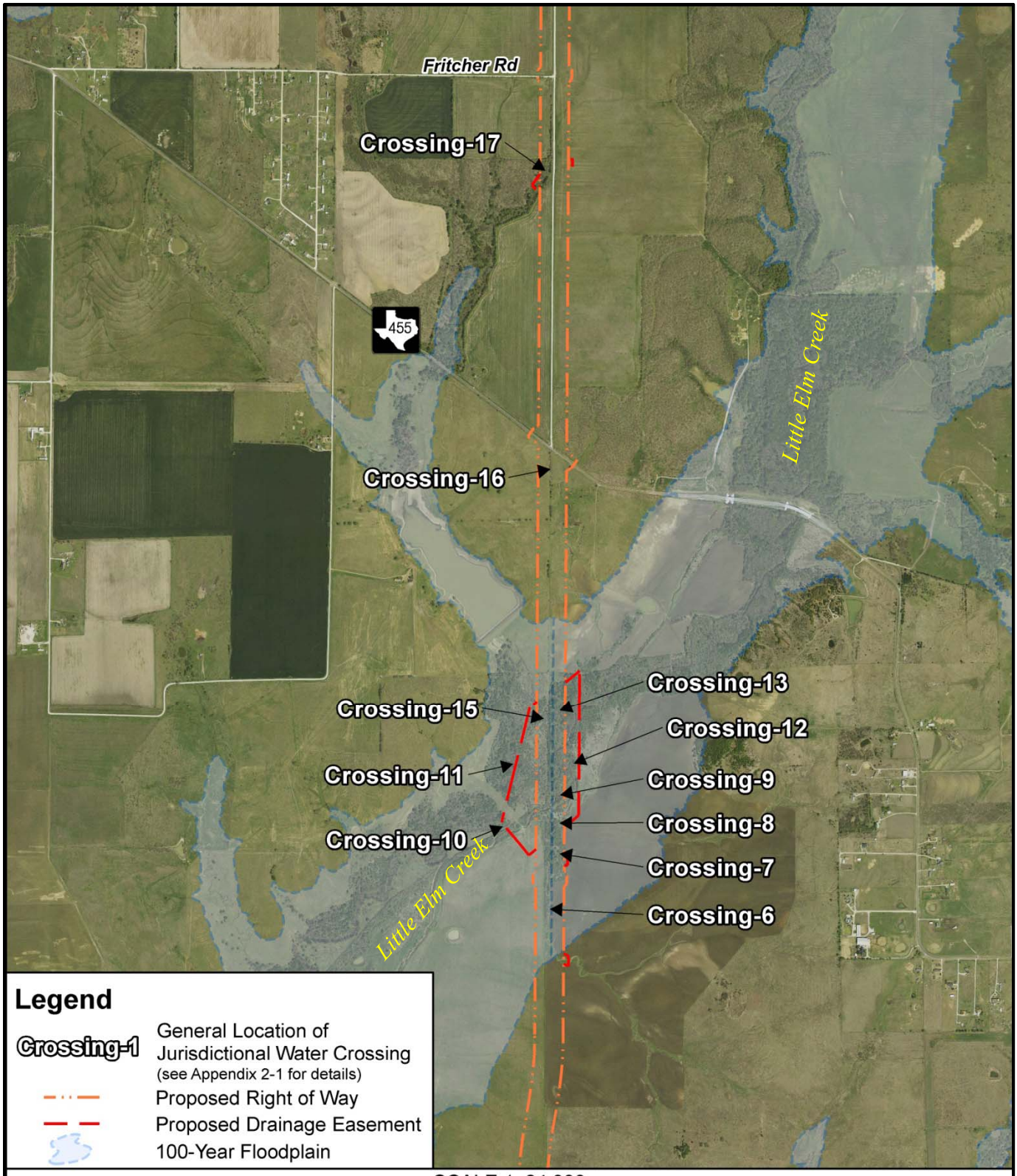
Dallas North Tollway Extension Phase 4B/5A, Collin, Denton, and Grayson Counties, Texas




Source/Year of Aerial Photograph Base Map: Landiscor/2009
Source/Year of Floodplain Data: FEMA/Collin County (2009), Denton County (2002), and Grayson County (2010)

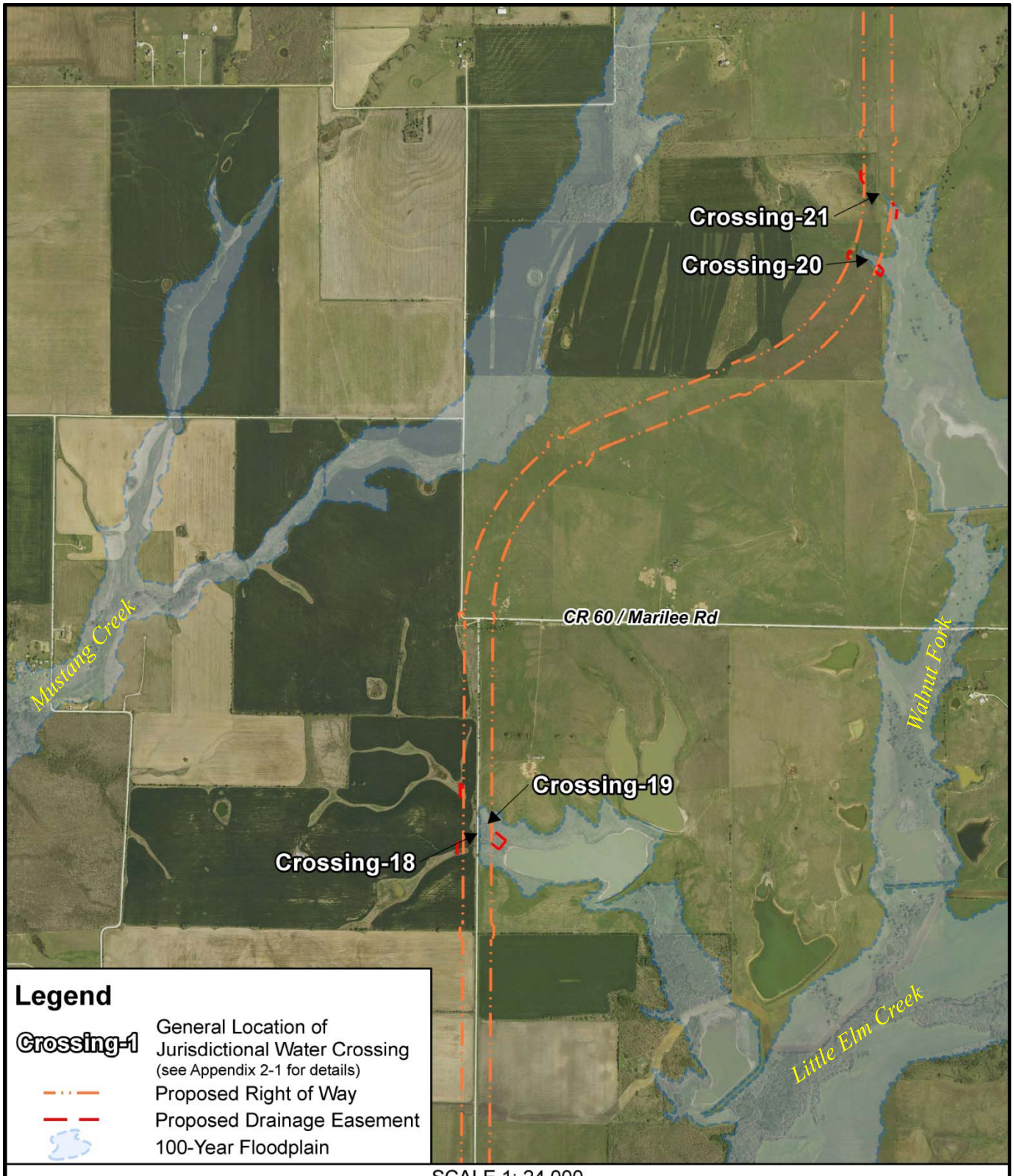
# Project on Aerial Photograph (Page 1 of 4)

Dallas North Tollway Extension Phase 4B/5A, Collin, Denton, and Grayson Counties, Texas



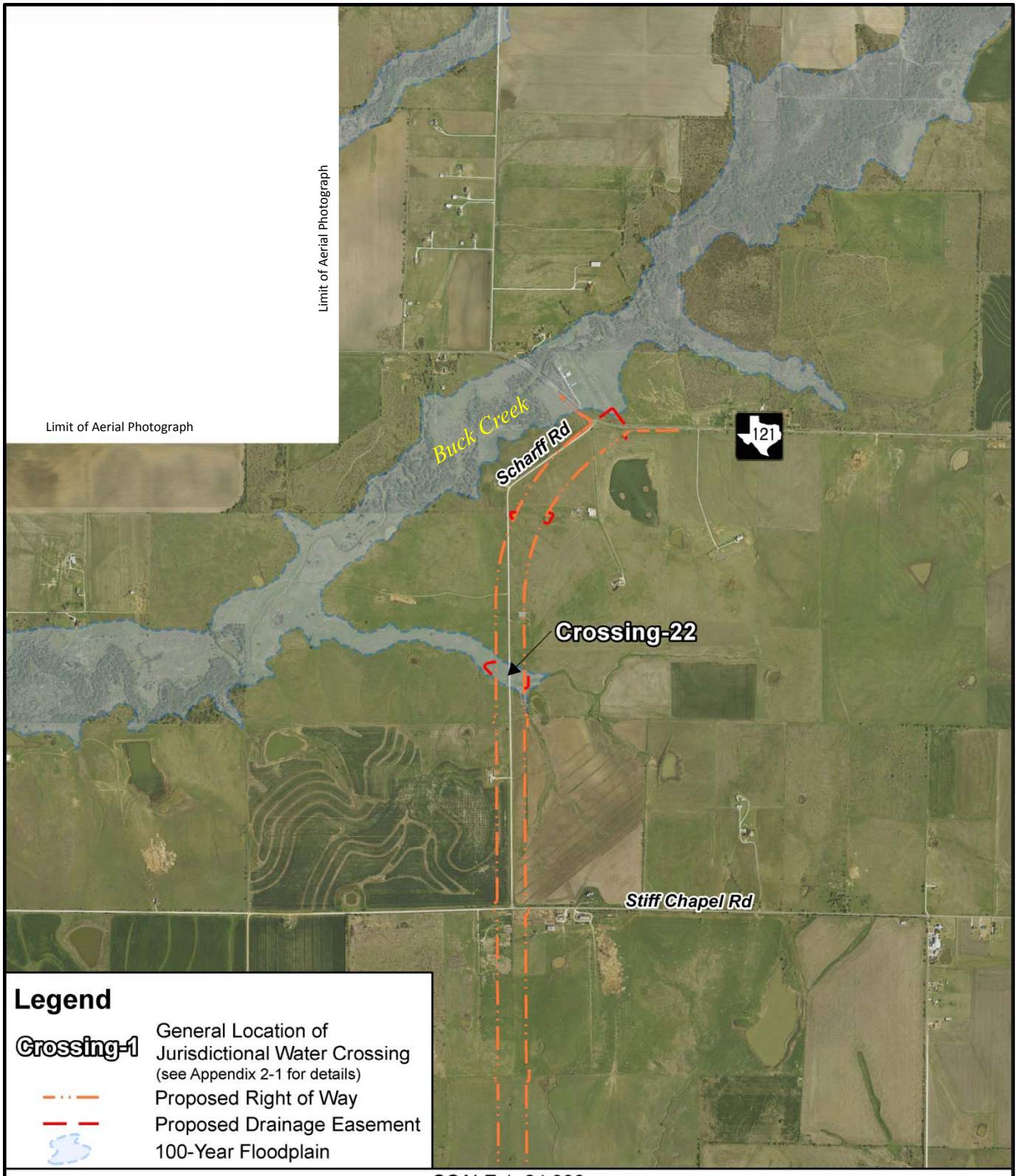

# Project on Aerial Photograph (Page 2 of 4)

Dallas North Tollway Extension Phase 4B/5A, Collin, Denton, and Grayson Counties, Texas



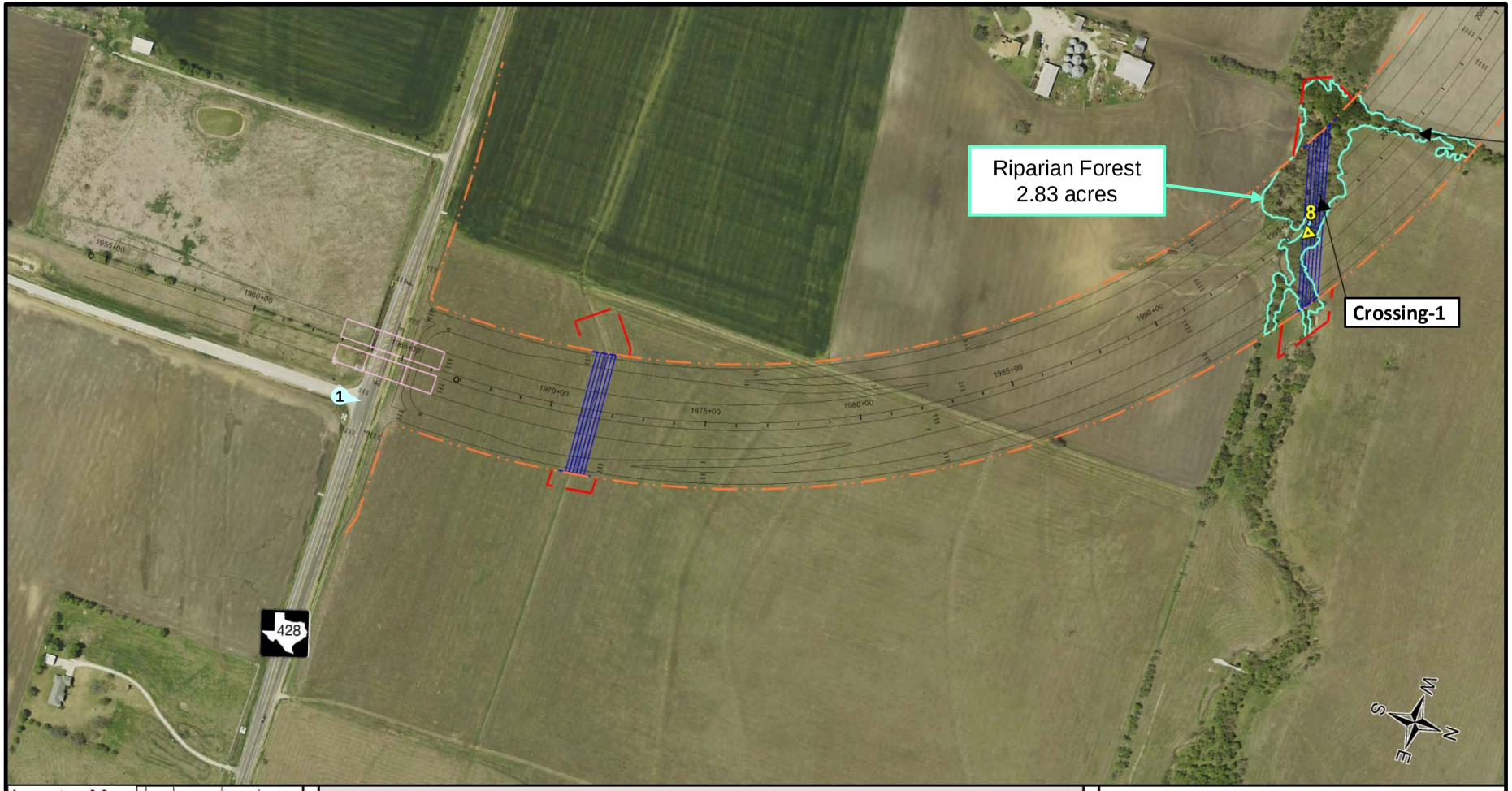

# Project on Aerial Photograph (Page 3 of 4)

Dallas North Tollway Extension Phase 4B/5A, Collin, Denton, and Grayson Counties, Texas




# Project on Aerial Photograph (Page 4 of 4)

Dallas North Tollway Extension Phase 4B/5A, Collin, Denton, and Grayson Counties, Texas

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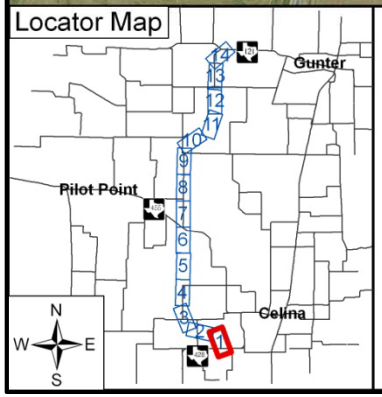



## Legend

- Proposed Right of Way
- Existing Right of Way
- Drainage Easement
- Proposed Bridge
- Proposed Edge of Pavement
- Proposed Direction of Travel
- Photo point and orientation (see photos in Exhibit 1-5)
- Noise Receiver Location
- Woodland Data Point Location
- Crossing-1 Water of the U.S.
- Wetland
- Proposed Storm Drainage

Source/Year of Aerial Photograph: Landiscor/2009

0 500 1,000 Feet

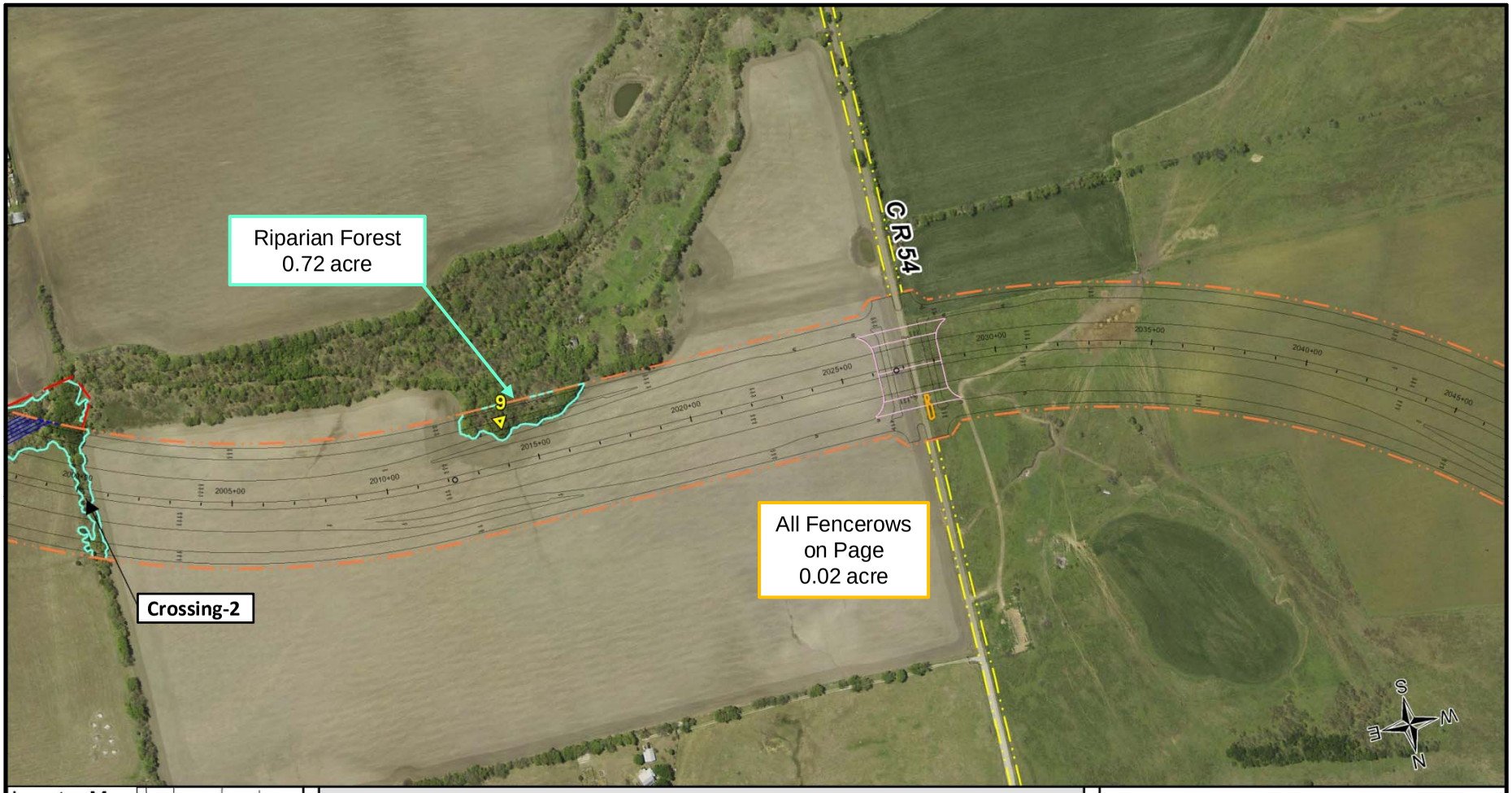
**Project Design on Aerial Photograph, Page 1**

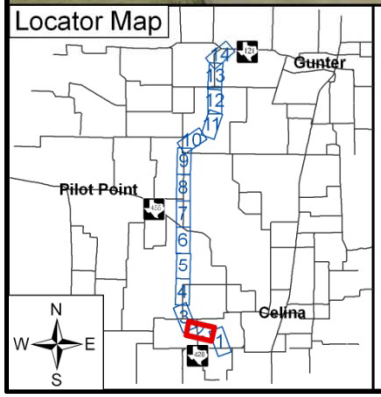
Dallas North Tollway Extension Phase 4B/5A
Collin, Denton, and Grayson Counties, Texas

NTTA NORTH TEXAS TOLLWAY AUTHORITY



Exhibit 2-3, Page 1




## Legend

- Proposed Right of Way
- Existing Right of Way
- Drainage Easement
- Proposed Bridge
- Proposed Edge of Pavement
- Proposed Direction of Travel
- 3 — Photo point and orientation (see photos in Exhibit 1-5)
- Noise Receiver Location
- 5 — Woodland Data Point Location
- Crossing-1 — Water of the U.S.
- Wetland
- Proposed Storm Drainage

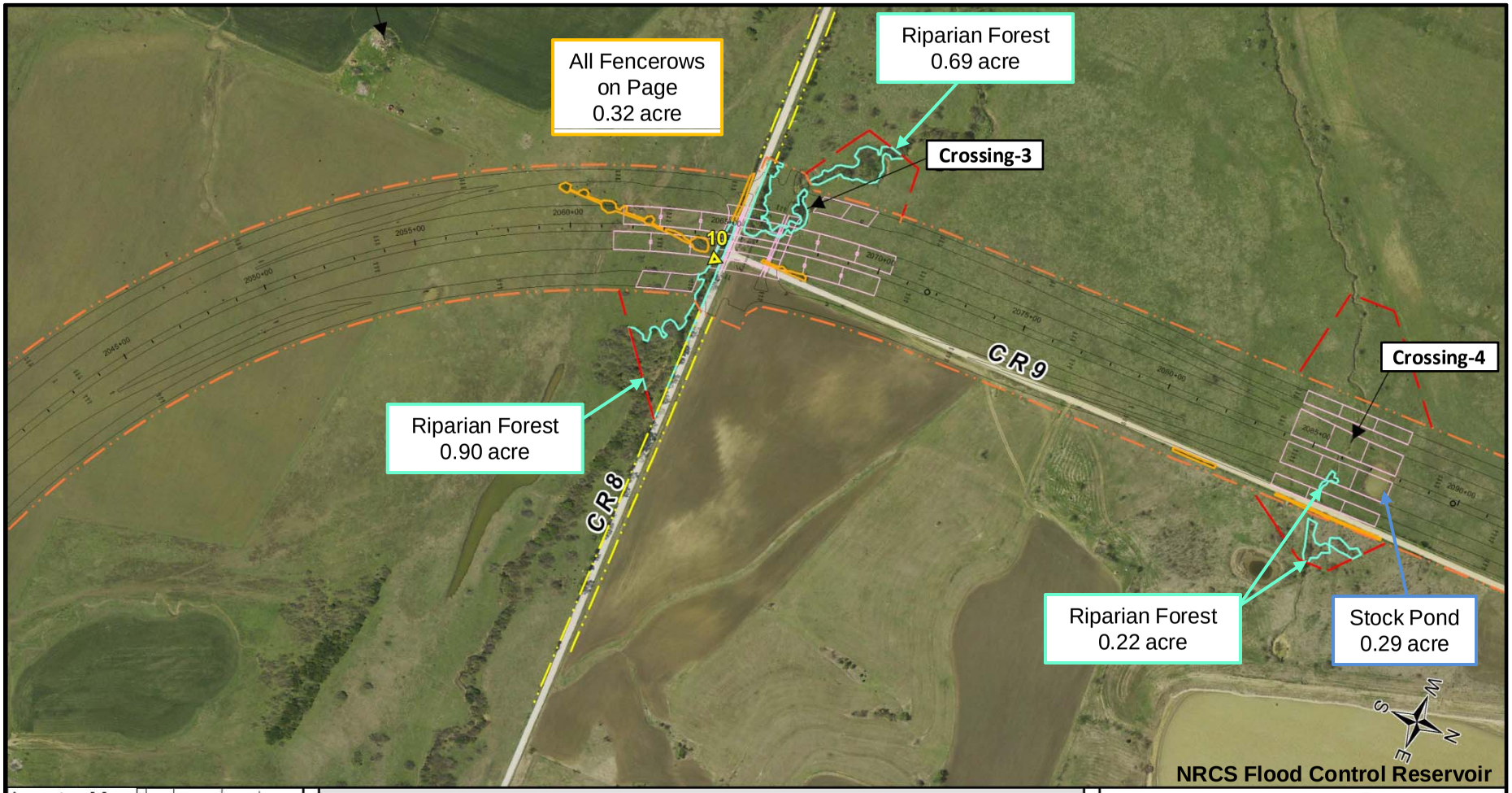
Source/Year of Aerial Photograph: Landiscor/2009

0 500 1,000 Feet

**Project Design on Aerial Photograph, Page 2**

Dallas North Tollway Extension Phase 4B/5A
Collin, Denton, and Grayson Counties, Texas

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

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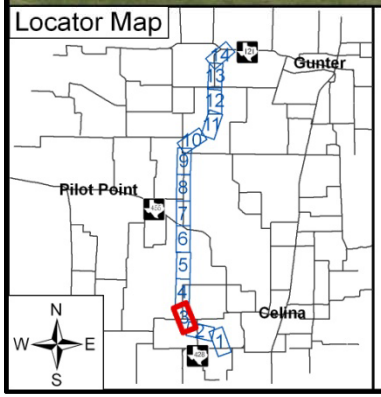


## Legend

- Proposed Right of Way
- Existing Right of Way
- Drainage Easement
- Proposed Bridge
- Proposed Edge of Pavement
- Proposed Direction of Travel
- 3 — Photo point and orientation (see photos in Exhibit 1-5)
- Noise Receiver Location
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- Crossing-1 — Water of the U.S.
- Wetland
- Proposed Storm Drainage

Source/Year of Aerial Photograph: Landiscor/2009

0 500 1,000 Feet

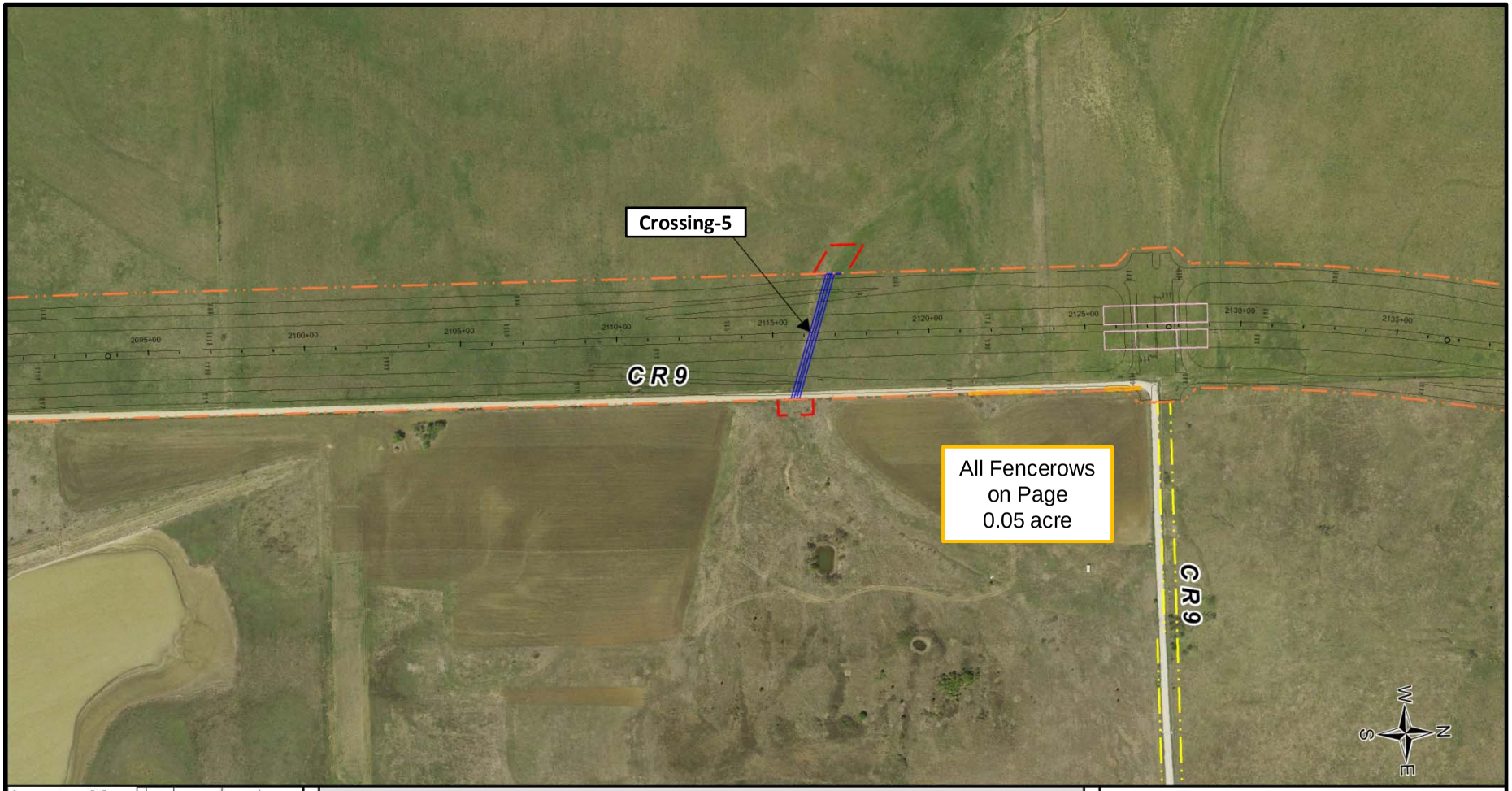
**Project Design on Aerial Photograph, Page 3**

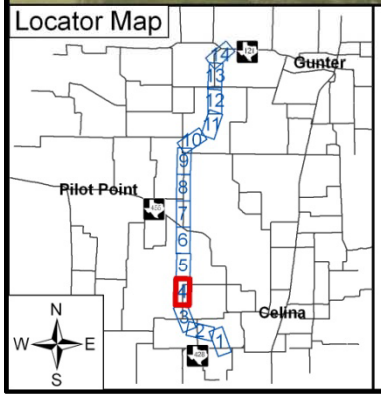
Dallas North Tollway Extension Phase 4B/5A
Collin, Denton, and Grayson Counties, Texas

NTTA NORTH TEXAS TOLLWAY AUTHORITY

Exhibit 2-3, Page 3

Exhibit 2-3, Page 3




## Legend

- Proposed Right of Way
- Existing Right of Way
- Drainage Easement
- Proposed Bridge
- Proposed Edge of Pavement
- Proposed Direction of Travel
- 3 — Photo point and orientation (see photos in Exhibit 1-5)
- Noise Receiver Location
- 5 — Woodland Data Point Location
- Crossing-1 — Water of the U.S.
- Wetland
- Proposed Storm Drainage

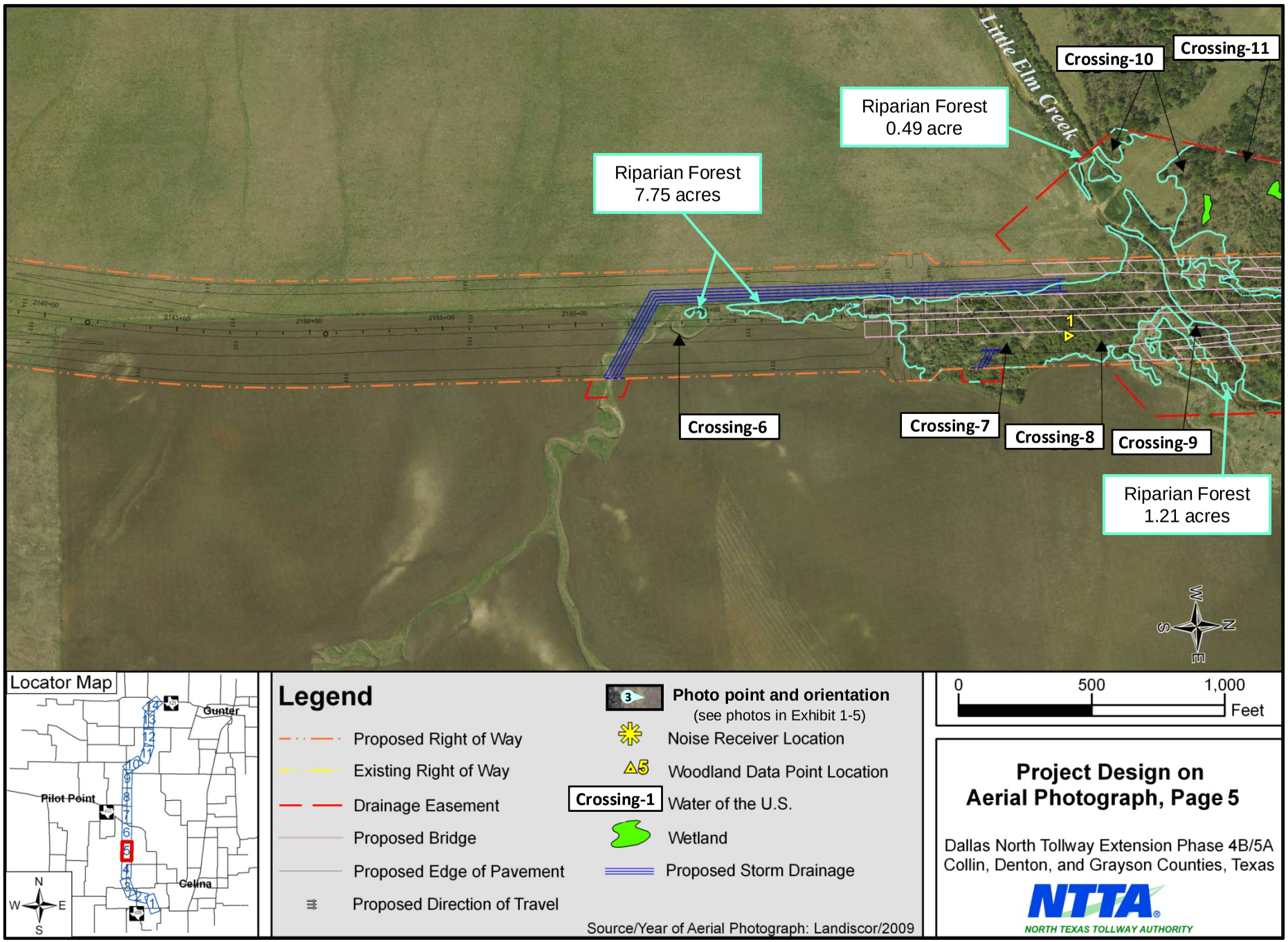
Source/Year of Aerial Photograph: Landiscor/2009

0 500 1,000 Feet

**Project Design on Aerial Photograph, Page 4**

Dallas North Tollway Extension Phase 4B/5A
Collin, Denton, and Grayson Counties, Texas

NTTA NORTH TEXAS TOLLWAY AUTHORITY




Locator Map




## Legend

- Proposed Right of Way
- Existing Right of Way
- Drainage Easement
- Proposed Bridge
- Proposed Edge of Pavement
- Proposed Direction of Travel
- 3 — Photo point and orientation (see photos in Exhibit 1-5)
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- Wetland
- Proposed Storm Drainage

Source/Year of Aerial Photograph: Landiscor/2009

0 500 1,000 Feet

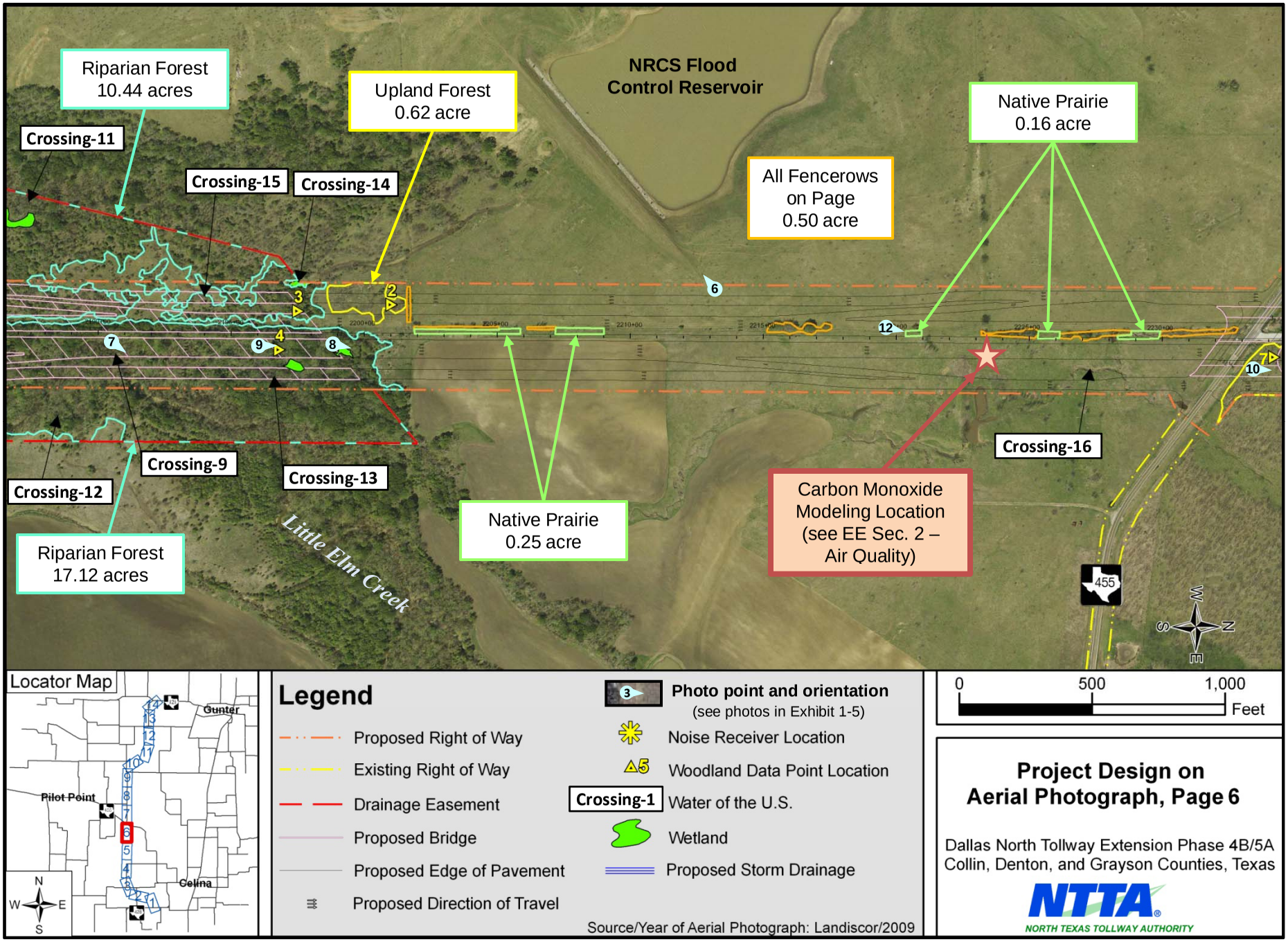
**Project Design on Aerial Photograph, Page 5**

Dallas North Tollway Extension Phase 4B/5A
Collin, Denton, and Grayson Counties, Texas

NTTA
NORTH TEXAS TOLLWAY AUTHORITY



Exhibit 2-3, Page 5


Riparian Forest
10.44 acres
Upland Forest
0.62 acre
NRCS Flood
Control Reservoir
Native Prairie
0.16 acre
Crossing-11
Crossing-15
Crossing-14
All Fencerows
on Page
0.50 acre
Crossing-16
Crossing-9
Crossing-13
Crossing-12
Native Prairie
0.25 acre
Carbon Monoxide
Modeling Location
(see EE Sec. 2 –
Air Quality)
Riparian Forest
17.12 acres
Little Elm Creek
455
Locator Map
Gunter
Pilot Point
Celina
Legend
Proposed Right of Way
Existing Right of Way
Drainage Easement
Proposed Bridge
Proposed Edge of Pavement
Proposed Direction of Travel
Photo point and orientation
(see photos in Exhibit 1-5)
Noise Receiver Location
Woodland Data Point Location
Crossing-1
Water of the U.S.
Wetland
Proposed Storm Drainage
Source/Year of Aerial Photograph: Landiscor/2009
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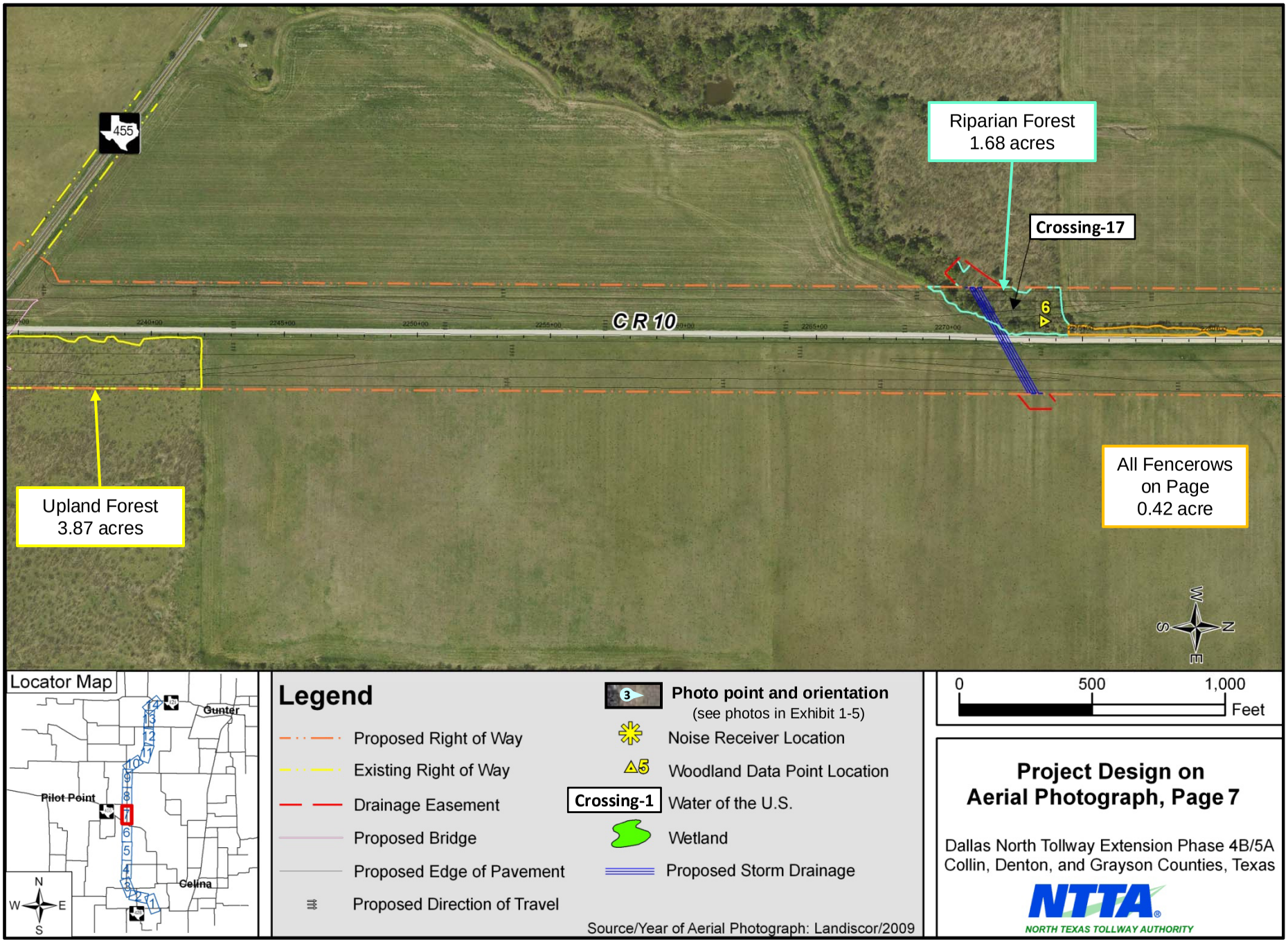
Project Design on
Aerial Photograph, Page 6
Dallas North Tollway Extension Phase 4B/5A
Collin, Denton, and Grayson Counties, Texas
NTTA
NORTH TEXAS TOLLWAY AUTHORITY




Locator Map




## Legend

- Proposed Right of Way
- Existing Right of Way
- Drainage Easement
- Proposed Bridge
- Proposed Edge of Pavement
- Proposed Direction of Travel
- 3 — Photo point and orientation (see photos in Exhibit 1-5)
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- Crossing-1 — Water of the U.S.
- Wetland
- Proposed Storm Drainage

Source/Year of Aerial Photograph: Landiscor/2009

0 500 1,000 Feet

**Project Design on Aerial Photograph, Page 7**

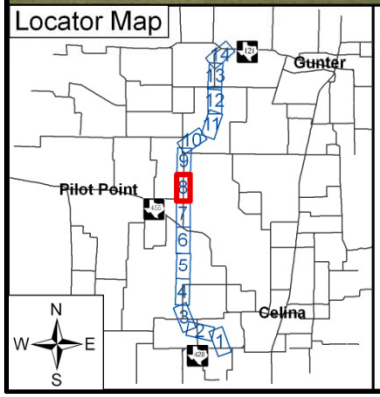
Dallas North Tollway Extension Phase 4B/5A
Collin, Denton, and Grayson Counties, Texas

NTTA
NORTH TEXAS TOLLWAY AUTHORITY



Exhibit 2-3, Page 7


Locator Map




## Legend

- Proposed Right of Way
- Existing Right of Way
- Drainage Easement
- Proposed Bridge
- Proposed Edge of Pavement
- Proposed Direction of Travel
- 3 — Photo point and orientation (see photos in Exhibit 1-5)
- Noise Receiver Location
- 5 — Woodland Data Point Location
- Crossing-1 — Water of the U.S.
- Wetland
- Proposed Storm Drainage

Source/Year of Aerial Photograph: Landiscor/2009

0 500 1,000 Feet

**Project Design on Aerial Photograph, Page 8**

Dallas North Tollway Extension Phase 4B/5A
Collin, Denton, and Grayson Counties, Texas

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

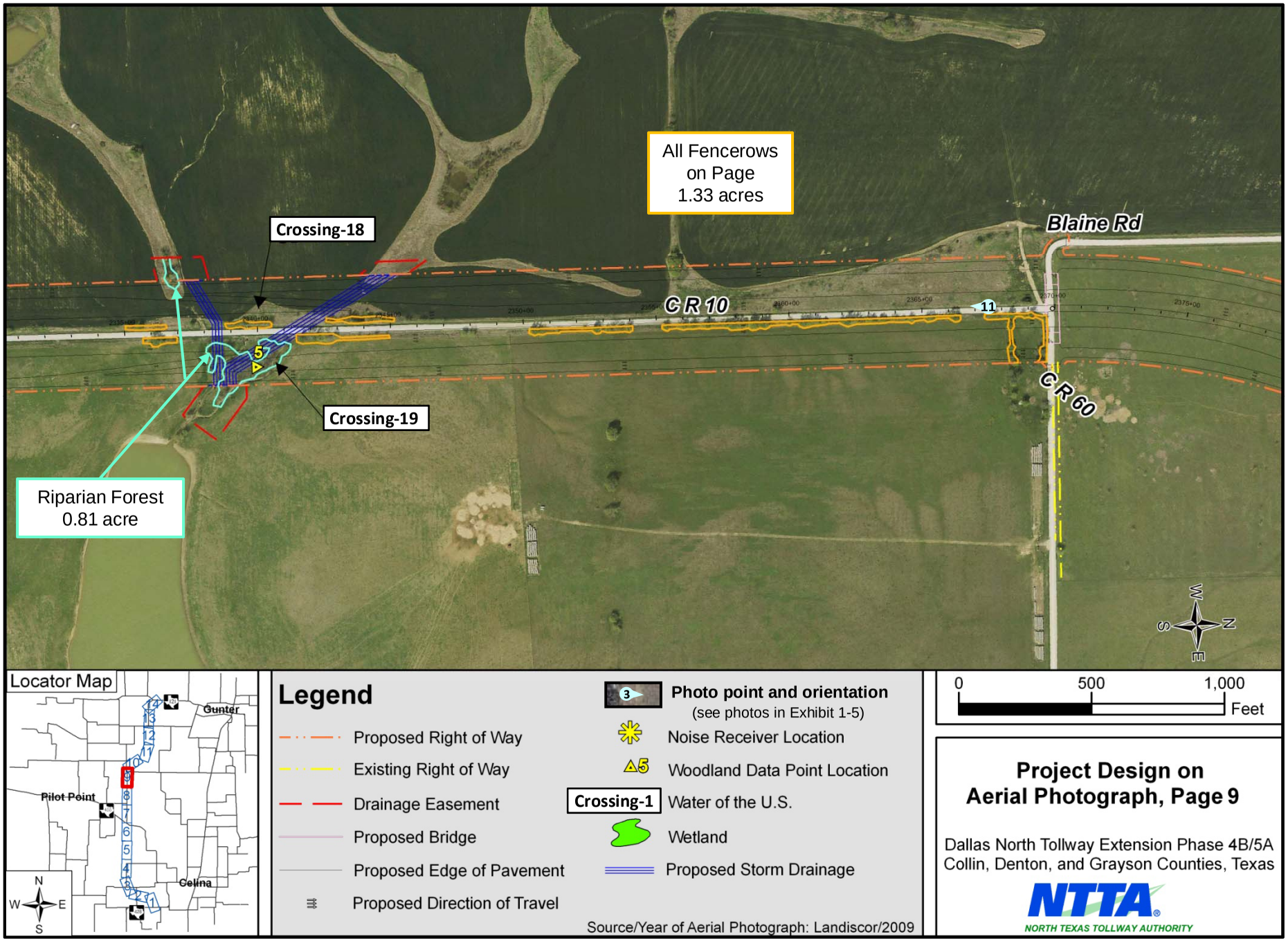
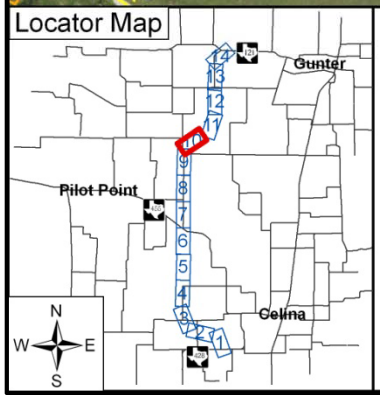





Exhibit 2-3, Page 9


## Legend

- Proposed Right of Way
- Existing Right of Way
- Drainage Easement
- Proposed Bridge
- Proposed Edge of Pavement
- Proposed Direction of Travel
- 3 — Photo point and orientation (see photos in Exhibit 1-5)
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- Wetland
- Proposed Storm Drainage

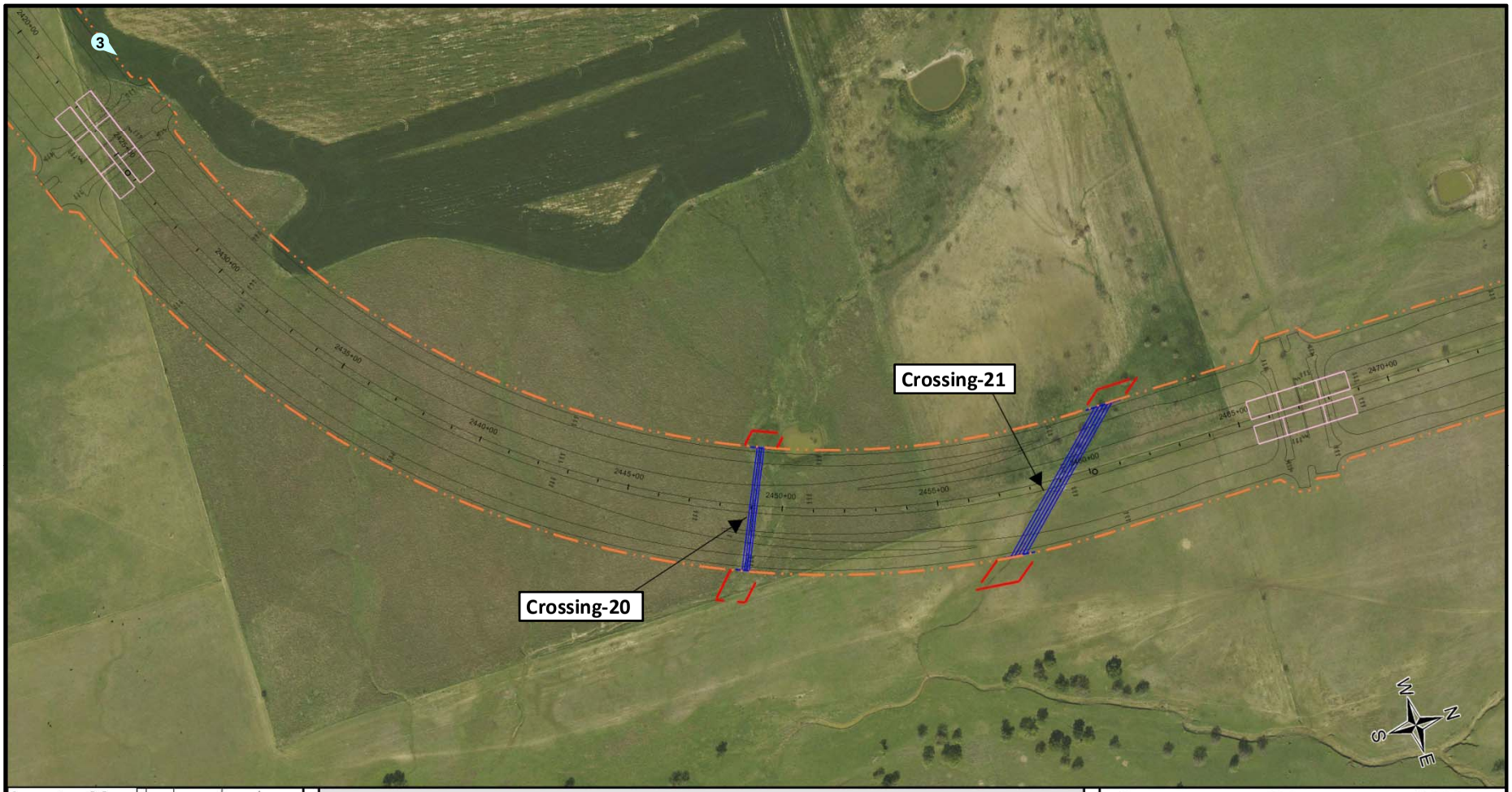
Source/Year of Aerial Photograph: Landiscor/2009

0 500 1,000 Feet

**Project Design on Aerial Photograph, Page 10**

Dallas North Tollway Extension Phase 4B/5A
Collin, Denton, and Grayson Counties, Texas

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

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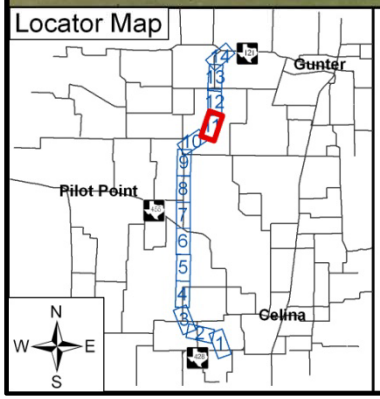


## Legend

- Proposed Right of Way
- Existing Right of Way
- Drainage Easement
- Proposed Bridge
- Proposed Edge of Pavement
- Proposed Direction of Travel
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- Noise Receiver Location
- 5 — Woodland Data Point Location
- Crossing-1 — Water of the U.S.
- Wetland
- Proposed Storm Drainage

Source/Year of Aerial Photograph: Landiscor/2009

0 500 1,000 Feet

**Project Design on Aerial Photograph, Page 11**

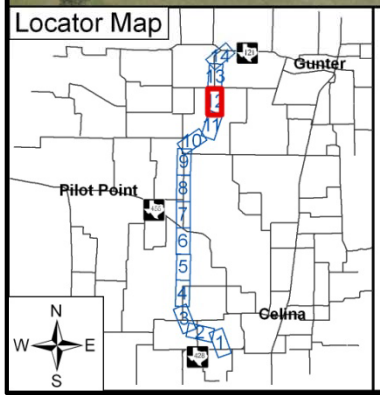
Dallas North Tollway Extension Phase 4B/5A
Collin, Denton, and Grayson Counties, Texas

NTTA NORTH TEXAS TOLLWAY AUTHORITY



Exhibit 2-3, Page 11


Locator Map




## Legend

- Proposed Right of Way
- Existing Right of Way
- Drainage Easement
- Proposed Bridge
- Proposed Edge of Pavement
- Proposed Direction of Travel
- 3 — Photo point and orientation (see photos in Exhibit 1-5)
- Noise Receiver Location
- 5 — Woodland Data Point Location
- Crossing-1 — Water of the U.S.
- Wetland
- Proposed Storm Drainage

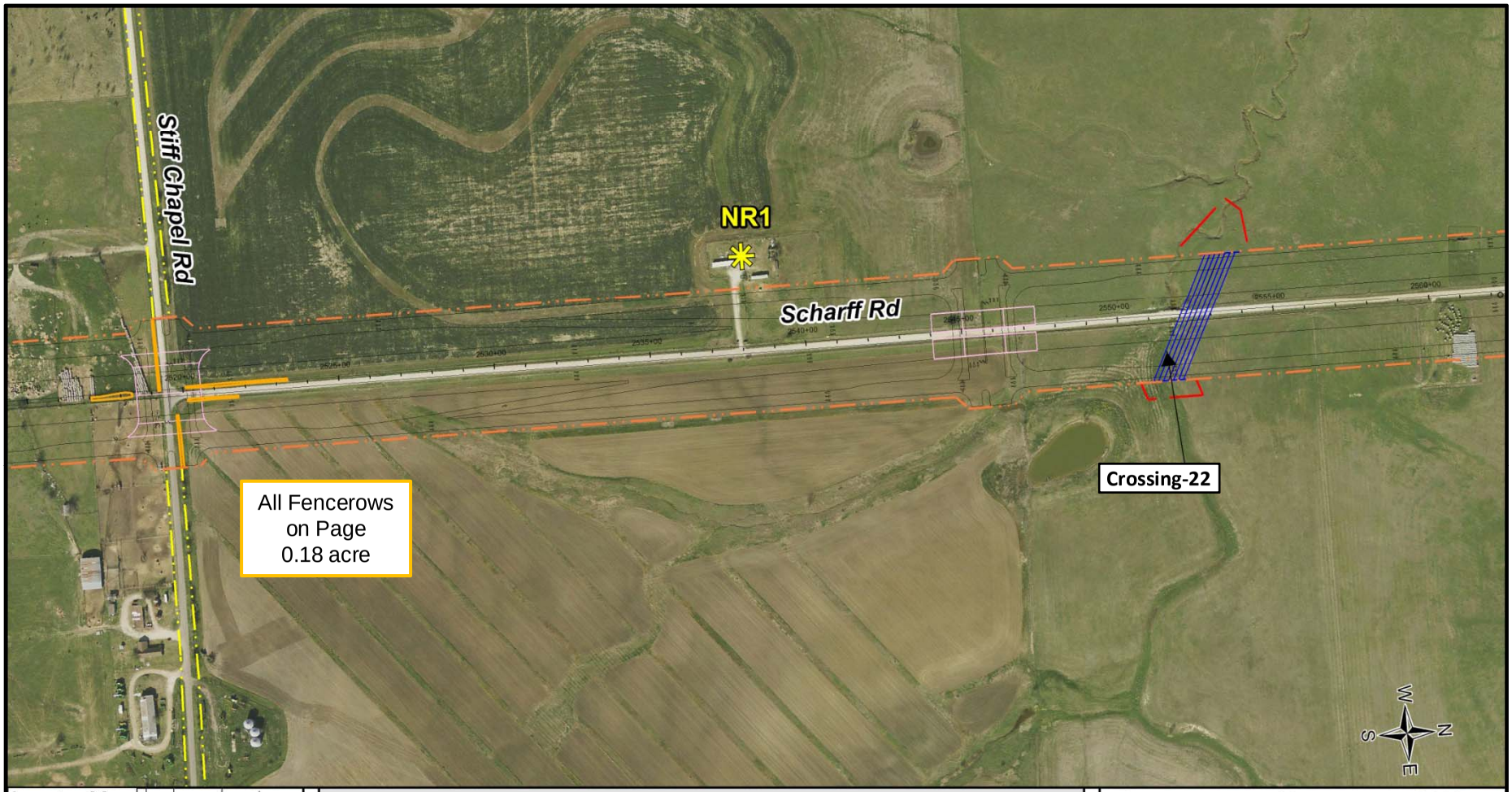
Source/Year of Aerial Photograph: Landiscor/2009

0 500 1,000 Feet

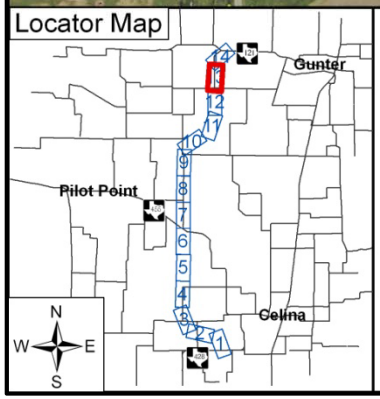
**Project Design on Aerial Photograph, Page 12**

Dallas North Tollway Extension Phase 4B/5A
Collin, Denton, and Grayson Counties, Texas

NTTA
NORTH TEXAS TOLLWAY AUTHORITY




Locator Map




## Legend

- Proposed Right of Way
- Existing Right of Way
- Drainage Easement
- Proposed Bridge
- Proposed Edge of Pavement
- Proposed Direction of Travel
- Photo point and orientation (see photos in Exhibit 1-5)
- Noise Receiver Location
- Woodland Data Point Location
- Crossing-1 Water of the U.S.
- Wetland
- Proposed Storm Drainage

Source/Year of Aerial Photograph: Landiscor/2009

0 500 1,000 Feet

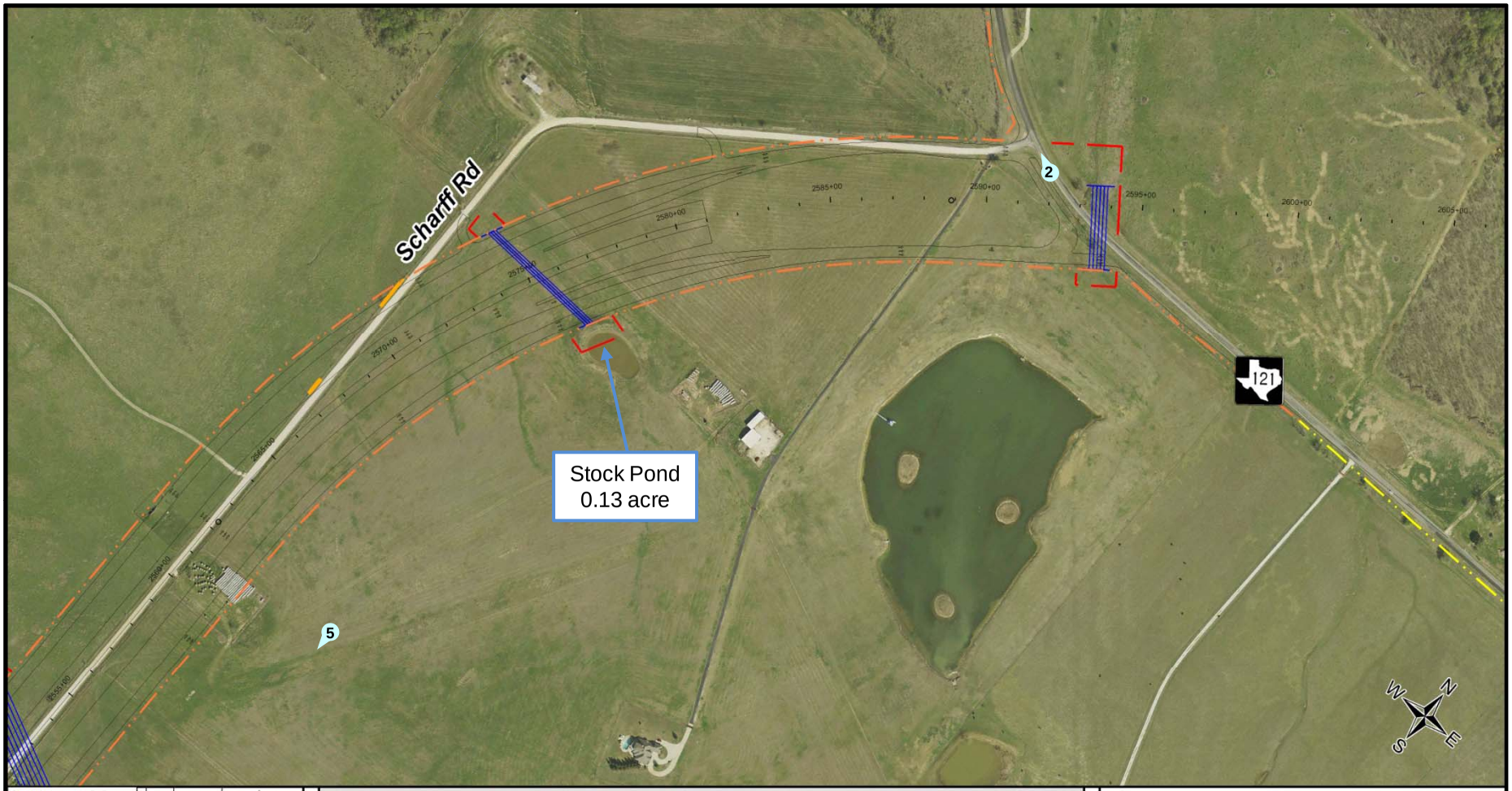
**Project Design on Aerial Photograph, Page 13**

Dallas North Tollway Extension Phase 4B/5A
Collin, Denton, and Grayson Counties, Texas

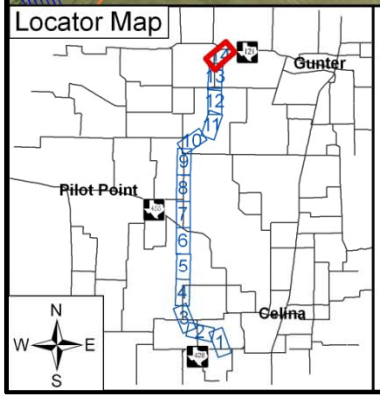
NTTA NORTH TEXAS TOLLWAY AUTHORITY



Exhibit 2-3, Page 13




Locator Map




## Legend

- Proposed Right of Way
- Existing Right of Way
- Drainage Easement
- Proposed Bridge
- Proposed Edge of Pavement
- Proposed Direction of Travel
- 3 Photo point and orientation (see photos in Exhibit 1-5)
- Noise Receiver Location
- 5 Woodland Data Point Location
- Crossing-1 Water of the U.S.
- Wetland
- Proposed Storm Drainage

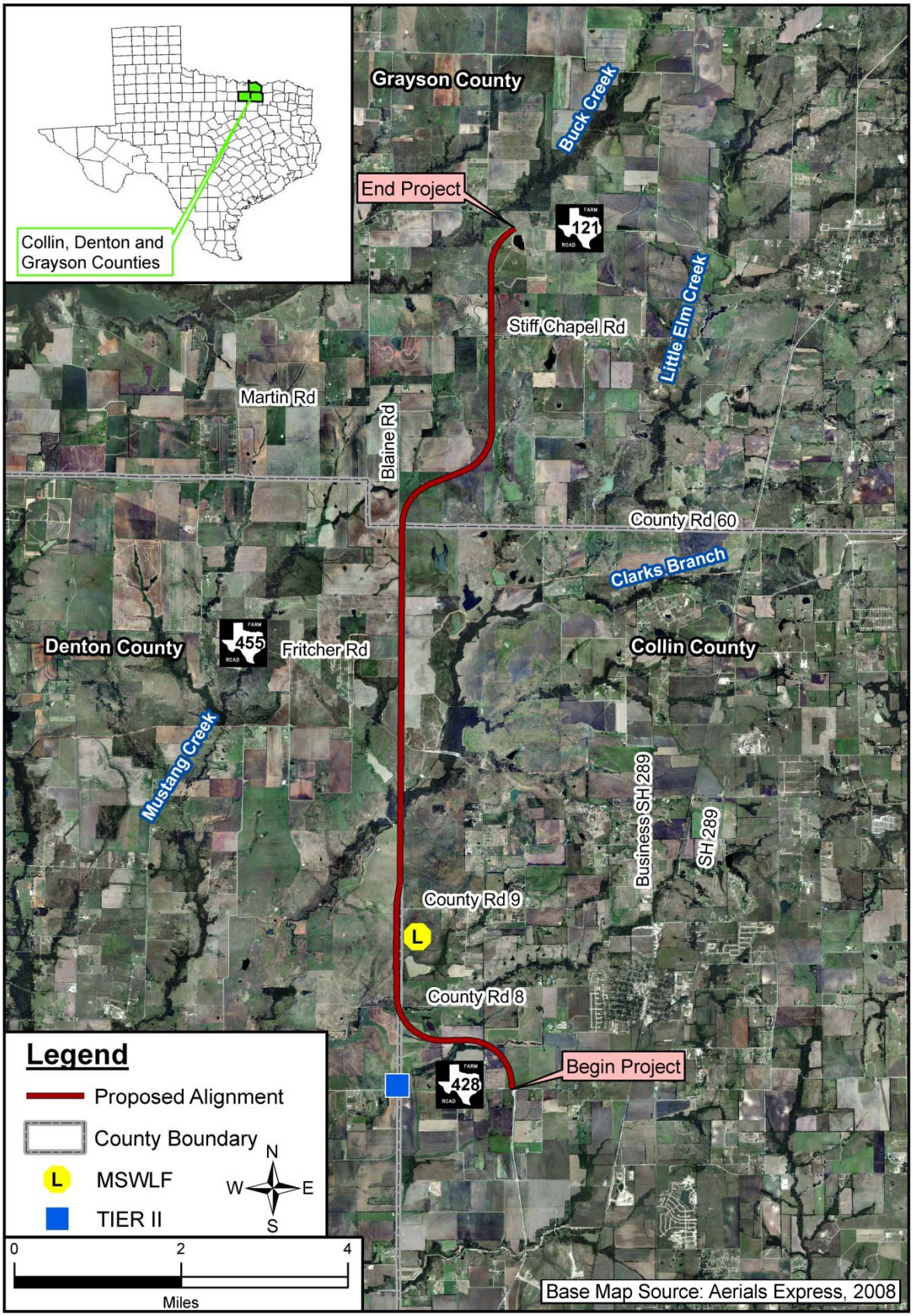
Source/Year of Aerial Photograph: Landiscor/2009

0 500 1,000 Feet

**Project Design on Aerial Photograph, Page 14**

Dallas North Tollway Extension Phase 4B/5A
Collin, Denton, and Grayson Counties, Texas

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

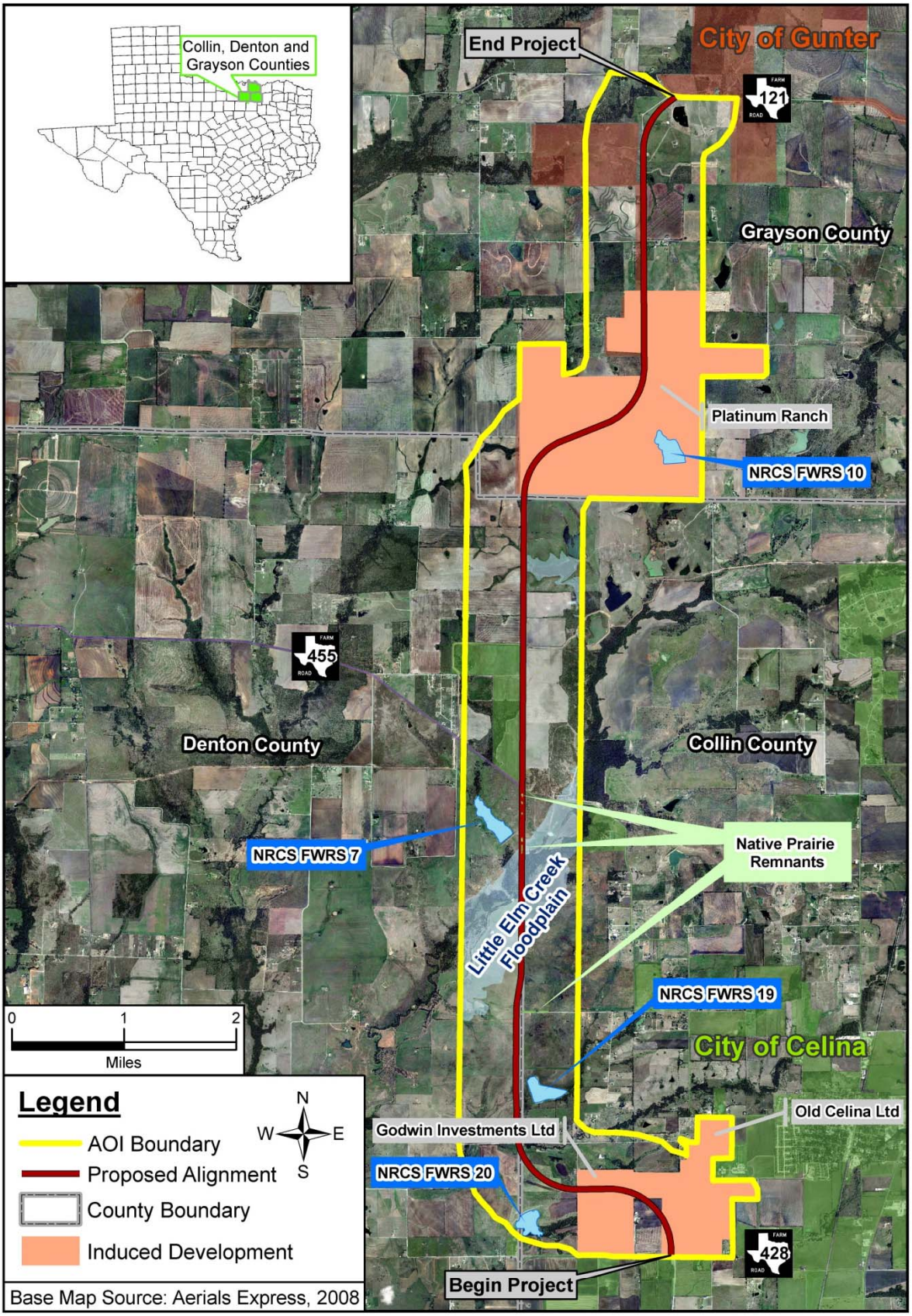



## Hazardous Materials Site Map

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

NTTA NORTH TEXAS TOLLWAY AUTHORITY

Exhibit 2-4

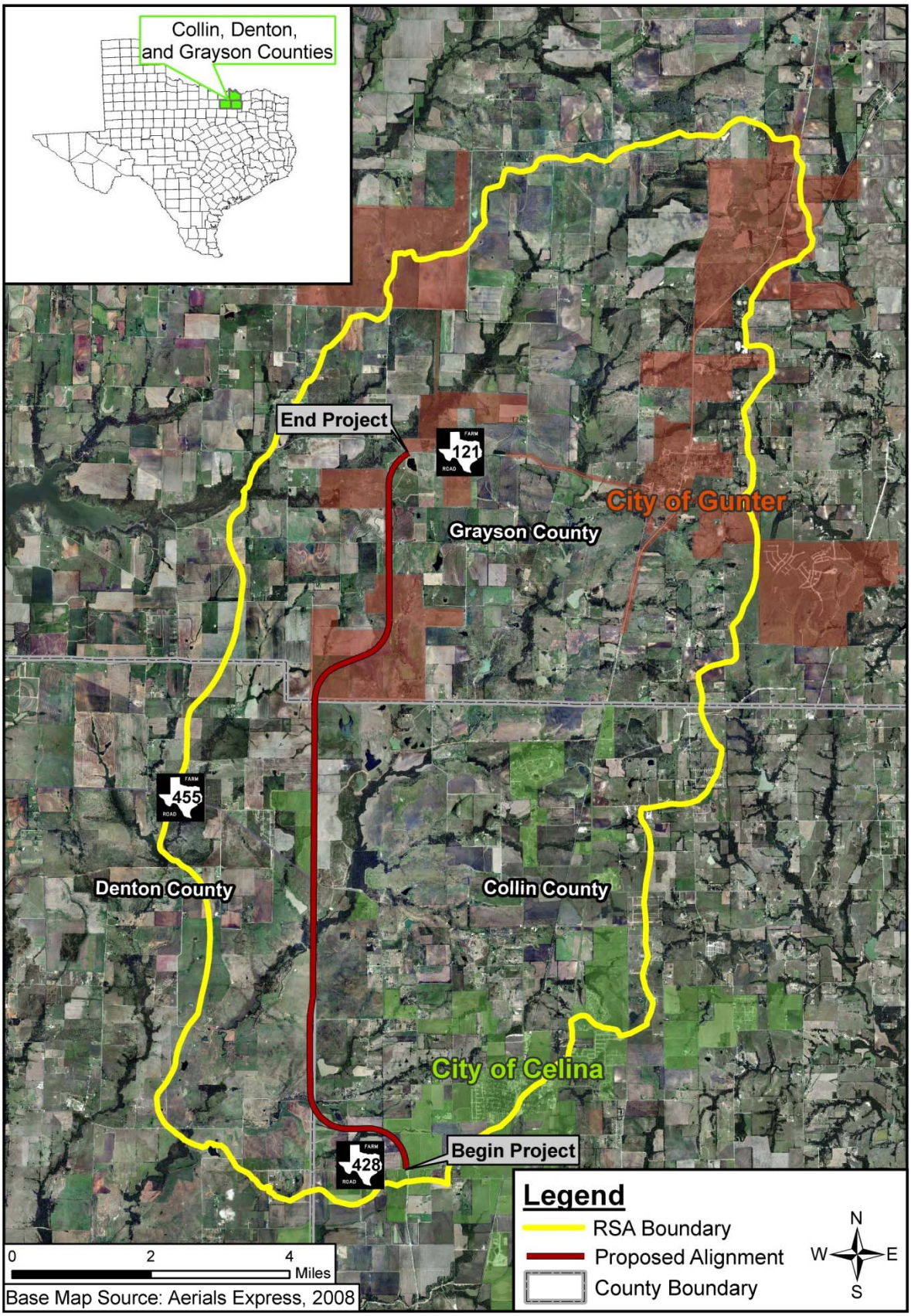



**Indirect Effects Area of Influence (AOI) Map**

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

Exhibit 2-5

NTTA NORTH TEXAS TOLLWAY AUTHORITY

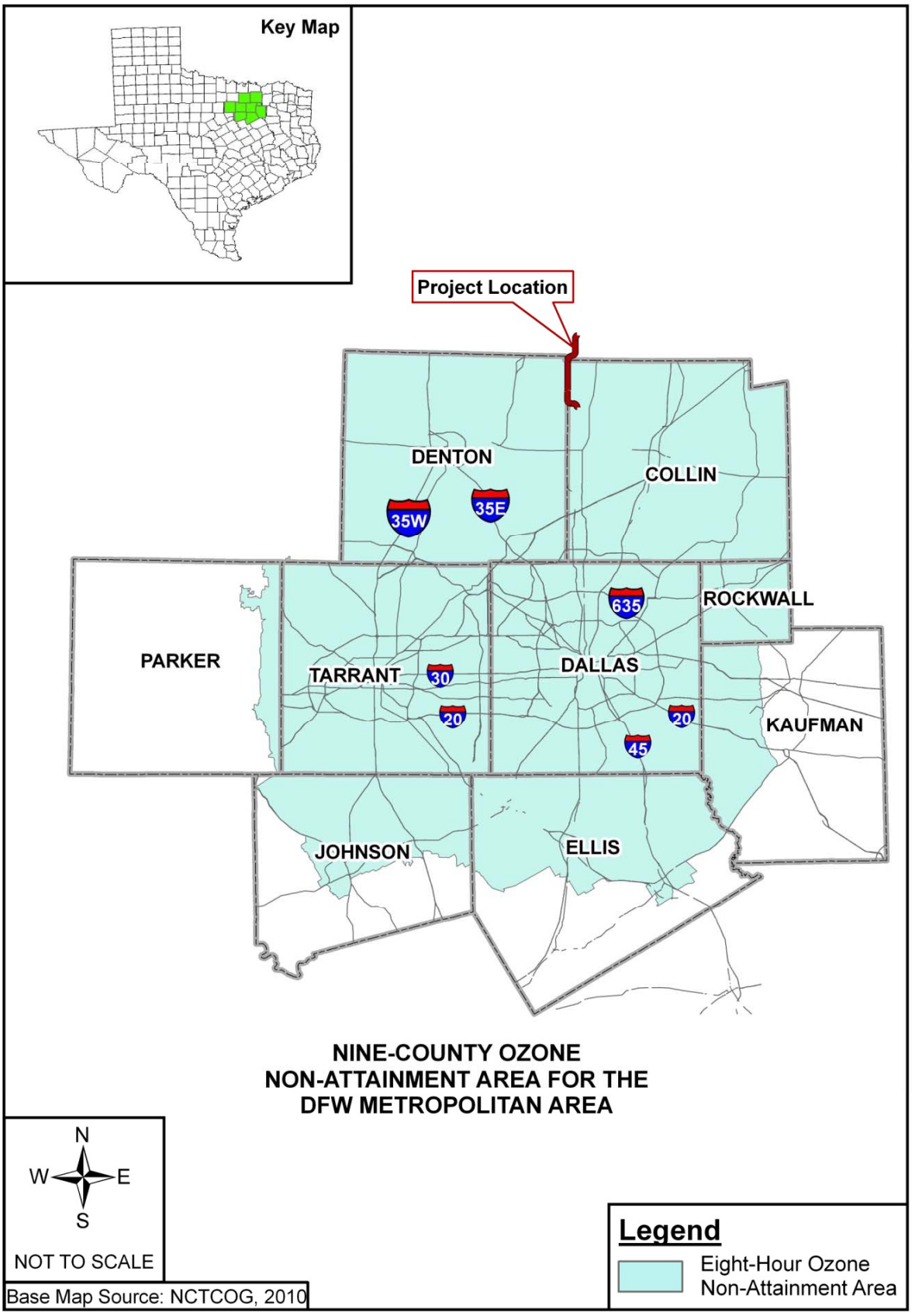



**Cumulative Impacts Resource Study Area (RSA) for Vegetation/Habitat**

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

NTTA NORTH TEXAS TOLLWAY AUTHORITY

Exhibit 2-6




**Cumulative Impacts Resource Study Area (RSA) for Air Quality**

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

Exhibit 2-7

# SECTION 3
# PERMITS AND MITIGATION

## Permits

- ☒ Section 404 Permits
- ☒ Section 401 Certifications
- ☐ Section 9 and Section 10 Permits
- ☐ Section 408 Determinations
- ☒ Section 402 TPDES Permits
- ☐ Corridor Development Certificate Permits
- ☐ Section 10(a) Permits
- ☐ Marl, Sand, Gravel, Shell, or Mudshell Permits
- ☒ Texas Antiquities Permits

## Mitigation

- ☒ Waters of the U.S., Including Wetlands
- ☐ Storm Water
- ☒ Floodplains
- ☒ Vegetation and Wildlife
- ☐ Historic Resources
- ☐ Archeological Resources
- ☒ Traffic Noise
- ☐ Public Lands

## Permits

### Section 404 Permit

Based on a preliminary jurisdictional determination, impacts at Crossing-6 and Crossing-9 would exceed the maximum allowable (0.5 acre) under Nationwide Permit (NWP) 14 – Linear Transportation Projects; therefore, an Individual Permit (IP) would be required. Because impacts at Crossing-1, Crossing-3, Crossing-4, Crossing-10 through Crossing-16, and Crossing-20 through Crossing-22 exceed the 0.1 acre permanent impact threshold for NWP 14 and/or affect associated wetlands, a Pre-Construction Notification (PCN) would be required for these locations. NWP 14 without a PCN would be required for Crossing-2, Crossing-5, Crossing-7, Crossing-8, and Crossing-17 through Crossing-19 because permanent impacts are less than 0.1 acre and no special aquatic sites (which include wetlands) would be impacted. Although NWP 14 is applicable for some of the crossings, the entire project would be submitted to the USACE for an IP as two of the crossings exceed the regulatory limits of NWP 14. This approach is consistent with the USACE-recommended procedure followed on similar projects, which ensures that impacts to waters of the U.S. requiring authorization by an IP can be viewed and justified in the context of the entire project. Additionally, it is expected that the USACE would exercise its discretionary authority to allow impacts under NWP 14 for the crossings that meet its criteria. Channelization would be required to construct the proposed DNT 4B/5A.

### Section 401 Certification

Permits under Section 404 of the CWA require applicants to also obtain the appropriate level of state water quality certification under Section 401 of the CWA. In Texas, compliance with Section 401 requires the use of the TCEQ's Best Management Practices (BMP) to manage water quality during construction. These BMP would address each of the following categories:

- Category I Erosion Control would be addressed by applying temporary reseeding to disturbed areas.
- Category II Sedimentation Control would be addressed by installing rock berms and erosion control logs.
- Category III Post-Construction Total Suspended Solids control would be addressed by installing erosion control compost.

Other approved BMP methods may be substituted if appropriate.

Additional regulatory requirements will apply to Crossing-6 and Crossing-9, including completion of the TCEQ Tier II 401 Certification Questionnaire and Alternatives Analysis Checklist.

### Section 402 TPDES Permit

The proposed DNT 4B/5A will disturb more than 5 acres of land. As a result, the NTTA will be required to comply with the TCEQ Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit (CGP) and file a Notice of Intent to obtain coverage under this general permit. In addition, a Storm Water Pollution Prevention Plan (SW3P) will need to be developed and implemeted during construction. Impacts will be minimized by avoiding work by construction equipment directly in stream channels and/or adjacent areas. No permanent water quality impacts are expected as a result of the proposed DNT 4B/5A.

**Texas Antiquities Permit**

An archeological evaluation of archival records relevant to the proposed DNT 4B/5A project area recommended a field survey of the project corridor. After reviewing the archeological evaluation, the THC indicated that a pedestrian field survey would be required (see **Appendix 5-1**). The NTTA submitted a TAP application on January 14, 2011 (see **Appendix 3-1**), and the THC issued TAP No. 5866 on January 25, 2011 (see **Appendix 5-1**). The archeological field survey was completed in April 2011 (**Appendix 2-8**), which found no archeological resources that would meet the eligibility criteria for listing on the NRHP. The results of the field survey will be coordinated with the THC and correspondence will be added to **Appendix 5-1**. No further actions under the TAP are anticipated.

## Mitigation

**Waters of the U.S., Including Wetlands**

Avoidance and minimization of impacts to wetlands were considered in the design of the proposed DNT 4B/5A. Impacts to the emergent wetlands within the Little Elm Creek floodplain (i.e., Crossing-10, Crossing-11, Crossing-13, Crossing-14, and Crossing-15) are unavoidable because of local conditions and design requirements that preclude moving the alignment of the proposed Build Alternative. These wetlands occur on the bridge abutment or under the proposed bridge over Little Elm Creek. The proposed DNT 4B/5A at this location is situated between a flood control reservoir to the west and Little Elm Creek to the east. Moving the proposed DNT 4B/5A to the east would greatly increase impacts to Little Elm Creek, and moving it westward would result in impacts to the flood control reservoir impoundment. Consequently, there is no practicable alternative that would avoid impacts to these four wetlands. Specific mitigation requirements would be developed to address impacts to waters of the U.S., including wetlands, in connection with the Section 404 permitting process with USACE.

To minimize impacts to water quality during construction, the proposed DNT 4B/5A would utilize temporary erosion and sedimentation control practices (i.e., temporary reseeding of disturbed areas, rock berms and erosion control logs, and/or erosion control compost). Where appropriate, these temporary erosion and sedimentation control structures would be in place prior to the initiation of construction and would be maintained throughout the construction period. Clearing of vegetation would be limited and/or phased to maintain a natural water quality buffer and minimize the amount of erodible earth exposed at any one time. Upon completion of earthwork operations, disturbed areas would be restored and reseeded.

**Floodplains**

The project design has included nearly 34 acres of drainage easements to ensure the proposed DNT 4B/5A would accommodate the design year flood without damaging the tollway, stream, or other property. In particular, drainage easements associated with three bridge crossings of floodplains (i.e., Little Elm Creek, and two floodplains near the intersection of CR 8 and CR 9) were created to allow necessary grading of the floodplain to ensure no change in base flood elevations.

**Vegetation/Habitat**

During project development, the NTTA would design, use, and promote construction practices that minimize adverse effects on both regulated and unregulated wildlife habitat. Existing vegetation, especially native trees, would be avoided and preserved wherever practicable. Every effort would be made to preserve trees within the ROW and other areas where they neither compromise safety nor substantially interfere with construction of the proposed DNT 4B/5A.

In instances where habitat of particular value to wildlife would be affected by the proposed DNT 4B/5A, the NTTA would coordinate with the TPWD for recommendations. Mitigation may be appropriate, under TPWD guidelines for transportation projects, for impacts to approximately 45 acres of riparian forests. Additionally, several small patches of native tallgrass prairie totaling 0.41 acre may warrant mitigation.

**Traffic Noise**

Noise associated with the construction of the proposed DNT 4B/5A is difficult to predict. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. However, construction normally occurs during daylight hours when occasional loud noises are more tolerable. None of the noise receivers are expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected. Provisions would be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work hour controls and proper maintenance of muffler systems.

**Exhibits:**

N/A

**Appendices:**

Appendix 3-1: Texas Antiquities Permit Application

# SECTION 4
# ENVIRONMENTAL COMPLIANCE

## EPIC Categories

- ☒ Waters of the U.S., Including Wetlands
- ☒ Storm Water
- ☐ Floodplain Development
- ☒ Vegetation
- ☒ Wildlife / Threatened and Endangered Species
- ☒ Cultural Resources
- ☒ Hazardous Materials
- ☒ Noise Abatement
- ☐ Public Lands

The Design Section Engineers shall ensure that all applicable environmental issues, permits, and commitments (EPIC) are included on the proposed DNT 4B/5A project EPIC sheet(s). EPIC sheet(s) shall be included in the final plans, specifications, and estimates prior to bidding. At the time of this EE, known EPIC are as follows:

## EPIC Categories

### Waters of the U.S., Including Wetlands

The EPIC sheet(s) shall convey to the Contractor the USACE Section 404 IP number and locations of any waters of the U.S., including wetlands, within the proposed DNT 4B/5A project area and direct the Contractor to be familiar with the permit and all of its conditions (general and/or special).

### Storm Water

The EPIC sheet(s) shall include BMP as required by current state and local regulations.

### Vegetation

The EPIC sheet(s) shall include:

- Instructions to avoid and/or preserve existing vegetation, especially native trees, wherever practicable;
- The location of sensitive habitat including riparian forest and native prairie remnant areas; and
- The location of any proposed mitigation areas for impacts to vegetation resources, if applicable.

### Wildlife / Threatened and Endangered Species

In accordance with the Migratory Bird Treaty Act, the Contractor will remove all old migratory bird nests from any structures that are affected by the proposed DNT 4B/5A and complete any bridge work and/or vegetation clearing between October 1 and February 15. The Contractor will be required to prevent migratory birds from building nests between February 15 and October 1. The EPIC sheet(s) shall state that a migratory bird survey will be conducted prior to the commencement of any construction, demolition, or clearing activities scheduled to occur during the nesting season between February 15 and October 1.

In the event that migratory birds are encountered on-site during project construction, adverse impacts on protected birds, active nests, eggs, and/or young will be avoided. If species are present, work will cease at that location and NTTA personnel should be contacted. If any active nests are found, the local USFWS biologist will be contacted by the NTTA to determine an appropriate plan of action.

The EPIC sheet(s) shall include the following regarding threatened and endangered species:

- The state-listed threatened timber/canebrake rattlesnake and its habitat description;
- Instructions to survey appropriate habitat areas (Little Elm Creek floodplain) for signs of the timber/canebrake rattlesnake prior to construction activities; and

- Instructions to notify the NTTA Environmental Compliance Manager if this species or any other federal and/or state-listed threatened and/or endangered species are encountered during construction activities.

**Cultural Resources**

The EPIC sheet(s) shall require the Contractor to notify the NTTA Environmental Compliance Manager if any previously undiscovered artifacts are encountered. At the time of this approval, there were no known historic-age resources (built prior to 1978) or archeological resources within the proposed DNT 4B/5A project APE.

In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area will cease, and the NTTA's environmental compliance and archeological technical consultants will be contacted to initiate post review discovery procedures which include notifying the Archeology Division of the THC.

**Hazardous Materials**

The Contractor shall take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction staging area. The use of construction equipment within environmentally sensitive areas such as streams or wetlands shall be minimized or eliminated entirely. All construction materials used for this project shall be removed as soon as the work schedules permit. Any unanticipated hazardous materials and/or petroleum contamination encountered during construction shall be handled according to applicable federal, state, and local regulations. The EPIC sheet(s) shall require the Contractor to notify the NTTA Environmental Compliance Manager if any undocumented regulated material is encountered.

**Noise Abatement**

The EPIC sheet(s) shall include a requirement for the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work hour controls and proper maintenance of muffler systems.

**Exhibits:**

N/A

**Appendices:**

N/A

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# SECTION 5
# AGENCY COORDINATION

**Federal**

- ☒ USACE
- ☐ USFWS
- ☐ FEMA
- ☐ EPA
- ☐ USCG

**State**

- ☒ TCEQ
- ☒ TPWD
- ☒ THC/SHPO
- ☐ TxDOT

**Local**

- ☒ NCTCOG
- ☒ City
- ☒ County
- ☐ DART
- ☐ The T
- ☐ Denton County Transit Authority

**Other**

- ☐ Other

## Federal

### USACE

Coordination with the USACE will be required for anticipated impacts to jurisdictional waters of the U.S., including wetlands, and receipt of a Section 404 IP, prior to construction. Coordination with the USACE has not been initiated to date but will be added to **Appendix 5-1** as it occurs.

## State

### TCEQ

Coordination with the TCEQ would be required in order for the proposed DNT 4B/5A to comply with the TPDES CGP and SW3P regulations. In addition, coordination with the TCEQ will also be required for the proposed DNT 4B/5A to be in compliance with the CWA Section 401 water quality certification requirements. Coordination with the TCEQ has not been initiated to date but will be added to **Appendix 5-1** as it occurs.

### TPWD

Coordination with the TPWD was initiated to confirm the presence or absence of state listed threatened and endangered species within Collin, Denton, and Grayson counties as well as to obtain the TXNDD information for the proposed DNT 4B/5A project area and its vicinity. The data received from the TPWD is discussed in **Appendix 2-5**. Coordination with the TPWD regarding potential impacts to vegetation and wildlife habitat was initiated with the TPWD in March 2011. All correspondence with the TPWD is included in **Appendix 5-1** and will be updated as additional coordination occurs.

### THC/SHPO

Coordination with the THC/SHPO will occur, as necessary, throughout the DNT 4B/5A project planning process to determine if the project would affect any previously recorded historic and/or archeological resources as well as to provide information about field studies of cultural resources. A copy of the historic-age resources due diligence report (**Appendix 2-6**) was provided to the THC on March 3, 2011 (see **Appendix 5-1**). As a result of coordination with the THC/SHPO regarding the archeological evaluation of archival records (**Appendix 2-7**), the THC requested the completion of an archeological pedestrian survey of the proposed DNT 4B/5A project area. The archeological survey (**Appendix 2-8**) was completed in April 2011 and coordination with the THC is pending. All correspondence with the THC is included in **Appendix 5-1** and will be updated as additional coordination occurs.

## Local

### NCTCOG

Early project coordination was made with the NCTCOG to obtain modeling data necessary to complete an analysis of MSAT emissions and potential impacts of tolling on environmental justice. The NTTA request for this information dated July 30, 2010 and the NCTCOG response dated November 19, 2010 are included in **Appendix 5-1**.

**City**

City officials have been involved as stakeholders throughout the development of the proposed DNT 4B/5A (see **Section 1, Alternatives Analysis**, and **Appendix 1-1**). The city councils of Gunter and Pilot Point have passed resolutions endorsing the proposed DNT 4B/5A alignment as their preferred alternative (see **Appendix 5-2**).

Coordination with the City of Celina regarding its tree preservation ordinance will occur, as needed.

Coordination with the cities of Celina, Gunter, and Pilot Point regarding the traffic noise analysis will occur to ensure that traffic noise contours are considered in zoning plans and future developments to avoid or minimize the need for noise abatement measures.

**County**

County government officials have assisted throughout the development of the proposed DNT 4B/5A (see **Section 1, Alternatives Analysis**, and **Appendix 1-1**). Resolutions passed by Collin, Denton, and Grayson counties regarding the proposed DNT 4B/5A have been included in **Appendix 5-2**.

**Exhibits:**

N/A

**Appendices:**

Appendix 5-1: Agency Correspondence
Appendix 5-2: Government Resolutions Regarding Preferred Alignment

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# SECTION 6
# PROJECT AGREEMENTS

## Types of Agreements

- ☒ Interlocal Agreement
- ☒ Memorandum of Understanding
- ☐ Letter of Intent
- ☐ Two-Party Agreement
- ☐ Three-Party Agreement
- ☐ Multi-Party Agreement

## Types of Agreements

### Interlocal Agreement

It is expected that the NTTA will enter into an Interlocal Agreement (ILA) with cities and counties affected by the proposed ROW. This ILA would address the responsibility of local governments for actions that may include the acquisition of ROW, the construction of frontage roads, and relocation of utilities. The ILA would be expected to require the NTTA to evaluate the revenue feasibility of the proposed DNT 4B/5A and to construct the facility if, where, and when it determines that a toll facility would be cost effective.

### Memorandum of Understanding

It is anticipated that a Memorandum of Understanding (MOU) may be negotiated with the cities of Celina, Gunter, and Pilot Point to more precisely define the role of each city in planning for and assisting with the construction of the proposed DNT 4B/5A under the ILA discussed above. It is not anticipated that any MOU will be negotiated until after the NTTA Board takes action on the project schematic design and this EE.

## Exhibits:

N/A

## Appendices:

N/A

# APPENDICES

**SECTION 1**

Appendix 1-1: Conceptual Alternatives Evaluation Report
Appendix 1-2: Traffic Analysis for Highway Design

**SECTION 2**

Appendix 2-1: Preliminary Jurisdictional Determination of Waters of the U.S.
Appendix 2-2: NTTA Stream Data Forms
Appendix 2-3: Inventory of Habitat Resources Supporting Information
Appendix 2-4: NTTA Woodlands Data Forms
Appendix 2-5: List of Federal and State Threatened and Endangered Species
Appendix 2-6: Historic-age Resources Due Diligence Report
Appendix 2-7: Archeological Evaluation Report
Appendix 2-8: Archeological Survey Report
Appendix 2-9: Excerpts from *Mobility 2030 – 2009 Amendment*
Appendix 2-10: Air Quality Analysis Supporting Information
Appendix 2-11: Traffic Noise Analysis Supporting Information
Appendix 2-12: Community Impact Assessment Supporting Information
Appendix 2-13: Indirect Impacts Analysis Supporting Information
Appendix 2-14: Cumulative Impacts Analysis Supporting Information

**SECTION 3**

Appendix 3-1: Texas Antiquities Permit Application

**SECTION 4**

N/A

**SECTION 5**

Appendix 5-1: Agency Correspondence
Appendix 5-2: Government Resolutions Regarding Preferred Alignment

**SECTION 6**

N/A

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