



Final Environmental Assessment

IH 30, Fort Worth District

IH 30 (From Cooper Street to SH 161),
Including the IH 30/SH 360 Interchange
CSJs: 1068-02-076, -104, -127; and 1068-04-903
Tarrant County and Dallas County, Texas
August 2015

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

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TABLE OF CONTENTS

SECTION 1.0	PROPOSED ACTION	1-1
1.1	INTRODUCTION AND PROJECT BACKGROUND	1-1
1.2	EXISTING FACILITY	1-3
1.3	PROPOSED FACILITY	1-4
1.4	PROJECT NEED AND PURPOSE	1-5
1.4.1	Need for Project Improvements.....	1-5
1.4.2	Project Purpose.....	1-12
1.5	LOGICAL TERMINI AND INDEPENDENT UTILITY	1-13
1.6	PROJECT FUNDING AND PLANNING	1-14
1.6.1	Project Funding.....	1-14
1.6.2	Planned Phasing of Project Construction.....	1-15
1.6.3	Project Consistency with Regional Transportation Plans.....	1-16
1.7	FOCUS OF THIS ENVIRONMENTAL ANALYSIS	1-17
SECTION 2.0	ALTERNATIVES	2-1
2.1	DESCRIPTION OF THE ALTERNATIVES	2-1
2.1.1	No-Build Alternative.....	2-1
2.1.2	Build Alternative.....	2-2
2.2	PROPOSED RIGHT-OF-WAY AND EASEMENTS	2-9
SECTION 3.0	ASSESSMENT OF ENVIRONMENTAL IMPACTS	3-1
3.1	COMMUNITY IMPACTS	3-2
3.1.1	ROW/Easement Acquisitions, Displacements, and Relocations.....	3-2
3.1.2	Land Use.....	3-4
3.1.3	Transportation and Access.....	3-9
3.1.4	Economic Effects.....	3-12
3.1.5	Bicycle and Pedestrian Accommodations.....	3-13
3.1.6	Public Facilities / Services and Utilities.....	3-14
3.1.7	Environmental Justice.....	3-16
3.1.8	Environmental Justice and Managed Lanes with a Tolling Component.....	3-20
3.1.9	Limited English Proficiency.....	3-28
3.1.10	Community Cohesion.....	3-30
3.1.11	Visual Impacts.....	3-32
3.2	CULTURAL RESOURCES	3-33
3.2.1	Historic-Age Properties.....	3-33
3.2.2	Archeological Resources.....	3-37
3.3	SECTION 4(F) AND SECTION 6(F) RESOURCES	3-39
3.4	WATER RESOURCES AND WATER QUALITY	3-43

3.4.1	Waters of the U.S., Including Wetlands	3-43
3.4.2	Water Quality Certification	3-45
3.4.3	Executive Order 11990 – Wetlands	3-47
3.4.4	Rivers and Harbors Act Sections 9 and 10.....	3-48
3.4.5	Water Quality	3-48
3.4.6	Measures to Reduce Erosion and Sedimentation	3-49
3.4.7	Municipal Separate Storm Sewer System	3-50
3.4.8	Floodplains.....	3-50
3.4.9	Trinity River Corridor Certification.....	3-51
3.5	VEGETATION AND WILDLIFE HABITAT	3-52
3.5.1	Project Area Vegetation Features and Impacts	3-52
3.5.2	Invasive Species and Beneficial Landscaping.....	3-54
3.6	PROTECTED WILDLIFE SPECIES AND OTHER SPECIES OF CONCERN.....	3-55
3.6.1	Federal and State-Listed Species, and State Species of Concern.....	3-55
3.6.2	Migratory Bird Treaty Act	3-58
3.6.3	Fish and Wildlife Coordination Act.....	3-59
3.7	FARMLAND PROTECTION POLICY ACT	3-60
3.8	AIR QUALITY	3-61
3.8.1	Transportation Conformity	3-61
3.8.2	Congestion Management Process.....	3-62
3.8.3	Carbon Monoxide and Traffic Air Quality Analysis	3-65
3.8.4	Mobile Source Air Toxics	3-67
3.8.5	Air Emissions During Construction	3-77
3.9	HAZARDOUS MATERIALS	3-78
3.10	TRAFFIC NOISE.....	3-89
SECTION 4.0	INDIRECT IMPACTS.....	4-1
4.1	INTRODUCTION TO PROJECT-LEVEL IMPACTS ANALYSIS.....	4-1
4.2	STEP 1 – SCOPING AND STUDY AREA.....	4-2
4.2.1	Project Attributes and Context	4-3
4.2.2	Geographic Boundary of the AOI.....	4-3
4.3	STEP 2 – IDENTIFY STUDY AREA’S GOALS AND TRENDS.....	4-4
4.3.1	Regional and Local Plans	4-4
4.3.2	Regional and Local Trends and Forecasts	4-7
4.4	STEP 3 – NOTABLE FEATURES.....	4-10
4.4.1	Sensitive Species and Habitats	4-11
4.4.2	Valued Environmental Components	4-12
4.4.3	Relatively Unique or Sensitive Landscape Features	4-12

4.4.4	Vulnerable Elements of the Population.....	4-12
4.5	STEP 4 – ANALYZE PROJECT-INDUCED GROWTH IMPACTS	4-13
4.5.1	Potential for Project-Induced Growth	4-13
4.5.2	Effects Related to Induced Growth	4-14
4.6	STEP 5 – ASSESS CONSEQUENCES AND DEVELOP MITIGATION.....	4-14
SECTION 5.0	CUMULATIVE IMPACTS	5-1
5.1	INTRODUCTION AND METHODOLOGY	5-1
5.2	STEP 1: RESOURCE STUDY AREAS, CONDITIONS, AND TRENDS.....	5-1
5.2.1	Selection of Environmental Resources for Analysis	5-1
5.2.2	Resource Study Areas	5-4
5.2.3	Resource Condition and Trends	5-7
5.3	STEP 2: DIRECT AND INDIRECT IMPACTS OF THE PROPOSED PROJECT	5-11
5.3.1	Waters of the U.S., including Wetlands	5-11
5.3.2	Vegetation and Wildlife Habitat.....	5-11
5.3.3	Air Quality.....	5-12
5.4	STEP 3: EFFECTS OF OTHER ACTIONS ON RESOURCES.....	5-12
5.4.1	Identification of Other Actions	5-12
5.4.2	Waters of the U.S., including Wetlands	5-13
5.4.3	Vegetation and Wildlife Habitat.....	5-13
5.4.4	Air Quality.....	5-14
5.5	STEP 4: CUMULATIVE IMPACTS ASSESSMENT.....	5-14
5.5.1	Waters of the U.S., including Wetlands	5-14
5.5.2	Vegetation and Wildlife Habitat.....	5-16
5.5.3	Air Quality.....	5-16
5.6	STEP 5: MITIGATION OF CUMULATIVE EFFECTS	5-19
5.6.1	Waters of the U.S., including Wetlands	5-19
5.6.2	Vegetation and Wildlife Habitat.....	5-20
5.6.3	Air Quality.....	5-21
5.7	SUMMARY OF THE REGIONAL TOLLING ANALYSIS	5-23
5.7.1	Introduction	5-23
5.7.2	Methodology.....	5-23
5.7.3	Regional Toll System Effects.....	5-24
5.7.4	Conclusion	5-27
SECTION 6.0	PERMITS AND COMMITMENTS	6-1
SECTION 7.0	PUBLIC INVOLVEMENT.....	7-1
SECTION 8.0	EA DETERMINATION	8-1

SECTION 9.0 LIST OF ACRONYMS AND ABBREVIATIONS9-1

LIST OF TABLES

Table 1-1. Summary of Signalized Intersections at the SH 360 Crossing of IH 30 1-3

Table 1-2. Local and Regional Population and Employment Trends 1-7

Table 1-3. IH 30 Traffic Study Area Results: 2014 Compared to 2035 No-Build Scenario 1-8

Table 1-4. Levels of Service (LOS) for Freeways 1-9

Table 1-5. Regional Traffic Study Results: 2014 Compared to 2035 No-Build Scenario 1-10

Table 1-6. Crash Data for IH 30 and SH 360 (2009 – 2014) 1-11

Table 1-7. Definitions of CSJs Related to the Proposed Project 1-14

Table 3-1. IH 30 Traffic Study Area Results: 2035 No-Build and Build Alternatives 3-11

Table 3-2. Regional Traffic Results: 2035 No-Build and Build Alternatives 3-12

Table 3-3. Environmental Justice Populations at the Block Level in the Project Area 3-17

Table 3-4. Median Household Income by Census Block Group 3-19

Table 3-5. Comparison of IH 30 O&D Data for Build and No-Build Scenarios 3-26

Table 3-6. Percent of the Population that Speaks English Less than “Very Well” 3-29

Table 3-7. Expected Impacts to Waters of the U.S., Including Wetlands 3-44

Table 3-8. Operational Improvement Projects near the Proposed Project Area 3-64

Table 3-9. Proposed Project Carbon Monoxide Concentrations 3-66

Table 3-10. Projected National MSAT Emission Trends 2010 – 2050 3-68

Table 3-11. MSAT Emissions of IH 30 by Scenario 3-72

Table 3-12. Summary of Regulated Sites of Concern 3-79

Table 3-13. Summary of Initial Asbestos and Lead Testing Results 3-88

Table 3-14. FHWA Noise Abatement Criteria 3-90

Table 3-15. Traffic Noise Levels in dB(A) Leq 3-92

Table 4-1. Plans and Goals of the Indirect Impacts AOI 4-5

Table 4-2. Population/Employment Trends and Forecasts 4-8

Table 4-3. Economic and Employment Data 4-9

Table 5-1. Resources/Issues Considered for Cumulative Impacts Analysis 5-2

Table 5-2. Resource Study Areas for Affected Resources 5-5

Table 5-3. Urban Land Use within the Natural Resources RSA 5-10

Table 5-4. Reasonably Foreseeable Actions 5-13

Table 5-5. Summary of Existing Resource Conditions and Potential Impacts 5-17

Table 5-6. Analysis of Potential Effects 5-24

LIST OF MOBILE SOURCE AIR TOXICS (MSAT) EXHIBITS

MSAT Exhibit 1. Projected National MSAT Emission Trends 2010 – 2050.....	3-68
MSAT Exhibit 2. Projected MSAT Emissions by IH 30 Project Scenario Over Time.....	3-73
MSAT Exhibit 3. Total MSAT Emissions and VMT by Alternative	3-74

LIST OF FIGURES [All figures are located after the end of Section 9.0 of this document.]

1.	Proposed Project Vicinity Map (1 page)
2.	Proposed Project on USGS Topographic Map (2 pages)
3.	Proposed Project on Aerial Photograph (1 page)
4.	Current IH 30/SH 360 Interchange Traffic Pattern (1 page)
5.	Existing and Proposed Typical Cross Sections (4 pages)
6-1.	Plan View Design Index Map (1 page)
6-2.	Plan View Design Map (11 pages)
7.	IH 30 Traffic Study Area for NCTCOG Regional Travel Modeling (1 page)
8.	IH 30 Project CSJ Definitions (1 page)
9.	Land Use Map (2 pages)
10-1.	Community Facility Map Index (1 page)
10-2.	Community Facility Map (4 pages)
11-1.	2010 Census Tract Map (1 page)
11-2.	2010 Census Block Map Index (1 page)
11-3.	2010 Census Block Map (6 pages)
12-1.	Year 2035 Build Main Lanes Traffic Distribution of Trips in AM Peak Period from TSZs (1 page)
12-2.	Year 2035 No-Build Main Lanes Traffic Distribution of Trips in AM Peak Period from TSZs (1 page)
12-3.	Year 2035 Build Managed Lanes Traffic Distribution of Trips in AM Peak Period from TSZs (1 page)
12-4.	Year 2035 No-Build Managed Lanes Traffic Distribution of Trips in AM Peak Period from TSZs (1 page)
12-5.	Environmental Justice Traffic Survey Zones (1 page)
12-6.	Year 2035 Build Main Lanes Traffic Distribution of Trips in AM Peak Period from EJ TSZs (1 page)
12-7.	Year 2035 No-Build Main Lanes Traffic Distribution of Trips in AM Peak Period from EJ TSZs (1 page)
12-8.	Year 2035 Build Managed Lanes Traffic Distribution of Trips in AM Peak Period from EJ TSZs (1 page)
12-9.	Year 2035 No-Build Managed Lanes Traffic Distribution of Trips in AM Peak Period from EJ TSZs (1 page)
13-1.	Map Index for Water Crossings Maps (1 page)
13-2.	Water Crossings Map and Potential Water Feature Impacts (11 pages)
14.	Forest Impacts Map (1 page)
15-1.	Year 2014 Affected Transportation Network (1 page)
15-2.	Year 2035 Affected Transportation Network (1 page)
16.	Hazardous Materials – Sites of Concern Map (4 pages)
17.	Noise Receiver Location Map (11 pages)

LIST OF FIGURES (continued) [All figures are located after the end of Section 9.0.]

18. Area of Influence Map with Notable Features (1 page)
19. Resource Study Area Map for Water and Vegetation Resources (1 page)
20. Air Quality RSA Map (1 page)
21. Regional Tolling Analysis: Mobility 2035-2013 Update Funded Roadway Recommendations for Controlled Access Facilities (1 page)

LIST OF APPENDICES -- [The appendices follow the document figures, noted above.]

- A. Project Area Photographs (7 pages)
- B. Agency Coordination (46 pages)
- C. Air Conformity Documentation (9 pages)

SECTION 1.0 PROPOSED ACTION

1.1 INTRODUCTION AND PROJECT BACKGROUND

The Texas Department of Transportation (TxDOT) proposes to make improvements to Interstate Highway (IH) 30 in the City of Arlington and City of Grand Prairie, Texas. This project is being planned and coordinated between TxDOT, the Federal Highway Administration (FHWA), the North Central Texas Council of Governments (NCTCOG), the aforementioned municipalities, and Tarrant and Dallas counties. The proposed IH 30 improvements would extend from Cooper Street to State Highway (SH) 161 (a distance of approximately 5.03 miles), and include the construction of an interchange with SH 360. Project limits along SH 360 extend from Brown Boulevard/Avenue K southward to Road to Six Flags Street (approximately 1.59 miles). The proposed project shares a boundary between Tarrant County and Dallas County, as shown in the Proposed Project Vicinity Map (**Figure 1**; all referenced figures are located after the end of **Section 9.0**). An outline of the proposed project area is shown on an U.S. Geological Survey (USGS) topographic map (**Figure 2**) and on an aerial photograph (**Figure 3**). The delineated project area in these and other figures comprises all areas where ground-disturbing activity may occur during the construction of the proposed project (i.e., the project's "construction footprint").

This Environmental Assessment (EA) has been prepared to comply with the requirements of the National Environmental Policy Act (NEPA) (42 U.S. Code [U.S.C.] Sections 4321-4375) and implementing regulations promulgated by the Council on Environmental Quality (CEQ, 40 Code of Federal Regulations [CFR] Part 1500) and the FHWA (23 CFR Part 771). The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by the FHWA and TxDOT.

Improvements to IH 30 are necessary to address current and projected travel demands, operational deficiencies, safety, and facility design deficiencies. Numerous plans for phased construction of improvements to IH 30 (and its intersection with SH 360) have been developed over the years to address these purposes. In the discussion of past planning efforts below, specific reference is made to the various TxDOT-assigned project identification numbers that

have been used to designate projects or portions of projects (i.e., Control-Section-Job or “CSJ” numbers).

In February 2007, the FHWA issued a Finding of No Significant Impact (FONSI) for the SH 360 EA (CSJs: 2266-02-054, 2266-02-086, and 1068-02-072). The SH 360 EA included proposed improvements to the SH 360 corridor from approximately Brown Boulevard/Avenue K on the north to Green Oaks Boulevard S.E. on the south, and IH 30 from approximately Ballpark Way on the west, to Great Southwest Parkway on the east. The project included the reconstruction of the SH 360/IH 30 interchange to provide grade separated, direct-connecting ramps between the main lanes of IH 30 and SH 360. The SH 360 project extended for approximately 8 miles along SH 360 and 2.4 miles along IH 30.

In April 2007, the FHWA issued a FONSI for the IH 30 EA which included proposed improvements from Oakland Boulevard to Northwest 19th Street (future SH 161) (CSJ: 1068-02-072). The improvements examined in that EA included the reconstruction and widening of existing IH 30 to an eight- to ten-lane facility, reconstruction of cross street bridges and ramps, and the addition of a single-lane, barrier-separated, reversible managed high-occupancy vehicle (HOV) facility. The length of the earlier IH 30 EA project was approximately 10.9 miles.

A Re-Evaluation of the SH 360 EA was initiated in 2009 for schematic design revisions within the 2007 SH 360 EA project limits. The design revisions included changes to the IH 30 managed lane system (expansion from one reversible lane to two reversible lanes) required revisions to the SH 360/IH 30 interchange. These revisions included additional right-of-way (ROW) needs along IH 30, and changes to the horizontal and vertical alignments of the IH 30 and SH 360 freeways to accommodate the additional managed lane on IH 30. In both the original SH 360 EA/FONSI and the Re-Evaluation, the SH 360 facility would remain non-tolled, as would all eight mainlane direct-connect ramps proposed for the new IH 30/SH 360 interchange. The revisions to IH 30 would not have affected the ramp or frontage road access approved with the SH 360 EA/FONSI. Work on the SH 360 Re-Evaluation was discontinued in 2012 to develop a project design that would include areas along IH 30 that were outside the SH 360 project limits (e.g., area between eastern project limits and the IH 30/SH 161 interchange).

1.2 EXISTING FACILITY

Within the proposed project limits, from Cooper Street to SH 161 (including the IH 30/SH 360 interchange), the existing IH 30 facility is comprised of six general purpose main lanes, auxiliary lanes, and two concurrent HOV lanes separated by a traffic barrier extending east of Center Street. The concurrent HOV lanes transition to two reversible managed lanes at the IH 30/SH 161 interchange. Discontinuous frontage roads are provided along IH 30 within the project limits, providing four to six lanes where frontage roads exist.

Within the proposed project limits for SH 360, from Brown Boulevard/Avenue K to Road to Six Flags Street, the facility consists of six general-purpose main lanes plus auxiliary lanes. Continuous, one-way frontage roads are provided along SH 360 within the project limits. North of IH 30, the total number of frontage road lanes varies between four and six. South of IH 30, the southbound frontage road varies between two and three lanes, and the northbound frontage road varies between two and four lanes. Currently SH 360 bridges over IH 30, but the existing configuration does not provide a direct-connecting interchange between the two freeways. Vehicles traveling between SH 360 and IH 30 are required to utilize predominantly Six Flags Drive or other local connecting streets such as Lamar Boulevard or Ballpark Way. Vehicle movements through Six Flags Drive require traversing one to three signalized intersections to connect to the other freeway, as summarized in **Table 1-1** and shown graphically in **Figure 4**.

Table 1-1. Summary of Signalized Intersections at the SH 360 Crossing of IH 30

Movement	Number of Signal Intersections
Southbound SH 360 to Eastbound IH 30	3
Southbound SH 360 to Westbound IH 30	3
Eastbound IH 30 to Southbound SH 360	2
Eastbound IH 30 to Northbound SH 360	2
Westbound IH 30 to Southbound SH 360	2
Westbound IH 30 to Northbound SH 360	2
Northbound SH 360 to Eastbound IH 30	1
Northbound SH 360 to Westbound IH 30	1

The site photographs in **Appendix A** provide representative views of the existing IH 30 and SH 360 facilities within the proposed project area.

1.3 PROPOSED FACILITY

The proposed improvements to IH 30 would provide up to ten general-purpose lanes and auxiliary lanes from Cooper Street to SH 161. Two reversible managed lanes would be provided from Center Street to SH 161, tying into the existing two-lane reversible managed lane system in Dallas County. From Cooper Street to Ballpark Way, the existing IH 30 main lane pavement, frontage roads, and cross street pavement/bridges would accommodate the proposed improvements without the need for additional ROW. Selected main lane widening, ramp improvements, and restriping would be utilized to create the proposed number of lanes and reversible managed lanes. A lane balance transition would be required at the western project limit to tie in to the existing IH 30 configuration. East of Ballpark Way to Duncan Perry Road, IH 30 would require complete reconstruction. The existing IH 30 pavement east of Duncan Perry Road to SH 161 would accommodate the proposed improvements without the need for additional ROW. As necessary, main lanes would be widened and restriped to accomplish the proposed improvements. The limits and general configuration of the existing IH 30 frontage roads would not be altered, except that one-way collector-distributor roadways between Ballpark Way and Six Flags Drive would be constructed to facilitate access between the IH 30 ramps and the local street network. The proposed improvements to IH 30 include reconstructing portions of Copeland Road, Six Flags Drive, Avenue F, Avenue G, Great Southwest Parkway, and the Union Pacific Railroad (UPRR) bridge over IH 30.

The proposed project would construct a fully-directional, multi-level IH 30/SH 360 interchange providing direct-connecting ramps for all freeway-to-freeway traffic movements. The proposed interchange would require reconstructing the SH 360 main lanes from north of Avenue J to Road to Six Flags Street; widening the existing main lanes from Brown Boulevard/Avenue K to north of Avenue J; and reconstructing the one-way, continuous frontage roads along SH 360 within the project limits. North of IH 30, proposed SH 360 would consist of six general purpose main lanes. South of IH 30 to Road to Six Flags Street, the number of main lanes would be increased to eight. Within the project limits, the proposed continuous, one-way frontage roads would provide three to four lanes in each direction. The proposed SH 360 improvements at the southern limit have been coordinated to match the proposed improvements from the previous SH 360 EA (FONSI issued in February 2007). The proposed improvements to SH 360 include reconstructing portions of Avenue J, Lamar Boulevard/Avenue H, and Six Flags Drive.

The proposed project design includes improvements for bicycle and pedestrian facilities, where practicable. For example, planned IH 30 westbound collector-distributor and frontage road facilities would create a continuous shared-use outer lane to accommodate bicycle traffic from Six Flags Drive westward nearly to Center Street. The northbound and southbound frontage roads along the SH 360 corridor would be reconstructed to provide a continuous 14-foot wide outer lane for shared vehicle/bicycle use. Sidewalks would be constructed along all frontage roads constructed or reconstructed as part of the proposed project.

The general engineering design aspects of the proposed improvements to IH 30 and SH 360 (within project limits) are provided in the figures following the end of **Section 9.0**. Existing and proposed typical cross sections for both IH 30 and SH 360 within project limits are shown in **Figure 5**. The series of maps in **Figure 6-2** shows the proposed project's preliminary design features in plan view (see **Figure 6-1** for an index to these maps). This figure also shows the various locations of proposed new ROW, permanent drainage easements, temporary construction easements, and access denial to adjacent properties within the overall project construction footprint. The proposed IH 30 project follows existing highway alignments, with no segments proposed for construction on new locations. Further details regarding the proposed project are provided in the description of the Build Alternative in **Section 2.1.2**.

1.4 PROJECT NEED AND PURPOSE

1.4.1 Need for Project Improvements

The proposed IH 30 improvements are needed to address current and projected travel demands, safety, and several types of existing facility design and operational deficiencies. There are two primary needs related to existing facility operational deficiencies. First, SH 360 currently passes over IH 30 without direct connections between either facility, which results in a serious traffic bottleneck that affects the local congestion and regional mobility. Second, there is a need for additional through capacity of the IH 30 general-purpose main lanes to help manage congestion resulting from regional growth in population and employment.

Projects such as the proposed IH 30 improvements help meet regionally established goals for transportation. Improving mobility by supporting travel efficiency measures and system enhancements targeted at congestion reduction and management, improving quality of life by

improving air quality and promoting active lifestyles (such as cycling), ensuring system sustainability through adequate maintenance, and enhancing the safety and reliability of the existing transportation system are specific goals of NCTCOG's metropolitan transportation plan (MTP). Additionally, the proposed IH 30 improvements support these other MTP policies and programs:

- Support the congestion management process (CMP) that includes explicit consideration and appropriate implementation of travel demand management, transportation system management, and intelligent transportation system (ITS) strategies during all stages of corridor development and operations. (MTP Policy TDM3-001)
- Improve efficiency, safety, economic development opportunities, and air quality related to freight movement. (MTP Policy FP3-001)
- Additional and improved interchanges, frontage roads, and auxiliary lanes should be considered and implemented as appropriate on all freeway/tollway facilities in order to accommodate a balance between mobility, access, operational, and safety needs. (MTP Policy FT3-007)
- Bottleneck Program for Regional Corridors (MTP Program TSM2-005)
- On-street Bicycle Facility Initiative: Provide accessibility to bicyclists through the implementation of appropriate on-street bicycle facilities and enhancements as routine accommodations for all new roadway construction or reconstruction, and encourage the update of local government plans and standards to provide for on-street bicycle access and connections. (MTP Program BP2-019)
- Provide appropriate bicycle and pedestrian facilities and enhancements as routine accommodations for all new roadway construction or reconstruction. (MTP Policy Action 3-001.16)

Travel Demand

The existing transportation network within and near the proposed project area is inadequate to handle the volume of traffic anticipated from projected regional population and employment growth. Estimates of future traffic conditions are linked to forecasts in population and employment. To help plan future transportation needs in the DFW (also referred to as "North Central Texas") Metropolitan Planning Area (MPA), NCTCOG prepares a demographic forecast

periodically for the 12-county MPA¹ surrounding the DFW urban core. Information from the *NCTCOG 2040 Demographic Forecast*,² summarized in **Table 1-2**, provides household population and employment forecasts from 2005 through 2040 for the municipalities, counties, and region surrounding the proposed project area. These demographic data show a long-term trend of substantial growth in household population and employment at all levels of government shown.

Table 1-2. Local and Regional Population and Employment Trends

Location	2005	2035 Projected	2040 Projected	Percent Increase 2005 to 2035	Percent Increase 2005 to 2040
Population Trends					
City of Arlington	360,310	487,849	511,786	35.4	42.0
City of Grand Prairie	127,025	231,573	247,005	82.3	94.5
Tarrant County	1,594,450	2,823,535	3,046,531	77.1	91.1
Dallas County	2,273,250	3,125,282	3,265,190	37.5	43.6
N. Central TX Region	5,777,272	9,833,378	10,543,336	70.2	82.5
Employment Trends					
City of Arlington	174,825	285,864	304,791	63.5	74.3
City of Grand Prairie	71,117	126,734	133,913	78.2	88.3
Tarrant County	944,583	1,644,463	1,766,177	74.1	86.9
Dallas County	1,895,059	2,854,287	2,988,916	50.6	57.7
N. Central TX Region	3,624,051	6,177,016	6,606,515	70.4	82.3
Source: NCTCOG's <i>2040 Demographic Forecast</i> .					

The anticipated effects of growth in population and employment on the performance of the transportation system in the IH 30 traffic study area were analyzed by NCTCOG in March 2015 using the Dallas-Fort Worth (DFW) Regional Travel Model (DFWRTM). The traffic study area was identified to account for the major parallel roadway facilities to the proposed project. The traffic study area was bounded by Green Oaks Boulevard (north), SH 180 – Division Street (south), Fielder Road (west) and SH 161 – President George Bush Turnpike (east), and is shown in **Figure 7**. As shown in **Table 1-3**, the traffic analysis used the existing 2014 traffic

¹ The 12 counties included in the MPA are as follows: Collin, Dallas, Denton, Ellis, Hood, Hunt, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise.

² The *2040 Demographic Forecast* for the DFW MPA may be downloaded from the NCTCOG Website: <http://www.nctcog.org/ris/demographics/forecast/County2040.pdf>, accessed May 14, 2015; <http://www.nctcog.org/ris/demographics/forecast/City2040.pdf>, accessed May 14, 2015.

network within the study area and compared the results to the 2035 traffic network without any of the proposed IH 30 improvements (i.e., the No-Build scenario), highlighting the expected worsening of traffic performance measures in the future due to deficiencies of existing transportation facilities.

Table 1-3. IH 30 Traffic Study Area Results: 2014 Compared to 2035 No-Build Scenario

Traffic Performance Measure	2014	2035 No-Build	Difference	Percent Difference
Daily Vehicle Miles of Travel (VMT)	2,446,157	3,018,129	571,972	23.4%
Daily Vehicle Hours of Travel (VHT)	67,198	91,547	24,349	36.2%
Average Loaded Speed (miles per hour, mph)	36.40	32.97	-3.43	-9.4%
Lane Miles (all categories of roadways)	411	428	17	4.1%
Vehicle Hours of Congestion Delay	10,851	21,063	10,212	94.1%
Vehicle Hours of Traffic Control Delay	6,745	8,954	2,209	32.8%
Percent of Total Lane Miles at LOS* D, E, or F	28.5%	40.0%	11.5%	n/a
Source: NCTCOG DFWRTM IH 30 Traffic Study Area, March 2015.				
* LOS = Level of Service.				

The DFWRTM results for the IH 30 Traffic Study Area show both a substantial amount of existing congestion in the local roadway network and a predicted substantial increase in both traffic and congestion for all traffic measures including a decrease in speed. Under the No-Build scenario, the daily amount of vehicle hours associated with signalized intersections (including those necessary for IH 30/SH 360 highway connections, see **Figure 4**) would increase by 32.8 percent. The largest impact from the 23.4 and 36.2 percent increase in vehicle miles of travel (VMT) and vehicle hours of travel (VHT), respectively, would result in a 94.1 percent increase in delay due to congestion (Vehicle Hours of Congestion Delay) and an increase in the lane miles operating at Level of Service (LOS) D, E, and F (11.5%). The LOS is a qualitative measure of describing operational conditions within a traffic stream or at an intersection, generally described in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. In summary, large increases in congestion-related impacts would diminish travel flow in the immediate area surrounding the proposed project in the IH 30 Traffic Study Area from 2014 to 2035 showing a direct need for a solution.

As with the DFWRTM results summarized above, segments of a highway or roadway may be evaluated for present and/or future traffic handling capacity through use of standardized LOS grading systems. The LOS ratings are designated A through F (A being the best and F the worst) and cover the entire range of traffic operations that may occur. The definitions of LOS A through F are presented in **Table 1-4**. Generally, when a roadway is operating below capacity

during peak hours, no improvements or travel demand reductions are warranted because the roadway is considered to be operating at an acceptable LOS. When traffic volumes approach a roadway’s capacity, substantial delays are experienced with stop-and-go movements taking place along the roadway. When this occurs, any incident, such as a disabled car pulled onto the shoulder or inclement weather, is likely to reduce the roadway’s capacity enough to produce excessive congestion and delay. When a roadway is over capacity, a breakdown in flow occurs.

Table 1-4. Levels of Service (LOS) for Freeways

LOS	DEFINITION
A	Free-flow operations. Free-flow speed (i.e., posted speed limit) prevails on the freeway, and vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The effects of incidents or point breakdowns are easily absorbed.
B	Reasonably free-flow operations. Free-flow speed on the freeway is maintained, and the ability to maneuver within the traffic stream is only slightly restricted. The effects of minor incidents or point breakdowns are still easily absorbed.
C	Flow with speeds near the free-flow speed on the freeway. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver. Minor incidents may still be absorbed, but the local deterioration in service quality will be significant. Queues may be expected to form behind any significant blockages.
D	Flow speeds declining with increasing flows. Traffic density increases more quickly, and freedom to maneuver within the traffic stream is seriously limited. Even minor incidents can be expected to create queuing, because the traffic stream has little space to absorb disruptions.
E	Operation at capacity. Operations on the freeway are highly volatile because there are virtually no usable gaps within the traffic stream, leaving little room to maneuver. Any disruption to the traffic stream, such as vehicles entering from a ramp or a vehicle changing lanes, can establish a disruption wave that propagates throughout the upstream traffic flow. The traffic stream has no ability to dissipate even the most minor disruption, and any incident can be expected to produce a serious breakdown and substantial queuing.
F	Breakdown, or unstable flow. Such conditions exist within queues forming behind bottlenecks. These breakdowns occur for a number of reasons such as: (1) traffic incidents that temporarily reduce capacity of a short segment, so that the number of vehicles arriving at a point is greater than the number of vehicles that can move through it; (2) points of recurring congestion, such as merge or weaving segments and lane drops, that experience very high demand in which the number of vehicles arriving is greater than the number of vehicles that can be discharged; and (3) areas where forecasted traffic volumes exceed estimated capacity at a given location. In all cases, existing traffic demand exceeds capacity. Operations at or immediately downstream of a bottleneck point are generally at or near LOS E, and downstream operations improve as discharging vehicles move away from the bottleneck. Whenever queues due to a breakdown exist, they have the potential to extend upstream for considerable distances.
Source: Transportation Research Board, <i>Highway Capacity Manual</i> , 2010 (page 11-6). See: http://trid.trb.org/view.aspx?id=1101465 .	

To evaluate the influence of the No-Build scenario on regional measures of traffic performance, the same DFWRM analysis was performed for the entire 12-county MPA. This analysis of existing and 2035 regional traffic performance measures resulted in trends similar to the IH 30 Traffic Study Area modeling. **Table 1-5** shows the results for the regional traffic analysis, which shows a growing need at the regional level for transportation facilities and programs to accommodate the growing population.

Table 1-5. Regional Traffic Study Results: 2014 Compared to 2035 No-Build Scenario

Traffic Performance Measure	2014	2035 No-Build	Difference	Percent Difference
Daily Vehicle Miles of Travel (VMT)	187,021,374	283,101,892	96,080,518	51.4%
Daily Vehicle Hours of Travel (VHT)	4,949,436	8,052,953	3,103,517	62.7%
Average Loaded Speed (miles per hour)	35.03	35.16	0.13	0.4%
Lane Miles (all categories of roadways)	47,092	52,782	5,690	12.1%
Vehicle Hours of Congestion Delay	746,658	1,803,465	1,056,807	141.5%
Vehicle Hours of Traffic Control Delay	471,286	730,029	258,743	54.9%
Percent of Total Lane Miles at LOS* D, E, or F	19.0%	32.2%	13.2%	n/a

Source: NCTCOG DFWRM Regional Network Traffic Study, March 2015.

* LOS = Level of Service.

Safety

Taking action to manage congestion at the intersection of the project area’s two major freeways is also important from a roadway safety standpoint, as a fully-directional interchange would reduce the amount of traffic that is currently routed through signalized intersections. **Table 1-6** shows the crash data for IH 30 and SH 360 within the proposed project area from 2009 to 2014, including the intersection of SH 360 and Six Flags Drive; this intersection is representative of other intersections essential to freeway-to-freeway traffic movements (see **Figure 4**). Improving the interchange at IH 30 and SH 360 and constructing the direct connections between the two freeways would substantially reduce traffic at the SH 360 and Six Flags Drive intersection and help reduce the number of accidents.

Table 1-6. Crash Data for IH 30 and SH 360 (2009 – 2014)

Location/Type of Crash	Year					
	2009	2010	2011	2012	2013	2014
IH 30 from Cooper Street to SH 161						
Unknown Injury Crashes	5	5	4	4	7	2
Incapacitating Injury Crashes	4	10	7	7	6	7
Non-Incapacitating Crashes	26	25	31	25	39	45
Possible Injury Crashes	17	41	42	43	43	44
Fatal Crashes	1	1	1	0	4	1
Non-Injury Crashes	96	95	108	131	123	161
Subtotal	149	177	193	210	222	260
SH 360 from Brown Boulevard to Road to Six Flags Street						
Unknown Injury Crashes	3	0	4	0	2	4
Incapacitating Injury Crashes	5	3	6	2	3	1
Non-Incapacitating Crashes	25	29	23	31	32	33
Possible Injury Crashes	58	43	33	39	48	51
Fatal Crashes	0	0	1	0	0	0
Non-Injury Crashes	116	97	86	108	94	112
Subtotal	207	172	153	180	179	201
SH 360 Frontage Road - Six Flags Drive Intersection						
Unknown Injury Crashes	0	0	2	0	1	3
Incapacitating Injury Crashes	1	1	2	0	1	1
Non-Incapacitating Crashes	8	8	9	10	20	13
Possible Injury Crashes	15	18	15	16	21	24
Fatal Crashes	0	0	1	0	0	0
Non-Injury Crashes	41	46	45	48	47	56
Subtotal	65	73	74	74	90	97
Total for All Three Areas Above	421	422	420	464	491	558
Source: TxDOT Crash Records Information System, February 2015. These data include only TxDOT "Reportable Crashes."						

Facility Design and Operational Deficiencies

The IH 30 corridor was originally constructed in the mid-1950s, and much of the IH 30 facility in the project area has not been updated to current highway design standards. In general, the existing IH 30 facility has several design deficiencies that are below the minimum design values required in the TxDOT Roadway Design Manual (RDM).³ Examples of highway features that do not meet minimum design values include lane widths, shoulder widths, and vertical clearance.

³ TxDOT RDM (revised October 2014): <http://onlinemanuals.txdot.gov/txdotmanuals/rdw/rdw.pdf>, accessed May 14, 2015.

For the general purpose lanes, the minimum design value for the main lane shoulder width is 10 feet. However, the existing IH 30 main lane and managed lane shoulder widths vary from 2 feet to 10 feet. For managed lanes, the minimum design value for shoulder width is 2 feet for one side of the lanes but the opposite shoulder design value is 10 feet. The existing managed lane shoulders do not meet this criterion. The existing IH 30 main lane and managed lane widths vary from 11 feet to 12 feet. The minimum required design values for main lanes and managed lane widths without a design exception is 12 feet. The vertical clearances at the IH 30 underpasses with SH 360, Great Southwest Parkway, Six Flags Drive, and the Union Pacific Railroad Bridge (just west of Duncan Perry Road) are all less than 16.5 feet, which is the minimum design value for vertical clearance without a design exception.

The SH 360 corridor was originally constructed in the mid-1970s, and the existing facility has several design deficiencies that are below the minimum design value recommended in the RDM. The vertical clearances at the existing Brown Boulevard/Avenue K underpass, Lamar Boulevard/Avenue H overpass, and Six Flags Drive overpass are all below the standard 16.5 feet. In addition, one of the vertical curves within project limits does not meet the RDM safety standard for the 60 miles per hour (mph) design speed. In addition, the existing frontage road system does not provide bicycle accommodations or continuous sidewalks for pedestrians.

The existing interchange between IH 30 and SH 360 is characterized by an unusual design pattern that has slower than acceptable design speeds and poor traffic flow according to current geometric design standards. As described above in **Section 1.2**, this unusual pattern represents substantial out-of-direction travel for several of the eight turning movements between these freeways. The existing configuration requires freeway-to-freeway movements to go through one to three signalized intersections, which can be confusing to unfamiliar drivers. This absence of free flow traffic between freeways under the current interchange configuration is a major design deficiency that affects the overall safety and operational efficiency of the interchange.

1.4.2 Project Purpose

The purpose of the proposed project is to help address current and projected travel demands, safety, and existing facility design and operational deficiencies in a manner compatible with local, county and regional plans.

The constraints of the existing facility along the proposed project corridor have compounded the adverse effects on traffic mobility within the proposed project area, and have a substantial influence on regional traffic as well. Even with the other planned transportation improvements identified in NCTCOG's *2015-2018 TIP*, targeted improvements within the proposed project area are necessary. The proposed project would address these needs by constructing an interchange at IH 30/SH 360 and creating additional through capacity of the IH 30 general purpose main lanes.

The construction of an interchange at IH 30/SH 360 would provide full directional connectivity between these two major highways, thus relieving the serious traffic bottleneck that affects local congestion and regional mobility. Creating additional through capacity of the IH 30 general purpose main lanes by adding two to four main lanes to the existing six lanes would reduce the number of vehicles per lane mile of roadway, thus better managing congestion levels along the route.

The proposed interchange would improve traffic operations and safety by eliminating the numerous conflict points at intersections. In addition, the design would be based on current design standards, thus improving the existing facility design features that fail to meet TxDOT design standards.

1.5 LOGICAL TERMINI AND INDEPENDENT UTILITY

The logical termini for the proposed project are Cooper Street and SH 161 for IH 30, and Brown Boulevard/Avenue K to Road to Six Flags Street for SH 360. These end points define the portions of IH 30 and SH 360 with facility deficiencies closely related to the IH 30/SH 360 interchange. The proposed project has independent utility of other proposed transportation projects.

1.6 PROJECT FUNDING AND PLANNING

1.6.1 Project Funding

To facilitate project-specific funding and planning, TxDOT has assigned the four CSJ numbers described in **Table 1-7** and graphically defined in **Figure 8**. Two of the four CSJs are overall project-controlling CSJs (1068-02-127 and 1068-04-903), as they extend the entire length of the proposed improvements to IH 30 from Cooper Street to SH 161 (including the IH 30/SH 360 interchange and improvements to SH 360 within project limits). The remaining two CSJs (1068-02-076 and 1068-02-104) cover the limits of the planned initial phases of project construction (i.e., the IH 30/SH 360 interchange), and are contained within CSJ 1068-02-127.

Table 1-7. Definitions of CSJs Related to the Proposed Project

IH 30 CSJ	Description	Approximate Road Length
1068-02-127	All planned improvements within Tarrant County from Cooper Street eastward to the county line	IH 30: 4.6 miles SH 360: 1.6 miles
1068-04-903	All planned improvements to IH 30 within Dallas County from the county line eastward to the IH 30/SH 161 interchange	IH 30: 0.4 mile
1068-02-076	Phased construction CSJ: Construction of the IH 30/SH 360 interchange (included within CSJ 1068-02-127); includes improvements to SH 360 from Brown Boulevard/Avenue K to Road to Six Flags Street	IH 30: 2.1 miles SH 360: 1.6 miles
1068-02-104	Phased construction CSJ: Reconstruction of the Six Flags Drive Bridge over IH 30 (included within CSJ 1068-02-127)	Six Flags Dr.: 0.1 mi.

The sources of funding to finance the construction of the proposed IH 30/SH 360 interchange (CSJ 1068-02-076) have been identified by the NCTCOG's Regional Transportation Council (RTC). The estimated cost of \$247.5 million would be funded primarily from recently-authorized State of Texas Proposition 1 funding (\$193.5 million). The remaining costs would be funded by FHWA (\$20.0 million) and from local sources (\$29.0 million). Funding in the amount of \$6.5 million for the reconstruction of the Six Flags Drive Bridge (CSJ 1068-02-104) has been approved from state Proposition 1 funds. The initial engineering estimate of costs for constructing the unfunded remainder of the proposed project is \$54.2 million. This estimate is broken down by the three IH 30 project segments outside the IH 30/SH 360 interchange as follows: (1) from Cooper Street eastward to the interchange, and from the east side of the interchange to the Dallas County line, \$52.0 million (CSJ 1068-02-127); and (2) from the Dallas County line eastward to SH 161, \$2.2 million (CSJ 1068-04-903).

1.6.2 Planned Phasing of Project Construction

The proposed IH 30 corridor improvements would span approximately 5.03 miles on IH 30 from Cooper Street to SH 161 and approximately 1.59 miles on SH 360 from Brown Boulevard/Avenue K to Road to Six Flags Street. The proposed implementation timeline for these projects involves constructing these improvements in multiple phases. The phased construction of IH 30 would consist of both interim and ultimate improvements. Interim improvements along the IH 30 corridor would be expected to remain in place until all later phases can be constructed and the planned ultimate improvements completed.

The construction contract for the funded first phase of the proposed project (CSJs: 1068-02-076 and 1068-02-104) is anticipated to be let in October 2015. This phase of construction would include the following improvements:

- Construction of the ultimate pavement for the IH 30 improvements from Ballpark Way to west of Great Southwest Parkway and interim transitions at each end;
- Construction of the ultimate SH 360 improvements from Brown Boulevard/Avenue K to Road to Six Flags Street and interim transitions at the southern limit; and
- Construction of the ultimate IH 30/SH 360 direct-connecting interchange, including the reconstruction of the Six Flags Drive Bridge over IH 30.

After the completion of the first phase of the proposed project, the managed lanes on IH 30 would continue to operate as an interim, two-lane concurrent facility (as in the existing condition). Conversion to the ultimate, two-lane reversible facility would not be expected to occur until the IH 30 improvements from Cooper Street to Ballpark Way and from west of Great Southwest Parkway to SH 161 are funded and constructed in later phases. The estimated time of completion (ETC) for all of the project's proposed improvements is the year 2028. Construction of the proposed project could not begin until the EA has received a project decision by TxDOT. A project decision is anticipated by late summer 2015.

1.6.3 Project Consistency with Regional Transportation Plans

The proposed IH 30 project is located within Tarrant and Dallas counties, which are part of the DFW area that has been designated by the U.S. Environmental Protection Agency (EPA) as a moderate nonattainment area for the 8-hour standard for ozone. In Texas, the EPA regulates progress toward achieving compliance (i.e., attainment) with ambient air standards of the Clean Air Act (CAA) through implementation of emission reduction strategies outlined in the State Implementation Plan (SIP)⁴ prepared by the Texas Commission on Environmental Quality (TCEQ). As mobile source emissions contribute to ozone nonattainment, the regional air quality planning agency (NCTCOG) is responsible for developing transportation plans for which mobile source emission modeling is performed to forecast future ozone concentrations within the regional transportation network. Nonattainment with the 8-hour ozone standard within the DFW region triggers the application of EPA's conformity rule,⁵ which requires regional transportation plans to conform to the SIP. The two DFW regional transportation plans subject to the conformity rule are the MTP and the Transportation Improvement Plan (TIP), discussed below.

The current MTP for North Central Texas is *Mobility 2035: The Metropolitan Transportation Plan for North Texas – 2014 Amendment (Mobility 2035 – 2014 Amendment)*.⁶ The air quality analysis in this MTP was found to conform to the SIP by the FHWA and the Federal Transit Authority (FTA) on May 29, 2015. The proposed project, as described in *Mobility 2035 – 2014 Amendment*, is consistent with the preliminary design schematic.

The *Fiscal Year (FY) 2015-2018 Transportation Improvement Program for North Central Texas* (hereinafter referred to as the "2015-2018 TIP") is a staged, multi-year program of projects proposed for funding by federal, state, and local sources within the region.⁷ The TIP is periodically updated by the NCTCOG's RTC in cooperation with local governments, TxDOT, the North Texas Tolling Authority (NTTA), and local transportation authorities.⁸ The projects

⁴ See: <http://www.nctcog.org/trans/air/sip/>, accessed May 14, 2015.

⁵ The conformity rule is in 40 Code of Federal Regulations (CFR) Parts 51 and 93. See: <http://www.epa.gov/air/genconform/regs.html>, accessed May 14, 2015.

⁶ See: <http://www.nctcog.org/trans/mtp/2035/2014amendment.asp>, accessed May 14, 2015.

⁷ The NCTCOG prepares and amends the TIP, see: <http://www.nctcog.org/trans/tip/15-18/index.asp>, accessed May 14, 2015.

⁸ The TIP is developed in accordance with the metropolitan planning requirements set forth in the Statewide and Metropolitan Final Rule (23 CFR Part 450, and 49 CFR Part 613).

included within the TIP implement improvements consistent with the MTP, and include projects to manage traffic congestion and provide additional traffic-carrying capability to respond to projected population and employment growth. The regional *2015-2018 TIP* is a component of the *FY 2015-2018 Statewide Transportation Improvement Program* (hereinafter “*2015-2018 STIP*”), which was determined by FHWA/FTA on June 24, 2015 to be consistent with its currently conforming MTP (i.e., *Mobility 2035 – 2014 Amendment*). The funding to construct the IH 30/SH 360 interchange outlined above in **Section 1.6.1** is reflected in the May 2015 update to the *2015-2018 STIP* (see **Appendix C, page 7**). When funding sources area are identified to construct aspects of the proposed project beyond the IH 30/SH 360 interchange, TxDOT and the NCTCOG will take the steps necessary to modify the TIP/STIP accordingly. No phase of the proposed project can be approved until it is funded and consistent with the TIP/STIP.

At present, the initial phase of the project that would construct the IH 30/SH 360 interchange (including the Six Flags Drive bridge) is funded, is consistent with the MTP and TIP, and meets conformity rule requirements.

1.7 FOCUS OF THIS ENVIRONMENTAL ANALYSIS

This EA focuses on choosing the best overall solution for managing traffic congestion within and near the IH 30/SH 360 interchange, given the current state of infrastructure, limited financial resources, environmental constraints, and the needs of the local and regional communities. In addition, as noted above in **Section 1.1**, the purpose of this EA is to comply with the requirements of NEPA, as implemented in Texas by TxDOT pursuant to a delegation of authority from FHWA. This EA complies with various guidance documents issued by TxDOT,⁹ and was preceded by and is consistent with scoping documents, risk assessments for myriad environmental topics, and the preparation of technical reports for key environmental topics.

⁹ TxDOT’s guidance documents may be found in its online Environmental Compliance Toolkits: <http://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits.html> , accessed May 14, 2015.

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SECTION 2.0 ALTERNATIVES

2.1 DESCRIPTION OF THE ALTERNATIVES

Throughout this EA, reference is made to the two contrasting alternatives under consideration, the No-Build Alternative and the preferred Build Alternative, as described below.

2.1.1 No-Build Alternative

The No-Build Alternative represents the case in which the proposed project would not be constructed. No improvements other than normal pavement and structure maintenance and repair would occur. Costs associated with the No-Build Alternative would include the following:

- Maintenance cost of the existing roadway system;
- Postponement of improvements that are needed, and an increase in ultimate cost for improvements/reconstruction cost increase when eventually carried out;
- Increased vehicle operating costs on under-designed, inadequate facilities;
- The monetary value of time lost by motorists due to lower operating speeds and congested roadway conditions; and
- The intangible costs associated with delayed response time of emergency service vehicles and associated potential loss of life, in addition to property damage and injuries related to safety deficiencies in the existing facility.

The No-Build Alternative has the advantage of avoiding negative impacts associated with new roadway construction and ROW acquisition, but the No-Build Alternative would not address operational deficiencies with the IH 30/SH 360 interchange, nor would it address concerns related to existing and future travel demands, safety, and existing facility design deficiencies. The No-Build Alternative would not be consistent with local government plans, and would do nothing to improve the availability of bicycle or pedestrian facilities. For these reasons, the No-Build Alternative would not satisfy the anticipated 2035 transportation demand, nor would it satisfy the need and purpose of the proposed project. The No-Build Alternative is carried forward through the analysis in this EA as a baseline comparison to anticipated impacts of the Build Alternative.

2.1.2 Build Alternative

Development of Build Alternative Design

As discussed in **Section 1.1**, the proposed Build Alternative is the culmination of transportation planning efforts that have been ongoing for many years.¹⁰ Beginning in August 2000 with the SH 360 Corridor Improvement Study (CIS) and EA/Schematic, the transportation planners considered a broad range of multi-modal alternatives to solve the SH 360 transportation challenges. These alternatives included congestion management strategies, rail and bus transit improvements, bicycle and pedestrian facilities, improvements to parallel arterials, and capacity and interchange improvements that included the IH 30/SH 360 interchange. The alternatives developed were presented in a public meeting to solicit feedback from the community. After considering input from the community, planners next developed preliminary alignments and operational details of the alternatives that were identified for further study. This stage considered environmental effects, mobility benefits, social and economic effects, cost effectiveness and affordability, and other effects such as transportation impacts during construction. The last stage of the CIS developed layouts and operational details of the alternatives. This stage of the analysis screened the available list of alternatives down to a single locally-preferred plan of action. This plan of action was presented in a public meeting in 2002, which again sought feedback from the community. As with the first public meeting, there was consensus that improvements to the IH 30/SH 360 interchange should be made without delay. Throughout the history of the development of the Build Alternative, TxDOT has coordinated closely with federal, state, and local government leaders and staff, as well as project coordination workgroups involving local stakeholders representing a variety of community elements.

Over the ensuing years, transportation planning for the proposed project area has included a variety of congestion management strategies, creation of more bicycle and pedestrian facilities, rail transit improvements, and upgrades to arterial roadways that cross IH 30 (e.g., Great Southwest Parkway and Ballpark Way). The importance of moving ahead with the design of the IH 30/SH 360 interchange intensified during the course of the SH 360 EA and the IH 30 EA, both of which were concluded in 2007 in the wake of continued community support. Since that

¹⁰ Details of the history of the proposed project may be found in the SH 360 EA and Re-Evaluation, and the IH 30 EA, discussed in **Section 1.1**.

time, further design refinements (outlined below) have occurred to prepare the proposed project for implementation.

Build Alternative Roadway Design

TxDOT's preferred plan for the proposed project area is to implement the Build Alternative to address the transportation needs and accomplish the project purpose discussed above. Within project limits, the proposed project would construct the improvements in the preliminary schematic design, which is outlined in **Section 1.3** above and is illustrated in **Figures 5** and **6**. Plans for phasing the construction of the various design components of the proposed project are as outlined above in **Section 1.4.2**. Key aspects of the ultimate facility are highlighted below.

Design Features of the IH 30/SH 360 Interchange

- Construct a fully-directional, multi-level IH 30/SH 360 interchange providing direct connecting ramps for all freeway-to-freeway traffic movements.
- Reconstruct the SH 360 main lanes and frontage roads within the project limits, in addition to the reconstruction of the Six Flags Drive Bridge over IH 30.
- Design interchange improvements to avoid interference with flood water hydraulics of Johnson Creek and its tributaries by minimizing fill within floodplain areas.

Design Features of the IH 30 Component

- Construct up to ten general-purpose main lanes and auxiliary lanes from Cooper Street to SH 161 (design speed: 60 mph).
- Construct two reversible managed lanes from Center Street to SH 161 (design speed: 60 mph).
- Create a lane balance transition at the western project limit to tie in to the existing IH 30 configuration.
- Construct one-way collector-distributor roadways between Ballpark Way and Six Flags Drive to facilitate access between IH 30 ramps and the local street network (design speed: 35 mph), but otherwise effect no substantial change to the limits and general configuration of the existing IH 30 frontage roads.
- Construct IH 30 improvements in accordance with TxDOT design standards (e.g., lane and shoulder widths), minimizing the need for design exceptions.
- Reconstruct portions of Copeland Road, Six Flags Drive, Avenue F, Avenue G, Great Southwest Parkway, and the Union Pacific Railroad Bridge over IH 30.

Design Features of the SH 360 Component

- Reconstruct the six general purpose main lanes in accordance with TxDOT design standards, including correcting verticle sag deficiencies (design speed: 60 mph).
- Reconstruct/construct eight main lanes south of IH 30 to Road to Six Flags Street (design speed: 60 mph). The proposed SH 360 improvements at the southern limit have been coordinated to match the proposed improvements from the previous SH 360 EA (FONSI issued in February 2007 for CSJs: 2266-02-054 and 2266-02-086).
- Reconstruct continuous frontage roads with the total number of lanes ranging from six to eight (design speed: 40 mph).
- Construct SH 360 improvements in accordance with TxDOT design standards (e.g., lane and shoulder widths), minimizing the need for design exceptions.
- Reconstruct portions of Avenue J, Lamar Boulevard/Avenue H, and Six Flags Drive.

As indicated in the above list of overall interchange design features, the proposed project includes design features to ensure the continued hydraulic performance of the Johnson Creek floodplain. This has been done by minimizing the amount of additional fill below the 100-year floodwater surface elevation to prevent loss of valley storage. For example, the southbound SH 360 frontage road and freeway-to-freeway connecting ramps on the west side of SH 360 have been placed on bridge structures rather than constructed on retaining walls and embankment.

Bicycle Accommodations

To accommodate bicycle travel along the IH 30 corridor, a minimum 14-foot wide outer lane (excluding gutter) for shared-use by bicycles and vehicles would be provided on frontage roads. Additional details are provided below.

IH 30 Frontage Roads and Collector-Distributors

The proposed IH 30 improvements would provide a continuous shared-use outer lane in the westbound direction from Lamar Boulevard to Six Flags Drive. Within the project limits, the existing westbound frontage road system begins at the intersection with Lamar Boulevard (west of Center Street). From this location to west of Ballpark Way, the existing westbound frontage road would be restriped to provide a 14-foot wide shared-use outer lane with a 2-foot curb offset. The proposed westbound frontage road from west of Ballpark Way to its junction with the westbound collector-distributor road (east of Ballpark Way) would also provide a 14-foot wide shared-use outer lane with a 2-foot curb offset. The proposed westbound collector-distributor

road would provide a 14-foot wide shared-use outer lane with a 2-foot curb offset from west of Ballpark Way to its eastern terminus at Six Flags Drive. East of Six Flags Drive, no collector-distributors or frontage roads are proposed so the shared-use outer lane would terminate at Six Flags Drive. However, east of the IH 30/SH 360 interchange the proposed project would reconstruct Avenue G, which runs parallel with IH 30 and would provide shared-use lanes extending to Great Southwest Parkway.

In the eastbound direction, bicycle accommodations would be discontinuous. Within the project limits, the existing eastbound frontage road begins at Cooper Street and terminates at AT&T Way. This frontage road would be restriped to provide a 14-foot wide shared-use outer lane with a 2-foot curb offset. East of AT&T Way, the one-way eastbound frontage road transitions into two-way Copeland Road. From AT&T Way to Ballpark Way, Copeland Road would maintain the existing pavement width, which provides two 11-12-foot wide lanes in each direction; therefore, this would not facilitate restriping to provide a 14-foot wide shared-use outer lane with a 2-foot curb offset. East of Ballpark Way, the proposed project would reconstruct and convert existing two-way Copeland Road to a one-way, eastbound collector-distributor road. This proposed eastbound collector-distributor would provide a 14-foot wide shared-use outer lane and 2-foot curb offset from east of Ballpark Way to its eastern terminus at Six Flags Drive. East of Six Flags Drive, no collector-distributors or frontage roads are proposed so the shared-use outer lane would terminate at Six Flags Drive. However, east of the IH 30/SH 360 interchange the proposed project would reconstruct Avenue F, which runs parallel with IH 30 and would provide shared-use lanes extending to Great Southwest Parkway.

IH 30 Cross Streets and Parallel Streets

The proposed project would address bicycle travel along the streets described below that cross IH 30, in addition to two parallel streets, Avenue F and Avenue G, as described for each street below.

- Cooper Street. The existing bridge crossing IH 30 would not be altered by the proposed project, and the bridge width would not facilitate restriping to provide a 14-foot wide outer lane and 2-foot curb offset. Although there would be no change to the existing 12-foot lanes, the bridge has 8-foot wide sidewalks on each side, which is the minimum width for a sidewalk to be shared by bicycle and pedestrian traffic.

- Center Street. The existing bridge over IH 30 would not be reconstructed by the proposed project. Existing Center Street is currently striped for a 15-foot wide outer lanes and 2-foot curb offset, which would accommodate a shared-use lane between vehicular and bicycle traffic.
- Collins Street and Baird Farm/AT&T Way. The existing bridges would be maintained and restriped between the frontage roads to provide a 14-foot wide shared-use outer lane and 2-foot curb offset to accommodate bicycle traffic.
- Ballpark Way. The existing bridge crossing IH 30 would be maintained. The northbound direction of the road has a 10-foot wide outside shoulder to accommodate bicycle traffic. The southbound direction would be restriped from south of Ballpark Way's intersection with the westbound IH 30 frontage road to Convention Center Drive to provide a 14-foot wide shared-use outer lane with a 2-foot curb offset to accommodate bicycle traffic.
- Six Flags Drive and Great Southwest Parkway. The proposed reconstruction of bridges for these roads over IH 30 would provide a 14-foot wide shared-use outer lane with a 2-foot curb offset to accommodate bicycle traffic.

In addition to the cross streets, Avenue F and Avenue G are two-lane, two-way city streets that parallel IH 30 east of SH 360, and portions of these city streets would be reconstructed. Existing and proposed Avenue F and G would provide a 16-foot wide lane with a 2-foot curb offset in each direction that would accommodate shared-use between bicycles and vehicles.

The Duncan Perry Road bridge crossing over IH 30 would not be altered by the proposed project, and the existing 12-foot wide lanes would remain. This bridge crossing is not currently designed to accommodate bicycle traffic and, therefore, would not be restriped for a shared-use lane.

SH 360 Frontage Roads and Cross Streets

To accommodate bicycle travel along the SH 360 corridor, a minimum 14-foot wide outer lane with a 2-foot curb offset would be provided along the northbound and southbound frontage roads within the project limits.

The proposed Lamar Boulevard/Avenue H and Six Flags Drive improvements under SH 360 would provide a 14-foot wide outer lane and 2 foot curb offset for shared-use bicycle traffic. The only exceptions where bicycle traffic would not be accommodated are along the existing Brown Boulevard/Avenue K Bridge and existing Avenue J Bridge over SH 360. These bridges would be maintained and their widths do not facilitate restriping to provide a 14-foot wide shared-use outer lane with a 2-foot curb offset; however, bicyclists may walk their bikes across the bridges on existing 6-foot wide sidewalks on both sides of these bridges.

Pedestrian Accommodations

To accommodate pedestrian travel within the project limits, continuous sidewalks would be provided along IH 30 and SH 360 frontage roads including Americans with Disabilities Act (ADA) access ramps at roadway/driveway crossings. During the final design phase of the project, TxDOT will make every effort to separate the proposed sidewalks from the cross streets and frontage roads as much as possible. All proposed sidewalks would meet ADA design criteria. Additional details are discussed below.

Sidewalks Associated with IH 30

Proposed cross streets, frontage roads, collector-distributor roads, Avenue F, and Avenue G would include a typical 6-foot wide sidewalk of 1.5 percent slope adjacent to the roadway for pedestrian travel. West of Ballpark Way, the proposed project would not alter the existing sidewalks adjacent to frontage roads and cross streets. The proposed project would construct a missing segment of sidewalk along the existing westbound frontage road between Center Street and Collins Street.

The proposed project would alter the existing Ballpark Way bridge over IH 30, which does not have sidewalks in the existing condition. A 6-foot wide sidewalk would be constructed along the southbound side of Ballpark Way. North of IH 30, a 6-foot wide sidewalk would be constructed at the back of curb and a crosswalk would be provided at the southbound Ballpark Way loop ramp crossing. This crosswalk design would include advanced warning signs, flashing pedestrian beacons, and yield-to-crosswalk signs. The 10-foot wide outside shoulder on the existing bridge over IH 30 would be reconfigured to include a Type II curb with a 6-foot wide sidewalk at the back of curb. These changes would require reconstructing the concrete traffic rail along the west side of the bridge. South of IH 30, approximately 175-feet of new sidewalk

would be constructed to tie to the existing sidewalk along Convention Center Drive. These proposed improvements would provide a continuous sidewalk along the Ballpark Way corridor.

The existing two-way section of Copeland Road between AT&T Way and Ballpark Way would also be maintained in its existing condition. This stretch of Copeland Road does not provide sidewalks adjacent to the roadway. Any future construction of sidewalks along this roadway would be the responsibility of the City of Arlington.

Sidewalks Associated with SH 360

The proposed reconstruction of SH 360 frontage roads and cross streets would include 6-foot sidewalks of 1.5 percent slope adjacent to the roadway to accommodate pedestrian travel. The project would maintain the existing Brown Boulevard/Avenue K Bridge and Avenue J Bridge, both of which have existing sidewalks.

Compatibility with Planned Regional Veloweb Trail

The Regional Veloweb is a network (nearly 2,000 miles) of existing and planned off-street, shared-use trails for bicyclists and pedestrians in the DFW MPA.¹¹ This trail network of shared-use paths is part of the regional transportation network and is a component of NCTCOG's MTP. Within the proposed project area, the Regional Veloweb's interactive map Website includes a planned (but unfunded) trail that parallels the south side of Copeland Road from Ballpark Way until it reaches Johnson Creek.¹² At that point, the planned trail turns northeast to cross Copeland Road and pass under IH 30 as it runs parallel to Johnson Creek along its west side. However, the above-described Regional Veloweb trail route is not shown in the latest City of Arlington Hike and Bike Plan.¹³ The city's Hike and Bike Plan shows a planned trail crossing IH 30 at the Baird Farm Road bridge. Coordination with the City of Arlington indicated that the trail route as reflected in the Regional Veloweb was abandoned, and that the city is planning the trail as an on-street facility using the existing sidewalk and shared-use lanes of AT&T Way and Baird

¹¹ See NCTCOG Regional Veloweb Website: <http://www.nctcog.org/trans/sustdev/bikeped/veloweb.asp>, accessed May 14, 2015.

¹² The planned trail may be viewed from NCTCOG's DFW maps interactive map by selecting the Transportation tab in the Map Contents menu, then checking the Trails box before navigating the to the project area. <http://www.dfwmaps.com/#>, accessed May 17, 2015.

¹³ The City of Arlington Hike and Bike Plan (map) was adopted August 2, 2011, and updated on July 28, 2014. http://www.arlington-tx.gov/cdp/wp-content/uploads/sites/11/2014/05/HikeBikePlan_11x17.pdf, accessed May 18, 2015.

Farm Road.¹⁴ The city does not plan to make any improvements to the existing bridge across IH 30. Accordingly, the conceptual design of this planned trail would be compatible with both the existing roadway conditions and the design plans for the proposed project.

2.2 PROPOSED RIGHT-OF-WAY AND EASEMENTS

The Build Alternative for the proposed IH 30 project follows existing highway alignments, with no segments proposed for construction on new locations. Of the 471 acres within the proposed project construction footprint, 97 percent is within existing transportation ROW. The proposed project would require a total of 13.9 acres of new ROW to construct planned improvements. In addition, it would be necessary to acquire 0.2 acre of drainage easements and 0.3 acre for temporary easements to facilitate construction of the project. The combined proposed acquisition of ROW and easements would be approximately 14.4 acres.

¹⁴ Coordination occurred May 18, 2015 with the Chief Transportation Planner for the City of Arlington's Community Development and Planning Department.

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SECTION 3.0 ASSESSMENT OF ENVIRONMENTAL IMPACTS

This section examines various aspects of the human and natural environment that could potentially be affected as the logical consequence of constructing and operating the facility. These fall into two categories of impacts traditionally assessed in environmental documents pursuant to NEPA. First are the direct impacts that result from constructing the facility within the project construction footprint. Second are the impacts that extend beyond the construction footprint either during or after construction of the facility. Examples of these impacts include the potential sedimentation of streams by soil eroded from construction sites, increases in traffic noise experienced on properties near the project after completion, or the contribution to ambient air quality in local areas near the completed project or throughout the region. These types of impacts are typically included with the discussion of direct impacts even though they are actually a component of indirect impacts (i.e., “encroachment-alteration impacts”) that occur later in time and/or extend beyond the project’s construction footprint. This approach allows a complete and concurrent discussion of all impact-causing activities of the proposed project, thus avoiding the need to repeat information (e.g., descriptions of existing conditions) and minimizing the number of references to previous discussions in the EA. For this reason, encroachment-alteration impacts are discussed only to a limited extent in the indirect impacts analysis (**Section 4.0**).

As noted above, the impacts of the proposed project assessed in this section include the construction footprint of the proposed project, which are the portions of the proposed project area that would be subject to ground disturbing activities from heavy construction equipment. In this EA, the construction footprint for the proposed project includes all areas within existing and proposed ROW/easements within project limits. This area comprises approximately 471 acres and is shown graphically in most of the figures included in this EA. Also assessed are the impacts in areas affected by indirect (encroachment-alteration) impacts that extend beyond the project footprint to the point such impacts would attenuate to negligible levels. Such areas vary according to the type of impact under consideration, and are addressed in connection with the discussions of each topic in this section.

The information presented in this section and throughout this EA was obtained from a variety of state and federal natural resource agencies, local governments, and from three field reconnaissance visits in August, September, and October 2014. The primary tool for assessing

environmental aspects of the study area was a geographic information system (GIS) database for which digital shapefiles were acquired regarding basic geographic features (i.e., roads and local government boundaries), geology and soils, elevation contours, water and floodplain features, vegetation and wildlife habitat, land use, and socio-economic characteristics.

Prior to assembling this EA, technical reports relating to the following topics were prepared, reviewed, and incorporated into the project file by TxDOT: biological resources, water resources, archeological resources, historic-age cultural resources, community impacts, traffic noise impacts, hazardous materials, and air quality. In accordance with TxDOT guidance,¹⁵ these technical reports and the detailed data and maps included within them are hereby incorporated by reference, and are not included in this EA. Selected graphical information and summaries of data from these technical reports are included in this EA to assist in describing anticipated project-related environmental impact. In addition, in those instances where technical reports were coordinated with outside governmental agencies, any correspondence relating to such coordination is included in **Appendix B**.

3.1 COMMUNITY IMPACTS

3.1.1 ROW/Easement Acquisitions, Displacements, and Relocations

Existing Conditions

The proposed project area includes major highway corridors in an urbanized setting with abutting properties used predominantly for commercial and industrial facilities. The various types of land uses for abutting properties are shown in **Figure 9**.

No-Build Alternative

Implementation of the No-Build Alternative would not require ROW acquisition, relocations, or displacements of any existing facilities.

¹⁵ *Environmental Handbook: NEPA Environmental Assessments (EA)*, TxDOT Environmental Affairs Division (February 2014); <http://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/140-01-gui.pdf>, accessed May 14, 2015.

Build Alternative: Direct Impacts

The total estimate of additional ROW and easements needed for the proposed project is approximately 13.9 acres for new ROW, approximately 0.2 acre for drainage easements, and approximately 0.3 acre for temporary construction easements. No displacements would result from any of the proposed easements needed for project improvements. No residences would be displaced and no residential relocations would occur due to this project. Existing control of access along the IH 30 corridor would be retained and new control of access would be required along SH 360 near relocated local access ramps between Brown Boulevard/Avenue K to Avenue J. The acquisition of ROW for the proposed project would result in displacements of seven commercial buildings, as follows: one fast-food restaurant, three gas stations with convenience stores (one of which is closed with windows boarded), one drive-thru car wash, one tire and rim repair business, and one motel building. The areas of proposed ROW and easements are shown on an aerial photograph in **Figure 6-2**, and several of the affected businesses are shown in the project area photographs in **Appendix A**. In addition to displaced buildings, one single-pole advertising billboard would be displaced. No other businesses would be affected in a manner that would prevent the continuation of operations (e.g., loss of parking or access). None of the commercial buildings provide services that are unique to the project area, nor do these facilities serve a specific population; there are numerous restaurants, gas stations, car washes, car repair shops, lodging facilities, and billboards present within the IH 30 and SH 360 corridors.

The acquisition of new ROW would result in a permanent change in property ownership for the parcels affected. Similarly, the acquisition of drainage easements would result in permanent restrictions on the use of the area subject to the easement, even though the existing property owners would retain ownership of the affected parcels. In contrast, the areas needed for construction easements would only impose temporary restrictions on affected properties, with no permanent impacts to property ownership. Of the total 14.1 acres of permanent changes in property ownership (ROW and drainage easements), approximately 4.0 acres would affect undeveloped property (mostly within the Johnson Creek floodplain) and the remaining 10.1 acres would affect commercial, retail, or industrial properties. In addition to including the displacements of facilities discussed above, these impacts would occur to portions of developed properties that are either landscaping (i.e., trees/shrubs or maintained grass) or parking areas.

Both the U.S. and Texas Constitutions provide that no private land may be taken for public purposes without the payment of just compensation. Acquisition and relocation assistance would be in accordance with the TxDOT Right-of-Way Acquisitions and Relocation Assistance Program, which adheres to the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 as amended, with the Civil Rights Act of 1964, and with the Urban Development Act of 1974. Relocation assistance is available to all individuals, businesses, and non-profit organizations displaced as a result of a transportation project. Thus, assistance applies to tenants as well as owners occupying the real property needed for the project. TxDOT would relocate all displaced businesses up to 50 miles. The TxDOT relocation office would also provide assistance to displaced businesses and non-profit organizations to aid in their satisfactory relocation with a minimum of delay and loss in earnings. In light of the nature and small number of businesses that would be displaced by the proposed project and the robust business community surrounding the project area, the relocation of such businesses within their existing service areas is not anticipated to be problematic.

Build Alternative: Encroachment-Alteration Indirect Impacts

The loss of the businesses described above would not likely have a substantial adverse effect on the community, as they do not provide products or services that are unique within the community.

3.1.2 Land Use

Existing Conditions

Land use within the project corridor is highly urbanized, and generally consists of the following types of uses: commercial, residential, industrial, cemetery, entertainment, recreational, and floodplain. The community surrounding the proposed project is primarily within the City of Arlington, with the easternmost portion of the project area within the City of Grand Prairie. City zoning along the proposed project corridor consists of retail/commercial, office, industrial, festival (Six Flags Over Texas), single and multi-family residential, and floodplain. Past urban development and construction of existing roadways have extensively altered land use throughout the project area from previous land uses that were predominantly agricultural (i.e., crops and pasture). Very few remnants of prehistoric landscapes such as prairie, forest savanna, and riparian forests may be found in the project area.

The patterns of existing land use in the project area are visible in recent aerial photography (see **Figure 3**) as well as the NCTCOG land use map in **Figure 9**. To further understand the land use in the vicinity of the proposed project, the locations of notable community facilities are shown in **Figure 10-2** (see **Figure 10-1** for the Community Facility Map Index). The community study area shown in **Figure 10-2** is comprised of commercial businesses that include manufacturing and distribution facilities, recreational facilities, lodging facilities, and numerous restaurants, retail shops, banks, and gas stations. The community study area reflects an area in which the construction of IH 30 and SH 360 pre-dated urban development, thus resulting in predominantly non-residential land uses adjacent to these highway corridors. The community study area generally follows the outline of 2010 Census blocks within and adjacent to the proposed project area. However, gaps within or between Census blocks were closed to create a contiguous, smoothed boundary around the proposed project area.

Along the IH 30 corridor to the west of SH 360, land use is dominated by commercial enterprises in Arlington's Entertainment District, which include large recreation facilities such as Six Flags over Texas and Six Flags Hurricane Harbor, as well as major regional sporting facilities nearby (i.e., AT&T - Dallas Cowboys - Stadium and the Globe Life - Rangers - Ballpark). As such recreation facilities draw visitors from throughout the region, there are numerous hotels/motels, restaurants, and retail establishments (e.g., shopping centers) in the vicinity. The Arlington Convention Center is another major component of the Entertainment District. Along IH 30 to the east of SH 360, industrial facilities dominate land use, with a mixture of commercial uses. Also within the community study area are various residential areas (mostly apartments) and small pockets of undeveloped land, which are generally farther removed from the major transportation corridors. As the project area is largely influenced by regional commercial and recreation activities, there are limited facilities within the community study area that appear to target local residents in the vicinity.

The proposed project area is located primarily within the City of Arlington in Tarrant County (see **Figure 10-1**). The eastern portion of the project area is within the City of Grand Prairie, and a small portion along the IH 30 corridor is in Dallas County. Land use within and near the project area is regulated by these two cities through comprehensive land use plans (CLUP) and zoning/development ordinances designed to manage growth and to achieve targeted social objectives throughout these large and diverse cities. Municipal zoning and land use regulations control the intensity and type of development and control where land should be developed and

where land should be preserved. Both City of Arlington and City of Grand Prairie have long range planning documents and regulations providing for future development and the protection of lands from arbitrary development. These documents emphasize the capital improvements and transportation infrastructure necessary to support projected population growth and economic development within each jurisdiction. The CLUP and transportation thoroughfare plan for each city include the assumed construction of the proposed IH 30 improvements. A brief description of influential aspects of local and regional plans relating to the proposed project is provided below.

- City of Arlington: The city's CLUP includes individual sector plans that address planning goals. The two sectors that cover the project area include the following planning goals: (1) Improve traffic circulation and provide better access to Dallas and Fort Worth; (2) Decrease traffic congestion particularly at the interchanges of IH 30 at SH 360 and at IH 30 at Collins Street; and (3) Provide direct access between IH 30 and SH 360. These goals are part of an overall city objective to improve public access to the Entertainment District, as well as industrial, commercial, and residential centers in the area. Also, the city's thoroughfare plan anticipates improvements in mobility within the project corridor.
- City of Grand Prairie: The city's CLUP includes the goal of maintaining and upgrading transportation infrastructure as part of an overall goal of sustainable growth and revitalizing older developed areas. Coordination with city planning officials in 2014 indicated the proposed IH 30 improvements are reflected in the city's planning documents, and planning officials stated the proposed project is a component in meeting the city's future goals and objectives.
- Mobility 2035 – 2013 Update and Mobility 2035 – 2014 Amendment: The proposed project is included in these MTPs (see details in **Section 1.6.3**), and is part of NCTCOG's regional planning to improve mobility by managing congestion.
- 2015-2018 TIP: The proposed project includes reference to the planned IH 30/SH 360 interchange, and steps have been taken to amend the TIP (see details in **Section 1.6.3**) to reflect the availability of funding for interchange improvements (including the proposed Six Flags Drive Bridge over IH 30).

No-Build Alternative

Implementation of the No-Build Alternative would not require any acquisition of new ROW or easements, and would not convert existing land uses to transportation use. However, as the proposed improvements are reflected in local and regional long range planning documents, the

No-Build Alternative is not consistent with planning goals of relevant municipalities and the NCTCOG.

Build Alternative: Direct Impacts

The proposed project would require a permanent change in land use of 13.9 acres for new ROW. An additional 0.2 acre would be required for drainage easements, which is a permanent restriction on land use even though the existing property owner retains possession. The 0.3 acre required for construction easements is a temporary condition, and is not considered a change in land use. Of the 14.1 acres of project-related change in land use, approximately 4.0 acres would affect undeveloped property (mostly within the Johnson Creek floodplain) and the remaining 10.1 acres would affect commercial, retail, or industrial properties. In addition to the displacements of facilities discussed in **Section 3.1.1**, nearly all of these impacts would occur to portions of developed properties that are either landscaping or parking areas.

Whether the changes from existing land use to transportation ROW or drainage easements described above would constitute an 'adverse' impact requires consideration of municipal land use policies, as well as regional transportation plans. It should be noted at the outset of this discussion that the acquisition of ROW/easement from a particular land owner might be viewed by the property owner as adverse, but that individualized perspective has no bearing on whether the change in land use is adverse from a community perspective.

Within the municipal setting described above, all existing land uses are the result of decisions involving both civic authorities and the property owner about the type of development that could potentially occur on a particular parcel of property. Thus, each municipality makes the initial determination of land use by enacting a zoning ordinance. The 'decision' as to the land use for a particular parcel of property is further modified by the city through the adoption of CLUPs, land development regulations, and thoroughfare plans, as well as the city's participation in preparing regional transportation plans (i.e., MTP and TIP) that plan and program roadway improvements. The same principle applies to other public works projects such as water and power utilities. Subject to such preliminary decisions within the province of the municipal authority, a property owner may develop or redevelop a parcel of property. Due to the nature of this joint land use decision-making process involving both the city and the property owner, there is no inherent value to an existing type of land use that compels it to remain unchanged. For this reason, it cannot simply be assumed that conversion of an existing land use to transportation use is *per*

se an adverse impact to land use because the proposed transportation use of a particular piece of land may offer tremendous benefits for the community and/or region that would be served by the transportation project.

The determination of whether a proposed change in land use is adverse or beneficial may only be objectively judged within the planning/zoning framework established by elected city leaders, as reflected in planning/zoning policies as outlined above. Consequently, the change in land use associated with the proposed project has been assessed to ensure that the nature and extent of the expected changes are consistent with the overall planning objectives of the cities of Arlington and Grand Prairie. The primary indicator of whether project-related changes in land use are adverse or beneficial depends on whether these changes are specifically mentioned in comprehensive land use plans or, if not mentioned by name, whether approval for the changes are implied by more broadly-stated policies and objectives. As indicated in the bulleted list of local and regional plans above, the proposed project is consistent with planned growth and land use envisioned both cities' CLUPs and thoroughfare plans. Additionally, the need for changes in land use are implicit in local planning documents as well as in public statements of support for the proposed project by city officials. Likewise, regional planning documents such as the MTP and TIP are the result of collaboration between NCTCOG, TxDOT, FHWA, other transportation authorities, and local government leaders to address transportation, socioeconomic, and environmental issues. Thus, long range planning objectives at both local and regional levels call for changes in the transportation network with an understanding that such changes will frequently require new ROW acquisition to implement.

In summary, the proposed project would facilitate mobility within this area of ongoing socioeconomic growth, thus supporting the collective and diverse land uses surrounding the IH 30/SH 360 interchange that are envisioned in urban plans of the cities of Arlington and Grand Prairie, as well as regional mobility plans. Although future growth and urbanization in the area surrounding the proposed project would occur with or without implementation of the proposed project, and the proposed improvements would better accommodate planned and forecasted land use changes in the vicinity and in the region. Accordingly, the proposed project would be consistent with relevant land use and transportation plans for the local area and region, and the conversion of existing types of land use to transportation ROW and drainage easements are considered beneficial impacts in terms of the goals of local and regional communities.

Build Alternative: Encroachment-Alteration Indirect Impacts

This type of indirect impact would not apply to new acquisitions of ROW and drainage easements acquisitions, as the change from existing uses of affected lands to transportation use is in compliance with the cities' plans and would not change the overall land use in areas surrounding the proposed project in the future.

3.1.3 Transportation and Access

Existing Conditions

Motor vehicle access to properties adjacent to IH 30 located west of SH 360 is generally by way of driveways entering parallel eastbound and westbound frontage roads and local city streets. However, the westbound frontage road is discontinuous from its intersection with Lamar Boulevard westward to Cooper Street; Lamar Boulevard is a two-way thoroughfare that functions as a frontage road at this location. North of IH 30 between Lamar Boulevard and Ballpark Way, access is provided in the westbound direction along the frontage road; east of Ballpark Way to SH 360 there is no frontage road on the north side of IH 30, but vehicular access is provided along Lamar Boulevard to the north of the properties. Access to properties adjacent to IH 30 east of Baird Farm Road/AT&T Way and extending to SH 360 is via Copeland Road on the south side of IH 30, which carries two-way traffic.

There is currently no IH 30 frontage road access to adjacent properties to the east of SH 360 and extending to the IH 30/SH 161 interchange. Access to properties adjacent to IH 30 is provided by various two-way city streets, only three of which are located between the adjacent properties and IH 30 (i.e., Avenue F and Avenue G, which extend westward from the Great Southwest Parkway, and 113th Street, which is found between Great Southwest Parkway and Duncan Perry Road).

Motor vehicle access to properties along SH 360 is provided by northbound and southbound frontage roads (i.e., Watson Road) which are continuous within the project area.

The existing access roads along the IH 30 corridor within project limits generally do not accommodate bicycle traffic, but sidewalks on at least one side of the street are usually provided for city streets. The existing frontage road system does not provide bicycle accommodations or continuous sidewalks for pedestrians.

No-Build Alternative

The No-Build Alternative would not address the need for mobility improvements to existing facilities within the project area. This alternative would do nothing to manage congestion that is expected to worsen in coming years in light of projected population and employment growth in the cities of Arlington and Grand Prairie. The intersection of IH 30 and SH 360 would remain a local and regional traffic bottleneck, and bicycle/pedestrian needs would continue to be inadequate.

Build Alternative: Direct Impacts

The proposed improvements to IH 30 and SH 360 would generally not permanently change the existing conditions of access to properties adjacent to these highways. Throughout the 4 to 4.5 years of interchange construction, construction, temporary detours and/or lane closures for all modes of transportation would be required on IH 30 and SH 360 main lanes, frontage roads, ramps, or parallel and cross streets to facilitate construction activities. Lane closures and other temporary detours would be adjusted during each construction phase to maintain safe travel through work areas. Temporary detours would consist of alignment shifts around construction activities that would last the duration of individual phased construction activities, or until a specific detour route is no longer required to facilitate construction and access is regained. Temporary changes to access would be communicated to motorists through signage, temporary striping, and traffic barriers. However, full closure of highway main lanes would likely be necessary for brief periods to allow for the demolition of existing bridges and the hanging of new bridge beams. In these instances of full closure, main lane traffic would be re-routed to temporary pavement, frontage roads, or parallel streets. In addition, full closure of main lanes would occur during off-peak periods such as overnight or during weekends. Motorists would be warned in advance of full closures by means of digital message signs placed along the roadsides, in addition to other notification avenues such as the internet and news media. Although delays and inconvenience necessarily accompany the construction of any major highway project, once completed the proposed project would accommodate current and future transportation needs by improving mobility for existing and future residences and businesses along the project corridor.

The proposed improvements to IH 30 and SH 360 would also not generally change the manner in which members of the community would access or cross these highways. People would continue to move across both IH 30 and SH 360 using the same cross streets that currently

exist. Access to IH 30 to and from the local street network would be improved by the construction of collector-distributor roads between Ballpark Way and Six Flags Drive. Otherwise, the proposed project would not result in substantial changes to the limits and general configuration of the existing IH 30 frontage roads. The existing frontage roads for SH 360 would be reconstructed with at least three lanes in each direction.

Build Alternative: Encroachment-Alteration Indirect Impacts

After completion, the proposed project is anticipated to improve mobility both in the community surrounding the proposed project as well as the DFW region. The extent of expected improvements to mobility were explored in a traffic performance comparison between the No-Build Alternative and the Build Alternative. This traffic performance study was conducted by NCTCOG using the DFWRTM for the planning year 2035, using the same traffic study area described for travel demand modeling discussed in **Section 1.6.1** (shown in **Figure 7**). The results of this comparative traffic analysis are summarized in **Table 3-1**. Vehicle hours traveled, congestion delay, traffic control (traffic signal) delay, and lane miles at LOS D, E, or F all decreased within the traffic study area, while average loaded speed increased. The number of lane miles and vehicle miles traveled were increased because of the 26 miles of new travel lanes added by the proposed improvements. The highest percent decrease was associated with the congestion hour delay, which decreased by 15.6 percent. The results show the proposed project would decrease delays related to the congestion and traffic controls within the traffic study area.

Table 3-1. IH 30 Traffic Study Area Results: 2035 No-Build and Build Alternatives

Traffic Performance Measure	2035 No-Build Alt.	2035 Build Alt.	Difference	Percent Difference
Daily Vehicle Miles of Travel (VMT)	3,018,129	3,166,756	148,627	4.9%
Daily Vehicle Hours of Travel (VHT)	91,547	89,586	-1,961	-2.1%
Average Loaded Speed (miles per hour)	32.97	35.35	2.38	7.2%
Lane Miles (all categories of roadways)	428	454	26	6.1%
Vehicle Hours of Congestion Delay	21,063	17,781	-3,282	-15.6%
Vehicle Hours of Traffic Control Delay	8,954	8,323	-631	-7.0%
Percent of Total Lane Miles at LOS* D, E, or F	40.02%	36.96%	-3.06%	n/a
Source: NCTCOG DFWRTM IH 30 Traffic Study Area, March 2015.				
* LOS = Level of Service.				

Additionally, the traffic effects associated with the No-Build and Build Alternative were modeled on the regional level using the 12-county MPA. The analysis of project effects on transportation at the regional level showed a reduction of nearly 8,000 daily vehicle hours in estimated travel

time with the Build Alternative. Benefits were also realized in terms of reductions in the hours of congestion delay and traffic control delay. These results indicate the travel benefits of the proposed project would extend beyond the traffic study area. The results of the regional traffic analysis are summarized in **Table 3-2**.

Table 3-2. Regional Traffic Results: 2035 No-Build and Build Alternatives

Traffic Performance Measure	2035 No-Build Alt.	2035 Build Alt.	Difference
Daily Vehicle Miles of Travel (VMT)	283,101,892	283,115,709	13,817
Daily Vehicle Hours of Travel (VHT)	8,052,953	8,044,977	-7,976
Lane Miles (all categories of roadways)	52,782	52,808	26
Vehicle Hours of Congestion Delay	1,803,465	1,798,206	-5,259
Vehicle Hours of Traffic Control Delay	730,029	728,118	-1,911
Source: NCTCOG DFWRM IH 30 Traffic Study Area, March 2015.			

3.1.4 Economic Effects

Existing Conditions

The proposed project area includes major highway corridors in an urbanized setting with abutting properties used predominantly for commercial and industrial facilities.

No-Build Alternative

Under the No-Build Alternative, the foregoing benefits to mobility in the community and region would not occur. The resulting exacerbation of congestion is expected to have a negative impact on general economic enterprises that rely on vehicular transportation to attract customers. This may be particularly adverse to the major sporting venues, recreation areas, Arlington Convention Center, and other facilities in the Arlington Entertainment District, as visitors may opt for alternative forms of entertainment rather than experience undue traffic delays as they travel to or leave sporting events or other entertainment venues.

Build Alternative: Direct Impacts

Direct economic impacts to displaced properties are discussed in **Section 3.1.1**, along with the general process for compensating property owners and relocation assistance.

Build Alternative: Encroachment-Alteration Indirect Impacts

The Build Alternative would support the planned community growth in the cities of Arlington and Grand Prairie, and the MPA. The proposed project would assist in accommodating current and

future transportation needs by improving circulation and mobility for existing and future residences and businesses along or near the project corridor. In particular, the planned IH 30 improvements would facilitate the flow of traffic to and from major venues in the Arlington Entertainment District, which may be considered an economic benefit insofar as potential visitors are not discouraged from attending entertainment venues by excessive traffic congestion. Overall, the enhanced mobility expected from the proposed project is expected to result in similar economic benefits for the community.

3.1.5 Bicycle and Pedestrian Accommodations

Existing Conditions

Sidewalks are discontinuous within the proposed project area, and bicycle accommodations are not generally available.

No-Build Alternative

Under the No-Build Alternative, bicycle and pedestrian accommodations would remain limited and discontinuous within the proposed project area.

Build Alternative: Direct Impacts

The proposed project includes improvements to bicycle and pedestrian accommodations as described in **Section 2.1.2**. Proposed improvements include construction of sidewalks along much of the IH 30 frontage or collector roads, and outside vehicle/bicycle shared-use lanes extending from Cooper Street to Six Flags Drive; however, the existing width of pavement for Copeland Road between AT&T Way and Ballpark Way precludes creating a shared-use lane for this road segment. The proposed project would also create shared-use lanes along SH 360 frontage roads and create continuous sidewalks.

Build Alternative: Encroachment-Alteration Indirect Impacts

Proposed bicycle and pedestrian improvements would also benefit hike/bike traffic originating farther away from the project area by providing better cross linkage within both community and

regional pedestrian and bicycle facilities such as the Regional Veloweb.¹⁶ The design of the proposed project would be compatible with the planned future extension of a Regional Veloweb trail that would cross IH 30 using the Baird Farm Road bridge as an on-street trail. The proposed project improvements would be compatible with the eventual design this planned trail, which is not expected to require any modification of AT&T Way or Baird Farm Road (see discussion of the Veloweb and the planned trail in **Section 2.1.2**).

3.1.6 Public Facilities / Services and Utilities

Existing Conditions

The majority of the proposed project area is dominated by commercial enterprises which include large recreation facilities (i.e., Six Flags over Texas and Six Flags Hurricane Harbor), major regional sporting facilities (i.e., AT&T - Dallas Cowboys - Stadium and the Globe Life - Rangers - Ballpark), hotels/motels, restaurants and retail establishments (e.g., shopping centers). Industrial facilities dominate the project area to the west of SH 360, and scattered throughout the project area are various residential areas (mostly apartments) and small pockets of undeveloped land. Important community facilities are noted in **Figure 10-2**.

The proposed project area includes various aerial and subterranean utilities located throughout the project corridor within or adjacent to existing highway ROW.

No-Build Alternative

Implementation of the No-Build Alternative would not adversely affect any public facilities or services. However, the No-Build Alternative would not improve mobility to access these facilities and services.

Build Alternative: Direct Impacts

As the project area is largely influenced by regional commercial and recreation activities, there are limited facilities within the project area that appear to target use by local residents in the vicinity. Implementation of the proposed project would not displace any public facilities, and would improve mobility to access these facilities and services.

¹⁶ See NCTCOG Regional Veloweb Website: <http://www.nctcog.org/trans/sustdev/bikeped/veloweb.asp>, accessed May 14, 2015.

Implementation of the proposed project would require the relocation and adjustment of existing utilities such as water lines, sewer lines, gas lines, telephone cables, electrical lines and other subterranean and aerial utilities. Schedules for any utility adjustments would be closely coordinated with the affected utility provider to ensure that no substantial interruption of service would take place. Additional details regarding utility relocations are provided below.

IH 30 Utility Adjustments

Utility adjustments, both longitudinal and transverse, would be required within the reconstruction limits of IH 30. The types of utilities along the IH 30 corridor include underground/overhead electric, water, sanitary sewer, gas, and fiber optic cable. Utility adjustments from Cooper Street to west of Ballpark Way would be very minor, if any, due to minor pavement widening, ramp reconstruction and restriping. From west of Ballpark Way to Great Southwest Parkway, utility adjustments would be more substantial due to the widening and reconstruction of the roadway and construction of collector-distributor roads. Longitudinal utilities would likely be relocated to the outer border width along the collector-distributor roads or Avenue F and Avenue G. From Great Southwest Parkway to SH 161, it is anticipated that utility adjustments would be minor due to the absence of proposed collector-distributor roads and because fewer utilities are located within this segment. There are utilities located parallel to existing Great Southwest Parkway, Avenue F, Avenue G, and the UPRR Bridge over IH 30. Utility relocations would be required for the reconstruction of these facilities.

SH 360 Utility Adjustments

Utility adjustments, both longitudinal and transverse, would be required along the SH 360 corridor. The types of utilities along the SH 360 corridor include underground/overhead electric, water, sanitary sewer, gas, and fiber optic cable. Utility adjustments from Brown Boulevard/Avenue K to Road to Six Flags Street would be required due to the widening and reconstruction of pavement and a shifting of the frontage roads outward. Longitudinal utilities would likely be relocated to the outer border widths along the frontage roads. There are utilities located parallel to existing Avenue J, Lamar Boulevard/Avenue H, and Six Flags Drive. Utility relocations would be required to construct the proposed improvements associated with these roadways.

Build Alternative: Encroachment-Alteration Indirect Impacts

It is not anticipated that utilities outside the proposed project construction footprint would require relocation.

3.1.7 Environmental Justice

Existing Conditions

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of the programs on minority or low-income populations. In implementing EO 12898, FHWA requires an evaluation of each proposed project in terms of potential impacts environmental justice (EJ) communities comprised predominantly of minority or low-income populations.¹⁷ Such evaluations are intended to avoid disproportionately high and adverse human health or environmental effects, which include adverse effects that: (1) are predominantly borne by a minority population and/or a low-income population; or (2) would be suffered by the minority population and/or low-income population and are appreciably more severe or greater in magnitude than the adverse effects that would be suffered but the non-minority population and/or non-low-income population.

To evaluate the proposed project in light of the requirements of EO 12898, data from the 2010 U.S. Census were analyzed to identify areas with high concentrations of minority and low-income populations. For the purpose of the demographics analysis, the project area was defined as the Census tracts, block groups, and blocks located within or abutting the proposed project footprint. Within the project area, there are 13 Census tracts, 13 Census block groups and 181 Census blocks. Maps depicting the boundaries for Census tracts, block groups, and blocks are included in **Figures 11-1** through **11-3**. Data obtained from the Census tracts, block groups, and blocks were analyzed to determine race and income characteristics of the population potentially affected by the proposed project.

¹⁷ FHWA Order 6640.23A (2012), *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. <http://www.fhwa.dot.gov/legregs/directives/orders/664023a.cfm>, accessed May 14, 2015.

According to 2010 U.S. Census data, a total of 6,336 persons were recorded within 24 Census blocks containing a residential population. The remaining 157 Census blocks did not contain a residential population. The Census data indicated that 21 Census blocks in the project area reported an aggregate minority percentage of 50 percent or higher, indicating predominantly EJ populations in the project area. The 2010 Census demographic data for the 24 Census blocks with a residential population are shown in **Table 3-3**, with Census blocks with a majority EJ population indicated by bold text for Census tract, block group, and block identifiers. Similarly, **Figure 11-3** shows all 24 Census blocks with a residential population as well as the 21 Census blocks (shown in bold text) with a combined EJ population that is 50 percent or greater.

Table 3-3. Environmental Justice Populations at the Block Level in the Project Area

Census Geography		Race and Ethnicity ^{1,2}								
Census Tract/Block Group ^{1,2}	Block	Total Population	Percent White Alone (No. of persons)	Percent Black or African American Alone (No. of persons)	Percent American Indian and Alaska Native Alone (No. of persons)	Percent Asian Alone (No. of persons)	Percent Native Hawaiian and Other Pacific Islander Alone (No. of persons)	Percent Some Other Race Alone (No. of persons)	Percent Two or More Races (No. of persons)	Percent Hispanic or Latino of Any Race (No. of persons)
154.01/4	4016	76	59% (45)	11% (8)	0%	0%	0%	0%	3% (2)	28% (21)
154.01/6	6004	603	35% (212)	22% (131)	<1% (3)	6% (39)	0%	<1% (1)	2% (15)	33% (202)
154.03/1	1002	28	7% (2)	29% (8)	0%	0%	0%	0%	0%	64% (18)
154.03/2	2002	437	21% (91)	9% (41)	0%	0%	0%	0%	1% (6)	68% (299)
1130.01/1	1090	688	44% (301)	36% (248)	1% (6)	4% (28)	0%	0%	2% (11)	14% (94)
--	1109	2	50% (1)	0%	0%	50% (1)	0%	0%	0%	0%
--	1120	176	48% (84)	30% (53)	0%	1% (1)	0%	1% (1)	2% (3)	19% (34)
--	1158	20	55% (11)	25% (5)	0%	15% (3)	0%	0%	0%	5% (1)
1130.02/1	1017	12	25% (3)	67% (8)	0%	0%	0%	0%	0%	8% (1)
--	1051	558	28% (157)	18% (99)	0%	9% (51)	0%	0%	1% (7)	44% (244)
--	1119	10	20% (2)	20% (2)	0%	60% (6)	0%	0%	0%	0%
1131.09/3	3001	672	35% (235)	47% (316)	<1% (2)	<1% (2)	<1% (1)	0%	3% (20)	14% (96)
--	3012	52	40% (21)	42% (22)	0%	0%	2% (1)	0%	2% (1)	13% (7)
1131.10/3	3006	546	28% (155)	40% (220)	1% (4)	3% (14)	0%	1% (3)	4% (21)	24% (129)
--	3009	58	17% (10)	55% (32)	0%	0%	0%	0%	3% (2)	24% (14)
--	3010	86	21% (18)	23% (20)	0%	5% (4)	0%	0%	0%	51% (44)
--	3012	59	27% (16)	46% (27)	2% (1)	2% (1)	0%	0%	3% (2)	20% (12)
1131.15/2	2001	1031	32% (327)	26% (269)	0%	2% (16)	<1% (1)	<1% (1)	3% (26)	38% (391)

Table 3-3. Environmental Justice Populations at the Block Level in the Project Area

Census Geography		Race and Ethnicity ^{1, 2}								
Census Tract/Block Group ^{1, 2}	Block	Total Population	Percent White Alone (No. of persons)	Percent Black or African American Alone (No. of persons)	Percent American Indian and Alaska Native Alone (No. of persons)	Percent Asian Alone (No. of persons)	Percent Native Hawaiian and Other Pacific Islander Alone (No. of persons)	Percent Some Other Race Alone (No. of persons)	Percent Two or More Races (No. of persons)	Percent Hispanic or Latino of Any Race (No. of persons)
--	2026	95	32% (30)	39% (37)	0%	2% (2)	0%	0%	1% (1)	26% (25)
1131.16/1	1006	477	24% (155)	47% (244)	0%	2% (9)	1% (3)	0%	2% (9)	25% (117)
1217.02/1	1026	5	20% (1)	0%	0%	0%	0%	0%	0%	80% (4)
--	1043	2	100% (2)	0%	0%	0%	0%	0%	0%	0%
--	1044	353	31% (109)	29% (104)	1% (3)	1% (5)	0%	0%	1% (4)	36% (128)
1217.03/1	1003	290	17% (49)	42% (123)	<1% (1)	1% (2)	0%	<1% (1)	2% (5)	38% (109)

Sources/References:

- Environmental Justice Guidance Under the National Environmental Policy Act, Council on Environmental Quality, published December 10, 1997.
- U.S. Census Bureau 2010, Summary File 1, Table P9.

Notes:

1. Table 3-3 includes all 2010 Census blocks within or adjacent to the project area with resident populations greater than zero; all Census blocks with zero population have been omitted from Table 1 but are shown in Table 2.
2. A specific racial or ethnic minority population includes those persons who are members of any of the following population groups: Black or African American not of Hispanic origin; American Indian or Alaskan Native; Asian; Native Hawaiian and other Pacific Islander; some other race; a combination of two or more races; or Hispanic or Latino (of any race). In instances where the combined total of all racial and minority groups of a potentially-affected Census block equals or exceeds 50 percent, the Census tract, block group, and block numbers are highlighted with **bold text**.

Census data were also researched to determine the median household income characteristics of the 15 Census block groups in the project area, based on the U.S. Census Bureau’s 2008-2012 American Community Survey (ACS) 5-year estimates data.¹⁸ The summary of median household income levels for Census block groups in **Table 3-4** indicates there are no Census block groups in the project area with a median household income less than the U.S. Department of Health and Human Services (HHS) 2015 poverty guideline of \$24,250 for a four-person family. Based on available data, therefore, there are no discernable low-income populations in the project area.

¹⁸ The latest Census data have been utilized to obtain all socioeconomic data. The 2010 U.S. Census data is used for population counts and basic characteristics, while the U.S. Census Bureau’s 2008 – 2012 ACS 5-year estimates were used for demographic, social, economic and housing characteristics.

Table 3-4. Median Household Income by Census Block Group

Census Tract / Block Group	Total Households ¹	Median Household Income in the Past 12 Months ² (in 2012 inflation-adjusted dollars)
154.01 / 4	322	\$104,615
154.01 / 6	685	\$33,750
154.03 / 1	346	\$33,000
154.03 / 2	339	\$41,680
1130.01 / 1	1,007	\$64,320
1130.02 / 1	654	\$38,050
1131.07 / 2	553	\$87,989
1131.09 / 2	586	\$95,128
1131.10 / 3	880	\$28,979
1131.11 / 1	372	\$24,795
1131.15 / 2	1,524	\$41,875
1131.16 / 1	1,079	\$38,316
1217.02 / 1	572	\$36,295
1217.03 / 1	879	\$32,344
1217.04 / 1	409	\$40,035
Source: U.S. Census Bureau 2008-2012 ACS 5-year estimates, Tables B17017 ¹ and B19013 ² .		

No-Build Alternative

Implementation of the No-Build Alternative would not result in any acquisition of ROW or easements, thus avoiding the potential for disproportionate impacts to minority residents. Although the worsening of congestion in the project area would result from taking no action to address mobility, such adverse impacts from the No-Build Alternative would be expected to affect EJ populations on a par with other non-EJ populations in the project area.

Build Alternative: Direct Impacts

Although most Census blocks in the project area have no residential populations, EJ populations comprise nearly all of the 24 Census blocks with residents. None of the Census tracts show a median income below the DHHS poverty level. The proposed project would not result in any residential relocations or displacements. The proposed improvements to IH 30 and SH 360 would generally not permanently change the existing conditions of access to any of the properties adjacent to these highways. No existing neighborhoods would be divided, and permanent disruptions to normal daily activities in the project area are not expected. Furthermore, as purposes of the proposed project include alleviating current safety and

operational deficiencies of the existing facility by improving the IH 30 corridor and the IH 30/SH 360 interchange, the expected benefits of these improvements would be available to all populations surrounding the project area, including EJ populations. Available information indicates that no disproportionately high and adverse impacts on minority or low-income populations should be anticipated as a result of the proposed project.

Build Alternative: Encroachment-Alteration Indirect Impacts

Based on previous environmental studies in the area and the nature of the proposed improvements to IH 30 and SH 360, the proposed project is not expected to result in substantial adverse impacts to surrounding communities with regard to air quality, traffic noise, or other encroachment-alteration impacts. The potential environmental effects of the proposed project would be experienced to the same degree by all populations surrounding the project area regardless of demographic makeup, and would not be felt disproportionately by minority or low-income populations. In this regard, all of the seven businesses that would be displaced by the proposed project provide services to the general public and do not specifically target the delivery of services to minority or low-income populations.

3.1.8 Environmental Justice and Managed Lanes with a Tolling Component

Existing Conditions

In addition to six general purpose main lanes, the existing IH 30 facility has two concurrent HOV lanes separated by a traffic barrier extending east of Center Street. These HOV lanes transition to two reversible managed lanes at the IH 30/SH 161 interchange. The ultimate design for the proposed project would include conversion of the concurrent HOV lanes to a two-lane reversible managed facility.

Including reversible managed lanes as part of the proposed project's design is in keeping with transportation policies developed in recent years by NCTCOG to help manage congestion in the MPA. This discussion summarizes elements of NCTCOG's managed lane policy, which has been the subject of study and planning for over a decade.¹⁹ The use of managed lanes is a

¹⁹ NCTCOG provides a variety of materials and studies to explain and illustrate its managed lane policies on the Regional Managed Lane System portion of its Website: <http://www.nctcog.org/trans/mtp/managed/managedlanes.asp>, accessed May 14, 2015. Additional materials relating

means to convert existing HOV lanes in the region's transportation network to achieve greater efficiency during peak travel periods while also generating an income stream for roadway construction and maintenance. In essence, managed lanes give motorists the choice to pay for a higher level of service. Managed lanes are designed to keep traffic moving at the target speed of 50 mph on at least a portion of a highway even during peak hours. This would be accomplished by increasing the price per mile for using a managed lane as traffic begins to slow down, such that persons unwilling to pay higher prices will exit the managed lane facility when the price becomes too high. Highways that include managed lanes would continue to have all general purpose main lanes and all frontage roads operate free of charge.

No-Build Alternative

This alternative would maintain the existing two-lane concurrent HOV facility in the project area, which would continue to restrict use to motorists meeting the occupancy criteria but would not charge a fee at any time.

Build Alternative: Direct and Encroachment-Alteration Indirect Impacts

Potential impacts to EJ populations related to constructing managed lanes are primarily an indirect impact, as introducing a tolling element to use of the facility could affect persons in a racial minority or low-income throughout the MPA. That is, people traveling through the project area from or to their residences may have to choose whether to pay a toll to use the managed lane facility. As funding mechanisms for improving area roadways evolve, the trend towards tolling of facilities in this region may, through time, create "user impacts" as access to highway systems becomes an issue to the economically disadvantaged. This aspect of community impacts has been examined with the performance of an origin and destination (O&D) analysis by NCTCOG.

Origin and Destination (O&D) Analysis for EJ Populations

O&D data secured from the NCTCOG were used for additional analysis of "user impacts" of the proposed IH 30 project on low-income and minority populations. Studying O&D data can determine travel patterns of traffic along a transportation facility during a typical day. This form

to NCTCOG's managed lane policies are in the Value Pricing portion of its Website:
<http://www.nctcog.org/trans/mtp/valuepricing/index.asp>, accessed May 14, 2015. This includes a brochure that outlines key aspects of NCTCOG's managed lane policy: <http://www.nctcog.org/trans/outreach/MandLan0209.pdf>, accessed May 14, 2015.

of analysis is useful in assessing “user impacts” as the number of trips associated with specific population characteristics can be studied to provide general travel assumptions for those specific populations. A trip is defined as a one-way movement from where a person starts (origin) to where the person is going (destination). Assessing “user impacts” in the form of an O&D analysis is an integral component of the EJ analysis for the proposed tolling aspects of the proposed project.

Traffic Survey Zones, Study Area, and Data Sources

The information associated with the O&D analysis is organized by traffic survey zones (TSZs) which are small geographic units of area that are developed as a basis for estimation of travel. TSZs may vary in size, are determined by the roadway network and homogeneity of development, and directly reflect demographic data generated by the U.S. Census Bureau. Delineated by state and/or transportation officials for tabulating traffic-related data, TSZs usually consist of one or more census blocks, block groups, or census tracts.

The study area for the O&D analysis consists of the geographic extent of the 12-county MPA boundary (shown in **Figure 12-1**) that consists of 9,441 square miles. Given the regional operating characteristics of IH 30 and SH 360, it is reasonable to assume the MPA contains the proposed project’s daily users. A total of 5,252 TSZs comprise the O&D study area.

TransCAD®, a GIS-based transportation planning software, was utilized by the NCTCOG to generate the traffic data analyzed during the O&D analysis. NCTCOG conducted a “select-link analysis” based on 2035 AM peak period traffic to generate O&D data associated with the proposed project. Traffic data exported directly from TransCAD® select-link matrices were correlated with U.S. Census Bureau data to provide a demographic profile of users anticipated to utilize the proposed IH 30 facility. NCTCOG’s O&D data for the IH 30 project provided data for the No-Build and Build scenarios for the year 2035.

O&D Analysis Assumptions and Limitations

To clarify the intent of the O&D analysis, it does not attempt to identify specific users (low-income and minority populations) but instead compares the origins and intensity of trips based on collective socio-economic characteristics at the TSZ level for the project alternatives mentioned above. In other words, the O&D analysis predicts the potential users of the IH 30 corridor in 2035 by correlating the general socio-economic characteristics of the future users

based on 2005-2009 ACS census data and 2010 Census data to the intensity of use quantified by the number of trips per TSZ generated by TransCAD®. The correlation of ACS census data, 2010 Census data, and TransCAD® data is the best available method to identify which TSZs would originate trips anticipated to utilize the IH 30 facility and the general demographics of the population associated with those TSZs. The model distinguishes between toll and non-toll alternatives by identifying the “toll links.” These “toll links” are assigned a cost per mile for the toll alternative and no cost per mile for the non-toll alternative. The model then assigns vehicle trips based on user cost, trip distance, time of day, and other factors to achieve system equilibrium in the network. However, the vehicle trip assignment process does not consider relative income differences or the differences in relative costs to potential users in the population when making trip assignments. Because no definitive data exists on the future users of IH 30 or similar type facilities, the O&D analysis cannot predict the specific race, ethnicity, or economic status associated with the predicted trips on the toll or non-toll facilities. However, the O&D analysis can identify a potential difference in trip intensity by comparing the TSZ trip percentages of the No-Build and Build Alternatives.

O&D Results of TSZs and Number of Trips Utilizing the IH 30 Facility in 2035

The results of NCTCOG modeled 2035 estimates of O&D data for the Build and No-Build scenarios are discussed below.

- **2035 Build Main Lanes.** A total of 4,608 TSZs are predicted to generate at least one trip per day during the AM peak period utilizing the proposed improvements to IH 30 main lanes. These TSZs, which are shown in **Figure 12-1**, are projected to generate a total of 80,086 trips per day on IH 30 after the proposed improvements to main lanes are completed. The number of projected trips from these TSZs varies from one to 1,064 trips per day. The TSZs in **Figure 12-1** are color-coded according to groupings based on the number of trips per day from each TSZ.
- **2035 No-Build Main Lanes.** A total of 4,575 TSZs are predicted to generate at least one trip per day during the AM peak period utilizing the existing IH 30 main lanes. These TSZs, which are shown in **Figure 12-2**, are projected to generate a total of 74,831 trips per day on existing main lanes. The number of projected trips from these TSZs varies from one to 1,105 trips per day. The TSZs in **Figure 12-2** are color-coded according to groupings based on the number of trips per day from each TSZ.

- 2035 Build Managed Lanes. A total of 260 TSZs are predicted to generate at least one trip per day during the AM peak period utilizing the two proposed IH 30 managed lanes. These TSZs, which are shown in **Figure 12-3**, are projected to generate a total of 1,126 trips per day on IH 30 managed lanes. The number of projected trips from these TSZs varies from one to 28 trips per day. The TSZs in **Figure 12-3** are color-coded according to groupings based on the number of trips per day from each TSZ.
- 2035 No-Build Managed Lanes. A total of 821 TSZs are predicted to generate at least one trip per day during the AM peak period utilizing the two existing IH 30 concurrent HOV lanes. These TSZs, which are shown in **Figure 12-4**, are projected to generate a total of 3,237 trips per day on existing concurrent HOV lanes. The number of projected trips from these TSZs varies from one to 59 trips per day. The TSZs in **Figure 12-4** are color-coded according to groupings based on the number of trips per day from each TSZ.

Identification of EJ TSZs for the O&D Analysis

The next step in the O&D analysis identifies each TSZ with an EJ population (specifically low-income or minority populations) equal to or greater than 50 percent of the population for the TSZ. The 2,272 EJ TSZs thus identified within the MPA are shown in **Figure 12-5**. The EJ TSZs in **Figure 12-5** are mapped by color indicating low-income population TSZs, minority population TSZs, and TSZs with both low-income and minority populations.

O&D Results of EJ TSZs and Number of Trips Utilizing the IH 30 Facility in 2035

The analysis of the O&D data for the 2035 Build and No-Build scenarios focused on those EJ TSZs that are anticipated to utilize IH 30 with at least one trip per day in 2035. The results of the EJ analysis are discussed below.

- 2035 Build Main Lanes. A total of 2,109 EJ TSZs are predicted to generate at least one trip per day during the AM peak period utilizing the proposed improvements to IH 30 main lanes. These TSZs, which are shown in **Figure 12-6**, are projected to generate a total of 47,355 trips per day on IH 30 after the proposed improvements to main lanes are completed. The number of projected trips from these TSZs varies from one to 1,064 trips per day. The TSZs in **Figure 12-6** are color-coded according to groupings based on the number of trips per day from each EJ TSZ.

- **2035 No-Build Main Lanes.** A total of 2,087 EJ TSZs are predicted to generate at least one trip per day during the AM peak period utilizing the existing IH 30 main lanes. These TSZs, which are shown in **Figure 12-7**, are projected to generate a total of 43,906 trips per day on existing main lanes. The number of projected trips from these TSZs varies from one to 1,105 trips per day. The TSZs in **Figure 12-7** are color-coded according to groupings based on the number of trips per day from each EJ TSZ.
- **2035 Build Managed Lanes.** A total of 131 EJ TSZs are predicted to generate at least one trip per day during the AM peak period utilizing the two proposed IH 30 managed lanes. These TSZs, which are shown in **Figure 12-8**, are projected to generate a total of 595 trips per day on IH 30 managed lanes. The number of projected trips from these TSZs varies from one to 28 trips per day. The TSZs in **Figure 12-8** are color-coded according to groupings based on the number of trips per day from each EJ TSZ.
- **2035 No-Build Managed Lanes.** A total of 522 EJ TSZs are predicted to generate at least one trip per day during the AM peak period utilizing the two existing IH 30 concurrent HOV lanes. These TSZs, which are shown in **Figure 12-9**, are projected to generate a total of 2,048 trips per day on the existing concurrent HOV lanes. The number of projected trips from these TSZs varies from one to 59 trips per day. The TSZs in **Figure 12-9** are color-coded according to groupings based on the number of trips per day from each EJ TSZ.

Summary of O&D Analysis Results

Table 3-5 compares the 2035 Build and the 2035 No-Build O&D results and provides further information regarding users of the proposed managed lanes as compared to the main lane improvements. These data indicate the following:

- For both the Build and No-Build scenarios regarding vehicles using IH 30 main lanes, 46 percent of EJ TSZs utilizing the facility would use the main lanes and would account for 59 percent of trips from all TSZs with at least one trip per day. Accordingly, these data indicate the proposed project would not affect the percent of EJ TSZs and trips using IH 30 main lanes as compared to EJ TSZs in the No-Build scenario.
- For the Build scenario, 50 percent of EJ TSZs utilizing IH 30 would use the managed lanes, which would account for 53 percent of all trips originating from EJ TSZs.

- For the No-Build scenario, 64 percent of EJ TSZs utilizing IH 30 would use the existing concurrent HOV lanes, which would account for 63 percent of all trips from EJ TSZs.

Table 3-5. Comparison of IH 30 O&D Data for Build and No-Build Scenarios

2035 Traffic Scenario	Number of TSZs with at Least One IH 30 Trip in Project Area			Total Number of TSZ Trips Using IH 30 in Project Area		
	Total TSZs Anticipated to Use IH 30	Total EJ TSZs Anticipated to Use IH 30	Percent EJ TSZs Anticipated to Use IH 30	Total TSZ Trips	Total EJ TSZ Trips	Percent EJ TSZ Trips of Total Trips
Build: Cars Using Main Lanes	4,608	2,109	46%	80,086	47,355	59%
No-Build: Cars Using Main Lanes	4,575	2,087	46%	74,831	43,906	59%
Build: Cars Using Managed Lanes	260	131	50%	1,126	595	53%
No-Build: Cars Using HOV Lanes	821	522	64%	3,237	2,048	63%
Source: NCTCOG TransCAD® data for 2035 Build and No-Build scenarios. The MPA is comprised of 5,252 total TSZs and 2,272 EJ TSZs.						

It is clear from the O&D modeling that at least one driver from most of the TSZs in the MPA would be making daily use of IH 30 main lanes in 2035 regardless of whether the proposed project is constructed. In addition, nearly 60 percent of all trips using IH 30 main lanes in the project area would originate from EJ TSZs. This underscores the potential benefits of improvements to IH 30 main lanes to EJ populations in the design year.

The results of O&D modeling regarding use of proposed managed lanes indicates that half of the drivers using IH 30 managed lanes in the project area would originate from EJ TSZs, and would make up 53 percent of total daily trips. The O&D modeling results indicate, however, that use by drivers from EJ TSZs would be greater in the No-Build scenario. That is, drivers from EJ TSZs would comprise 64 percent of total TSZs involved in daily use of the existing concurrent HOV lanes, and 63 percent of all trips using the HOV lanes would be from EJ TSZs. These results indicate that drivers from EJ TSZs would make substantial use of these facilities in the design year, whether constructed as managed lanes or left as HOV lanes.

Potential Tolling Effects on EJ Populations

The proposed project would not evenly distribute the benefits of time cost savings associated with the proposed managed lanes among all income groups because lower income groups would pay a higher proportion (approximately three to four times more) of their income for tolls as compared to middle and higher income groups for the same time savings benefit. However, alternative project-specific, non-toll options currently exist and would continue to be available at the time the managed lanes would be open to traffic. Such non-tolled options include the

addition of non-tolled mainlanes and frontage roads to the existing IH 30 facility, thereby improving mobility for all users (including low-income users) who do not elect or only on an occasional basis can afford to travel on the managed lanes.

Tolling aspects of the proposed project would be implemented in accordance with RTC policies contained in the current MTP. As stated in *Mobility 2035 – 2013 Update*, “The existing number of free lanes in the corridor will remain the same or be increased while dynamically-priced toll lanes will provide additional capacity and mobility options with a discounted toll for high occupancy vehicles during peak periods.”²⁰ These facilities serve as bus transit corridors, improving the performance of the on-road transit system.

In accordance with the RTC's excess toll revenue policy for managed lanes, local governments are offered the option “to invest in a managed lane project as a means to fund the facility, as well as generate local revenue.”²¹ This revenue could be used in the construction or maintenance of other tolled and/or non-tolled roadways and for other congestion reducing efforts that would benefit all populations from varying income levels.

The anticipated dynamic-fee pricing for managed lanes allows operators to set market-based toll rates based on corridor demand, and those rates could fluctuate at any time throughout the day, even in real time, in response to changing traffic conditions. The policy includes a reduced toll rate (half price) that would be applied toward HOV users (two or more occupants) and publicly operated vanpools during the morning and afternoon peak periods. The toll rate would be established to maintain a minimum average corridor speed of 50 miles per hour. During the off-peak periods, HOV users would pay the same toll as drivers of single-occupancy vehicles (SOVs). Users of managed lanes would be notified of the toll rate before entering the designated lanes by an electronic message board. Clearly posted overhead signage would designate the lane that drivers should use to enter and exit the facility. Main lanes and frontage roads, including the proposed additional main lanes for IH 30, would remain as non-tolled options for all users and no existing mainlanes would be converted to tolled managed lanes.

²⁰ See *Mobility 2035 – 2013 Update*, Chapter 6 – Mobility Options (page 6.34): <http://www.nctcog.org/trans/mtp/2035/documents/2013Update-MobilityOptions.pdf>, accessed May 14, 2015. The RTC policies relating to managed lanes set out in *Mobility 2035 – 2013 Update* would remain in effect in *Mobility 2035 – 2014 Amendment*: <http://www.nctcog.org/trans/mtp/2035/2014Amendment.asp>, accessed May 14, 2015.

²¹ See *Mobility 2035 – 2013 Update*, Chapter 6 – Mobility Options (page 6.37): <http://www.nctcog.org/trans/mtp/2035/documents/2013Update-MobilityOptions.pdf>, accessed May 14, 2015.

The actual rates for use of managed lanes would be prescribed according to prevailing RTC policies, and the manner of collection for tolls would be consistent with prevailing toll collection policies and practices throughout the region. The proposed managed lanes would become part of the regional managed lane system, designed to effect an overall reduction in congestion during peak traffic hours while generating a funding stream that would reduce the costs of maintaining or adding to the regional road network for all users. The potential cumulative impacts of the regional network of tolled facilities and relevant RTC policies are examined in the summary of the regional tolling analysis in **Section 5.7**.

Based on the above discussion and analysis looking at the totality of effects from the proposed IH 30 project, including the benefits associated with non-tolled components of the proposed project and the existing facility, disproportionately high and adverse impacts on minority or low-income populations are not anticipated. Therefore, the requirements of EO 12898 would be satisfied.

3.1.9 Limited English Proficiency

Existing Conditions

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

An analysis was conducted to identify populations in the project area that may have LEP, as these residents may not understand outreach materials. LEP populations were determined by analyzing U.S. Census Bureau 2008-2012 ACS 5-year estimates data. Census tracts were assessed within proposed project ROW and adjacent areas. Within the population that is 5 years of age and older, persons who speak English less than “very well” are considered to have a limited English proficiency.

The populations in the project area that speak English less than “very well” are shown in **Table 3-6**. The percentage of LEP populations in the Census tracts within the project area ranges from 2 to 38 percent. Of the 48,630 persons within the Census tracts, approximately 17 percent of the population (8,162 persons) speaks English less than “very well.” Of this LEP population, the predominant spoken language is Spanish (approximately 86 percent), followed by Asian/Pacific Island languages (approximately 8 percent), Indo-European languages (approximately 4 percent) and Other languages (approximately 2 percent).

Table 3-6. Percent of the Population that Speaks English Less than “Very Well”

Census Tract	Total Population	LEP Population	Languages Spoken by LEP Populations: Percent and (number of persons)			
			Spanish	Indo-European	Asian/Pacific Island	Other
154.01	5,555	182	3.3% (182)	0%	0%	0%
154.03	2,881	840	28.1% (810)	1% (30)	0%	0%
1130.01	3,534	147	2.3% (83)	0.4% (14)	1.1% (39)	0.3% (11)
1130.02	5,755	1,169	16.8% (964)	0.3% (19)	3.2% (186)	0%
1131.07	2,206	51	0.7% (16)	0%	0.7% (15)	0.9% (20)
1131.09	3,736	246	3.5% (131)	0.5% (19)	2.2% (82)	0.4% (14)
1131.10	4,057	339	6.2% (251)	0%	1.4% (57)	0.8% (31)
1131.11	3,665	836	22.8% (836)	0%	0%	0%
1131.15	3,365	787	20.2% (681)	2.0% (66)	1.2% (40)	0%
1131.16	3,747	231	2.3% (87)	2.6% (99)	0.6% (23)	0.6% (22)
1217.02	1,760	209	6.8% (120)	3.5% (61)	1.6% (28)	0%
1217.03	5,163	1,974	33% (1,704)	0.4% (19)	3.5% (180)	1.4% (71)
1217.04	3,206	1,155	35.2% (1,127)	0%	0.9% (28)	0%
TOTAL	48,630	8,166	6,992	327	678	169

Source: U.S. Census Bureau 2008-2012 ACS 5-year estimates, Table DP02.

A windshield survey of the project area indicated that English was the primary language used for building signage and other forms of posted information and advertisements along the project corridor. No signs were observed in languages other than English, and no places of worship, retailers, or services were noted that target or serve specific minority groups.

No-Build and Build Alternatives

The requirements relating to LEP populations focus on adapting the NEPA process to include LEP persons in public involvement activities, rather than assessing impacts. Under both the No-Build Alternative and Build Alternative of the proposed project, LEP individuals would be afforded the opportunity to participate in the decision-making process as discussed in the remainder of this section.

Efforts have been made and will continue to be made to include all affected communities and populations, including potential minority and low income populations, in the public involvement and decision making process. These include steps taken to ensure that LEP persons have access to the programs, services, and information that TxDOT provides. For example, a public meeting for the proposed IH 30 project was held on December 2, 2014, at the Hilton Arlington Hotel. Public notices were mailed to adjacent property owners and elected/local officials, and were advertised in Spanish in the *La Estrella* and *La Semana* newspapers, and in English in the *Star Telegram* newspaper. Notices were published in English and Spanish and included contact information for those interested in requesting language assistance. The TxDOT staff and consultants attending the public meeting included fluent Spanish speakers. However, no request for language interpretation services was made, nor did any of the attendees at the public meeting request an interpreter.

A proactive public involvement program will continue for the proposed project and all populations affected would have continuous opportunities to participate in the development of the project. Future notices of the project's public hearing will be released to the public in English and Spanish. For any other LEP population, similar services would be provided where needs arise. The requirements of EO 13166, pertaining to LEP, would be satisfied.

3.1.10 Community Cohesion

Existing Conditions

A review of historical aerial photography indicates that the construction of IH 30 and SH 360 within the project limits occurred prior to the arrival of residential communities in or near the project area. Over the ensuing decades, urbanization along the IH 30 and SH 360 corridors has favored non-residential land uses abutting these highways. Accordingly, the community

surrounding the IH 30/SH 360 interchange area has grown up with the IH 30 and SH 360 corridors in place.

No-Build Alternative

In light of the history leading to existing conditions in the project corridor, the No-Build Alternative would not likely affect community cohesion. Leaving the IH 30 and SH 360 facilities as they are may, however, serve as an impediment to cohesiveness in the community because the severe bottleneck represented by the existing IH 30/SH 360 interchange may tend to discourage contacts between persons on opposite sides of the interchange.

Build Alternative: Direct Impacts

The proposed improvements to IH 30 and SH 360 main lanes, frontage roads, and ramps would not affect, separate, or isolate any distinct neighborhoods, ethnic groups, or other specific groups. Virtually all urbanization occurred after construction of these highways, so the surrounding communities have developed over the past 60 years with these corridors in place. . The proposed project would modify IH 30 and SH 360, primarily by creating an interchange between these highways with full connectivity. The proposed improvements would benefit the surrounding communities by facilitating mobility within the community, consequently increasing the efficiency in the travel time through and within the project area to local services and facilities. People would continue to move across both IH 30 and SH 360 using the same cross streets that currently exist. Community connectivity via sidewalks and bicycle facilities would be enhanced because existing pedestrian/bicycle accommodations would be retained or expanded by the proposed project.

Build Alternative: Encroachment-Alteration Indirect Impacts

Potential adverse impacts to community cohesiveness would extend beyond the footprint of the proposed project and would occur after the improvements are operational. Accordingly, such impacts, should they occur, would be encroachment-alteration indirect impacts. Whether the proposed improvements would worsen separation within the community is a very unlikely possibility. The proposed project would make improvements to two highway corridors that have been in existence for many decades, and predate the urbanization that has occurred since. The proposed project would modify IH 30 and SH 360, primarily by creating an interchange between these highways with full connectivity. The proposed improvements would benefit the surrounding communities by facilitating mobility within the community, consequently increasing

the efficiency in the travel time through and within the project area to local services and facilities. Moreover, improvements to frontage roads would include the construction of sidewalks and shared-use vehicle/bicycle lanes where they do not currently exist. Surrounding communities would benefit from the proposed improvements because access to other parts of the community via vehicular, pedestrian, and bicycle routes would improve. Accordingly, the planned improvements to IH 30 and SH 360 would not affect, separate, or isolate any distinct neighborhoods, ethnic groups, or other specific groups within the surrounding communities.

3.1.11 Visual Impacts

Existing Conditions

The proposed project occurs within the highly urbanized IH 30 and SH 360 highway corridors. These transportation facilities pre-date modern development that has occurred over the past 50 years or more. The visual importance to the area of these highways is well established (see photographs in **Appendix A**), as has been the periodic modifications made to them as capacity has been added or other efforts to modernize the highways have taken place. Notably, recent transportation improvements along IH 30 to the west of the IH 30/SH 360 interchange expanded the highway's capacity while modernizing its purpose and appearance with artistic friezes that were made part of retaining wall facings throughout the "Three Bridges" project. The Three Bridges project included other visual enhancements including the construction of benches with canopies (i.e., part of a sporting venue trolley service) and landscape lighting for retaining wall friezes and the newly-constructed bridges. To the east of the IH 30/SH 360 interchange, the recent construction of the IH 30/SH 161 interchange introduced an impressive multi-level facility with associated lighting that serves a safety purpose but also calls attention to this modern transportation interchange.

No-Build Alternative

Under this alternative, there would be no visual changes to the project area. One adverse consequence of the No-Build Alternative would be a perpetuation of frequent scenes of congested traffic as vehicles queue up at signalized intersections that must be traversed to move from one highway to the other.

Build Alternative: Direct Impacts

The need to modernize the IH 30/SH 360 interchange is acute, and the visual changes that would occur would signify the replacement of outdated infrastructure with a facility representing modern engineering design. Within a dedicated transportation corridor that pre-dates virtually all of the surrounding urban development, such changes would likely be viewed as a welcome visual addition. Modernizing IH 30 within project limits would serve to blend visually this highway segment with recent highway improvements along IH 30 to the east and west of the IH 30/SH 360 interchange.

Build Alternative: Encroachment-Alteration Indirect Impacts

The visual effects of the proposed project would generally only be observable from within the project area. Encroachment alteration indirect impacts would be those instances where portions of the IH 30/SH 360 interchange would be observable farther away because of the added height of bridge structures that would make up the multi-level interchange. In such cases, the ability to observe a modern, efficient transportation facility within a well-established transportation corridor would be considered a beneficial visual effect.

3.2 CULTURAL RESOURCES

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

3.2.1 Historic-Age Properties

Existing Conditions

Upon receiving a historic age resources technical report, TxDOT's Environmental Division commissioned a reconnaissance-level historic resources survey of the proposed project area.

This historic resources survey was conducted in January 2015, considering all historic-age properties within an Area of Potential Effects (APE) defined as 150 feet from existing and proposed ROW and easements. As the proposed project is expected to let for construction in 2015, all properties constructed before 1971 were considered historic age, and were photographed and inventoried. The reconnaissance survey included literature review, analysis of online data and historical aerial photographs, coordination with municipal and county historic preservation staff, and a review of previous historic resource surveys conducted as part of the IH 30 and SH 360 EAs in the early 2000s. Qualified historians then evaluated each property as to whether the property would meet one or more of the eligibility criteria for listing the property on the National Register of Historic Places (NRHP). The Report for Historic Studies Survey (RHSS) prepared in March 2015 from this effort has been approved by TxDOT and has been coordinated with the THC. The remainder of this discussion of historic-age resources summarizes the information contained in the RHSS for the proposed project.

The historic resources survey included a review of the NRHP, the list of State Archeological Landmarks (SAL), and the list of Recorded Texas Historic Landmarks (RTHL), which indicated that one NRHP-eligible resource was previously documented in the 1,300-foot project study area: the P.A. Watson Cemetery (see **Appendix A, Photograph 9**). Also noted within the vicinity of the proposed project are five Official Texas Historical Markers (OTHM). Only the OTHM for the P.A. Watson Cemetery is located within the project APE; the four other OTHMs are located within the Six Flags Over Texas theme park and outside the 150-foot APE.

The P.A. Watson Cemetery is located within the northeast corner of the intersection of IH 30 and SH 360. The cemetery dates to 1846, and is considered important due to contributions of the people interred therein in the early history of local community. In connection with the preparation of the SH 360 EA, coordination in 2004 with the THC regarding the P.A. Watson Cemetery resulted in a determination that this property is eligible for the NRHP under Criterion A (Events/Trends) for Exploration and Settlement at the local level. As no new information or integrity considerations regarding the cemetery bear on its eligibility for listing in the NRHP, the RHSS recommended that TxDOT maintain the previous eligibility determination.

The RHSS revealed 51 historic-age properties (built prior to 1971) located within the APE. In addition to the P.A. Watson Cemetery, TxDOT determined one historic-age property eligible to the NRHP, the Chance Vought Electronics Building, in letters to the THC dated March 16 and

May 22, 2015 (see **Appendix B**). The former Chance Vought Electronics building is located at 2905 East Avenue E in Arlington (see **Appendix A, Photograph 10**). This building was constructed in 1962 and meets NRHP local-level eligibility Criterion C (Design/Construction) because of its thin-shell concrete hyperbolic paraboloid coverings of the building's north and south entrances.

The THC concurred with TxDOT's recommendations regarding eligibility for NRHP listing of the P.A. Watson Cemetery and the Chance Vought Electronics building by letter endorsements dated May 20 and May 27, 2015 (see **Appendix B**).

No-Build Alternative

Under the No-Build Alternative, no additional ROW or easements would be acquired. Therefore, no impacts to historic resources are anticipated.

Build Alternative: Direct Impacts

P.A. Watson Cemetery

The current design for the proposed project would result in no direct effects to the cemetery, as it would not acquire any ROW or easements from the cemetery. Although the cemetery has three entrance points, only two are currently in use. The two primary entrances are located at the southwest corner of the cemetery (connecting to the northbound SH 360 frontage road) and centered along the north side of the property (Avenue H). A third unused, gated entrance is located near the northwest corner of the property, just south of the intersection between the northbound SH 360 frontage road (North Watson Road) and Avenue H. The preliminary project design would remove pavement associated with this unused access point to facilitate construction of a sidewalk along the frontage road and for traffic safety. The proposed project would also improve the north entrance to the cemetery by modifying the existing traffic island on Avenue H to allow a left turn from the north entrance drive. The proposed project would maintain the existing entrance in the southwest corner of the cemetery. In February 2015, TxDOT historians coordinated the proposed project improvements with the P.A. Watson Cemetery Association's president, who voiced no objections to the removal of the cemetery drive that is no longer in use.

TxDOT's determination that the project would have no adverse effect to the P.A. Watson Cemetery was coordinated with the THC, and THC concurrence regarding effects findings were documented in letter endorsements dated May 20 and May 27, 2015 (see **Appendix B**).

Former Chance Vought Electronics Building

The proposed project would require approximately 1.8 acres of new ROW along the west and north edges of the 16.1-acre parcel, which contains the former Chance Vought Electronics building. This ROW acquisition is needed to allow the construction of an eastbound entrance ramp to IH 30, thus necessitating a shift in the alignment of Avenue F. The proposed ROW acquisition affecting this property would have no adverse effect to the property. The existing access drive along Avenue F would be maintained in approximately the same location, and the modified Avenue F road surface would be no closer than 85 feet from any of the character-defining hyperbolic paraboloid structures.

TxDOT determined that the acquisition of new ROW to construct the proposed project would have no adverse effect to the former Chance Vought Electronics property. This conclusion is based on the rationale that eligibility for the NRHP is based on the method of building construction. Thus, the acquisition of ROW for the proposed project would not affect the workmanship, materials, design, feeling, association, location, and setting associated with the building. Moreover, since its construction in 1962, the property has been situated within an industrial area adjacent to a major highway and the proposed improvements to IH 30 would not alter the overall character of the site.

During project coordination with the THC, concerns were raised as to the potential for damage from vibrations from construction equipment such as vibratory rollers, and hoe-rams or other impact equipment used to break up pavement. Specifically, THC expressed concern that such vibrations could potentially harm the thin-shell concrete hyperbolic paraboloid canopies at the northwest and southwest entrances to the building if construction activity occurs too close to the structures. Further coordination occurred between TxDOT and THC on the issue, focusing on limiting vibration-causing activities within a protective distance buffer from the historic canopies. Using a collection of current practices to address potential construction vibration effects to

historic buildings as guidelines,²² discussions led to the identification of mitigation measures to ensure that construction activity within a 250-foot restricted area around the historic canopies does not result in vibrations that could potentially harm this historic resource. These discussions have considered the subsurface soil conditions as characterized from recent geotechnical testing and various ways to remove and reconstruct pavement that would minimize vibrations.

Pursuant to Stipulation VI "Undertakings with Potential to Cause Effects" of the PA-TU,²³ TxDOT historians determined the proposed project has no adverse effect to the Chance Vought Electronics Building. TxDOT's determination was coordinated with the THC, and THC concurrence regarding effects findings were documented in letter endorsements dated May 20 and May 27, 2015 (see **Appendix B**). The mitigation measures identified in the course of coordinating the proposed project with the THC will be included in the final design plans for project construction.

Build Alternative: Encroachment-Alteration Indirect Impacts

The scope of the RHSS extended beyond the project footprint an additional 150 feet to take in potential effects to historic-age resources. However, except for the P.S. Watson Cemetery and the former Chance Vought Electronics building, no historic-age resources were found to meet any of the eligibility criteria for listing on the NRHP. Therefore, no encroachment-alteration indirect impacts are expected for any additional historic-age resources.

3.2.2 Archeological Resources

Existing Conditions

The potential for archeological resources to occur within the proposed project corridor was investigated prior to and in connection with the preparation of the IH 30 and SH 360 EAs in 2007. Those previous studies determined that the area of proposed construction activity

²² National Cooperative Highway Research Program: Current Practices to Address Construction Vibration and Potential Effects to Historic Buildings Adjacent to Transportation Projects, NCHRP 25-25/Task 72 (September 2012). [http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP25-25\(72\)_FR.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP25-25(72)_FR.pdf), accessed May 16, 2015.

²³ The PA-TU refers to the *First Amended Programmatic Agreement among the Federal Highway Administration, the Texas Department of Transportation, the Texas State Historic Preservation Officer, the Advisory Council on Historic Preservation Regarding the Implementation of Transportation Undertakings* (2005); <http://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/400-01-pa.pdf>, accessed July 27, 2015.

possesses a low potential for intact cultural deposits and recommended no further investigations based on the following: (1) the lack of new sites and previously recorded sites within the vicinity of the proposed project; (2) the previous amount of disturbance associated with the construction and maintenance of IH 30; and (3) the fact that proposed improvements would occur almost entirely within existing ROW. Previous studies were coordinated with the THC, and it was determined that no further survey work for archeological resources would be warranted.

No-Build Alternative

Under the No-Build Alternative, no additional ROW would be acquired. Therefore, no impacts to archeological resources are anticipated.

Build Alternative: Direct Impacts

In November 2014, a technical report was prepared to outline the preliminary design for the proposed project and identify previous archeological investigations. Upon reviewing documents relating to the proposed design of the IH 30 project, previous archeological surveys, and the nature of the land within the project's construction footprint, a TxDOT archeologist determined that the proposed project would have no effect on archeological sites and that any further survey effort would be unwarranted (see file memorandum in **Appendix B**). This finding was made in accordance with relevant agreements between TxDOT and the THC.²⁴ The proposed project was coordinated with the Kickapoo Tribe of Oklahoma, who indicated no objections in their response (see **Appendix B**), but requested to be notified if burial remains or artifacts are discovered during the development or construction process.

In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area would cease and TxDOT archeological staff would be contacted to initiate post-review discovery procedures.

²⁴ See: (1) The First Amended Programmatic Agreement Among the FHWA, TxDOT, the Texas SHPO, and the Advisory Council on Historic Preservation Regarding the Implementation of Transportation Undertakings, <http://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/400-01-pa.pdf>, accessed May 14, 2015; and (2) Memorandum of Understanding between TxDOT and the THC (43 TAC Sections 2.251 – 2.278), <http://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/400-01-mou.pdf>, accessed May 14, 2015.

Build Alternative: Encroachment-Alteration Indirect Impacts

As the potential for affecting archeological sites is necessarily limited to the proposed project construction footprint, there is no potential for the project to result in encroachment-alteration indirect impacts to archeological resources.

3.3 SECTION 4(F) AND SECTION 6(F) RESOURCES

Existing Conditions

Section 4(f) of the U.S. Department of Transportation Act of 1966, as amended (hereinafter 'Section 4(f)'),²⁵ prohibits “the use of publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national state, or local significance” or public or private “land of an historic site of national, State, or local significance” unless it has been determined that there is no feasible and prudent alternative available²⁶, and all possible planning²⁷ to minimize harm from such use has occurred. Within the construction footprint of the proposed project, there is no publicly-owned land from a park, recreation area, wildlife and waterfowl refuge, or historic sites of national significance. As discussed above in **Section 3.2.1**, the P.A. Watson Cemetery is considered a historic site of state significance, and the former Chance Vought Electronics building is regarded as a historic site of local significance. Both of these resources are, therefore, subject to evaluation for compliance with Section 4(f).

The extent to which Section 4(f) may apply to a parcel owned by the City of Arlington and managed by the Parks and Recreation Department (PRD) has been closely examined. The city provided comments in response to the public hearing held June 30, 2015, indicating that a property identified on the IH 30 design schematic as Parcel #554 is regarded by the city as being within the city's inventory of parks, recreation areas, and natural areas. Parcel #554 is located at 2525 E. Lamar Boulevard, and extends along Johnson Creek from Lamar Boulevard to SH 360.²⁸ The parcel is approximately 4.8 acres in size, and is located entirely within the 100-year floodplain of Johnson Creek. The proposed project would require approximately 0.8 acre of ROW from this parcel from its eastern edge to construct the proposed IH 30/SH 360

²⁵ 49 U.S. Code Section 303 and 23 U.S. Code Section 138. Section 4(f) is implemented by FHWA through regulations at 23 Code of Federal Regulations Part 774.

²⁶ As defined in 23 CFR Section 774.17(h).

²⁷ As defined in 23 CFR Section 774.17(b).

²⁸ The legal description of Parcel #554 is Lot 6R1R, Block 3, of the Brookhollow/Arlington Addition Survey.

interchange. This property has been left in its natural state since its acquisition by the city in 2002 to preserve the existing greenspace. Due to this property's isolation from other undeveloped city-owned properties and very limited access to the public, there have been no improvements provided to further develop this land for use as a park or recreation area. City ownership of the parcel effectively prevents the potential for urban development of the land, thereby preserving the Johnson Creek floodplain's ability to convey flood waters through this stream segment. Land cover throughout the property is primarily mature or scrub riparian forest that is characterized by generally a dense understory of shrubs and vines. No amenities have been or are planned to be constructed on the property and there are no signs posted or identified entryways within the property to advise the community that it is available for use. This property is not included in the PRD Website's interactive map that notifies the community of properties available for use by the public. The property is nearly surrounded by privately-owned property, which limits public access to the property to the Lamar Boulevard and SH 360 bridge crossings of Johnson Creek. There is no information available indicating that this property is actually used by members of the public with any frequency. For these reasons, the primary purpose of this property is for floodplain preservation, with incidental use by the public as an unimproved natural area. As set out in correspondence received from the City of Arlington (see **Appendix B**), the city has concluded that this property is not a locally significant park, recreation area, or wildlife refuge. Therefore, Section 4(f) does not apply to Parcel #554.

The State of Texas Parks and Wildlife Code Chapter 26 (hereinafter 'Chapter 26'), however, may apply to Parcel #554, as it is owned by a municipality and available for public use as a natural area, despite the limitations described above. Chapter 26 prohibits the use or taking of "public land dedicated and used" as a park or recreation area for other purposes without first complying with the requirement for a public hearing. Additionally, Chapter 26 requires the authorized governing body to find that there is no feasible and prudent alternative to the use or taking of the land and that all reasonable planning has occurred to minimize harm to the land.²⁹

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act³⁰ requires that outdoor recreational lands acquired or developed with Department of the Interior financial assistance

²⁹ Texas Parks and Wildlife Code Section 26.001.

³⁰ 16 U.S. Code Section 460l.

under the LWCF Act may not be converted to non-recreational use unless approval is granted by the National Park Service. None of the parcels to be acquired as ROW for the proposed project is encumbered by funding subject to the LWCF Act. Therefore, consideration under Section 6(f) is not required for the proposed project.

No-Build Alternative

Implementation of the No-Build Alternative would not impact a Section 4(f) resource.

Build Alternative: Direct Impacts

P.A. Watson Cemetery

The proposed project would not require any acquisition of ROW or an easement from the cemetery, nor would reconstruction of the northbound SH 360 frontage road, including a sidewalk on the east side of the road, substantially impair any purpose of the cemetery. Therefore, as the proposed project would require no use of the cemetery property, further evaluation pursuant to the requirements of Section 4(f) would not be required.

Former Chance Vought Electronics Building

The proposed undertaking would affect one NRHP-eligible property, the Chance Vought Electronics Building. Approximately 1.8 acres of new ROW is required from the property's 16.1-acre parcel, or 11.1% of its total acreage. The new ROW area is located along the west and north edges of the property, and is needed to allow the construction of an eastbound entrance ramp to IH 30, thus necessitating a shift in the alignment of Avenue F. The proposed action would not affect or diminish the qualities and characteristics that contribute to the historic significance of the property. The existing access drive along Avenue F would be maintained in approximately the same location, and the modified Avenue F road surface would be no closer than 85 feet from any of the character-defining hyperbolic paraboloid structures.

As discussed above in **Section 3.2.1**, TxDOT has coordinated with the THC the matter of preventing damage during project construction to thin-shell concrete hyperbolic paraboloid canopies. Protective measures have been identified to ensure that vibrations from construction equipment are sufficiently minimized within a 250-foot restricted area around this historic resource to preclude any harm to the building. It is expected that implementation of such protective measures would prevent any harm to this historic resource during construction of the proposed project.

Pursuant to Stipulation VI "Undertakings with Potential to Cause Effects" of the PA-TU and as defined in Part 774 of the Section 4(f) Final Rule and Section 6009(a) of SAFETEA-LU,³¹ TxDOT historians determined the proposed project has no adverse effect to the Chance Vought Electronics Building. Prior to making its determination, TxDOT coordinated with the THC, and received THC concurrence regarding TxDOT's finding of no adverse effects. THC also had no comment on TxDOT's *de minimis* impact finding for this historic property (see **Appendix B**). The mitigation measures identified in the course of coordinating the proposed project with the THC will be included in the final design plans for project construction. In compliance with FHWA's Section 4(f) *de minimis* guidelines, TxDOT has determined that the proposed project meets the *de minimis* requirements as applied to this historic property (see **Appendix B**).

Property Managed by the Arlington Parks and Recreation Department

Although Section 4(f) does not apply to Parcel #554, TxDOT determined that it would be appropriate to comply with Chapter 26 under the circumstances. The City of Arlington is pursuing the steps necessary to conduct a public hearing and to otherwise comply with the requirements of Chapter 26 prior to the acquisition of any portion of Parcel #554 as ROW. Accordingly, TxDOT will not acquire any portion of Parcel #554 until the requirements of Chapter 26 have been met.

³¹ Section 4(f) refers to the a provision in the 1966 U.S. Department of Transportation Act which is codified in 49 U.S. Code Section 303, with a similar provision in 23 U.S. Code Section 138 (applicable to the Federal-Aid Highway Program). These statute impose substantive and procedural requirements that must be met before FHWA may use publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites for transportation purposes. Section 6009(c) of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) simplified the process and approval of projects that have only a *de minimis* impact on Section 4(f) properties. Section 4(f) is implemented by FHWA through regulations at 23 Code of Federal Regulations Part 774.

Build Alternative: Encroachment-Alteration Indirect Impacts

Other than the two historic resources discussed above, there are no Section 4(f) resources within 150 feet of existing and proposed ROW for the proposed project. Therefore, encroachment-alteration indirect impacts are not expected for any additional Section 4(f) resources.

3.4 WATER RESOURCES AND WATER QUALITY

3.4.1 Waters of the U.S., Including Wetlands

Existing Conditions

The proposed project area is located within the Lower West Fork sub-basin of the Trinity River watershed. The most prominent water resource in the project area is Johnson Creek (see **Appendix A, Photograph 8**), a perennial stream that crosses both IH 30 and SH 360 in the project area near the IH 30/SH 360 intersection (see maps in **Figures 13-1** and **13-2**). A second perennial stream, Arbor Creek, crosses IH 30 just west of the IH 30/SH 161 interchange. The only other perennial stream in the project area is an unnamed tributary to Johnson Creek, identified in **Figure 13-2** as Tributary 2 to Johnson Creek. There are also four ephemeral channels that cross IH 30 within project limits. Most notable of these is Tributary 1 to Johnson Creek, which is a remnant of the original Johnson Creek that was channelized as part of the construction of IH 30. The remaining three ephemeral channels all cross IH 30 west of Johnson Creek, and each of these have been placed in culverts within the existing IH 30 ROW.

The term “waters of the U.S.” refers to those waterways which potentially fall within the jurisdictional authority of the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA) (hereinafter ‘Section 404’), and includes wetlands that are adjacent to jurisdictional waterways. The Section 404 jurisdictional status of water features within the proposed project area was determined from an examination of historical and recent aerial photography, USGS topographic maps, Federal Emergency Management Agency (FEMA) maps, and field investigations conducted on August 5 and October 9, 2014. During these field visits, the ordinary high water mark (OHWM) for potentially jurisdictional waters of the U.S. was delineated. During the field investigation, each of the jurisdictional water features described above was examined for water features meeting the criteria of wetlands, but no such water features were observed. All of the perennial and ephemeral streams identified above are

considered subject to Section 404 jurisdiction. Although there are several other instances where ephemeral channels cross highways in the project area, these man-made channels transport storm water runoff from highway pavement and are not considered subject to regulation under Section 404.

No-Build Alternative

This alternative would require no construction, so there would be no possibility of any permanent fill or other impacts to waters of the U.S.

Build Alternative: Direct Impacts

Permanent impacts to waters of the U.S. crossed by IH 30 and SH 360 are anticipated at four water crossings due to construction of the IH 30/SH 360 interchange, which consists of mass grading, reconstruction of bridge crossings of Johnson Creek, construction of connecting ramp bridges, placement of support columns for bridge spans, and a culvert extension. In addition, temporary fill impacts could occur from incidental deposition of debris during bridge construction/reconstruction and installation of support columns. A summary of the jurisdictional water features and anticipated permanent and temporary impacts is in **Table 3-7**.

Table 3-7. Expected Impacts to Waters of the U.S., Including Wetlands

Name of Water Body and Location Indicator	Existing Structure	Proposed Work or Structure	Permanent Fill		Temporary Fill		NWP #	PCN (Y/N)	IP (Y/N)
			Waters (acres & linear feet)	Wetlands (acres)	Waters (acres & linear feet)	Wetlands (acres)			
Johnson Creek – IH 30 crossing	bridge	bridge replacement	none	none	0.4 acre 685 LF	none	14	N	N
Johnson Creek – SH 360 crossing	bridge	bridge replacement	<0.001 acre <100 LF	none	0.4 acre 570 LF	none	14	N	N
Tributary 1 to Johnson Creek – north of IH 30	none	construct 2 ramp bridges	0.002 acre <100 LF	none	0.2 acre 420 LF	none	14	N	N
Tributary 2 to Johnson Creek – south of IH 30	box culvert upstream end	extend culvert and construct 2 ramp bridges	0.06 acre 150 LF	none	0.3 acre 830 LF	none	14	N	N
Tributary 3 to Johnson Creek – IH 30 crossing	box culvert	no work	none	none	none	none	n/a	n/a	n/a
Tributary 4 to Johnson Creek – IH 30 crossing	box culvert	no work	none	none	none	none	n/a	n/a	n/a
Tributary 5 to Johnson Creek – IH 30 crossing	box culvert	no work	none	none	none	none	n/a	n/a	n/a
Arbor Creek – IH 30 crossing	box culvert	no work	none	none	none	none	n/a	n/a	n/a

Notes: The locations of the stream crossings and estimates of impacts of the proposed project are shown in **Figure 13-2**.

The placement of temporary and permanent dredge or fill material into each of the four jurisdictional waters of the U.S. would be authorized under Nationwide Permit (NWP) 14 (Linear Transportation Projects) under Section 404. That is, each of the crossings would be a single and complete crossing of a separate water body, and each would affect less than 0.50 acre of jurisdictional waters. As none of the crossings would have permanent impacts exceeding 0.10 acre and no wetlands would be filled, construction of the proposed project would proceed without a NWP 14 Pre-Construction Notification (PCN).

During construction, appropriate measures would be taken to maintain normal downstream flows and minimize flooding. Temporary fills consisting of materials would be placed in a manner that would not be eroded by expected high flows. Temporary fills would be entirely removed and affected areas restored to pre-construction elevations and revegetated as appropriate. Stream channel modifications, including bank stabilization, would be limited to the minimum necessary to construct or protect roads or drainage structures, and would be restricted to the immediate vicinity of the project. The proposed project would comply with all general and regional conditions applicable to NWP 14.

Build Alternative: Encroachment-Alteration Indirect Impacts

Project-related impacts to jurisdictional waters would occur only within the construction footprint of the proposed project. Accordingly, no encroachment-alteration indirect impacts would occur.

3.4.2 Water Quality Certification

Existing Conditions

Under Section 401 of the CWA, certification of compliance with water quality standards issued by the state water quality agency is required for any discharge of pollutants into waters subject to regulation under Section 404. In Texas, state water quality certification under Section 401 is carried out by the TCEQ. With regard to projects with impacts to waters of the U.S. that meet the criteria for a NWP, TCEQ has provided conditional Section 401 certification.³² For transportation projects with impacts to water features covered by NWP 14, such as the

³² TCEQ letter to USACE dated April 5, 2012 re USACE Nationwide Permits. This TCEQ letter addresses Section 401 water quality certification for USACE NWPs issued under Section 404. http://media.swf.usace.army.mil/pubdata/enviro/regulatory/permitting/nwp/2012_TCEQ401.pdf, accessed May 14, 2015.

proposed project, TCEQ's Section 401 conditional certification requires the Soil Erosion and Sedimentation Controls under NWP General Condition (GC) 12 and the Post-construction Total Suspended Solids (TSS) Controls under NWP GC 25. In essence, these GCs require the use of best management practices (BMPs) to manage water quality on construction sites.

No-Build Alternative

This alternative would not result in any ground-disturbing activity, so there would be no requirement for a Section 404 permit or the Section 401 certification associated with a permit.

Build Alternative: Direct Impacts

The Section 401 certification requirements for NWP 14 would be met by implementing at least one TCEQ-approved BMP for each of the following categories of controls:

- Category I – Erosion Control
- Category II – Sedimentation Control
- Category III – Post-construction Total Suspended Solids Control

Category I could be addressed with temporary vegetation, which would involve re-seeding disturbed areas according to TxDOT-approved seeding specifications. Category II could be addressed by installing silt fences around construction areas prior to commencing work. Category III could be addressed by installing mulch filter socks and compost filter socks at drainage inlets. During final design of the proposed project, other TCEQ-approved BMPs may be substituted if necessary using one of the BMPs from the identical control category.

Build Alternative: Encroachment-Alteration Indirect Impacts

As project-related impacts to jurisdictional waters would occur only within the construction footprint of the proposed project, no encroachment-alteration indirect impacts would occur.

3.4.3 Executive Order 11990 – Wetlands

Existing Conditions

In addition to the regulation of wetlands that meet the criteria of Section 404 as waters of the U.S., Executive policy issued as EO 11990³³ seeks to protect a broader range of wetland environments. Under EO 11990, wetlands are defined as “those areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.” Unlike Section 404, the definition of wetlands in EO 11990 does not consider the relationship of wetlands to any waters of the U.S. or tributaries to them, but applies to areas with vegetation adapted to wetland conditions wherever such areas may be found.

During the field investigations for the proposed project, the project construction footprint was examined for areas that would meet the definition of wetlands under EO 11990. No area was observed that supports wetland vegetation.

No-Build Alternative

The absence of construction activity associated with the No-Build Alternative would preclude the possibility of wetland impacts.

Build Alternative: Direct Impacts

As no wetlands were observed within the project area, no adverse impacts to wetlands would occur.

Build Alternative: Encroachment-Alteration Indirect Impacts

As project-related impacts are limited to the construction footprint for the proposed project and no wetlands were observed, no indirect impacts to wetlands beyond the project footprint are likely.

³³ EO 11990 – *Protection of Wetlands* (42 Federal Register 26961, May 24, 1977).

3.4.4 Rivers and Harbors Act Sections 9 and 10

Existing Conditions

This project does not involve work in or over a navigable water of the U.S., therefore Section 10 of the Rivers and Harbors Act does not apply. Likewise, a navigational clearance under the General Bridge Act of 1946, and Section 9 of the Rivers and Harbors Act (administered by the U.S. Coast Guard [USCG]) is not applicable. Coordination with the USCG (for Section 9 and the General Bridge Act) and the USACE (for Section 10) would not be required.

Both Alternatives

As neither alternative would result in any impacts to a navigable water, authorizations under Section 9 or 10 would not apply.

3.4.5 Water Quality

Existing Conditions

Runoff from this project would discharge directly into threatened or impaired water listed pursuant to Section 303(d) of the CWA. Based on the 2012 TCEQ Texas 303(d) List, Johnson Creek, Segment ID 0841L, is considered impaired due to bacteria.³⁴ Johnson Creek is considered a Category 5a water body, indicating that total maximum daily loads (TMDLs) are underway, scheduled, or will be scheduled for one of more parameters. However, the draft 2014 TCEQ Index of Water Quality Impairments indicates that Johnson Creek has been reduced to a Category 4a water body, indicating that all TMDLs have been completed and approved by EPA.³⁵

No-Build Alternative

³⁴ See TCEQ's Texas Integrated Report – Texas 303(d) List for Segment ID 0841L (Johnson Creek from the Lower West Fork Trinity River upstream to just south of Mayfield Road in Arlington):

http://www.tceq.state.tx.us/assets/public/waterquality/swqm/assess/12twqi/2012_303d.pdf, accessed May 16, 2015.

³⁵ See TCEQ's Texas Integrated Report Index of Water Quality Impairments for Segment ID 0841L (Johnson Creek from the Lower West Fork Trinity River upstream to just south of Mayfield Road in Arlington):

https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/14txir/2014_imp_index.pdf, accessed May 16, 2015.

Water quality would not be affected by the No-Build Alternative as there would be no construction activity.

Build Alternative: Direct Impacts

Construction activity associated with the proposed project would not be likely to contribute to a degradation of water quality due to bacteria. However, the proposed project and associated activities would be implemented, operated and maintained using best management practices to control the discharge of pollutants from the project site. Furthermore, the proposed project would be implemented in a manner that is consistent with the approved TMDL.

Coordination with TCEQ in accordance with the TxDOT-TCEQ MOU (43 Texas Administrative Code (TAC) Sections 2.301 – 2.308) is required, and TxDOT initiated coordination with TCEQ on May 28, 2015. On June 5, 2015, TCEQ responded by email indicating ‘no comment’ regarding the EA’s discussion of water quality (see **Appendix B**).

Build Alternative: Encroachment-Alteration Indirect Impacts

The proposed project would not result in impacts beyond the construction footprint that would contribute to a degradation of water quality due to bacteria.

3.4.6 Measures to Reduce Erosion and Sedimentation

Existing Conditions

The proposed project would include 5 acres or more of earth disturbance.

No-Build Alternative

No action would be necessary for this alternative as it would not cause earth disturbance.

Build Alternative: Direct Impacts

Pursuant to Section 402 of the CWA, TxDOT would comply with the TCEQ Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit (CGP). A Storm Water Pollution Prevention Plan (SW3P) would be implemented, and a construction site notice would be posted on the construction site. A Notice of Intent (NOI) would be required.

Build Alternative: Encroachment-Alteration Indirect Impacts

It is anticipated that implementation of the SW3P would reduce erosion and sedimentation from construction sites to a negligible level, such that migration of substantial amounts of sediment away from the project footprint would be unlikely.

3.4.7 Municipal Separate Storm Sewer System

Existing Conditions

The proposed project is located within the boundaries of the Phase I Municipal Separate Storm Sewer System (MS4) for the City of Arlington and the Phase II MS4 for the City of Grand Prairie.

No-Build Alternative

This alternative would not alter the amount of runoff generated within the project area.

Build Alternative: Direct Impacts

The proposed project would comply with applicable requirements of the MS4 permit issued by TCEQ. TxDOT will notify the non-TxDOT MS4 operators for Arlington and Grand Prairie who would directly receive storm water discharge from the proposed project.

Build Alternative: Encroachment-Alteration Indirect Impacts

The proposed project would not generate storm runoff except within the project footprint, so project-related runoff outside the project area would not be likely.

3.4.8 Floodplains

Existing Conditions

All of the proposed project area lies within the corporate boundaries of the City of Arlington and the City of Grand Prairie, both of which are participants in the National Flood Insurance Program. Each of these cities has jurisdiction over floodplains within project limits. The locations of designated 100-year floodplains within the project area are shown in **Figures 13-1** and **13-2**. These 100-year flood zone areas are associated with Johnson Creek and Arbor Creek.

No-Build Alternative

This alternative would not alter the existing level of roadway encroachments into floodplains.

Build Alternative: Direct Impacts

The hydraulic design for this project would be in accordance with current FHWA and TxDOT design policies. The facility would permit the conveyance of the 100-year flood, inundation of the roadway being acceptable, without causing significant damage to the facility, stream, or other property. The proposed project would not increase the base flood elevation to a level that would violate applicable floodplain regulations and ordinances. Additionally, the amount of fill within these floodplains would not pose a significant risk, nor adversely affect natural and beneficial floodplain values. Therefore, floodplain impacts resulting from the proposed actions would not be considered substantial. Coordination with the local floodplain administrators would be required.

Build Alternative: Encroachment-Alteration Indirect Impacts

Construction would be limited to the proposed project's existing/proposed ROW/easement areas, and would have no effect on floodplain areas outside the construction area.

3.4.9 Trinity River Corridor Certification

Existing Conditions

The proposed project is not within the Trinity River Corridor Development Regulatory Zone; therefore, a Corridor Development Certificate (CDC) permit would not be required.

Both Alternatives

Neither alternative would require a CDC permit.

Build Alternative: Encroachment-Alteration Indirect Impacts

Construction would be limited to the proposed project's existing/proposed ROW/easement areas, and would have no effect on floodplain areas outside the construction area. Accordingly, no CDC approval would be required as the result of encroachment-alteration indirect impacts.

3.5 VEGETATION AND WILDLIFE HABITAT

3.5.1 Project Area Vegetation Features and Impacts

Existing Conditions

Although the project area occurs within the Cross Timbers ecoregion, the area's history of extensive agricultural land use followed by urbanization within the IH 30 and SH 360 highway corridors has altered all but small pockets of vegetation. Areas associated with floodplains, however, in many instances are dominated by hardwood riparian forests that reflect the same types of species that were prevalent in prehistory. Field surveys were conducted by a qualified biologist on August 5, September 9, and October 8, 2014, to characterize the vegetation within the project area in terms of dominant species and suitability as preferred habitat for wildlife species.

The inventory and evaluation of vegetation for TxDOT projects is governed by a Memorandum of Understanding (MOU) with the Texas Parks and Wildlife Department (TPWD),³⁶ and implementing programmatic agreements.³⁷ In accordance with the MOU, a biological technical report containing a Tier I Site Assessment was prepared to support early coordination of the proposed project with TPWD. That technical report provided detailed information about dominant vegetation in the project area based on the field biological survey and GIS maps. Included in the Tier I Site Assessment was an analysis of vegetation found in the project area as compared to TPWD's Ecological Mapping Systems of Texas (EMST).³⁸ Additionally, information extracted from TPWD's Texas Natural Diversity Database (TXNDD) was included in the technical report, which tracks known occurrences of special plant and animal species on public land throughout Texas. The primary purpose of coordination project impacts with TPWD

³⁶ The TxDOT-TPWD MOU went into effect on September 1, 2013, and is in 43 TAC Sections 2.201 – 2.214.

³⁷ These programmatic agreements between TxDOT and TPWD under the 2014 MOU include the Threshold Table Programmatic Agreement (2014) and the Best Management Practices Programmatic Agreement (2014). See: <http://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/ecological-resources.html>, accessed May 14, 2015.

³⁸ As referenced in the TxDOT-TPWD MOU, the EMST represents an ongoing effort to map vegetation at high resolution using multi-spectral aerial imagery and intensive ground verification. With the project area, the EMST map developed from the Texas Ecological Systems Classification Project - Phase 1 vegetation data (as modified by TxDOT) was used to help characterize vegetation within the project area. See: <http://tpwd.texas.gov/gis/data/downloads#EMS-T>, accessed May 17, 2015.

is to identify the BMPs established to avoid, minimize, and mitigate impacts to vegetation and wildlife.

No-Build Alternative

As there would be no construction under this alternative, there would be no impacts to vegetation resources.

Build Alternative: Direct Impacts

Permanent impacts resulting from the proposed project would include 9.5 acres of riparian forest habitat along Johnson Creek and its tributaries, located to the west of SH 360, and extending north and south of IH 30 (see map in **Figure 14**). The proposed project would also remove approximately 0.6 acre of upland woodland habitat located east of SH 360 and just north of IH 30 (shown in **Figure 14**). Anticipated impacts to perennial streams would be those described in **Section 3.4.1** (combined impacts would be less than 0.1 acre, see **Figure 13-2**). The remaining impacts would occur to existing roadway pavement and other urban landscape (including areas of maintained grass) within the IH 30 and SH 360 highway corridors.

Early project coordination with TPWD was completed on February 4, 2015, and relevant correspondence is included in **Appendix B**. With regard to vegetation resources, TxDOT has committed to the following BMPs in connection with future planning and construction of the proposed project:

- TxDOT will be implementing its standard seeding in areas that will include the removal of existing roadway. TxDOT will be working closely with the cities of Grand Prairie and Arlington to encourage native and regionally adapted species for revegetating disturbed areas within the proposed project area.
- The proposed project will be in compliance with EO 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping (see **Section 3.5.2**, below).

Build Alternative: Encroachment-Alteration Indirect Impacts

Construction would be limited to the proposed project's existing/proposed ROW/easement areas, and would not remove any vegetation resources outside of the construction area.

3.5.2 Invasive Species and Beneficial Landscaping

Existing Conditions

EO 13112³⁹ requires federal agencies to prevent and control the introduction and spread of invasive (non-native) plant and animal species. In addition, the President issued the Executive Memorandum on Environmentally Beneficial Landscaping⁴⁰, which requires federal agencies to utilize techniques in landscaping activities that complement and enhance the local environment and seek to minimize the adverse effect that the landscaping would have on it. In particular, this means using regionally native plants and employing landscaping practices and technologies that conserve water and prevent pollution. By using effective landscape management practices, appropriate application of pesticides and fertilizers, and runoff reduction practices, potential impacts to water quality would be minimized.

No-Build Alternative

This alternative would not require any soil disturbance or revegetation actions.

Build Alternative: Direct Impacts

All revegetation and landscaping activities would comply with EO 13112 and the Executive Memorandum on Beneficial Landscaping, as outlined above. In particular, environmentally beneficial landscaping would include seeding and replanting the ROW in accordance with TxDOT-approved seeding specifications utilizing native species. Only regionally native and non-invasive plants will be used in landscaping and revegetation.

Build Alternative: Encroachment-Alteration Indirect Impacts

As the proposed project would not remove any vegetation resources outside of the construction footprint, the safeguards discussed above would not be applicable.

³⁹ EO 13112 – Invasive Species (64 Federal Register 6183-6186, February 8, 1999).

<http://www.gpo.gov/fdsys/pkg/FR-1999-02-08/pdf/99-3184.pdf>, accessed May 14, 2015..

⁴⁰ Executive Memorandum on Environmentally Beneficial Landscaping (42 Federal Register 26961, May 24, 1977).
<http://environment.fhwa.dot.gov/guidebook/documents/042694em.asp>, accessed May 14, 2015..

3.6 PROTECTED WILDLIFE SPECIES AND OTHER SPECIES OF CONCERN

3.6.1 Federal and State-Listed Species, and State Species of Concern

Existing Conditions

The Tier I Site Assessment in the biological technical report discussed in **Section 3.5.1** included field observations and other available maps and database information regarding rare wildlife species and the availability of preferred habitat for those species in the project area. Such data included the following described resources:

- Lists of federal threatened and endangered species with potential occurrence for in Tarrant and Dallas counties,⁴¹ and information on the availability of designated critical habitat for these species in the project area. Such information is maintained by the U.S. Fish and Wildlife Service (USFWS) in furtherance of the Endangered Species Act.
- Lists of state threatened and endangered species with potential occurrence for in Tarrant and Dallas counties,⁴² element occurrence records for rare species from the TXNDD, and relevant data from the Texas Conservation Action Plan regarding species of greatest conservation need (SGCN). These information sources are maintained by TPWD in accordance with the laws of the State of Texas.

The Tier I Site Assessment coordinated with TPWD concluded that, based on rare species habitat preferences and the available habitat in the project area, that there is no USFWS-designated critical habitat for federally-listed species in the project area nor is there preferred habitat for such species. Regarding state-listed animal species and SGCNs, the Tier I Site Assessment indicated that suitable habitat is not present in the project area for state-listed species or SGCNs that could potentially be found in Tarrant County or Dallas County, with the exception of the following species:

- Mollusks (mussel species):
 - Fawnsfoot (*Truncilla donaciformis*) – SGCN
 - Little spectaclecase (*Villosa lienosa*) – SGCN
 - Louisiana pigtoe (*Pleurobema riddellii*) – State Threatened

⁴¹ Environmental Conservation Online System Species by County Report, USFWS online data accessed on May 14, 2015. <http://ecos.fws.gov/ecp/>.

⁴² Annotated County Lists of Rare Species, TPWD online data last updated for Tarrant and Dallas counties on April 28, 2014. New Website: <http://tpwd.texas.gov/gis/rtest/>, accessed May 14, 2015.

- Texas heelsplitter (*Potamilus amphichaenus*) – State Threatened
- Texas pigtoe (*Fusconaia askewi*) – SGCN
- Wabash pigtoe (*Fusconaia flava*) – SGCN
- Mammals:
 - Plains spotted skunk (*Spilogale putorius interrupta*) – SGCN
- Reptiles:
 - Texas garter snake (*Thamnophis sirtalis annectens*) – SGCN
 - Timber rattlesnake (*Crotalus horridus*) – State Threatened

Although unlikely to occur within this highly urbanized setting, there is a possibility that the state-listed threatened timber rattlesnake and two SGCNs (plains spotted skunk and Texas garter snake) may utilize forested riparian habitat along Johnson Creek and its tributaries within the project area.

With regard to state-listed mussel species (Louisiana pigtoe and Texas heelsplitter) and SGCN mussels (fawnsfoot, little spectaclecase, Texas pigtoe, and Wabash pigtoe), Johnson Creek is a perennial stream that could potentially provide habitat for these species. On July 16, 2015, biologists from TxDOT conducted a presence/absence survey for state-listed mussels at areas where construction is proposed to take place in or over Johnson Creek and Tributary 2 to Johnson Creek, both of which are perennial streams. This aquatic survey was conducted by qualified personnel in accordance with applicable laws, permit requirements, and TPWD guidelines. No evidence of state-listed threatened mussels (live or dead shell) was found during the survey effort, nor were any live native freshwater mussels (*Unionidae*) of any species found at any of the surveyed stream segments. The biologists surveying Johnson Creek observed several live non-native Asian clams (*Corbicula* sp.) along with numerous dead Asian clam shells, and dead shells for three common native mussel species: giant floater (*Pyganodon grandis*), paper pondshell (*Utterbackia imbecillis*), and southern mapleleaf (*Quadrula apiculata*). No dead shells of native mussels were found in Tributary 2 to Johnson Creek.

No-Build Alternative

As this alternative would require no construction activity, there would be no likelihood of impacts to any protected species or SGCNs.

Build Alternative: Direct Impacts

TxDOT has committed to implementing the BMPs⁴³ jointly developed with TPWD to avoid and minimize impacts to the state's fish and wildlife resources and their habitats. These and other specified commitments relating to the conduct of construction activities will be included in the project's construction plans (see **Section 6.0**).

Potential impacts to riparian forest areas would affect approximately 9.5 acres located along the west side of SH 360, principally north of IH 30 but including smaller areas south of IH 30. Such areas could be suitable habitat for the timber rattlesnake, plains spotted skunk, and Texas garter snake. It is expected that, given the urban project setting and that general lack of available habitat, the potential for encountering these species during construction is low. The following species BMPs are applicable due to the presence of habitat for the timber rattlesnake, plains spotted skunk, and Texas garter snake:

- Timber rattlesnake, Texas garter snake, and plains spotted skunk: Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.
- Additionally, regarding the plains spotted skunk: Contractors will be instructed to avoid unnecessary impacts to dens.

Due to the presence of potentially suitable habitat for freshwater mussels in the proposed project area, TxDOT carefully considered impact avoidance measures for aquatic organisms during project planning and will minimize in-water impacts to the extent practicable. In addition, TxDOT either has implemented or will implement freshwater mussel BMPs, as follows:

- Where construction work is expected in the water, a survey for state-listed species was completed where appropriate habitat exists. As discussed above, no state-listed mussel species were observed and no further survey work for state-listed mussels is anticipated.
- As the stream survey described above did not discover any live native mussels in surveyed stream segments, no relocation of state-listed or SGCN mussels is warranted. However, TxDOT will require implementation of Water Quality BMPs⁴⁴ (relating to

⁴³ See Best Management Practices Programmatic Agreement (2014), developed pursuant to the TxDOT-TPWD MOU. <http://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/ecological-resources.html>, accessed May 14, 2015.

⁴⁴ Water Quality BMPs address the following: (1) removal of silt fencing and accumulated sediment after construction is completed and disturbed areas revegetated; (2) minimizing the use of equipment in streams and riparian areas

minimizing the duration and extent of substrate disturbance to water bodies) during project construction.

- When work is adjacent to the water, Water Quality BMPs implemented as part of the SW3P for a construction general permit or any conditions of the Section 401 water quality certification of the project will be implemented.

Build Alternative: Encroachment-Alteration Indirect Impacts

The proposed project would only remove wildlife habitat from within the construction footprint. In light of the highly urbanized nature of the project area, it is not expected that removal of habitat within the project footprint would affect any habitat that is available in adjacent or nearby areas.

3.6.2 Migratory Bird Treaty Act

Existing Conditions

The Migratory Bird Treaty Act of 1918 (MBTA) makes it unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg in part or in whole, without a federal permit issued in accordance within the MBTA's policies and regulations. All bridges in the project area were examined during the field survey on August 5, 2014 for signs of migratory bird nesting. One active pigeon nest with hatchlings was observed at the top of a column supporting the Copeland Road bridge crossing of Johnson Creek. One mud nest (probably from a barn swallow) was observed on the concrete girder of the SH 360 bridge over Johnson Creek, and an additional mud nest was under the IH 30 bridge crossing of Johnson Creek.

No-Build Alternative

The lack of construction activity for this alternative would make any MBTA violations unlikely.

during construction; (3) where temporary stream crossings are unavoidable, remove crossings when no longer needed and stabilize banks and soils around the crossing; (4) consider wildlife-vehicle interactions when siting detention ponds; (5) removal of rubbish found near bridges.

Build Alternative: Direct Impacts

TxDOT will take all appropriate actions to prevent the take of migratory birds, their active nests, eggs, or young by the use of proper phasing of the project or other appropriate actions. Such actions include implementing the following bird BMPs to avoid or minimize impacts to all birds protected by the MBTA:

- No disturbing, destroying, or removing active nests, including ground nesting birds, during the nesting season.
- Avoid the removal of unoccupied, inactive nests, as practicable.
- Prevent the establishment of active nests during the nesting season on TxDOT-owned and operated facilities and structures proposed for replacement or repair.
- No collecting, capturing, relocating, or transporting birds, eggs, young, or active nests without a permit.

Build Alternative: Encroachment-Alteration Indirect Impacts

As all expected impacts to migratory birds would be associated with construction activity within the project footprint, no encroachment-alteration indirect impacts to birds are likely.

3.6.3 Fish and Wildlife Coordination Act

Existing Conditions

The Fish and Wildlife Coordination Act (FWCA)⁴⁵ was enacted to protect fish and wildlife when federal actions result in the control or modification of a natural stream or body of water. The statute requires federal agencies to do the following: take into consideration the effect that water-related projects would have on fish and wildlife resources; take action to prevent loss or damage to these resources; and provide for the development and improvement of these resources. The FWCA also requires that federal agencies obtain comments from USFWS and TPWD whenever a project involves impounding, diverting, or deepening a stream channel or other body of water.

⁴⁵ 16 U.S. Code Sections 661-666c.

No-Build Alternative

As no construction activity would occur for this alternative, the requirements of the FWCA are inapplicable.

Build Alternative: Direct Impacts

As discussed in **Section 3.4.1**, all impacts to waters of the U.S. would be authorized under Section 404 of the CWA by NWP 14. Therefore, the USFWS considers FWCA coordination to have been completed as part of the NWPs review last authorized and reissued in 2012, and further coordination would not be required.

Build Alternative: Encroachment-Alteration Indirect Impacts

There is nothing in the design of the proposed project that would cause modifications to water bodies beyond the reach of the construction footprint. Therefore, there would be no encroachment-alteration indirect impacts that would require coordination under the FWCA.

3.7 FARMLAND PROTECTION POLICY ACT

Existing Conditions

The Farmland Protection Policy Act (FPPA)⁴⁶ seeks to preserve the agricultural use of soils that are particularly productive. The Natural Resources Conservation Service (NRCS) implements the FPPA through regulations⁴⁷ and by classifying soil series in terms of suitability for farming. However, NRCS regulations exempt from the definition of “farmland” any “land already in or committed to urban development”.⁴⁸

No-Build Alternative

The FPPA is inapplicable under the No-Build Alternative because no new ROW is required.

⁴⁶ 7 U.S. Code Sections 4201-4209.

⁴⁷ 7 CFR Part 658.

⁴⁸ 7 CFR Section 658.2(a).

Build Alternative: Direct Impacts

As all areas of proposed new ROW and permanent easements are zoned for urban use or within an urbanizing area, the areas of proposed ROW/easement for the proposed project are exempt from the FPPA. No coordination with NRCS is required.

Build Alternative: Encroachment-Alteration Indirect Impacts

All proposed acquisition of ROW and easements for the proposed project would occur within the construction footprint, thereby precluding any application of the FFPA to encroachment-alteration indirect impacts.

3.8 AIR QUALITY

3.8.1 Transportation Conformity

Existing Conditions

The proposed project is located within an area that has been designated by the EPA as a moderate nonattainment area⁴⁹ for the 8-hour ozone standard; therefore, transportation conformity rules apply.

No-Build Alternative

This alternative does not propose to create any additional transportation capacity and is not subject EPA's transportation conformity rules.

Build Alternative: Direct Impacts and Encroachment-Alteration Indirect Impacts

Transportation conformity is assessed on a regional level, which considers both direct and encroachment-alteration indirect impacts related to mobile source emissions. The proposed project is consistent with NCTCOG's financially-constrained *Mobility 2035 – 2014 Amendment* (see **Appendix C**), which was found to conform to the TCEQ SIP on May 29, 2015. As the proposed project adds transportation capacity within a nonattainment area, TxDOT coordinated with TCEQ regarding the EA and TCEQ concurred with TxDOT's assessment of the proposed project's consistency with the MTP and TIP (see **Appendix B**).

⁴⁹ Effective July 20, 2012, EPA designated the ten-county DFW nonattainment area "moderate" nonattainment for the 2008 8-hour ozone NAAQS. The nonattainment area includes Tarrant and Dallas counties.

The 2015-2018 TIP includes references to the funded construction of the IH 30/SH 360 interchange (CSJ 1068-02-076) and the reconstruction of the Six Flags Drive bridge over IH 30 (CSJ 1068-02-104) in its May 2015 quarterly update (see **Appendix C**). These components of the initial phase of the proposed project are consistent with the TIP, which was found to meet conformity requirements on June 24, 2015. The remaining two CSJs (1068-02-127 and 1068-04-903) are included in the TIP as an unfunded construction phase of the proposed project. This second construction phase of the planned improvements to IH 30 is necessary for the transitioning of main lanes and other facilities that are part of the IH 30/SH 360 interchange with existing IH 30 lane configurations to the east and west of the interchange. However, as a major portion of the proposed project is consistent with the approved MTP and TIP, TxDOT may proceed to take final action on this environmental document despite the lack of current funding for the later construction phase. TxDOT and NCTCOG will continue to work toward securing funding for CSJs 1068-02-127 and 1068-04-903.

3.8.2 Congestion Management Process

Existing Conditions

This project is adding SOV capacity; therefore, a CMP analysis is required. The 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 project was developed from NCTCOG's operational CMP, which meets all requirements of 23 CFR 500.109. The CMP, first adopted in 2007 by NCTCOG Regional Transportation Council, was updated in July 2013.⁵⁰

The region commits to operational improvements and travel demand reduction strategies at two levels of implementation: program level and project level. Program level commitments are inventoried in the regional CMP, which was adopted by NCTCOG RTC; they are included in the financially constrained MTP, and future resources are reserved for their implementation.

⁵⁰ See: <http://www.nctcog.org/trans/cmp/>, accessed May 14, 2015.

The CMP element of the plan carries an inventory of all project commitments (including those resulting from major investment studies) that details type of strategy, implementing responsibilities, schedules, and expected costs. At the project's programming stage, travel demand reduction strategies and commitments will be added to the regional TIP or included in the construction plans. The regional TIP would provide for programming of these projects at the appropriate time with respect to the SOV facility implementation and project specific elements.

No-Build Alternative

The CMP is inapplicable to the No-Build Alternative because it would not add SOV capacity.

Build Alternative: Direct Impacts and Encroachment-Alteration Indirect Impacts

Committed congestion reduction strategies and operational improvements within and surrounding the proposed project's study area will consist of intersection improvements and new road construction. Individual projects that were completed in recent years, are ongoing, or which are planned are listed in **Table 3-8**.

In an effort to reduce traffic congestion and the need for SOV lanes in the region, TxDOT and NCTCOG will continue to promote appropriate congestion reduction strategies through the Congestion Mitigation and Air Quality program, the CMP, and the MTP. The congestion reduction strategies considered for the proposed project would help alleviate congestion in the SOV study boundary, but would not eliminate it. Therefore, construction of the proposed project is justified in terms of its integration with other planned or completed CMP projects. The CMP analysis for added SOV capacity projects in the Transportation Management Area is on file and available for review at NCTCOG.

Table 3-8. Operational Improvement Projects near the Proposed Project Area

Project Location	TIP Project Code	Project Type	Agency	Implementing Year	Total Project Cost
IH 30 from Tarrant/Dallas C/L to Sylvan Avenue	20195	HOV	TxDOT-Dallas	2013	\$65,174,765
IH 30 from 0.5 miles west of Fielder Road to Dallas/Tarrant County Line	53127	HOV	TxDOT-Dallas	2012	\$8,365,788
IH 30 Frontage Road	11983	Park & Ride/Rail Station	TxDOT-Ft Worth	2014	\$171,000
IH 30 from IH 35E to Tarrant/Dallas County Line	1176.1000	ITS*	TxDOT-Dallas	2012	\$173,534
IH30 Corridor/Entertainment District	11143	ITS*	Arlington	2012	\$565,338
Arlington Entertainment District From Collins & Lamar Boulevard SH 360 & Division Street	20041	ITS*	Arlington	2012	\$954,000
Division, Collins, Rogers, Baird Farm; Arlington Entertainment District, and Road to Six Flags St.	20042	ITS*	Arlington	2009	\$2,993,796
Collins Street at Randol Mill Road	11150.2068	Traffic Signal Improvement	Arlington	2014	\$459,315
Collins Street at Sanford Street	11150.207	Traffic Signal Improvement	Arlington	2014	\$459,315
Sanford Street at Mesquite Street	11150.2108	Traffic Signal Improvement	Arlington	2014	\$459,315
Randol Mill Road at 106th Street	11150.2127	Traffic Signal Improvement	Arlington	2014	\$459,315
Randol Mill Road at Six Flags Drive	11150.2129	Traffic Signal Improvement	Arlington	2014	\$459,315
SH 161 From Spur 303 to South of IH 30	52388	New Road	TxDOT-Dallas	2010	\$24,960,709
Carrier Parkway	11822	Traffic Signal Improvement	Grand Prairie	2010	\$169,000
IH 30 from SH 161 to NW 7 th Street	52527	New Road	TxDOT-Dallas	2035	\$9,442,879
Cooper Street at Lamar Boulevard/IH 30	11150.1002	Traffic Signal Improvement	Arlington	2014	\$308,369
Lamar Boulevard at IH 30	11150.1154	Traffic Signal Improvement	Arlington	2014	\$308,369
Collins Street at Brown Boulevard	11150.2062	Traffic Signal Improvement	Arlington	2014	\$459,315
Collins Street at Washington Drive	11150.2063	Traffic Signal Improvement	Arlington	2014	\$459,315
Collins Street at Lamar Boulevard	11150.2065	Traffic Signal Improvement	Arlington	2014	\$459,315
Ballpark Way at Brown Boulevard	11150.2237	Traffic Signal Improvement	Arlington	2014	\$459,315
IH 30 EB Frontage Road at 19 th Street	11800.0001	ITS*	TxDOT-Dallas	2009	\$72,966
IH 30 WB Frontage Road at 19 th Street	11800.0002	ITS*	TxDOT-Dallas	2009	\$72,966
SH 161 from N. of IH 30 to N. of Rock Island Road	20026	New Road	TxDOT-Dallas	2010	\$167,595,907
IH 30 from NW 7 th to Belt Line Road	20227	New Road	TxDOT-Dallas	2013	\$9,928,660

Source: NCTCOG: *TIPINS* Interactive Map (on-line) and Query, accessed January 5, 2015.
 Notes: * ITS = Intelligent Transportation System. The projects listed above include transportation improvements within the project area. These do not include regional or city-wide projects or programs, such as alternative fuels, traffic demand management, or traffic signal improvements.

3.8.3 Carbon Monoxide and Traffic Air Quality Analysis

Existing Conditions

The primary pollutants from motor vehicles are volatile organic compounds (VOCs), carbon monoxide (CO), and nitrogen oxides (NOx). VOCs and NOx can combine under the right conditions in a series of photochemical reactions to form ozone. Because these reactions take place over a period of several hours, maximum concentrations of ozone are often found far downwind of the precursor sources. As ozone is thus a regional problem and not a localized condition, the modeling procedures for ozone 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 ozone for the purpose of comparing the results of the National Ambient Air Quality Standards (NAAQS) are modeled by the regional air quality planning agency (NCTCOG) for the SIP. However, concentrations for CO are readily modeled for highway projects and are required by federal regulations.

No-Build Alternative

The No-Build Alternative would not add any vehicle capacity to road networks and this scenario was used as a baseline condition for the analysis of ambient CO levels discussed in the following subsection.

Build Alternative: Direct Impacts

The topography and meteorology that characterize the proposed project area is not expected to restrict the dispersion of the mobile-source air pollutants such as CO. The traffic data used in the CO Traffic Air Quality Analysis (TAQA) were obtained from a traffic study by the project team for the design year (2035), which was later approved by the TxDOT Transportation Planning and Programming (TPP) Division in May 2015. Although preliminary traffic data were used to complete the CO TAQA, the analytic results were re-evaluated in light of minor modifications to traffic data required by the TPP Division and the CO TAQA results were determined to be unaffected by the TPP changes.

The traffic study forecasted the annual average daily traffic (AADT) for road segments in the proposed project area. The design year traffic projections and the current year (2015) traffic

data were used to interpolate traffic volumes for the ETC year 2028. The maximum AADT in the proposed project area would be linked to SH 360 main lanes, and would be 232,865 vehicles per day (VPD) for the ETC year, and 253,900 VPD for the design year. Estimates of CO levels in the project area were made for the ETC year and the design year.

Estimated concentrations of CO for the proposed project were modeled using CAL3QHC and the TxDOT Environmental Division CO emissions spreadsheet factoring in adverse meteorological conditions and sensitive receptors at the ROW line in accordance with the TxDOT Air Quality Guidelines.⁵¹ The results of CO modeling efforts indicate that local concentrations of CO emissions (when combined with background concentrations) are not expected to exceed CO NAAQS in the ETC and design years. The results of the CO TAQA are summarized in **Table 3-9**.

Table 3-9. Proposed Project Carbon Monoxide Concentrations

Year	1-hour CO (Standard 35 ppm)	1-hour % NAAQS	8-hour CO (Standard 9 ppm)	8-hour % NAAQS
2028 (ETC)	4.7 ppm	13.4%	2.9 ppm	32.2%
2035 (Design Year)	4.8 ppm	13.7%	3.0 ppm	32.9%

Notes: The NAAQS for CO is 35 parts per million (ppm) for the one-hour standard and 9 ppm for the 8-hour standard. Analysis results include the following average CO background concentrations (ppm) for the roadway links within the geographical areas noted: Dallas, 1-hour, 3.7 ppm, and 8-hour, 2.3 ppm; Fort Worth, 1-hour, 1.8 ppm, and 8-hour, 1.2 ppm. The average CO background concentrations were taken from Appendix D of the TxDOT Air Quality Guidelines (2006).

Build Alternative: Encroachment-Alteration Indirect Impacts

The assessment of impacts of the proposed project on ambient CO predicts concentrations of this pollutant at the edge of existing/proposed ROW. Therefore, concentrations of CO are expected to attenuate from predicted levels as one moves farther away from the project area.

⁵¹ TxDOT Air Quality Guidelines, TxDOT Environmental Affairs Division (2006). See Appendix D for estimates of background CO concentrations. http://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/env/air/air_quality_guidelines_0606.pdf, accessed May 14, 2015.

3.8.4 Mobile Source Air Toxics

Existing Conditions

In addition to the criteria air pollutants for which there are NAAQS, the EPA also regulates air toxics. Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the EPA regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS).⁵² In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment.⁵³ These are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (or “diesel PM”), formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics (MSAT), the list is subject to change and may be adjusted in consideration of future EPA rules.

The 2007 EPA MSAT rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. Based on a FHWA analysis using EPA’s MOVES2010b model, as summarized in **Table 3-10** and shown graphically in **MSAT Exhibit 1**, even if the number of VMT increases by 102 percent as assumed from 2010 to 2050, a combined reduction of 83 percent in the total annual emissions for the priority MSAT is projected for the same time period.

⁵² See: <http://www.epa.gov/ncea/iris/index.html>, accessed May 14, 2015.

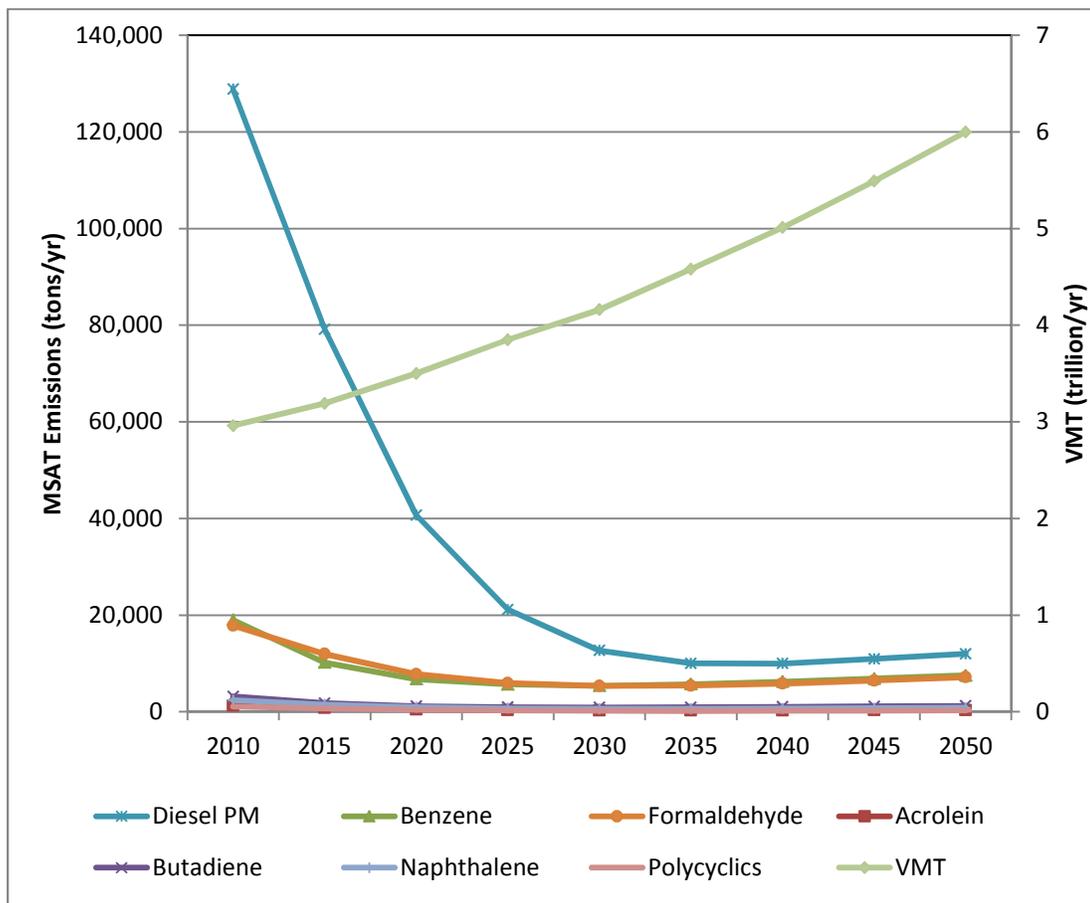
⁵³ See: <http://www.epa.gov/ttn/atw/nata1999>, accessed May 14, 2015.

Table 3-10. Projected National MSAT Emission Trends 2010 – 2050

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

Source: EPA MOVES2010b model runs conducted during May – June 2012 by FHWA.

MSAT Exhibit 1. Projected National MSAT Emission Trends 2010 – 2050



Source: Table 3-10.

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

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

No-Build Alternative

The No-Build Alternative would not add any vehicle capacity to road networks and this scenario was used as a baseline condition for the analysis of MSAT levels discussed below.

Build Alternative: Direct Impacts and Encroachment-Alteration Indirect Impacts

Qualitative MSAT Discussion

For the Build Alternative and No-Build Alternative, the amount of MSAT emitted would be proportional to the VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for the Build Alternative is slightly higher than that for the No-Build Alternative, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. This increase in VMT would lead to higher MSAT emissions for the preferred action alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to EPA's MOVES2010b model, emissions of all of the priority MSAT decrease as speed increases. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes contemplated as part of the Build Alternative will have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore, there may be localized areas where ambient concentrations of MSAT could be higher under the Build Alternative than the No-Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the expanded IH 30 highway sections that would be built within and along the approaches to the IH 30/SH 360 interchange. However, the magnitude and the duration of these potential increases compared to the No-Build Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts.

In sum, when a highway is widened, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No-Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

Quantitative MSAT Analysis

Added capacity projects with FHWA involvement that have a high potential for meaningful MSAT impacts within the existing right of way (a project of MSAT concern), or have an AADT volume of over 140,000 VPD are required to complete a quantitative MSAT analysis. The IH 30 project is an added capacity project with federal involvement with projected traffic that exceeds the 140,000-VPD AADT threshold, and is therefore subject to a quantitative MSAT analysis.

The process for completing a quantitative MSAT analysis begins with an MSAT conference call between TxDOT, FHWA and the relevant Metropolitan Planning Organization (MPO). The call establishes the parameters for the analysis, including the base year, the design year and whether an interim year should be included in the modeling. The call also determines the schedule for the analysis including the availability of the relevant travel demand model to be used to establish the transportation network affected by the proposed project. Once the appropriate traffic and other data are available, modeling is conducted to determine the potential MSAT emissions that would be expected from the proposed project. For the proposed IH 30 project, the MSAT phone conference between TxDOT, FHWA, and NCTCOG (the MPO for the

DFW area) was held on December 15, 2014. During the coordination conference call, it was determined that a quantitative MSAT analysis would be completed for 2014 (base year) and 2035 (design horizon year), but that MSAT data for an interim year would be unnecessary.

A quantitative analysis provides a basis for identifying and comparing the potential differences in MSAT emissions between the No-Build and Build Alternatives. This analysis assesses the contributions of the proposed project on a regional level, and although this includes direct impacts, the focus is on encroachment-alteration indirect impacts. The quantitative assessment presented below is derived from a methodology developed by the FHWA,⁵⁴ and builds upon data generated about the regional transportation network by NCTCOG. This analysis is based on existing or base year (2014) and design year (2035) volumes of traffic that have been projected by the NCTCOG travel model, and is reflected in *Mobility 2035 –2014 Amendment*.

The MSAT study area for the quantitative analysis is coextensive with the NCTCOG transportation model network within the 12-county North Central Texas MPA. Within this study area, the MSAT analysis first seeks to identify the portion of the overall transportation network that would be most affected by the proposed project. The methodology employed by NCTCOG to determine the project-specific affected network for MSAT modeling identifies those roadway links in the *Mobility 2035 – 2014 Amendment* transportation network that would experience a change of +/- 5 percent in the traffic volume between the 2035 No-Build and Build Alternatives. The 2035 affected transportation network is then extrapolated to the base year (2014) as the basis for estimating MSAT emissions under existing conditions. The affected transportation network links identified for the IH 30 project for Years 2014 and 2035 are shown in **Figures 15-1** and **15-2**, respectively. These affected networks were then combined with annual emission factors provided by NCTCOG for each roadway link in the affected transportation network. These inputs are appropriate to the North Central Texas MPA, and are consistent with those used for other modeling activities in the area (e.g., air conformity analyses).

The results of project-specific modeling are shown in **Table 3-11**, which provides the emissions for the seven priority MSAT for each affected network (i.e., base year, and design year for No-

⁵⁴ A Methodology for Evaluating Mobile Source Air Toxic Emissions among Transportation Project Alternatives: http://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemi ssions.cfm, accessed May 14, 2015.

Build and Build scenarios). Of the MSAT compounds analyzed, **Table 3-11** indicates that diesel PM, formaldehyde, and benzene contribute the most to the emissions total for the 2014 base year. This is expected to remain the case in future years even though substantial declines are expected for formaldehyde and benzene, and an even greater decline in diesel PM (86 and 89 percent decrease from 2014 to 2035 for the Build and No-Build scenarios, respectively).

Table 3-11. MSAT Emissions of IH 30 by Scenario

Compound	Estimated Emissions by Year/Scenario (Tons/Year)			Percent Difference 2014-2035	
	2014 Base Year	2035 Design Year		No-Build	Build
		No-Build	Build		
Acrolein	0.05	0.01	0.02	-73	-67
Benzene	0.71	0.35	0.43	-51	-39
1,3-Butadiene	0.16	0.07	0.09	-53	-41
Diesel Particulate Matter	5.16	0.56	0.73	-89	-86
Formaldehyde	0.87	0.34	0.42	-61	-51
Naphthalene	0.11	0.04	0.05	-63	-54
Polycyclic Organic Matter	0.04	0.01	0.02	-70	-62
Total MSAT (Tons/Year)	7.11	1.39	1.76	-80	-75
Total VMT (Miles/Year)	1,412,145,215	1,645,797,045	2,037,400,435	17	44

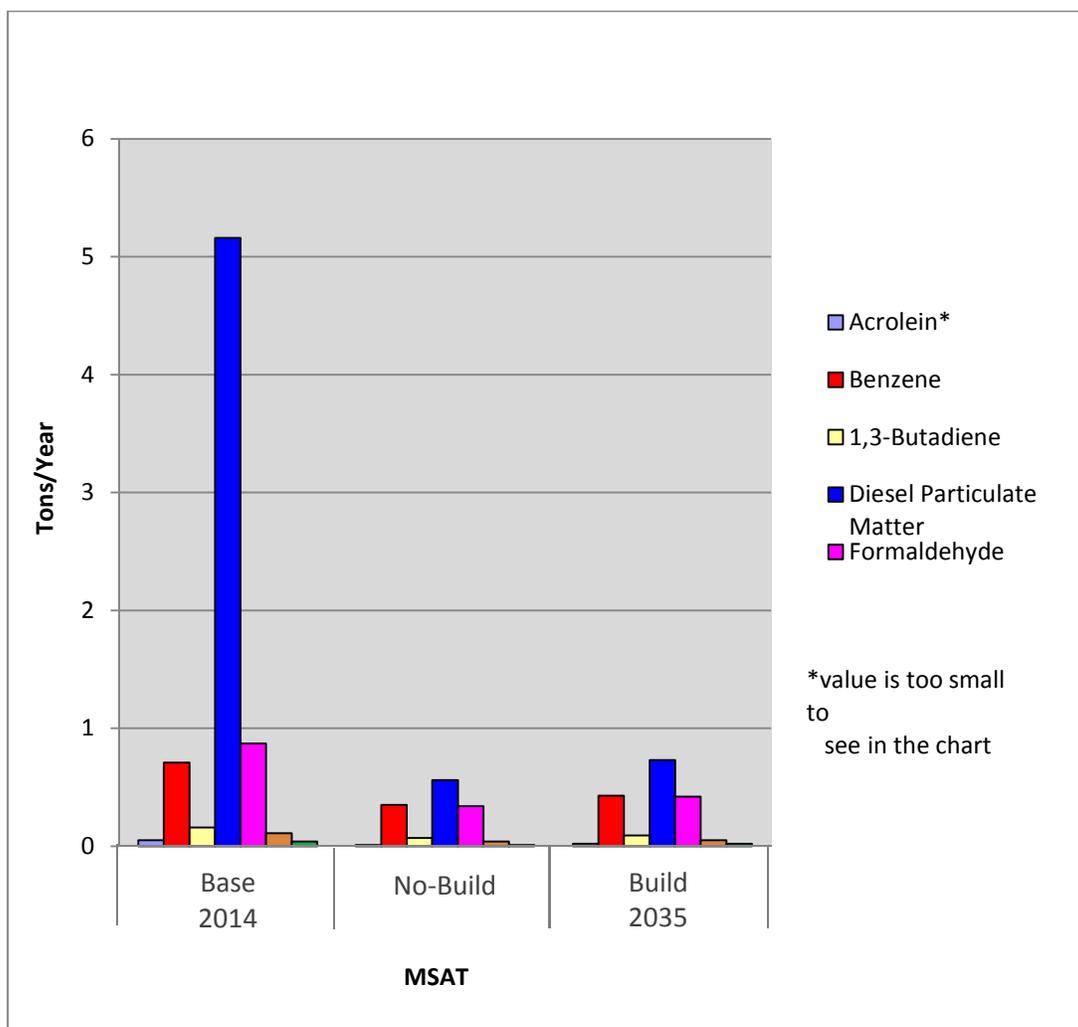
Source: NCTCOG, February 2015.

The data in **Table 3-11** are displayed graphically in **MSAT Exhibit 2**, which shows MSAT emissions for each priority MSAT as compared to total VMT for each affected network. The analysis indicates a substantial decrease in annual MSAT emissions can be expected for both the Build and No-Build scenarios in year 2035 compared to the base year 2014 (**MSAT Exhibit 2**). Compared with 2014 levels, annual emissions of total MSAT are projected to decrease by approximately 80 percent in 2035 No-Build scenario and 75 percent in 2035 Build scenario. If total MSAT emissions are plotted over time, a substantially decreasing level of emissions can be seen (**MSAT Exhibit 3**) even though overall VMT in the transportation network would continue to rise.

As indicated from the results of MSAT modeling discussed above, estimated levels of MSAT emissions is expected to decrease substantially despite an expected substantial increase in VMT. The reasons for these dramatic improvements are twofold: (1) a change in vehicle fuels, both gasoline and diesel fuel; and (2) a change in emission standards that both light-duty and

heavy-duty on-road motor vehicles must meet. The EPA predicts substantial future air emission reductions as the agency’s new light-duty and heavy-duty on-road fuel and vehicle rules come into effect (Tier II, light-duty vehicle standard, Heavy-Duty Diesel Vehicle standards and low sulfur diesel fuel, and the EPA’s proposed Off-Road Diesel Engine and Fuel Standard). These projected air emission reductions will be realized even with the predicted continued growth in VMT.⁵⁵

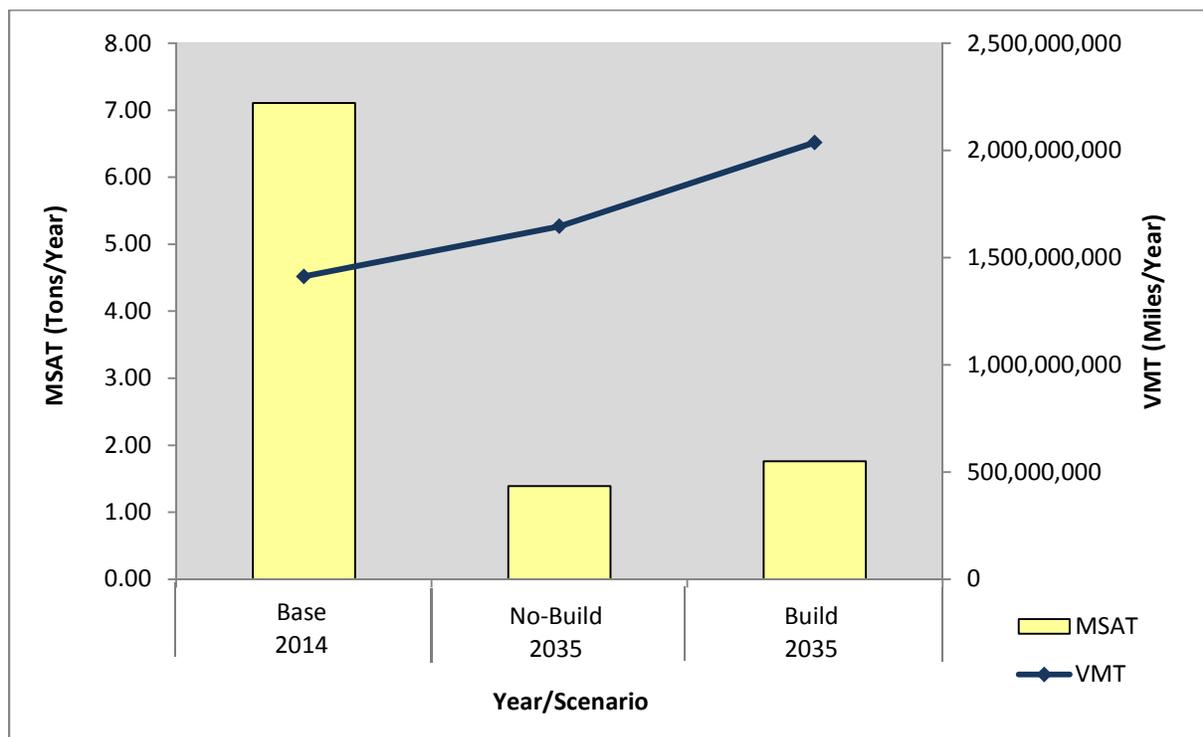
MSAT Exhibit 2. Projected MSAT Emissions by IH 30 Project Scenario Over Time



Source: NCTCOG data and Project Study Team (2015).

⁵⁵ See *Regulatory Impact Analysis Control of Air Pollution from New Motor Vehicles: Tier II Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements*; EPA’s Engine Programs and Compliance Division, Office of Mobile Sources; Publication No. EPA420-R-99-24 023 (1999). See also EPA’s Heavy-Duty Diesel Vehicle Regulatory Impact Analysis in its *Final Rule for Controlling Emissions of Hazardous Air Pollutants from Mobile Sources* (66 FR 17229; March 29, 2001).

MSAT Exhibit 3. Total MSAT Emissions and VMT by Alternative



Source: NCTCOG data and Project Study Team (2015).

Incomplete or Unavailable Information

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

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. The EPA is the lead authority for administering the Clean Air Act and its amendments and has specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the IRIS, which is a compilation of electronic reports on over 550 chemical substances found in the environment and the potential

of these substances to cause human health effects.⁵⁶ Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the HEI. Two HEI studies are summarized in Appendix D of FHWA's *2009 Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents*, which can be found Online.⁵⁷ That appendix also discusses a variety of FHWA research initiatives related to air toxics. Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious are the adverse human health effects of MSAT compounds at current environmental concentrations⁵⁸ or in the future as vehicle emissions substantially decrease.⁵⁹

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

⁵⁶ See: <http://www.epa.gov/iris/>, accessed May 14.

⁵⁷ See: http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/eqintguidapd.cfm, accessed May 14, 2015.

⁵⁸ HEI: <http://pubs.healtheffects.org/view.php?id=282>.

⁵⁹ HEI: <http://pubs.healtheffects.org/view.php?id=306>, accessed May 14.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI.⁶⁰ As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA⁶¹ and the HEI⁶² have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the CAA to determine whether controls that are more stringent are required to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine a “safe” or “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than one in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than one in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two-step decision framework.

Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable. Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as

⁶⁰ See: <http://pubs.healtheffects.org/view.php?id=282>, accessed May 14.

⁶¹ See: <http://www.epa.gov/risk/basicinformation.htm#g>, accessed May 14.

⁶² See: <http://wwwcf.fhwa.dot.gov/exit.cfm?link=http://pubs.healtheffects.org/getfile.php?u=395>, accessed May 14.

reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

MSAT Analysis Conclusions

In this document, a quantitative assessment of MSAT emissions relative to the No-Build and Build Alternatives has been provided acknowledging that both the No-Build and Build Alternatives may result in increased exposure to particular MSAT emissions in certain locations, although diesel PM would decrease substantially between 2014 and 2035 under either alternative. The concentrations and duration of exposures are uncertain, however, and because of this uncertainty, the health effects from these emissions cannot be estimated. Overall, total MSAT emissions for the project are expected to decrease at least 75 percent between the base year 2014 and the design year 2035, for both the No-Build and Build Alternatives, and therefore mitigation strategies for further reductions are not proposed.

3.8.5 Air Emissions During Construction

Existing Conditions

This section addresses changes that may occur during the construction phase of the proposed project.

No-Build Alternative

No transportation-related construction air emissions would be expected from the No-Build Alternative.

Build Alternative: Direct Impacts

During the construction phase of the proposed project, temporary increases in air pollutants may occur from construction activities. The primary construction-related emissions are particulate matter (e.g., fugitive dust) from site preparation and diesel particulate matter (MSAT) from diesel powered construction equipment and vehicles. These emissions are temporary in nature (only occurring during actual construction); it is not possible to estimate impacts reasonably from these emissions due to limitations of the existing models. However, the potential impacts of particulate matter emissions will 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 Texas Emissions Reduction Plan includes incentive programs to encourage the development of multi-pollutant approaches to ensure that the air in Texas is both safe to breathe and meets minimum federal standards.⁶³ TxDOT encourages construction contractors to utilize this program to the fullest extent possible to minimize diesel emissions.

Build Alternative: Encroachment-Alteration Indirect Impacts

The efforts described above for abatement of air pollutants on construction sites are directed at improving air quality onsite in addition to preventing such pollutants from migrating beyond the construction footprint. Construction-related pollutants that are not contained onsite are expected to dissipate readily in the normal course of atmospheric mixing. 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 this project will have any substantial impact on air quality in the proposed project area.

3.9 HAZARDOUS MATERIALS

Existing Conditions

Construction of the proposed project would include drilling of bridge piers, excavation, and other earth moving activities. Project planning includes the risk that such activities pose in terms of encountering hazardous materials and substances within the project area from past human activities. Therefore, a hazardous materials site visit was conducted on October 2, 2014 and a hazardous materials initial site assessment (ISA) was completed on October 22, 2014 to identify possible hazardous materials within the proposed project limits. A review of a regulatory database list was conducted as part of the ISA technical report in accordance with TxDOT guidelines, the results are summarized below.

A brief summary of regulated sites of concern within the proposed project limits is provided in **Table 3-12**. These sites are shown on the Hazardous Materials – Sites of Concern Map (**Figure 16**).

⁶³ For information about this program, see: <http://www.tceq.state.tx.us/implementation/air/terp/>, accessed May 14, 2015.

Table 3-12. Summary of Regulated Sites of Concern

Map ID	Site Information	Database ^{1, 2}	Location Relative to Project
1	Wet N Wild 1800 W. Lamar Blvd. Arlington, TX 76012-5719 Wet N Wild Vacant Property 1700 Blk Lamar Blvd. Arlington, TX 76006	PST Facility ID# 63262 LPST ID# 112433 Site Visit Concerns: None. Facility is now Six Flags Hurricane Harbor.	Adjacent
2	Fina Gas Station 2005 E. Copeland Rd. Arlington, TX 76011 (Also known as E Z Serve 10 located at 2005 E. Copeland Rd., Arlington, TX 76011 and Kwik Chek 42 located at 2025 E. Copeland Rd., Arlington, TX 76011)	LPST ID# 116826, Facility ID# 0030232 LPST ID# 093404, Facility ID# 0030232 PST Facility ID# 30232 Note: The radius report identified LPST ID# 116826/093404 and PST ID# 30232 as two different facilities; however, based on site visit, tank installation/removal dates, and identical facility ID Nos., they are determined to be the same facility. Site Visit Concerns: Based on 10/02/2014 site visit, site address No. is 2005. Evidence of tank removal and fill.	Adjacent
3	Former EZ Serve 2019 Brinker Ct. Arlington, TX 76011 (Also known as Former EZ Serve located at 2019 E I-30, Arlington, TX 76011)	PST Facility ID# 69829 LPST ID# 107799 Site Visit Concerns: Surface dumping, refuse, debris, and transportation materials storage observed during 10/02/2014 site visit.	Adjacent
4	Six Flags Over Texas 2201 Road to Six Flags Street Arlington, TX 76004 (including motor pool area and Chaparral Cars)	LPST ID# 095120, ID# 093165, ID# 117721, ID# 117724, ID# 106236 PST Facility ID# 31455 IHW: Registration ID# 74217; EPA ID# TXD048253843; TNRCC ID# 28598 Site Visit Concerns: None	Proposed ROW acquisition
5	Electrocom Automation 2910 Avenue F Arlington, TX 76011 (also known as Siemens Dematic Postal Automation, Siemens Electrocom LP, and Postal Automation Facility)	IHW Registration ID# 35744; EPA ID# TXD107052037; TNRCC ID# 12806 VCP ID# 1586 NLRRCRAG: EPA ID# TXD107052037 APAR: Program ID# 1586, Reference # RN100684596 Site Visit Concerns: None	Proposed ROW acquisition
6	General Magnaplate Texas 801 Avenue G Arlington, TX 76011	RCRAGR06: EPA ID# TXR000020420 IHW: Registration ID# 33689; EPA ID# TXR000020420; TNRCC ID# 11168 Site Visit Concerns: None	Proposed ROW acquisition

Table 3-12. Summary of Regulated Sites of Concern

Map ID	Site Information	Database ^{1,2}	Location Relative to Project
7	<p>Imperial Tooling & Mfg. 941 Avenue G Arlington, TX 76011</p> <p>(also known as Imperial Tool and The Clark-Aiken Company – Aerospace Division)</p>	<p>IHW: Registration ID# 39241; EPA ID# TXD047881909; TNRCC ID# 15792</p> <p>LPST ID# 104299</p> <p>PST Facility ID# 14608</p> <p>NLRRCRAG: EPA ID# TXD047881909</p> <p>IHW: Registration ID# 32195; EPA ID# Not Reported; TNRCC ID# 9737</p> <p>Site Visit Concerns: Aboveground storage tanks and 55-gallon drums observed at this facility during 10/02/2014 site visit.</p>	Proposed ROW acquisition
8	<p>Bell Helicopter Textron Plant 5 1700 N. Hwy. 360 Grand Prairie, TX 75050</p> <p>(also known as BHT, Inc. Site 6 Plant 5 located at Hwy 360 and Ave K)</p>	<p>LPST ID# 098798</p> <p>PST Facility ID# 16952</p> <p>VCP ID# 0018</p> <p>CERCLIS: EPA ID# TXD000764498, Site ID# 0601579</p> <p>NFRAP: EPA ID# TXD000764498; Site ID# 0601579</p> <p>RCRAGR06: EPA ID# TXD000764498</p> <p>IHW: Registration ID# 32248; EPA ID# TXD000764498; TNRCC ID# 9789</p> <p>Site Visit Concerns: None</p>	Adjacent
9	<p>Corner Store 2002 2525 Brown Blvd. Arlington, TX 76006</p> <p>(also known as Stop N Go 003)</p>	<p>PST Facility ID# 39335</p> <p>LPST ID# 096037</p> <p>Site Visit Concerns: None</p>	Adjacent
10	<p>Corner Store 2176 1622 N. SH 360 Grand Prairie, TX 75050</p> <p>(also known as Stop N Go Markets)</p>	<p>PST Facility ID# 39351</p> <p>LPST ID# 094769</p> <p>Site Visit Concerns: None</p>	Adjacent
11	<p>Olympia Petroleum Management 1101 N. Watson Rd. Arlington, TX 76011</p>	<p>PST Facility ID# 74065</p> <p>Site Visit Concerns: None. The 10/02/2014 site visit revealed that the now vacant business was formerly a Mobil Station.</p>	Potential displacement

Table 3-12. Summary of Regulated Sites of Concern

Map ID	Site Information	Database ^{1, 2}	Location Relative to Project
12	7-Eleven 34105 900 N Watson Rd. Arlington, TX 76011 (also known as Texaco located at 900 N. Hwy. 360/900 N. Watson Rd. and Star Enterprises Arlington located at 900 N. Hwy. 360)	PST Facility ID# 13427 LPST ID# 092137 LSPT ID# 112690 IHW: Registration ID# 75636; EPA ID# TXD987993474; TNRCC ID# 29983 Site Visit Concerns: None	Potential displacement
13	Six Flags Valero 840 N. Watson Rd. Arlington, TX 76011 (also known as Exxon 64500 located at 840 N. Hwy. 360)	PST Facility ID# 26614 LPST ID# 110801 Site Visit Concerns: None	Potential displacement
14	Pressure Systems Supply 830 N. Hwy 360 Arlington, TX 76011 (also known as Anthony Pools)	PST Facility ID# 57983 LPST ID# 104106 IHW: Registration ID# 72372; EPA ID# TXD064223555; TNRCC ID# 26813 Site Visit Concerns: None. The 10/02/2014 site visit revealed that the current business is Cowboy's Auto.	Potential displacement
<p>1. ABBREVIATIONS FOR RADIUS REPORT DATABASES CITED:</p> <p>IHW Industrial and Hazardous Waste Sites CERCLIS Comprehensive Environmental Response, Compensation and Liability Information System RCRA06 Resource Conservation and Recovery Act – Generator Facilities LPST Leaking Petroleum Storage Tanks PST Petroleum Storage Tanks VCP Voluntary Cleanup Programs Sites NLRRCRAG No Longer Regulated RCRA Generator Facilities APAR Affected Property Assessment Reports NFRAP No Further Remedial Action Planned Sites EPA Environmental Protection Agency TNRCC Texas Natural Resource Conservation Commission</p> <p>2. Source: GeoSearch radius report of hazardous materials databases (August 21, 2014); and field work performed on October 2, 2014.</p>			

Petroleum Storage Tanks (PST)

Within the project limits, there are 64 registered petroleum storage tank (RPST) facilities within the specified search distance for the radius report. Of these, 55 facilities are also listed as leaking petroleum storage tank (LPST) sites. The site visit and research into the historical land use did not reveal any other abandoned and/or active gasoline service stations. ROW acquisition is required for this project and considerable excavation is anticipated. Four of the RPST sites would be acquired as part of the ROW requirements of the proposed project. District ROW would be notified of the PST regulatory status and exact locations. The PST sites of concern are included in **Table 3-12** and shown in **Figure 16**.

Leaking Petroleum Storage Tanks (LPST)

A review of the hazardous materials database indicated 55 LPST sites within the proposed project area. Eleven of these sites are considered environmental concerns due to proximity to the project, gradient relative to the project, priority, and status. There is the potential that subsurface releases of petroleum hydrocarbons from one or more of these facilities have affected the subsurface conditions of the project area. The LPST sites of concern are included in **Table 3-12** and shown in **Figure 16**, and are discussed below in the order of the Map Identification Numbers (**Figure 16**) for each LPST site.

Map ID 1 - Wet N Wild Vacant Property, 1800 Block Lamar, Arlington, Texas (LPST ID# 112433): This site is on the north side of IH 30 and is adjacent and up gradient to the proposed project. No ROW would be required from this site. According to the database, a subsurface release of petroleum hydrocarbons occurred; however, the release date is not reported. Groundwater was not impacted, and there were no apparent threats or impacts to receptors. The TCEQ has issued "Final Concurrence, Case Closed."

Map ID 2 - Fina Gas Station (E Z Serve 10), 2005 E. Copeland Road, Arlington, Texas (LPST ID# 116826 and 093404): This site is on the south side of IH 30, adjacent and at the same gradient as the project. ROW would not be required from this site. According to the database results for LPST ID# 116826, a subsurface release of petroleum hydrocarbons was reported on January 18, 2006. Groundwater used by humans and endangered species was impacted within 500 feet to 0.25 mile to the southwest. The TCEQ has issued "Final Concurrence, Case Closed." According to the database results for LPST ID# 093404, a subsurface release of petroleum hydrocarbons was reported on July 20, 1989. Groundwater was impacted and a public/domestic water supply well was affected. Final TCEQ concurrence is pending documentation of well plugging.

Map ID 3 - Former E Z Serve, 2019 E. IH 30, Arlington, Texas (LPST ID# 107799): This site is on the north side of IH 30, adjacent and at the same gradient as the project. No ROW would be required from this site. According to the database, a subsurface release of petroleum hydrocarbons was reported on February 18, 1993. Soil contamination occurred, and a full site assessment and remedial action plan were required. The TCEQ has issued "Final Concurrence, Case Closed."

Map ID 4 - Six Flags Over Texas (including motor pool area, Chaparral Cars, and Valero Gas), 2201 Road to Six Flags Street, Arlington, Texas (LPST ID# 095120, 093165, 117721, 117724, and 106236): This site is on the south side of IH 30, adjacent and up gradient to the project. ROW would be required from this site. According to the database results for LPST ID# 095120, a subsurface release of petroleum hydrocarbons was reported on February 16, 1990. A designated major or minor aquifer was impacted. The TCEQ has issued "Final Concurrence, Case Closed." According to the database results for LPST ID# 093165, a subsurface release of petroleum hydrocarbons was reported on May 30, 1989. Groundwater was impacted, but there were no apparent threats or impacts to receptors. The TCEQ has issued "Final Concurrence, Case Closed." According to the database results for LPST ID# 117721, a subsurface release of petroleum hydrocarbons was reported on April 9, 2008. Groundwater used by humans and endangered species was impacted less than 500 feet to the southwest. The TCEQ has issued "Final Concurrence, Case Closed." According to the database results for LPST ID# 117724, a subsurface release of petroleum hydrocarbons was reported on August 23, 2007. The assessment was incomplete, but there were no apparent receptors impacted. The TCEQ has issued "Final Concurrence, Case Closed." According to the database results for LPST ID# 106236, a subsurface release of petroleum hydrocarbons was reported on February 17, 1993. Groundwater was not impacted, and there were no apparent threats or impacts to receptors. The TCEQ has issued "Final Concurrence, Case Closed."

Map ID 7 - Imperial Tool, 941 E. Avenue G, Arlington, Texas (LPST ID# 104299): This site is on the north side of IH 30, adjacent and at the same gradient as the project. ROW would be required from this site. According to the database, a subsurface release of petroleum hydrocarbons was reported on August 10, 1992. Minor soil contamination occurred, but a remedial action plan was not required. The TCEQ has issued "Final Concurrence, Case Closed."

Map ID 8 - Bell Helicopter Textron Plan 5, 1700 N. Highway 360, Grand Prairie, Texas (LPST ID# 098798): This site is on the east side of SH 360, adjacent and at the same gradient as the project. ROW would not be required from this site. According to the database, a subsurface release of methanol was reported on May 2, 1991. Groundwater was impacted and a public/domestic water supply well was affected. The underground storage tank (UST) was removed from the ground on April 15, 1991 and the site is undergoing a corrective action plan.

Map ID 9 - Stop N Go 003, 2525 Brown Boulevard, Arlington, Texas (LPST ID# 096037): This site is on the west side of SH 360, adjacent and down gradient to the project. No ROW would be required from this site. According to the database, a subsurface release of petroleum hydrocarbons was reported on June 21, 1990. A designated major or minor aquifer was impacted. The TCEQ has issued "Final Concurrence, Case Closed."

Map ID 10 - Stop N Go Markets, 1622 N. Highway 360, Grand Prairie, Texas (LPST ID# 094769): This site is on the east side of SH 360, adjacent and at the same gradient as the project. No ROW would be required from this site. According to the database, a subsurface release of petroleum hydrocarbons was reported on January 22, 1990. Soil contamination occurred, and a full site assessment and remedial action plan were required. The TCEQ has issued "Final Concurrence, Case Closed."

Map ID 12 - Texaco, 900 N. Highway 360 (N. Watson Road), Arlington, Texas (LPST ID# 092137 and 112690): This site is on the east side of SH 360, adjacent and down gradient to the project. ROW acquisition for the proposed project would result in the displacement of this facility. According to the database results for LPST ID# 092137, a subsurface release of petroleum hydrocarbons was reported on September 14, 1988. Groundwater other than a drinking water aquifer was impacted and the site characterization was incomplete. The TCEQ has issued "Final Concurrence, Case Closed." According to the database results for LPST ID# 112690, a subsurface release of petroleum hydrocarbons was reported on October 2, 1997. Groundwater was impacted, but there were no apparent threats or impacts to receptors. The TCEQ has issued "Final Concurrence, Case Closed."

Map ID 13 - Exxon 64500, 840 N. Highway 360, Arlington, Texas (LPST ID# 110801): This site is on the east side of SH 360, adjacent and down gradient to the project. ROW acquisition for the proposed project would result in the displacement of this facility. According to the database, a subsurface release of petroleum hydrocarbons occurred, but the release date was not reported. No groundwater was impacted and there were no apparent threats or impacts to receptors. The TCEQ has issued "Final Concurrence, Case Closed."

Map ID 14 - Pressure Systems Supply, 830 N. Highway 360, Arlington, Texas (LPST ID# 104106): This site is on the east side of SH 360, adjacent and down gradient to the project. ROW acquisition for the proposed project would result in the displacement of this facility.

According to the database, a subsurface release of petroleum hydrocarbons was reported on August 16, 1991. Minor soil contamination occurred, but a remedial action plan was not required. The TCEQ has issued "Final Concurrence, Case Closed".

Monitoring Wells

Monitoring wells were observed within the project limits.

Oil and Gas Wells

Eight gas wells were identified within the proposed project study area. The well locations are depicted in **Figure 16**. While these gas wells are located within the proposed project area, they are not located within existing or proposed ROW or within proposed easements. Nor are they located in areas where substantial excavation is anticipated.

Active Pipelines

During the preliminary hazardous materials investigation, no pipelines were found to bisect the proposed project.

Voluntary Cleanup Program (VCP) Sites

A review of the hazardous materials database indicated 15 VCP sites within the proposed project area. Two of these VCP sites (Map ID 5 and 8) are considered environmental concerns due to their proximity to the project and gradient relative to the project. There is the potential that a subsurface release from one or more of these facilities has affected the subsurface conditions of the project area.

No-Build Alternative

This alternative would not cause and ground-disturbing activity, thus making unnecessary the taking of precautions to avoid mobilizing any existing contamination in soils or groundwater.

Build Alternative: Direct Impacts

It is anticipated that contaminated soil and/or groundwater would be encountered during construction. Special provisions or contingency language would be included in the project's construction plans to handle hazardous materials and/or petroleum contamination according to applicable federal and state regulations. In addition, the construction contractor would take appropriate measures to prevent, minimize, and control spillage of hazardous materials in the

construction staging area. Anticipated actions relative to various sources of potential contamination are discussed by topic below.

PST and LPST Sites

The LPST sites (and the tank systems) and potential contamination would be addressed during the ROW negotiation and acquisition process. The LPST sites are currently in various stages of corrective action. It is anticipated that all sites would obtain closure prior to construction. However, if this does not occur then TxDOT would continue to coordinate with property owners, tank owners, operators, and TCEQ up to and during construction. It is anticipated that contaminated groundwater or soil would be encountered during construction, and that appropriate safety measures will be followed in accordance with federal and state requirements.

Monitoring Wells

Proper plugging of the wells would be addressed during the ROW negotiation and acquisition process. If not plugged prior to construction, the wells would be addressed per TxDOT Standard Specification Item 103 - Disposal of Wells.⁶⁴

Oil and Gas Wells

The implementation of the proposed project is unlikely to impact the eight gas wells identified with the project area.

VCP Sites

It is expected that environmental concerns relating to two VCP sites (Map ID 5 and 8) would be addressed during the ROW negotiation and acquisition process.

Utility Adjustments/Relocation

At this time, specific utility adjustment requirements have not been determined. There is the potential for subsurface contamination to be encountered during utility adjustments. Coordination with utility companies concerning contamination would be addressed during the ROW stage of project development. It is unknown whether all utility adjustments or relocations would be completed prior to construction.

⁶⁴ TxDOT's 2004 Standard Specifications Book, <http://ftp.dot.state.tx.us/pub/txdot-info/des/specs/specbook.pdf>, accessed May 14, 2015.

Storm Water Drainage Structures and De-watering Activities

The proposed project requires the installation of storm sewers. Due to the possible contamination from adjacent properties, special considerations or provisions for entry and monitoring in the project's construction plans would be required.

De-watering of some excavations is anticipated. A hydrology study would be contracted by an engineering and environmental consultant to provide specifications on handling procedures and permitting requirements if contamination is encountered.

Discharge permits from the local publicly owned treatment works and/or TCEQ may be required. Groundwater filtration systems may need to be designed to remove contaminants to permitted levels prior to discharge.

Possible Asbestos-Containing Materials

The proposed project includes the demolition and/or relocation of building and bridge structures. Initial testing for the presence of asbestos on bridges and other road structures (i.e., retaining walls and traffic barriers) within the proposed project area has been completed, and a summary of the results is provided in **Table 3-13**. Further examination of bridge structures and other structures with potential to contain asbestos would be performed prior to demolition. All past and future asbestos inspections, specification, notification, license, accreditation, abatement and disposal, as applicable, have been and would continue to be completed in compliance with federal and state regulations.

Table 3-13. Summary of Initial Asbestos and Lead Testing Results

National Bridge Inventory ID #	Road/Bridge	Road/Feature Crossed	Asbestos Present? (Y/N)	Lead Present? (Y/N)
02-220-0-1068-02-107	Ballpark Way	IH 30	N	Y
02-220-0-1068-02-140	SH 360 Southbound Main Lanes	IH 30	Y	Y
02-220-0-1068-02-145	SH 360 Western Frontage Rd	IH 30	N	Y
02-220-0-1068-02-148	UPRR	IH 30	N	N
02-220-0-1068-02-149	Great Southwest Parkway	IH 30	N	Y
02-220-0-1068-02-180	SH 360 Northbound Main Lanes	IH 30	Y	Y
02-220-0-1068-02-199	IH 30 Eastbound Main Lanes	Johnson Creek	N	Y
02-220-0-1068-02-200	IH 30 Westbound Main Lanes	Johnson Creek	N	Y
02-220-0-1068-02-307	SH 360 Northbound Main Lanes	IH 30	N	Y
02-220-0-2266-02-004	SH 360 & Six Flags	Johnson Creek Tributary	N	Y
02-220-0-2266-02-020	SH 360 Southbound Main Lanes	Johnson Creek	N	Y
02-220-0-2266-02-021	SH 360 Southbound Main Lanes	Lamar Boulevard	Y	Y
02-220-0-2266-02-022	SH 360 Southbound Main Lanes	Six Flags Drive	N	Y
02-220-0-2266-02-049	Avenue K	SH 360	N	N
02-220-0-2266-02-050	Avenue J	SH 360	N	Y
02-220-0-2266-02-051	SH 360 Northbound Frontage Rd	Johnson Creek	N	Y
02-220-0-2266-02-052	SH 360 Southbound Frontage Rd	Johnson Creek	N	Y
02-220-0-2266-02-064	SH 360 Northbound Main Lanes	Johnson Creek	N	N
02-220-0-2266-02-065	SH 360 Northbound Main Lanes	Lamar Boulevard	Y	Y
02-220-0-2266-02-066	SH 360 Northbound Main Lanes	Six Flags Drive	Y	Y
02-220-0-C012-71-001	Copeland Road, Eastbound	Johnson Creek	N	N
02-220-0-C012-71-002	Copeland Road, Westbound	Johnson Creek	N	N

Lead-Based Paint

The proposed project includes the demolition and/or relocation of building and bridge structures, some of which contain lead based paint. Initial testing for the presence of lead in paint on roads and bridges within the proposed project area was completed, and a brief summary of the results for bridge structures is provided in **Table 3-13**. Further examination of bridge structures and other paint-bearing structures for lead based paint would be performed prior to demolition. Any waste materials and construction debris containing lead based paint would be disposed of according to current disposal regulations of the TCEQ and EPA.

Build Alternative: Encroachment-Alteration Indirect Impacts

The discussion of hazardous materials is unlike any of the other issues discussed in this EA because it focuses on potential impacts that might result if earth moving activity encounters pre-existing contaminants in soils or groundwater. As construction activity would be restricted to the project footprint, it is unlikely that the proposed project would mobilize contaminants in the soil or groundwater beyond construction areas.

3.10 TRAFFIC NOISE

Existing Conditions

Sound from highway traffic is generated primarily from a vehicle's tires, engine, and exhaust. It is commonly measured in decibels and is expressed as "dB." Sound occurs over a wide range of frequencies. However, not all frequencies are detectable by the human ear; therefore, an adjustment is made to the high and low frequencies to approximate the way an average person hears traffic sounds. This adjustment is called A-weighting and is expressed as "dB(A)." Also, because traffic sound levels are never constant due to the changing number, type and speed of vehicles, a single value is used to represent the average or equivalent sound level and is expressed as "Leq."

A traffic noise analysis seeks to compare the existing traffic noise level of a roadway to the predicted noise level after proposed improvements are completed and project traffic levels are using the new facility. A traffic noise analysis typically includes the following elements:

- Identification of land use activity areas that might be impacted by traffic noise.
- Determination of existing noise levels.
- Prediction of future noise levels.
- Identification of possible noise impacts.
- Consideration and evaluation of measures to reduce noise impacts.

The FHWA has established the Noise Abatement Criteria (NAC) in **Table 3-14** for various land use activity areas that are used as one of two means to determine when a traffic noise impact would occur.

Table 3-14. FHWA Noise Abatement Criteria

Activity Category	FHWA dB(A) Leq	Description of Land Use Activity Areas
A	57 (exterior)	Lands on which serenity and quiet are of extra-ordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	Residential
C	67 (exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F.
F	--	Agricultural, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	Undeveloped lands that are not permitted.

A noise impact occurs when either the absolute or relative criterion is met:

Absolute criterion: the predicted noise level at a receiver approaches, equals or exceeds the NAC. "Approach" is defined as one dB(A) below the NAC. For example, a noise impact would occur at a Category B residence if the noise level is predicted to be 66 dB(A) or above.

Relative criterion: the predicted noise level substantially exceeds the existing noise level at a receiver even though the predicted noise level does not approach, equal or exceed the NAC. "Substantially exceeds" is defined as more than 10 dB(A). For example, a noise impact would occur at a Category B residence if the existing level is 54 dB(A) and the predicted level is 65 dB(A).

When a traffic noise impact occurs, noise abatement measures must be considered. A noise abatement measure is any positive action taken to reduce the impact of traffic noise on an activity area.

No-Build Alternative

This alternative would not alter the existing transportation facility's capacity. However, future noise levels may be affected by changes in the amount of traffic on roadways as a result of

increasing travel demand. No attempt has been made to estimate future noise levels under the No-Build Alternative because traffic noise is modeled at roadway design speeds, and increasing congestion will make experiencing roadway design speeds increasingly rare.

Build Alternative: Direct Impacts and Encroachment-Alteration Indirect Impacts

The analysis of traffic noise is by its nature an examination of encroachment-alteration indirect impacts. That is, traffic noise models predict the noise levels that would be perceived by people located away from newly-constructed transportation facilities. No attempt has been made to describe noise levels that may exist directly within the transportation facility by motorists, as noise is generally accepted as a necessary element that accompanies the use of roadways.

This analysis was accomplished in accordance with TxDOT's (FHWA approved) 2011 Guidelines for Analysis and Abatement of Roadway Traffic Noise.⁶⁵ The FHWA traffic noise modeling software was used to calculate existing and predicted traffic noise levels. The model primarily considers the number, type and speed of vehicles; highway alignment and grade; cuts, fills and natural berms; surrounding terrain features; and the locations of activity areas likely to be impacted by the associated traffic noise. The data regarding the number and type of vehicles expected throughout the proposed project area for existing conditions and for the design year (2035) were preliminary estimates that were later submitted to TxDOT's TPP Division for approval. After the TPP Division required minor modifications to the AADT for some roadway links, the noise modeling analysis was re-evaluated and it was determined that the noise modeling results would not have been affected by the TPP adjustments to traffic data.

Existing and predicted traffic noise levels were modeled at receiver locations (**Table 3-15** and **Figure 17**) that represent the land use activity areas adjacent to the proposed project that might be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement.

⁶⁵ Guidelines for Analysis and Abatement of Roadway Traffic Noise. TxDOT (2011)
(<https://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/730-02-gui.pdf>, accessed May 14, 2015).

Table 3-15. Traffic Noise Levels in dB(A) Leq

Representative Receiver	NAC Category	NAC Level	Existing	Predicted 2035	Change (+/-)	Noise Impact
R1 - Huntington Chase (Apartments)	B	67	61	62	+1	No
R2 - Comfort Suites (Motel)	E	72	68	69	+1	No
R3 - Pappasito's (Outside Seating)	E	72	69	70	+1	No
R4 - Sedona Springs Apartments	B	67	60	61	+1	No
R5 - Econo Lodge Inn - Six Flags (Motel)	E	72	66	67	+1	No
R6 - Joe's Crab Shack (Outside Seating)	E	72	70	72	+2	Yes
R7 - Summit Ridge (Apartments)	B	67	66	69	+3	Yes
R8 - Sheraton Arlington Hotel	E	72	53	57	+4	No
R9 - Six Flags Hurricane Harbor	C	67	64	65	+1	No
R10 - Howard Johnson Express Inn (Hotel)	E	72	72	73	+1	Yes
R11 - Hilton Garden Inn (Hotel)	E	72	69	74	+5	Yes
R12 - America Extended Stay (Motel)	E	72	67	71	+4	Yes
R13 - Fairfield Inn and Suites (Motel)	E	72	68	72	+4	Yes
R14 - Crowne Plaza Arlington Suites (Hotel)	E	72	72	74	+2	Yes
R15 - Hillcrest Apartments	B	67	63	66	+3	Yes
R16 - Belmont Apartments	B	67	67	69	+2	Yes
R17 - Windridge Apartments	B	67	66	69	+3	Yes
R18 - Budget Suites of America (Motel)	E	72	66	68	+2	No
R19 - American's Best Inn and Suites (Motel)	E	72	73	75	+2	Yes
R20 - Castillian Condominiums	B	67	73	75	+2	Yes
R21 - The Creek at Brookhollow (Apartments)	B	67	73	74	+1	Yes
R22 - Hyatt Place (Hotel)	E	72	63	65	+2	No
R23 - Reflections Admiral Hotel	E	72	65	66	+1	No
R24 - Studio 6 (Motel)	E	72	67	68	+1	No
R25 - Misty Hollow Apartments	B	67	61	62	+1	No
R26 - Knight's Inn (Motel)	E	72	68	70	+2	No

As indicated in **Table 3-15**, the proposed project would result in a traffic noise impact and the following noise abatement measures were considered: traffic management, alteration of horizontal and/or vertical alignments, acquisition of undeveloped property to act as a buffer zone and the construction of noise barriers.

Before any abatement measure can be proposed for incorporation into the project, it must be both feasible and reasonable. In order to be "feasible," the abatement measure must be able to reduce the noise level at greater than 50% of impacted, first row receivers by at least five dB(A); and to be "reasonable," it must not exceed the cost-effectiveness criterion of \$25,000 for each receiver that would benefit by a reduction of at least five dB(A) and the abatement measure must be able to reduce the noise level for at least one impacted, first row receiver by at least seven dB(A).

Traffic management: control devices could be used to reduce the speed of the traffic; however, the minor benefit of one dB(A) per five mph reduction in speed does not outweigh the associated increase in congestion and air pollution. Other measures such as time or use restrictions for certain vehicles are prohibited on state highways.

Alteration of horizontal and/or vertical alignments: any alteration of the existing alignment would displace existing businesses and residences, require additional right of way and not be cost effective/reasonable.

Buffer zone: the acquisition of undeveloped property to act as a buffer zone is designed to avoid rather than abate traffic noise impacts and, therefore, is not feasible.

Noise barriers: this is the most commonly used noise abatement measure. Noise barriers were evaluated (up to 16 feet high) for each of the impacted receiver locations with the following results:

R10 and R19: these receivers represent a hotel and a motel with driveways facing the roadway. A continuous noise barrier would restrict access to these properties. Gaps in a noise barrier would satisfy access requirements but the resulting non-continuous wall segments along the ROW would not be sufficient to achieve the minimum, feasible reduction of 5 dB(A) or the noise reduction design goal of 7 dB(A).

R6, R7, R11 through R17, and R21: these receivers are apartments, hotels, motels, and restaurants with outdoor seating. Noise barriers along the ROW that would achieve the minimum feasible reduction of 5 dB(A) while achieving a 7 dB(A) noise reduction design goal at each of these receivers would exceed the reasonable, cost-effectiveness criterion of \$25,000.

R20: this receiver represents a total of 32 residences within the Castillian Condominiums. Based on preliminary calculations, a noise barrier along the ROW 965 feet in length and 14 feet in height would reduce noise levels by at least 5 dB(A) for at least half of the receivers and 7 dB(A) for at least one receiver. There are approximately 30 benefited receivers at a total cost of \$252,000 or \$8,400 per benefited receiver. A noise barrier would be feasible and reasonable for this receiver and, therefore, is proposed for incorporation into the project.

Any subsequent project design changes may require a reevaluation of this preliminary noise barrier proposal. The final decision to construct the proposed noise barrier will not be made until completion of the project design, utility evaluation and polling of adjacent property owners.

To avoid noise impacts that may result from future development of properties adjacent to the project, local officials responsible for land use control programs must ensure, to the maximum extent possible, no new activities are planned or constructed along or within the following predicted (2035) noise impact contours:

<u>Land Use</u>	<u>Impact Contour</u>	<u>Distance from ROW</u>
NAC category B and C	66 dB(A)	200 feet
NAC category E	71 dB(A)	175 feet

Noise associated with the construction of the project is difficult to predict. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. However, construction normally occurs during daylight hours when occasional loud noises are more tolerable. None of the receivers is expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected. Provisions will 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.

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

SECTION 4.0 INDIRECT IMPACTS

4.1 INTRODUCTION TO PROJECT-LEVEL IMPACTS ANALYSIS

The CEQ defines indirect effects (or impacts) as those “caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.”⁶⁶ Indirect impacts differ from the direct impacts associated with the construction and operation of the proposed project and are caused by another action or actions that have an established relationship or connection to the proposed project. These induced actions are those that would not or could not occur except for the implementation of the proposed project.

The analysis of indirect impacts discussed in this document follows the March 2014 TxDOT Environmental Handbook for Indirect and Cumulative Impacts (*TxDOT Handbook for ICI*).. Indirect impacts can occur in three broad categories:

1. Encroachment-Alteration Impacts – Alteration of the behavior and functioning of the physical environment expected as a result of project design features [as explained in the introduction to **Section 3.0**, this type of indirect impact was discussed concurrently with the discussion of direct impacts throughout all subsections in **Section 3.0**];
2. Project-Induced Land Use Change – Alteration of traffic, access, and mobility that induces change in land use through new development (including redevelopment of already developed land), or accelerates the rate of new development; and,
3. Impacts Resulting from Project-Induced Land Use Change – Impacts to the human and natural environment expected when project-induced development occurs.

According to the *TxDOT Handbook for ICI*, the objective of the indirect impact analysis is to identify and analyze induced growth impacts caused by the proposed project, including project-

⁶⁶ 40 CFR Section 1508.8(b).

induced land use change and impacts resulting from project-induced land use change as mentioned above. The procedural requirements in the *TxDOT Handbook for ICI* include the following instruction regarding encroachment-alteration impacts, “Concurrently with direct impact analysis, complete the indirect encroachment impacts analysis for all resources...” As explained in the introduction to **Section 3.0** and in keeping with the TxDOT-recommended approach, all encroachment-alteration impacts have been addressed along with direct impacts in in **Section 3.0**.

The steps followed for assessing indirect impacts regarding the proposed IH 30/SH 360 interchange improvements are summarized as follows:

1. Scoping and Study Area;
2. Identify the Study Area’s Goals and Trends;
3. Inventory of the Study Area’s Notable Features ;
4. Analyze Project-Induced Growth Impacts; and
5. Assess Consequences and Develop Mitigation.

4.2 STEP 1 – SCOPING AND STUDY AREA

The first objective of Step 1 is to define the scope of the analysis by considering the types of potential indirect impacts and the possible geographic range of those impacts. This is done by considering the attributes and context of the proposed project, and leads to a general assessment of the level of impacts anticipated. In addition, the assessment considers the distance from the project construction footprint necessary for those impacts to attenuate to a negligible level (i.e., the limits of encroachment-alteration indirect impacts). This approach helps determine the level of effort and approach needed to complete the analysis, and is also vital in achieving the second objective of determining the geographic extent of the indirect impacts study area or Area of Influence (AOI).

An essential aspect of scoping the proposed project for potential indirect impacts is coordination with municipal planners who are intimately acquainted with the characteristics of the community and plans for addressing socioeconomic issues. Accordingly, to obtain input relevant to defining the AOI, as well as current planning documents, proposed development projects, and other data

relevant to the analysis of the proposed project's indirect and cumulative impacts, the City of Grand Prairie and City of Arlington planning offices were consulted.

Information from interviews, planning databases, and maps obtained from the city planners is provided in the discussion of indirect impacts in this section, and in the analysis of cumulative impacts in **Section 5.0**. Information from city planners also guided the exercise of planning judgment that necessarily extends throughout the analysis of both indirect and cumulative impacts.

4.2.1 Project Attributes and Context

IH 30 has been a major east-west transportation corridor since the late 1950s, is the only direct connection between downtown Dallas and Fort Worth, and is one of the busiest east-west highways crossing the DFW metropolitan area. SH 360 serves as a connecting freeway to IH 30. The proposed IH 30 improvements would extend from Cooper Street to SH 161, and include the construction of an interchange with SH 360. The proposed project has been planned and designed to address current and projected traffic demands and facility deficiencies. The proposed project extends through urbanized areas within the cities of Arlington and Grand Prairie and would affect approximately 471 acres, which includes approximately 13.9 acres of estimated additional ROW, 0.2 acre of drainage easements, and 0.3 acre of temporary construction easements (see **Figure 6-2**).

The project area's topography was initially characterized by prairie and savannah cover, which was then largely converted to crop and pasture use before undergoing urbanization in recent decades. The density of urban development is high throughout the project corridor, and includes retail/commercial, sports/recreation areas, residential, institutional and industrial land uses (see **Figure 10-2**, and representative site photographs in **Appendix A**).

4.2.2 Geographic Boundary of the AOI

Various methods can be implemented to determine the most accurate study area or AOI associated with potential indirect effects caused by a proposed project. According to TxDOT's guidance on analyzing indirect effects, there are four preferred methods for determining the AOI:

1. Adopting political/geographic boundaries;
2. Using the project's commuteshed;
3. Using watershed or habitat boundaries; or
4. Incorporating data from stakeholder interviews or public involvement.

The Build Alternative's AOI was established using methods three and four: watershed boundaries and stakeholder input. A group of watershed sub-basins was developed as an appropriate AOI because they encompass the entire Build Alternative and adjacent areas where development could potentially occur. Extending the AOI out farther would encompass areas unlikely to be affected by the proposed project. The Build Alternative's AOI includes portions of Arlington and Grand Prairie. The cities' planning staff agreed that the group of watershed sub-basins included within **Figure 18** would be the appropriate size for analyzing indirect effects associated with the proposed project. The AOI encompasses approximately 11,744 acres.

Temporal boundaries for the indirect effects extend from construction of the Build Alternative until 2035, which is the project's design horizon year and correlates with the current MTP's time frame.

4.3 STEP 2 – IDENTIFY STUDY AREA'S GOALS AND TRENDS

This step presents information on general demographic, economic, social and ecological trends within the AOI, in addition to goals of the community as reflected in local plans.

4.3.1 Regional and Local Plans

A variety of plans exists to promote, guide, and monitor various development activity ranging from regional transportation infrastructure to residential, commercial, or industrial activities. The cities of Arlington and Grand Prairie have long range planning documents and/or regulations providing for future development and the protection of lands from arbitrary development. Furthermore, regional planning documents, as well as more study-area centric planning studies, provide insight into the overall goals and objectives for development within the AOI. A brief description of the most influential aspects of regional and local plans in relation to the proposed project and surrounding AOI is presented below in **Table 4-1**. In summary, the proposed project

would implement a portion of regional and local transportation plans in accordance with future land use plans (FLUPs) established for the project area by the cities of Arlington and Grand Prairie.

Table 4-1. Plans and Goals of the Indirect Impacts AOI

Planning Document	Description
North Central Texas Region Plans and Overall Goals/Objectives	
<p>NCTCOG's Metropolitan Transportation Plan (MTP)</p>	<ul style="list-style-type: none"> Generated and maintained by the NCTCOG, there have been 13 MTPs in the DFW region starting in 1974. Current MTP: Approved on June 13, 2013 by the RTC of the NCTCOG, entitled <i>Mobility 2035: The Metropolitan Transportation Plan for the Dallas-Fort Worth Area, 1 2013 Update (Mobility 2035 Mobility 2035 – 2013 Update)</i>. In November 2014, the RTC approved an amendment, <i>Mobility 2035 – 2014 Amendment</i>, which builds on the previous plan. <i>Mobility 2035 – 2014 Amendment</i> received federal approval on May 29, 2015. <i>Mobility 2035 – 2013 Update and Mobility 2035 – 2014 Amendment</i> present a system of transportation improvements needed to maintain mobility in the DFW Metropolitan Area through the year 2035, and serve as a guide for the expenditure of state and federal funds for the region. Development has been coordinated among local governments, transit authorities, the North Texas Tollway Authority (NTTA), and TxDOT. The plan was formulated through a process of forecasting future travel demand, evaluating system alternatives, and selecting options, which best meet the mobility needs of the region. As stated on NCTCOG's MTP Website, the main goals of the MTP include: to improve mobility for people and goods; to support travel efficiency measures and system enhancements targeted at congestion reduction and management; to assure all communities are provided access to the regional transportation system and the planning process; to preserve and enhance the natural environment, improve air quality, and promote active lifestyles; to encourage livable communities which support sustainability and economic vitality; to ensure adequate maintenance and enhance the safety and reliability of the existing transportation system; to pursue long-term sustainable revenue sources to address regional transportation system needs; to provide for timely project planning and implementation, and to develop cost-effective projects and programs aimed at reducing the costs associated with constructing, operating, and maintaining the regional transportation system.
<p>Transportation Improvement Program (TIP)</p>	<ul style="list-style-type: none"> The NCTCOG FY 2015 - 2018 TIP for the DFW Metropolitan Area is a staged, multi-year program of projects proposed for funding by federal, state, and local sources within the DFW Metropolitan Area. The TIP is developed by the NCTCOG's RTC in cooperation with local governments, TxDOT, NTTA, and local transportation authorities. The projects included within the <i>2015-2018 TIP</i> were selected to implement improvements consistent with <i>Mobility 2035 – 2013 Update and the Mobility 2035 – 2014 Amendment</i>. Roadway improvement plans for the study area identified within the TIP may provide additional traffic-carrying capability to respond to the projected population and employment growth. According to the <i>2015 - 2018 TIP</i>, the goals include: to identify improvement projects recommended by TxDOT and the RTC; to indicate realistic current estimates of cost for funding transportation improvement programs; to demonstrate that energy, environmental, air quality, cost and mobility considerations are addressed in regional transportation planning; to implement <i>Mobility 2035 – 2013 Update and Mobility 2035 – 2014 Amendment</i>; and to meet the requirements of the CAA as outlined in the SIP for air quality. The proposed project is included within and consistent with the <i>2015-2018 TIP</i>.
City of Arlington Plans/ Zoning Regulations	

Table 4-1. Plans and Goals of the Indirect Impacts AOI

Planning Document	Description
<p>2014 Comprehensive Plan Update</p>	<ul style="list-style-type: none"> • The Comprehensive Plan is the City of Arlington’s official guide for making decisions about growth and development. The City is updating their current Comprehensive Plan, adopted in 1992. The 1992 Comprehensive Plan completed the citywide overview for long-term planning directives, and the Comprehensive Plan Update will provide the same high-level overview, including an integrated approach to all aspects of Arlington’s development. Components of the plan will include an emphasis on developing attractive neighborhoods for all residents; having environmental, economic, and social sustainability; and enhancing land use and transportation coordination. Six factors were listed as major contributors to the need for the 2014 Update. 1. Growth/Redevelopment – The City wants to manage growth while maintaining a high quality of life and retaining its unique attributes. Plan elements include strategies for preserving and redeveloping neighborhoods, addressing housing and historic preservation, and improving services such as public safety, libraries, and education. 2. Housing – The City wants to provide a variety of housing options. 3. Economic Development – The City wants to remain nationally and internationally competitive. Plan elements include strategies for a diversified economy, City focus areas, and workforce development. 4. Land Uses – The City wants to provide a mixture of compatible land uses and redevelopment opportunities. Plan elements include strategies to address these issues. 5. Transportation – The City wants to maximize mobility and connectivity. Plan elements include strategies for maximizing existing infrastructure and providing multi-modal transportation options. 6. Environment – The City wants to preserve the environment for the present and improve it for the future. Plan elements include strategies for preservation and conservation. • The Comprehensive Plan Update will be implemented through the adoption of plans and ordinances, and through their Capital Improvement Program. • The City of Arlington is divided into six individual planning sectors as based on their demographic make-up and issues. Each sector has its own individual plan. Between 1996 and 2003, the six sector plans were adopted as components of the 1992 Comprehensive Plan. Four goals concerning IH 30 were identified within the North and Central Planning Sectors. <ol style="list-style-type: none"> 1. Improve traffic circulation and provide better access to Dallas and Fort Worth; 2. Decrease traffic congestion particularly at the interchanges of IH 30 at SH 360 and at IH 30 at Collins Street; 3. Provide direct access between IH 30 and SH 360; and 4. Redesign the interchange at IH 30 at Collins Street to provide direct access from IH 30 to Center Street.
<p>Thoroughfare Development Plan (2011)</p>	<ul style="list-style-type: none"> • The Thoroughfare Development Plan (TDP) is a long-range plan that identifies the location and type of roadway facilities that are needed to meet projected long-term growth within the City of Arlington. The TDP serves as a tool to enable the city to preserve future corridors for transportation system development as the need arises. It also forms the basis for Arlington’s roadway Capital Improvement Program, roadway impact fees, and developer requirements. • The TDP includes detailed information related to roadway classification, ROW requirements, design criteria, and number of through travel lanes for each thoroughfare within the city. According to the Thoroughfare Plan Map, there are 10 major arterials, five minor arterials, 14 major collectors, and six minor collectors in the AOI. Of these 35 roadways, five major arterials, two major collectors, and one minor collector are planned for added capacity by 2030. Three of these roadways cross IH 30.
<p>Zoning Map (2014) and Land Use Map (2014)</p>	<ul style="list-style-type: none"> • According to the Zoning Map, the majority of land within the portion of the AOI that resides in the City of Arlington is zoned Single Family, minimum 7,200-square foot lots (RS-7.2), followed by Industrial Manufacturing (IM), Community Commercial (CC), Planned Development (PD), Residential Multi-Family, 22 units/acre (RMF-22), General Commercial (GC), Office Commercial (OC), Neighborhood Commercial (NC), and Residential Estate, minimum one-acre lots (RE). Appendix A contains the Zoning Map. • The Land Use Map shows the present use of a property as opposed to the Zoning Map, which shows the administrative designation given to a parcel of land that defines the uses allowable on that particular piece of property. According to the Land Use Map, the largest land use within the portion of the AOI that resides in the City of Arlington is for single family residences, followed by entertainment/recreational facilities, multi-family housing, commercial/retail facilities, manufacturing/warehouse/industrial facilities, institutional facilities, park/open spaces, vacant/developable land, as well as transportation, utilities, and communication facilities.
<p>City of Grand Prairie Plans/ Zoning Regulations</p>	

Table 4-1. Plans and Goals of the Indirect Impacts AOI

Planning Document	Description
Comprehensive Plan and Future Land Use Plan (FLUP)	<ul style="list-style-type: none"> • Comprehensive Plan: The City of Grand Prairie’s 2010 Comprehensive Plan was adopted by the Grand Prairie City Council on November 16, 2010 (Ordinance #9125-2010). While the plan is being updated, it currently covers a time period from 2000 through the year 2030 and aims to accommodate a build-out population in excess of 230,000 persons. Goals of the 2010 Comprehensive Plan include maintaining and upgrading the City’s transportation infrastructure as well as promoting and enhancing economic development strengths, like the entertainment venues. Per the Comprehensive Plan and conversations with the City of Grand Prairie Planning and Development Department, the City has planned and accounted for the proposed project. • As a component of the Comprehensive Plan, the City of Grand Prairie FLUP identifies the majority of land within the portion of the AOI that resides in the City of Grand Prairie as light industrial and followed by low density residential, heavy industrial, open space/drainage, parks/recreation, high density residential, commercial/retail/office, and mixed use. As shown on the Future Land Use Map, the IH 30/SH 360 interchange is surrounded by light industrial and heavy industrial land use classifications.
City of Grand Prairie Zoning Regulations	<ul style="list-style-type: none"> • Zoning rules, along with FLUPs, form a key component to city management of urban land use. By enacting city ordinances that establish special purpose districts, the City of Grand Prairie created numerous zoning districts with designated use authorizations and restrictions. • According to the City of Grand Prairie’s online interactive map (http://gis.gptx.org/maps/), the majority of land within the portion of the AOI that resides in the City of Grand Prairie is zoned Single Family-One Residential District (SF-1), followed by Light Industrial District (LI), Planned Development District (PD), Multi Family One Residential District (MF-1), General Retail District (GR), Commercial Office District (CO), Commercial District (C), and Two Family Residential District (2F).
<p>Notes: 1. <i>Mobility 2035 – 2013 Update</i> and the 2015 – 2018 TIP, were determined on July 19, 2013 and December 2, 2014, respectively, to meet all the requirements for a joint conformity determination under the CAAA of 1990.</p>	

4.3.2 Regional and Local Trends and Forecasts

Population and Employment Trends and Forecasts

As shown in **Table 4-2**, the 12-County MPA, Dallas and Tarrant counties, and the five market areas located in the AOI are expected to experience population and employment growth through the year 2040.

Table 4-2. Population/Employment Trends and Forecasts

Year	2005	2035	2040	Percent Increase between 2005 and 2040
AOI: Market Area 9				
Population	100,100	124,985	129,127	29.0%
Employment	47,451	75,878	80,022	68.6%
AOI: Market Area 30				
Population	68,220	95,033	98,960	45.1%
Employment	34,581	60,435	64,723	87.2%
AOI: Market Area 53				
Population	117,968	139,008	142,870	21.1%
Employment	87,926	132,963	139,269	58.4%
AOI: Market Area 60				
Population	75,293	108,136	112,718	49.7%
Employment	36,860	68,648	72,769	97.4%
AOI: Market Area 61				
Population	86,765	135,331	144,746	66.8%
Employment	71,676	100,934	105,161	46.7%
Dallas County				
Population	2,273,250	3,125,282	3,265,190	43.6%
Employment	1,895,059	2,854,287	2,988,916	57.7%
Tarrant County				
Population	1,594,450	2,823,535	3,045,531	91.0%
Employment	944,583	1,644,463	1,766,177	87.0%
12-County MPA				
Population	5,777,272	9,833,378	10,543,336	82.5%
Employment	3,624,051	6,177,016	6,606,515	82.3%
Source: NCTCOG 2040 Demographic Forecast (accessed August 2014).				

Employment and Economy

The steady to improving economy within the AOI and the cities of Arlington and Grand Prairie can be attributed in part to their close proximity to IH 30 and SH 360, which serve as primary travel corridors for the area. **Table 4-3** provides economic and employment data from the U.S. Census Bureau for the years 2002 and 2011. Substantial job growth has occurred between 2002 and 2011 in the AOI and in the cities spanning the AOI. The increase in total jobs ranged from 2.9 percent in the AOI to 13.8 percent in Grand Prairie. Jobs with earnings over \$3,333 per month increased in the AOI, City of Arlington, and City of Grand Prairie by 31.9 percent, 33.8 percent, and 42.2 percent, respectively. In the AOI, manufacturing made up the majority of jobs in 2002, but by 2011, manufacturing was replaced by health care and social assistance. Administration and support, waste management and remediation was the number two job by NAICS Sector in 2011, followed by manufacturing. In Arlington, educational services made up the majority of jobs in 2002 and 2011, followed by health care, social assistance and accommodation and food services. In Grand Prairie, manufacturing made up the majority of

jobs in 2002 and 2011. Wholesale trade was the number two job by NAICS Sector in 2011 followed by retail trade.

Table 4-3. Economic and Employment Data

Geographic Area	2002		2011		Percent Change
	Number/ Industry Sector	Percent	Number/ Industry Sector	Percent	
AOI					
Total Jobs	58,459	-	60,219	-	+2.9%
Jobs by Earnings - \$1,250/month or less	17,796	30.4%	15,282	25.4%	-16.5%
Jobs by Earnings - \$1,251 to \$3,333/month	24,540	42.0%	21,264	35.3%	-15.4%
Jobs by Earnings - \$3,333/month or more	16,123	27.6%	23,673	39.3%	+31.9%
#1 Job by NAICS ¹ Industry Sector	Manufacturing	12.0%	Health Care and Social Assistance	13.2%	-
#2 Job by NAICS Industry Sector	Administration and Support, Waste Management and Remediation	11.1%	Administration and Support, Waste Management and Remediation	11.9%	-
#3 Job by NAICS Industry Sector	Retail Trade	10.2%	Manufacturing	10.9%	-
Arlington					
Total Jobs	134,319	-	145,522	-	+8.3%
Jobs by Earnings - \$1,250/month or less	46,583	34.7%	42,116	28.9%	-10.6%
Jobs by Earnings - \$1,251 to \$3,333/month	53,972	40.2%	52,438	36.0%	-2.9%
Jobs by Earnings - \$3,333/month or more	33,764	25.1%	50,968	35.0%	+33.8%
#1 Job by NAICS ¹ Industry Sector	Educational Services	11.9%	Educational Services	13.7%	-
#2 Job by NAICS Industry Sector	Health Care and Social Assistance	10.0%	Health Care and Social Assistance	13.0%	-
#3 Job by NAICS Industry Sector	Accommodation and Food Services	9.7%	Accommodation and Food Services	9.1%	-
Grand Prairie					
Total Jobs	51,680	-	59,922	-	+13.8%
Jobs by Earnings - \$1,250/month or less	12,768	24.7%	11,736	19.6%	-8.8%
Jobs by Earnings - \$1,251 to \$3,333/month	24,322	47.1%	22,930	38.3%	-6.1%
Jobs by Earnings - \$3,333/month or more	14,590	28.2%	25,256	42.1%	+42.2%
#1 Job by NAICS Industry Sector	Manufacturing	22.4%	Manufacturing	22.6%	-
#2 Job by NAICS Industry Sector	Retail Trade	12.3%	Wholesale Trade	11.5%	-
#3 Job by NAICS Industry Sector	Wholesale Trade	12.1%	Retail Trade	10.4%	-
¹ NAICS - North American Industry Classification System Source: U.S. Census Bureau, Center for Economic Studies, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2 nd Quarter of 2002-2011), http://onthemap.ces.census.gov/ .					

The Arlington Entertainment District resides within the AOI and is roughly bounded by IH 30 (Tom Landry Freeway) on the north, SH 360 (Angus G. Wynn Jr. Freeway) on the east, East Division Street (SH 180) on the south, and North Collins Street (FM 157) on the west. The Entertainment District contains Six Flags Over Texas, Six Flags Hurricane Harbor, Texas

Rangers Ballpark, Legends of the Game Museum, Dallas Cowboys AT&T Stadium, Lincoln Square Mall, and the Arlington Convention Center. Texas Health Arlington Memorial Hospital is located within the AOI. This facility has more than 550 physicians on the medical staff and 1,900 employees. A portion of the AOI contains the Great Southwest Industrial District, which is composed of 1,888 acres of industrial buildings and warehouses with 1,600 tenants on 7,000 acres of land in Grand Prairie and Arlington near the intersection of IH 30 and SH 360. The University of Texas at Arlington is just south of the AOI and is one of the largest employers in North Texas, with more than 5,000 employees and over 38,000 students.

School Enrollment

The Texas Education Agency (TEA) guides and monitors activities and programs related to public education in Texas. According to the TEA's School District Locator Enrollment Data, the 2013-2014 enrollments totaled 11,743 students compared to the 2009-2010 enrollment of 10,589 students within the AOI. This represents a growth rate of 10.9 percent over a period of five years.

Housing Units

According to Census 2000 and Census 2010 data, the number of housing units within the two municipalities in the AOI has increased. The City of Arlington increased from 130,628 housing units in 2000 to 144,805 in 2010 and the City of Grand Prairie increased from 46,425 housing units in 2000 to 62,424 in 2010. Combined, the number of household units increased from 177,053 housing units to 207,229 units, an increase of approximately 17 percent over the 10 year period.

4.4 STEP 3 – NOTABLE FEATURES

The third step in the indirect impacts assessment framework involves conducting an inventory of notable features within the AOI. Notable features include sensitive habitats and species, environmental components of value to the community, relatively unique or sensitive landscape features, and vulnerable elements of the population. Identifying notable features is important in assessing whether potential indirect impacts are substantial because such features may be more vulnerable or highly valued. The absence of mentioning a notable feature within the AOI does not indicate an absence of indirect impacts, but may be taken as an indication that there is less potential for the impacts to be substantial.

4.4.1 Sensitive Species and Habitats

Sensitive species and habitats are defined as ecologically valuable species and habitats, and/or those that are vulnerable to impacts. There are approximately 35.4 miles of streams, 217 acres of wetlands, and 65 acres of ponds in the AOI including Johnson Creek and the West Fork Trinity River. These notable features are shown on **Figure 18**.

Aerial photography of the AOI from October 2013 indicates that the primary vegetation in non-urbanized areas within the AOI is herbaceous vegetation and floodplain forest associated with the West Fork Trinity River. Healthy riparian areas are also found adjacent to portions of Johnson Creek and tributaries to Johnson Creek. According to aerial photography and TPWD's EMST mapping of vegetation data, existing, potential wildlife habitat includes approximately 613 acres of Crosstimbers Woodland and Forest; 211 acres of Disturbed Prairie; 591 acres of Floodplain; and 127 acres of Riparian MOU Habitat-type vegetation within the AOI. The previously discussed water features within the AOI also serve as habitat for aquatic species.

Based on the vegetation and water features found within the AOI, state and federally listed threatened and endangered species, and SGCNs have potential to occur where preferred habitat of sufficient quantity and quality may be found within the AOI. These species may include interior least tern (*Sterna antillarum athalassos*), western burrowing owl (*Athene cunicularia hypugaea*), plains spotted skunk, fawnsfoot, little spectaclecase, Louisiana pigtoe, Texas heelsplitter, Texas pigtoe, alligator snapping turtle (*Macrochelys temminckii*), Texas garter snake, Texas horned lizard (*Phrynosoma cornutum*), and timber rattlesnake. Migratory birds (wintering, breeding, and/or year-round) that could be found within the AOI include Bell's vireo (*Vireo bellii*), chestnut-collared longspur (*Calcarius ornatus*), dickcissel (*Spiza americana*), fox sparrow (*Passerella iliaca*), Harris's sparrow (*Zonotrichia querula*), Hudsonian godwit (*Limosa haemastica*), lark bunting (*Calamospiza melanocorys*), Le Conte's sparrow (*Ammodramus leconteii*), least bittern (*Ixobrychus exilis*), little blue heron (*Egretta caerulea*), loggerhead shrike (*Lanius ludovicianus*), McCown's longspur (*Calcarius mccownii*), Mississippi kite (*Ictinia mississippiensis*), orchard oriole (*Icterus spurius*), painted bunting (*Passerina ciris*), Prothonotary warbler (*Protonotaria citrea*), red-headed woodpecker (*Melanerpes*

erythrocephalus), rusty blackbird (*Euphagus carolinus*), scissor-tailed flycatcher (*Tyrannus forficatus*), and short-eared owl (*Asio flammeus*).⁶⁷

4.4.2 Valued Environmental Components

Valued environmental components are those characteristics or attributes of the environment that society seeks to use, protect, or enhance such as parks and recreation areas.

Arlington community facilities within the AOI include the Clarence Thompson Park, Crystal Canyon Natural Area, Ditto Golf Course, Dixon W. Holman Park, Dr. Robert Cluck Linear Park, George Stevens Park, Gibbins Park, Johnson Creek Linear Park, Parkway Central Park, Richard Greene Linear Park, River Legacy Parks and River Legacy Parks – East.

Grand Prairie community facilities present within the AOI include C.P. Waggoner Park and Good Link Trail Park. These notable features are shown on **Figure 18**.

4.4.3 Relatively Unique or Sensitive Landscape Features

Historic resources are present within the AOI and shown on **Figure 18**, including: the P.A. Watson Cemetery, the Carousel Historical Marker, the Cable Tool Rig Historical Marker, the Six Flags Over Texas Historical Marker, and the Narrow Gauge Railway Historical Marker. In addition, the former Vought Electronics building, located at 2905 East Avenue E in Arlington (see **Section 3.2.1**), has recently been identified as a historic resource and is considered a notable feature.

4.4.4 Vulnerable Elements of the Population

Vulnerable elements of the population include the elderly, children, persons with disabilities, minority groups, and low-income persons. Vulnerable elements of the population exist in the AOI. Based on the data presented in community impacts technical report, EJ and LEP populations are present within the study area, and are therefore present in the AOI. Facilities

⁶⁷ USFWS Information, Planning, and Conservation System [IPaC] (accessed May 14, 2015).
<https://ecos.fws.gov/ipac/>.

within the AOI that are utilized by vulnerable elements of the population include schools, daycares, assisted living centers, community centers, a hospital, and a public library. These notable features are shown on **Figure 18**.

4.5 STEP 4 – ANALYZE PROJECT-INDUCED GROWTH IMPACTS

The objective of this step is to screen potential induced growth impacts for those impacts considered substantial, and evaluate the extent of those impacts. The discussion that follows examines the potential for project-induced growth, which results in project-induced land use change and the impacts resulting from that land use change.

4.5.1 Potential for Project-Induced Growth

City of Arlington planning officials did not identify any project-related induced developments within the AOI, nor did they identify any project-related indirect effects. City officials identified current and planned development/redevelopment within the AOI, but emphasized that the development/redevelopment would occur regardless of the proposed project.

City of Grand Prairie planning officials did not identify any project-related induced development within the AOI, nor did they identify any project-related indirect effects. They noted that due to the proposed project's location (only a small portion within the city limits/on the outskirts of the city away from the main business area) they do not foresee the proposed project having a major impact on the city. City officials did not identify any planned development within the AOI, but did note the proposed redevelopment of the Great Southwest Golf Club to industrial development. Again, city planners emphasized that this redevelopment would occur regardless of the proposed project. In closing, City of Grand Prairie planning officials noted that the extension of Great Southwest Parkway (between Avenue K and Fountain Parkway) would have more influence on redevelopment in the city than the proposed project.

Changes in access to properties may often be the cause of induced land development where existing access connections to road networks are inadequate. However, as discussed in **Section 3.1.3**, the proposed project would not make any substantial changes in roadway access to any of the properties adjacent to IH 30 or SH 360. While the proposed project is expected to improve mobility in the project area, access to properties would not be affected.

As discussed in **Section 3.1.4**, improved mobility in the IH 30 and SH 360 corridors would be enhanced by the proposed project and this may be expected to facilitate the flow of traffic to and from major venues in the Arlington Entertainment District. Although it is expected that some economic benefit may derive from enhanced mobility (i.e., salutary effect of encouraging visitors to undertake traveling to an entertainment venue), such benefit is not expected to be of such a magnitude as to cause any new land development or redevelopment of existing facilities.

Current and future residential, commercial/retail, industrial, and transportation-related development/redevelopment is planned in both cities, but according to the city planners, development of this land is not related to the proposed project. Nor is there currently any future development planned as a result of the proposed roadway improvements. Overall, planning staffs of the cities of Arlington and Grand Prairie did not indicate any expectation that there would be induced growth effects resulting from the proposed project.

4.5.2 Effects Related to Induced Growth

Typically, the discussion of impacts related to induced growth includes quantifiable data associated with impacts to the physical environment from induced development and land use changes. However, no induced growth is attributable to the proposed project; therefore, no indirect impacts from impacts related to induced growth are anticipated.

4.6 STEP 5 – ASSESS CONSEQUENCES AND DEVELOP MITIGATION

This step of the indirect impacts analysis assesses the consequences of the expected indirect impacts and considers/develops strategies to address unacceptable indirect impacts.

It is not anticipated that the proposed project would have adverse indirect effects on the AOI. No project-induced land use changes would occur because of the proposed project; therefore, no effects from land use changes would occur. Accordingly, there would be no need for mitigation to address unexpected project-induced indirect impacts.

SECTION 5.0 CUMULATIVE IMPACTS

5.1 INTRODUCTION AND METHODOLOGY

The CEQ defines cumulative impacts as those which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.⁶⁸ Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. As such, it may be difficult to understand the role that a proposed action may have in contributing to the overall or cumulative impacts to an area or resource. Cumulative impacts tend to be less defined than indirect impacts and are therefore more difficult to quantify.

In accordance with TxDOT's *Cumulative Impacts Analysis Guidelines* (March 2014), this analysis includes the five steps, listed below, to adequately consider the cumulative effects of the proposed project.

1. Resource Study Area (RSA), Conditions, and Trends
2. Direct and Indirect Effects on each Resource from the Proposed Project
3. Other Actions and their Effect on each Resource
4. The Overall Effects of the Proposed Project Combined with other Actions
5. Mitigation of Cumulative Effects

5.2 STEP 1: RESOURCE STUDY AREAS, CONDITIONS, AND TRENDS

5.2.1 Selection of Environmental Resources for Analysis

The proposed project's cumulative impacts were narrowed down by carrying forward the direct and indirect impacts that may contribute to a cumulative impact. The cumulative impacts analysis focuses on resources substantially impacted by the proposed project and resources in poor or declining health or at risk that are directly or indirectly impacted by the proposed project.

⁶⁸ 40 CFR Section 1508.7.

The resources, which were evaluated for direct and indirect impacts, are listed in **Table 5-1**. The table summarizes the direct and indirect impacts anticipated for each resource and identifies whether or not the resource is carried forward for cumulative impacts analysis. As shown in the table, the following resources are candidates for cumulative impacts analysis: vegetation and wildlife habitat, waters of the U.S., including wetlands, and air quality. These resources were analyzed to identify adverse effects from cumulative impacts

Table 5-1. Resources/Issues Considered for Cumulative Impacts Analysis

Subject Considered for Direct and Indirect Impacts	TxDOT/CEQ Criteria ¹		Included for Cumulative Impacts Analysis?	Explanation for Including or Excluding the Subject from Cumulative Impacts Analysis ³
	Would Proposed Project Result in Substantial Adverse Impacts? ²	Is Subject a Scarce Resource or in Poor or Declining Health? ²		
Community Impacts (see Section 3.1)				
ROW Acquisition, Displacements, and Relocations (see Section 3.1.1)	---	---	No	Excluded because this topic does not involve a resource. In addition, although several commercial displacements would be displaced, no general adverse direct or indirect effects are anticipated for the surrounding community as a result of those displacements.
Land Use (see Section 3.1.2)	---	---	No	Excluded because project-related land use changes (i.e., ROW and easement acquisition) would be consistent with land use plans and, therefore, would not be an adverse impact.
Transportation and Access (see Section 3.1.3)	No	No	No	Excluded because the proposed project would improve mobility and would have no adverse impacts on existing access.
Economic Effects (see Section 3.1.4)	No	No	No	Excluded because the proposed project would not cause any substantial adverse economic benefits to the community.
Bicycle and Pedestrian Accommodations (see Section 3.1.5)	No	No	No	Excluded because the proposed project would expand and improve existing bicycle and pedestrian accommodations.
Environmental Justice Aspects (see Sections 3.1.6 and 3.1.7)	No	Yes	No	Excluded because no disproportionately high or adverse impacts on minority or low-income populations are anticipated as a result of the proposed project.
Limited English Proficiency (see Section 3.1.8)	---	---	No	Excluded because this topic does not involve a resource and because adequate steps are planned to assist any LEP populations within the project area.
Community Cohesion (see Section 3.1.9)	No	No	No	Excluded because the proposed project would not affect, separate, or isolate any distinct neighborhoods, ethnic groups, or other specific groups within the project area.
Public Facilities / Services / Utilities (see Sec. 3.1.10)	No	No	No	Excluded because the proposed project would not displace any public facilities/services, and improved mobility would provide a benefit.
Visual Impacts (see Sec. 3.1.11)	No	No	No	Excluded because the proposed project would be expected to have a positive visual impact within established transportation corridors with aging infrastructure.
CULTURAL RESOURCES (see Section 3.2)				
Historic-Age Properties (see Section 3.2.1)	No	No	No	Excluded because the proposed project is not expected to adversely affect historic resources.
Archeological Resources (see Section 3.2.2)	No	No	No	Excluded because the proposed project is not expected to adversely affect any archeological resources or cemeteries.

Table 5-1. Resources/Issues Considered for Cumulative Impacts Analysis

Subject Considered for Direct and Indirect Impacts	TxDOT/CEQ Criteria ¹		Included for Cumulative Impacts Analysis?	Explanation for Including or Excluding the Subject from Cumulative Impacts Analysis ³
	Would Proposed Project Result in Substantial Adverse Impacts? ²	Is Subject a Scarce Resource or in Poor or Declining Health? ²		
SECTION 4(F) AND SECTION 6(F) RESOURCES (see Section 3.3)				
Section 4(f)/6(f) Resources (see Section 3.3)	No	No	No	Excluded because no adverse impacts are anticipated to local parks and recreation areas that meet Section 4(f) criteria, and <i>de minimis</i> impacts are expected to one historic-age resource.
WATER RESOURCES AND WATER QUALITY (see Section 3.4)				
Waters of the U.S., including Wetlands (see Section 3.4.1)	Yes	Yes	Yes	Included because there would be permanent impacts to 0.06 acre of stream channel, and other minor stream impacts from bridge piers.
Water Quality (see Section 3.4.5)	No	No	No	Excluded because no permanent water quality impacts are expected from the proposed project, and required permits to control erosion during construction are expected to result in minimal temporary degradation of water quality.
Floodplains (see Section 3.4.8)	No	No	No	Excluded because the proposed project would not increase the base flood elevation that would violate applicable floodplain regulations.
VEGETATION/WILDLIFE HABITAT/ SOILS (see Section 3.5)				
Vegetation and Wildlife Habitat (see Section 3.5.1)	No	Yes	Yes	Included because the construction of the proposed project is expected to affect approximately 10 acres of vegetation (9.5 acres of riparian forest and 0.6 acre of upland forest).
PROTECTED SPECIES AND UNPROTECTED SPECIES OF CONCERN (see Section 3.6)				
Threatened/ Endangered Species (see Section 3.6.1)	No	Yes	No	Excluded because no adverse impacts are anticipated for federal or state listed species. Also, high value habitat for wildlife species is already included for cumulative analysis (i.e., vegetation and wildlife habitat).
FARMLAND PROTECTION POLICY ACT (see Section 3.7)				
Farmland Protection Policy Act (see Sec. 3.7)	No	No	No	Excluded because the proposed project is exempt from coordination pursuant to the FPPA because all new ROW and easements would be in areas zoned for commercial use.
AIR QUALITY (see Section 3.8)				
Air Quality (see Sections 3.8.1 to 3.8.5)	No	Yes	Yes	Included because of prevailing ozone non-attainment conditions and added capacity of the proposed project could contribute to ozone precursors.
HAZARDOUS MATERIALS (see Section 3.9)				
Hazardous Waste or Materials Sites (see Section 3.9)	---	---	No	Excluded because the proposed project would not generate hazardous waste. Instead, consideration of this topic is for the purpose of identifying existing sources of potential contamination.
TRAFFIC NOISE (see Section 3.10)				
Traffic Noise (see Section 3.10)	---	---	No	Excluded because although there are traffic noise impacts, any impacts would be mitigated by the planned construction of proposed noise barriers in accordance with FHWA and TxDOT policies.

Table 5-1. Resources/Issues Considered for Cumulative Impacts Analysis

Subject Considered for Direct and Indirect Impacts	TxDOT/CEQ Criteria ¹		Included for Cumulative Impacts Analysis?	Explanation for Including or Excluding the Subject from Cumulative Impacts Analysis ³
	Would Proposed Project Result in Substantial Adverse Impacts? ²	Is Subject a Scarce Resource or in Poor or Declining Health? ²		
Notes:				
1. In accordance with TxDOT and CEQ selection criteria for limiting the scope of cumulative impacts analyses.				
2. “---” Represents an environmental “issue” but not a resource (i.e., natural resource, ecosystem, or human community), and generally does not lend itself to an evaluation of resource condition and context (i.e., amount of similar resources within a defined resource study area).				
3. For each resource/issue considered, the Section 3.0 subsection number is provided in row headings for the discussion of direct impacts and encroachment-alteration indirect impacts. Indirect impacts that could result from project-induced growth for each resource/issue were also considered (see Section 4.0).				

5.2.2 Resource Study Areas

Cumulative impacts analysis requires an evaluation of the sustainability of each resource of interest as viewed from the perspective of a geographic context that is larger than the project area. This spatial frame of reference for evaluating the cumulative impacts of each of the three resource categories in **Table 5-2** is RSA. The RSAs for the resources evaluated for cumulative impacts were established using the criteria in CEQ/TxDOT guidance cited above. Each RSA represents a geographic area of sufficient size to sustain the long-term vitality of a given resource, and defining the RSA is largely a function of the nature of each resource as defined on a case-by-case basis after considering the unique aspects of a particular proposed project.⁶⁹ The cumulative impacts analysis considered a larger frame of reference (i.e., RSA) for each of the three resources to allow the expected impacts of the proposed project to be viewed within a larger context for each resource. As the geographic area of each RSA varies from resource to resource, a summary of the affected resources and corresponding RSAs is in **Table 5-2** and maps showing geographic limits of the RSAs are in **Figures 19** and **20**.

⁶⁹ CEQ (January 1997), *Considering Cumulative Effects under the National Environmental Policy Act*, page 15.

Table 5-2. Resource Study Areas for Affected Resources

Affected Resource	Resource Study Area	RSA Temporal Boundary
Waters of the U.S., including Wetlands	Sub-basins for Johnson Creek and the West Fork Trinity River (Figure 19)	1950 - 2035
Vegetation and Wildlife Habitat	Sub-basins for Johnson Creek and the West Fork Trinity River (Figure 19)	1950 - 2035
Air Quality	Ozone - Ten-county Ozone Non-attainment Area for the Dallas-Fort Worth MPA; for completeness, CO and MSAT are included in the overall analysis of air quality (Figure 20)	1990 - 2035

The rationale for designating the RSA for each resource analyzed for cumulative impacts is discussed below. As cumulative impacts analysis guidelines also require the setting of general temporal boundaries to better define the time period considered, a brief statement regarding the cumulative impacts temporal frame of reference is also included in the discussion of each resource below.

Waters of the U.S., including Wetlands

Due to laws and regulations concerning waters of the U.S., agricultural practices and residential/commercial development usually avoid streams and can leave portions of natural habitat in place. For this reason, quality wildlife habitat and vegetation are usually found within stream systems, adjacent to intermittent and perennial streams. The proposed project is located within sub-basins of Johnson Creek and the West Fork Trinity River. The geographical RSA for waters of the U.S. used in this analysis consists of these sub-basins because they support the waters, vegetation, and wildlife habitat most likely to be affected by the proposed project. Extending the RSA beyond these sub-basins would include areas outside the influence of the proposed project. The RSA totals approximately 11,744 acres. The cumulative impacts RSA for waters of the U.S., vegetation, and wildlife habitat is the same as the indirect effects AOI.

For waters of the U.S., including wetlands, the year 1950 was used as the beginning temporal boundary as it corresponds to the time preceding construction of IH 30. The ending temporal boundary was established as 2035, in correspondence with the project design year and other local and regional (e.g., MTP and TIP) planning documents.

Vegetation and Wildlife Habitat

The RSA evaluated for vegetation and wildlife habitat is identical to that for waters of the U.S., including wetlands previously discussed. As previously stated, the size of the RSA is approximately 11,744 acres and is a naturally bounded basin with interconnected hydrologic features. This area includes portions of Johnson Creek and West Fork Trinity River sub-basins, and was considered sufficient to capture the cumulative effects of the proposed project on vegetation and wildlife habitat because these sub-basins contain the streams and associated vegetative habitat that wildlife depends on for food, water, and shelter. Acreages of vegetation types in the RSA were determined from aerial photographs and TPWD's EMST vegetation data.

Again, the years 1950 to 2035 were established as the temporal boundaries for analyzing cumulative impacts to water resources. The former year was chosen because it predates construction of IH 30 in the 1950s. The latter year was chosen again in correspondence the project design year and other local and regional (e.g., MTP 2035 - 2013 Update) planning documents.

Air Quality

The RSA for evaluating the ozone NAAQS includes the ten-county moderate eight-hour ozone nonattainment area established by the EPA for the DFW Metropolitan Area, which includes the following counties: Collin, Dallas, Denton, Tarrant, Ellis, Johnson, Kaufman, Parker, Rockwall and Wise. As discussion of CO and MSAT is part of the overall consideration of air quality, the air quality RSA was expanded to include the 12-county Affected Transportation Network used in the MSAT analysis.

The temporal boundaries for analyzing air quality cumulative impacts are the years 1990 to 2035. This date was established because the CAAA of 1990, authorized EPA to designate areas in non-attainment for failing to meet established NAAQS. The year 2035 was chosen as the future temporal limit in order to capture the primary impacts that would be realized by the proposed project and estimated changes in roadway traffic volumes, as well as the expected implementation of local land use plans and the MTP (*Mobility 2035 – 2014 Amendment*).

5.2.3 Resource Condition and Trends

The conditions and trends of affected resources reflect the combined effects of past and present (i.e., recently completed) actions on those resources. Field observations and review of aerial photography were used to identify past and present actions. Since 1990, development within the RSA has followed a continuing trend with sporting/recreational and industrial development hugging the IH 30/SH 360 interchange; commercial/retail development abutting the two major roadways; and residential development being further removed from these heavily traveled roadways. Over the past ten years, the quality and quantity of sporting/recreational venues has increased, encouraging and promoting the construction of infill development including restaurants, hotels, shopping establishments, and parking facilities. This trend continues today as shopping, dining, and hospitality establishments continue to move into the area. Additionally, efforts to revitalize the Great Southwest Industrial Park have been made in recent years. Current and future efforts are planned to continue this revitalization with park expansion, new development, and redevelopment.

Waters of the U.S., including Wetlands.

Historically, agricultural activities were the primary activities conducted within the RSA. Generally, these activities did not require the substantial filling or alteration of waters of the U.S. Due to the emerging transportation, residential, industrial, and entertainment setting within the RSA, impacts from stream channelization, construction of bridges and culverts, and other actions to fill or alter waters of the U.S. have continued to occur within the RSA. With some exceptions discussed below, the overall current condition of the waters of the U.S. within the RSA is considered to be in decline due to past and ongoing urbanization in the RSA.

The approximately 11,744-acre Johnson Creek and the West Fork Trinity River sub-basins RSA was considered sufficient to capture the cumulative impacts of the Build Alternative on waters of the U.S., including wetlands because the water within the proposed project area is included in these sub-basins. Stream lengths in the RSA were measured using aerial photographs, FEMA GIS shapefiles, and topographic maps, and the acreage of wetlands was determined using GIS data available from the USFWS Wetlands Mapper. The linear mile is the measurement unit used for determining stream impacts and acres is the measurement unit used for determining wetland impacts. Additionally, ponds/lakes were identified within the RSA using GIS data provided by the USFWS. The measurement unit for determining impacts to ponds is acres.

Waters within the RSA include approximately 35.4 miles of streams, 217 acres of wetlands, and 65 acres of ponds/lakes. Common rural and urban wildlife use the riparian areas adjacent to streams and wetlands within the RSA. The streams and accompanying wildlife habitat surrounding IH 30 are connected to other stream systems located to the northwest and northeast of the roadway, creating wildlife corridors that can be used by aerial, aquatic, and terrestrial animals. Development within the RSA could fragment existing creeks into small, distinct segments surrounded by manmade structures instead of the existing continuous corridors, effectively removing travel corridors for any wildlife.

In the northern portion of the RSA, the West Fork Trinity River and an associated tributary run through the River Legacy Parks in Arlington. The West Fork Trinity River within the RSA is also surrounded by a vast 100-year floodplain, in which development restrictions exist. In the south-central portion of the RSA Johnson Creek and various tributaries to Johnson Creek flow through three parks: Richard Greene Linear Park, Johnson Creek Linear Park, and Dr. Robert Cluck Linear Park. A segment of Johnson Creek runs through the Great Southwest Golf Course and a segment of a tributary to West Fork Trinity Rivers runs through the Ditto Golf Course. Additional parks through which tributaries to the West Fork Trinity River and Johnson Creek run include Gibbins Park, Parkway Central Park, the Crystal Canyon Natural Area, and C.P. Waggoner Park. Due to the creek's locations within various parks and floodplain, development along these portions of the creeks is very limited and they are therefore protected from the fill and degradation activities associated with urban development.

Vegetation and Wildlife Habitat

The RSA is located in the Johnson Creek and the West Fork Trinity River drainage sub-basins of the Trinity River watershed and is within the Cross Timbers ecoregion. This natural region historically consisted of oak-dominated forests intermixed with sections of tall-grass prairie in open areas. Historically disturbed by fire and drought, the majority of natural herbaceous vegetation within this ecoregion was replaced in the course of historical patterns of agricultural land use (i.e., cropland and livestock grazing). Based on aerial photography, development started moving into the area in the late 1950s and early 1960s, but was primarily concentrated south of IH 30, with a small amount of development on the northeast corner of the IH 30/SH 360 intersection. SH 360 was introduced to the area in the early 1960s, improving connectivity and opening up the area for further development. The expanding transportation network in the area

reduced the available habitat along the riparian corridors and reduced the ability of streams and wetlands to filter runoff and retain water. This allowed for increased erosion and degradation of the water features.

Some areas, such as the West Fork Trinity River floodplain, have remained relatively unchanged over the years and continue to provide habitat for wildlife and ecological benefits from water features. This expansive wooded corridor not only provides protection to the West Fork Trinity River from disturbance associated with development, but also serves as a sanctuary for wildlife and plant species. Beyond the wooded corridor are undeveloped areas comprised of maintained herbaceous vegetation. Overall, the floodplain corridor provides a protected environment for native and sensitive wildlife and plant species to live and grow with minimal disturbance.

Other areas, such as those surrounding the southern reaches of Johnson Creek within the RSA, have been developed or fragmented to such an extent that little habitat exists for wildlife and overall quality and connectivity of riparian corridors has declined. Streams and wetlands have been altered and do not provide the same ecological benefits they once provided. As a result of a change in vegetation and habitat, wildlife species in the area are shifting to species better able to adapt to an urban environment. Overall, the current condition of the vegetation and wildlife habitat within the RSA is considered in decline.

According to aerial photography and TPWD's EMST⁷⁰ mapped vegetation classes, existing, vegetation and wildlife habitat includes approximately 613 acres of Crosstimbers Woodland and Forest; 211 acres of Disturbed Prairie; 591 acres of Floodplain; and 127 acres of Riparian vegetation within the RSA (1,542 acres total). Common rural and urban wildlife use these vegetation types as habitat in the RSA. The vegetation and streams surrounding IH 30 are connected to other vegetated areas northwest and northeast of the roadway, creating open corridors that can be used by terrestrial animals. Development within the RSA could further fragment existing vegetation into small, distinct segments surrounded by manmade structures

⁷⁰ As referenced in the TxDOT-TPWD MOU, the EMST represents an ongoing effort to map vegetation at high resolution using multi-spectral aerial imagery and intensive ground verification. With the project area, the EMST map developed from the Texas Ecological Systems Classification Project - Phase 1 vegetation data (as modified by TxDOT) was used to characterize vegetation within the RSA. See: <http://tpwd.texas.gov/gis/data/downloads#EMS-T>, accessed May 17, 2015.

instead of the existing continuous corridors, effectively removing travel corridors for any animals.

The water features within the RSA also serve as wildlife habitat for aquatic species. Aerial and terrestrial animals also utilize the water bodies as a source of food, as they consume aquatic vegetation and animals. The measurement unit for determining impacts to wildlife habitat is acres. In order to quantify the acreage of streams within the RSA, an average stream width of 10 feet was assumed for the 35.4 miles (186,787 feet) of streams. In total, the acreage of aquatic habitat within the RSA is 325 acres (43 acres of streams, 217 acres of wetlands, and 65 acres of ponds). Combined, there is 1,867 acres of wildlife habitat within the RSA.

Based upon 2013 aerial photography and TPWD’s EMST vegetation data, approximately 84 percent (9,877 acres) of the RSA is urban or developed. Using 2010 land use data from the NCTCOG in combination with the above sources, it is estimated that the majority of development within the RSA (19.0 percent) is single-family residential which comprises 1,876 acres. **Table 5-3** lists the land use type identified within the RSA.

Table 5-3. Urban Land Use within the Natural Resources RSA

Land Use Type	Acres	% of Urban/Developed Land in RSA
Cemeteries	78	0.8%
Commercial	941	9.5%
Communication	1	<0.1%
Education	169	1.7%
Group quarters	19	0.2%
Hotel/motel	130	1.3%
Industrial	1,260	12.8%
Institutional/semi-public	246	2.5%
Large stadium	88	0.9%
Mobile home	75	0.8%
Multi-family	1,043	10.6%
Office	179	1.8%
Parking	362	3.7%
Parks/recreation	703	7.1%
Railroad	202	2.0%
Retail	162	1.6%
Single family	1,876	19.0%
Utilities	35	0.3%
Vacant	499	5.1%
Transportation ROW	1,809	18.3%
Total	9,877	100%
Source: NCTCOG 2010 Land Use GIS data and Google Earth Aerial Imagery (October 2013).		

Air Quality

The EPA establishes limits on atmospheric pollutant concentrations through enactment of the NAAQS for seven principal, or criteria, pollutants. The EPA designated 10 counties in the Dallas Fort Worth area as non-attainment for ozone. The region is currently in attainment for all other criteria pollutants, with the exception of a small part of Collin County that is in non-attainment for lead, effective December 31, 2010. This project is located outside that portion of Collin County in non-attainment for lead. Although there have been year-to-year fluctuations, the ozone trend continues to show improvement. The trend of improving air quality in the region is attributable in part to the effective integration of highway and alternative modes of transportation, cleaner fuels, improved emission control technologies, and NCTCOG regional clean air initiatives.

5.3 STEP 2: DIRECT AND INDIRECT IMPACTS OF THE PROPOSED PROJECT

The direct and indirect impacts of the proposed project are a component of cumulative impacts. This step looks at the impacts of the proposed project in combination with the impacts of other past, present, and reasonably foreseeable projects identified within the RSA.

5.3.1 Waters of the U.S., including Wetlands

Permanent impacts to waters of the U.S. total approximately 0.06 acre (approximately 200 LF), and would affect Johnson Creek, and Tributaries 1 and 2 to Johnson Creek. Although temporary impacts to water features would not be precisely determined until final design plans are prepared, temporary impacts have been estimated to total approximately 1.3 acres (approximately 2,505 LF). It is not anticipated that there would be project-related indirect impacts to waters of the U.S.

5.3.2 Vegetation and Wildlife Habitat

Approximately 10 acres of vegetation (9.5 acres of riparian forest and 0.6 acre of upland forest) would be directly impacted by the proposed project. It is not anticipated that there would be project related indirect impacts to vegetation and wildlife habitat.

5.3.3 Air Quality

All direct and indirect impacts from the proposed project on ozone air emissions are included in NCTCOG's emission budget modeling for the regional transportation network. As the proposed project is included in the MTP and consistent with it, federal conformity determinations that the MTP is consistent with the SIP indicates the proposed project would not appreciably contribute to a worsening of ozone levels for the region. Direct and indirect impacts on air quality in terms of MSAT emissions from the proposed project are primarily those associated with the increased capacity, accessibility, and the resulting projected increases in VMT. Emission reductions as a result of EPA's new fuel and vehicle standards are anticipated to offset MSAT impacts associated with VMT increases. Analysis of CO emissions related to the proposed project did not raise any concerns regarding the proposed project's impacts on ambient CO levels. Consequently, it is not anticipated that there would be project related direct or indirect impacts to air quality.

5.4 STEP 3: EFFECTS OF OTHER ACTIONS ON RESOURCES

5.4.1 Identification of Other Actions

The cumulative impacts analysis considers the combined effects of past, present, and reasonably foreseeable actions on the resources analyzed. The combined effects of past and present actions were addressed in the discussion of conditions and trends in **Section 5.2.3**. This section focuses on how the effects of reasonably foreseeable projects may further combine with past and present actions to affect the resources under consideration. To identify other reasonably foreseeable actions within the RSA, planning data were provided by various city representatives and obtained from the city Websites for both Arlington and Grand Prairie. The reasonably foreseeable actions thus identified are listed in **Table 5-4** and the expected areas to be affected by these actions are shown in **Figure 19**. The reasonably foreseeable actions total approximately 271.2 acres.

Table 5-4. Reasonably Foreseeable Actions

Development/Redevelopment	Area (acres)
Arlington	
Aloft Hotel	10.1
Hotel/motel	16.5
Mixed-use	14.1
Office	19.8
Arlington Commons (multi-family residential)	23.8
Lincoln Square (commercial/retail)	9.0
Abram St. from SH 360 to Great Southwest Pkwy. (widen from four lanes to six lanes)	1.2
Grand Prairie	
Great Southwest Industrial Park addition (currently Great Southwest Golf Club)	167.3
Wildlife Parkway from Beltline Road to SH 161 (widen and construction new bridge from 0/2 lanes rural to 2/4 lanes divided arterial)	2.9
Great Southwest Parkway Extension (four-lane divided arterial between Avenue K and Fountain Parkway)	6.5
Total	271.2
Source: Interviews with city planners (November 2014) from the Cities of Arlington and Grand Prairie; Grand Prairie Roadway Improvements (http://www.gptx.org/index.aspx?page=1515); and Arlington Capital Improvements Project Status (http://www.arlington-tx.gov/finance/purchasing/bidding-procurement/).	

5.4.2 Waters of the U.S., including Wetlands

The anticipated projects within the RSA that are unrelated to the proposed project (**Table 5-4**) are expected to result in the fill of approximately 1.1 miles of stream, with an estimated 0.9 acre of impacts to wetlands, and 11.3 acres of impacts to ponds or lakes.

5.4.3 Vegetation and Wildlife Habitat

For the purposes of this analysis, it was assumed that any of the reasonably foreseeable actions would displace all the native vegetation and wildlife habitat within the confines of the development. The planned projects in **Table 5-4** would be expected to remove approximately 11 acres of Crosstimbers Woodland and Forest; 4 acres of Disturbed Prairie; 17 acres of Floodplain; and 0.4 acre of Riparian vegetation within the RSA. Impacts to aquatic habitat total 13.5 acres (1.3 acres of streams, 0.9 acre of wetlands, and 11.3 acres of ponds). The total impact to wildlife habitat due to the reasonably foreseeable actions is 45.9 acres. The remainder of impacts would occur to existing urban landscapes.

5.4.4 Air Quality

The reasonably foreseeable actions in the combined air quality RSA considers regionally-projected air pollution emissions resulting from projected population and employment growth. The emissions from mobile and stationary sources are estimated by NCTCOG as regional plans are developed to address ozone nonattainment and other regional challenges. Any increased ozone emissions resulting from increased capacity, accessibility, and development within the region are projected to be more than offset by emission reductions from EPA's new fuel and vehicle standards or addressed by EPA's and TCEQ's regulatory programs. Notably among these are the ongoing requirements for the MTP and TIP to demonstrate conformity with the SIP, including the requirement for regional planning documents to show progress toward improving air quality in terms of the ozone standard. National and regional evaluations of priority MSAT emissions continue to project an overall decline in MSAT despite estimates of substantial increases in future VMT. Such improvements are linked to EPA's vehicle and fuel regulations and fleet turnover, which are anticipated to have a cumulatively beneficial impact on air quality related to MSAT. The past record of regional compliance with the CO standard suggests that CO will continue to be modeled on a project-level basis, as there is no apparent concern regarding this pollutant at the regional level. Accordingly, it is not expected that planned future land development or transportation actions would be likely to result in substantial adverse impacts to regional air quality.

5.5 STEP 4: CUMULATIVE IMPACTS ASSESSMENT

The cumulative impacts relating to the three resources evaluated are summarized in **Table 5-5**, showing the estimated direct impacts, indirect impacts, and the impacts from unrelated reasonably foreseeable projects within the respective RSAs. These topics are discussed further below.

5.5.1 Waters of the U.S., including Wetlands

The cumulative impacts on waters of the U.S., including wetlands, would have an estimated permanent impact on a total of 1.1 miles of streams in the RSA. Nearly all of these impacts would be attributable to reasonably foreseeable projects unrelated to the proposed project. The total project-related (i.e., direct and indirect impacts) would affect approximately 200 LF of

streams (0.06 acre). These cumulative impacts to streams would affect 3.1 percent of the stream resources within the RSA. Cumulative impacts to streams would affect primarily smaller tributaries to perennial streams and the West Fork Trinity River. This is expected primarily because of restrictions on building habitable structures within 100-year floodplains and programs such as the CDC that require any development in a floodplain to be hydraulically neutral. For these reasons, it is not expected that future projects would have appreciable impacts on streams associated with FEMA-delineated 100-year floodplains. The effects of urbanization on smaller streams has been to incorporate many of them as channels for conveying flow from storm water drain outfalls to larger streams and rivers. As urban development continues, such ephemeral or intermittent streams are often ultimately placed within culverts. The proposed project would have a negligible effect on such trends, and reasonably foreseeable projects would have a minor effect on the overall loss of open stream channels.

The cumulative impacts on wetlands would total approximately 0.9 acre, all of which would be the result of reasonably foreseeable actions in the RSA. No direct and indirect impacts to wetlands resulting from the proposed project are anticipated. Cumulative impacts to wetlands would affect approximately 0.4 percent of the resource within the RSA. As discussed above regarding streams in 100-year floodplains, many wetlands are associated with floodplain areas and it is expected these would be unaffected by reasonably foreseeable projects. The small impacts to wetlands from reasonably foreseeable projects would likely occur to minor wetland areas adjacent to ephemeral or intermittent streams. This is consistent with development trends over the last 50 years that have resulted in removing many such features as part of site plans for various types of urban development.

The cumulative impacts on ponds would total approximately 11.3 acres from the previously described reasonably foreseeable actions in the RSA. Direct and indirect impacts to ponds resulting from the proposed project are not anticipated. Cumulative impacts to ponds would affect approximately 17.4 percent of the resource within the RSA. Ponds within the RSA were generally created as water sources for livestock, and have ceased to be useful for that purpose. Although many the combined footprint for reasonably foreseeable projects would affect a substantial percentage of ponds in the RSA, it is expected that at least some of the ponds would be retained as part of the landscaping for commercial or other site developments.

5.5.2 Vegetation and Wildlife Habitat

The cumulative impacts on vegetation and terrestrial habitat resulting from the approximately 10.1 acres of direct impacts and 32.4 acres of impacts to vegetation (non-urban land cover) from other reasonably foreseeable actions would total 42.5 acres. The cumulative impact on aquatic habitat resulting from approximately 0.1 acre of direct impacts and 13.5 acres of impacts to waters from other reasonably foreseeable actions would total 13.6 acres. Indirect impacts to vegetation and wildlife habitat resulting from the proposed project are not anticipated. Cumulative impacts to vegetation and wildlife habitat would total 56.1 acres and would affect 3.0 percent of the resource within the RSA.

5.5.3 Air Quality

The cumulative impacts on air quality from the proposed project and reasonably foreseeable transportation projects are addressed at the regional level by analyzing the air quality impacts of transportation projects in the *Mobility 2035 – 2014 Amendment* and the *2015-2018 TIP*, as revised. It is expected that the proposed project and any foreseeable transportation projects will proceed to construction only upon demonstrating compliance with a current MTP and TIP that have been determined to be in conformity with the SIP. Overall, it is expected that planned transportation improvements throughout the DFW region, revised EPA fuel and vehicle regulations, and fleet turnover together would combine to result in a cumulatively beneficial impact on air quality.

Table 5-5. Summary of Existing Resource Conditions and Potential Impacts

		Summary of Existing Resource Conditions and Potential Impacts (Analysis Step #)				
Indicator of Resource Condition (Step 1)	Resource Study Area (Step 2)	Existing Condition in RSA ¹ (Step 1)	Proposed Direct Impacts ^{1 & 2} (Step 2)	Proposed Project: Indirect Impacts (Step 2)	Impacts from Reasonably Foreseeable Projects within RSA ^{1 & 2} (Step 3)	Potential Cumulative Impacts Step 4 + Step 5 ^{1 & 2} (Step 4)
Waters of the U.S., including Wetlands: permanent impacts to waters of the U.S. (i.e., stream channel length and pond acreage).	Local watershed area	Streams: 35.4 miles Wetlands: 217 acres Ponds/Lakes: 65 acres	Streams: 200 LF (0.04 mile)	Indirect impacts are not anticipated.	Streams: 1.1 miles Wetlands: 0.9 acre Ponds/Lakes: 11.3 acres	Streams: 1.1 miles Wetland: 0.9 acre Ponds/Lakes: 11.3 acres
Vegetation and Wildlife Habitat: acreage of impacts to non-urban habitat.	Local watershed area	Terrestrial Habitat Crosstimbbers W. & F.: 613 acres Dist. Prairie: 211 acres Floodplain: 591 acres Riparian: 127 acres Aquatic Habitat Streams: est. 43 acres Wetlands: 217 acres Ponds/Lakes: 65 acres TOTAL: 1,867 acres	Terrestrial Habitat Upland Woodland: 0.6 acre Riparian Forest: 9.5 acres Aquatic Habitat Streams: 0.1 acre TOTAL: 10.2 acres	Indirect impacts are not anticipated.	Terrestrial Habitat Crosstimbbers Woodland and Forest: 11.0 acres Disturbed Prairie: 4.0 acres Floodplain: 17.0 acres Riparian: 0.4 acre Aquatic Habitat Streams: 1.3 acres Wetlands: 0.9 acre Ponds/Lakes: 11.3 acres TOTAL – All Non-Urban Habitats: 45.9 acres	Terrestrial Habitat Crosstimbbers W. & F.: 11.0 acres Disturbed Prairie: 4.0 acres Floodplain: 17.0 acres Upland Woodland: 0.6 acre Riparian: 9.9 acres Aquatic Habitat Streams: 1.4 acres Wetlands: 0.9 acre Ponds/Lakes: 11.3 acres TOTAL – All Non-Urban: 56.1
Air Quality: ability of the DFW Region to achieve the 8-hour ozone standard.	Ozone: Ten-county nonattainment area within DFW MPA MSAT: 12-county MPA Ozone: project area	Ten-county DFW area in moderate nonattainment for the 8-hour ozone standard and in attainment for other NAAQS criteria pollutants (including CO), with the exception of a portion of Collin County in nonattainment for lead.	The proposed project is included in the current MTP, Steps have been taken to update the current TIP to reflect funding status of project.	Indirect impacts are not anticipated.	Regional modeling to estimate future ozone levels include all planned and financed major transportation projects as well as other major sources of air emissions of ozone precursors. These projects reflect ongoing urbanization and redevelopment within the region, and would likely have a temporary negative effect on air quality due to construction-related impacts. However, the contribution of reasonably foreseeable future growth and urbanization on air quality would be minimized by enforcement of federal and state regulations by the USEPA and TCEQ, and regional planning efforts led by NCTCOG.	The proposed project and the other reasonably foreseeable transportation projects were included in the <i>Mobility 2035 - 2014</i> Amendment and <i>2015-2018 TIP</i> , and conform to the SIP. When combined, planned transportation improvements, revised USEPA fuel and vehicle regulations, and fleet turnover are anticipated to have a cumulatively beneficial impact on air quality.

NOTES:

1. Acreages are approximate estimates and are based on information presented earlier in this report. For the purposes of the cumulative impacts analysis, calculations of acreage presented in this table have been rounded to the nearest tenth of an acre.
2. The information presented reflects expected impacts, and does not take into consideration potential mitigation or other measures stipulated/required by regulatory authorities.

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5.6 STEP 5: MITIGATION OF CUMULATIVE EFFECTS

5.6.1 Waters of the U.S., including Wetlands

Avoidance or minimization of impacts to waters of the U.S. and wetlands should be performed during the development design phase so that the least amount of impact occurs. Mitigation is only conducted when impacts to waters of the U.S. and wetlands cannot be avoided. Typical mitigation for impacts to waters of the U.S. includes the construction of mitigation areas or purchasing credits from a mitigation bank. Mitigation is frequently conducted as one of the requirements for obtaining a Section 404 permit. The USACE decides what the ratio of the mitigation area would be relative to the acreage of impacts to waters of the U.S. A typical mitigation ratio is three times the amount of acreage impacted, while the minimum mitigation ratio is one time the amount of acreage impacted (i.e. 1:1 ratio).

A mitigation bank is a wetland, stream, or other aquatic resource area that has been restored, established, enhanced, or in certain circumstances, preserved for the purpose of providing compensation for unavoidable impacts to aquatic resources permitted under Section 404 or a similar state or local wetland regulation. Mitigation banks are used in situations where the construction of a mitigation area is not practical. Mitigation banks are a form of “third-party” compensatory mitigation, in which the responsibility for compensatory mitigation implementation and success is assumed by a party other than the permittee. The USACE would have jurisdiction over mitigation activities for impacts to waters of the U.S., and as such, would determine the mitigation responsibilities of the developers.

The City of Arlington’s 1992 Comprehensive Plan (currently under revision) discusses similar strategies that would reduce impacts to water features within the RSA including encouraging the preservation of rivers, creeks, lakes, ponds, and wetlands, primarily the West Fork Trinity River and associated wetlands and Johnson Creek; developing and adopting an ordinance relative to the preservation of the floodplain resources; and requiring all stream courses to be left in the natural state unless there are specific, unique circumstances which indicate that the stream should be channelized.

Goal 2 of the City of Grand Prairie’s 2010 Comprehensive Plan Goals is to encourage resource conservation and renewable energy. Additionally, Section 9 (Watershed Planning and

Environmental Quality) of the comprehensive plan discuss the conservation of natural resources and features in site planning. Suggested practices include the preservation of undisturbed areas, preservation of riparian buffers, avoidance of floodplains, and the avoidance of steep slopes. Striving to achieve Goal 2 and following the previously suggested practices would greatly reduce the impacts to water features within the RSA. Namely impacts to Johnson Creek where it runs through the Great Southwest Golf Club, a site proposed to be converted for future industrial development.

5.6.2 Vegetation and Wildlife Habitat

Incorporating parks, open spaces, and riparian corridors around and within developed areas would provide wildlife habitat and shelter. Planting these areas with native fruit or nut-bearing trees and shrubs, and native grain-bearing grasses would provide food for wildlife, and would help to mitigate impacts to habitat used by wildlife. This mitigation could be conducted by whoever is responsible for the impact such as a city or a developer.

Development within the associated municipalities within the RSA would be subject to the laws and ordinances regulating residential, commercial and industrial development set by each municipal government. Mitigation could include mandatory park areas or a limit on lot sizes. State and federal entities protect the quality of water and wildlife habitat in the area and additional development would follow the requirements of state and federal laws.

Strategies from the City of Arlington's 1992 Comprehensive Plan (currently under revision) discussed in the Waters of the U.S. section above would also reduce impacts to vegetation and wildlife habitat within the RSA. Additional strategies include development of programs to preserve significant stands of vegetation and topography primarily associated with the Trinity River and creeks; development and adoption of a tree preservation ordinance to protect significant existing trees, and providing incentives to development that preserve and protect natural resources.

As discussed in the Waters of the U.S. section above, Goal 2 of the City of Grand Prairie's 2010 Comprehensive Plan Goals and the suggested practices from Section 9 (Watershed Planning and Environmental Quality) of the comprehensive plan would also greatly reduce the impacts to vegetation and wildlife habitat features within the RSA. Additionally, past and future acquisition

of land by the city's Parks and Recreation Department for parks, linear parks, and open spaces provides for additional of vegetation and wildlife habitat resources.

5.6.3 Air Quality

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

The CAA also requires states with areas that fail to meet the NAAQS prescribed for criteria pollutants to develop a SIP. The SIP describes how the state would reduce and maintain air pollution emissions in order to comply with the federal standards. Important components of a SIP include emission inventories, motor vehicle emission budgets, control strategies to reduce emissions, and an attainment demonstration. The TCEQ develops the Texas SIP for submittal to the EPA. One SIP is created for each state, but portions of the plan are specifically written to address each of the non-attainment areas. These regulatory controls, as well as other local transportation and development initiatives implemented throughout the DFW MPA by local governments and other entities provide the framework for growth throughout the area consistent

with air quality goals. As part of this framework, all major transportation projects, including the proposed project, are evaluated at the regional level by the NCTCOG for conformity with the SIP.

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

The City of Arlington's 1992 Comprehensive Plan (currently under revision) discusses several strategies that would reduce impacts to air quality within the RSA including converting city vehicles to alternative fuels to reduce air emissions; encouraging tree planting and tree preservation to improve air quality; and identifying appropriate separation criteria between land uses that emit toxic pollutants and sensitive adjacent uses to prevent future encroachment, for the mutual protection of such uses.

In City of Grand Prairie's 2010 Comprehensive Plan, one of several key values listed is to protect, preserve, and enhance the city's natural features and decrease air and water pollutants. Objective 2: Policy 5 from the comprehensive plan is to reduce fossil fuel dependence by encouraging transit-oriented development. Compact development minimizes the need to drive. Encouraging home occupations and live-work settings is an additional means of reducing fossil fuel dependence. Live-work refers to mixed use development that provides additional space and services for residences of the development who work from home. Objective 14: Policy 9 is to prevent activities that emit waste or pollutants into the environment. New businesses that process hazardous chemicals will need to meet or exceed clean air standards. The city also has a program, Green Grand Prairie, with a mission to "reduce greenhouse gas emissions by encouraging the recycling, remanufacturing and reuse of existing materials, appliances, vehicles and facilities and using green technologies and operating to enhance the public welfare and protect the environment for the wellbeing and benefit of the citizens, and future generations of Grand Prairie." Pursuit of the previously discussed value and goals, and citywide adoption of the Green Grand Prairie program would aid in reducing impacts to air quality in the RSA.

5.7 SUMMARY OF THE REGIONAL TOLLING ANALYSIS

5.7.1 Introduction

To assess the significance of regional impacts and address the potential need for mitigation of the tolled components of the long-range metropolitan transportation plan, NCTCOG prepared the *Regional Tolling Analysis for the Dallas-Fort Worth Metropolitan Planning Area based on Mobility 2035 – 2013 Update* technical memorandum prepared in January 2014 (hereinafter *Regional Tolling Analysis* or ‘technical memorandum’).⁷¹ The purpose of the *Regional Tolling Analysis* is to evaluate the effects of proposed expansion of the regional priced facility system in the Dallas-Fort Worth region based on the improvements included in *Mobility 2035 – 2013 Update*. The *Regional Tolling Analysis* provides the context of the transportation system, planned improvement potential effects, incomplete and unavailable information, summary, and conclusion. The following discussion summarizes the methodology, effects, and conclusion of the analysis.

5.7.2 Methodology

Section 4.0 of the *Regional Tolling Analysis* evaluates potential effects of the regional toll system elements of *Mobility 2035 – 2013 Update* on land-use, air quality, and environmental justice populations. **Figure 21** shows the funded recommendations for controlled access facilities from *Mobility 2035 – 2013 Update*. The land-use and demographic forecasts from *2040 Demographic Forecast* were used as the basis for all travel demand modeling in *Mobility 2035 – 2013 Update* and *Regional Tolling Analysis*.

The *Regional Tolling Analysis* environmental justice analysis focuses on differential impacts (see **Table 5-6**) between environmental justice populations and non-environmental justice populations at the transportation survey zone (TSZ) geography. Based on 2010 census data and 2005-2009 American Community Survey data, the *Regional Tolling Analysis* classifies TSZs into four categories: non-environmental justice TSZs, low-income alone TSZs, minority

⁷¹ This technical memorandum may be found on NCTCOG's Website for *Mobility 2035 – 2013 Update* (<http://www.nctcog.org/trans/mtp/2035/>, accessed May 14, 2015) and may be downloaded using the following link: <http://www.nctcog.org/trans/mtp/2035/documents/RTAJan2014.pdf>, accessed May 14, 2015.

alone TSZs, and both low-income and minority TSZs. Regional traffic was modeled under three transportation network conditions:

- 2013 network (2013 roadway and transit facilities with 2013 demographics)
- 2035 build network (all *Mobility 2035 – 2013 Update* recommended roadway and transit facilities with 2035 demographics)
- 2035 priced facilities no build network [all recommended transportation (roadway and transit) facilities in *Mobility 2035 – 2013 Update* except proposed facilities with any priced elements (built after 2013) with 2035 demographics]

5.7.3 Regional Toll System Effects

Table 5-6 lists the resource areas and performance metrics analyzed in *Regional Tolling Analysis*. A more detailed analysis of each item is included in the full technical memorandum in section 4.0.

Table 5-6. Analysis of Potential Effects

Analysis	Section of Technical Memorandum	Results
Land Use	4.1	The priced facilities components of <i>Mobility 2035</i> may affect land-use by helping to enhance land development or redevelopment opportunities.
Air Quality	4.2	The regional roadway network (including priced facilities) would show a decrease in nitrogen oxides and emissions of volatile organic compounds, which are both precursors to ozone.
Environmental Justice Populations		
Access to Jobs*	4.3.1	The 2035 build network (including priced facilities) would provide protected populations access to more jobs accessible within 30 minutes by car and more jobs accessible within 60 minutes by transit in the future when compared to the 2013 network
Regional Congestion*	4.3.1	While congestion increases for both the protected and non-protected populations in the 2035 networks, the non-protected population sees a larger increase in localized congestion.
Daily Vehicle Miles Travelled	4.3.2	The greater percent VMT change on freeways and priced facilities under the 2035 build network would reduce the amount of congestion on arterials and collectors compared to the 2035 priced facilities no build network.
Average Loaded Speed	4.3.2	The 2035 build network would result in a slight increase in daily roadway speed for most roadway classifications compared to the 2035 priced facilities no build network.
Morning Peak Period Level of Service	4.3.2	Under the 2035 build network the overall proportion of lane-miles at LOS F is lower than the 2035 priced facilities no build network.

Table 5-6. Analysis of Potential Effects

Analysis	Section of Technical Memorandum	Results
Morning Peak Period Roadway Trip Times	4.3.3	Under the 2035 build network the average vehicle trip times are lower than in the 2035 priced facilities no build network for both environmental justice and non-environmental justice populations.
Morning Peak Period Roadway Trip Length	4.3.3	Under the 2035 build network the average vehicle trip lengths are longer than in the 2035 priced facilities no build network for both environmental justice and non-environmental justice populations.
Morning Peak Period Roadway Trip Speeds	4.3.3	Under the 2035 build network the average vehicle trip speed is higher than in the 2035 priced facilities no build network for both environmental justice and non-environmental justice populations.
Morning Peak Period Transit Usage	4.3.3	Under the 2035 build network the number of transit trips is higher than in the 2035 priced facilities no build network for both environmental justice and non-environmental justice populations.
Morning Peak Period Transit Trip Times	4.3.3	Under the 2035 build network the average transit trip times are higher than in the 2035 priced facilities no build network for both environmental justice and non-environmental justice populations.
Morning Peak Period Transit Trip Length	4.3.3	Under the 2035 build network the average transit trip lengths are longer than in the 2035 priced facilities no build network for both environmental justice and non-environmental justice populations.
Morning Peak Period Transit Trip Speeds	4.3.3	Under the 2035 build network the average vehicle trip speed is higher than in the 2035 priced facilities no build network for both environmental justice and non-environmental justice populations.
Congestion Levels	4.3.4	Environmental justice TSZs are projected to have fewer no congestion and severe congestion TSZs, but more light to moderate congestion TSZs than the non-environmental justice areas. The construction of additional facilities in the 2035 build network would reduce the percentage of environmental justice TSZs with severe congestion.
Regional Origin-Destination Study	4.3.5	Under the 2035 build network, slightly more TSZs would send trips to priced facilities than under the 2035 priced facility no build network. Proposed priced facilities would be built closer to environmental justice populations than the existing priced facility system. This would increase accessibility to these roadway facilities as shown by the slightly higher proportion of trips from environmental justice TSZs on priced facilities in the 2035 build network than in the 2035 priced facility no build network.
Annual Toll Costs	4.3.6	The median household income in the region is about 2.7 times the HHS low-income threshold, so each dollar expended for the use of priced facilities by low income households is a greater proportion of the household budget. Regular use of priced facilities at the base rate could cost a household at the low-income threshold approximately 3.3 to 4.5 percent of their total household income.
Transportation Benefits		
Quality of Life	4.3.7	The planned priced facility projects would help to reduce traffic congestion, improve air quality (and thereby health), improve travel time reliability, and improve safety compared to the full no build and priced facility no build alternatives**.

Table 5-6. Analysis of Potential Effects

Analysis	Section of Technical Memorandum	Results
Bus Transit and Emergency Vehicles	4.3.7	An increase in service for both bus and emergency vehicles would improve the quality of life for those choosing to use or in need of those services, respectively.
Transportation System Financing	4.3.7	The revenue from priced facilities would help to finance improvements/rehabilitation of both tolled and non-tolled facilities. It would also accelerate the funding for construction as compared to traditional tax-supported highway finance, thereby reducing capital costs and making new transportation capacity available to the traveling public sooner.
*Analysis conducted and documented within Mobility 2035 – 2013 Update, summarized in the Regional Tolling Analysis ** Mobility 2035 – 2013 Update includes a 2035 full no build network, which is defined as the 2013 roadway and transit facilities with 2035 demographics		

Section 6.0 of the *Regional Tolling Analysis* provides the results of the assessment. Based on the environmental justice analysis conducted for *Mobility 2035 – 2013 Update* and summarized in *Regional Tolling Analysis*, it was determined that the recommended transportation projects included in *Mobility 2035 – 2013 Update* do not have a highly adverse or disproportionate impact on protected populations.

In addition, results from the performance reports prepared for the MPA showed a marginal increase in roadway speed and a slight improvement in LOS for the majority of the roadway classifications in the 2035 build network compared to the 2035 priced facilities no build network. The 2035 build network for the MPA would generally maintain the 2013 network roadway performance conditions for freeways and toll roads throughout the NCTCOG region while accommodating the travel demands of the growing regional population.

Although environmental justice populations would see an increase in out of pocket cost for priced facility usage under the 2035 build scenario, the growth in usage by protected populations is proportional to the increased usage by the entire MPA population as the priced system expands. Almost all environmental justice TSZs are projected to generate trips along priced facilities in the 2013 network and 2035 build network. For populations (including environmental justice populations) who would choose to use non-priced facilities, the 2035 build network would provide a non-priced roadway network that would operate at better traffic conditions (slightly higher speeds and an improved LOS) on all roadways and an increased benefit over the 2035 priced facilities no build network.

The planned transit system is the same for both the 2035 build network and 2035 priced facility no build network. The analysis in the *Regional Tolling Analysis* show that improved roadway performance would lead to slightly longer distance and higher speed transit trips in the 2035 build network compared to the 2035 priced facility no build network.

While the analysis focused on the potential impacts, priced facilities are also expected to provide benefits to system users, which can be categorized into two forms: quality of life and economic. The transportation system, including priced facilities, increases the number of travel options available to transportation system users. These facilities serve as bus transit corridors, improving the performance of the on-road transit system. The priced facilities will help manage congestion, improve air quality, improve travel time reliability, improve safety, and enhance health compared to the no build and priced facility no build alternatives. By helping to reduce overall congestion levels, improvements to the overall transportation system, including priced facilities, also contributes to the economic vitality of the region. Additionally, the revenue from priced facilities will help to finance improvements/rehabilitation of both priced and non-priced facilities. Compared to traditional tax-supported highway finance, priced facilities are implemented more quickly, thereby minimizing capital costs and making new transportation capacity (via transit, roadway, or other modes) available to the traveling public sooner.

5.7.4 Conclusion

Based on the analysis documented in the *Regional Tolling Analysis*, the 2035 build network for the MPA, including future priced facilities, would result in a fair distribution of impacts and benefits among the regional population including environmental justice communities. The 2035 build network for the MPA, including priced facilities, would not cause disproportionately high and adverse impacts on any minority or low-income populations as per Executive Order 12898 regarding environmental justice. Therefore, no regional mitigation measures are proposed at this time. This regional analysis is based on the most recent policies, programs, and projects included in *Mobility 2035 – 2013 Update*. Changes in tolling/managed lane policies could necessitate that the regional tolling analysis be revised if, after a thorough review, the changes are of sufficient magnitude. All of these elements are subject to change in future MTPs. During the development of future MTPs, new analyses of the effects of pricing to environmental justice and protected classes would be conducted.

The *Regional Tolling Analysis* concludes that *Mobility 2035 – 2013 Update* and the regional transportation planning process provide ways to avoid and minimize potential impacts that could occur due to transportation projects. It also indicates that NCTCOG has performed an environmental justice and Title VI analysis, using the best available data, to ensure that no person is excluded from participation in, denied benefits of, or discriminated against in planning efforts, including the development of the MTP. This assures that *Mobility 2035 – 2013 Update* is consistent with Title VI of the Civil Rights Act of 1964 and Executive Order 12898 on environmental justice, as well as the Civil Rights Restoration Act of 1987.

SECTION 6.0 PERMITS AND COMMITMENTS

All project-specific commitments and conditions of approval, including resource agency permitting compliance and monitoring requirements, would be incorporated in the project plan for the proposed project. These project-specific commitments and conditions for approval, as further described below, may vary depending on the project's final design and construction. Mitigation monitoring would be conducted by TxDOT and other federal, state, and local agencies to ensure compliance.

This section summarizes the commitments mentioned in this EA that TxDOT has made to avoid, minimize, or otherwise mitigate adverse impacts of the proposed project that are required to be included in the Environmental Permits, Impacts and Commitments (EPIC) sheet. The EPIC sheet documents and communicates permit issues and environmental commitments that must be incorporated into the Plans, Specifications, and Estimates (PS&E) design for the proposed project. This ensures that any construction contractor bidding on the construction contract for the proposed project is aware of the permits, impacts, and commitments relevant to the proposed project. Moreover, including these commitments in the EPIC sheet ensures that each prospective contractor is contractually obligated to carry out those commitments. The information below follows the standard format for TxDOT EPIC sheets, and provides only the entries that must be filled in to reflect project-specific commitments (i.e., the mandatory pre-printed EPIC provisions are not repeated below).

I. SW3P: CWA Section 402

- The project includes 5 or more acres of earth disturbance. The project must comply with the TCEQ TPDES CGP. Contractor must implement and maintain a SW3P. A NOI would be required.
- Implement the following water quality BMPs to protect mussel species in perennial streams:
 - o Once construction is complete and disturbed areas have been revegetated, remove silt fence and accumulated sediment to reduce wildlife barriers and hazards.

- Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges.
- When stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing.
- Rubbish found near bridges on TxDOT ROW should be removed and disposed of properly to minimize the risk of pollution. Rubbish does not include brush piles or snags.

II. Work in Streams/Other Water: CWA Section 401/404

- Applicable Permit: NWP 14 under Section 404 of the CWA without PCN.
- Required Actions (affected waters): (1) IH 30 crossing of Johnson Creek; (2) SH 360 crossing of Johnson Creek; (3) ramp crossings of Tributary 1; and (4) extend culvert and ramp crossings of Tributary 2 to Johnson Creek.
- Section 401 BMPs for General Conditions: The SW3P would include at least one BMP from the 401 Water Quality Certification Conditions for NWPs as published by the TCEQ. These BMPs would address each of the following categories: (1) Category I Erosion Control; (2) Category II Sedimentation Control; and (3) Category III Post Construction Total Suspended Solids Control. The project-specific selection of at least one BMP to address each of the categories above will be included in the PS&E plans, and will be reflected in the EPIC sheet.

III. Cultural Resources

- In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area will cease, and TxDOT archeological staff would be contacted to initiate post-review discovery procedures.
- Contractor is required to use caution during demolition and/or excavation operations within a 250-foot radius of the north and south hyperbolic paraboloid canopies of the historic structure located at the following address: 2905/2910/2920 East Avenue F, Arlington. The use of vibratory pile drivers, pneumatic or drop hammers, and jack hammers is strictly prohibited. Within this 250-foot radius restricted area, use saw cutting for the removal of existing pavement, and steel rollers with vibrators turned off for earth compaction. Contractor shall coordinate with the Engineer prior to commencing construction within this restricted envelope to understand all equipment

preclusions. Engineer shall ensure throughout the course of the work that Contractor adheres to these equipment preclusions within the restricted area.

IV. Vegetation Resources

- Contractor shall use only seeding mixes specified by TxDOT for revegetation of disturbed areas. These TxDOT seed mixes will use only native and regionally adapted species for the revegetating disturbed areas.
- Contractor is required to be familiar with and comply with the requirements of EO 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping.

V. Federally-Listed and State-Listed Species, SGCNs, and MBTA

- Contractor is advised of the potential occurrence of the plains spotted skunk in the project area, and is instructed to avoid harming the species if encountered and to avoid unnecessary impacts to dens.
- Contractor is advised of the potential occurrence of the timber rattlesnake and Texas garter snake in the project area (particularly streamside forests), and is instructed to avoid harming these species if encountered.
- In addition to complying with standard EPIC sheet MBTA provisions, Contractor shall avoid removing unoccupied, inactive bird nests, as practicable.

VI. Hazardous Materials or Contamination Issues

- Prior to demolition of buildings and bridge structures, any necessary asbestos testing must be completed and appropriate abatement procedures followed.
- Prior to demolition of buildings and bridge structures, any necessary lead based paint testing must be completed and appropriate abatement procedures followed.

VII. Other Environmental Issues

- Contractor shall minimize particulate matter emissions from construction sites 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.
- Contractor shall make every reasonable effort to minimize construction noise through

abatement measures such as work-hour controls and proper maintenance of muffler systems.

SECTION 7.0 PUBLIC INVOLVEMENT

Public involvement for the proposed project was initiated a meeting of the Project Coordination Work Group (PCWG) on October 27, 2014, held at the NCTCOG offices in Arlington. Attendees included staff from the City of Arlington, City of Grand Prairie, Tarrant County, Dallas County, NCTCOG, TxDOT, FHWA, Arlington Independent School District, Arlington Chamber of Commerce, and representatives from major recreation venues in the Arlington Entertainment District. The 39 attendees of this PCWG meeting were briefed on the need for the project and its purpose, design features, project history and past environmental studies, status of project funding, and overall project schedule. Also discussed were several design options for which input from the PCWG was sought. Attendees were advised of future outreach plans and were invited to the public meeting scheduled for December 2, 2014. After the briefing, attendees asked questions about the project design plans, and TxDOT staff and consultants were on hand to answer questions after the formal presentation was concluded. Attendees of the PCWG meeting expressed interest and support for the proposed project.

A public meeting was held on December 2, 2014 in the Arlington Hilton Hotel to present information about the project design and schedule, preliminary design plans, constraints, and typical sections. The total attendance at the public meeting was 116 people, which included 15 TxDOT project staff members, ten project consultants, two individuals representing elected/local officials, two representatives from NCTCOG, and 87 interested members of the community. Plans and exhibits illustrating the proposed improvements were displayed at the public meeting, which was conducted in an open house format. All plans and exhibits displayed at the public meeting, with the exception of the environmental constraints map, were published on TxDOT's Website.⁷² All attendees were provided with comment forms and written comments were received from 30 people. Feedback from attendees was generally supportive of the proposed project, and many attendees asked when construction would begin. TxDOT carefully considered all comments received in its overall evaluation of the proposed project. In several instances where property owners requested design changes to minimize impacts, TxDOT staff subsequently met with the property owners and made modifications to the preliminary schematic design to avoid or minimize impacts to adjacent property owners.

⁷² <http://txdot.gov/inside-txdot/get-involved/about/hearings-meetings/fort-worth/120214.html>, accessed May 14, 2015.

In connection with the public meeting held on December 2, 2014, public notices were mailed to adjacent property owners and elected/local officials, and were advertised in Spanish in the *La Estrella* and *La Semana* newspapers, and in English in the *Star Telegram* newspaper. These notices included contact information for those interested in requesting language assistance. The TxDOT staff and consultants attending the public meeting included fluent Spanish speakers. However, no request for language interpretation services was made, nor did any of the attendees at the public meeting request an interpreter.

A second PCWG meeting was held at NCTCOG on May 21, 2015. The makeup of the PCWG meeting attendees were as described above for the first PCWG meeting, and totaled 30 people. The meeting began with a briefing to update attendees on developments in the design of the proposed project, funding for construction of the IH 30/SH 360 interchange, and project schedule. Also included in the briefing was an update on the EA, and a discussion of feedback received from the December 2014 public meeting. Meeting attendees were informed of the public hearing scheduled for the end of June 2015. After the briefing, TxDOT and the design consultant answered questions about project schedule and design. At the conclusion of the PCWG meeting, attendees were invited to examine the design schematic on display and to ask questions of the TxDOT staff and consultants who were on hand to assist.

An open house and public hearing were conducted on June 30, 2015 in the Arlington Hilton Hotel to present information about the proposed project. During the open house, which extended from 6:00 to 7:00 p.m., attendees were invited to examine exhibits illustrating the project design. These exhibits reflected key aspects of the design schematic for the proposed project, including a plan view design display with typical roadway cross sections, and an orthographic rendering display of the proposed project corridor. Other exhibits included posters of computer rendered aerial images depicting the proposed interchange design, and a computer-rendered video overflight of the entire project corridor. In addition to the engineering exhibits, copies of the EA were available for the public to review. TxDOT staff and consultants were on hand during the open house to answer questions. A total of 137 people attended the public hearing, of whom four were either elected officials or representing an elected official, 12 were local or regional government staff, 18 were TxDOT staff, and 17 were project consultants; 86 attendees were members of the community not representing government entities in some capacity. All attendees received a packet containing the public hearing agenda, a comment

form, a form for requesting to make a verbal statement, and a copy of the slides displayed during the formal presentation.

The public hearing began at 7:00 p.m. with an explanation of the purpose of the public hearing and an overview of the agenda, followed by discussions of project history, design, expected environmental impacts, and ROW acquisition procedures. After a 20-minute recess to allow attendees to again view exhibits and ask questions, attendees were invited to make verbal comments. A total of eight people made verbal statements during the public hearing, and written comments were received from 23 additional people during the public hearing comment period that extended from May 31 through July 10, 2015. As with the public meeting, nearly all of the comments from the public during the comment period were supportive of the proposed project. TxDOT carefully considered all comments received in assessing project design and the impacts discussed in the EA. In several instances where property owners expressed concerns about impacts to adjacent properties, TxDOT staff subsequently met with the property owners and made modifications to the preliminary schematic design to avoid or minimize impacts to adjacent property owners. Several commenters expressed support for a follow on transportation study to create frontage road connections between the IH 30 interchanges with SH 360 and SH 161.

In preparation for the public hearing, public notices were mailed to adjacent property owners and elected/local officials, people who attended the public meeting, and people included in the PCWG. The public hearing was advertised in Spanish in the *La Estrella* newspaper and in English in the *Star Telegram* newspaper. These newspaper notices included contact information for those interested in requesting language assistance. The TxDOT staff and consultants attending the public hearing included fluent Spanish speakers. However, no request for language interpretation services was made, nor did any of the attendees at the public hearing request an interpreter. The plan view design exhibits and the draft EA were posted on posted on TxDOT's Website⁷³ throughout the public comment period, and paper copies of these documents were available for inspection at the TxDOT Fort Worth office, as well as in city offices for the City of Arlington and City of Grand Prairie as advertised in all notices of the public hearing.

⁷³ <http://txdot.gov/inside-txdot/get-involved/about/hearings-meetings/fort-worth/063015.html>, accessed July 23, 2015.

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SECTION 8.0 EA DETERMINATION

The engineering, social, and environmental investigations conducted thus far indicate that the proposed project would have no significant impact on the quality of the human environment. A Finding of No Significant Impact (FONSI) is anticipated for this proposed project.

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SECTION 9.0 LIST OF ACRONYMS AND ABBREVIATIONS

ACS	American Community Survey
ADA	Americans with Disabilities Act
AADT	annual average daily traffic
AOI	area of influence
APE	area of potential effects
BMP	best management practice
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CDC	corridor development certificate
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CGP	construction general permit
CIS	corridor improvement study
CLUP	comprehensive land use plan
CMP	Congestion Management Process
CO	carbon monoxide
CSJ	Control-Section-Job
CWA	Clean Water Act
dB	decibels
dBA	decibels (A-weighted)
DFW	Dallas-Fort Worth
DFWRM	Dallas-Fort Worth Regional Travel Model
EA	environmental assessment
EJ	environmental justice
EMST	Ecological Mapping Systems of Texas
EO	Executive Order
EPA	Environmental Protection Agency
EPIC	Environmental Permits, Impacts and Commitments
ETC	estimated time of completion
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FLUP	future land use plan
FONSI	finding of no significant impact
FPPA	Farmland Protection Policy Act

FTA	Federal Transit Administration
FWCA	Fish and Wildlife Coordination Act
FY	fiscal year
GC	general condition
GIS	geographic information systems
HEI	Health Effects Institute
HHS	Department of Health and Human Services
HOV	high-occupancy vehicle
IH	Interstate Highway
IRIS	Integrated Risk Information System
ISA	initial site assessment
ITS	intelligent transportation systems
LEP	limited English proficiency
Leq	average/equivalent sound level
LF	linear foot (or feet)
LOS	level of service
LPST	leaking petroleum storage tank
LWCF	Land and Water Conservation Fund
MBTA	Migratory Bird Treaty Act
MOU	memorandum of understanding
MPA	metropolitan planning area
mph	miles per hour
MPO	metropolitan planning organization
MS4	municipal separate storm sewer system
MSAT	mobile source air toxics
MTP	metropolitan transportation plan
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NCTCOG	North Central Texas Council of Governments
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOI	notice of intent
NOx	nitrogen oxides
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTTA	North Texas Tollway Authority
NWP	Nationwide Permit

O&D	origin and destination
OHWM	ordinary high water mark
OTHM	Official Texas Historical Marker
PCN	pre-construction notification
PCWG	project coordination work group
PM	particulate matter
ppm	parts per million
PS&E	Plans, Specifications, and Estimates
PST	petroleum storage tank
RDM	roadway design manual
RHSS	report for historic studies survey
RPST	registered petroleum storage tank
ROW	right-of-way
RSA	resource study area
RTC	Regional Transportation Council
SH	State Highway
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SGCN	species of greatest conservation need
SOV	single-occupancy vehicle
SW3P	storm water pollution prevention plan
TAC	Texas Administrative Code
TAQA	traffic air quality analysis
TCAA	Texas Clean Air Act
TCEQ	Texas Commission on Environmental Quality
TEA	Texas Education Agency
THC	Texas Historical Commission
TIP	Transportation Improvement Plan
TMDL	Total Maximum Daily Load
TPDES	Texas Pollutant Discharge Elimination System
TPP	Transportation Planning and Programming
TPWD	Texas Parks and Wildlife Department
TSS	total suspended solid
TSZ	traffic survey zone
TxDOT	Texas Department of Transportation
TXNDD	Texas Natural Diversity Database
UPRR	Union Pacific Railroad

USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank
VCP	Voluntary Cleanup Program
VHT	vehicle hours of travel
VMT	vehicle miles of travel
VOC	volatile organic compound
VPD	vehicles per day

LIST OF FIGURES

1. Proposed Project Vicinity Map (1 page)
2. Proposed Project on USGS Topographic Map (2 pages)
3. Proposed Project on Aerial Photograph (1 page)
4. Current IH 30/SH 360 Interchange Traffic Pattern (1 page)
5. Existing and Proposed Typical Cross Sections (4 pages)
- 6-1. Plan View Design Index Map (1 page)
- 6-2. Plan View Design Map (11 pages)
7. IH 30 Traffic Study Area for NCTCOG Regional Travel Modeling (1 page)
8. IH 30 Project CSJ Definitions (1 page)
9. Land Use Map (2 pages)
- 10-1. Community Facility Map Index (1 page)
- 10-2. Community Facility Map (4 pages)
- 11-1. 2010 Census Tract Map (1 page)
- 11-2. 2010 Census Block Map Index (1 page)
- 11-3. 2010 Census Block Map (6 pages)
- 12-1. Year 2035 Build Main Lanes Traffic Distribution of Trips in AM Peak Period from TSZs (1 page)
- 12-2. Year 2035 No-Build Main Lanes Traffic Distribution of Trips in AM Peak Period from TSZs (1 page)
- 12-3. Year 2035 Build Managed Lanes Traffic Distribution of Trips in AM Peak Period from TSZs (1 page)
- 12-4. Year 2035 No-Build Managed Lanes Traffic Distribution of Trips in AM Peak Period from TSZs (1 page)
- 12-5. Environmental Justice Traffic Survey Zones (1 page)
- 12-6. Year 2035 Build Main Lanes Traffic Distribution of Trips in AM Peak Period from EJ TSZs (1 page)
- 12-7. Year 2035 No-Build Main Lanes Traffic Distribution of Trips in AM Peak Period from EJ TSZs (1 page)
- 12-8. Year 2035 Build Managed Lanes Traffic Distribution of Trips in AM Peak Period from EJ TSZs (1 page)
- 12-9. Year 2035 No-Build Managed Lanes Traffic Distribution of Trips in AM Peak Period from EJ TSZs (1 page)
- 13-1. Map Index for Water Crossings Maps (1 page)
- 13-2. Water Crossings Map and Potential Water Feature Impacts (11 pages)
14. Forest Impacts Map (1 page)
- 15-1. Year 2014 Affected Transportation Network (1 page)
- 15-2. Year 2035 Affected Transportation Network (1 page)
16. Hazardous Materials – Sites of Concern Map (4 pages)
17. Noise Receiver Location Map (11 pages)
18. Area of Influence Map with Notable Features (1 page)
19. Resource Study Area Map for Water and Vegetation Resources (1 page)
20. Air Quality RSA Map (1 page)
21. Regional Tolling Analysis: Mobility 2035-2013 Update Funded Roadway Recommendations for Controlled Access Facilities (1 page)

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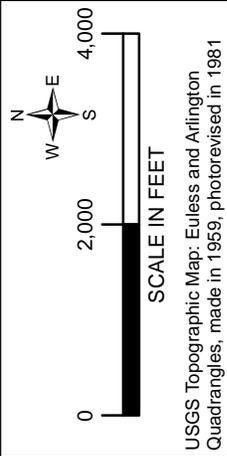


Figure 2 (Page 1 of 2).
Proposed Project on USGS Topographic Map
 IH 30 Project from Cooper Street to SH 161,
 including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

 Project Limits

USGS Topographic Map: Euless and Arlington
 Quadrangles, made in 1959, photorevised in 1981

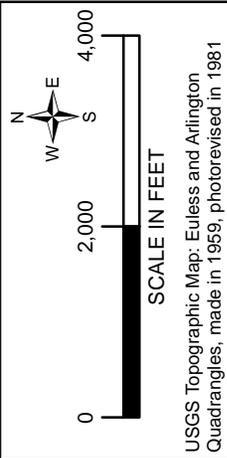
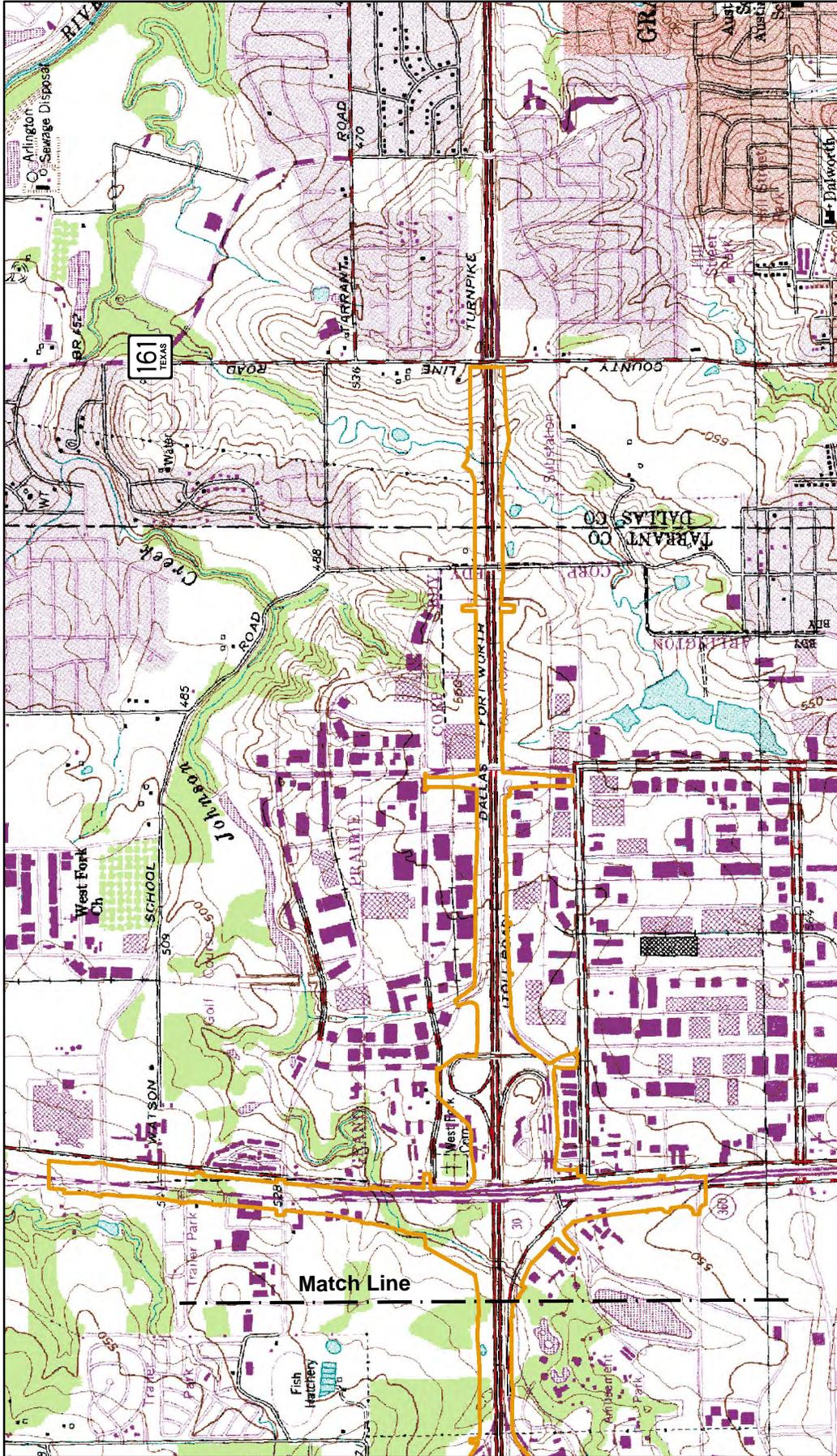


Figure 2 (Page 2 of 2).
Proposed Project on USGS Topographic Map
 IH 30 Project from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

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USGS Topographic Map: Euless and Arlington
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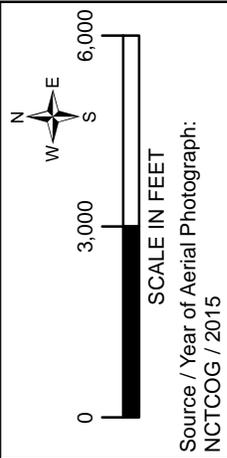
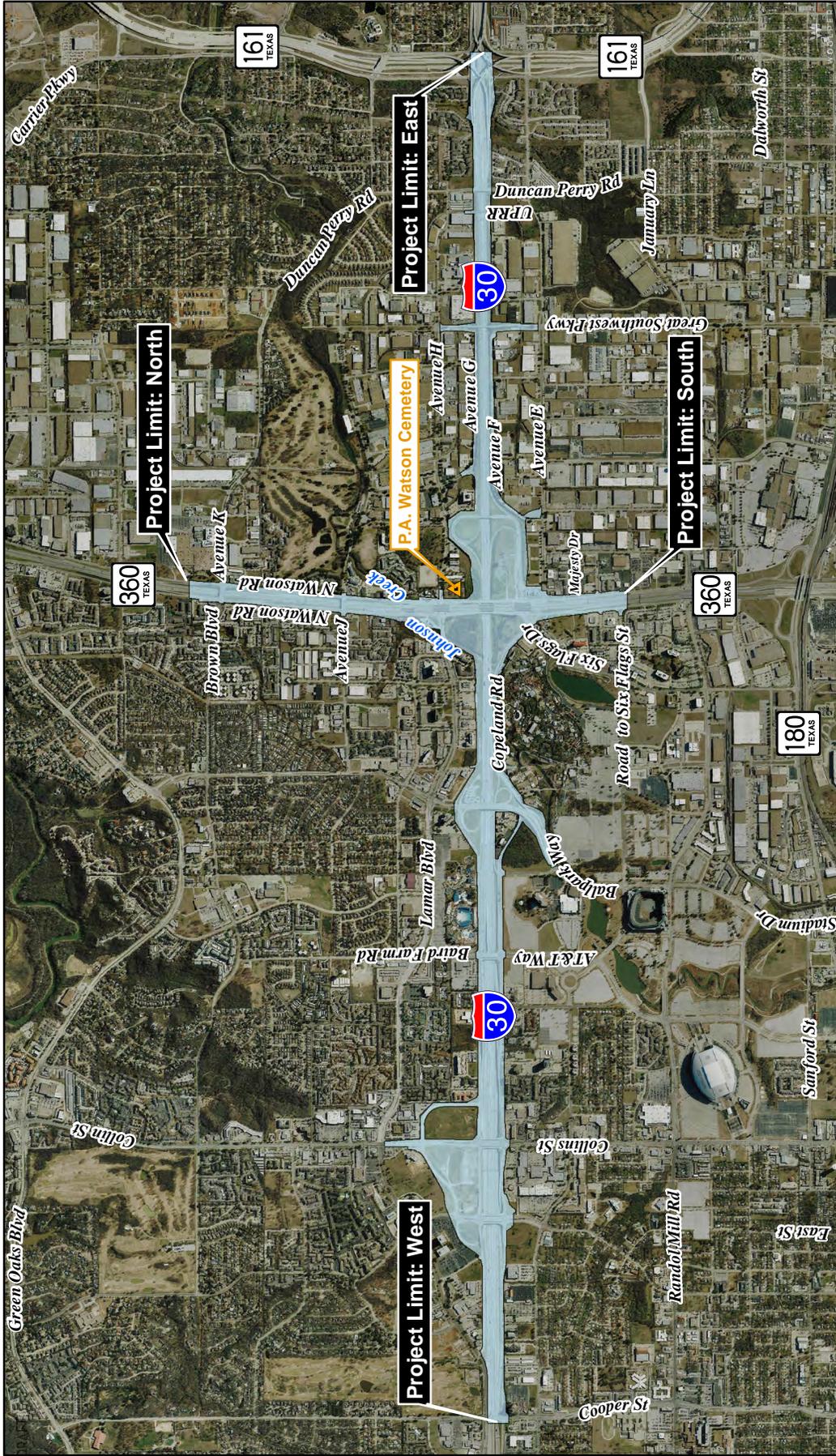


Figure 3. Proposed Project on Aerial Photograph

IH 30 Project from Cooper Street to SH 161, Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

- Project Limits

Source / Year of Aerial Photograph:
 NCTCOG / 2015

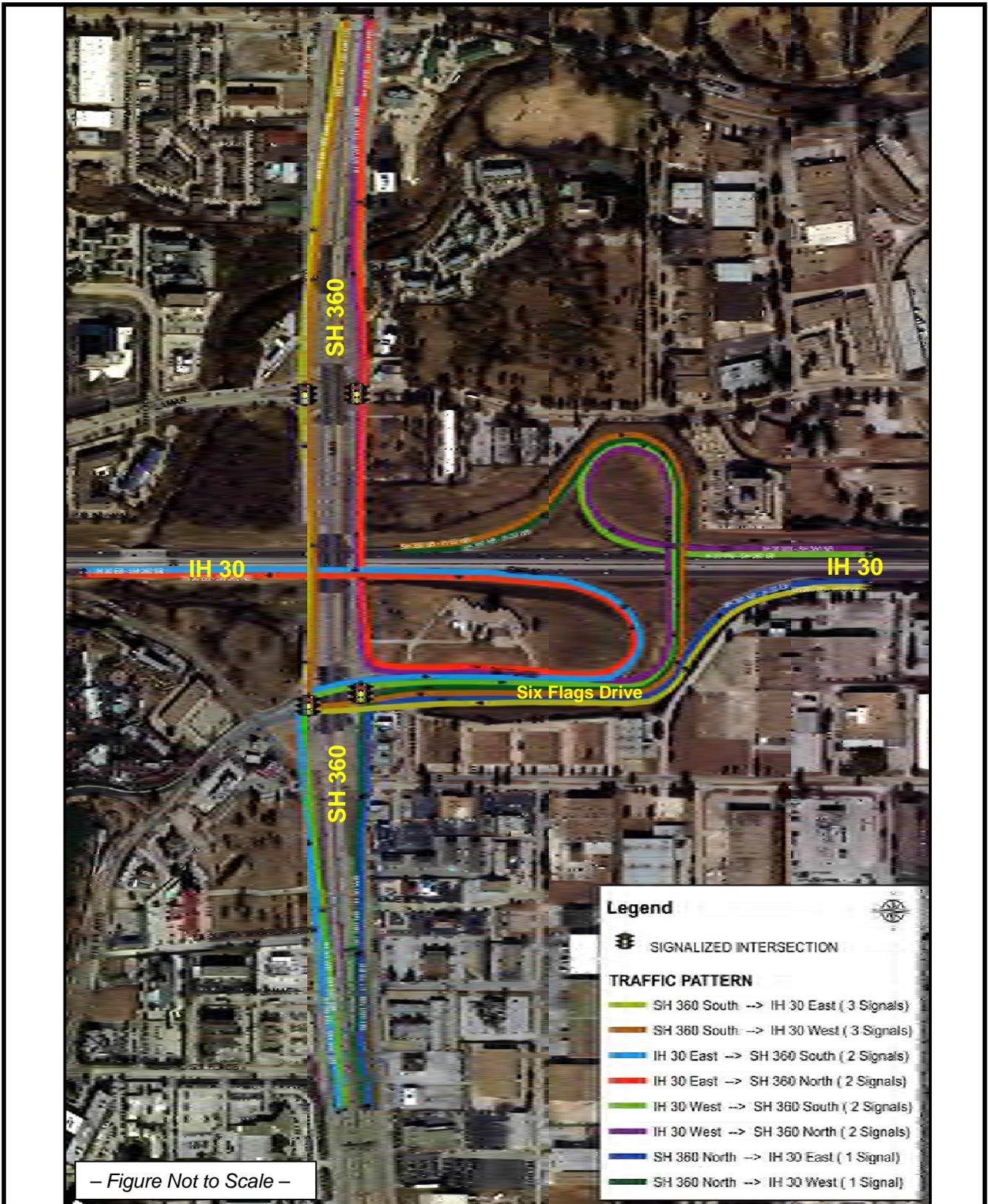
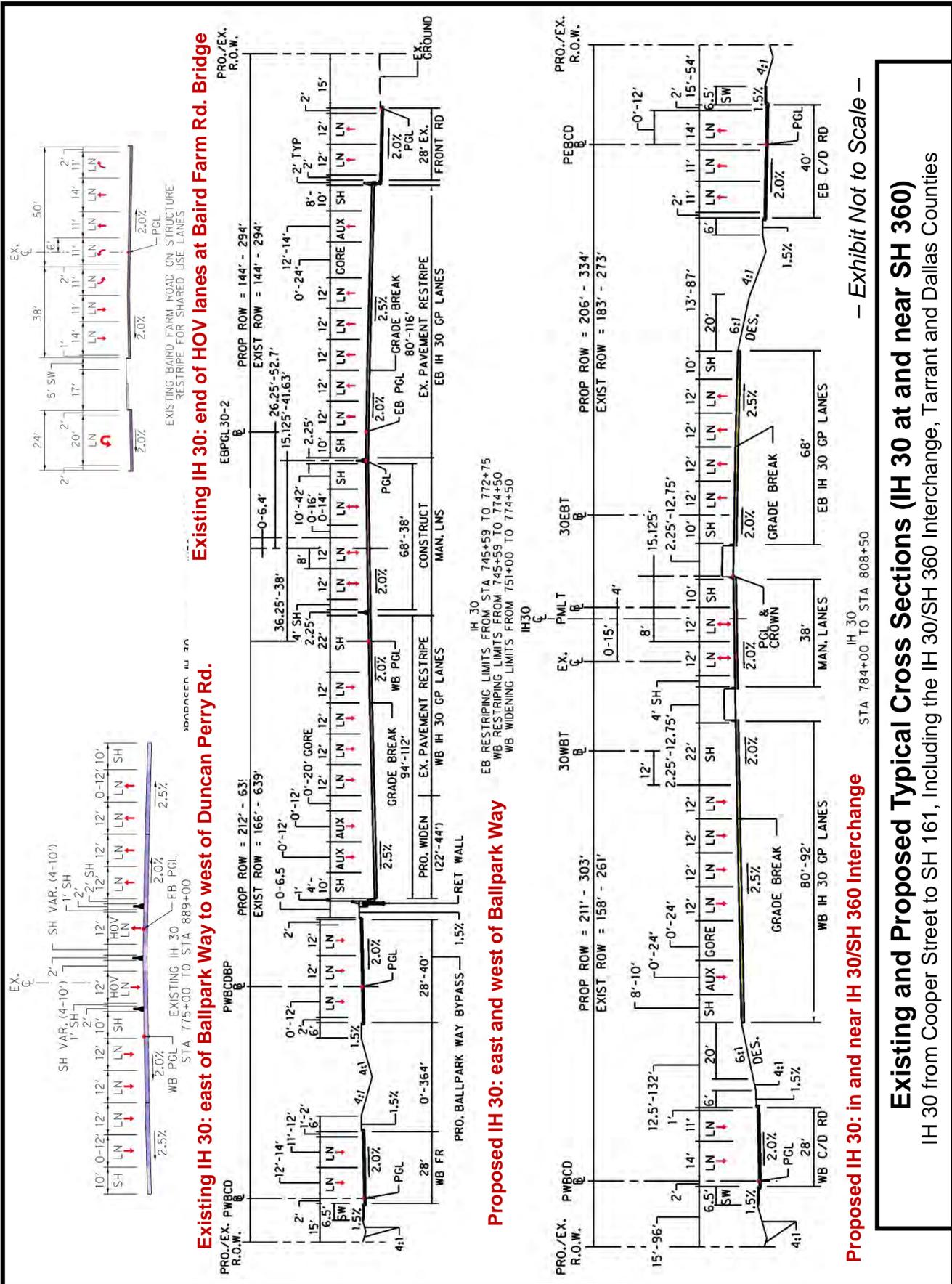


Figure 4. Current IH 30/SH 360 Interchange Traffic Pattern

IH 30 from Cooper Street to SH 161, Including the IH 30/SH 360 Interchange

Tarrant and Dallas Counties, Texas

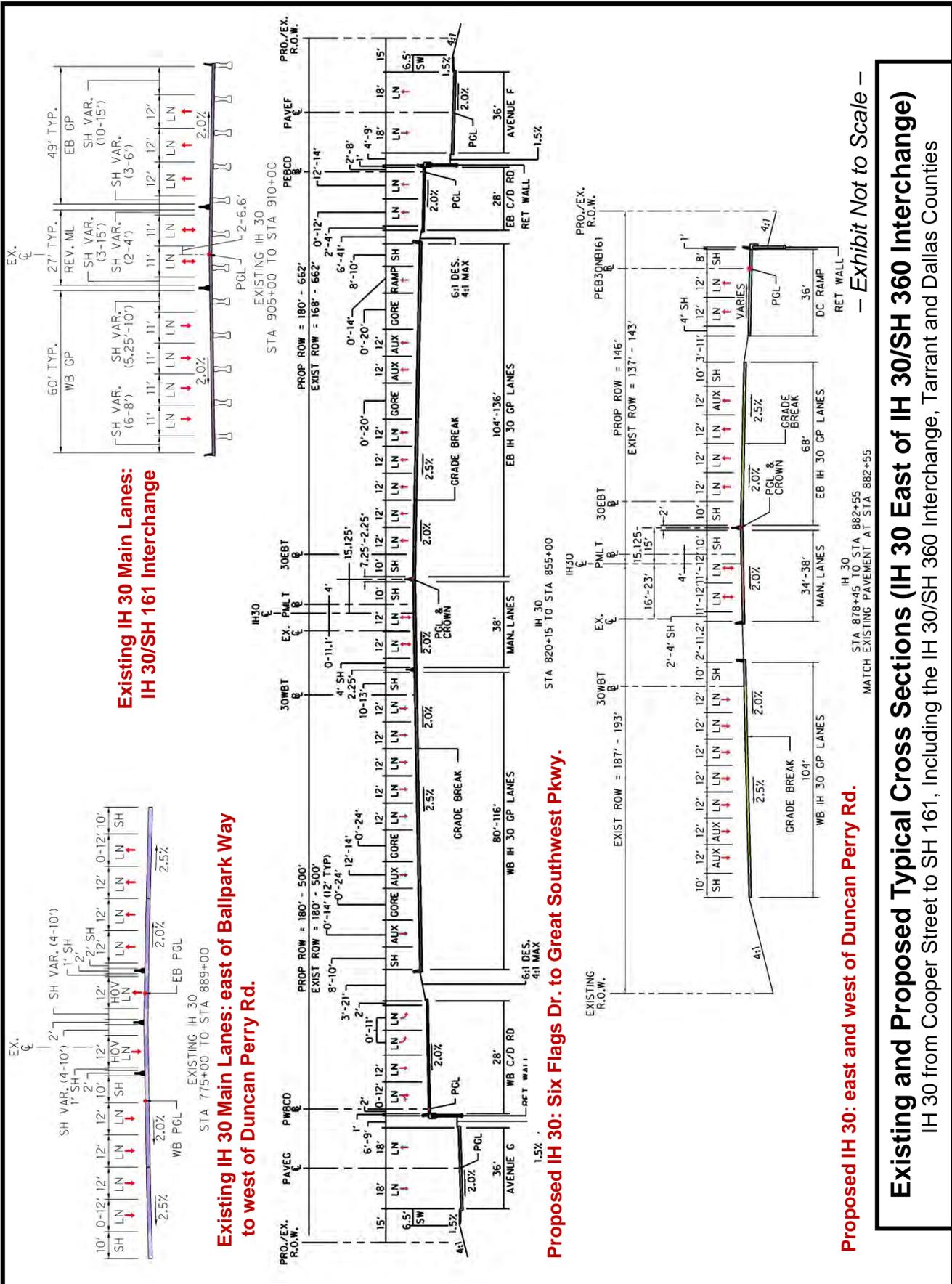
CSJs: 1068-02-076, -104, -127; and 1068-04-903

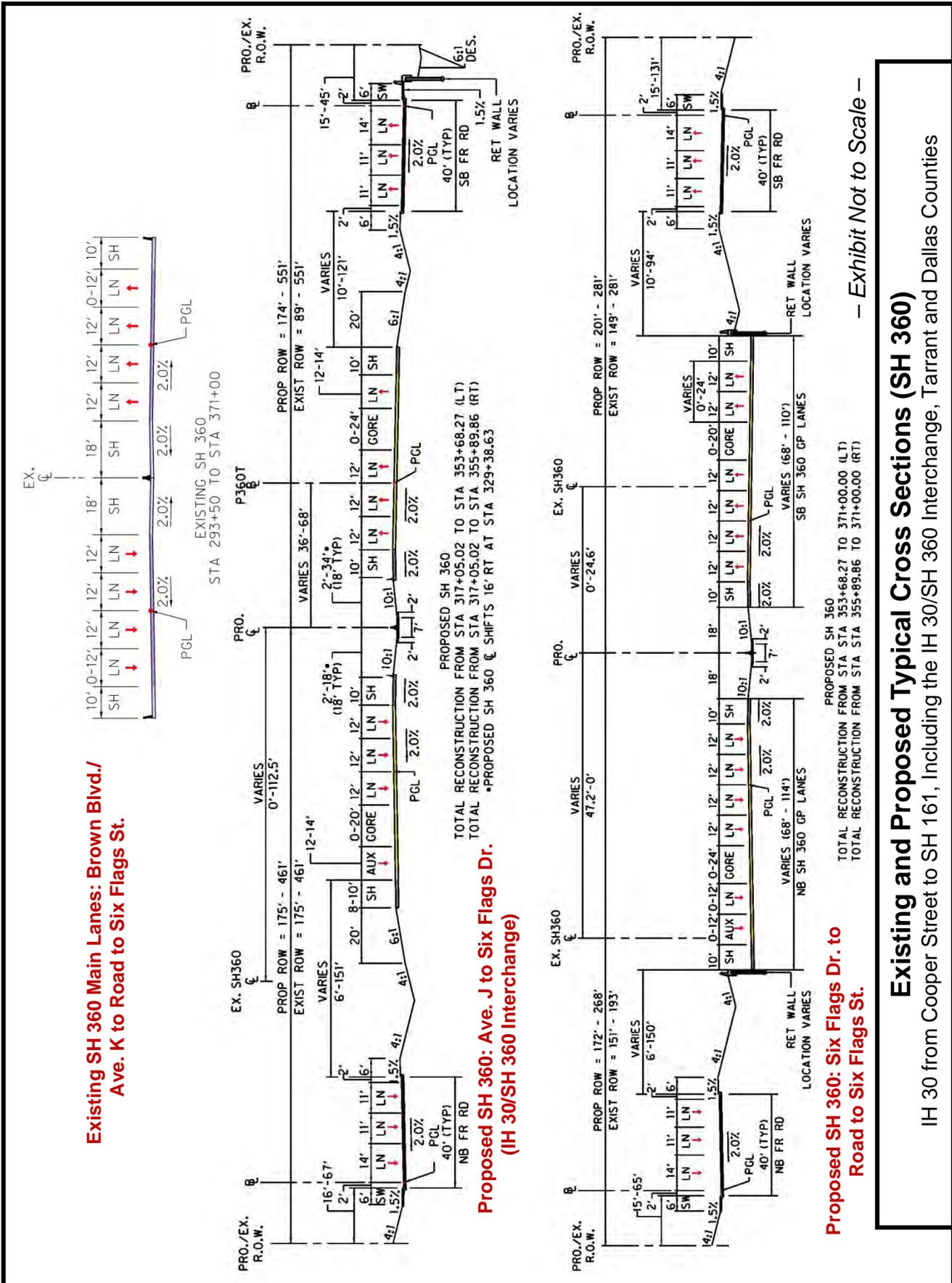


— Exhibit Not to Scale —

Existing and Proposed Typical Cross Sections (IH 30 at and near SH 360)

IH 30 from Cooper Street to SH 161, including the IH 30/SH 360 Interchange, Tarrant and Dallas Counties





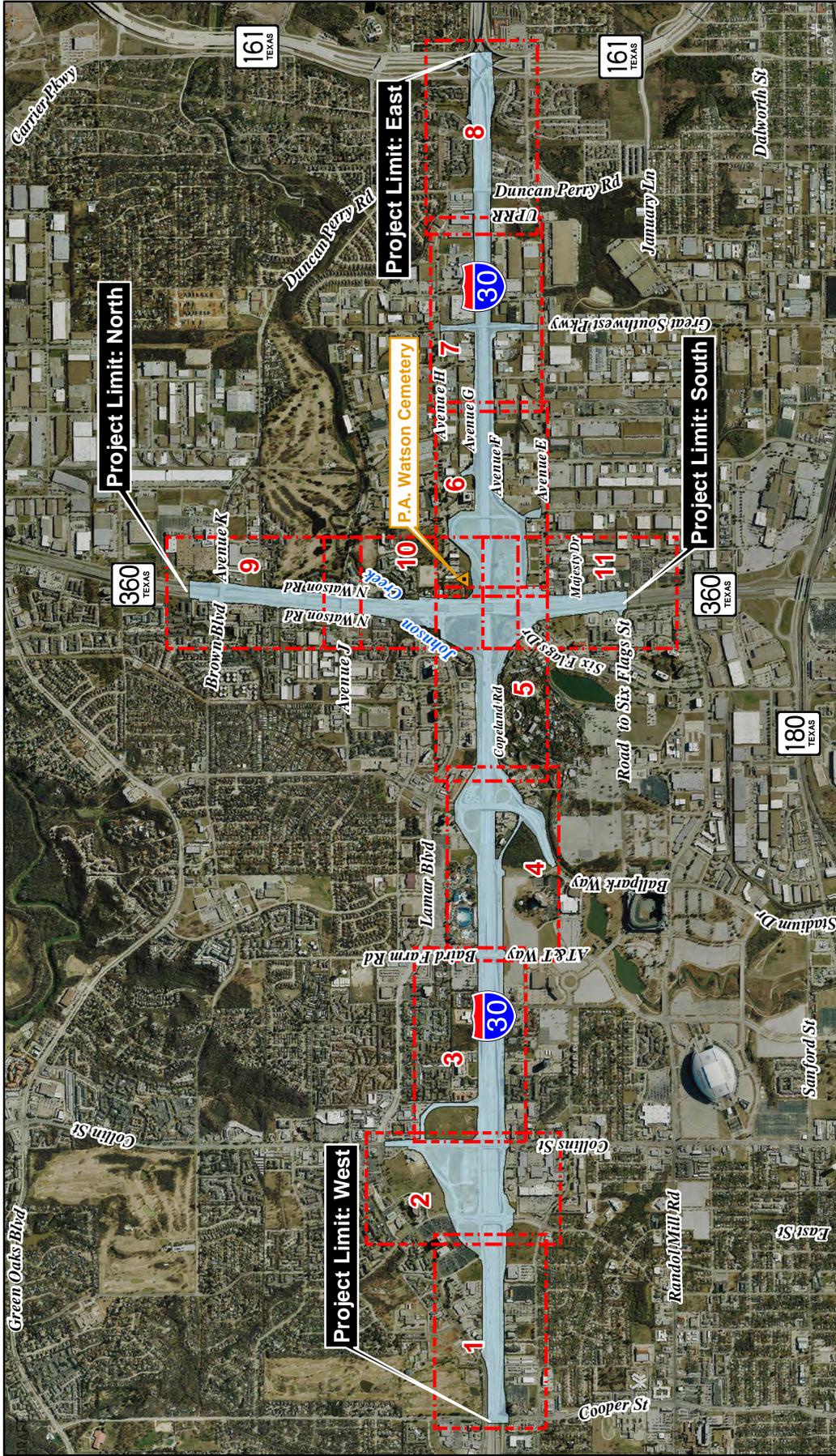


Figure 6-1. Plan View Design Index Map

IH 30 from Cooper Street to SH 161, Including the IH 30/SH 360 Interchange Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

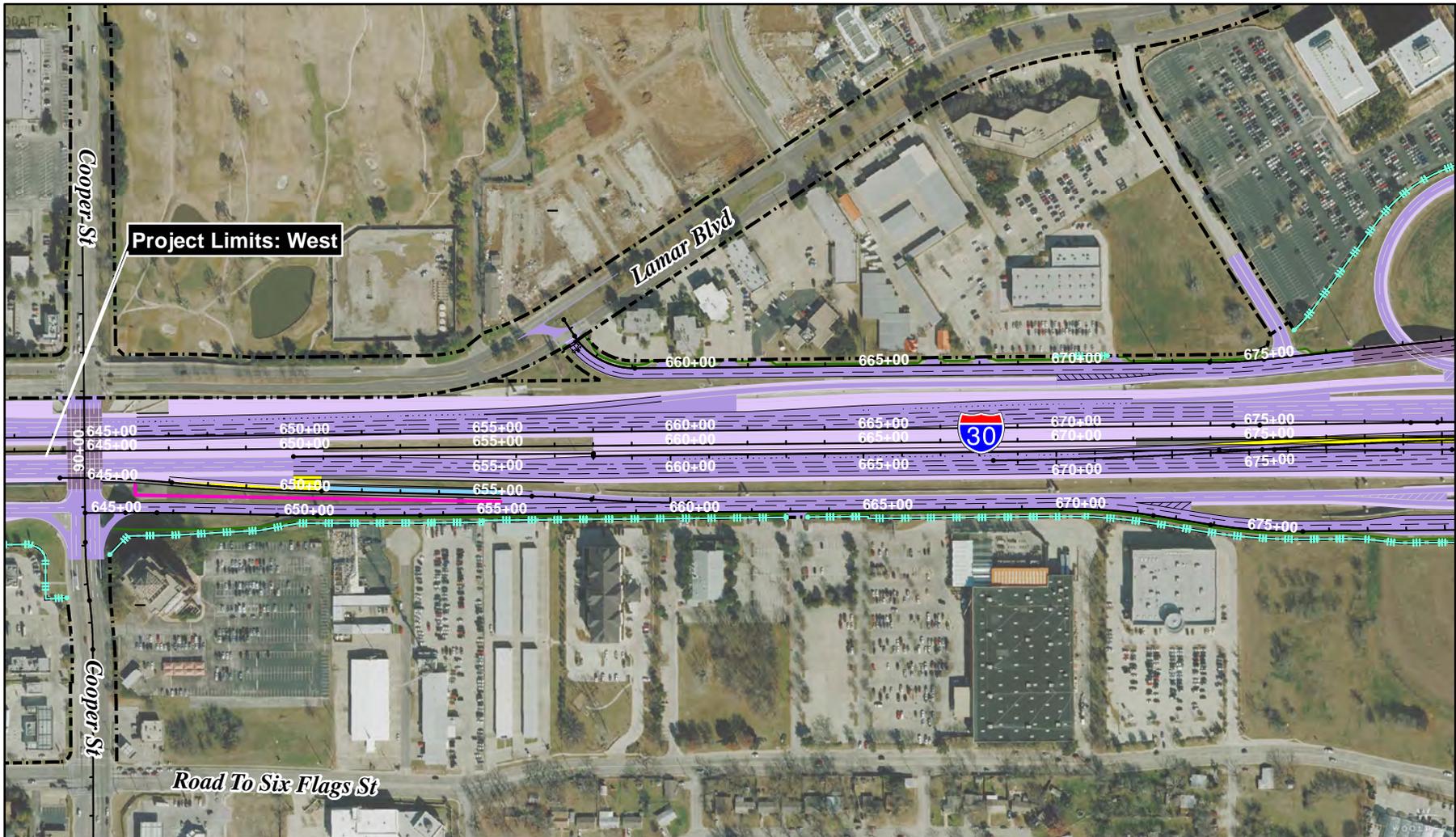
Legend

- Project Limits
- 1 Map Sheet Boundary and Number

Legend

- Project Limits
- 1 Map Sheet Boundary and Number

Source / Year of Aerial Photograph: NCTCOG / 2015

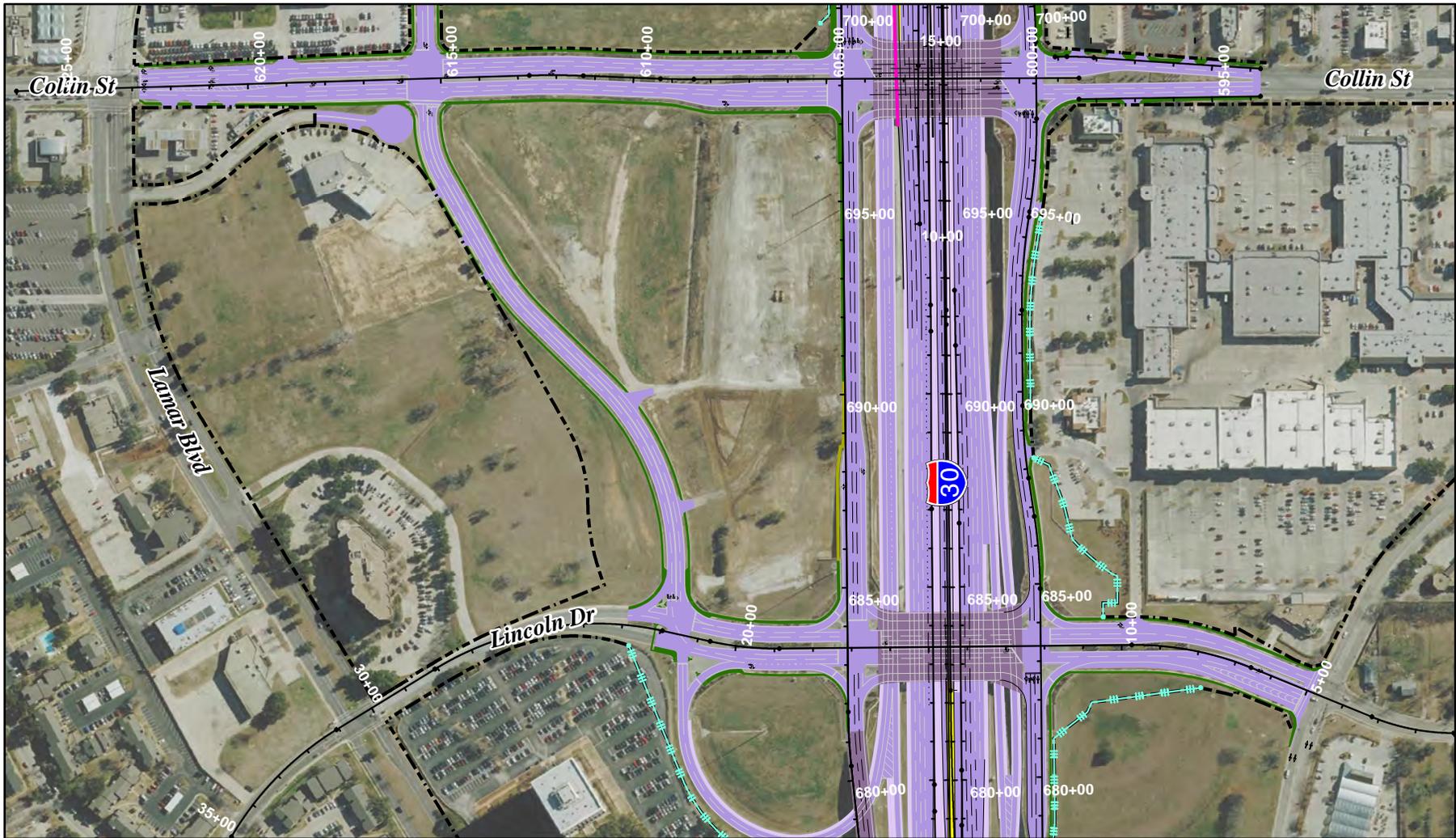


Legend		
— Existing ROW	— Proposed Retaining Wall	— Proposed Managed Lane
— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Proposed Sidewalk
— Proposed Bridge Abutment	— Existing Bridge	— Existing Sidewalk
— Proposed Bridge Bent	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Noise Wall	— Proposed Mainlane	— Pavement/Bridge to be Removed
	— Proposed Frontage Road	

**Figure 6-2. (Page 1 of 11).
Plan View Design Map**
IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

SCALE IN FEET

Source / Year of Aerial Photograph:
NCTCOG / 2015

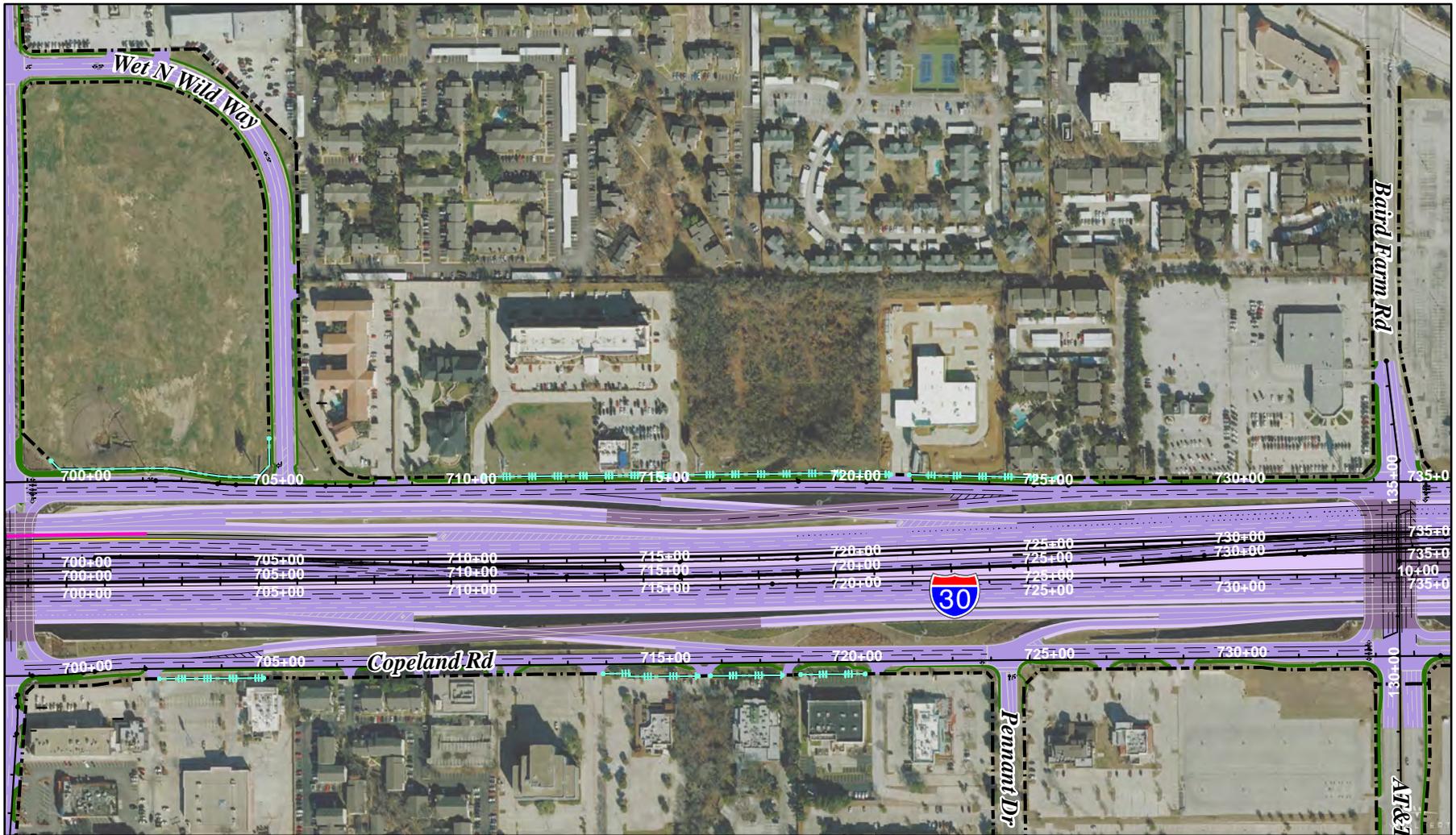


Legend		
— Existing ROW	— Proposed Retaining Wall	— Proposed Managed Lane
— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Proposed Sidewalk
— Proposed Bridge Abutment	— Existing Bridge	— Existing Sidewalk
— Proposed Bridge Bent	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Noise Wall	— Proposed Mainlane	— Pavement/Bridge to be Removed
	— Proposed Frontage Road	

**Figure 6-2. (Page 2 of 11).
Plan View Design Map**
IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

SCALE IN FEET

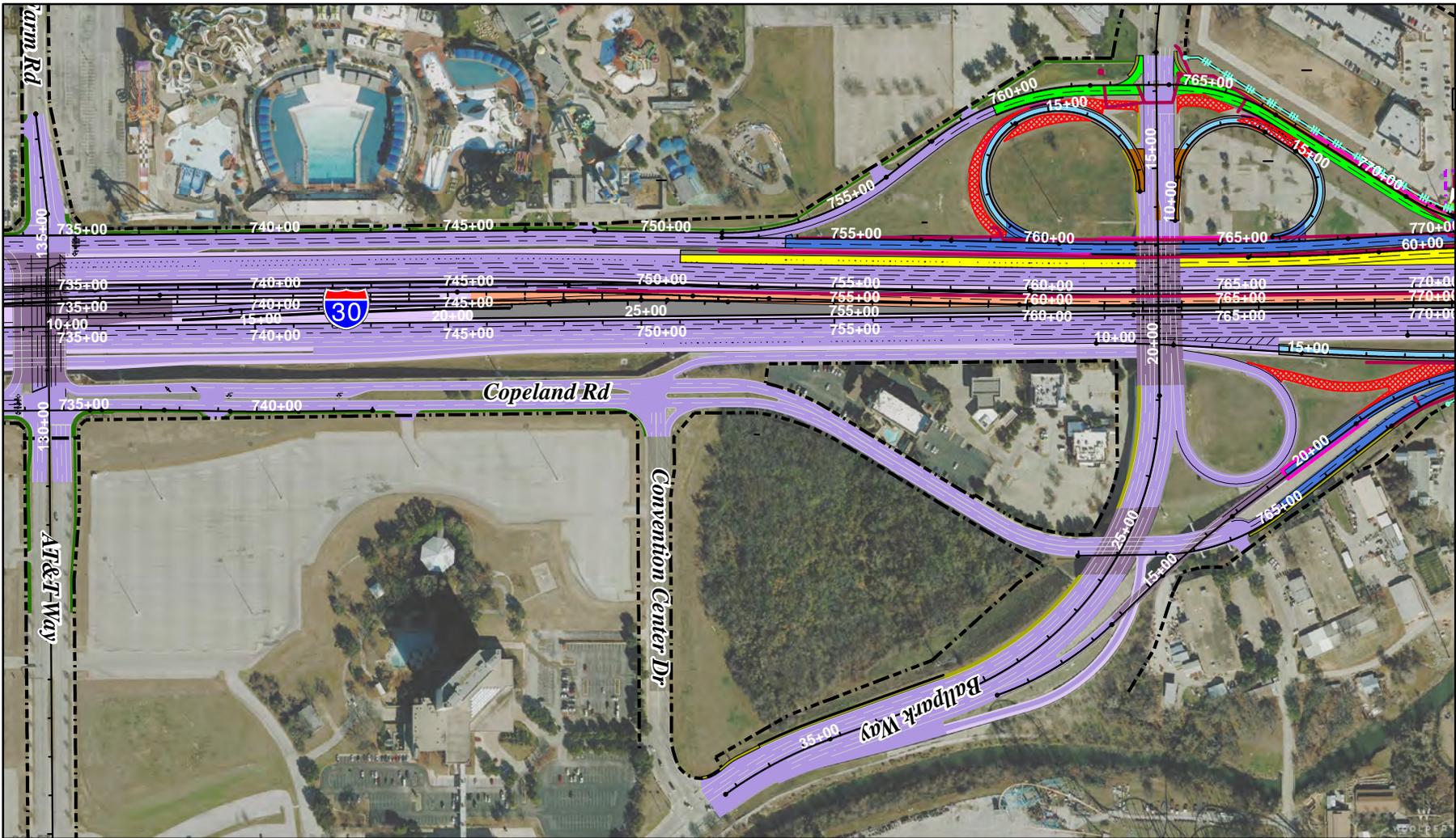
Source / Year of Aerial Photograph:
NCTCOG / 2015



Legend		
— Existing ROW	— Proposed Retaining Wall	— Proposed Managed Lane
— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Proposed Sidewalk
— Proposed Bridge Abutment	— Existing Bridge	— Existing Sidewalk
— Proposed Bridge Bent	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Noise Wall	— Proposed Mainlane	— Pavement/Bridge to be Removed
	— Proposed Frontage Road	

**Figure 6-2. (Page 3 of 11).
Plan View Design Map**
IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

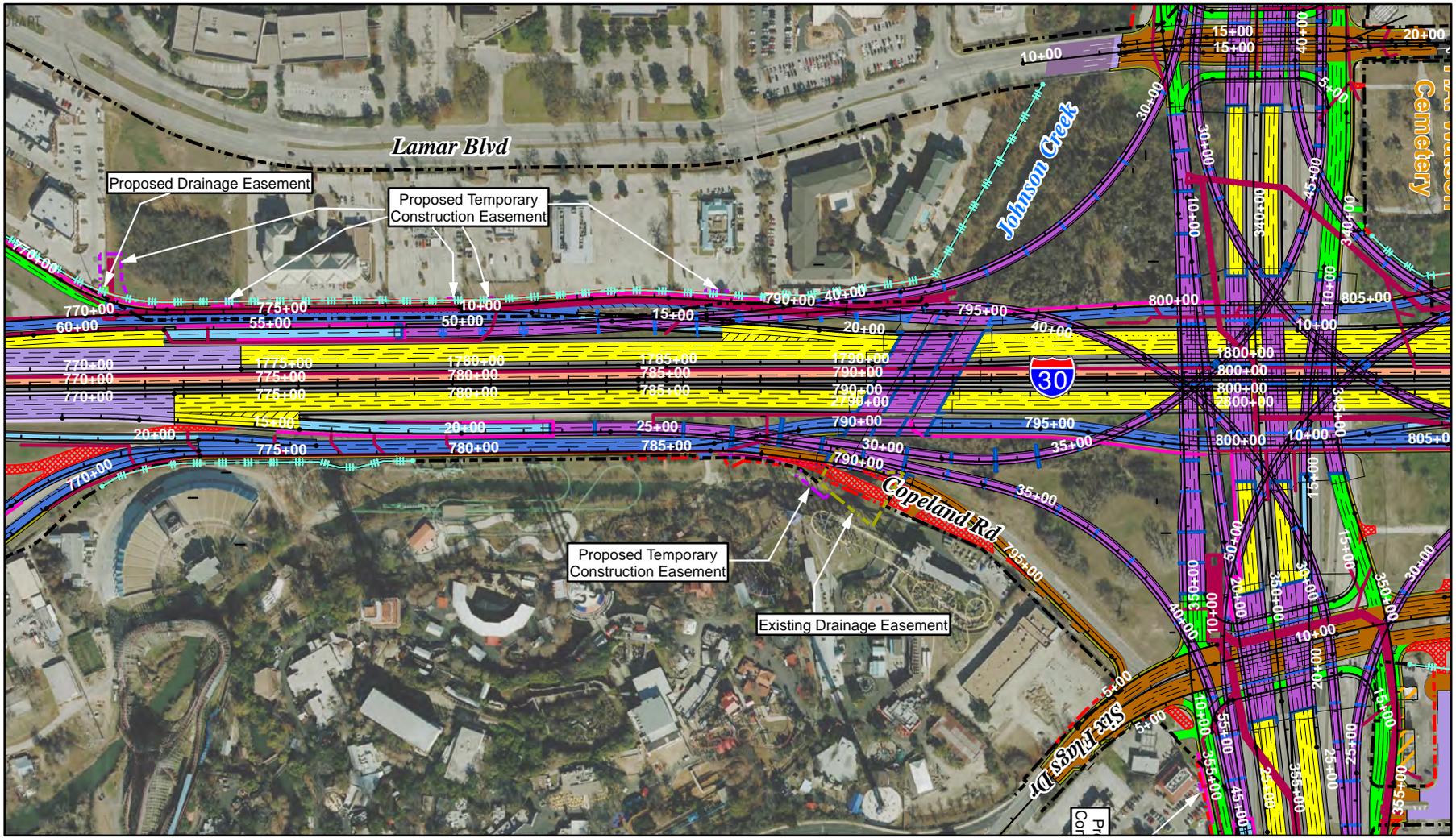

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 SCALE IN FEET
 Source / Year of Aerial Photograph:
 NCTCOG / 2015



Legend		
— Existing ROW	— Proposed Retaining Wall	— Proposed Managed Lane
— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Proposed Sidewalk
— Proposed Bridge Abutment	— Existing Bridge	— Existing Sidewalk
— Proposed Bridge Bent	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Noise Wall	— Proposed Mainlane	— Pavement/Bridge to be Removed
	— Proposed Frontage Road	

**Figure 6-2. (Page 4 of 11).
Plan View Design Map**
IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

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SCALE IN FEET
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NCTCOG / 2015

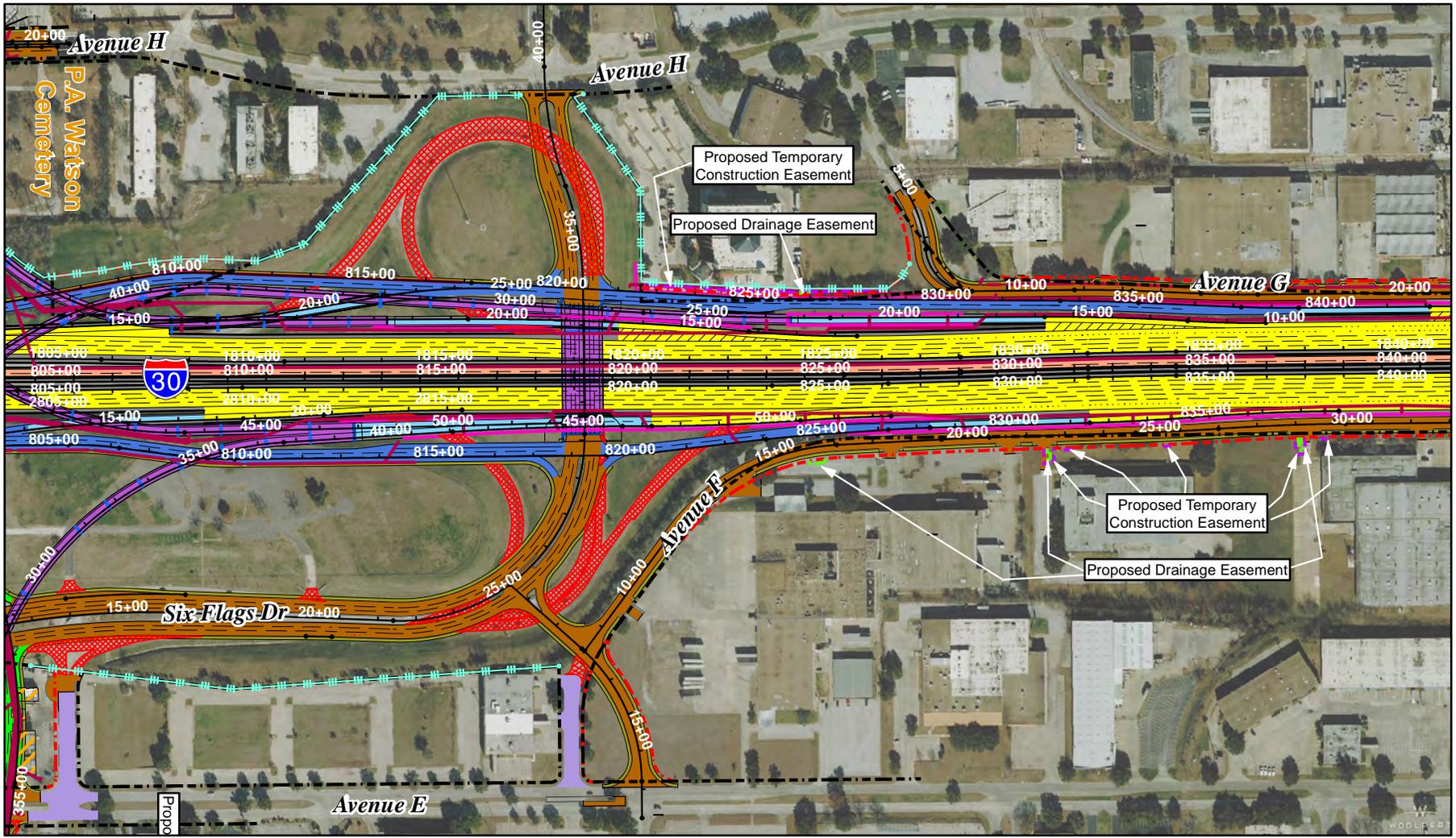


Legend		
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— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Proposed Sidewalk
— Proposed Bridge Abutment	— Existing Bridge	— Existing Sidewalk
— Proposed Bridge Bent	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Noise Wall	— Proposed Mainlane	— Pavement/Bridge to be Removed
	— Proposed Frontage Road	

**Figure 6-2. (Page 5 of 11).
Plan View Design Map**
 IH 30 Project from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

SCALE IN FEET

Source / Year of Aerial Photograph:
NCTCOG / 2015

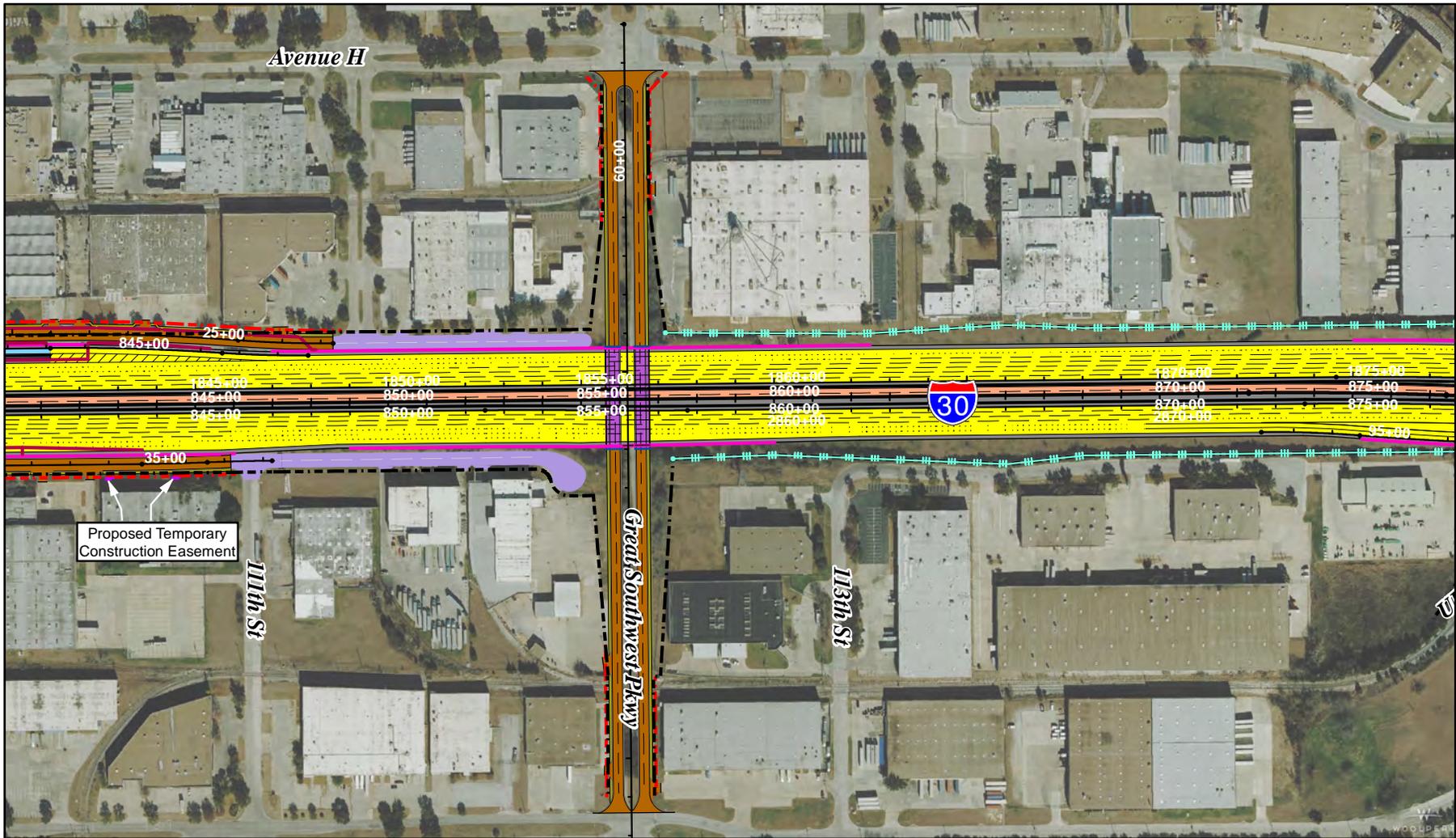


Legend		
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— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Proposed Sidewalk
— Proposed Bridge Abutment	— Existing Bridge	— Existing Sidewalk
— Proposed Bridge Bent	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Noise Wall	— Proposed Mainlane	— Pavement/Bridge to be Removed
	— Proposed Frontage Road	

**Figure 6-2. (Page 6 of 11).
Plan View Design Map**
 IH 30 Project from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

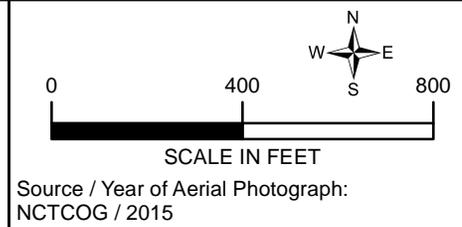
SCALE IN FEET

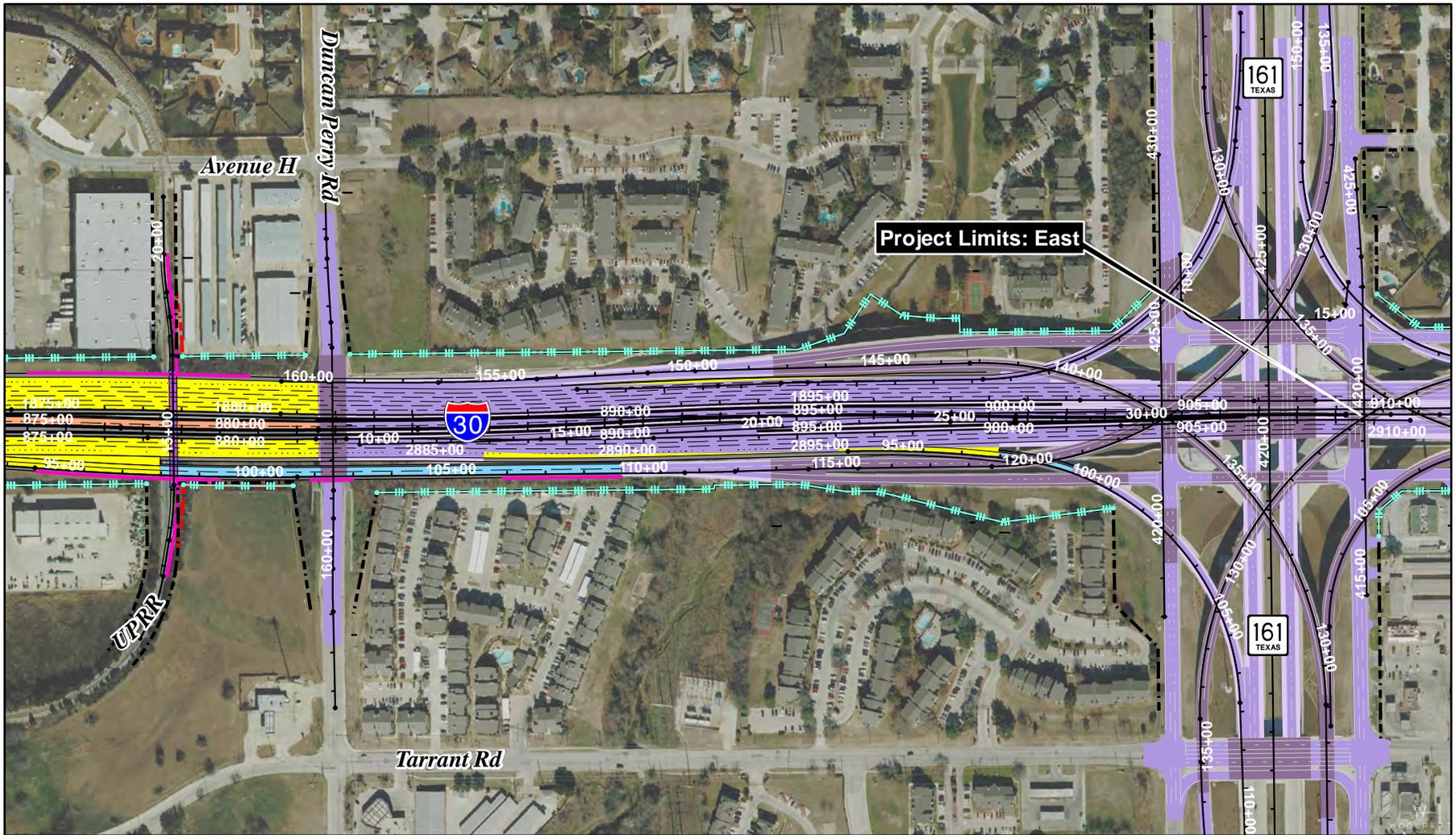
Source / Year of Aerial Photograph:
NCTCOG / 2015



Legend		
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— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
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— Proposed Bridge Abutment	— Existing Bridge	— Existing Sidewalk
— Proposed Bridge Bent	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Noise Wall	— Proposed Mainlane	— Pavement/Bridge to be Removed
	— Proposed Frontage Road	

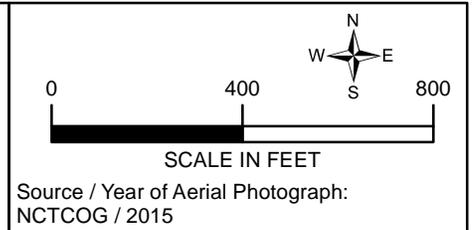
**Figure 6-2. (Page 7 of 11).
Plan View Design Map**
IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

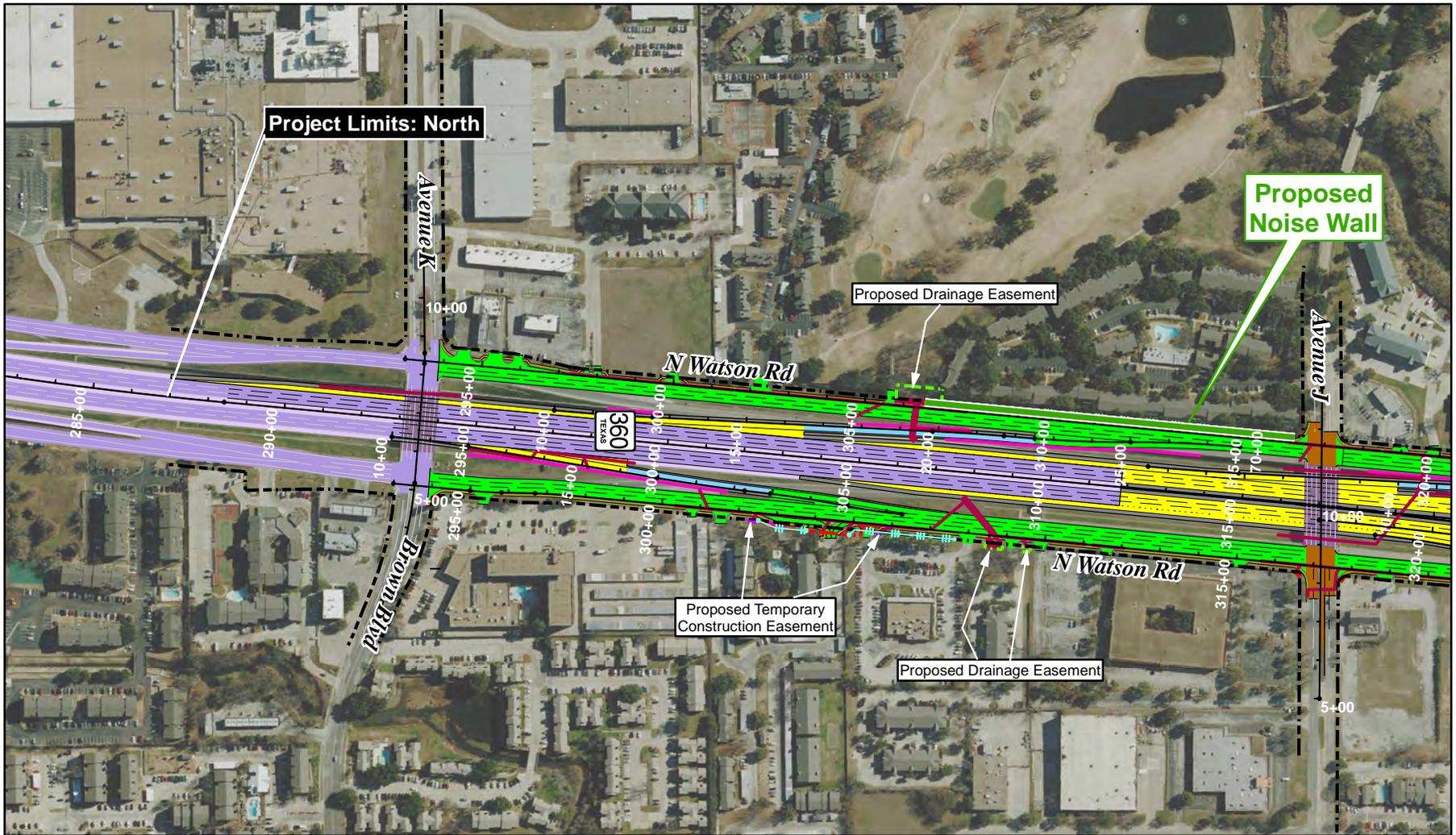




Legend		
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— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
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— Proposed Bridge Abutment	— Existing Bridge	— Existing Sidewalk
— Proposed Bridge Bent	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Noise Wall	— Proposed Mainlane	— Pavement/Bridge to be Removed
	— Proposed Frontage Road	

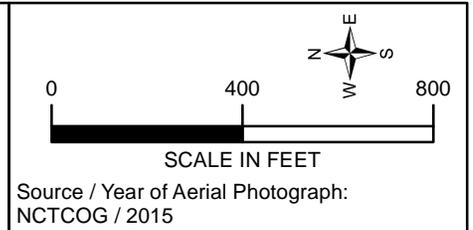
**Figure 6-2. (Page 8 of 11).
Plan View Design Map**
IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

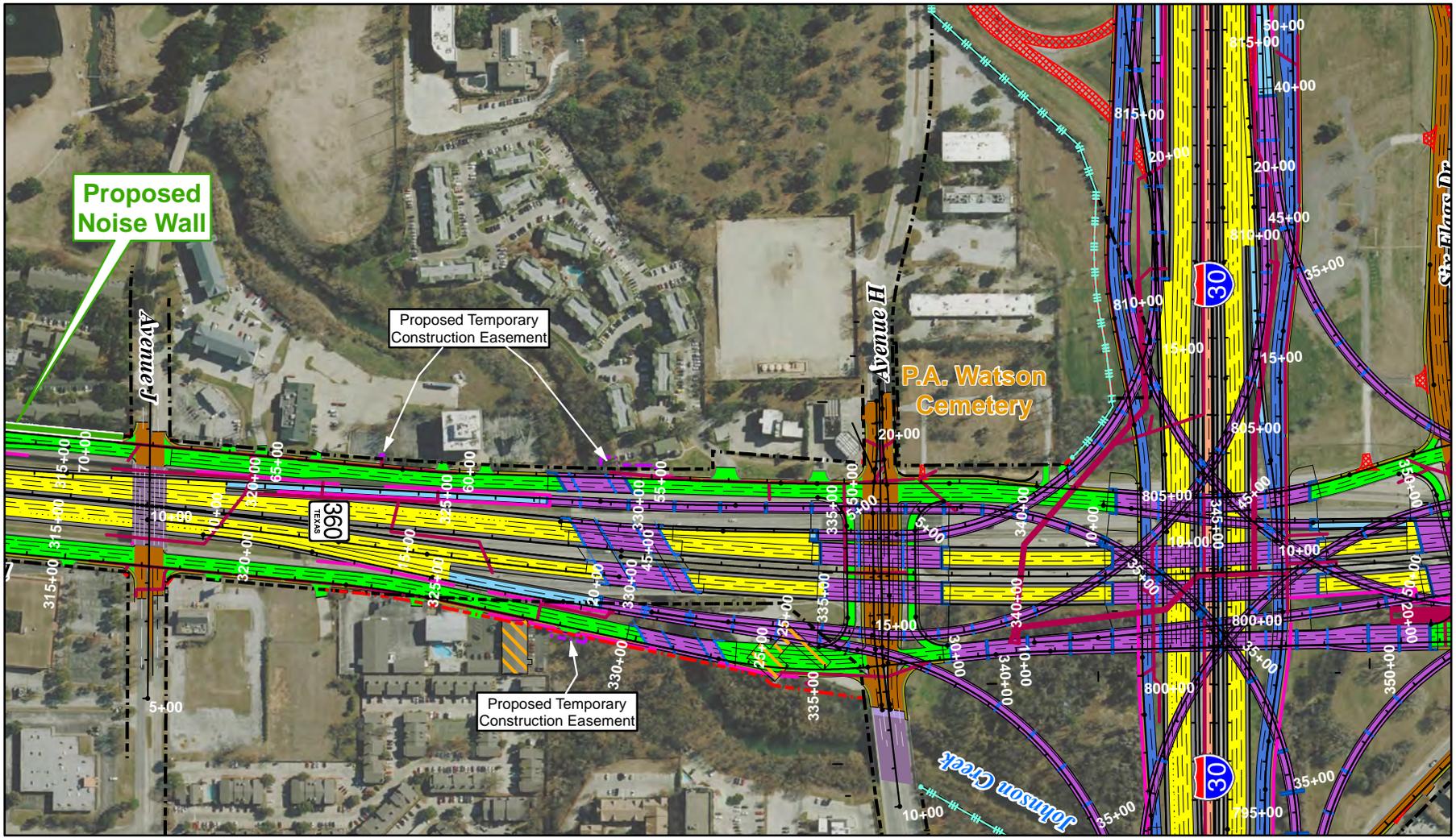




Legend		
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— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
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— Control of Access	— Existing Roadway	— Proposed Sidewalk
— Proposed Bridge Abutment	— Existing Bridge	— Existing Sidewalk
— Proposed Bridge Bent	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Noise Wall	— Proposed Mainlane	— Pavement/Bridge to be Removed
	— Proposed Frontage Road	

**Figure 6-2. (Page 9 of 11).
Plan View Design Map**
IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903





Proposed Noise Wall

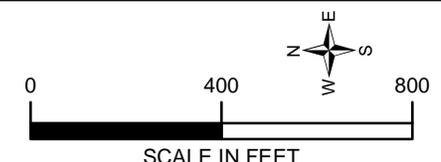
Proposed Temporary Construction Easement

Proposed Temporary Construction Easement

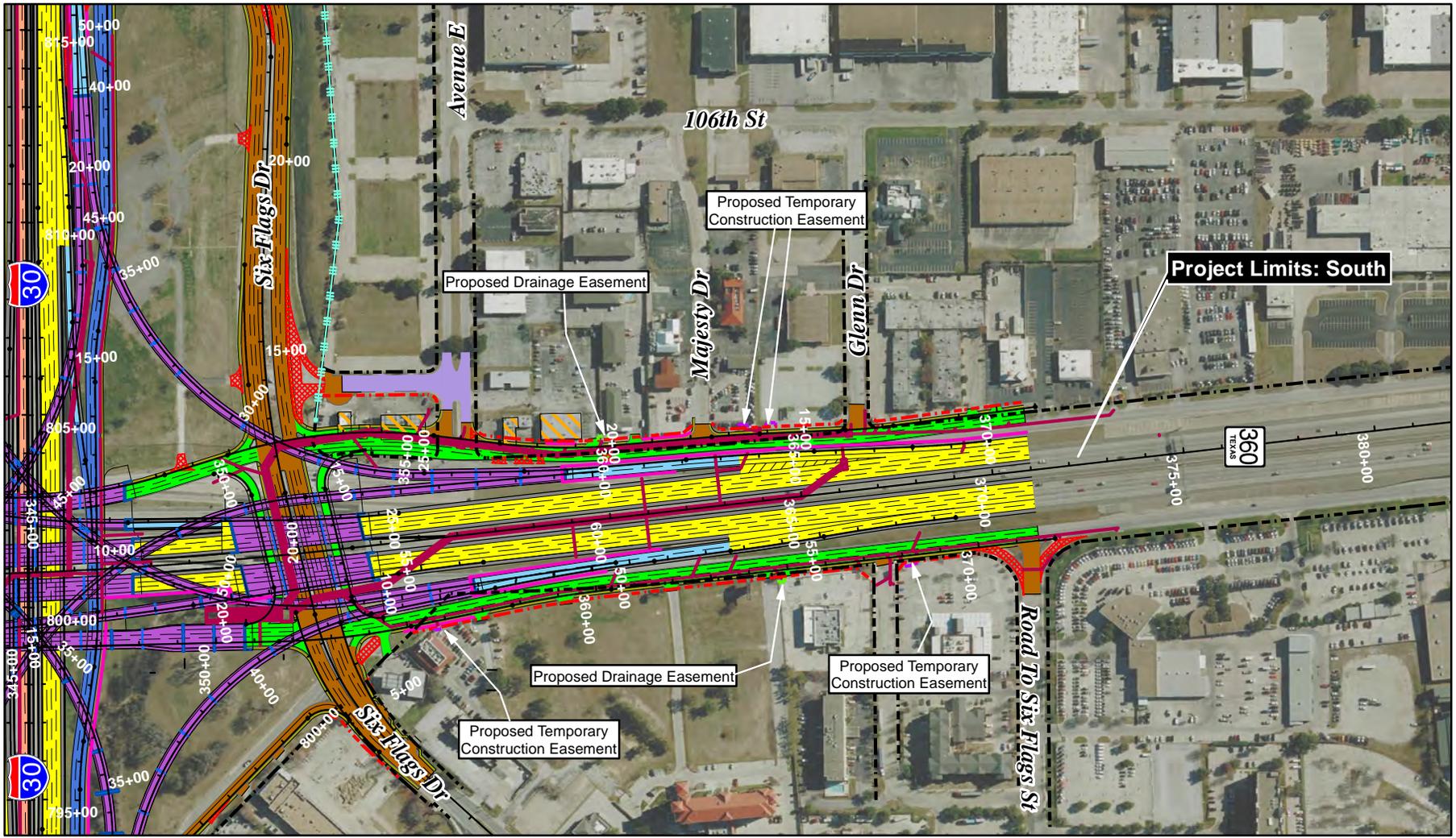
Legend		
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— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Proposed Sidewalk
— Proposed Bridge Abutment	— Existing Bridge	— Existing Sidewalk
— Proposed Bridge Bent	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Noise Wall	— Proposed Mainlane	— Pavement/Bridge to be Removed
	— Proposed Frontage Road	

Figure 6-2. (Page 10 of 11). Plan View Design Map

IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903



SCALE IN FEET
Source / Year of Aerial Photograph:
NCTCOG / 2015



Legend		
— Existing ROW	— Proposed Retaining Wall	— Proposed Managed Lane
— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Proposed Sidewalk
— Proposed Bridge Abutment	— Existing Bridge	— Existing Sidewalk
— Proposed Bridge Bent	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Noise Wall	— Proposed Mainlane	— Pavement/Bridge to be Removed
	— Proposed Frontage Road	

**Figure 6-2. (Page 11 of 11).
Plan View Design Map**
 IH 30 Project from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

SCALE IN FEET

Source / Year of Aerial Photograph:
NCTCOG / 2015

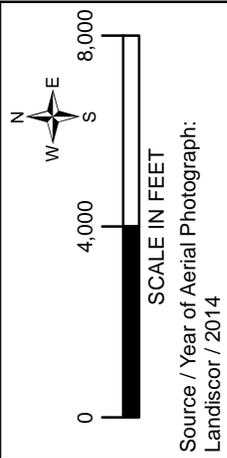
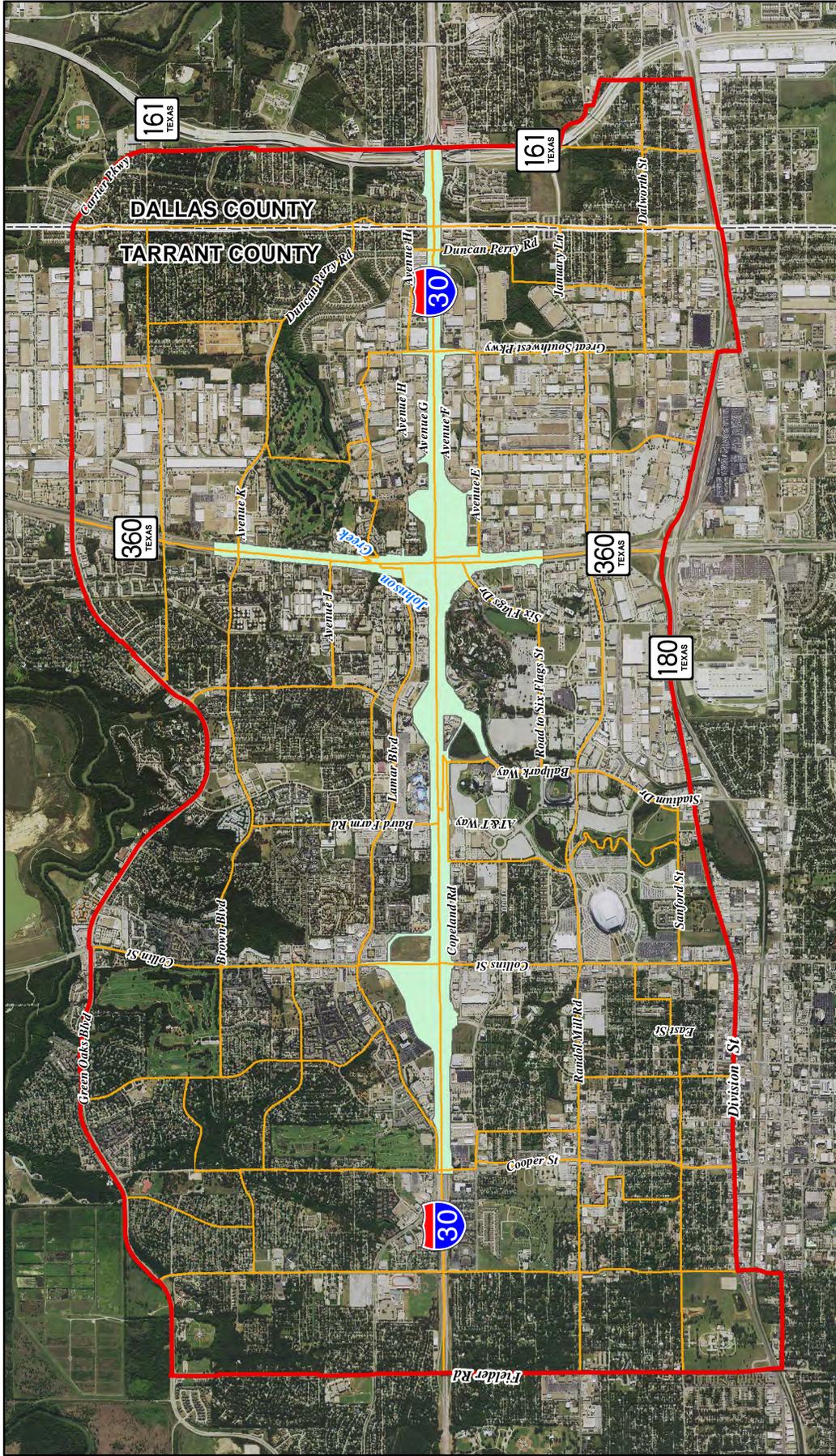
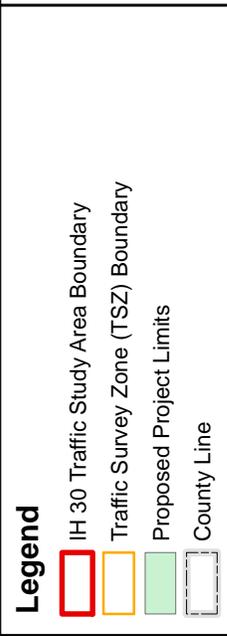


Figure 7. IH 30 Traffic Study Area for NCTCOG Regional Travel Modeling
 IH 30 from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903



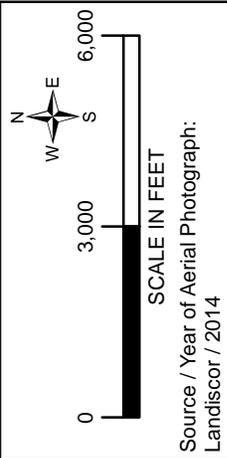
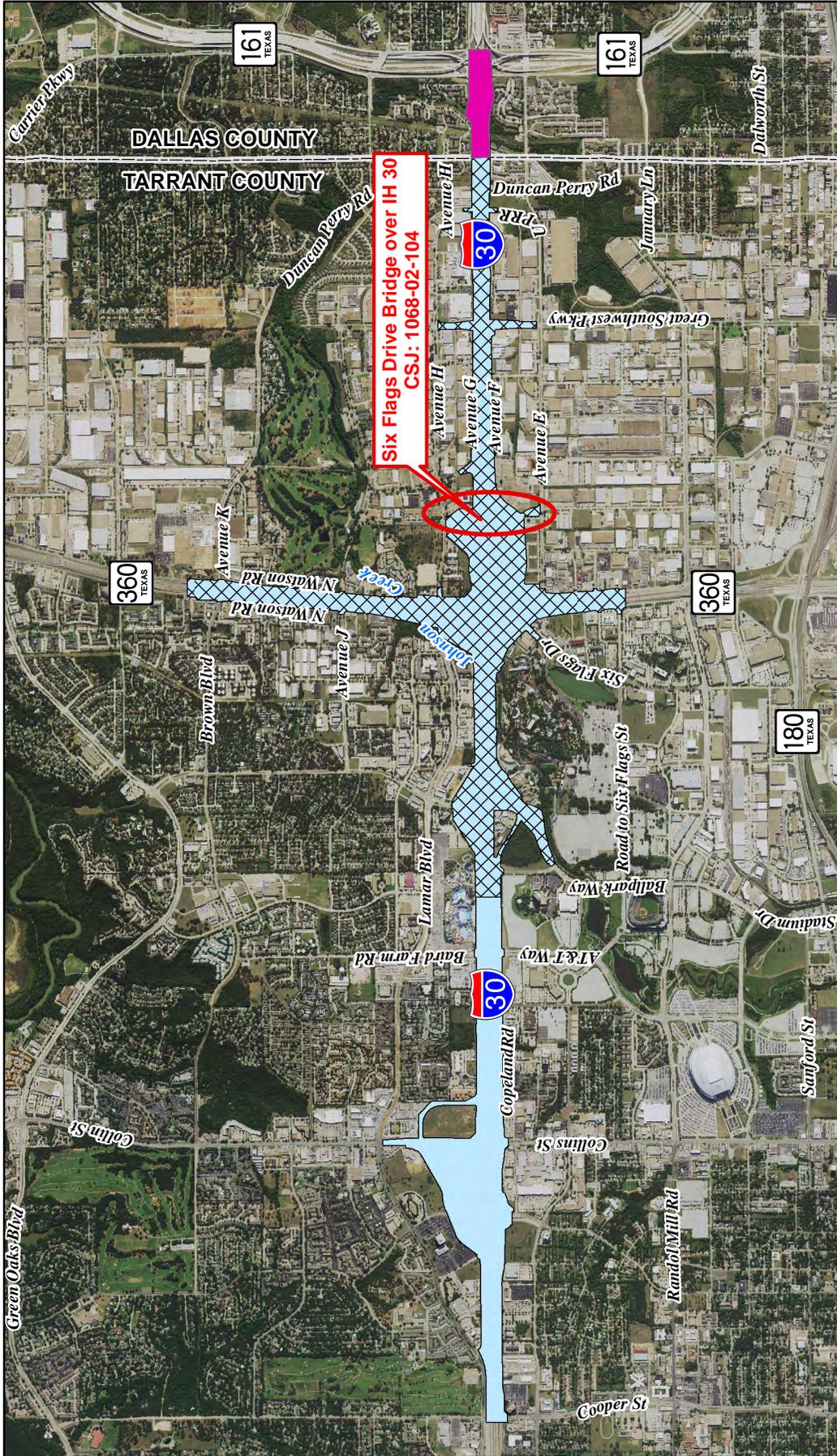
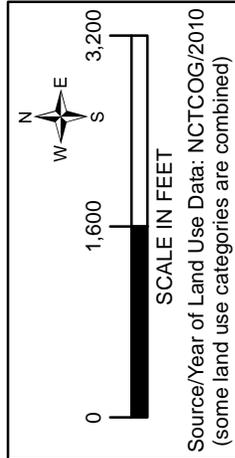
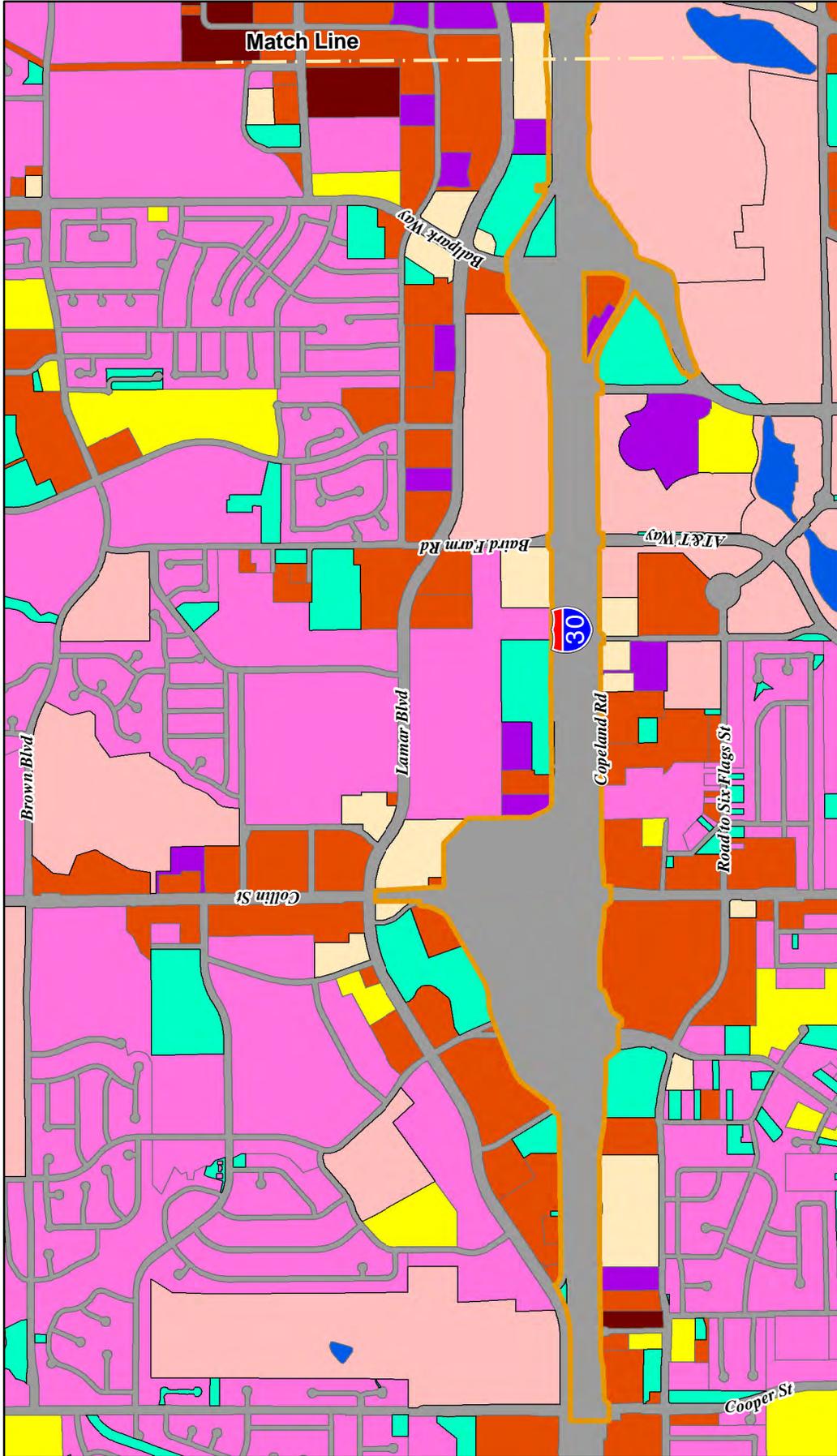


Figure 8. IH 30 Project CSJ Definitions

IH 30 from Cooper Steet to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

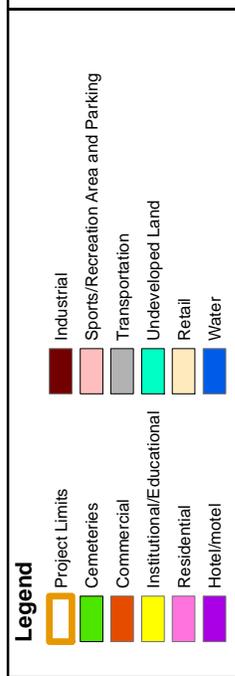
Legend

	IH 30 within Dallas County (CSJ: 1068-04-903)
	IH 30/SH 360 Interchange (CSJ: 1068-02-076)
	IH 30 within Tarrant County (CSJ: 1068-02-127)
	County Line

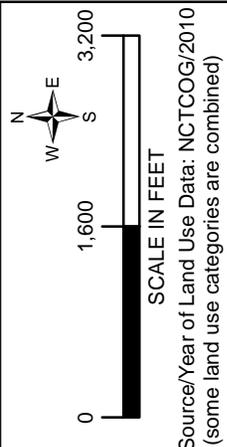
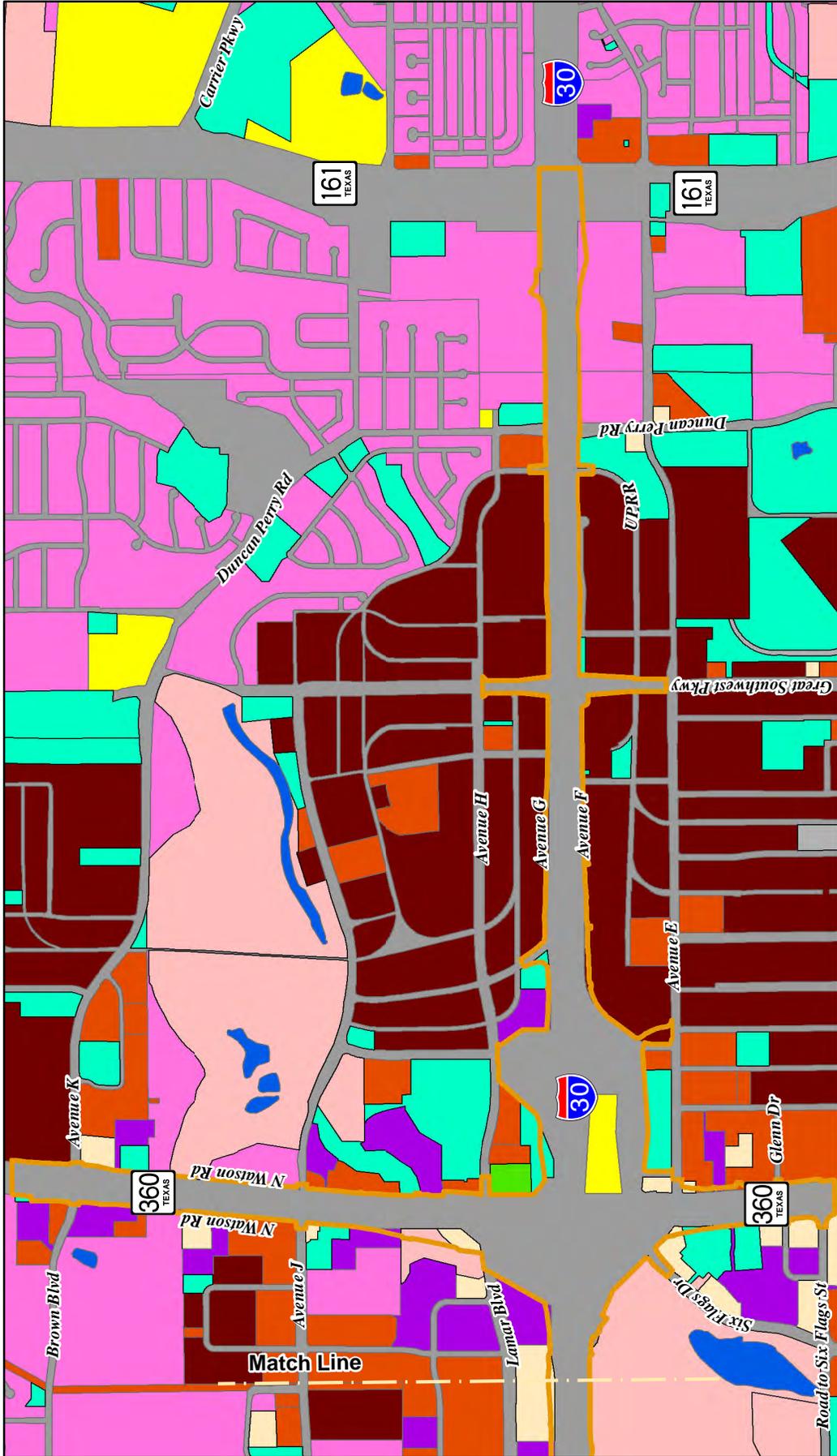


**Figure 9 (Page 1 of 2).
Land Use Map (2010)**

IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903



Source/Year of Land Use Data: NCTCOG/2010
(some land use categories are combined)

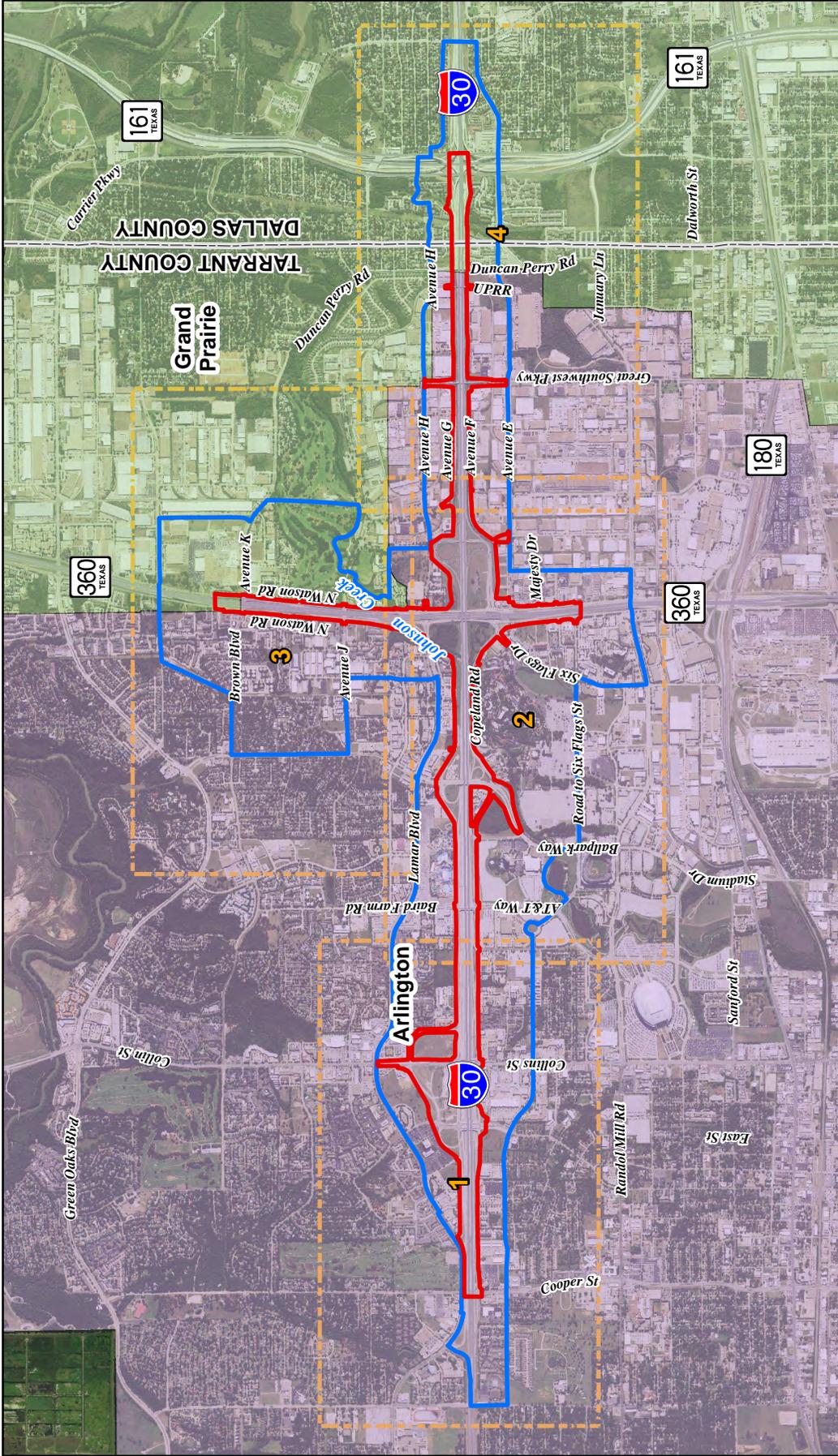


**Figure 9 (Page 2 of 2).
Land Use Map (2010)**
IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

	Project Limits		Industrial
	Cemeteries		Sports/Recreation Area and Parking
	Commercial		Transportation
	Institutional/Educational		Undeveloped Land
	Residential		Retail
	Hotel/motel		Water

Source/Year of Land Use Data: NCTCOG/2010
(some land use categories are combined)



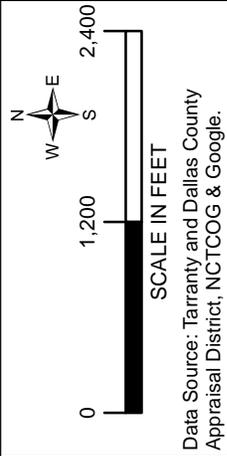
Legend

- Project Area
- Community Study Area
- Map Grid
- City of Grand Prairie
- City of Arlington
- County Line

Figure 10-1.
Community Facility Map Index
 IH 30 Project from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

SCALE IN FEET
 Source / Year of Aerial Photograph:
 Landisoor / 2014

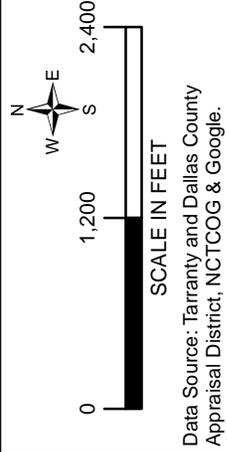
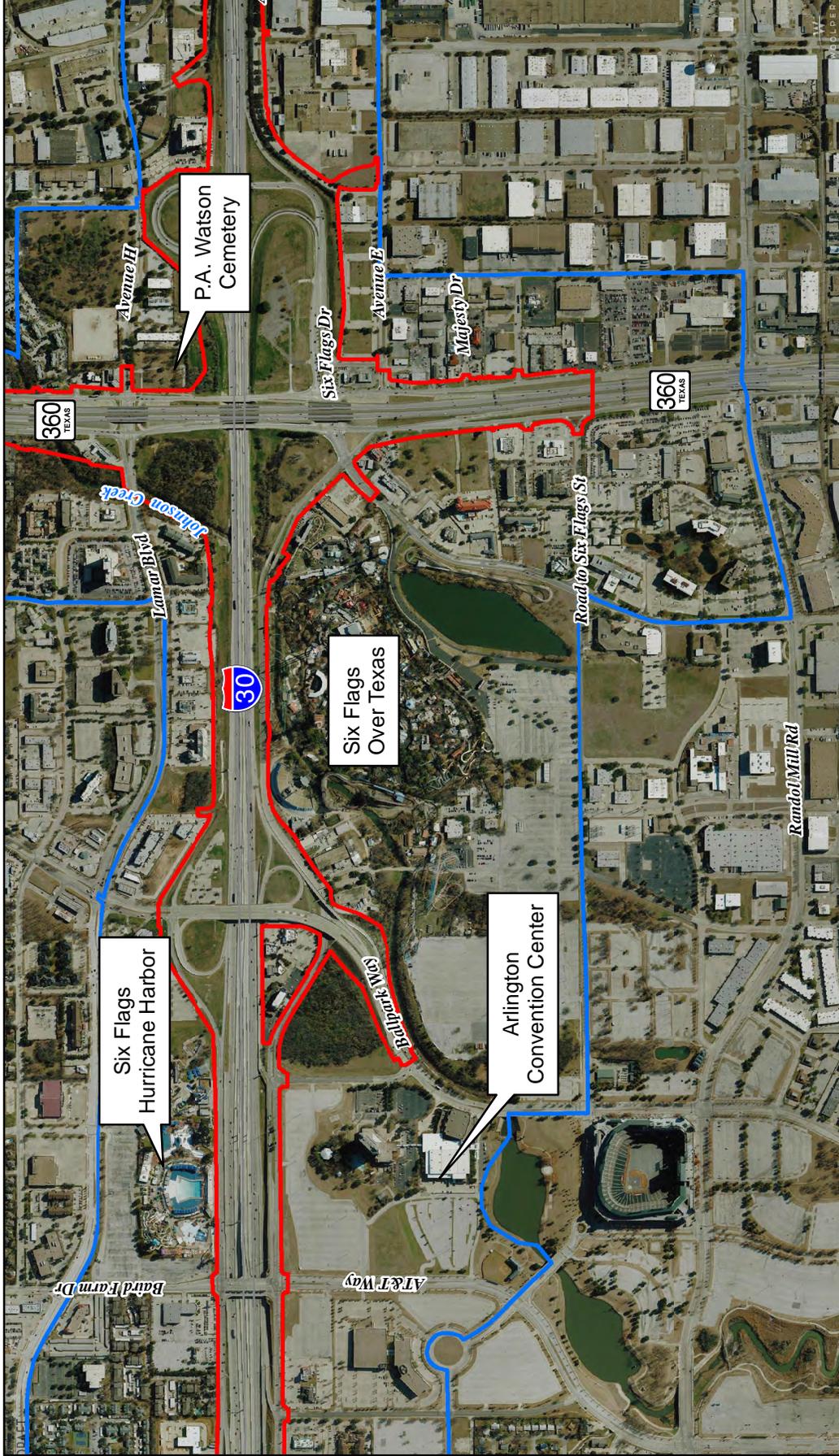
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**Figure 10-2 (Page 1 of 4).
Community Facility Map**
 IH 30 Project from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

- Project Area
- Community Study Area



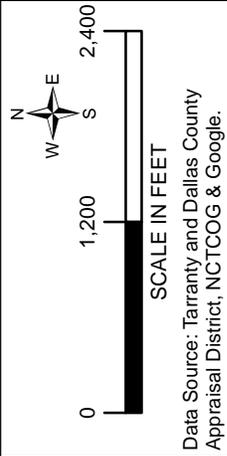
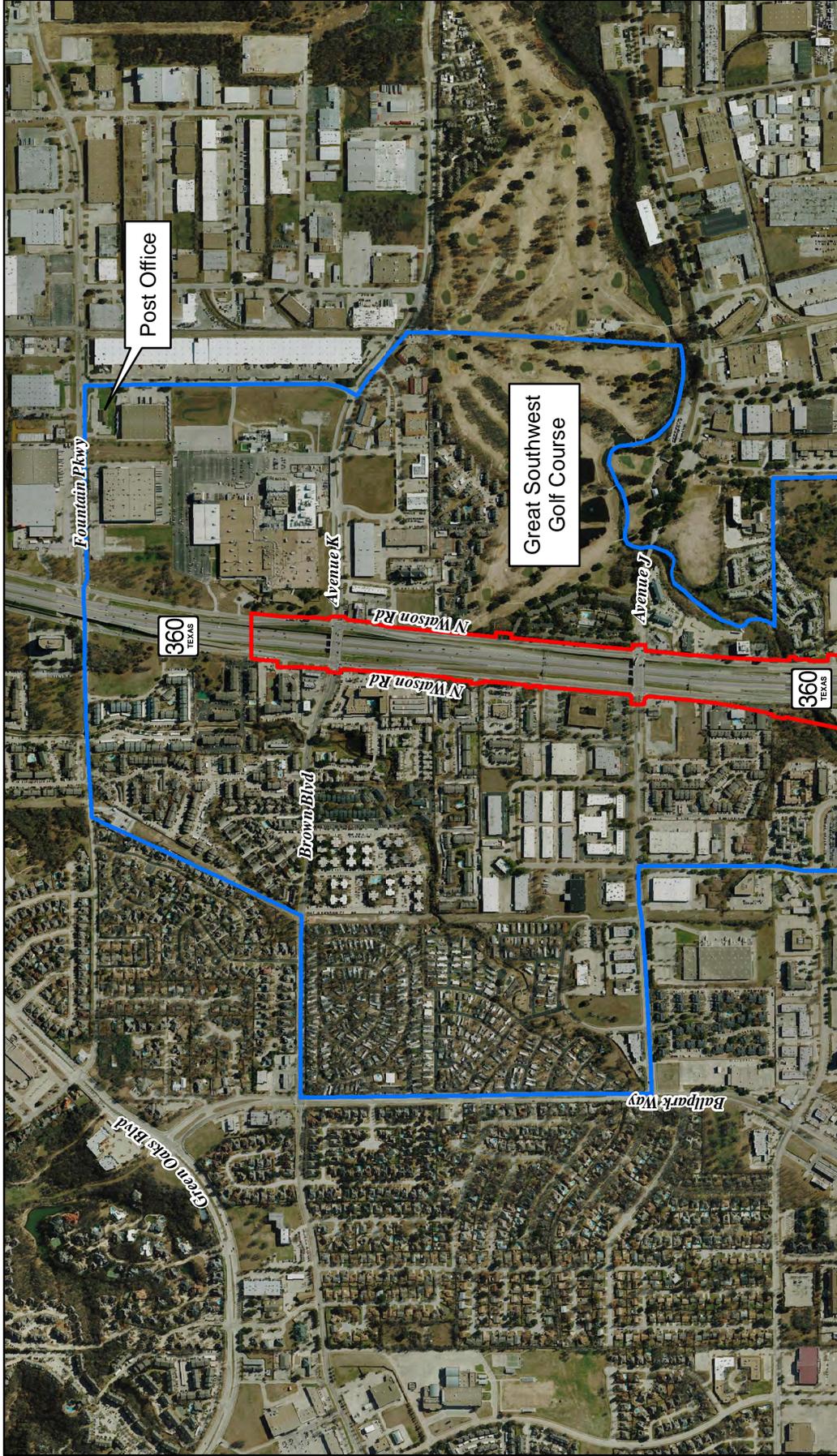
SCALE IN FEET
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 Data Source: Tarrant and Dallas County Appraisal District, NCTCOG & Google.

**Figure 10-2 (Page 2 of 4).
 Community Facility Map**

IH 30 Project from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

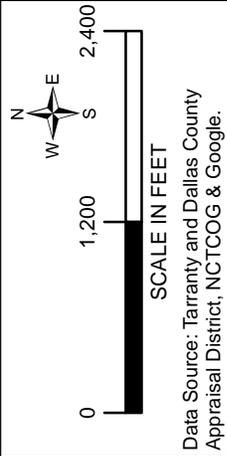
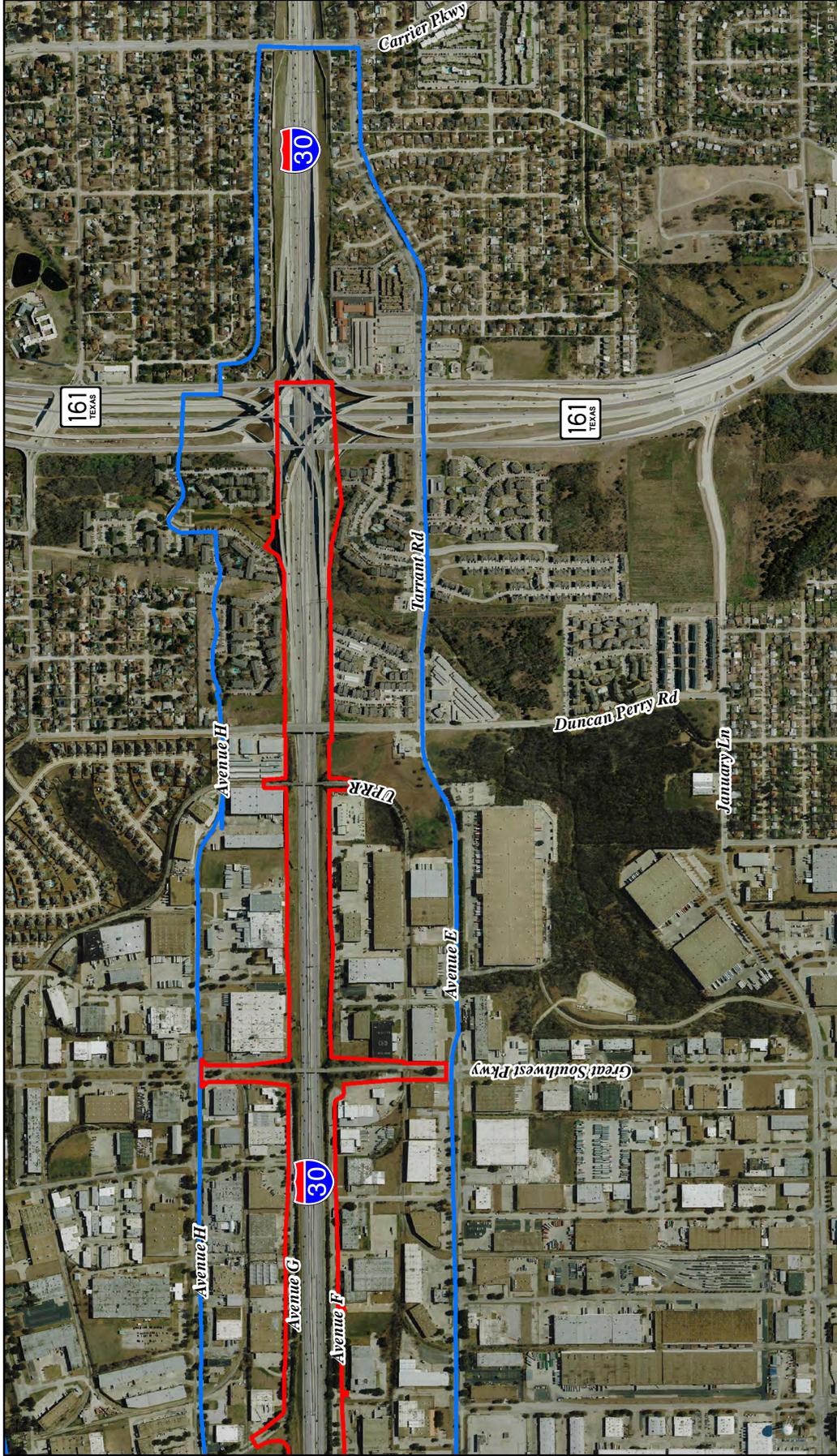
- Project Area
- Community Study Area



**Figure 10-2 (Page 3 of 4).
Community Facility Map**
 IH 30 Project from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

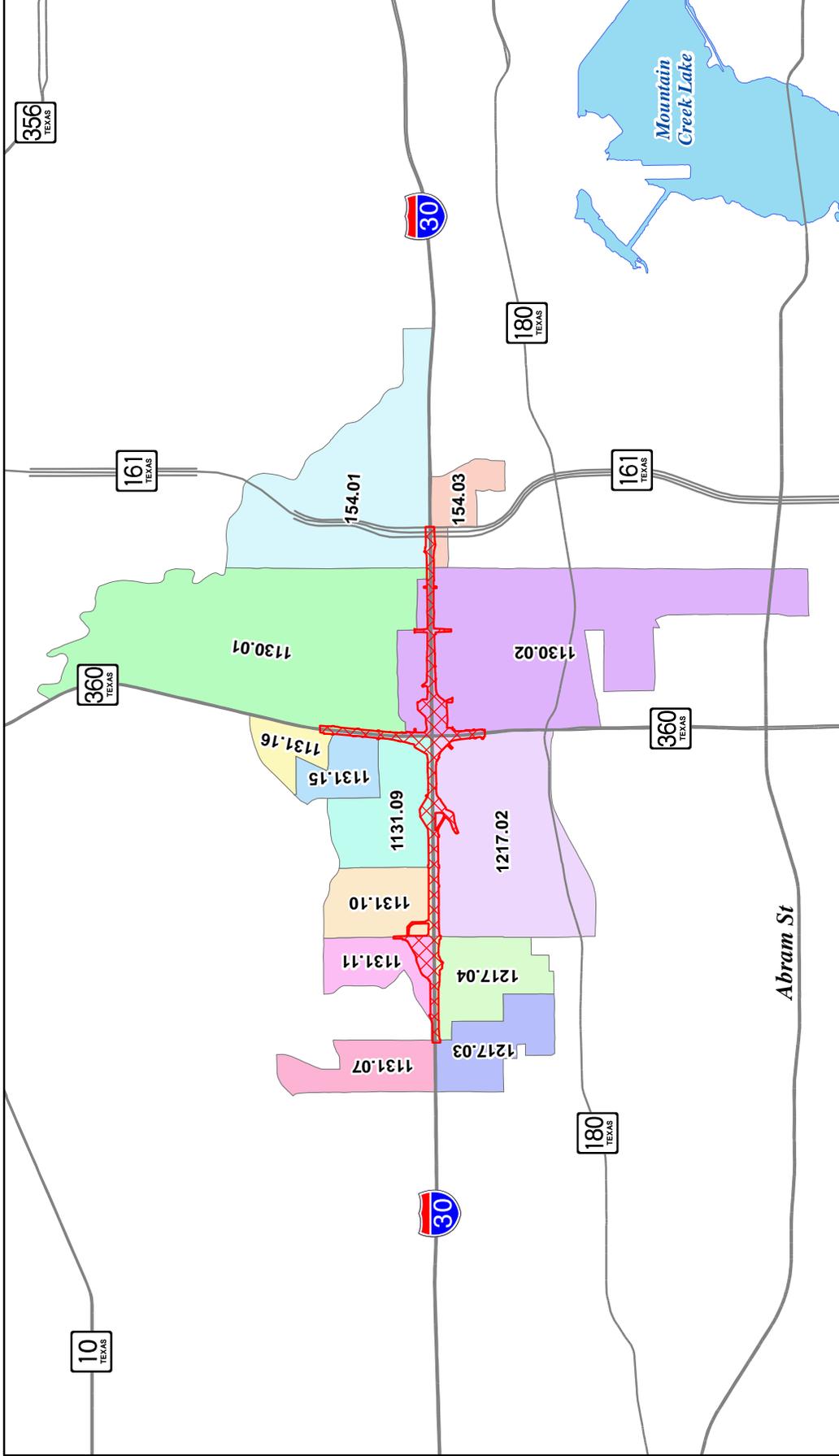
- Project Area
- Community Study Area



**Figure 10-2 (Page 4 of 4).
Community Facility Map**
 IH 30 Project from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

- Project Area
- Community Study Area

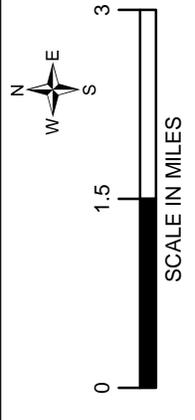


Legend

-  Project Area
-  Representative Sample 2010 Census Tract *
-  Lake

* Note: Colors were used to assist in showing each census tract limits, but has no other significance on this map.

Figure 11-1.
2010 Census Tract Map
 IH 30 Project from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903



SCALE IN MILES
 Data Source: The U.S. Census Bureau

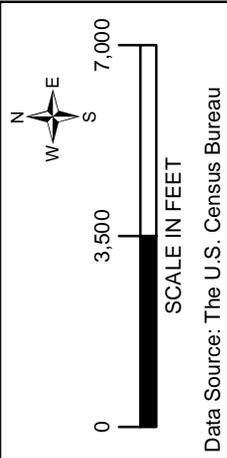
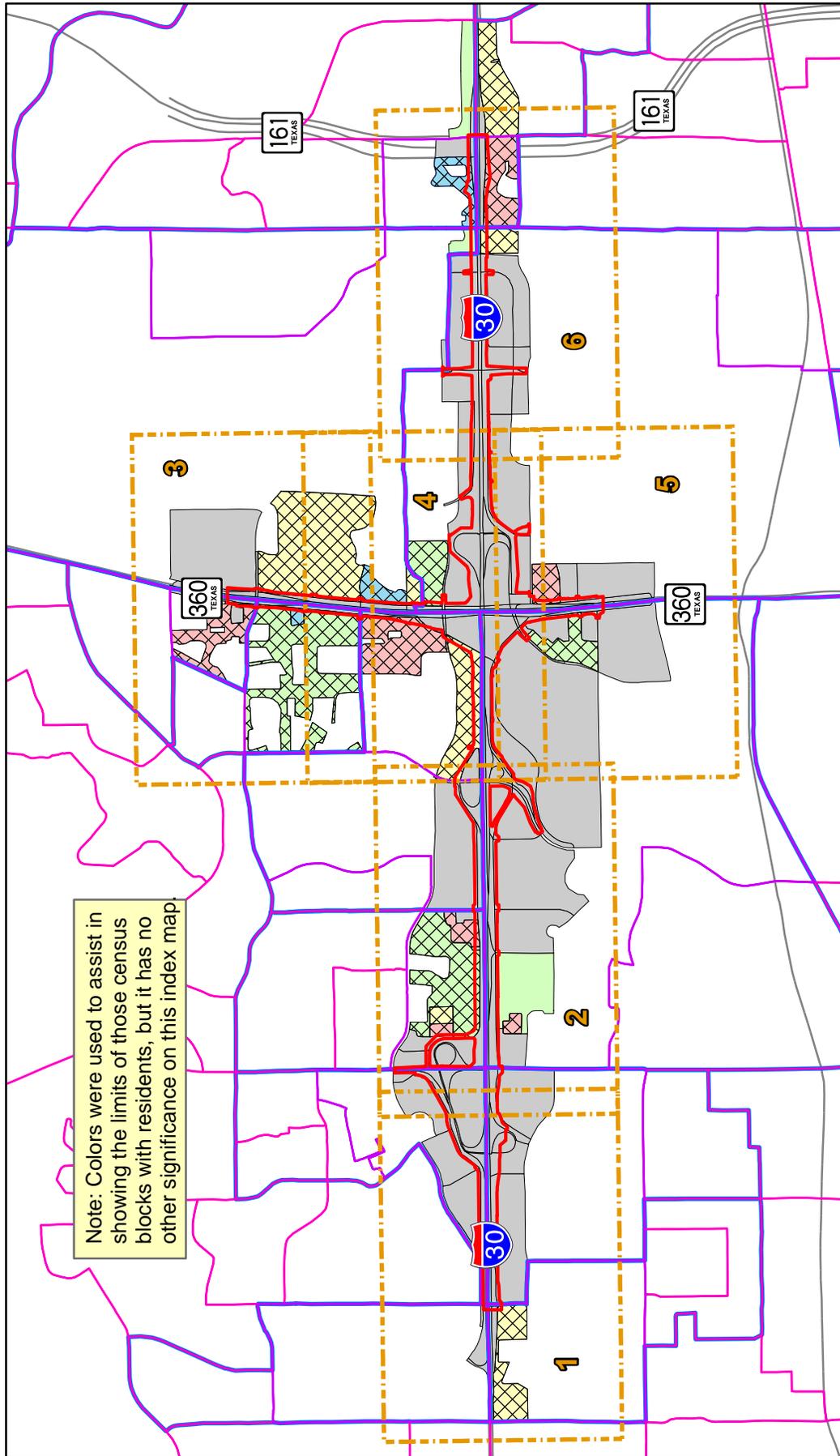
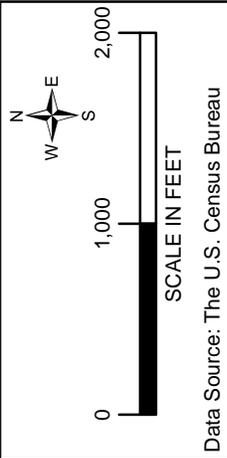
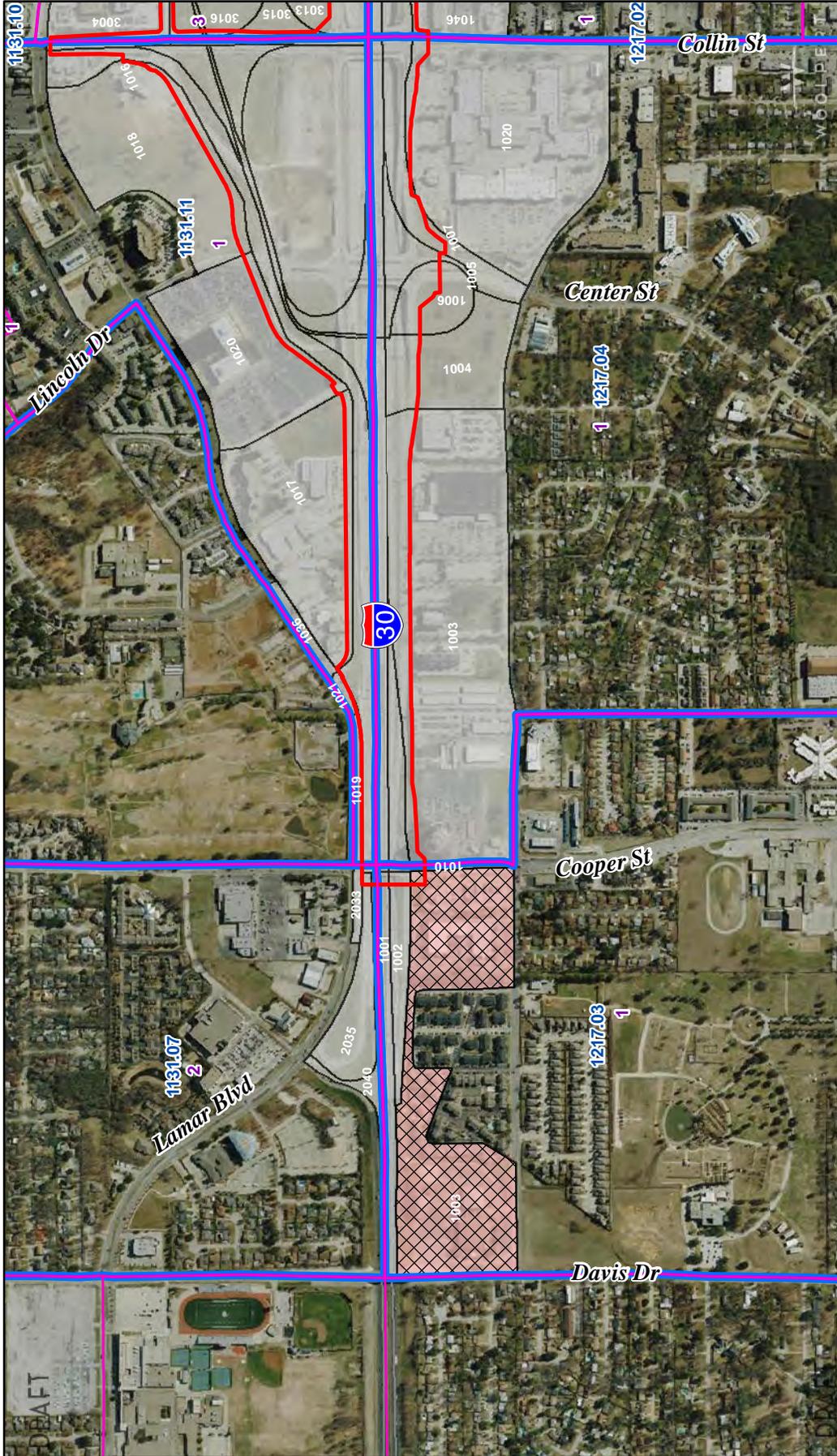


Figure 11-2.
2010 Census Block Map Index
 IH 30 Project from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

- 2010 Census Tract
- 2010 Census Block Group
- Representative Sample Census Block Color *
- Total EJ Population \geq 50%
- No Resident Census Block
- Project Area
- Map Grid

* See note above.

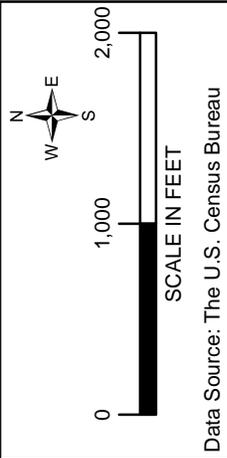
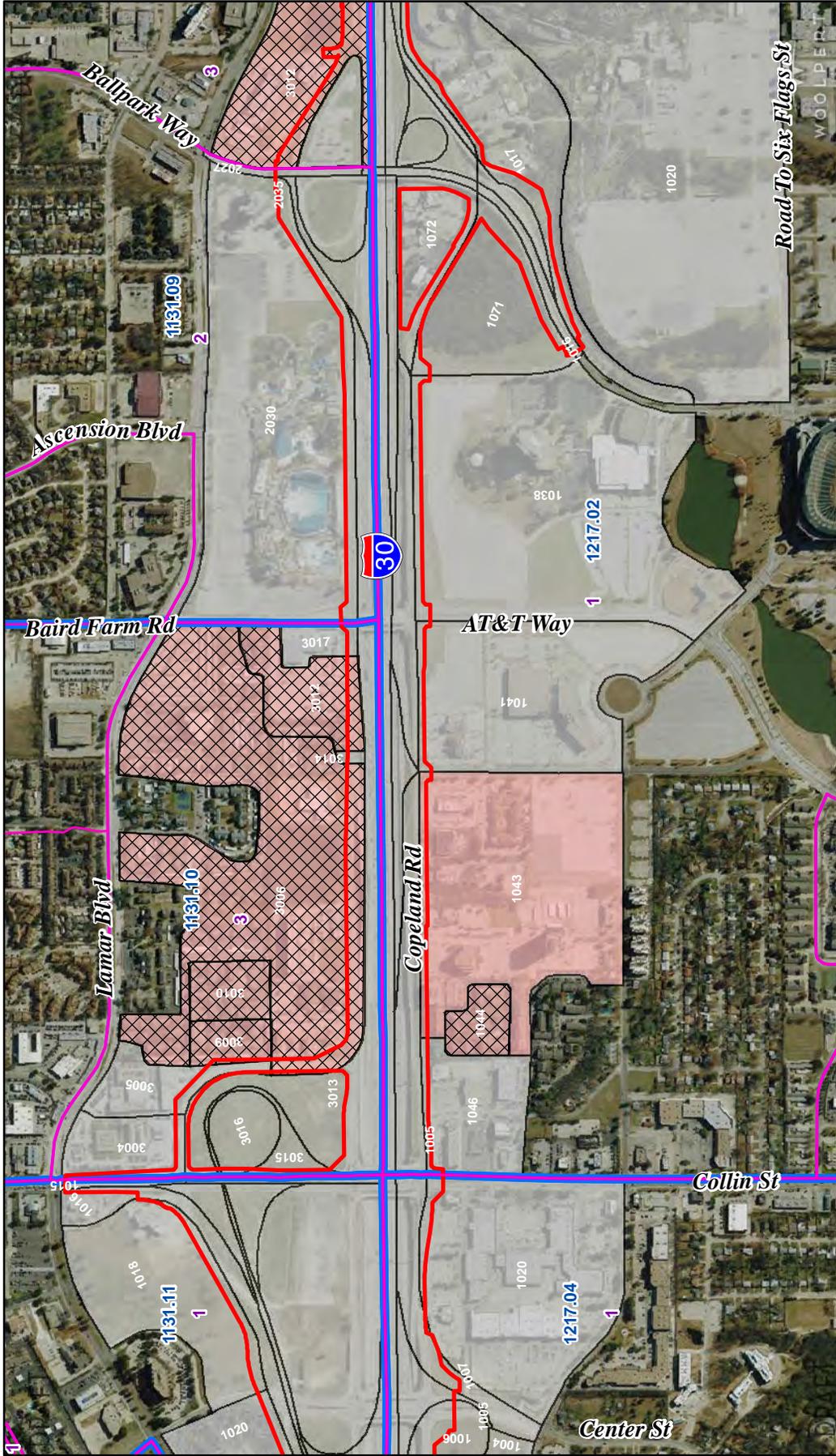


Data Source: The U.S. Census Bureau

**Figure 11-3 (Page 1 of 6).
2010 Census Block Map**
 IH 30 Project from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

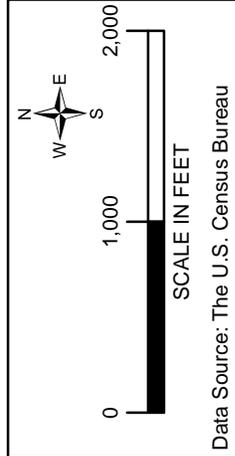
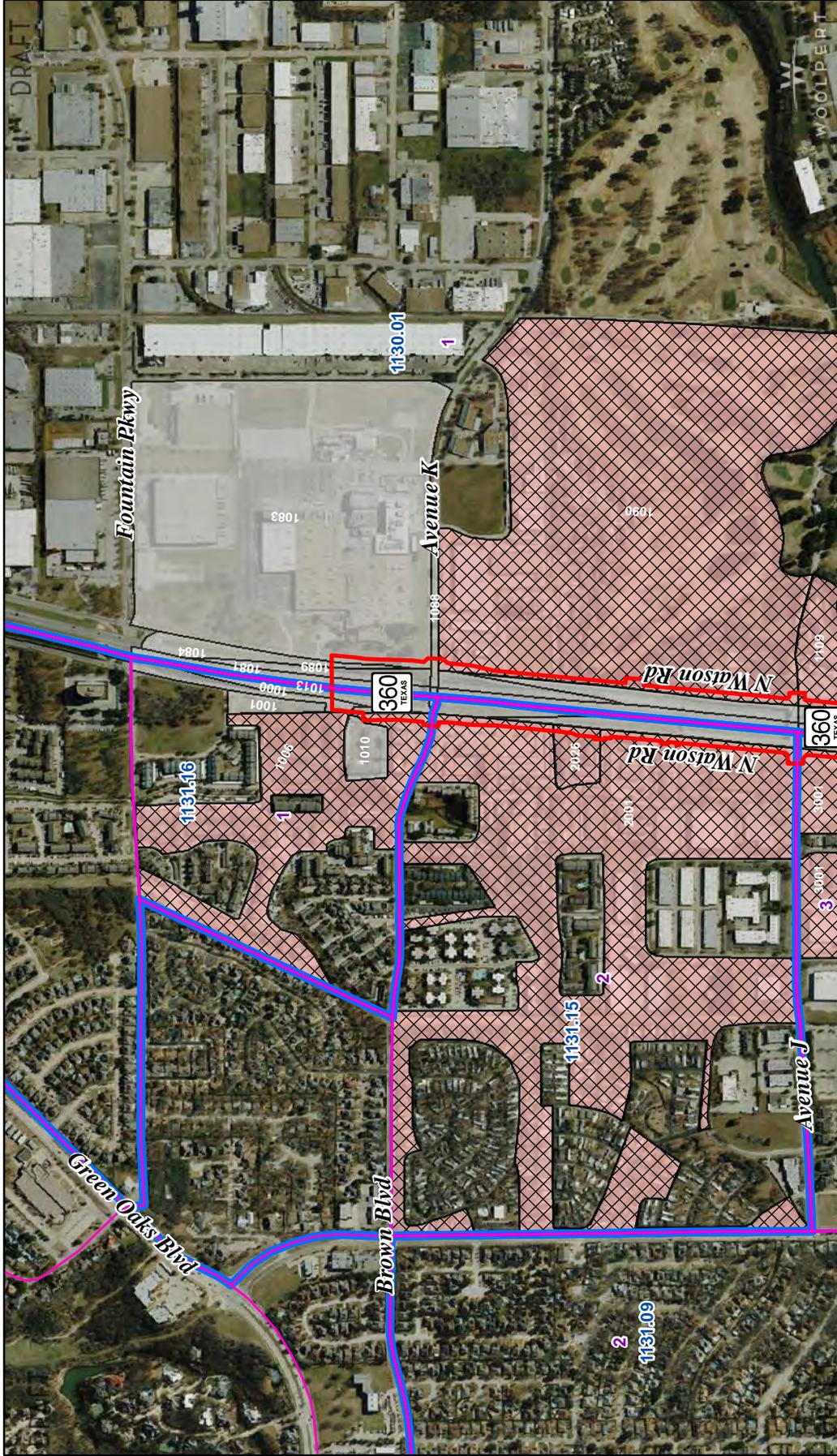
- 1217.03 2010 Census Tract
- 1 Census Block Group
- 1003 Census Block with Residents
- 1020 Census Block without Residents
- EJ Population \geq 50%*
* Total of all racial and ethnic populations in Census block.
- Project Area



**Figure 11-3 (Page 2 of 6).
2010 Census Block Map**
IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

- 1217.03 2010 Census Tract
- 1 Census Block Group
- 1003 Census Block with Residents
- 1020 Census Block without Residents
- Project Area
- EJ Population \geq 50%*
* Total of all racial and ethnic populations in Census block.

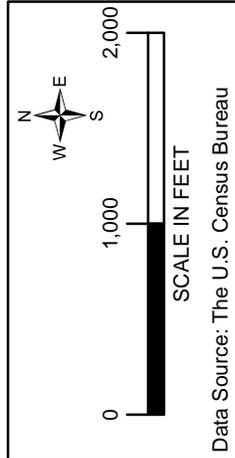
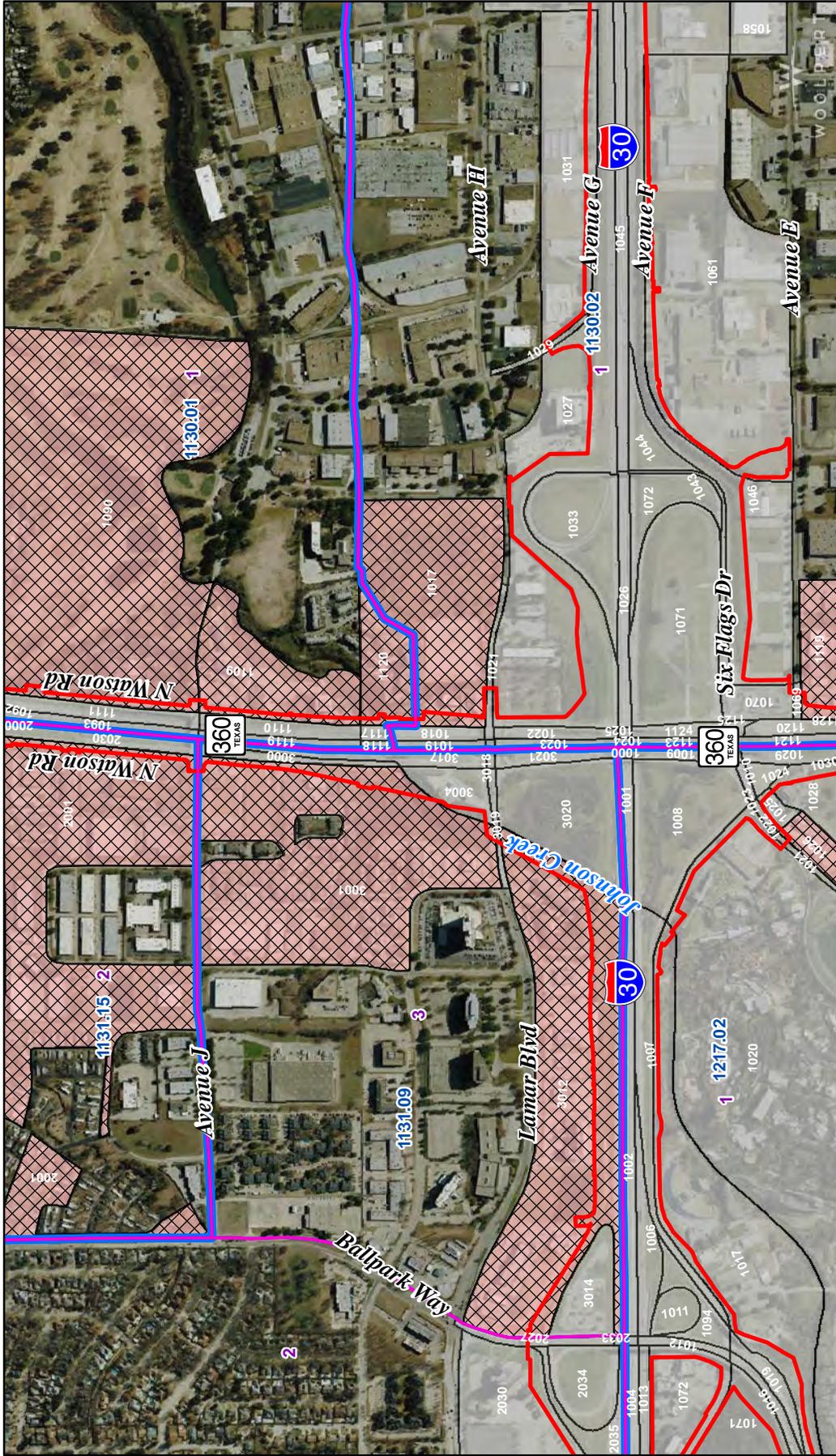


**Figure 11-3 (Page 3 of 6).
2010 Census Block Map**

IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

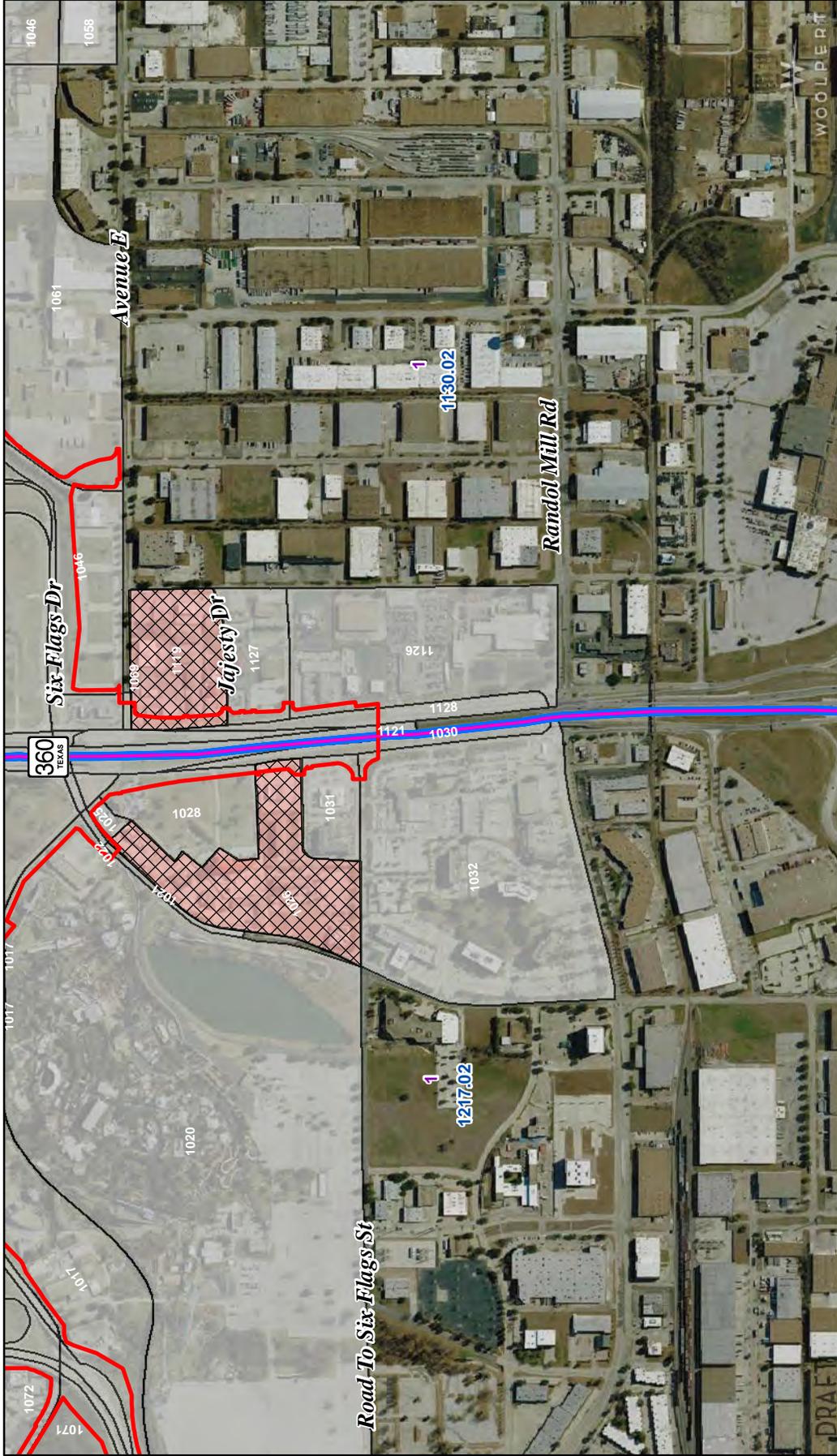
- 1217.03 2010 Census Tract
- 1 Census Block Group
- 1003 Census Block with Residents
- 1020 Census Block without Residents
- Project Area
- EJ Population \geq 50%*
* Total of all racial and ethnic populations in Census block.



**Figure 11-3 (Page 4 of 6).
2010 Census Block Map**
IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

- 1217.03 2010 Census Tract
- 1 Census Block Group
- 1003 Census Block with Residents
- 1020 Census Block without Residents
- Project Area
- EJ Population \geq 50%*
- * Total of all racial and ethnic populations in Census block.



Legend

- 1217.03 2010 Census Tract
- 1 Census Block Group
- 1003 Census Block with Residents
- 1020 Census Block without Residents
- EJ Population \geq 50%*
- * Total of all racial and ethnic populations in Census block.
- Project Area

Figure 11-3 (Page 5 of 6).
2010 Census Block Map
 IH 30 Project from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

0 1,000 2,000
 SCALE IN FEET
 Data Source: The U.S. Census Bureau

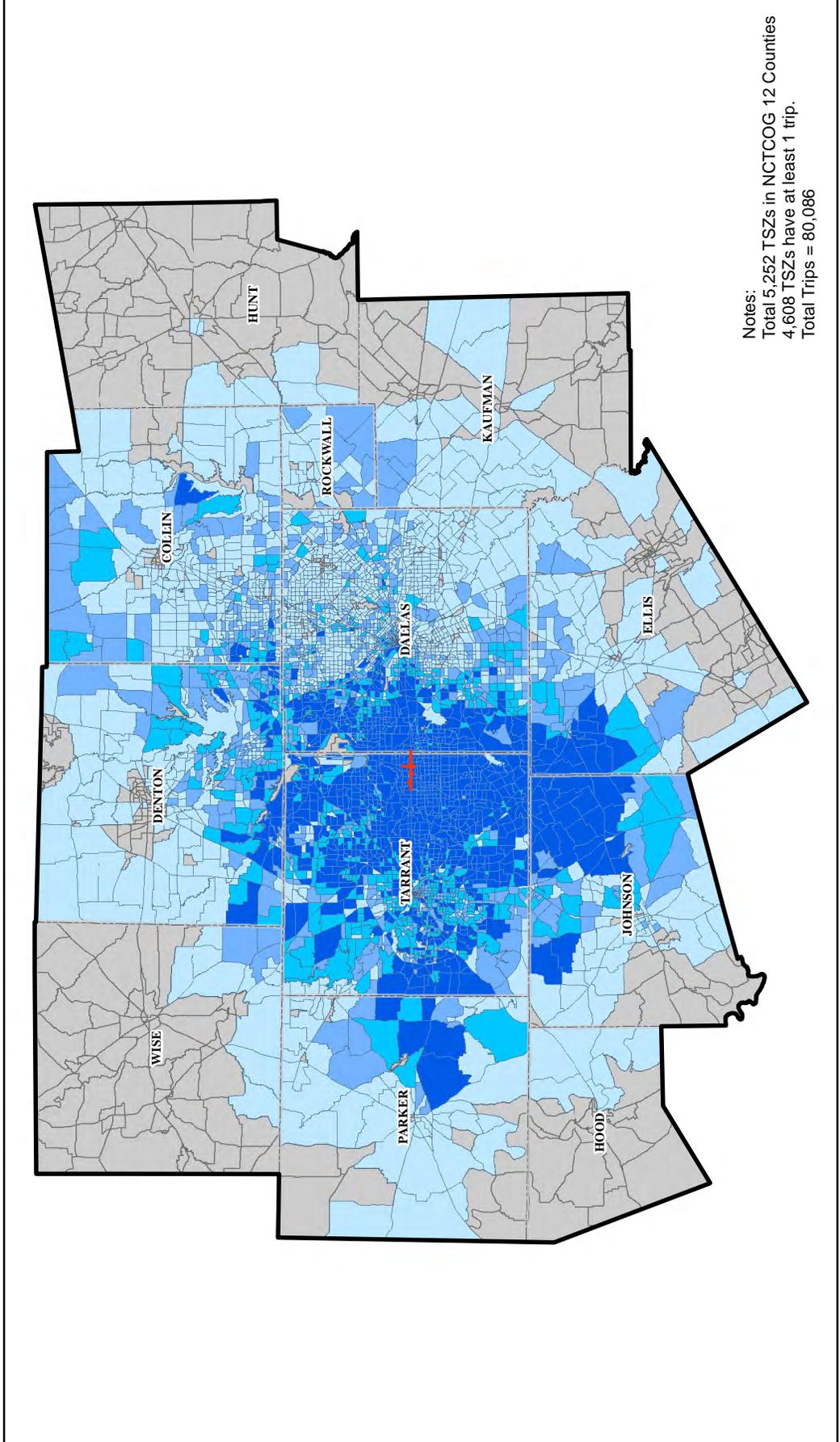


Figure 12-1. Year 2035 Build Main Lanes Traffic Distribution of Trips in AM Peak Period from Traffic Survey Zones (TSZs)
 IH 30 Project from Cooper Street to SH 161, Including the IH 30/SH 360 Interchange Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

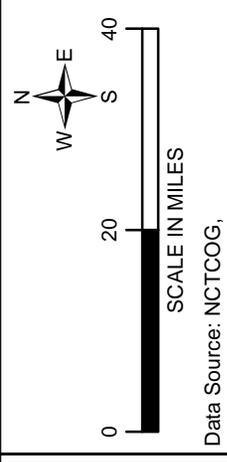
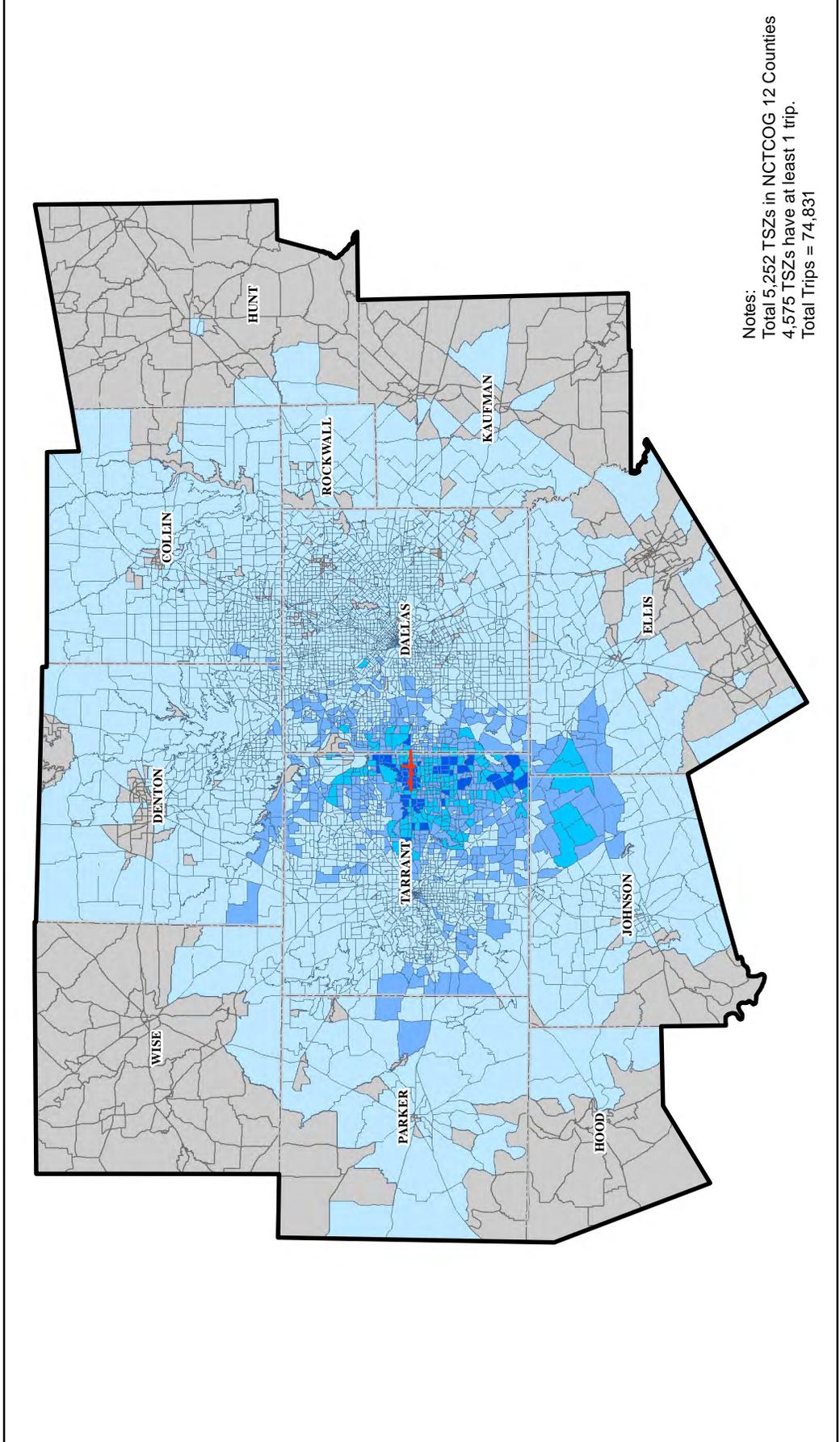
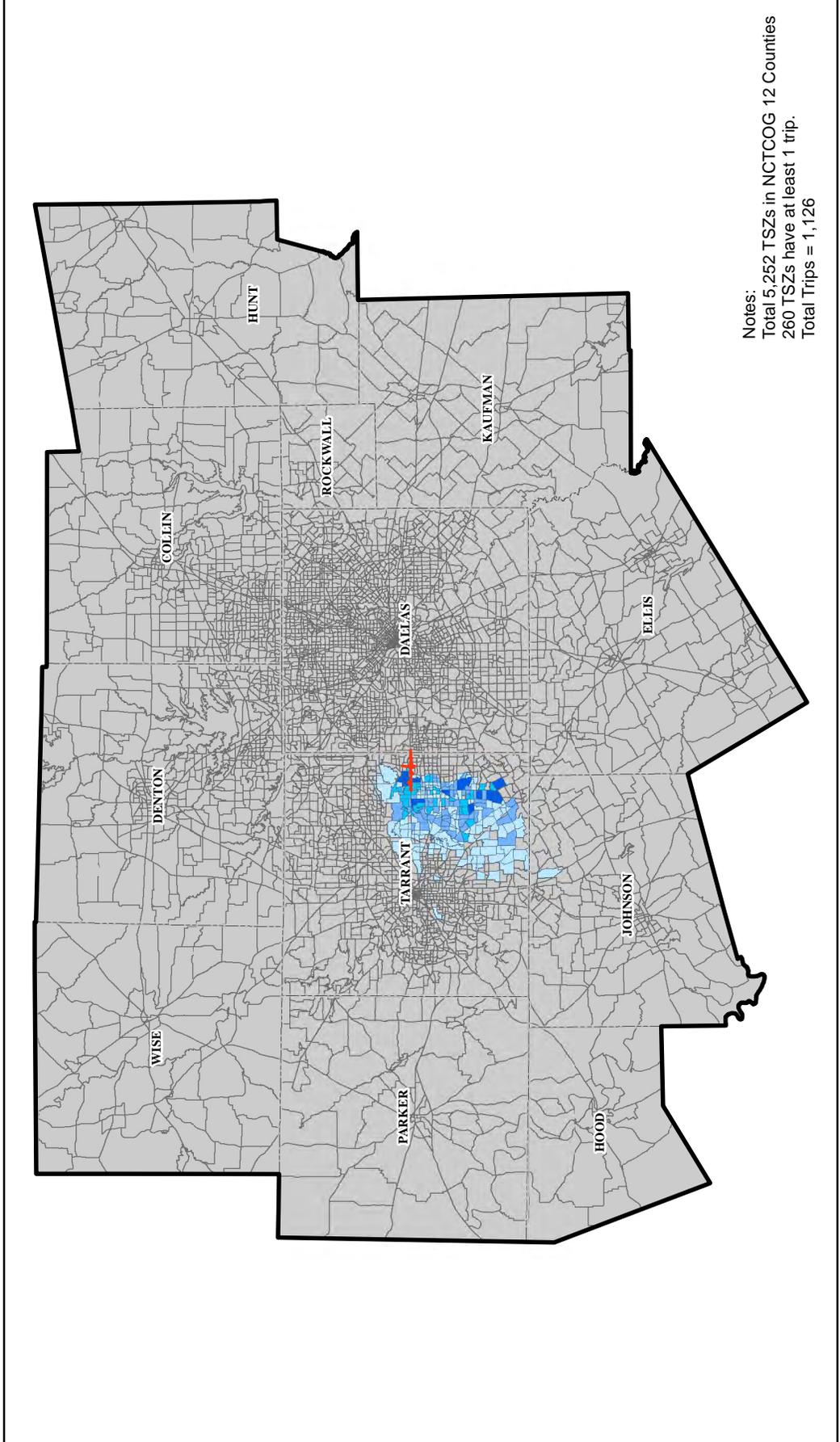


Figure 12-2. Year 2035 No Build Main Lanes Traffic Distribution of Trips in AM Peak Period from Traffic Survey Zones (TSZs)
 IH 30 Project from Cooper Street to SH 161, Including the IH 30/SH 360 Interchange Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

	Project Limits		22-72 Trips (475 TSZs have 18,494 trips, 25% of total trips)
	County Boundary		73-179 Trips (164 TSZs have 18,659 trips, 25% of total trips)
Number of Trips Originating from TSZs			180-1,105 Trips (57 TSZs have 18,578 trips, 25% of total trips)
	No Trip (677 TSZs)		
	1-21 Trips (3,879 TSZs have 19,100 trips, 25% of total trips)		



Notes:
 Total 5,252 TSZs in NCTCOG 12 Counties
 260 TSZs have at least 1 trip.
 Total Trips = 1,126

Legend

- Project Limits
- County Boundary
- Number of Trips Originating from TSZs
 - No Trip (4,992 TSZs)
 - 1-3 Trips (151 TSZs have 270 trips, 24% of total trips)
 - 4-6 Trips (59 TSZs have 281 trips, 25% of total trips)
 - 7-12 Trips (33 TSZs have 285 trips, 25% of total trips)
 - 13-28 Trips (17 TSZs have 290 trips, 26% of total trips)

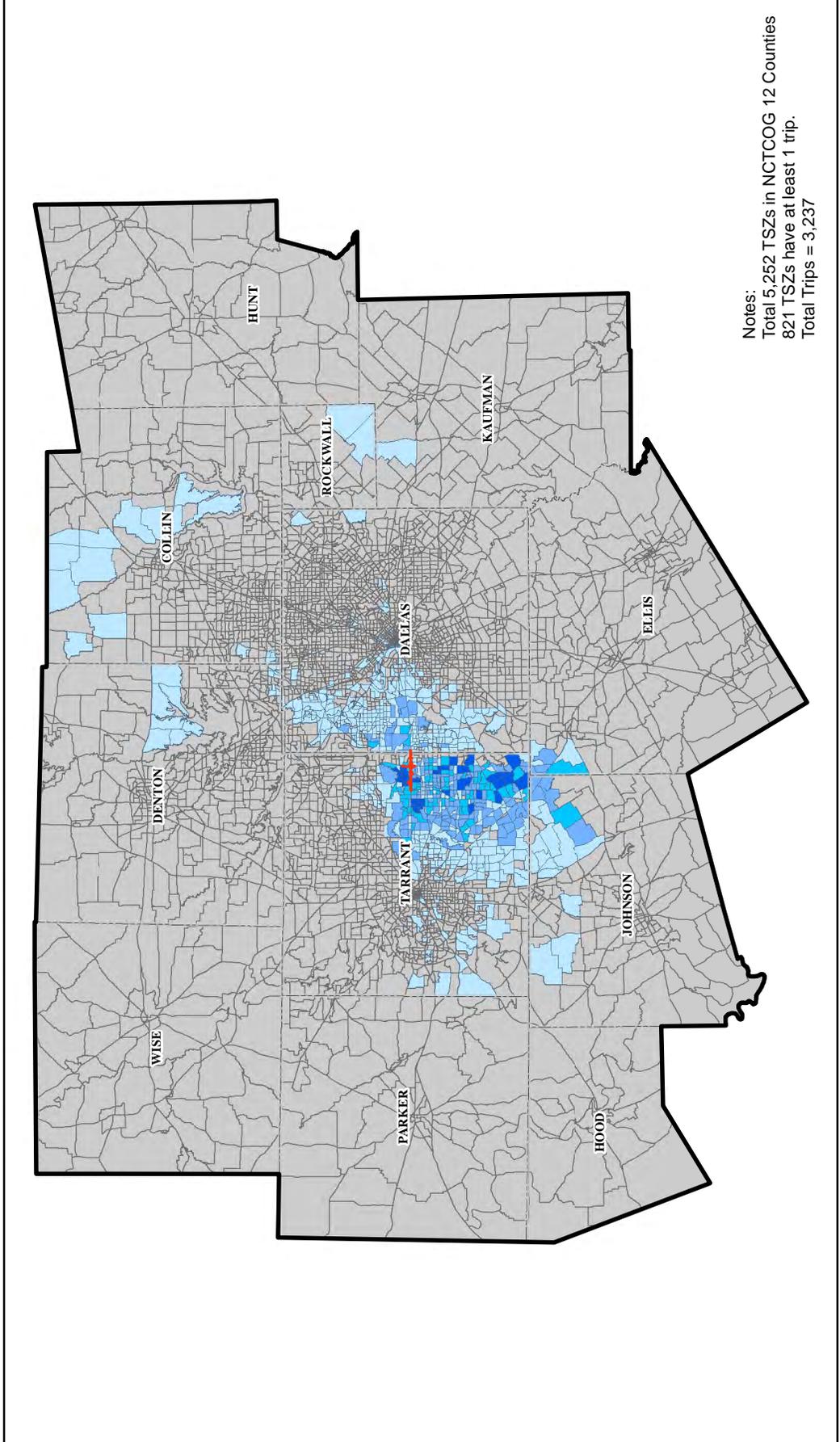
Figure 12-3. Year 2035 Build Managed Lanes Traffic Distribution of Trips in AM Peak Period from Traffic Survey Zones (TSZs)

IH 30 Project from Cooper Street to SH 161, Including the IH 30/SH 360 Interchange Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

0 20 40

SCALE IN MILES

Data Source: NCTCOG,



Notes:
 Total 5,252 TSZs in NCTCOG 12 Counties
 821 TSZs have at least 1 trip.
 Total Trips = 3,237

SCALE IN MILES

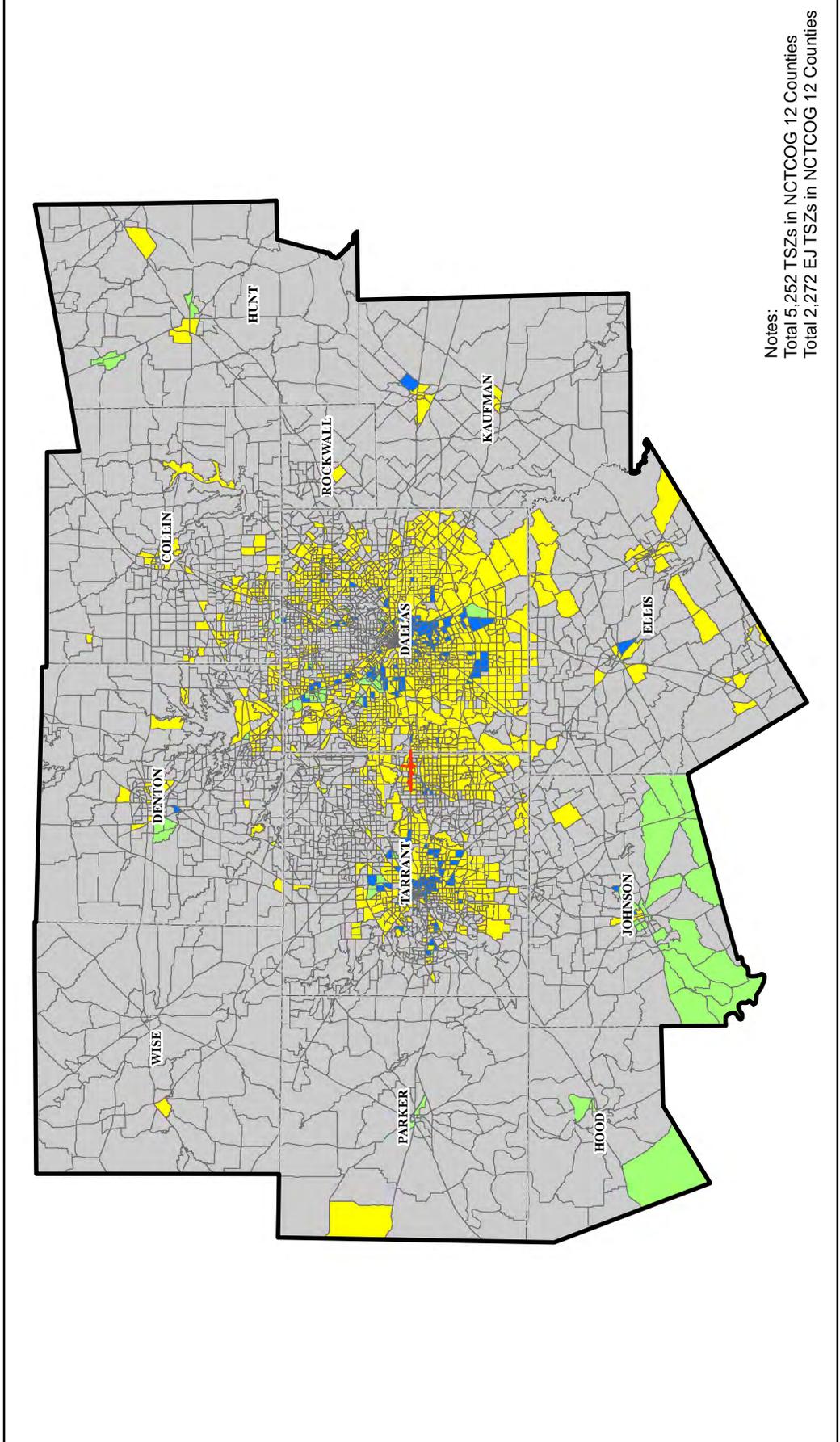
 0 20 40

 Data Source: NCTCOG,

Figure 12-4. Year 2035 No Build Managed Lanes Traffic Distribution of Trips in AM Peak Period from Traffic Survey Zones (TSZs)
 IH 30 Project from Cooper Street to SH 161, Including the IH 30/SH 360 Interchange Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

- Project Limits
- County Boundary
- Number of Trips Originating from TSZs**
- No Trip (4,431 TSZs)
- 1-3 Trips (562 TSZs have 761 trips, 24% of total trips)
- 4-8 Trips (158 TSZs have 881 trips, 27% of total trips)
- 9-16 Trips (69 TSZs have 814 trips, 25% of total trips)
- 17-59 Trips (17 TSZs have 781 trips, 24% of total trips)



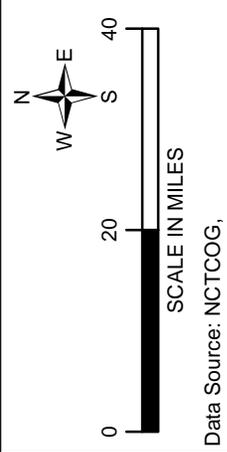
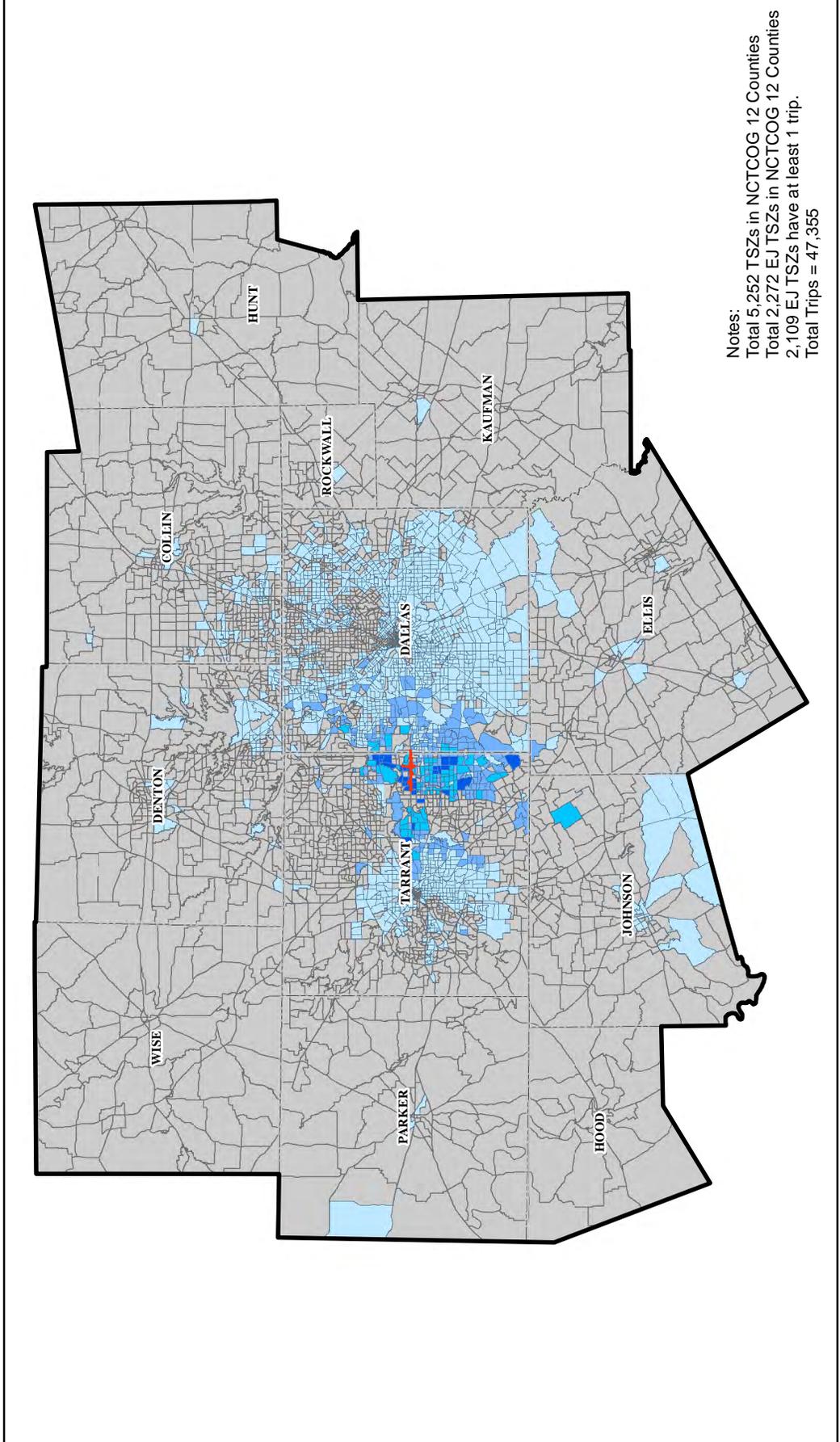
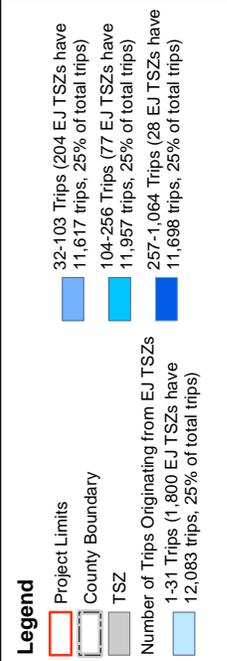


Figure 12-6. Year 2035 Build Main Lanes Traffic Distribution of Trips in AM Peak Period from Environmental Justice Traffic Survey Zones (EJ TSZs)
 IH 30 Project from Cooper Street to SH 161, including the IH 30/SH 360 Interchange Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903



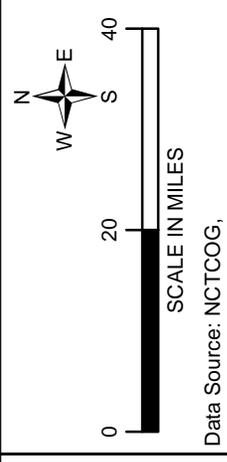
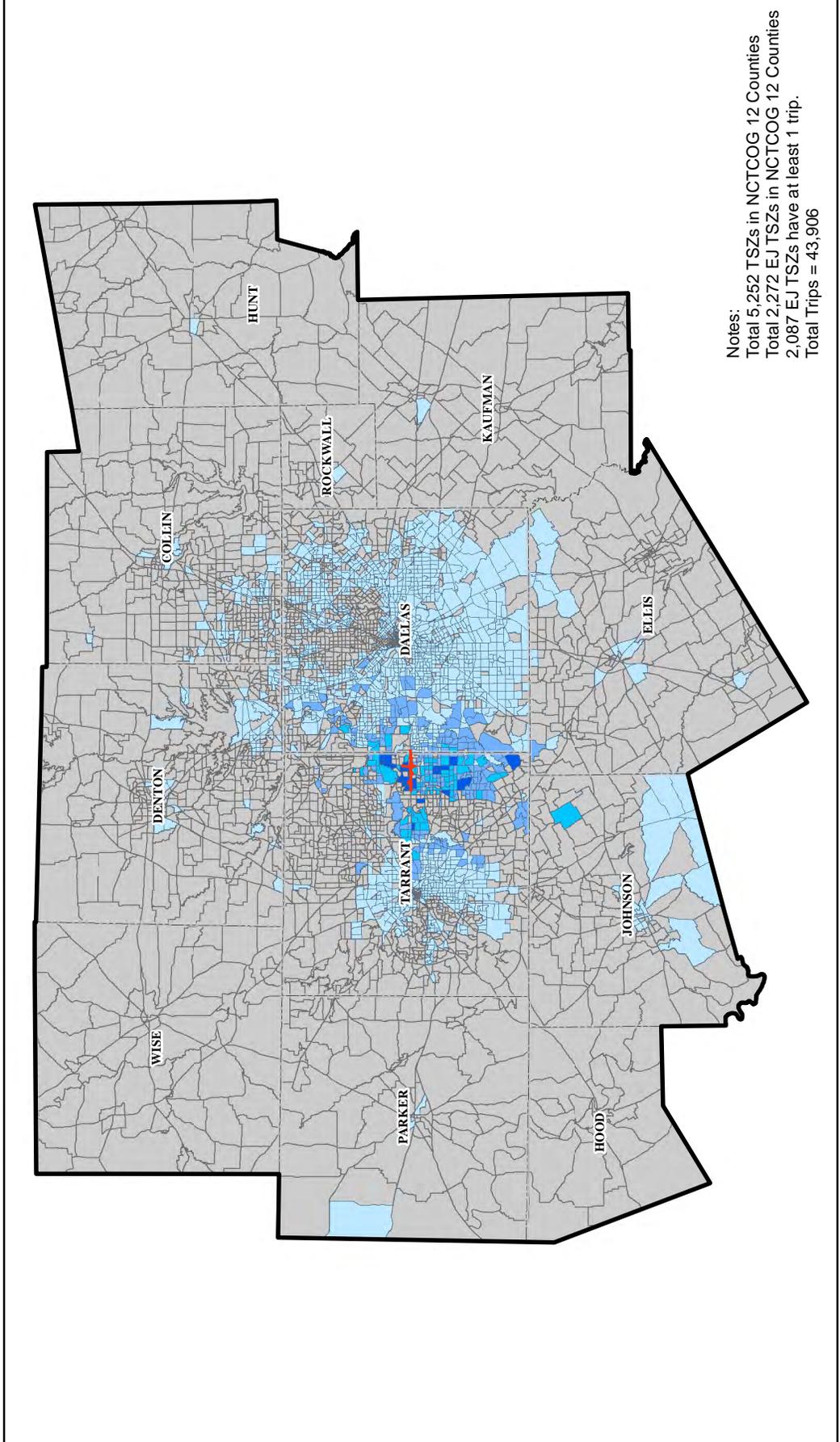
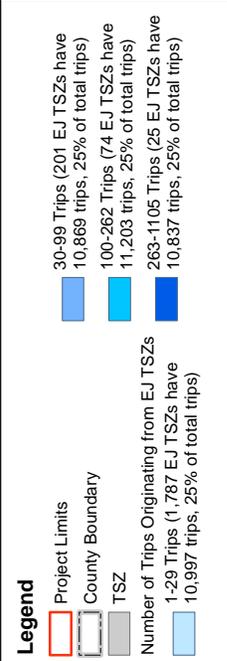
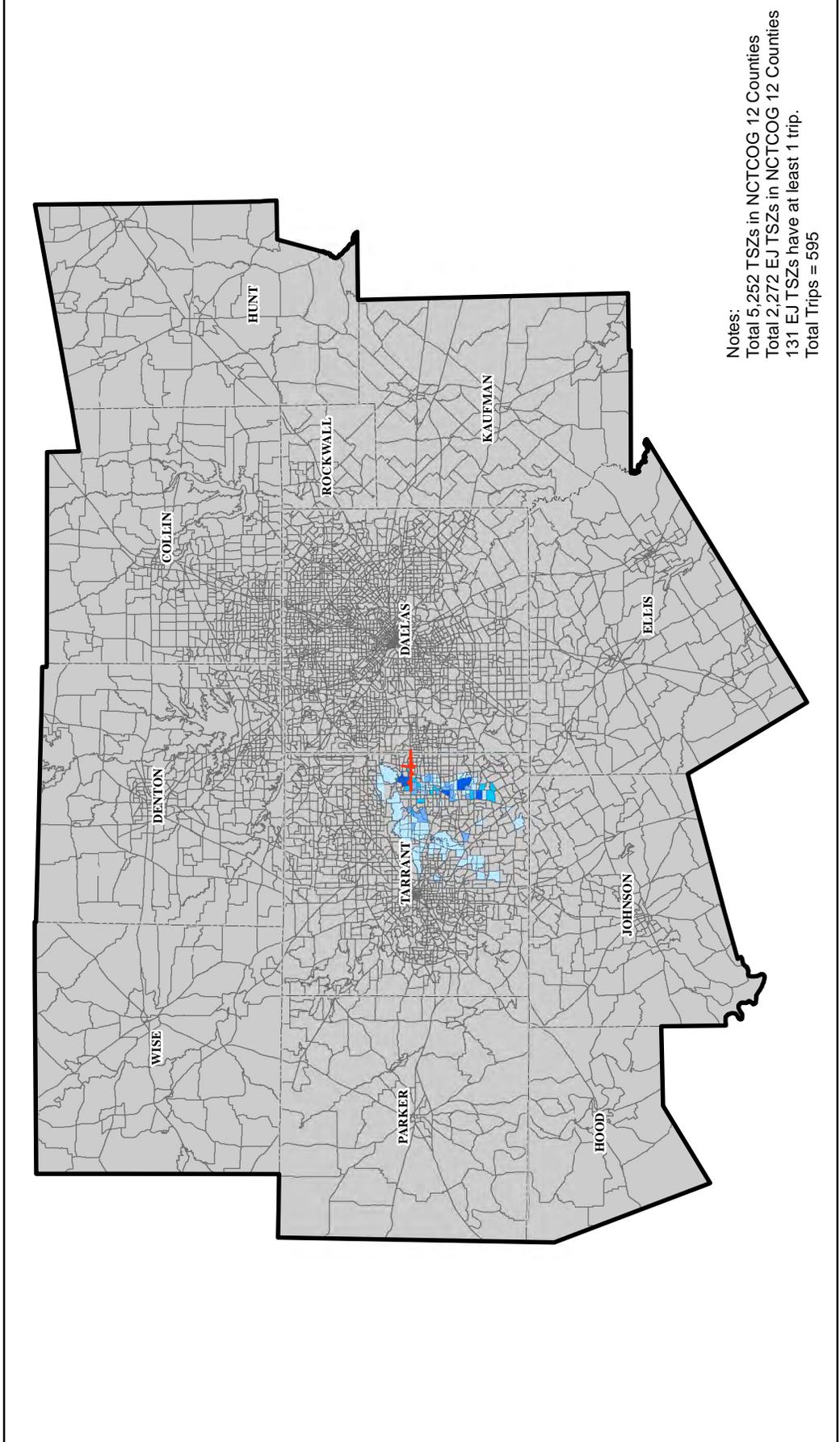


Figure 12-7. Year 2035 No Build Main Lanes Traffic Distribution of Trips in AM Peak Period from Environmental Justice Traffic Survey Zones (EJ TSZs)
 IH 30 Project from Cooper Street to SH 161, including the IH 30/SH 360 Interchange Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127, 1068-04-903





Notes:
 Total 5,252 TSZs in NCTCOG 12 Counties
 Total 2,272 EJ TSZs in NCTCOG 12 Counties
 131 EJ TSZs have at least 1 trip.
 Total Trips = 595

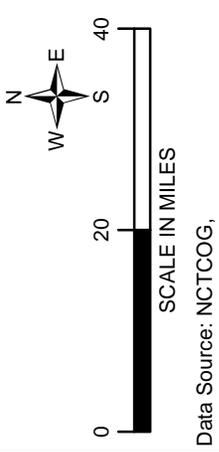


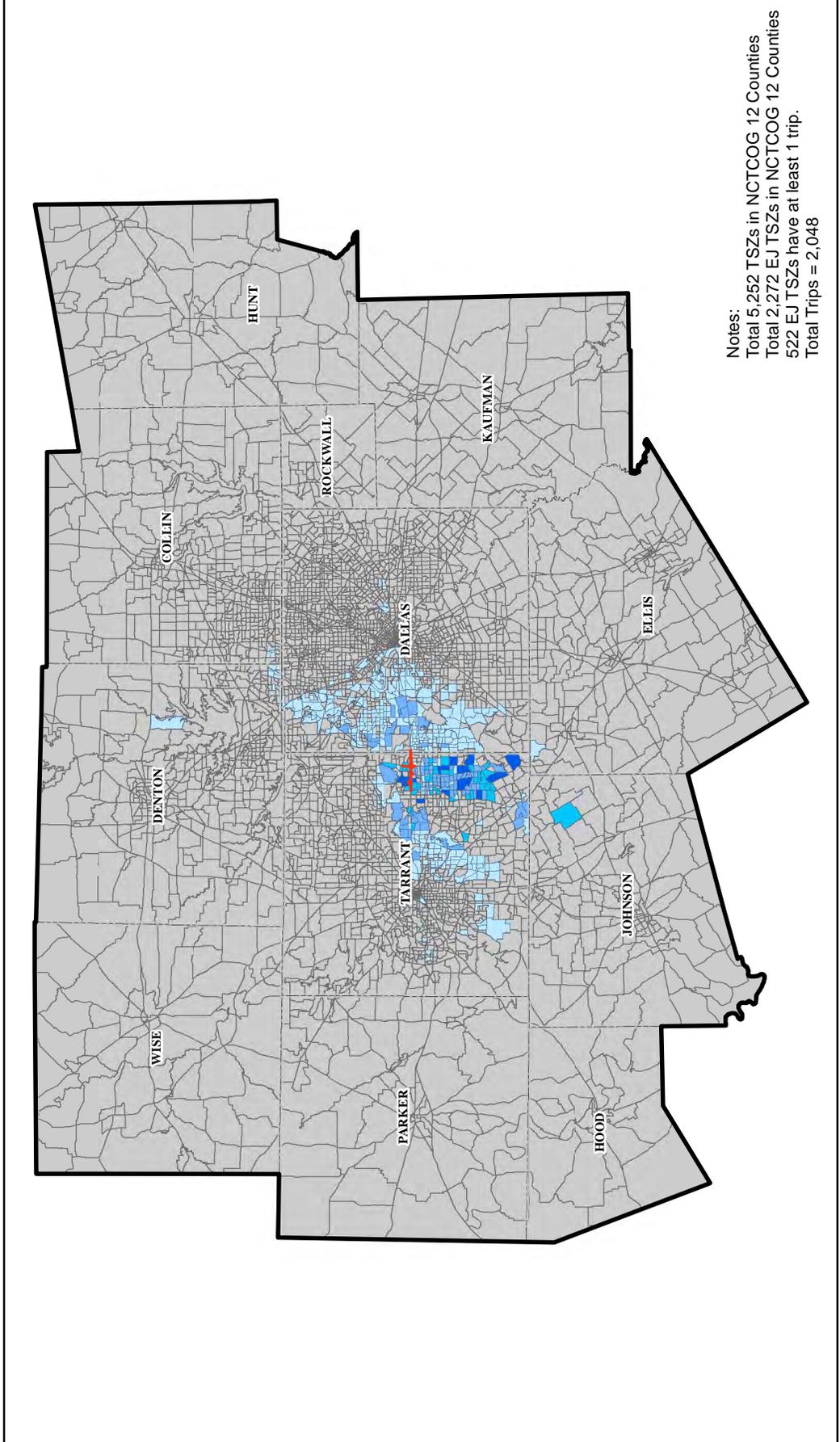
Figure 12-8. Year 2035 Build Managed Lanes Traffic Distribution of Trips in AM Peak Period from Environmental Justice Traffic Survey Zones (EJ TSZs)
 IH 30 Project from Cooper Street to SH 161, Including the IH 30/SH 360 Interchange Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

- Project Limits
- County Boundary
- TSZ

Number of Trips Originating from EJ TSZs

- 1-4 Trips (90 EJ TSZs have 180 trips, 30% of total trips)
- 5-8 Trips (21 EJ TSZs have 136 trips, 23% of total trips)
- 9-13 Trips (12 EJ TSZs have 127 trips, 21% of total trips)
- 14-28 Trips (8 EJ TSZs have 152 trips, 26% of total trips)



Notes:
 Total 5,252 TSZs in NCTCOG 12 Counties
 Total 2,272 EJ TSZs in NCTCOG 12 Counties
 522 EJ TSZs have at least 1 trip.
 Total Trips = 2,048

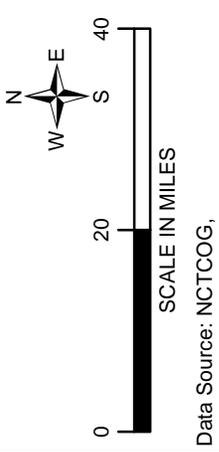


Figure 12-9. Year 2035 No Build Managed Lanes Traffic Distribution of Trips in AM Peak Period from Environmental Justice Traffic Survey Zones (EJ TSZs)
 IH 30 Project from Cooper Street to SH 161, including the IH 30/SH 360 Interchange Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

- Project Limits
- County Boundary
- TSZ

Number of Trips Originating from EJ TSZs

- 1-3 Trips (371 EJ TSZs have 496 trips, 24% of total trips)
- 4-9 Trips (92 EJ TSZs have 549 trips, 27% of total trips)
- 10-17 Trips (41 EJ TSZs have 519 trips, 25% of total trips)
- 18-59 Trips (18 EJ TSZs have 484 trips, 24% of total trips)

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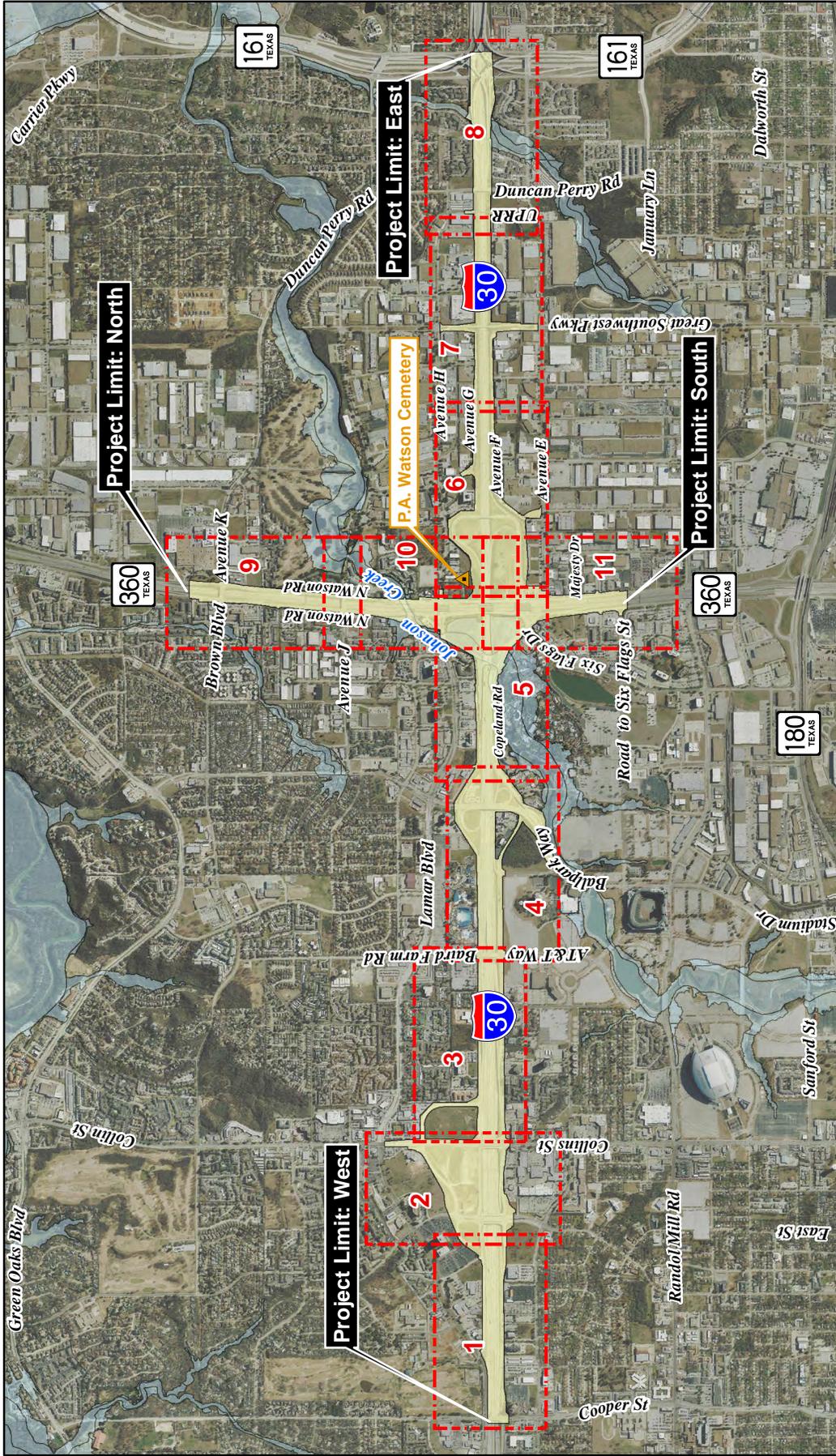


Figure 13-1. Map Index for Water Crossings Maps
 IH 30 from Cooper Street to SH 161, Including the IH 30/SH 360 Interchange Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

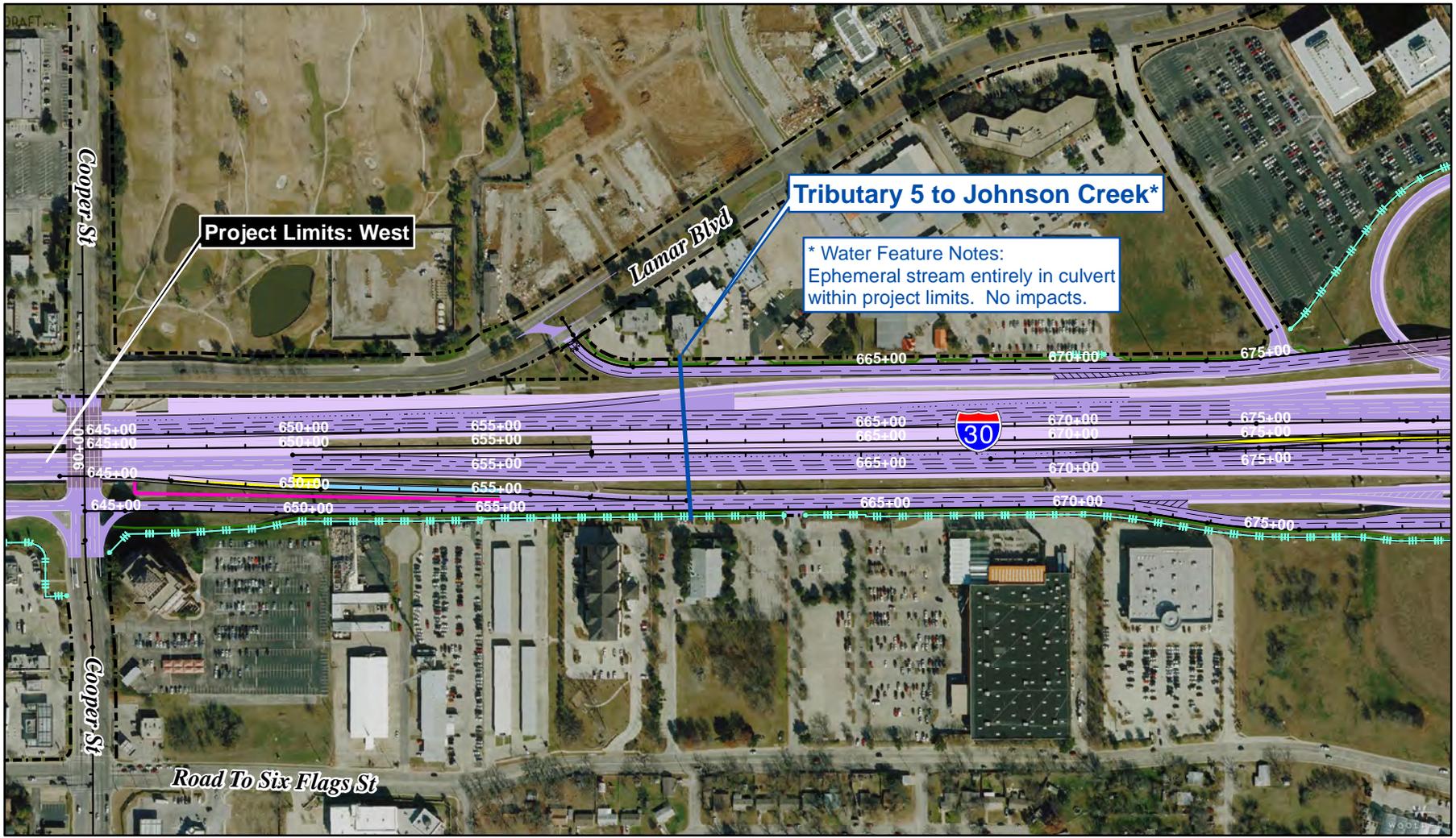
- Project Limits
- 100-Year Floodplain
- Map Sheet Boundary and Number





SCALE IN FEET

Source / Year of Aerial Photograph:
 NCTCOG / 2015



Project Limits: West

Tributary 5 to Johnson Creek*

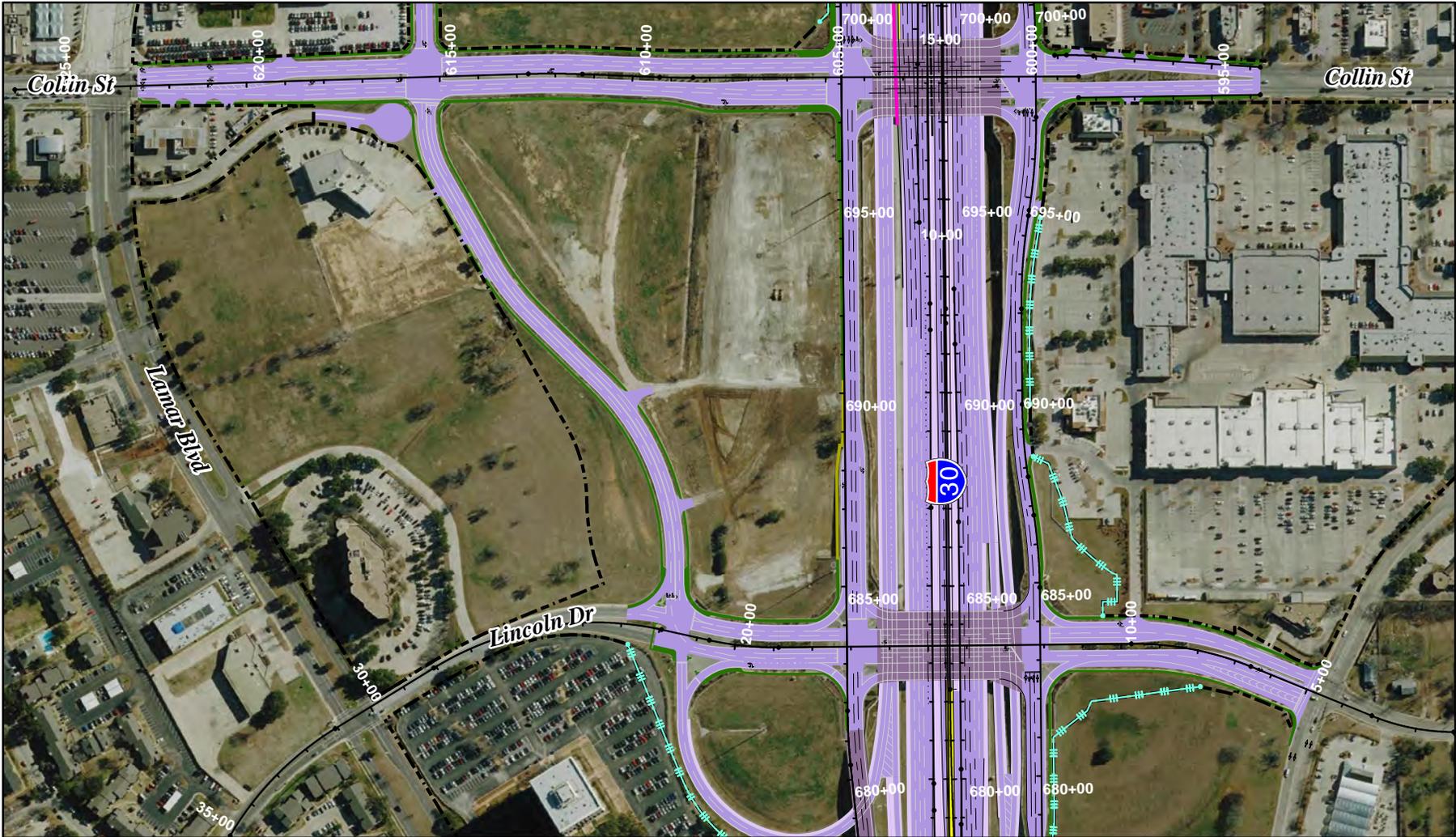
* Water Feature Notes:
Ephemeral stream entirely in culvert
within project limits. No impacts.

Legend		
— Existing ROW	— Proposed Retaining Wall	— Proposed Managed Lane
— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Existing Sidewalk
— Water of the U.S.	— Existing Bridge	— Proposed Sidewalk
— Proposed Bridge Abutment	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Bridge Bent	— Proposed Mainlane	— Pavement/Bridge to be Removed
— Proposed Noise Wall	— Proposed Frontage Road	

**Figure 13-2. (Page 1 of 11).
Waters Crossings Map and Potential
Water Feature Impacts**
IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

SCALE IN FEET

Source / Year of Aerial Photograph:
NCTCOG / 2015



Legend		
— Existing ROW	— Proposed Retaining Wall	— Proposed Managed Lane
— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Existing Sidewalk
— Water of the U.S.	— Existing Bridge	— Proposed Sidewalk
— Proposed Bridge Abutment	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Bridge Bent	— Proposed Mainlane	— Pavement/Bridge to be Removed
— Proposed Noise Wall	— Proposed Frontage Road	

**Figure 13-2. (Page 2 of 11).
Waters Crossings Map and Potential
Water Feature Impacts**
IH 30 Project from Cooper Street to SH 161,
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Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903


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 SCALE IN FEET
 Source / Year of Aerial Photograph:
 NCTCOG / 2015



Tributary 4 to Johnson Creek*

* Water Feature Notes:
Ephemeral stream entirely in culvert within project limits. No impacts.

Tributary 3 to Johnson Creek*

* Water Feature Notes:
Ephemeral stream entirely in culvert within project limits. No impacts.

- Legend**
- Existing ROW
 - Proposed ROW
 - Existing Drainage Easement
 - Proposed Drainage Easement
 - Proposed Temporary Construction Easement
 - Control of Access
 - Water of the U.S.
 - Proposed Bridge Abutment
 - Proposed Bridge Bent
 - Proposed Noise Wall
 - Proposed Retaining Wall
 - Existing Striping to Remain
 - Proposed Striping - Dashed
 - Drainage Structure
 - Existing Roadway Shoulder
 - Existing Roadway
 - Existing Bridge
 - Proposed Roadway Shoulder
 - Proposed Mainlane
 - Proposed Frontage Road
 - Proposed Managed Lane
 - Proposed Bridge
 - Proposed Ramp/Direct Connect
 - Proposed Collector/Distributor
 - Proposed Cross/Local Street
 - Existing Sidewalk
 - Proposed Sidewalk
 - Potential Displacements
 - Pavement/Bridge to be Removed

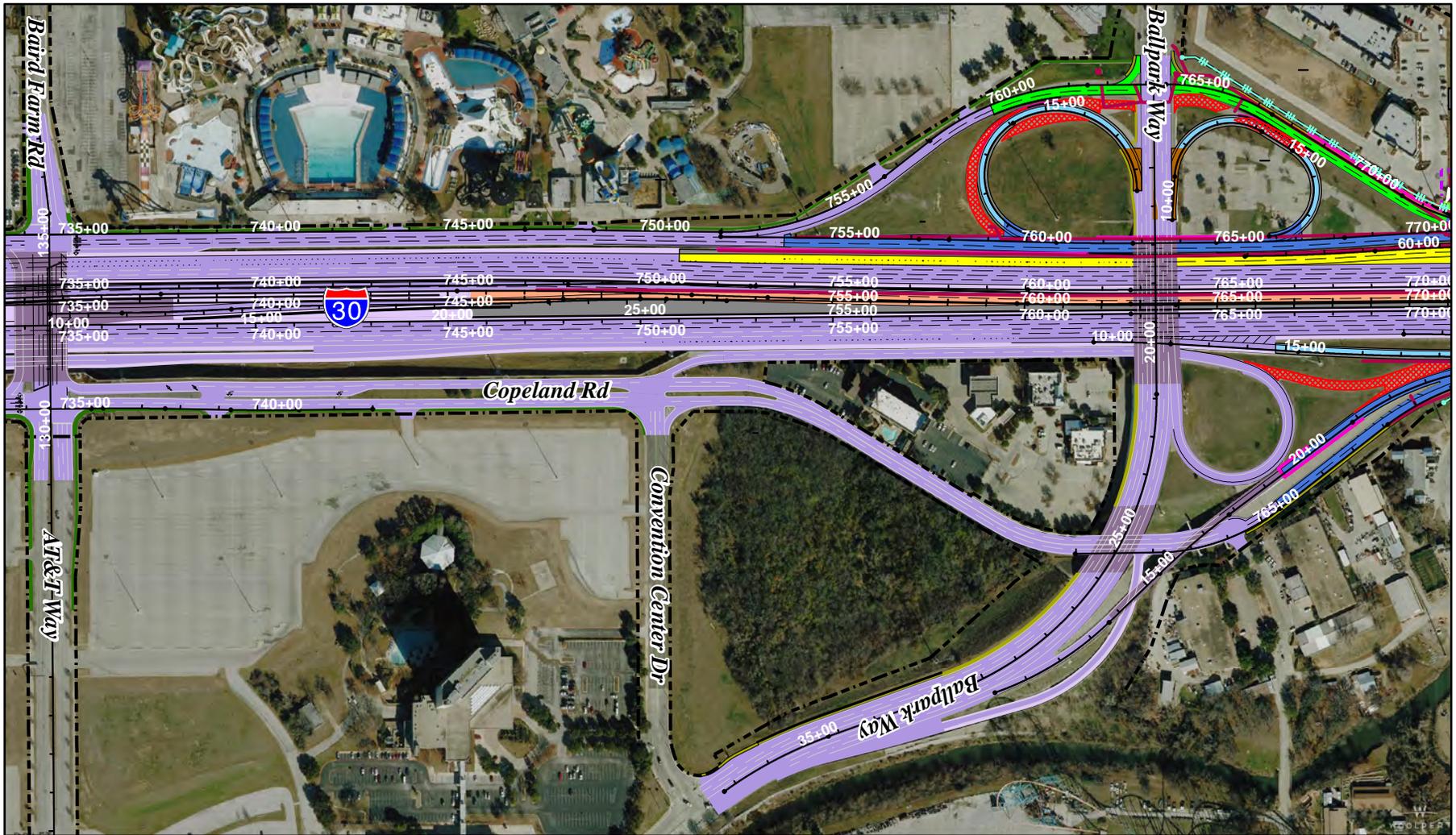
**Figure 13-2. (Page 3 of 11).
Waters Crossings Map and Potential
Water Feature Impacts**
IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

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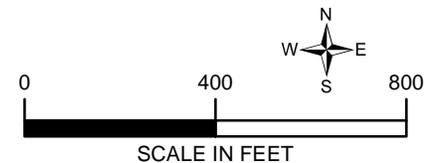
Source / Year of Aerial Photograph:
NCTCOG / 2015



Legend		
— Existing ROW	— Proposed Retaining Wall	— Proposed Managed Lane
— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Existing Sidewalk
— Water of the U.S.	— Existing Bridge	— Proposed Sidewalk
— Proposed Bridge Abutment	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Bridge Bent	— Proposed Mainlane	— Pavement/Bridge to be Removed
— Proposed Noise Wall	— Proposed Frontage Road	

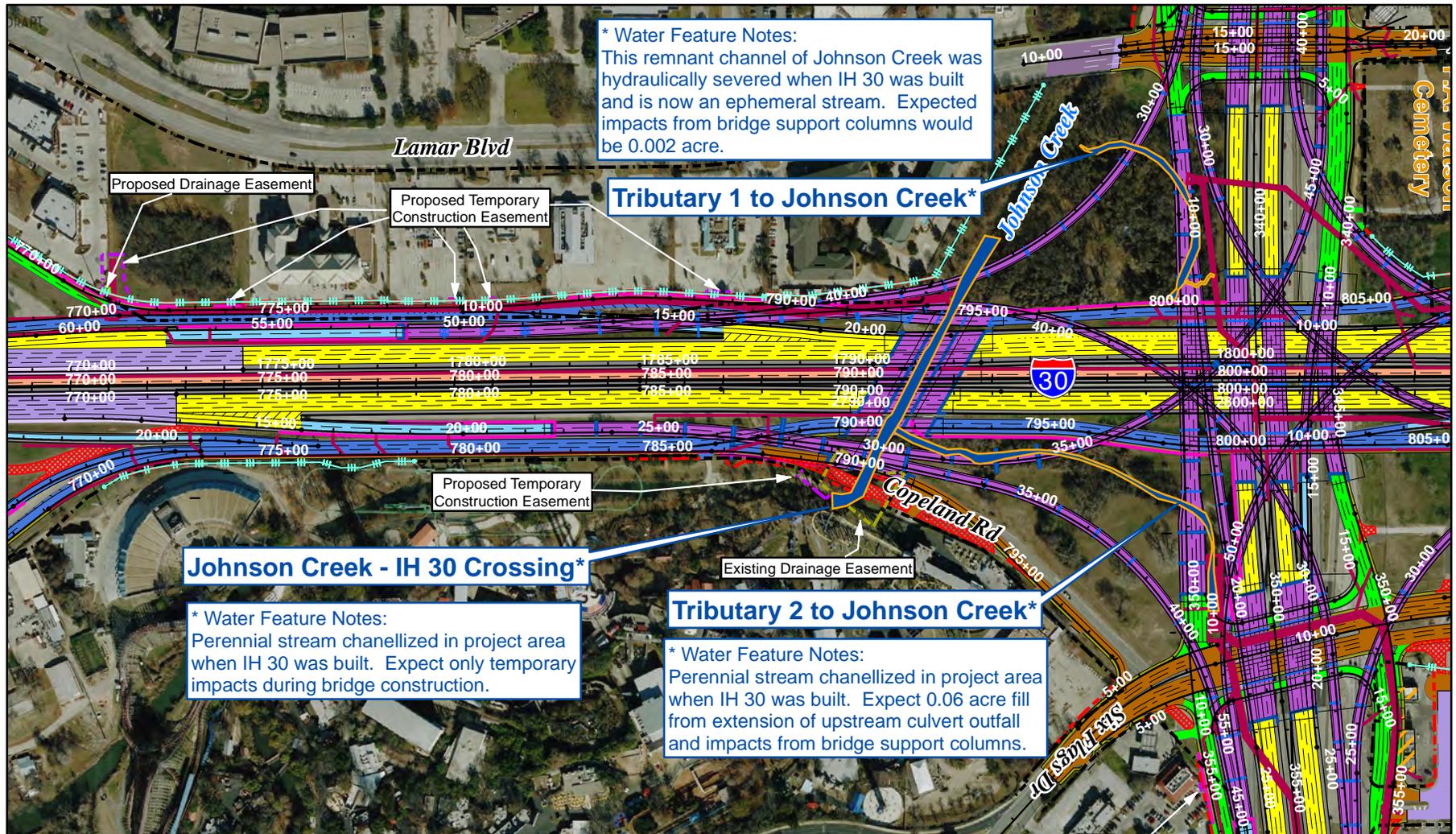
**Figure 13-2. (Page 4 of 11).
Waters Crossings Map and Potential
Water Feature Impacts**

IH 30 Project from Cooper Street to SH 161,
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Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903



SCALE IN FEET

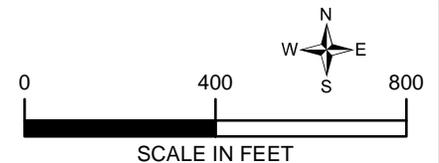
Source / Year of Aerial Photograph:
NCTCOG / 2015



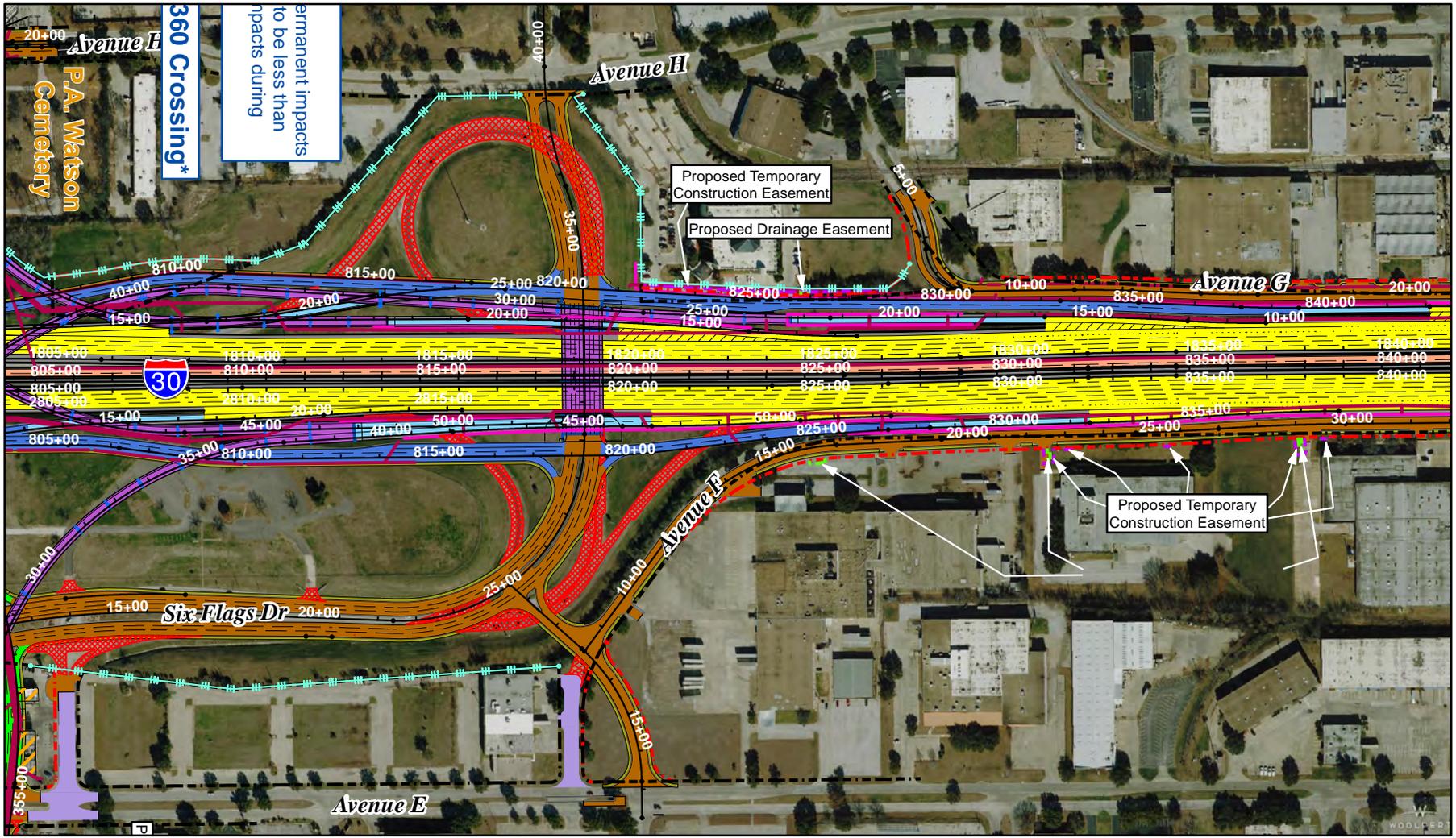
Legend		
— Existing ROW	— Proposed Retaining Wall	— Proposed Managed Lane
— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Existing Sidewalk
— Water of the U.S.	— Existing Bridge	— Proposed Sidewalk
— Proposed Bridge Abutment	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Bridge Bent	— Proposed Mainlane	— Pavement/Bridge to be Removed
— Proposed Noise Wall	— Proposed Frontage Road	

**Figure 13-2. (Page 5 of 11).
Waters Crossings Map and Potential
Water Feature Impacts**

IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903



SCALE IN FEET
Source / Year of Aerial Photograph:
NCTCOG / 2015



Permanent impacts to be less than impacts during construction

360 Crossing*

Proposed Temporary Construction Easement

Proposed Drainage Easement

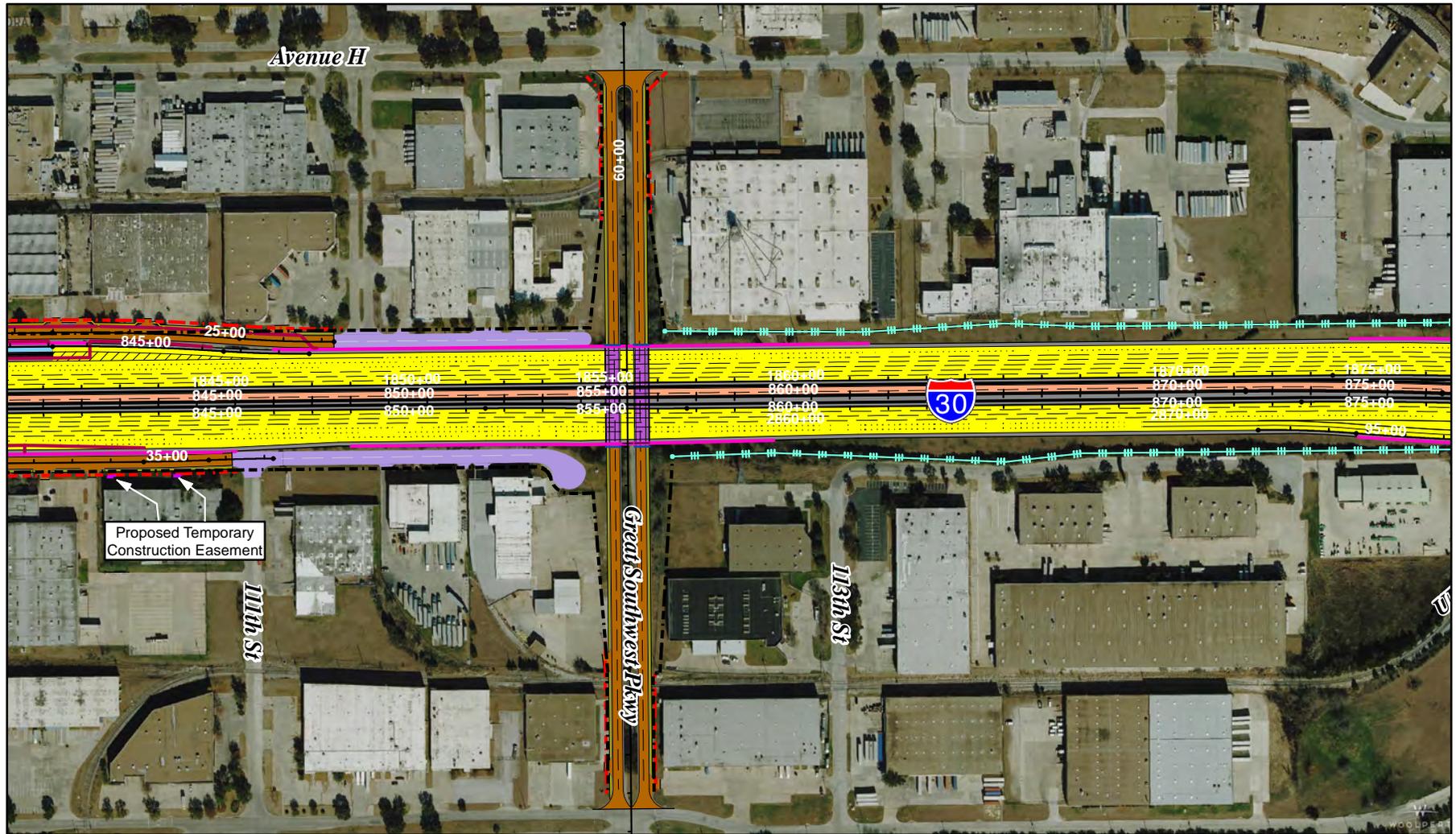
Proposed Temporary Construction Easement

Legend		
— Existing ROW	— Proposed Retaining Wall	— Proposed Managed Lane
— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Existing Sidewalk
— Water of the U.S.	— Existing Bridge	— Proposed Sidewalk
— Proposed Bridge Abutment	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Bridge Bent	— Proposed Mainlane	— Pavement/Bridge to be Removed
— Proposed Noise Wall	— Proposed Frontage Road	

**Figure 13-2. (Page 6 of 11).
Waters Crossings Map and Potential
Water Feature Impacts**
IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

SCALE IN FEET

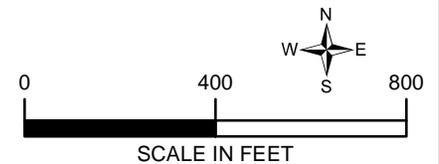
Source / Year of Aerial Photograph:
NCTCOG / 2015



Legend		
— Existing ROW	— Proposed Retaining Wall	— Proposed Managed Lane
— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Existing Sidewalk
— Water of the U.S.	— Existing Bridge	— Proposed Sidewalk
— Proposed Bridge Abutment	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Bridge Bent	— Proposed Mainlane	— Pavement/Bridge to be Removed
— Proposed Noise Wall	— Proposed Frontage Road	

**Figure 13-2. (Page 7 of 11).
Waters Crossings Map and Potential
Water Feature Impacts**

IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903



SCALE IN FEET

Source / Year of Aerial Photograph:
NCTCOG / 2015



Arbor Creek*

* Water Feature Notes:
Perennial stream entirely in culvert within project limits. No impacts.

Project Limits: East

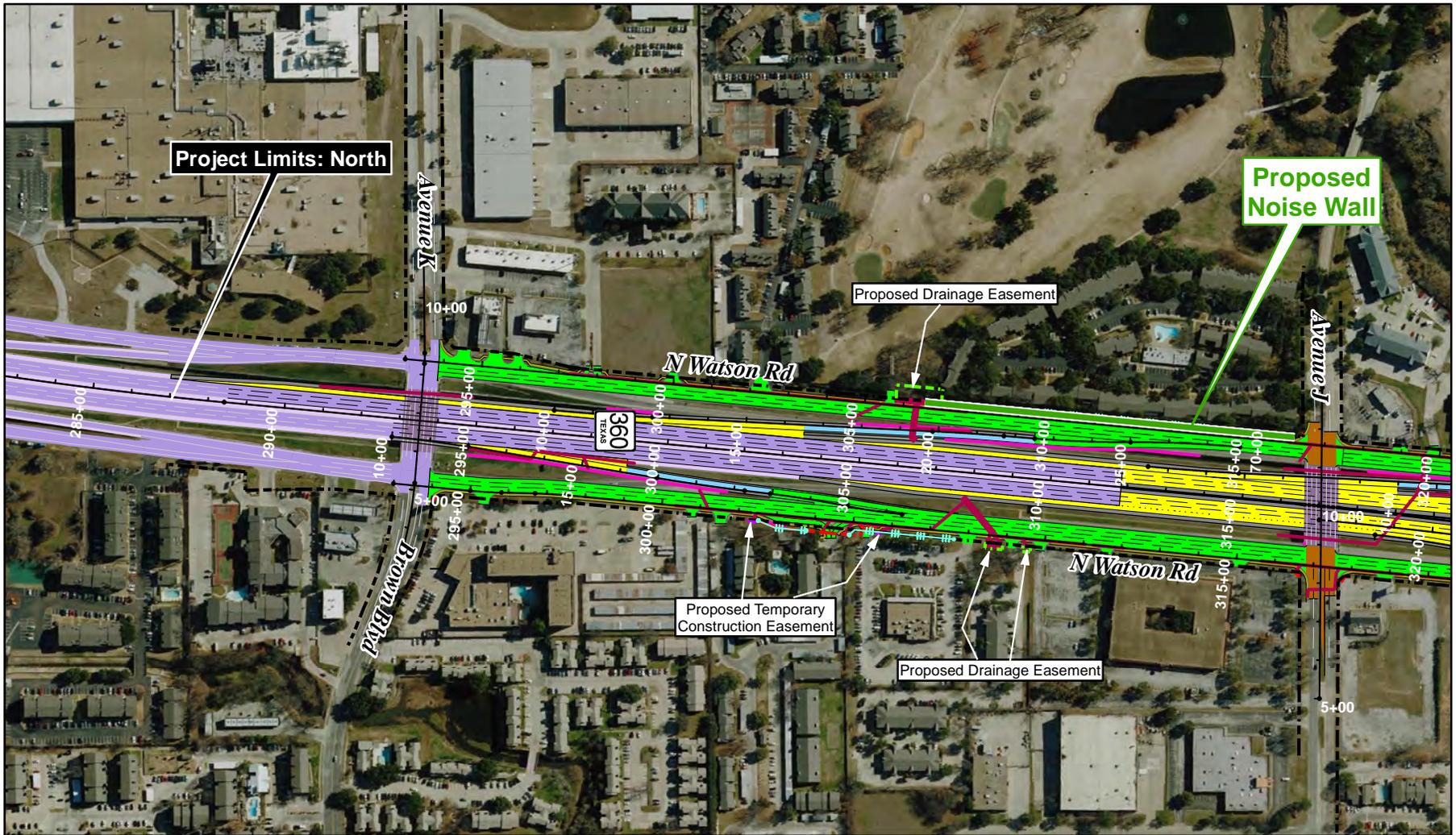
- Legend**
- Existing ROW
 - Proposed ROW
 - Existing Drainage Easement
 - Proposed Drainage Easement
 - Proposed Temporary Construction Easement
 - Control of Access
 - Water of the U.S.
 - Proposed Bridge Abutment
 - Proposed Bridge Bent
 - Proposed Noise Wall
 - Proposed Retaining Wall
 - Existing Striping to Remain
 - Proposed Striping - Dashed
 - Drainage Structure
 - Existing Roadway Shoulder
 - Existing Roadway
 - Proposed Roadway Shoulder
 - Proposed Mainlane
 - Proposed Frontage Road
 - Proposed Managed Lane
 - Proposed Bridge
 - Proposed Ramp/Direct Connect
 - Proposed Collector/Distributor
 - Proposed Cross/Local Street
 - Existing Sidewalk
 - Proposed Sidewalk
 - Potential Displacements
 - Pavement/Bridge to be Removed

**Figure 13-2. (Page 8 of 11).
Waters Crossings Map and Potential
Water Feature Impacts**

IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

SCALE IN FEET

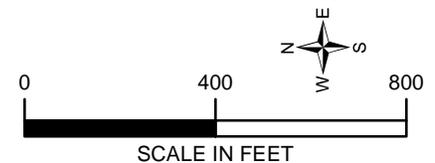
Source / Year of Aerial Photograph:
NCTCOG / 2015



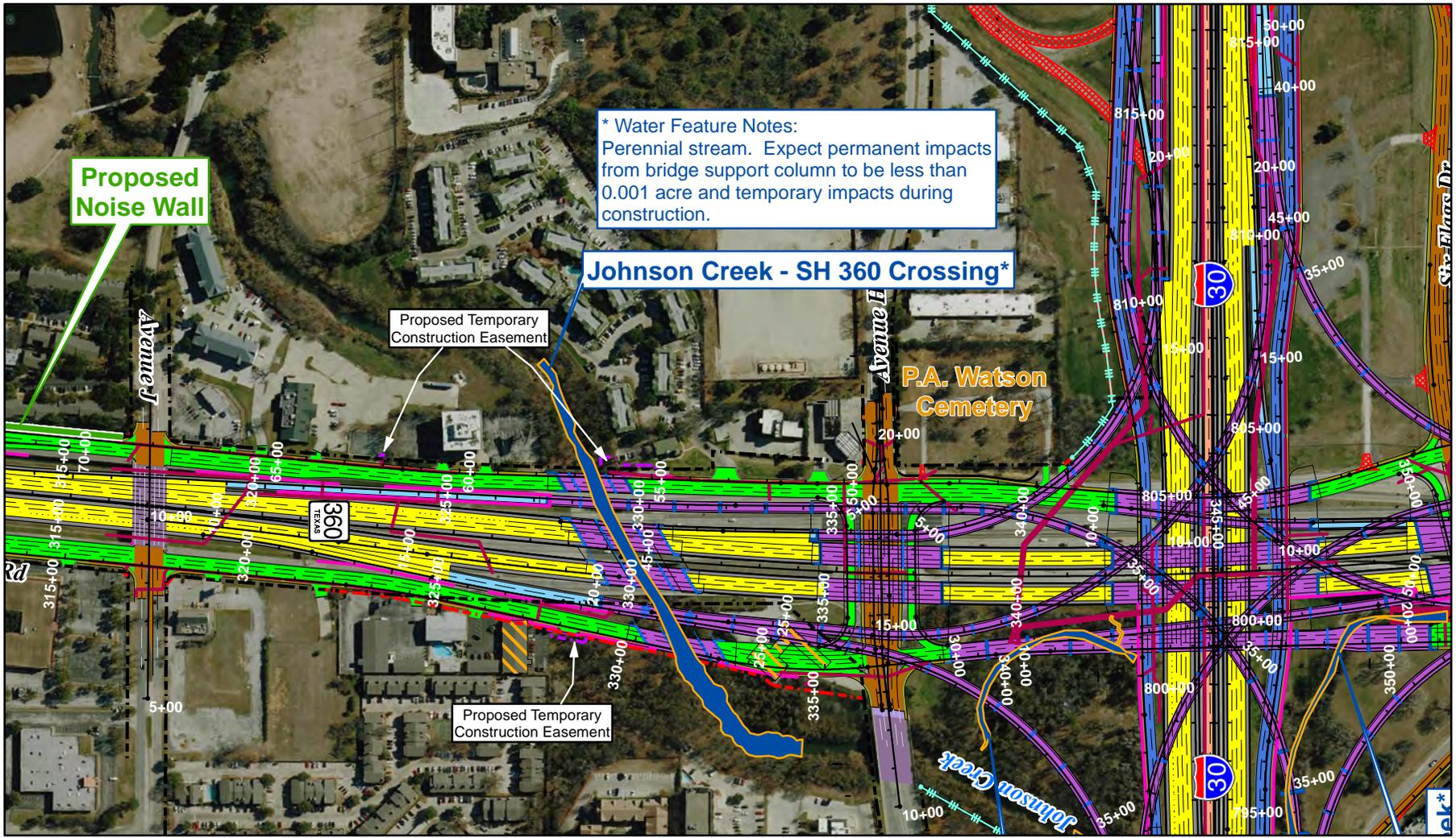
Legend		
— Existing ROW	— Proposed Retaining Wall	— Proposed Managed Lane
— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Existing Sidewalk
— Water of the U.S.	— Existing Bridge	— Proposed Sidewalk
— Proposed Bridge Abutment	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Bridge Bent	— Proposed Mainlane	— Pavement/Bridge to be Removed
— Proposed Noise Wall	— Proposed Frontage Road	

**Figure 13-2. (Page 9 of 11).
Waters Crossings Map and Potential
Water Feature Impacts**

IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903



SCALE IN FEET
Source / Year of Aerial Photograph:
NCTCOG / 2015

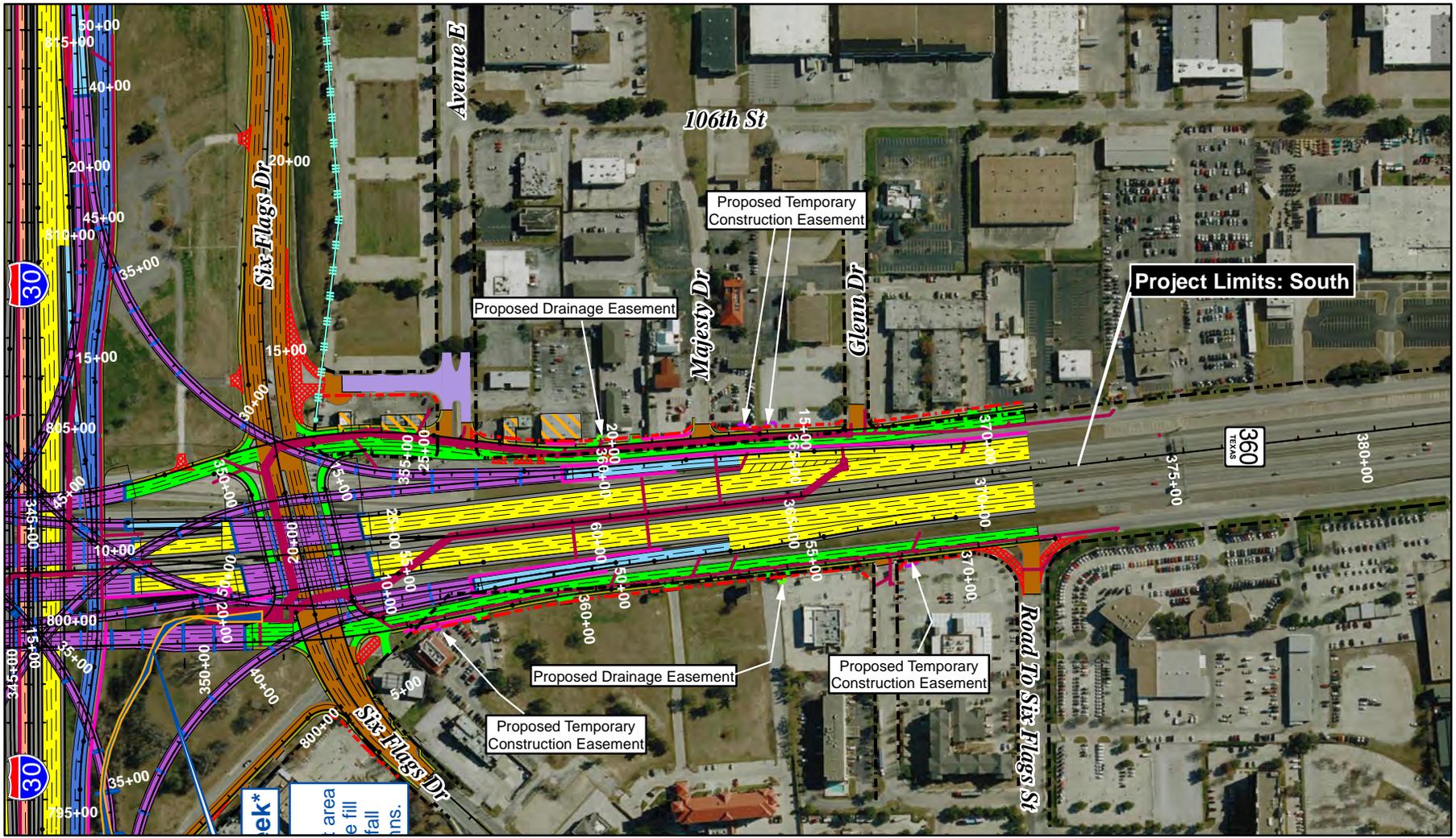


Legend		
— Existing ROW	— Proposed Retaining Wall	— Proposed Managed Lane
— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Existing Sidewalk
— Water of the U.S.	— Existing Bridge	— Proposed Sidewalk
— Proposed Bridge Abutment	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Bridge Bent	— Proposed Mainlane	— Pavement/Bridge to be Removed
— Proposed Noise Wall	— Proposed Frontage Road	

**Figure 13-2. (Page 10 of 11).
Waters Crossings Map and Potential
Water Feature Impacts**
IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

SCALE IN FEET

Source / Year of Aerial Photograph:
NCTCOG / 2015

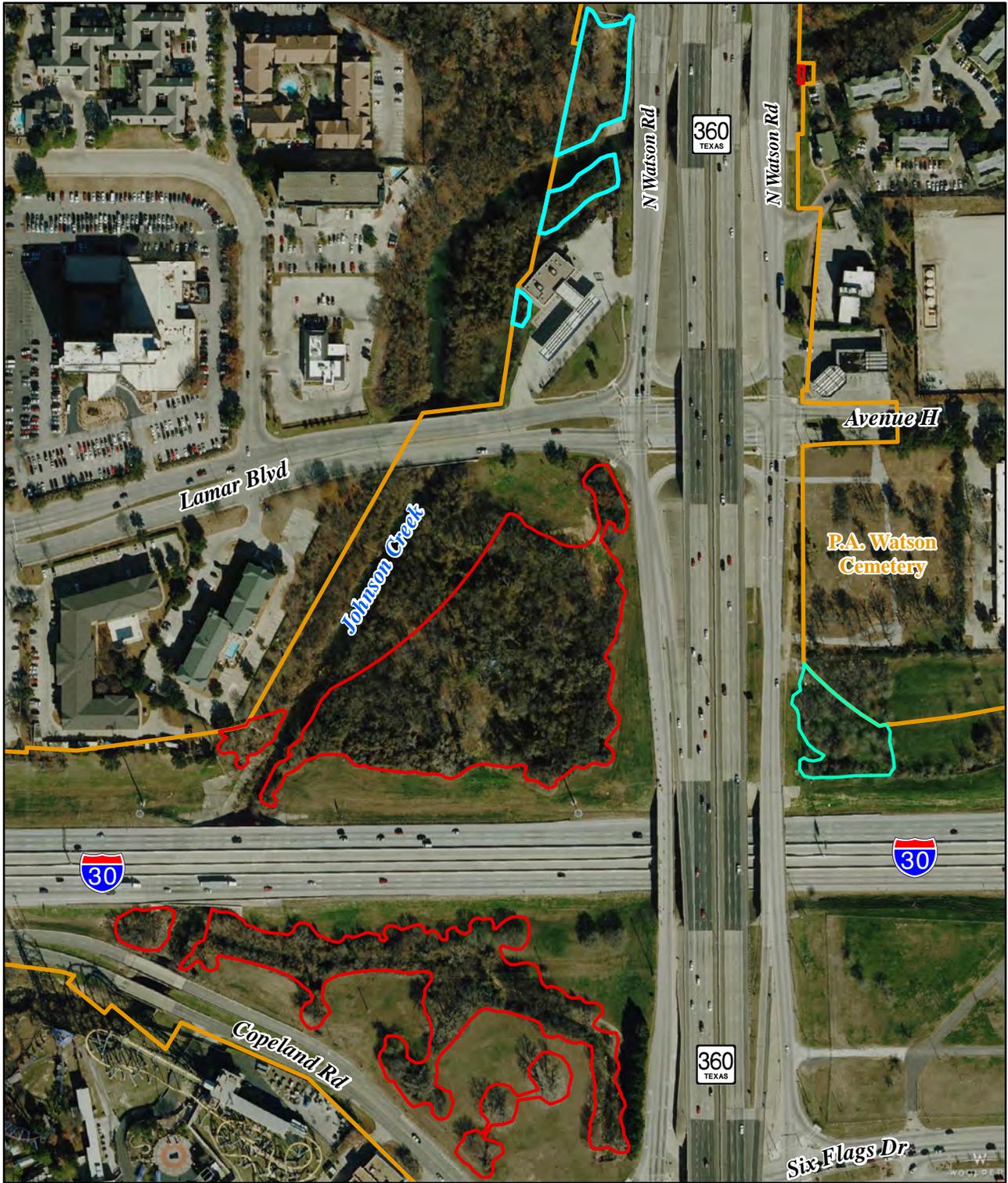


Legend		
— Existing ROW	— Proposed Retaining Wall	— Proposed Managed Lane
— Proposed ROW	— Existing Striping to Remain	— Proposed Bridge
— Existing Drainage Easement	— Proposed Striping - Dashed	— Proposed Ramp/Direct Connect
— Proposed Drainage Easement	— Drainage Structure	— Proposed Collector/Distributor
— Proposed Temporary Construction Easement	— Existing Roadway Shoulder	— Proposed Cross/Local Street
— Control of Access	— Existing Roadway	— Existing Sidewalk
— Water of the U.S.	— Existing Bridge	— Proposed Sidewalk
— Proposed Bridge Abutment	— Proposed Roadway Shoulder	— Potential Displacements
— Proposed Bridge Bent	— Proposed Mainlane	— Pavement/Bridge to be Removed
— Proposed Noise Wall	— Proposed Frontage Road	

**Figure 13-2. (Page 11 of 11).
Waters Crossings Map and Potential
Water Feature Impacts**
IH 30 Project from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

SCALE IN FEET

Source / Year of Aerial Photograph:
NCTCOG / 2015

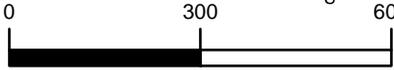


Legend	
	Project Limits
	Riparian Forest Impacts Area
	Upland Forest Impacts Area

Figure 14.
Forest Impacts Map

IH 30 from Cooper Steet to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903


 N
 W E
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 SCALE IN FEET

Source / Year of Aerial Photograph:
 NCTCOG / 2015

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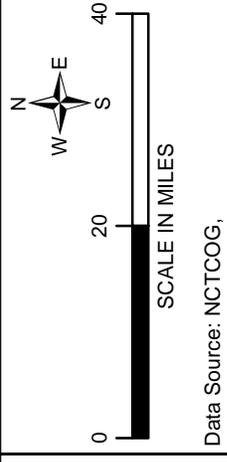
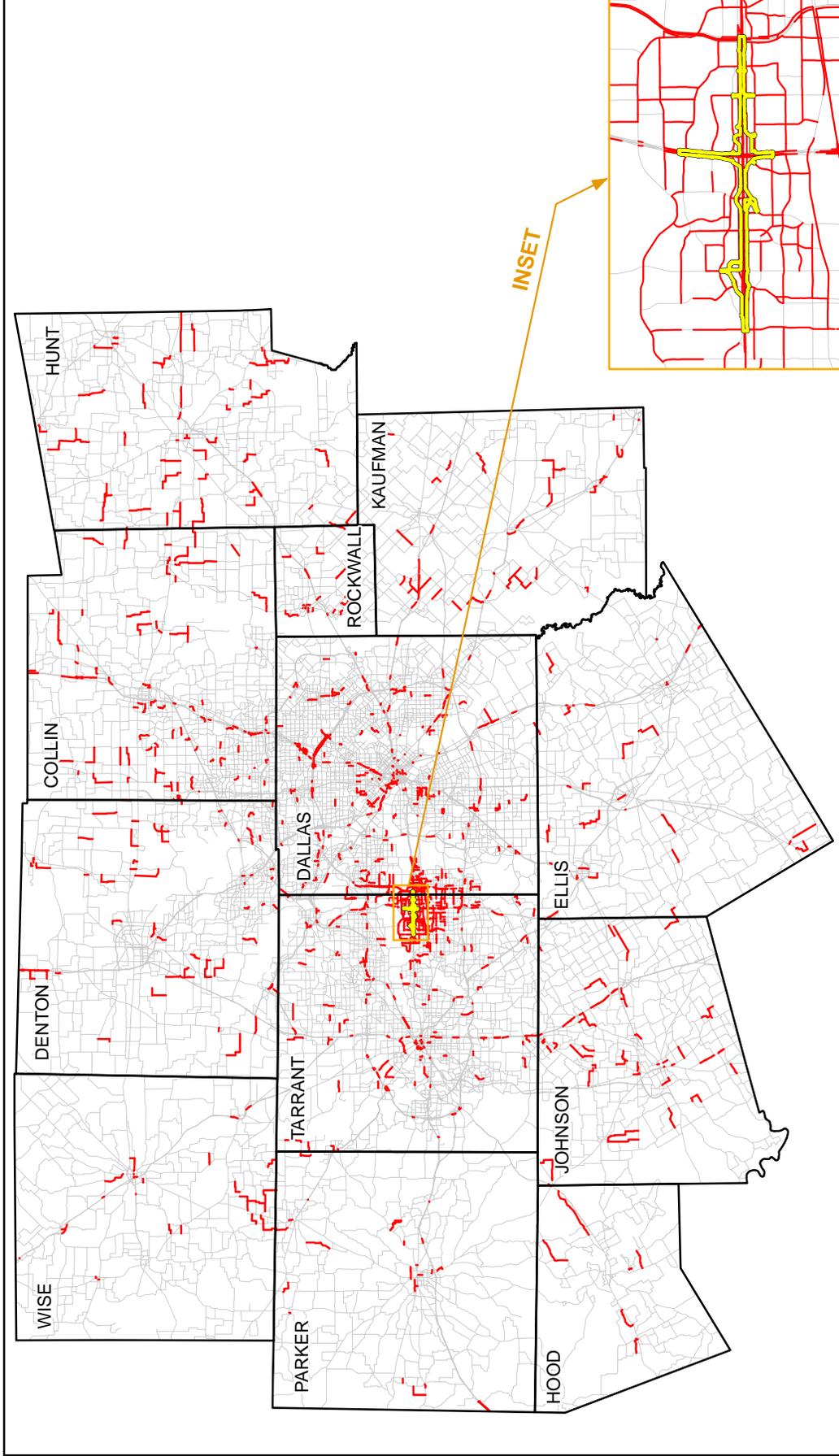
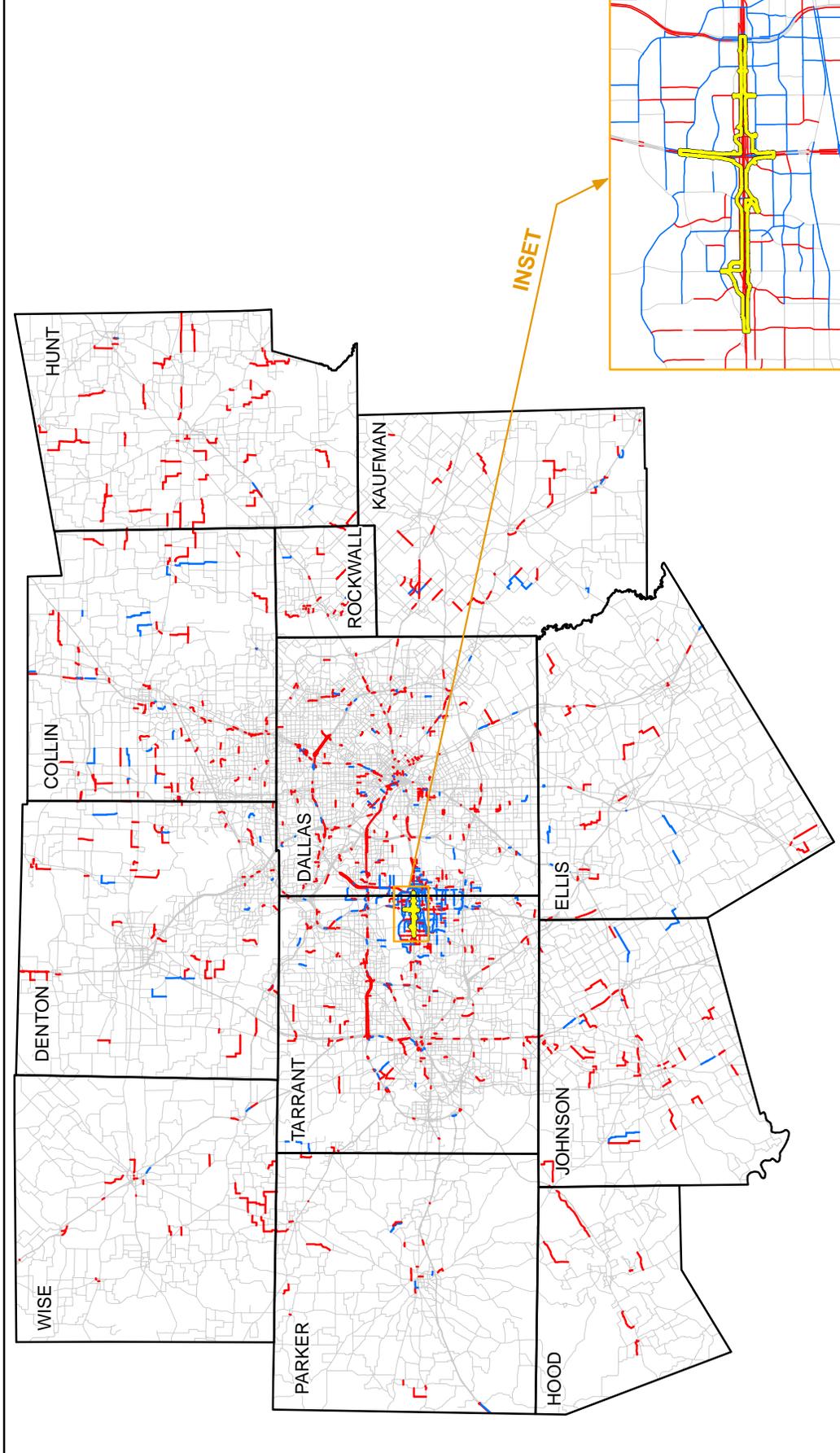


Figure 15-1. Year 2014 Affected Transportation Network
 IH 30 Project from Cooper Street to SH 161, Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

- Year 2014 Affected Transportation Network
- Year 2014 Road Network
- ▭ Project Limits
- ▭ 2035 MPA Boundary (12 Counties)



Legend

- Year 2035 Affected Transportation Network
- Traffic Volum Change <=-5% (Build VS No-Build) —
- Traffic Volum Change >=+5% (Build VS No-Build) —
- Year 2035 Road Network —
- Project Limits
- 2035 MPA Boundary (12 Counties)

SCALE IN MILES
 Data Source: NCTCOG

**Figure 15-2. Year 2035
Affected Transportation Network**
 IH 30 Project from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903

Legend

- Year 2035 Affected Transportation Network
- Traffic Volum Change <=-5% (Build VS No-Build) —
- Traffic Volum Change >=+5% (Build VS No-Build) —
- Year 2035 Road Network —
- Project Limits
- 2035 MPA Boundary (12 Counties)

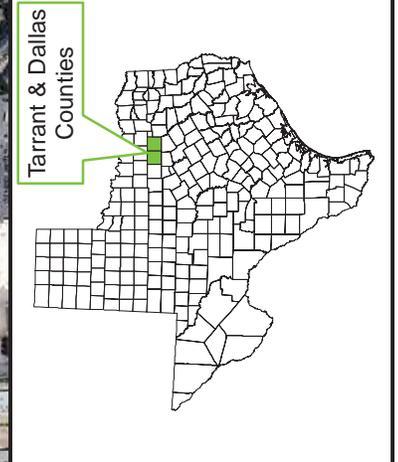
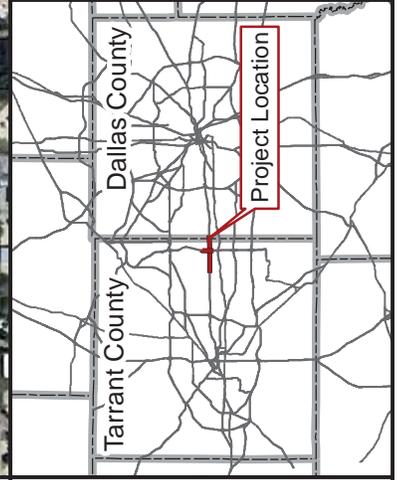
SCALE IN MILES
 Data Source: NCTCOG



Base Map Sources: NCTCOG, 2013; TAD, 2014; DCAD, 2014; Aerial Surveys International, 2011

Legend

-  Project Limits
-  Hazardous Materials Site of Concern
-  Gas Well
-  Potential Displacement
-  Parcel Boundary
-  County Line



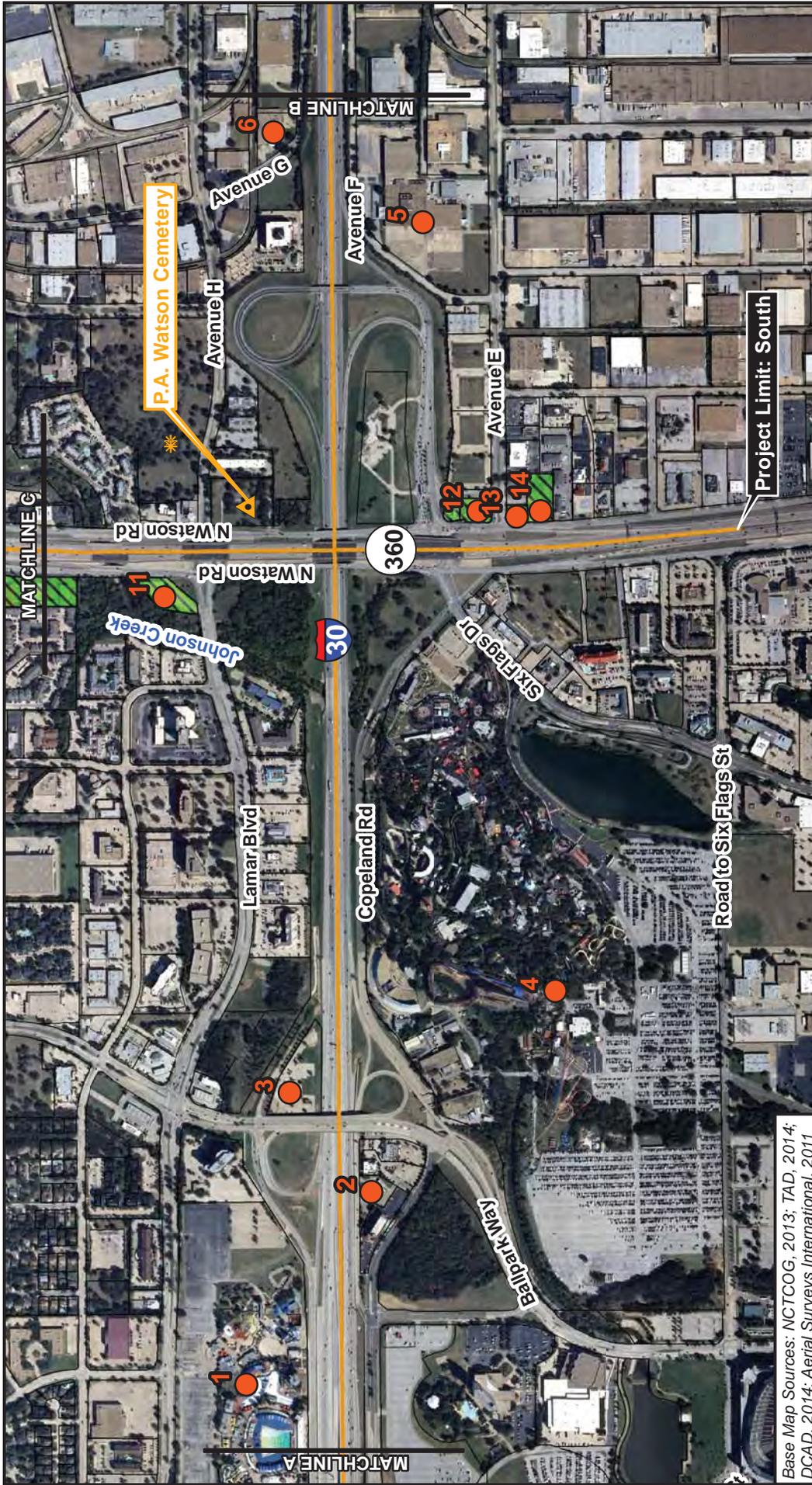


0 1,000 Feet

Figure 16 (Page 1 of 4)
**Hazardous Materials-
 Sites of Concern Map**

IH 30 from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange

CSJs: 1068-02-076, -104, -127; 1068-04-903



Base Map Sources: NCTCOG, 2013; TAD, 2014; DCAD, 2014; Aerial Surveys International, 2011

Legend

- Project Limits
- Hazardous Materials Site of Concern
- Gas Well
- Potential Displacement
- Parcel Boundary
- County Line

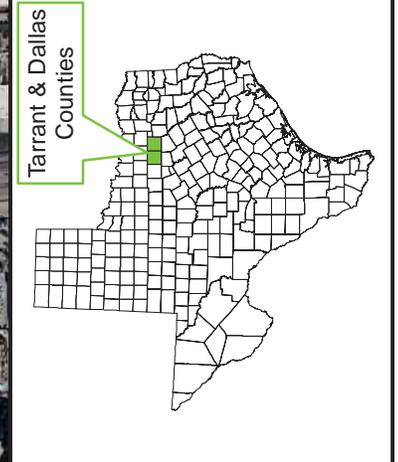
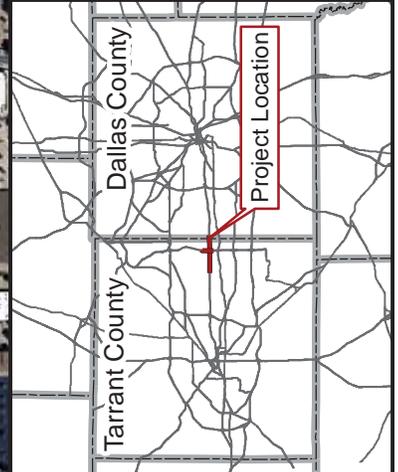
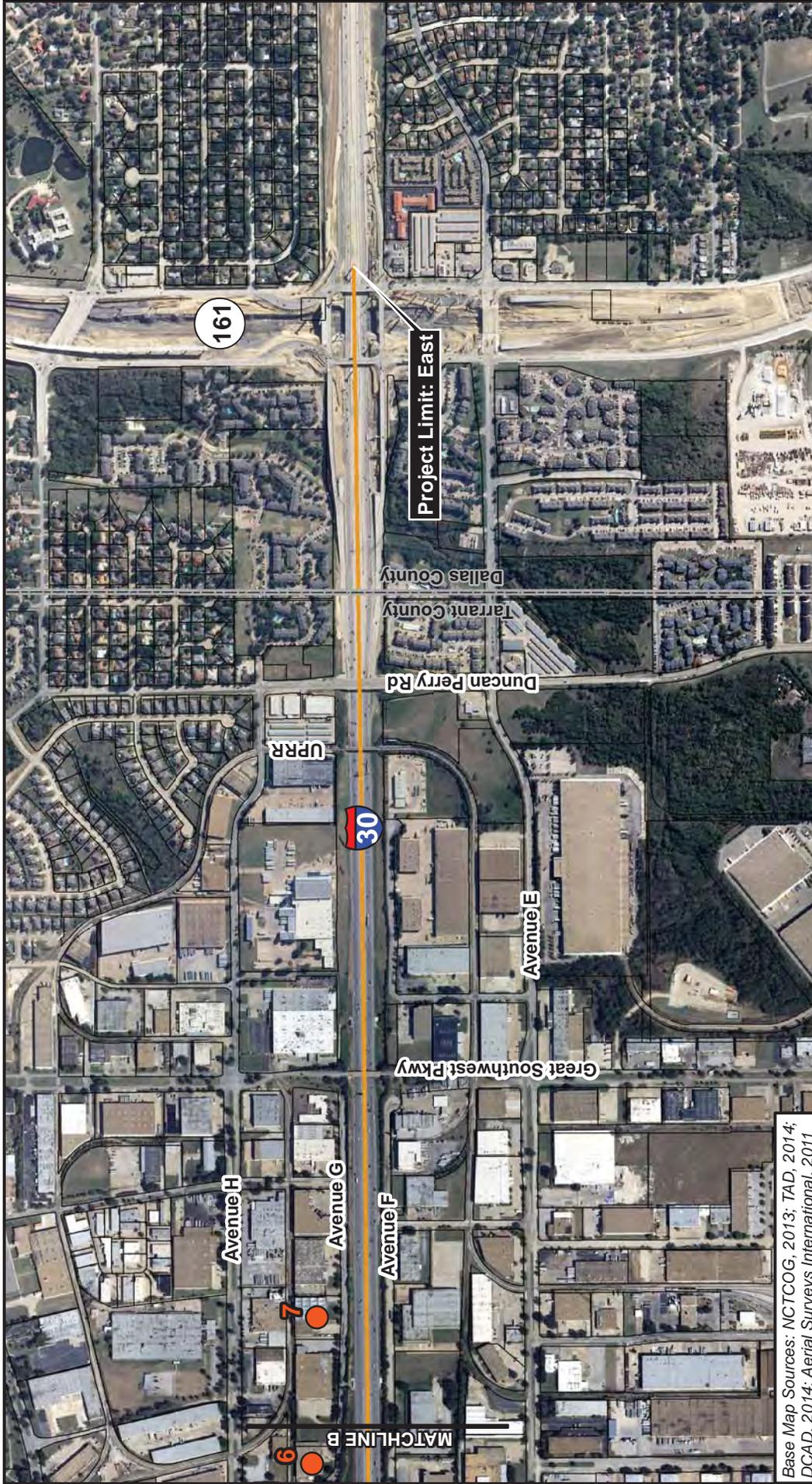


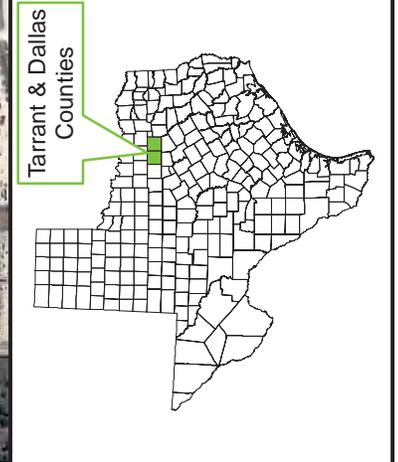
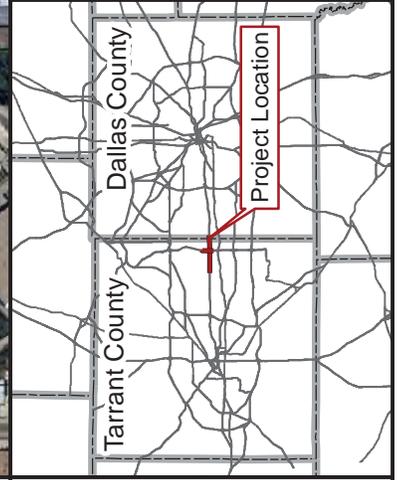
Figure 16 (Page 2 of 4)
Hazardous Materials- Sites of Concern Map
 IH 30 from Cooper Street to SH 161, Including the IH 30/SH 360 Interchange
 CSJs: 1068-02-076, -104, -127; 1068-04-903

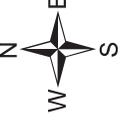


Base Map Sources: NCTCOG, 2013; TAD, 2014; DCAD, 2014; Aerial Surveys International, 2011

Legend

-  Project Limits
-  Hazardous Materials Site of Concern
-  Gas Well
-  Potential Displacement
-  Parcel Boundary
-  County Line

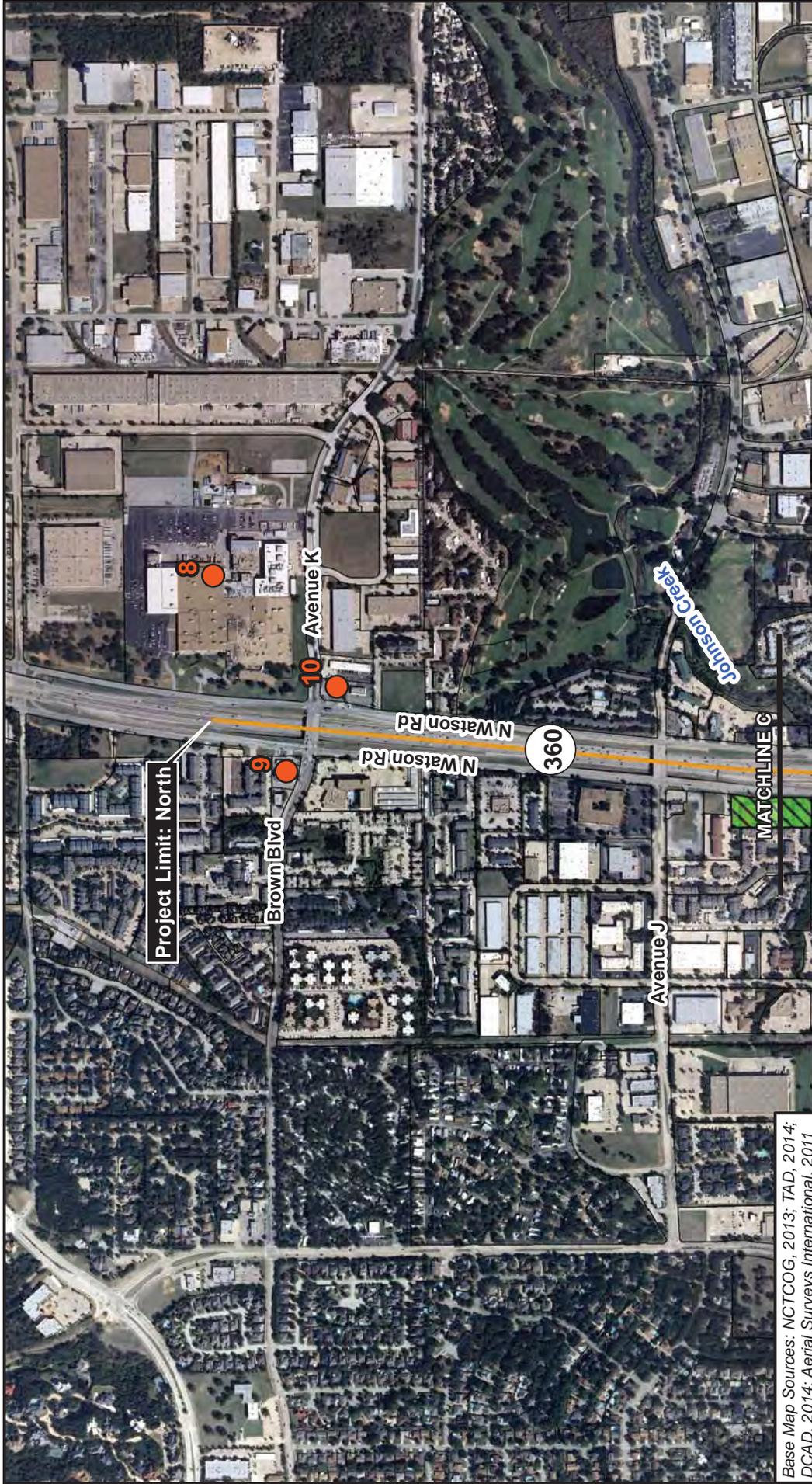




0 1,000 Feet

Figure 16 (Page 3 of 4)
**Hazardous Materials-
 Sites of Concern Map**

IH 30 from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 CSJs: 1068-02-076, -104, -127; 1068-04-903



Base Map Sources: NCTCOG, 2013; TAD, 2014; DCAD, 2014; Aerial Surveys International, 2011

Legend

-  Project Limits
-  Hazardous Materials Site of Concern
-  Gas Well
-  Potential Displacement
-  Parcel Boundary
-  County Line

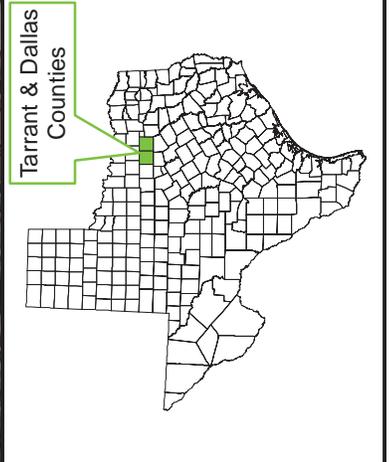
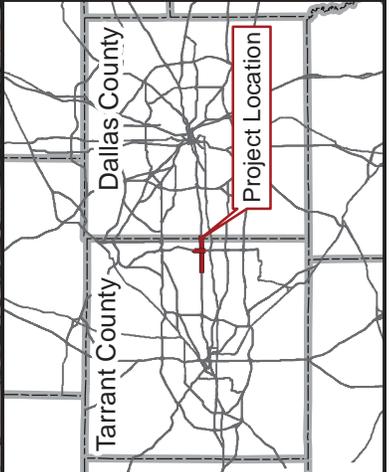
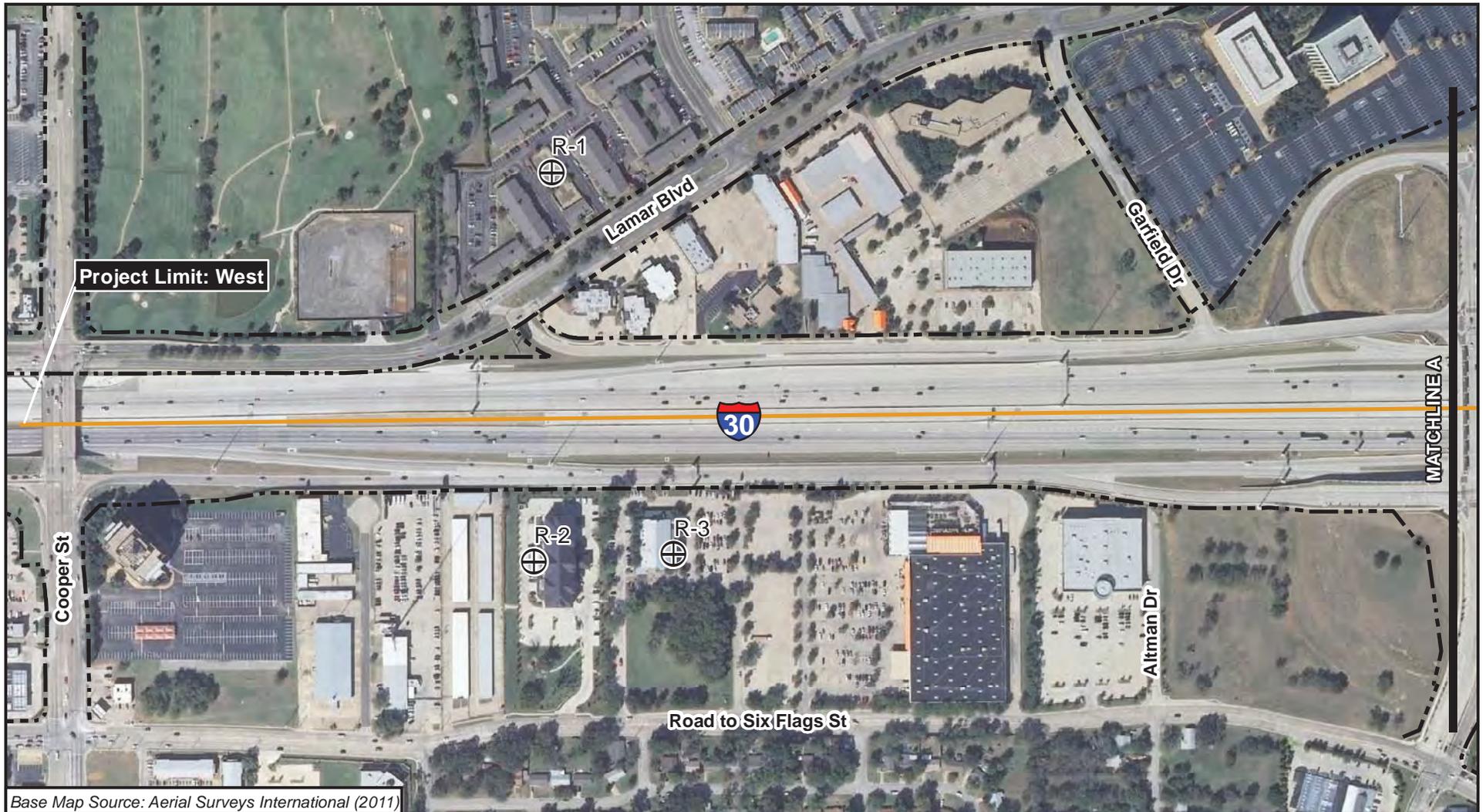


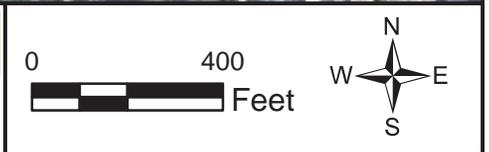
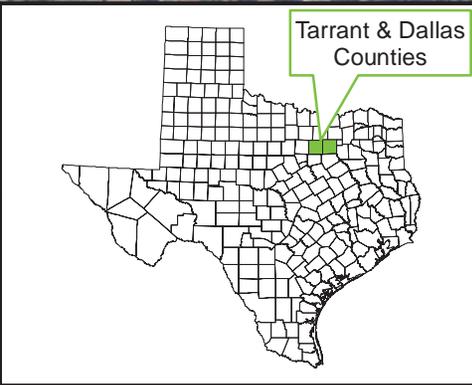
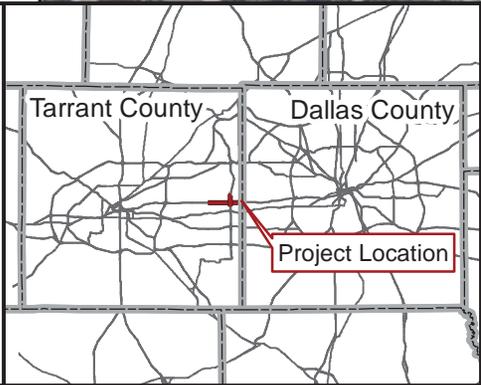
Figure 16 (Page 4 of 4)
**Hazardous Materials-
 Sites of Concern Map**
 IH 30 from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 CSJs: 1068-02-076, -104, -127; 1068-04-903



Base Map Source: Aerial Surveys International (2011)

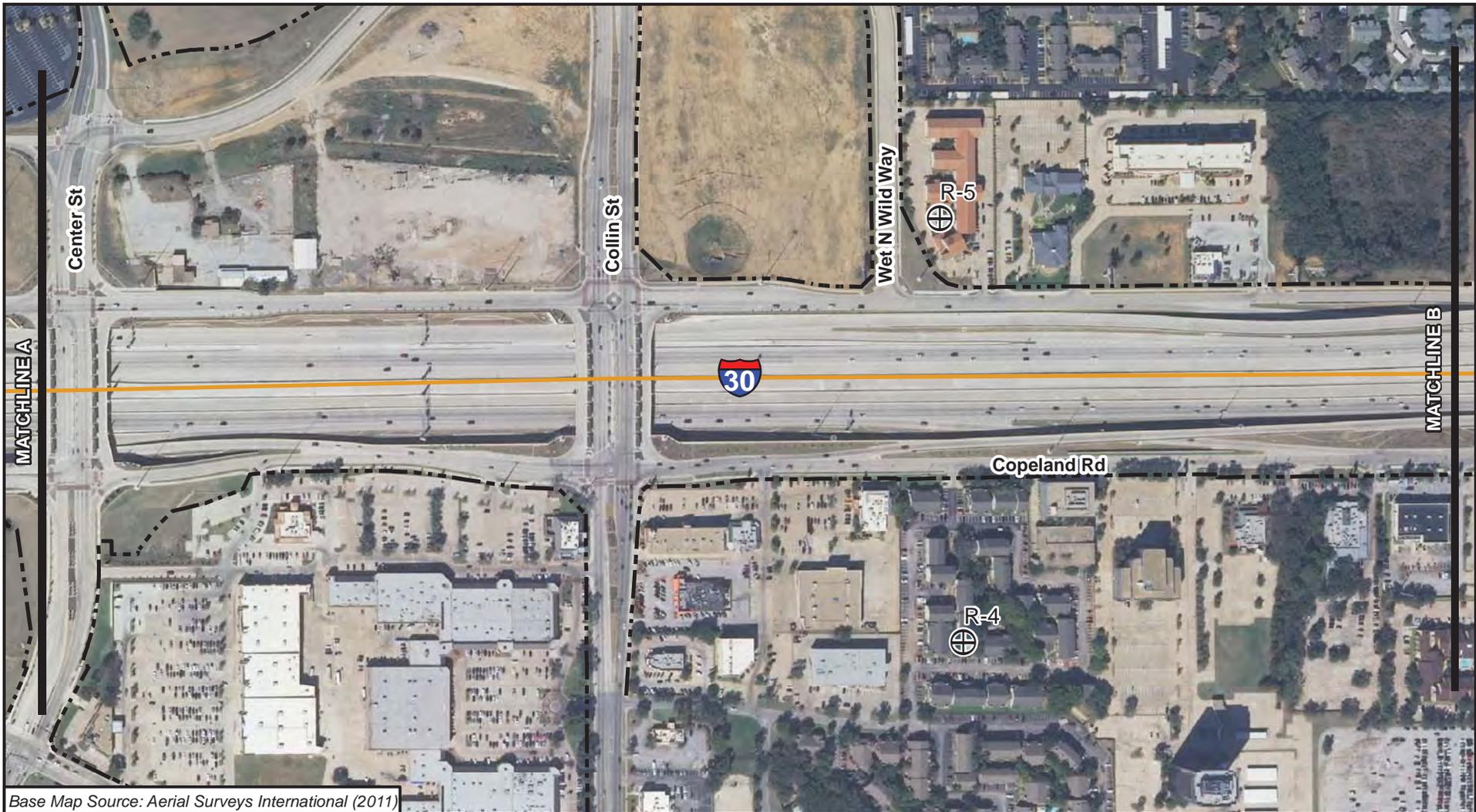
Legend

- Project Limits
- - - Existing Right-of-Way
- - - Proposed Right-of-Way
- Proposed Noise Barrier
- ⊕ Non-Impacted Noise Receiver
- ⊕ Impacted Noise Receiver
- ⊕ Noise Receiver Benefitting From Noise Mitigation



**Figure 17 (Page 1 of 11)
Noise Receiver Location Map**

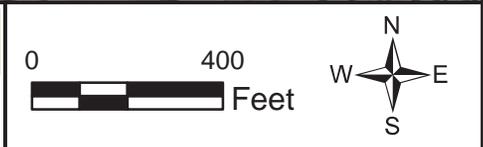
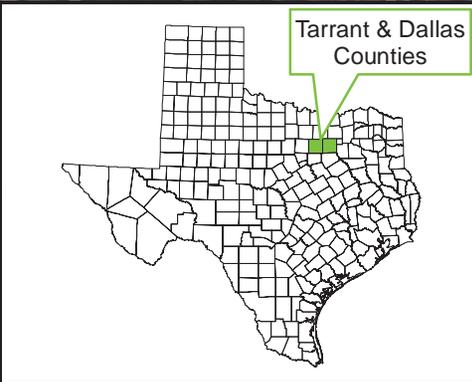
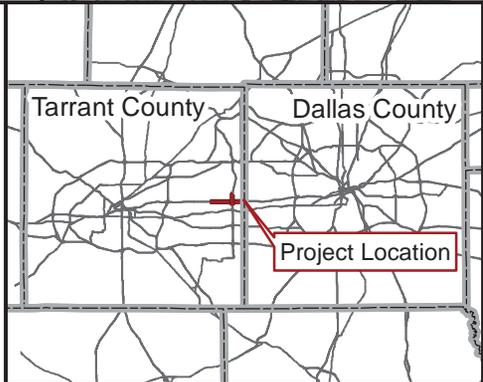
IH 30 from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903



Base Map Source: Aerial Surveys International (2011)

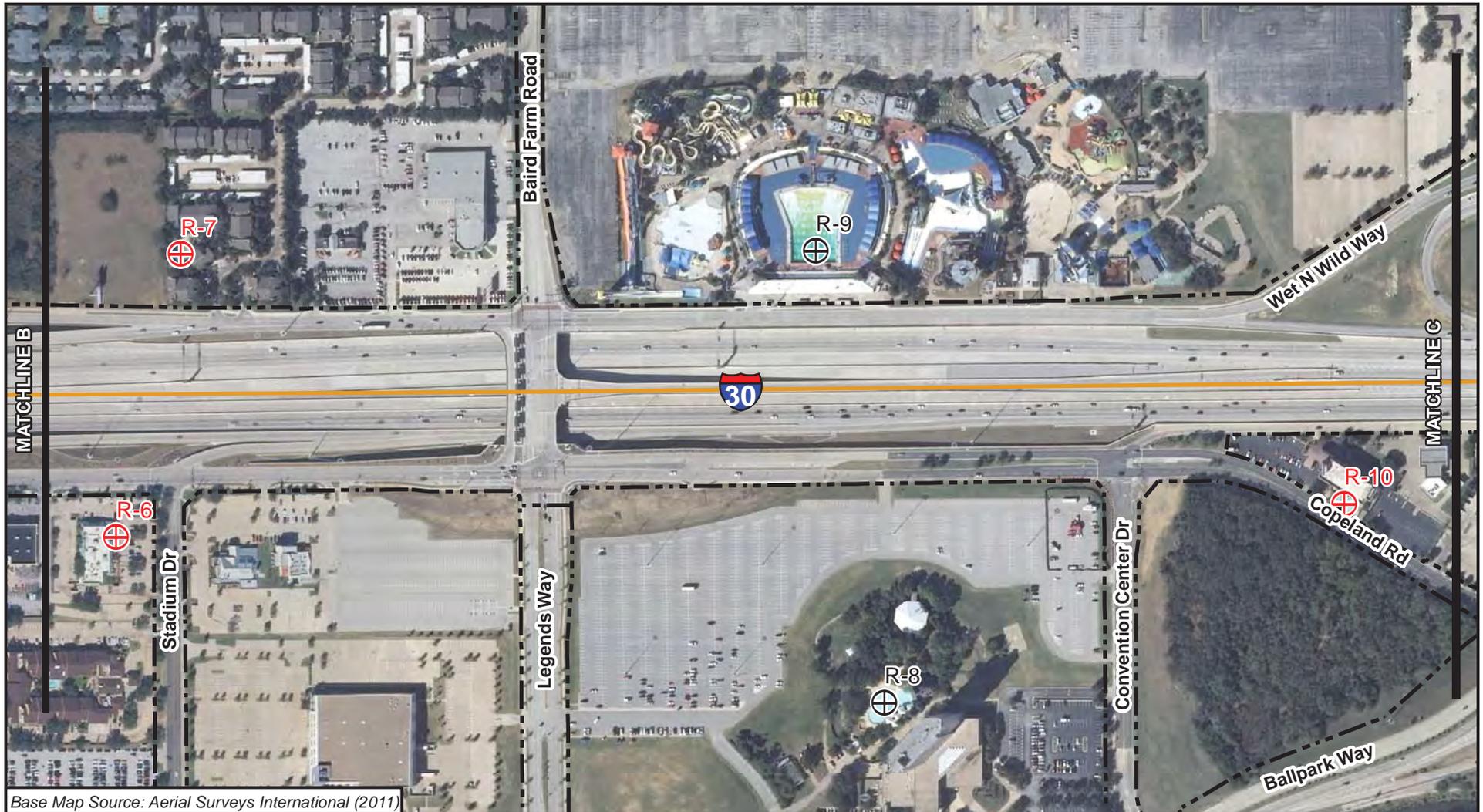
Legend

- Project Limits
- Existing Right-of-Way
- Proposed Right-of-Way
- Proposed Noise Barrier
- Non-Impacted Noise Receiver
- Impacted Noise Receiver
- Noise Receiver Benefitting From Noise Mitigation



**Figure 17 (Page 2 of 11)
Noise Reciever Location Map**

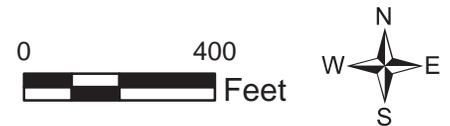
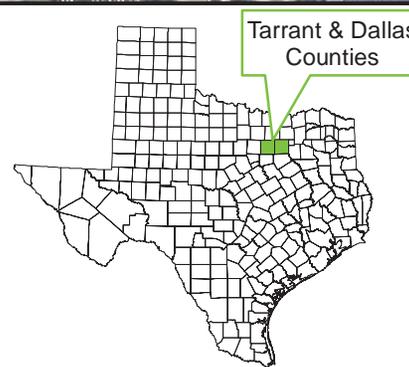
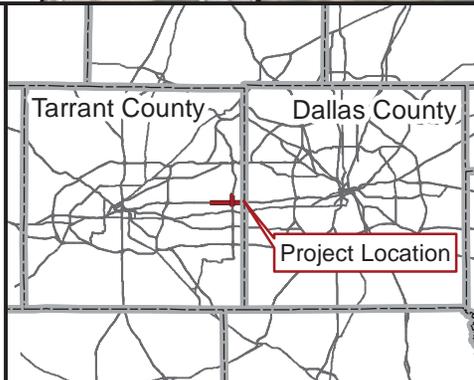
IH 30 from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903



Base Map Source: Aerial Surveys International (2011)

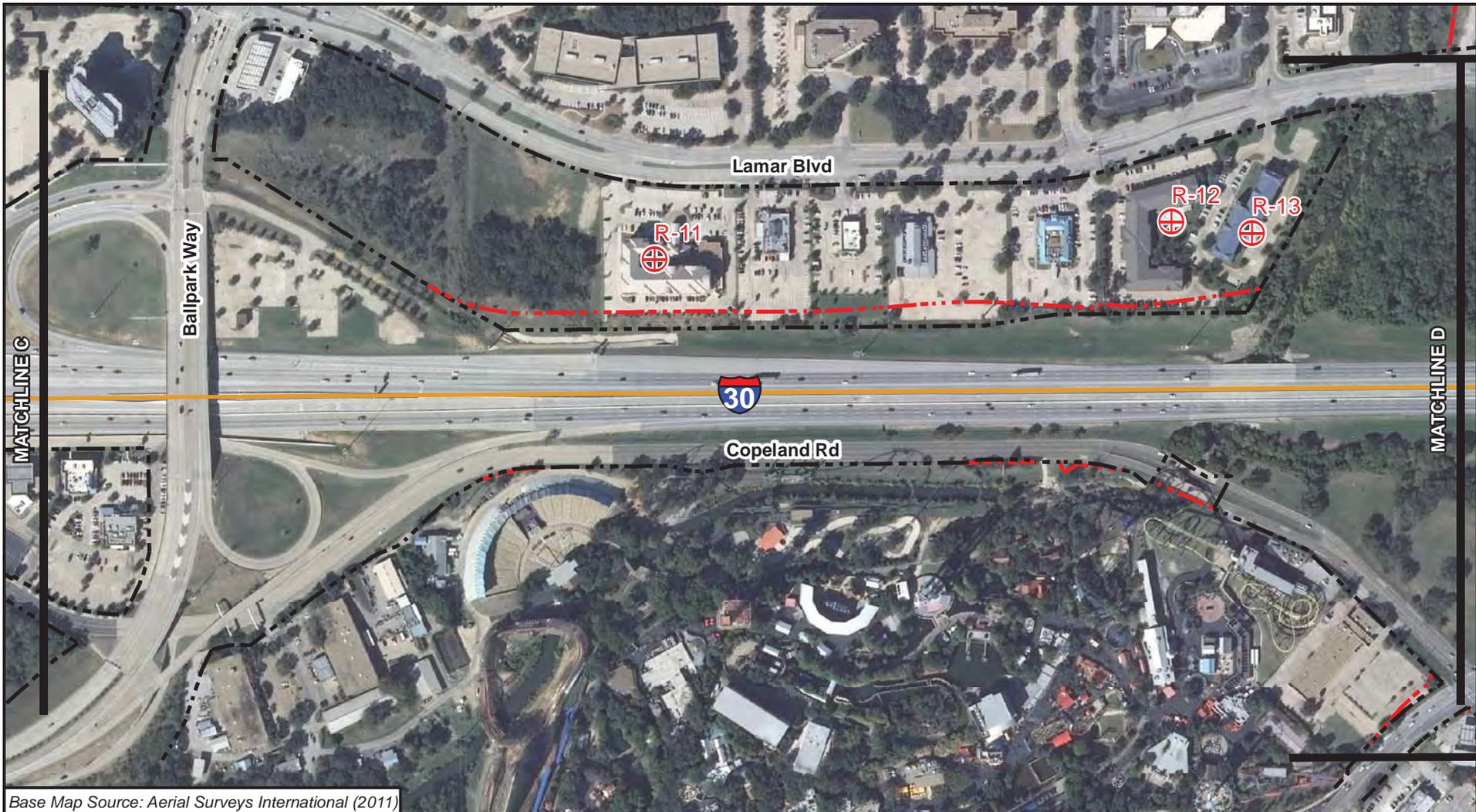
Legend

-  Project Limits
-  Existing Right-of-Way
-  Proposed Right-of-Way
-  Proposed Noise Barrier
-  Non-Impacted Noise Receiver
-  Impacted Noise Receiver
-  Noise Receiver Benefitting From Noise Mitigation



**Figure 17 (Page 3 of 11)
Noise Receiver Location Map**

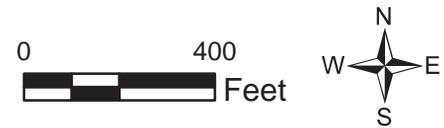
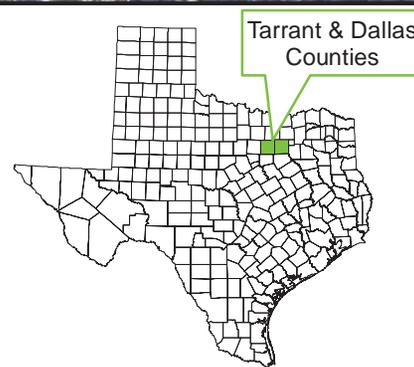
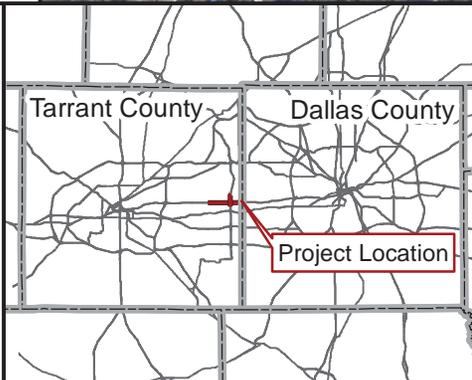
IH 30 from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903



Base Map Source: Aerial Surveys International (2011)

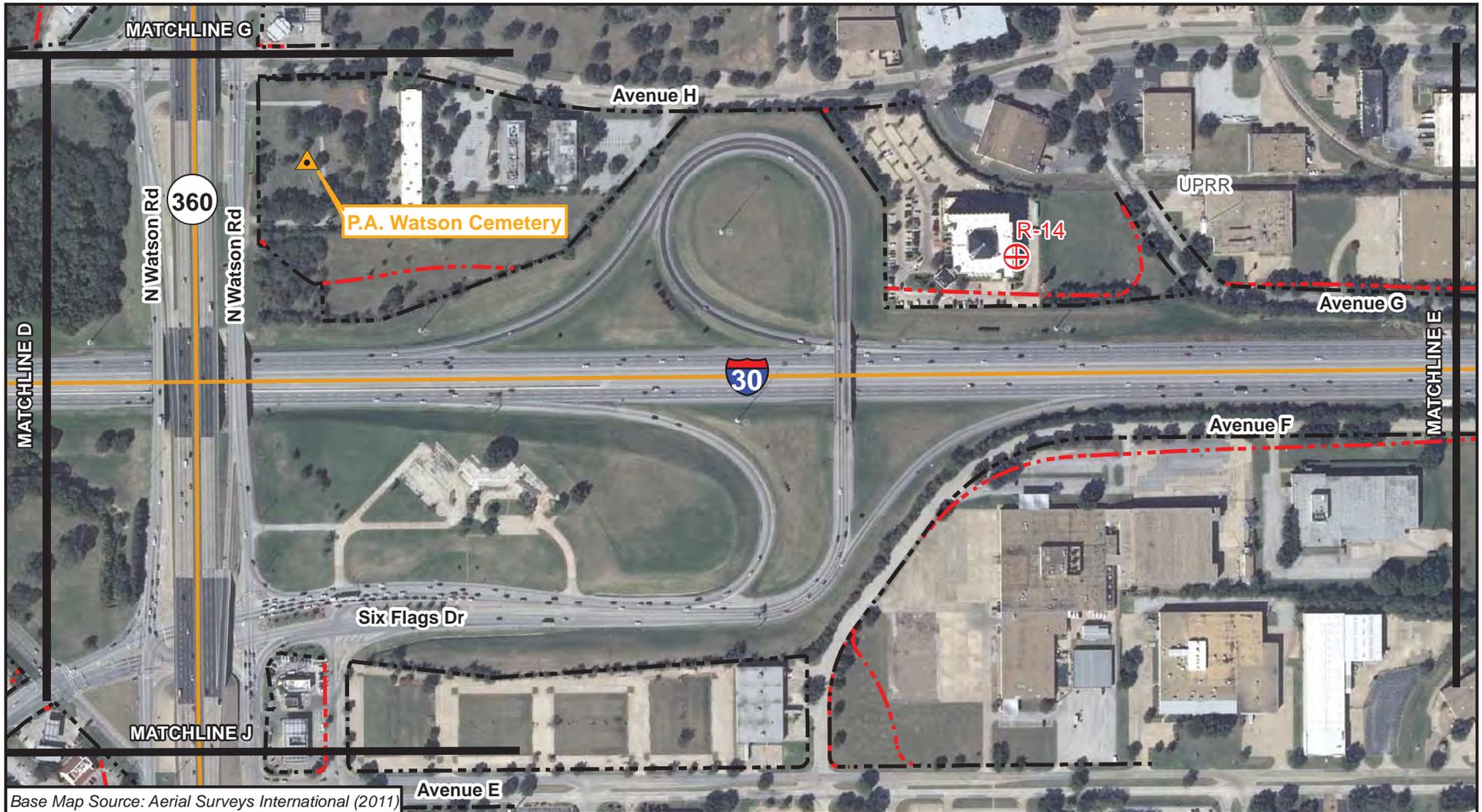
Legend

- Project Limits
- Existing Right-of-Way
- Proposed Right-of-Way
- Proposed Noise Barrier
- ⊕ Non-Impacted Noise Receiver
- ⊕ Impacted Noise Receiver
- ⊕ Noise Receiver Benefitting From Noise Mitigation



**Figure 17 (Page 4 of 11)
Noise Receiver Location Map**

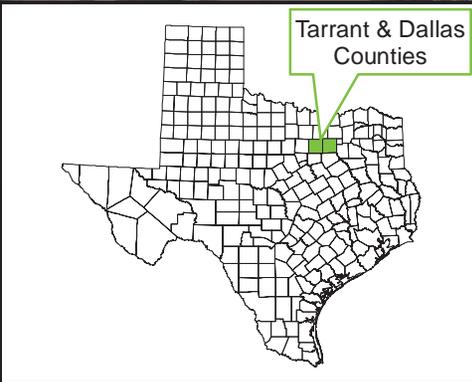
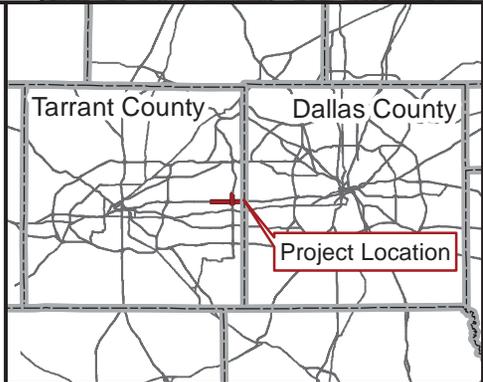
IH 30 from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903



Base Map Source: Aerial Surveys International (2011)

Legend

- Project Limits
- Existing Right-of-Way
- Proposed Right-of-Way
- Proposed Noise Barrier
- ⊕ Non-Impacted Noise Receiver
- ⊕ Impacted Noise Receiver
- ⊕ Noise Receiver Benefitting From Noise Mitigation



0 400 Feet

Figure 17 (Page 5 of 11)
Noise Receiver Location Map

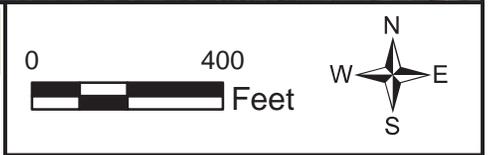
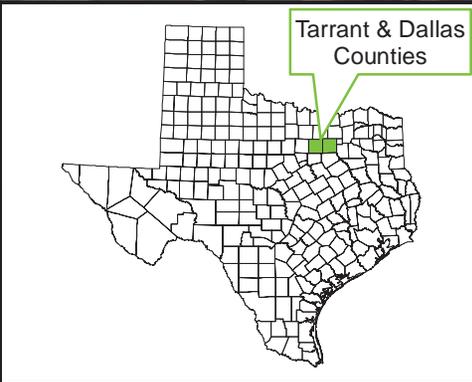
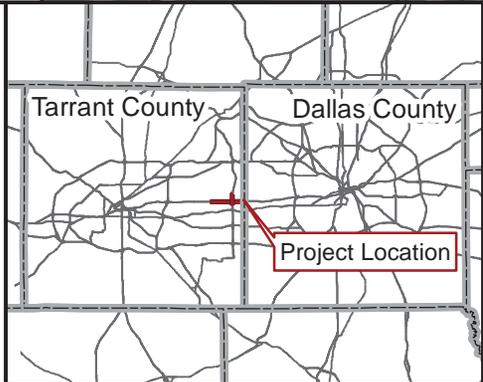
IH 30 from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903



Base Map Source: Aerial Surveys International (2011)

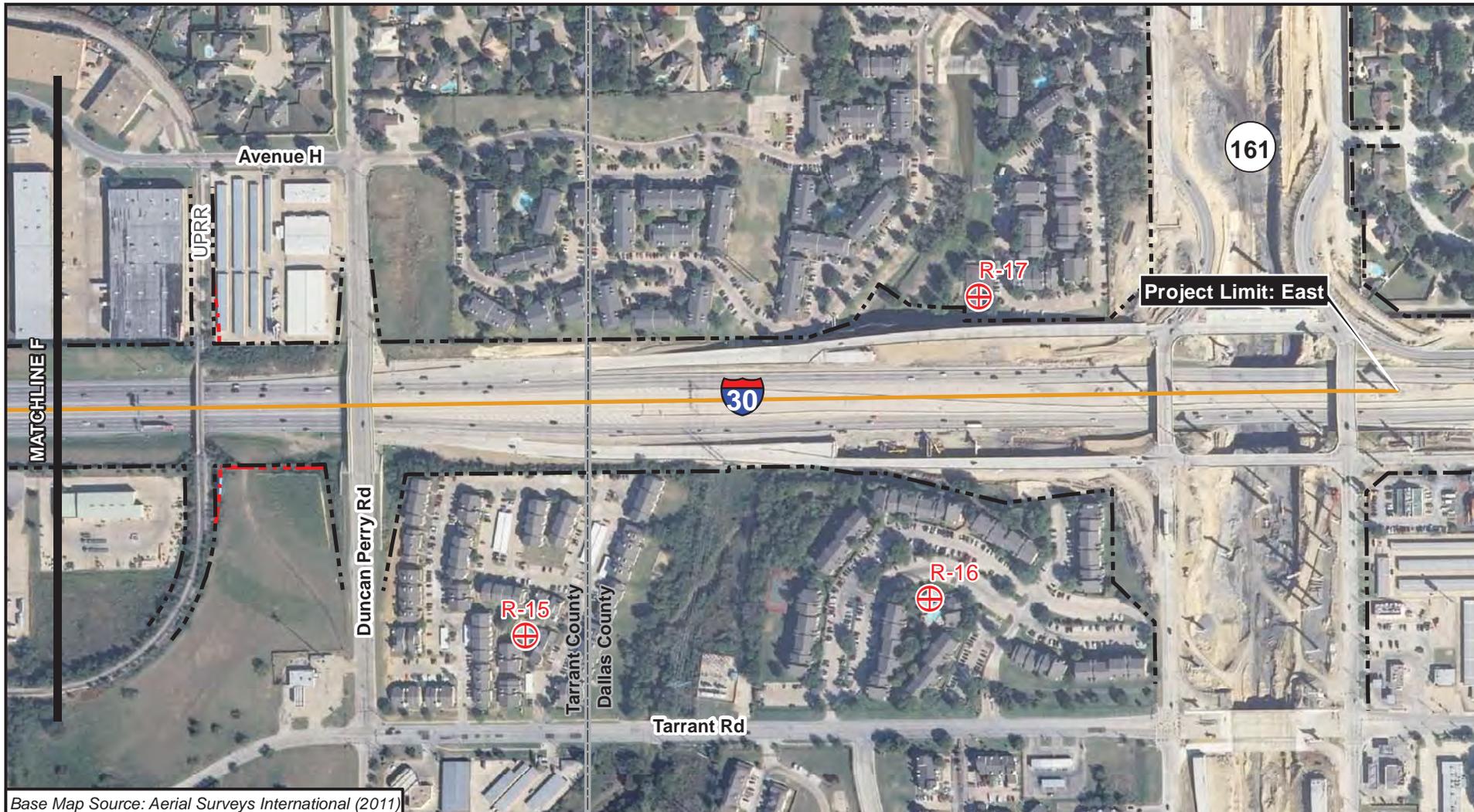
Legend

- Project Limits
- Existing Right-of-Way
- Proposed Right-of-Way
- Proposed Noise Barrier
- Non-Impacted Noise Receiver
- Impacted Noise Receiver
- Noise Receiver Benefitting From Noise Mitigation



**Figure 17 (Page 6 of 11)
Noise Reciever Location Map**

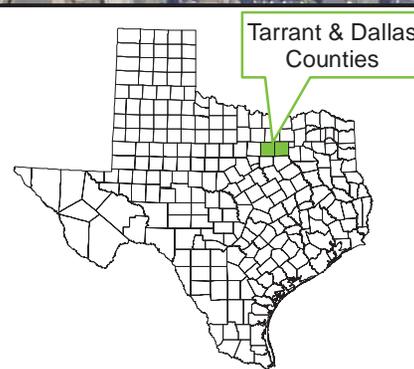
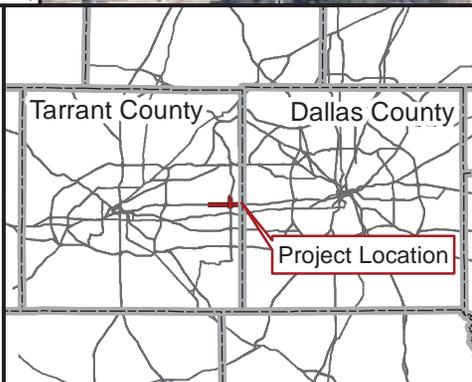
IH 30 from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903



Base Map Source: Aerial Surveys International (2011)

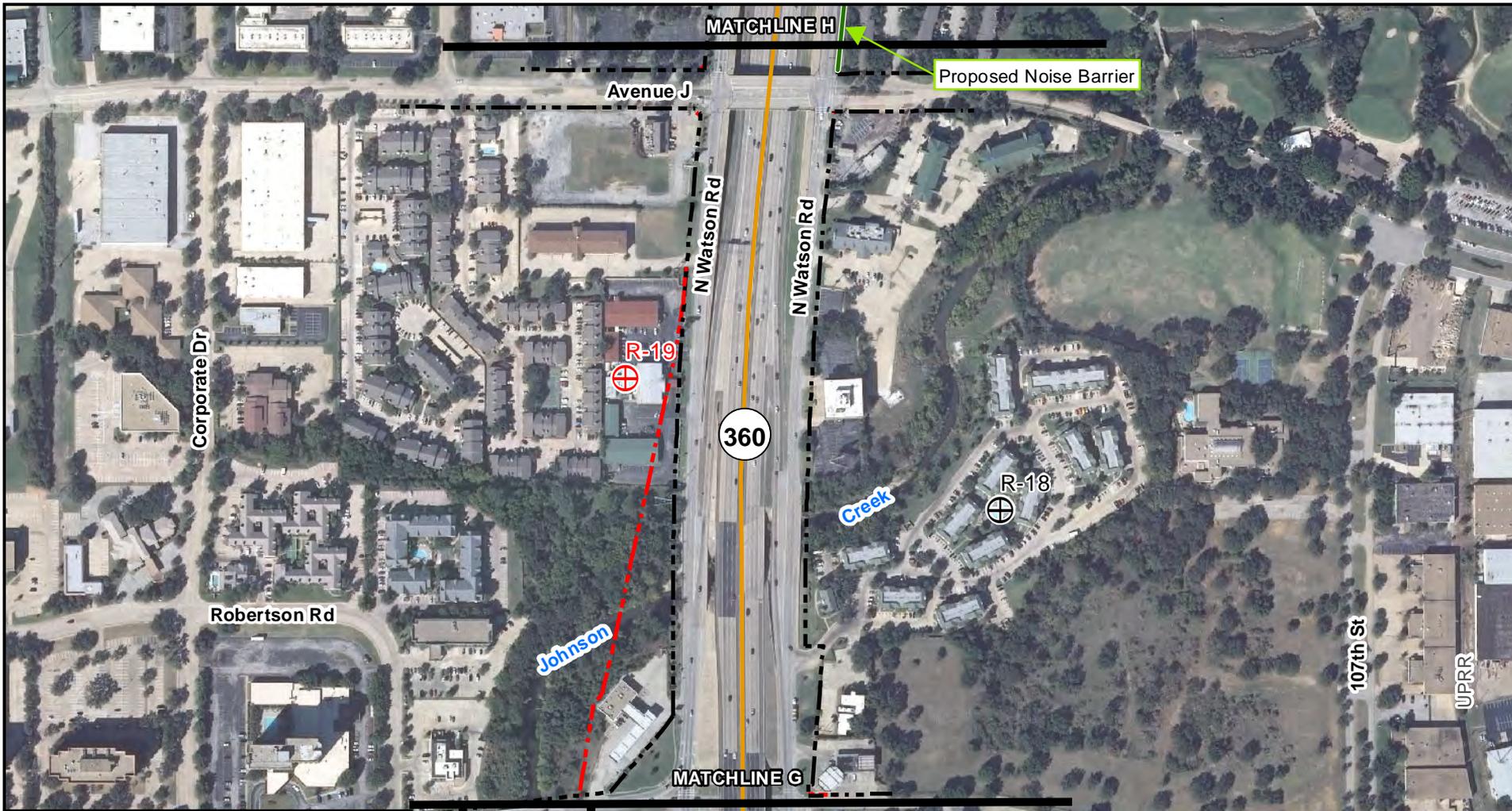
Legend

-  Project Limits
-  Existing Right-of-Way
-  Proposed Right-of-Way
-  Proposed Noise Barrier
-  Non-Impacted Noise Receiver
-  Impacted Noise Receiver
-  Noise Receiver Benefitting From Noise Mitigation



**Figure 17 (Page 7 of 11)
Noise Reciever Location Map**

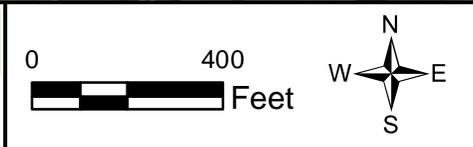
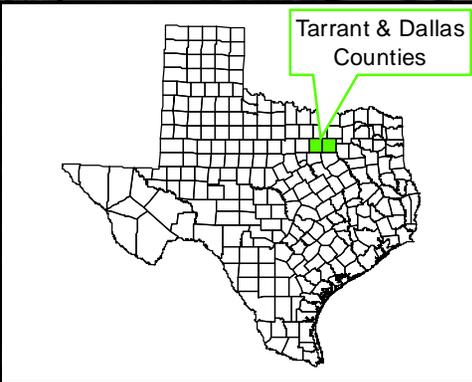
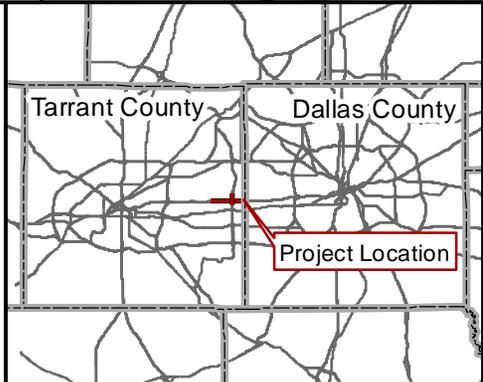
IH 30 from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903



Base Map Source: Aerial Surveys International (2011)

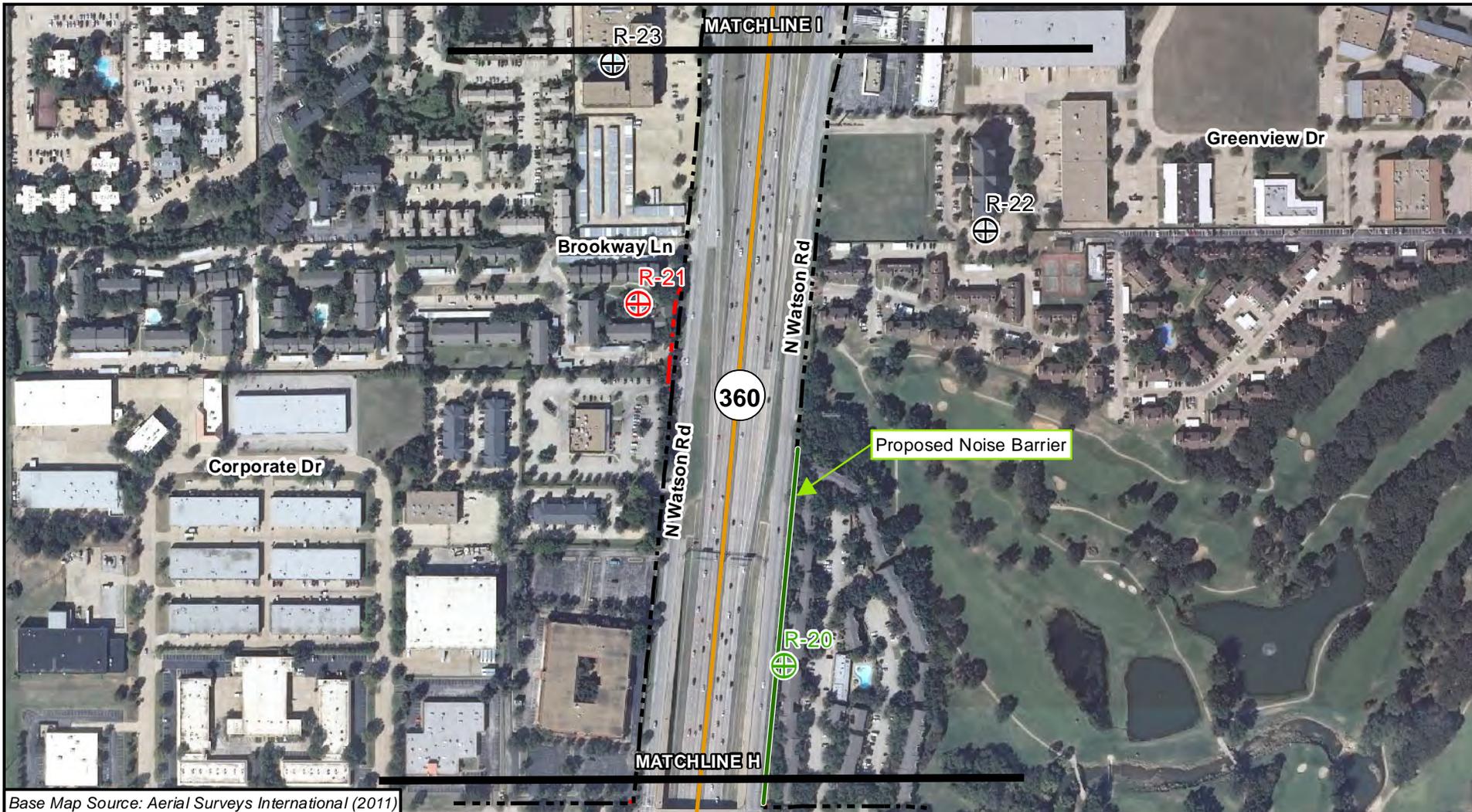
Legend

- Project Limits
- Existing Right-of-Way
- Proposed Right-of-Way
- Proposed Noise Barrier
- Non-Impacted Noise Receiver
- Impacted Noise Receiver
- Noise Receiver Benefitting From Noise Mitigation



**Figure 17 (Page 8 of 11)
Noise Reciever Location Map**

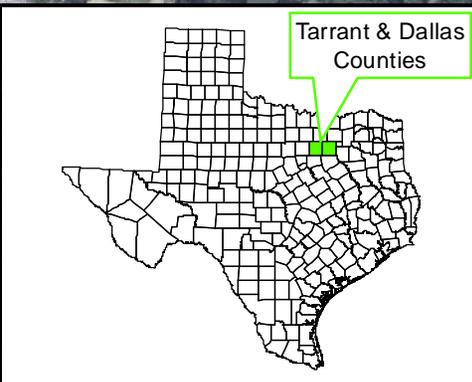
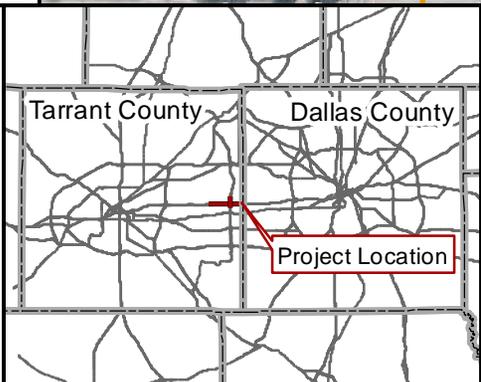
IH 30 from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903



Base Map Source: Aerial Surveys International (2011)

Legend

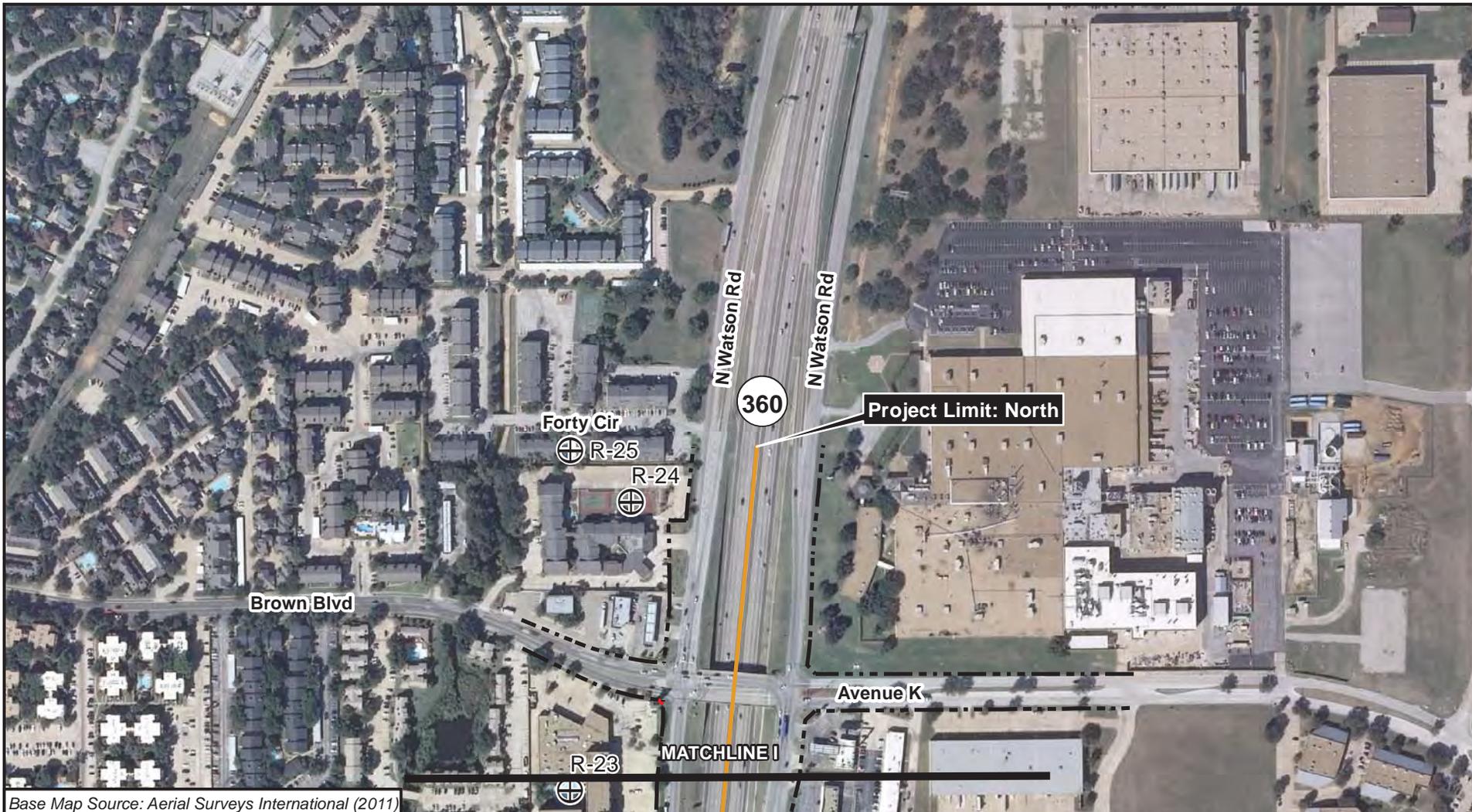
- Project Limits
- Existing Right-of-Way
- Proposed Right-of-Way
- Proposed Noise Barrier
- Non-Impacted Noise Receiver
- Impacted Noise Receiver
- Noise Receiver Benefitting From Noise Mitigation



0 400 Feet

Figure 17 (Page 9 of 11)
Noise Receiver Location Map

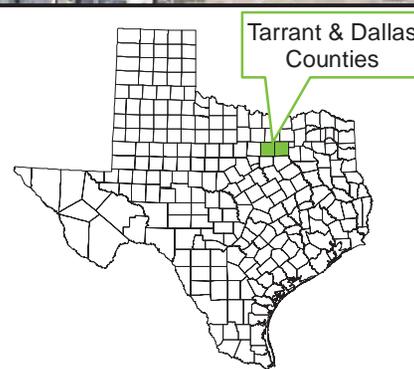
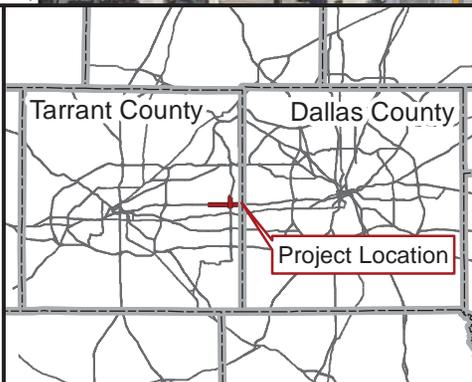
IH 30 from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903



Base Map Source: Aerial Surveys International (2011)

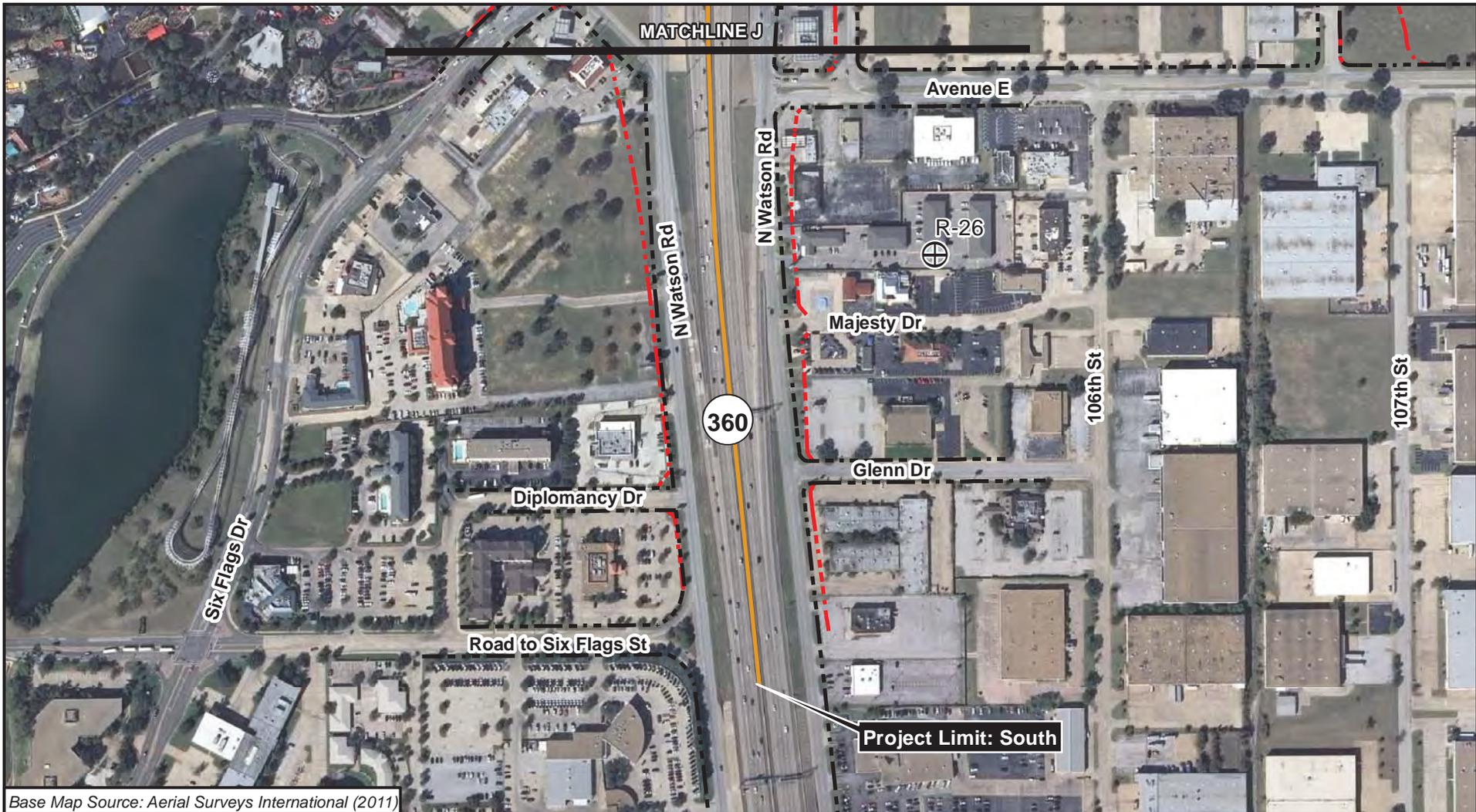
Legend

-  Project Limits
-  Existing Right-of-Way
-  Proposed Right-of-Way
-  Proposed Noise Barrier
-  Non-Impacted Noise Receiver
-  Impacted Noise Receiver
-  Noise Receiver Benefitting From Noise Mitigation



**Figure 17 (Page 10 of 11)
Noise Reciever Location Map**

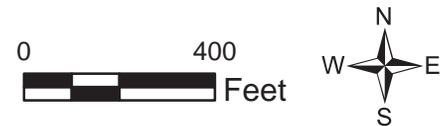
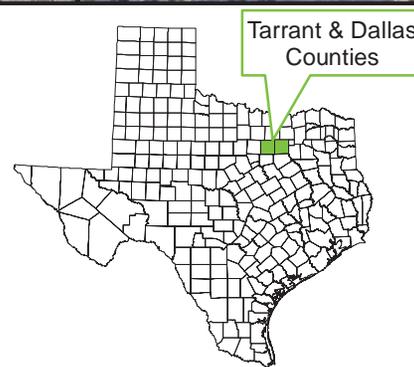
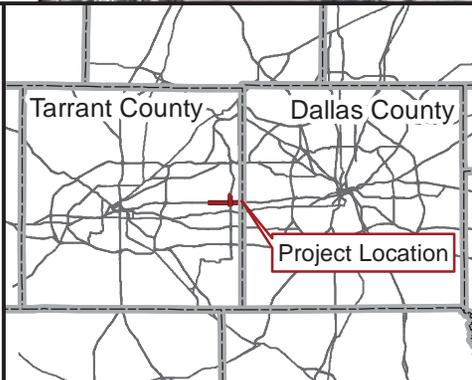
IH 30 from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903



Base Map Source: Aerial Surveys International (2011)

Legend

-  Project Limits
-  Existing Right-of-Way
-  Proposed Right-of-Way
-  Proposed Noise Barrier
-  Non-Impacted Noise Receiver
-  Impacted Noise Receiver
-  Noise Receiver Benefitting From Noise Mitigation



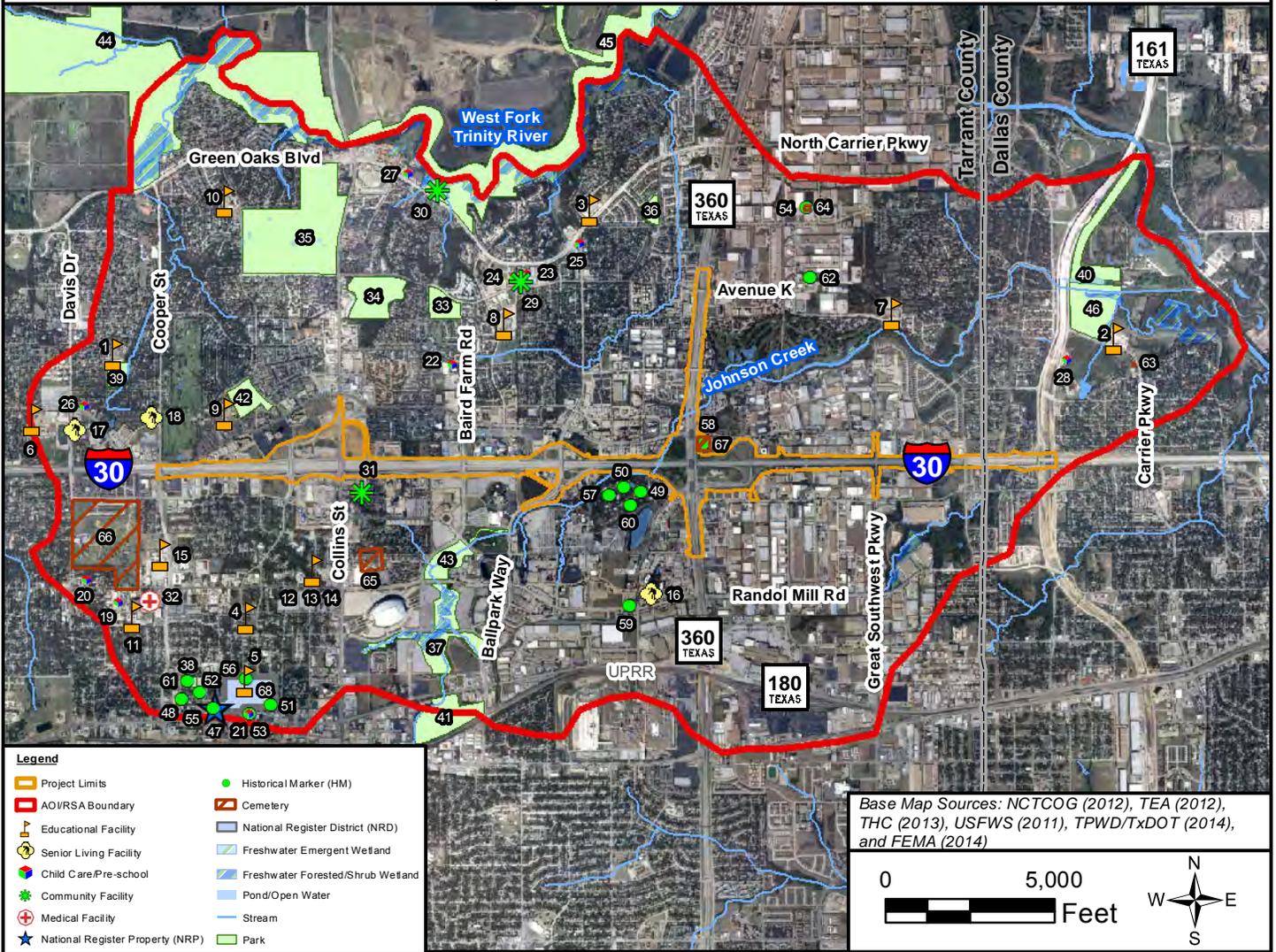
**Figure 17 (Page 11 of 11)
Noise Reciever Location Map**

IH 30 from Cooper Street to SH 161,
Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; 1068-04-903

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List of Notable Features:

- | | | | |
|--|---|---|---|
| 1. Butler Elementary School | 18. The Waterford on Cooper Assisted Living | 34. Crystal Canyon Natural Area | 53. First United Methodist Church of Arlington HM |
| 2. Dwight D. Eisenhower Elementary School | 19. Children's Choice Learning Center | 35. Ditto Golf Course | 54. Ford Cemetery HM |
| 3. Ellis Elementary School | 20. Country Day School of Arlington | 36. Dixon W. Holman Park | 55. Hutcheson-Smith House HM |
| 4. Jean Massieu Academy | 21. Enrichment Center for Young Children | 37. Dr. Robert Cluck Linear Park | 56. John A. Kookan Elementary School HM |
| 5. Kookan Education Center | 22. North Arlington Kindercare | 38. George Stevens Park | 57. Narrow Gauge Railway HM |
| 6. Lamar High School | 23. Primrose School of Northeast Green Oaks | 39. Gibbins Park | 58. P.A. Watson Cemetery HM |
| 7. Larson Elementary School | 24. Spanish Schoolhouse | 40. Good Link Trail Park | 59. Site of Arlington Downs Racetrack HM |
| 8. Nichols Junior High School | 25. The Children's Courtyard 1 | 41. Johnson Creek Linear Park | 60. Six Flags Over Texas HM |
| 9. Roquemore Elementary School | 26. The Children's Courtyard 2 | 42. Parkway Central Park | 61. The Hill HM |
| 10. Sherrod Elementary School | 27. TLC School on Green Oaks | 43. Richard Greene Linear Park | 62. West Fork United Presbyterian Church HM |
| 11. Speer Elementary School | 28. Westridge Academy | 44. River Legacy Parks | 63. Bradshaw Family Cemetery |
| 12. Uplift Education Summit International Middle Campus | 29. Arlington Public Library – Northeast Branch | 45. River Legacy Parks – East | 64. Ford Cemetery |
| 13. Uplift Education Summit International Preparatory | 30. Elzie Odom Athletic Center | 46. Waggoner Park | 65. Keystone Cemetery |
| 14. Uplift Education Summit International Primary Campus | 31. YMCA – North Family Center | 47. Hutcheson-Smith House NRP | 66. Moore Memorial Gardens Cemetery |
| 15. Webb Elementary School | 32. Texas Health Arlington Memorial | 48. Booker T. Washington School HM | 67. P.A. Watson Cemetery |
| 16. Community Assisted Living | 33. Clarence Thompson Park | 49. Cable Tool Rig HM | 68. Old Town Historic District NRD |
| 17. The Guardian Assisted Living | | 50. Carousel HM | |
| | | 51. Carver Dixon King HM | |
| | | 52. Emmanuel Church of God in Christ HM | |



Base Map Sources: NCTCOG (2012), TEA (2012), THC (2013), USFWS (2011), TPWD/TxDOT (2014), and FEMA (2014)

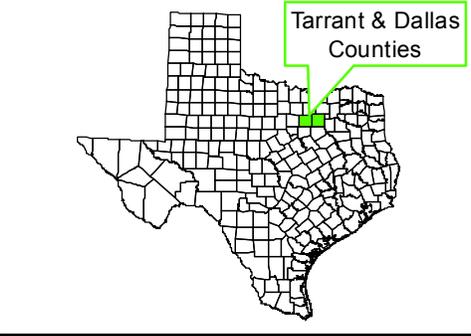
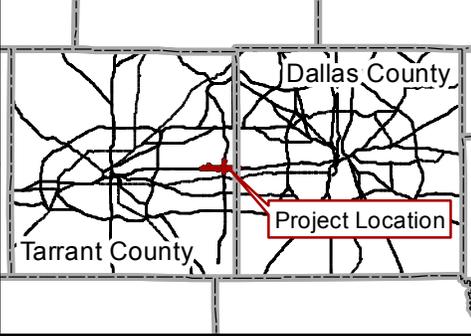
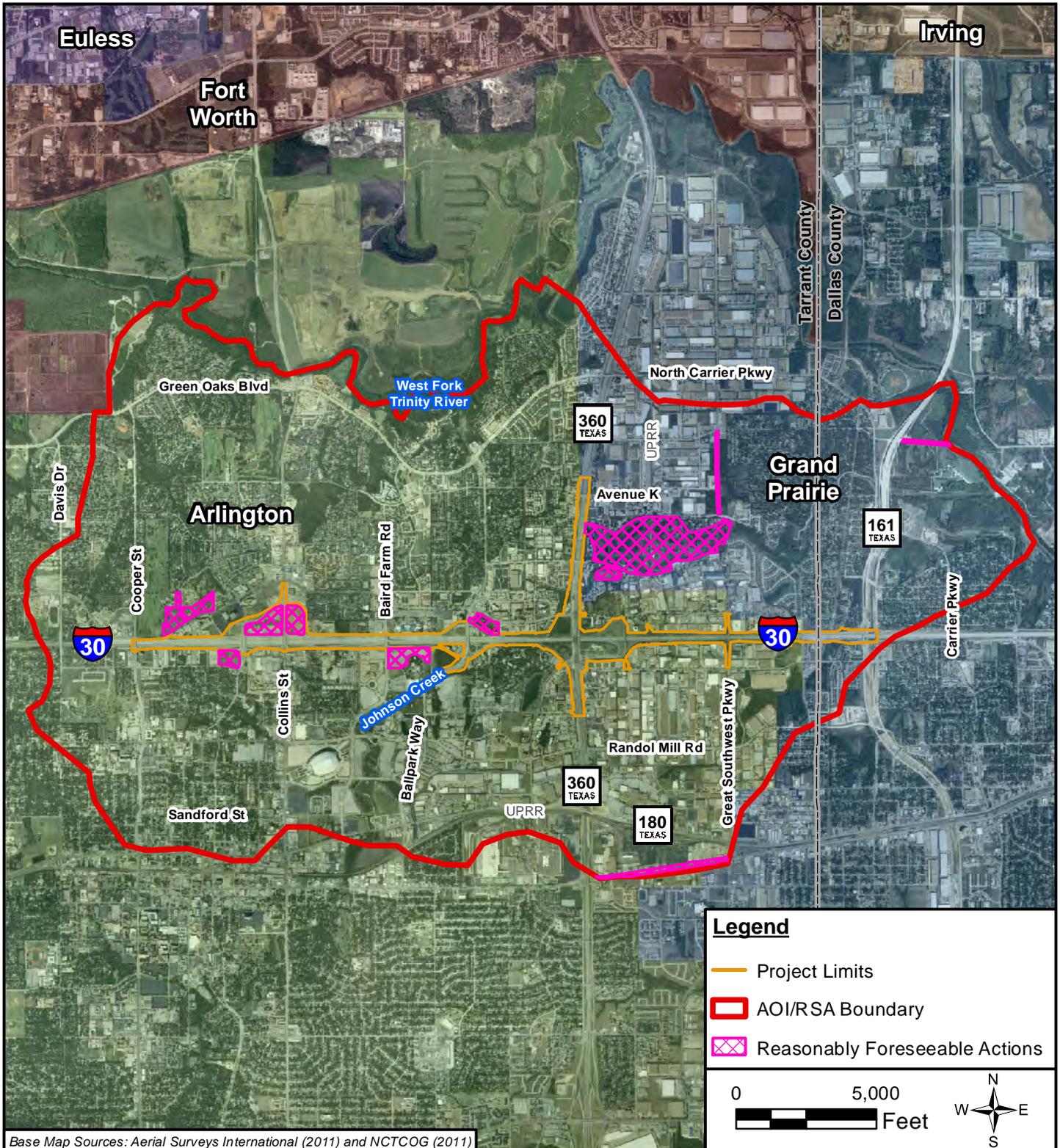


Figure 18
Area of Influence (AOI) Map
with Notable Features
 IH 30 from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903



Legend

-  Project Limits
-  AOI/RSA Boundary
-  Reasonably Foreseeable Actions



Base Map Sources: Aerial Surveys International (2011) and NCTCOG (2011)

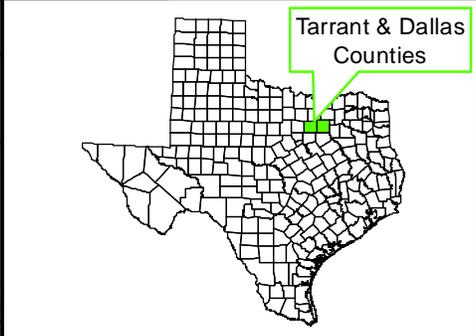
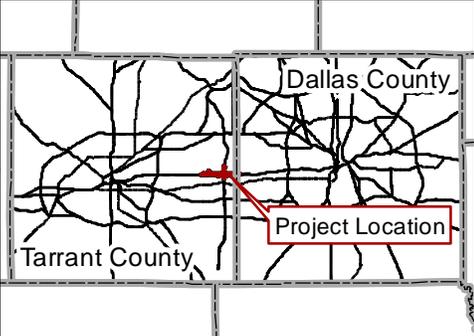


Figure 19
Resource Study Area (RSA)
Map for Water and Vegetation
Resources

IH 30 from Cooper Street to SH 161,
 Including the IH 30/SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; 1068-04-903



LEGEND

-  CO RSA
-  Ozone RSA – DFW 8-hour Non-attainment Area
-  MSAT RSA – Affected Transportation Network
-  County Line

Base Map Sources: NCTCOG (2011) and U.S. EPA (2012)

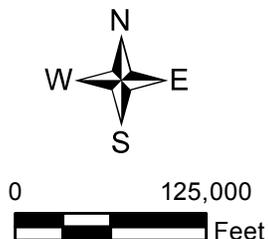
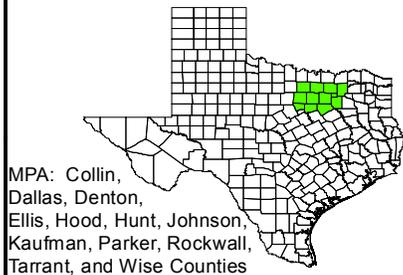
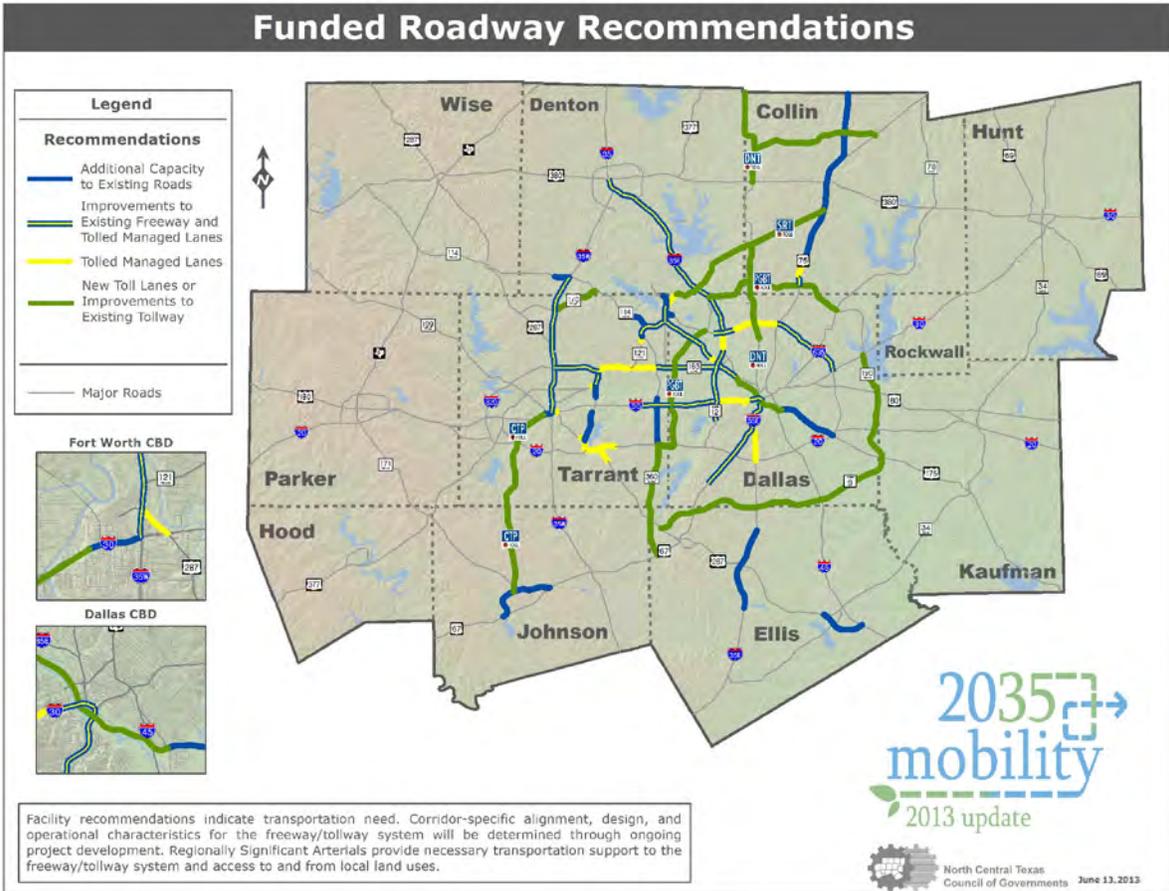


Figure 20

Air Quality RSA Map

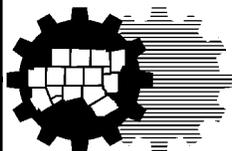
IH 30 from Cooper Street to SH 161, Including the IH 30/SH 360 Interchange
Tarrant and Dallas Counties, Texas

CSJs: 1068-02-076, -104, -127; 1068-04-903



Regional Tolling Analysis

for the Dallas-Fort Worth Metropolitan Planning Area based on *Mobility 2035 – 2013 Update*



Mobility 2035 - 2013 Update: Funded Roadway Recommendations for Controlled Access Facilities

North Central Texas Council of Governments

Date Created: January 2014

Source: NCTCOG, 2013

Figure 21

APPENDIX A
PROJECT AREA PHOTOGRAPHS

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Photograph 1. IH 30 as viewed from the Cooper Street bridge (the western project terminus). View is to the east.



Photograph 2. IH 30 as viewed from the Baird Farm Road/Legends Way bridge. View is to the east.

Appendix A. Project Area Photographs (Page 1 of 7)

IH 30 from Cooper Street to SH 161, Including the SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; and 1068-04-903



Photograph 3. IH 30 as viewed from the SH 360 bridge. View is to the east.



Photograph 4. IH 30 as viewed from the Great Southwest Parkway bridge. View is to the west.

Appendix A. Project Area Photographs (Page 2 of 7)

IH 30 from Cooper Street to SH 161, Including the SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; and 1068-04-903



Photograph 5. The IH 30/SH 161 Interchange (the eastern project terminus) as viewed from the Duncan Perry Road bridge. View is to the east.



Photograph 6. SH 360 as viewed from the Brown Boulevard/East Avenue K bridge (the northern project terminus). View is to the north.

Appendix A. Project Area Photographs (Page 3 of 7)

IH 30 from Cooper Street to SH 161, Including the SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; and 1068-04-903



Photograph 7. Potential displacements, America's Best Inn & Suites, an advertising billboard, and an Executive Inn, as viewed from the west side of SH 360 on N. Watson Road between Avenue J and East Lamar Boulevard/Avenue H. View is to the south.



Photograph 8. Johnson Creek as viewed from the west side of SH 360 on N. Watson Road between Avenue J and East Lamar Boulevard/Avenue H. View is to the west.

Appendix A. Project Area Photographs (Page 4 of 7)

IH 30 from Cooper Street to SH 161, Including the SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; and 1068-04-903



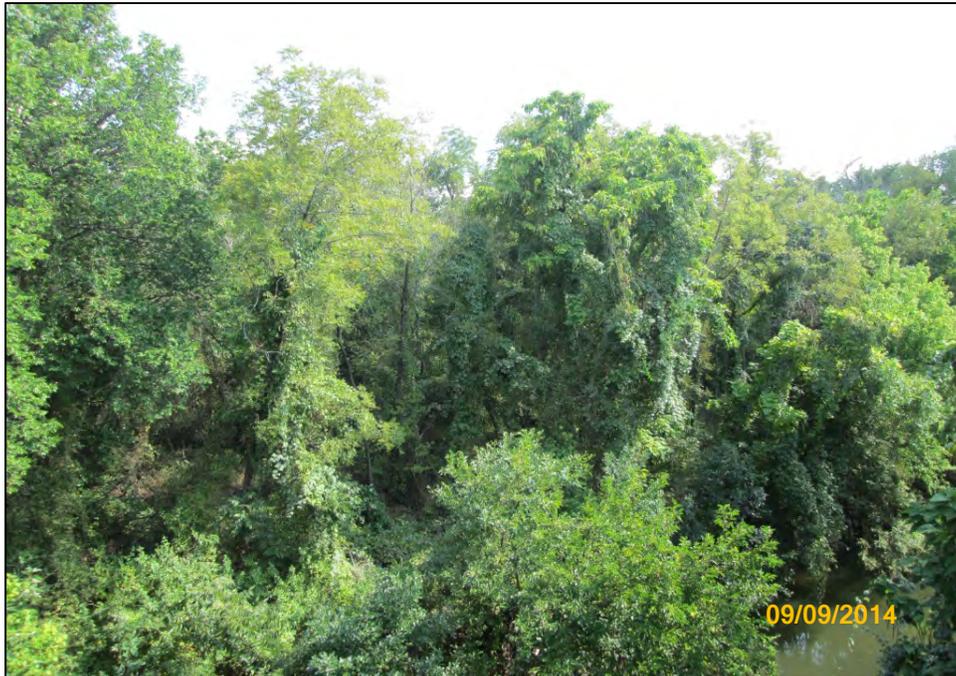
Photograph 9. The P.A. Watson Cemetery driveway as viewed from the east side of SH 360 between East Lamar Boulevard/Avenue H, where construction of a frontage road driveway is proposed. View is to the north. This cemetery has been determined to be eligible for listing on the National Register of Historic Places.



Photograph 10. A. F. Technologies, Inc. building at 2905 East Avenue F in Arlington. This building was formerly the Vought Electronics building, and is considered eligible for the National Register of Historic Places because of its method of construction that included the thin shell concrete hyperbolic paraboloids forming the entrance cover.

Appendix A. Project Area Photographs (Page 5 of 7)

IH 30 from Cooper Street to SH 161, Including the SH 360 Interchange
Tarrant and Dallas Counties, Texas
CSJs: 1068-02-076, -104, -127; and 1068-04-903



Photograph 11. Representation of riparian habitat as viewed from the east side of East Lamar Boulevard along Johnson Creek. View is to the east.



Photograph 12. Potential displacements, including the Valero gas station/convenience store, the Shell gas station/convenience store and car wash, and McDonald's, as viewed from the east side of SH 360 on N. Watson Road between Six Flags Drive and Majesty Drive. View is to the north.

Appendix A. Project Area Photographs (Page 6 of 7)

IH 30 from Cooper Street to SH 161, Including the SH 360 Interchange
Tarrant and Dallas Counties, Texas

CSJs: 1068-02-076, -104, -127; and 1068-04-903



Photograph 13. A potential displacement, Cowboys Auto, as viewed from the east side of SH 360 on N. Watson Road between Avenue E and Majesty Drive. View is to the northeast.



Photograph 14. SH 360 as viewed from the SH 360 southbound shoulder, perpendicular to the Road to Six Flags Street (the southern project terminus). View is to the north.

Appendix A. Project Area Photographs (Page 7 of 7)

IH 30 from Cooper Street to SH 161, Including the SH 360 Interchange
 Tarrant and Dallas Counties, Texas
 CSJs: 1068-02-076, -104, -127; and 1068-04-903

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APPENDIX B
AGENCY COORDINATION

Date	Description	Number of Pages
February 4, 2015	Email correspondence from TPWD indicating the completion of early project coordination and indicating TxDOT's commitments to various recommended actions from TPWD.	5
February 6, 2015	Coordination letter from TxDOT's Environmental Affairs Division to the Kickapoo Tribe of Oklahoma [attachments removed].	4
February 18, 2015	Internal memorandum from TxDOT's Environmental Affairs Division indicating that the proposed project would have no effect on archeological properties.	1
March 16, 2015	Coordination letter from TxDOT's Environmental Affairs Division to the THC regarding Section 106 Review: Determination of NRHP Eligibility and No Adverse Effect; and Section 4(f) Review: Notification of Intent to Render de Minimis Section 4(f) Finding [attachments removed].	4
March 20, 2015	Letter from the Kickapoo Tribe of Oklahoma indicating no objections to the proposed project.	1
April 10, 2015	City of Grand Prairie endorsement to a letter dated March 17, 2015 from TxDOT's Environmental Affairs Division coordinating the results of the historic resources survey and concurring with the finding of "no adverse effects to historic properties."	3
April 21, 2015	Email request from the THC to TxDOT's Environmental Affairs Division requesting additional information.	1
April 27, 2015	City of Arlington endorsement to a letter dated March 17, 2015 from TxDOT's Environmental Affairs Division coordinating the results of the historic resources survey and concurring with the finding of "no adverse effects to historic properties."	3
May 20, 2015	State Historic Preservation Officer endorsement to a letter dated May 18, 2015 from TxDOT's Environmental Affairs Division providing supplemental information to the THC regarding the P.A. Watson Cemetery and the Vought Electronics Building. The endorsement concurs with TxDOT's recommended finding of eligibility for listing in the NRHP (Vought Electronics Building) and that the proposed project would have no adverse effect on eligible historic properties.	2

Date	Description	Number of Pages
May 27, 2015	State Historic Preservation Officer endorsement to a letter dated May 22, 2015 from TxDOT's Environmental Affairs Division providing a summary of prior interagency coordination, a project-related discussion of the P.A. Watson Cemetery and the Vought Electronics Building, findings of no adverse effects to these properties, and notification of TxDOT's determination that the proposed project meets the requirements for a Section 4(f) de minimis finding. The endorsement concurs with TxDOT's finding of no adverse effects and stated that the THC has no comments regarding TxDOT's <i>de minimis</i> determination regarding the Vought Electronics property.	4
May 28, 2015	Email correspondence from TxDOT's Environmental Affairs Division to TCEQ requesting review of the EA with reference to air quality and water quality matters.	1
June 3, 2015	TxDOT Environmental Affairs Division's completed Review Standard for Section 4(f) De Minimis Checklist for Historical Properties relating to the former Vought Electronics building (with attachments)	8
June 5, 2015	TCEQ's email concurrence with TxDOT's assessment of the proposed project's compliance status regarding air quality conformity. TCEQ had no comment regarding water quality matters.	1
July 28, 2015	Letter from the City of Arlington to TxDOT describing Parcel #554 as property used primarily to aid flood control for Johnson Creek, and explaining why the city does not regard the property as a locally significant park, recreation area, or wildlife or waterfowl refuge.	2

TPWD Coordination Emails

From: Laura Zebehazy [<mailto:Laura.Zebehazy@tpwd.texas.gov>]
Sent: Wednesday, February 04, 2015 11:22 AM
To: Elisa Garcia
Subject: CSJ 1068-02-127 - IH 30/SH 360 Interchange project in Tarrant and Dallas Counties: TPWD early coordination response

Good afternoon, Elisa,

Thank you for coordinating the IH-30/SH 360 Interchange Reconstruction and Improvements project from Cooper Street to SH 161 in Tarrant and Dallas Counties (CSJ 1068-02-127) with TPWD. TPWD appreciates the amount and quality of information provided to facilitate review of this project. TPWD would like to offer the following information, comments, and recommendations to avoid or minimize impacts to fish and wildlife resources.

TxDOT has committed to the following actions to avoid and minimize impacts to the State's fish and wildlife resources and their habitats:

- The TxDOT-TPWD BMP PA - Bird BMPs will be implemented to avoid or minimize impacts to all birds protected by the Migratory Bird Treaty Act.
- Due to the presence of potentially suitable habitat for freshwater mussels in the proposed project area, the Freshwater Mussel BMPs will be implemented. TxDOT also plans on surveying potentially suitable habitat for state-listed mussel species in early 2015. Surveys will be conducted by qualified personnel and in accordance with applicable laws, permit requirements, and TPWD guidelines.
- Species-specific BMPs for the plains spotted skunk, timber rattlesnake, and Texas garter snake will be implemented.
- The proposed project will be in compliance with Executive Order 13112 on Invasive Species and Executive Memorandum on Beneficial Landscaping.
- Based on communication between TxDOT and TPWD, TxDOT will be implementing their standard seeding in areas that will include the removal of existing roadway. TxDOT will be working closely with the cities of Grand Prairie and Arlington to encourage native and regionally adapted species for the enhanced landscaping areas within the proposed project area.

TxDOT understands that these are the commitments being made on this project.

Aquatic Resources

The proposed project's environmental documentation indicates that this project will be covered by a USACE NWP 14 without a PCN. Also, documentation provided for this review indicated that potentially suitable habitat for the Wabash pigtoe (SGCN), Texas pigtoe (SGCN), Texas heelsplitter (state-listed threatened), Louisiana pigtoe (state-listed threatened), little spectaclecase (SGCN), and fawnsfoot (SGCN) occurs within the proposed project area. As stated above, TxDOT will be surveying potentially suitable habitat for state-listed mussels in early 2015 within the project area.

TPW Code Section 1.011 grants TPWD authority to regulate and conserve aquatic animal life of public waters. Title 31, Chapter 57, Subchapter B, Section 57.157 of Texas Administrative Code (TAC) regulates take of mussels **which are not limited to state-listed mussels**. Section 12.301 of TPW Code identifies liability for wildlife taken in violation of TPW Code or a regulation adopted under TPW Code. Under TPW Code Section 12.015, 12.019, 66.015 and TAC 52.101-52.105, 52.202, and 57.251-57.259, TPWD

TPWD Coordination Emails

regulates the introduction and stocking of fish, shellfish, and aquatic plants into public waters of the state. The *Permit to Introduce Fish, Shellfish or Aquatic Plants into Public Waters* allows for movement (i.e., introduction, stocking, transplant, relocation) of aquatic species in waters of the state. Movement of aquatic species, even within the same river or estuary, has potential natural resources risk (e.g., exotics, timing for successful survival). Therefore, a permit is required to minimize that risk.

Dewatering activities can impact aquatic resources through stranding fish and mussels. Other harmful construction activities can trample, dredge, or fill areas exhibiting stationary aquatic resources such as plants and mussels. To avoid or reduce impacts, TPWD may require relocating aquatic life to an area of suitable habitat outside the project footprint. Relocation activities are done under the authority of a TPWD Permit to Introduce Fish, Shellfish or Aquatic Plants into Public Waters. Information regarding this permit can be obtained at <http://www.tpwd.state.tx.us/publications/fishboat/forms/>. Aquatic Resource Relocation Plans are used to plan resource handling activities and assist in the permitting process. If dewatering activities and other project-related activities cause mortality to fish and wildlife species, then the responsible party could be subject to investigation by the TPWD Kills and Spills Team (KAST) and could be liable for the value of the lost resources under the authority of TPW Code Sections 12.0011 (b) (1) and 12.301.

TPWD Recommendations:

- TPWD recommends that impact avoidance measures for aquatic organisms, including ***all native freshwater fish and mussel species, regardless of state-listing status***, be considered during project planning and construction activities.

TxDOT has considered impact avoidance measures for aquatic organisms during project planning and will minimize in-water impacts to the extent practicable .

If construction occurs during times when water is present in streams and dewatering activities or other harmful construction activities are involved (such as placement of temporary or permanent fills), then TPWD may require relocating potentially impacted native aquatic resources in conjunction with a *Permit to Introduce Fish, Shellfish or Aquatic Plants into Public Waters* and an Aquatic Resource Relocation Plan. The Aquatic Resource Relocation Plan should be completed and approved by the department **30 days prior to activity within project waters and/or resource relocation** and submitted with an application for a no-cost Permit to Introduce Fish, Shellfish, or Aquatic Plants into Public Waters. Aquatic Resource Relocation Plans can be submitted to Greg Conley or Adam Whisenant, TPWD Region 2 KAST. Please contact Greg Conley at 903-566-2518 or greg.conley@tpwd.texas.gov or Adam Whisenant at 903-566-8387 or adam.whisenant@tpwd.texas.gov for more information or to initiate coordination for a *Permit to Introduce Fish, Shellfish or Aquatic Plants into Public Waters*.

Consistent with the freshwater mussel BMP, TxDOT will survey project footprints for state-listed species where appropriate habitat exists. If mussels discovered during surveys TxDOT would relocate state-listed and SGCN mussels after obtaining authorization from TPWD and would implement water quality BMPs.

State-listed Species and Species of Greatest Conservation Need (SGCN)

According to the Biological Evaluation Form, state-listed and SGCN species that may occur in the area of the proposed project include the timber rattlesnake, Texas garter snake, and plains spotted skunk. TxDOT has committed to implementing BMPs for each of these species; however TPWD makes the following additional recommendations to avoid and minimize impacts to amphibians and reptiles, as well as other wildlife, that may be in or adjacent to the proposed project area.

TPWD Coordination Emails

TPWD Recommendations:

- TPWD recommends the judicious use and placement of sediment control fence to exclude wildlife, including rare and protected herpetofauna, from the construction area and away from areas of potential vehicle-wildlife collisions. In many cases, sediment control fence placement for the purposes of controlling erosion and protecting water quality can be modified minimally to also provide the benefit of excluding wildlife access to construction areas. The exclusion fence should be buried at least six inches and be at least 24 inches high or following TxDOT's sediment control fence installation specifications. The exclusion fence should be maintained for the life of the project and only removed after the construction is completed and the disturbed site has been revegetated. Construction personnel should be encouraged to examine the inside of the exclusion area daily to determine if any wildlife species have been trapped inside the area of impact and provide safe egress opportunities prior to initiation of construction activities.
- TPWD recommends that any open trenches or excavation areas be covered overnight and/or inspected every morning to ensure no reptiles, amphibians or other wildlife species have been trapped. Also, inspect excavation areas for trapped wildlife prior to refilling.
- For soil stabilization and/or revegetation of disturbed areas within the proposed project area, TPWD prefers the use of hydromulching and/or hydroseeding rather than erosion control blankets or mats due to a reduced risk to wildlife. If erosion control blankets or mats will be used during this project, TPWD recommends that TxDOT utilize erosion and seed/mulch stabilization materials that avoid entanglement hazards to snakes and other wildlife species. The mesh found in many erosion control blankets or mats pose an entanglement hazard to wildlife, particularly snakes. If blankets must be utilized, TxDOT should avoid mats that contain plastic mesh matting. TPWD recommends products that contain no netting or contain loosely woven, natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings.

TxDOT will implement BMPS for timber rattlesnake, Texas garter snake, and, plains spotted skunk by advising contractor of their potential to occur in the project area and to avoid harming them if encountered. TxDOT is unable to commit to the additional recommendations on this specific project.

Please confirm that TxDOT's commitments are correctly identified above and respond to indicate whether TxDOT will commit to implementing the additional recommendations provided. Again, thank you for coordinating with TPWD regarding your project. Please do not hesitate to call me if you have any questions regarding these recommendations.

Laura Zebahazy
Transportation Conservation Coordinator
TPWD – Wildlife Habitat Assessment Program
Phone: (512)389-4638

TPWD Coordination Emails

From: Elisa Garcia [<mailto:Elisa.Garcia@txdot.gov>]
Sent: Monday, February 02, 2015 10:31 AM
To: Laura Zebehazy
Subject: RE: CSJ 1068-02-127 - IH 30/SH 360 Interchange project in Tarrant and Dallas Counties:
Request for additional information

Good Morning Laura,

TxDOT Fort Worth District Landscape Architect, Kimberly Phillips met with the City of Grand Prairie and the City of Arlington on January 23rd to discuss the possibilities.

She discussed possible planting areas and gave them until last Friday, January 30th to confirm the areas (recommended by the design team). The cities would prefer for enhanced landscapes as they will be responsible for any maintenance once these projects are completed. As plans progress, we will work closely with the consultants and the Cities to encourage native and adaptive plantings in these areas. In specific areas that will be disturbed, our normal seeding for erosion control will be utilized.

Thank you for your interest.
Sincerely,

From: Laura Zebehazy [<mailto:Laura.Zebehazy@tpwd.texas.gov>]
Sent: Tuesday, December 23, 2014 10:02 AM
To: Elisa Garcia
Subject: RE: CSJ 1068-02-127 - IH 30/SH 360 Interchange project in Tarrant and Dallas Counties:
Request for additional information

Good morning, Elisa,

As I was reviewing the preliminary project plans that you provided, I noticed a number of areas (symbolized by red hatch marks) that were noted as either "remove exist ramp" or "remove exist road". I was curious if there were any specific plans on how these areas will be rehabilitated/restored? Since this project will be impacting the remaining woodlands in the area (particularly if large diameter trees will be removed), I was interested to know if TxDOT would be willing to do some native landscaping with trees and shrubs in those areas where the existing infrastructure will be removed.

Thank you for looking into this for me.

Sincerely,

Laura Zebehazy
Transportation Conservation Coordinator
TPWD – Wildlife Habitat Assessment Program
Phone: (512)389-4638

TPWD Coordination Emails

From: Elisa Garcia
Sent: Monday, December 22, 2014 7:37 AM
To: 'Laura Zebehazy'
Subject: RE: CSJ 1068-02-127 - IH 30/SH 360 Interchange project in Tarrant and Dallas Counties: Request for additional information

Laura,

I have attached supplemental information you requested. However it is a large file so if it bounces back, I will forward to you by TxDOT drop box.

THANKS

From: Laura Zebehazy [<mailto:Laura.Zebehazy@tpwd.texas.gov>]
Sent: Wednesday, December 17, 2014 3:22 PM
To: Elisa Garcia
Subject: CSJ 1068-02-127 - IH 30/SH 360 Interchange project in Tarrant and Dallas Counties: Request for additional information

Good afternoon, Elisa,

I am responsible for reviewing your proposed project for the IH 30/SH 360 Interchange (CSJ 1068-02-127) project in Tarrant and Dallas Counties. Thank you so much for the amount and clarity of detail provided for this project. I have two requests –

1. Is it possible for you to provide site plans for the bridge crossings & other construction activities that may impact waterways and for the area that will include potential impacts to the 9.6 acres of riparian forest habitat?
2. Can you provide summary reports with pictures of the preliminary mussel surveys that were conducted?

And

3. How many acres of new ROW will be acquired?

Thank you in advance for providing the additional requested information.

Sincerely,

Laura Zebehazy
Transportation Conservation Coordinator
Wildlife Division – [Wildlife Habitat Assessment Program](#)
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, TX 78744
Phone: (512)389-4638

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FEDERAL HIGHWAY ADMINISTRATION
300 EAST 8TH STREET, RM 826
AUSTIN, TEXAS 78701



TEXAS DEPARTMENT OF TRANSPORTATION
125 E. 11th STREET
AUSTIN, TEXAS 78701-2483

February 6, 2015

Mr. Gilbert Salazar, Chairperson
Business Committee
Kickapoo Tribe of Oklahoma
P.O. Box 70
McCloud, OK 74851

RE: CSJ: 1068-02-127; IH 30, from Cooper Street to SH 161, Roadway Improvements; Tarrant and Dallas Counties, Fort Worth District

Dear Mr. Salazar:

The above referenced transportation project is being considered for construction by the Federal Highway Administration (FHWA) and the Texas Department of Transportation (TxDOT). Environmental studies are in the process of being conducted for this project. The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

The purpose of this letter is to contact you in order to initiate Section 106 consultation with your Tribe pursuant to stipulations of the First Amended Programmatic Agreement among the Federal Highway Administration, the Texas Department of Transportation, the Texas State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Implementation of Transportation Undertakings (PA-TU). The project is located in an area that may be of interest to your Tribe.

The proposed project would provide improvements along Interstate Highway (IH) 30, from Cooper Street to State Highway (SH) 161, located within the City of Fort Worth in Tarrant and Dallas Counties, Texas. Maps that show the proposed project area are enclosed, as well as a map of the state that indicates the location of Tarrant and Dallas Counties.

The area of potential effects (APE) would include the proposed project length of approximately 5.05 miles and existing right of way (ROW) that ranges from 340 to 470

feet wide. The project would require approximately 17 acres of proposed new ROW and easements that would be located in multiple small areas along the eastern portion of the project (see attached aerial photos). According to typical roadway design, the depth of impacts would be an estimated maximum of 50 feet below the current ground surface for bridge and intersection overpass supports and an estimated maximum of 3.5 feet below ground surface for the remainder of the project. The APE would encompass a total of approximately 468 acres. For the purposes of this cultural resources review, potential impacts are considered within an area that includes the stated APE, as well as a 50-foot lateral buffer to account for potential alterations to the proposed APE included in the final project design. Consultation would be continued if potential impacts extend beyond this buffer, based on the final design.

Review of the of the Geologic Atlas of Texas, Amarillo Sheet, the underlying geology of the APE is comprised of Upper Cretaceous age Eagle Ford and Woodbine Formations (Kef and Kwb) (<http://www.twdb.state.tx.us/GwRD/GTA/GAT/index.htm>). Both of these geologic formations developed during periods that predate the generally accepted arrival of human beings into Tarrant and Dallas Counties (12,000 years ago); and, therefore, present minimal potential for the presence of naturally buried intact archeological deposits. Holocene age alluvium that has demonstrated potential to harbor naturally buried intact archeological sites is not mapped within 100 meters (328 feet) of the proposed APE.

Review of the Eules topographic quadrangle (3297-441) on the Texas Archeological Sites Atlas (Atlas) shows no previously recorded archeological sites in or within 1.0 kilometer (0.62 mile) of the proposed APE (<http://nueces.thc.state.tx.us/>). The Atlas also shows 6 previously completed archeological investigations (surveys) completed within the proposed APE. TxDOT completed 5 of these investigations, which occurred in 1984, 1987, 1991, 1993, and 2005. The sixth investigation was completed in 2006 by the United States Army Corps of Engineers -- Fort Worth District. Cumulatively, these 6 surveys covered approximately 40 percent of the current APE.

The APE presents minimal potential for naturally buried intact archeological deposits. Archeological deposits within the APE, if any, would occur on or near the ground surface and would have been subjected to either bulldozing associated with the original IH 30 roadway construction in the existing ROW or extensive urban development within the 17 acres of the proposed new ROW and easements. Any archeological artifacts, features, faunal, and or floral remains would have likely been crushed, broken, weathered, eroded, mixed, and pushed out of any original depositional context, making it extremely difficult, if not impossible, for them to yield information important to history or prehistory.

Based on a review of the APE summarized above, **TxDOT proposes the following findings and recommendations for this proposed project:**

- **that no archeological historic properties (36 CFR 800.16(I)) would be affected by this project;**
- **that a buffer zone of 50 feet beyond the APE be considered as part of the cultural resources evaluation;**
- **that no further archeological investigation is warranted at this time.**

Re: Section 106 Consultation, National Historic Preservation Act;
Proposed Texas Department of Transportation Project, Fort Worth District
CSJ: 1068-02-127; IH 30, from Cooper Street to SH 161,
Roadway Improvements; Tarrant and Dallas Counties

According to our procedures and at the request of the FHWA under Section 106 of the National Historic Preservation Act, we are writing to request your comments on historic properties of cultural or religious significance to your Tribe that may be affected by the proposed undertaking APE and the area within the above defined buffer. Any comments you may have on the TxDOT recommendation should also be provided. Please provide your comments within 30 days of receipt of this letter. Any comments provided after that time will be addressed to the fullest extent possible. If you do not object with a recommendation "no historic properties affected," please sign below to indicate your concurrence. In the event that further investigations by our office disclose the presence of archeological deposits, we will contact your Tribe to continue consultation.

Thank you for your attention to this matter. If you have questions, please contact Jon Budd (TxDOT Archeologist) at 512/416-2640 (email: Jon.Budd@txdot.gov) or me at 512/416-2638 (email: Sharon.Dornheim@txdot.gov). When replying to this correspondence, please ensure that the envelope address includes reference to the Archeological Studies Branch, Environmental Affairs Division.

Sincerely,



Sharon Dornheim
Staff Archeologist / Consultation Coordinator
Environmental Affairs Division

Concurrence by:

Date:

Attachments

cc w/attachments:
ENV-ARCH Project File / ENV-ARCH ECOS

The attached letter was sent by Email to the following tribes on February 6, 2015:

Mr. Gilbert Salazar, Chairperson
Business Committee
Kickapoo of Oklahoma
P.O. Box 70
McLoud, OK 74851

[emailed to Pam Wesley]

Ms. Stephanie A. Bryan, Chairperson
Poarch Band of Creek Indians
5811 Jack Springs Road
Atmore, AL 36502

[emailed to Megan Young]

Mr. Juan Garza, Jr., Chairperson
NAGPRA Coordinator
Kickapoo Traditional Tribe of Texas
HC1 Route, Box 9700
162 Chick Kazen St
Eagle Pass, TX 78852

[emailed to Don Spaulding]



MEMO

February 18, 2015

To: 850 File, Various Road Projects, Various CSJs, Various Districts

From: Scott Pletka, Ph.D.

Subject: Internal review under the First Amended Programmatic Agreement Among the Federal Highway Administration, the Texas Department of Transportation, the Texas State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Implementation of Transportation Undertakings (PA-TU), and internal review under the Memorandum of Understanding (MOU) Between the Texas Historical Commission and the Texas Department of Transportation

Listed below are the projects reviewed internally by qualified TxDOT archeologists from 2/12/15 to 2/18/15. The projects will have no effect on archeological historic properties. As provided under the PA-TU, consultation with the Texas State Historic Preservation Officer is not necessary for these undertakings. As provided under the MOU, the proposed projects do not require individual coordination with the Texas Historical Commission.

CSJ	DISTRICT	ROADWAY	WORK PERFORMED
0986-01-042	Austin	FM 619	Intensive Survey
1068-02-127	Fort Worth	IH 30	No Survey
0203-08-015	Tyler	FM 1253	No Survey
0903-03-081	Wichita Falls	CR 155	Intensive Survey
3308-01-012	Wichita Falls	FM 3092	No Survey

Signature  Date: 2/18/15

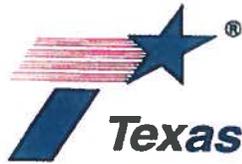
For TxDOT

cc: ECOS Data Entry; PD; ENV_ARC: PA File

Table Template for Weekly List Memo.doc

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

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#1

March 16, 2015

SECTION 106 REVIEW: DETERMINATION OF NRHP ELIGIBILITY AND NO ADVERSE EFFECT
SECTION 4(f) REVIEW: NOTIFICATION OF INTENT TO RENDER *DE MINIMIS* SECTION 4(F) FINDING
Dallas and Tarrant County/Fort Worth District
Location IH 30 from Cooper Street to SH 161
CSJ: 1068-02-127

Ms. Linda Henderson
History Programs
Texas Historical Commission
Austin, TX 78711

Dear Ms. Henderson:

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated 12-16-14, and executed by FHWA and TxDOT. In accordance with 36 CFR 800 and our first amended Programmatic Agreement for Transportation Undertakings (PA-TU 2005), this letter initiates Section 106 consultation on the effect the proposed undertaking poses for historic properties located within the project's area of potential effects (APE). As a consequence of these agreements, TxDOT's regulatory role for this project is that of the Federal action agency.

Project Description

The Texas Department of Transportation (TxDOT) proposes to reconstruct the IH 30/SH 360 interchange to provide direct connection ramps between the two facilities. It would also widen IH 30 to provide up to ten main lanes, several auxiliary lanes, and two reversible managed lanes. The proposed project would require approximately 13.48 acres of new right-of-way (ROW) and approximately 0.3 acre of drainage and construction easements. For a detailed project description, please see the attached *Report for Historical Studies Survey*.

Determination of Eligibility

Background research was conducted to identify properties listed on the National Register of Historic Places (NRHP) and State Archeological Landmarks (SAL), and Recorded Texas Historic Landmarks (RTHL). One property, the P.A. Watson Cemetery was previously determined NRHP eligible within the project APE. TxDOT historians determined the area of potential effects (APE) for this project is 150 feet from the existing and proposed ROW and easements.

A March 2015 *Report for Historical Studies Survey* identified 58 historic-age resources at 51 locations (report attached). TxDOT historians determined two resources eligible for listing to the NRHP:

- Resource 16 - the previously determined eligible (THC concurred) P.A. Watson Cemetery under Criterion A (Events/Trends) for Exploration and Settlement at the local level.
- Resource 29 - the 1962 flat roof irregular form commercial property that was originally Chance Vought Electronics under Criterion C (Method of Construction) for its character-defining thin shell concrete hyperbolic paraboloids located at its north and south entrances.

Consultation with Other Parties

TxDOT contacted several parties as part of the Section 106 consulting process including:

- P.A. Watson Cemetery Society –A TxDOT historian contacted President David Isom on January 27, 2015 regarding the removal of the secondary driveway access on the west side of the cemetery. Plans were sent to Mr. Isom via email and during a phone conversation on February 2, 2015 and email February 6, 2015, Mr. Isom stated that the association has no objections to the removal of the driveway.
- Four other consulting partners identified below and the outcome of contact is included on page 9 & 10 of the attached survey:
 - Dallas CHC Chair – No Comment
 - Tarrant CHC Chair – No Response
 - City of Arlington HPO No Response to initial contact – comment pending
 - City of Grand Prairie HPO - No Response to initial contact – comment pending

In consultation with THC, a concurrent review between THC and the Historic Preservation Officers (HPO) offices (Arlington & Grand Prairie) will be given a 30 day review period due to their Certified Local Government (CLG) status. Copies of correspondence are attached.

Determination of Effect

In accordance with 36 CFR 800.5, TxDOT Historians applied the *Criteria of Adverse Effect* and determine the proposed project poses **no adverse effect** to NRHP eligible Resources 16 and 29.

- Direct Effect: The project will have **no adverse effect** at the NRHP-eligible locations:
 - Resource 16 requires no additional ROW. A continuous curb will be installed along the frontage road on the west side of the cemetery and thereby eliminating TxDOT ROW access to a secondary driveway. The driveway is not the primary gate or a historic entrance. There is still an additional secondary entrance on the north side of the cemetery. Consultation with the P.A. Watson Cemetery Society revealed no concerns or objections. There are **no adverse effects** to the historic cemetery's location, setting, feeling, association, design, workmanship, or materials.
 - Resource 29 requires approximately 1.79 acres of new ROW from the property's 16.07 acre parcel, or 11.1% of its total acreage. The new ROW is located at the southwest corner at the intersection of Avenues E and F and along Avenue F on the north side of the property (see survey for a more detailed explanation on Page 35 and the survey form for the illustration of ROW needs). There is no direct effect to the character-defining hyperbolic paraboloid features. The needed ROW would be taken from grassy areas and large parking lots that separate the building from the roadway. At its closest points, Resource 29 is located approximately 500 feet from the existing ROW at the southwest corner and approximately 115 feet from the existing ROW along Avenue F to the north. The new ROW and pavement edge would move approximately 190 feet closer at the southwest corner, leaving a 301-foot buffer between the widened roadway and the south entrance's hyperbolic paraboloid. Along Avenue F, the new ROW and pavement edge would be approximately 30 feet closer, leaving an 85-foot buffer between the roadway and the north entrance's hyperbolic paraboloids. These changes pose **no adverse effect** to the historic property's location,

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Appendix B, Page 14

2 of 3

setting, feeling, association, design, workmanship, or materials.as the property would still possess its significance following completion of the project.

- Indirect Effects: Project activities pose no indirect effects to Resources 16 and 29. The proposed project would not affect or diminish the qualities and characteristics that contribute to the historic significance of the property.
- Cumulative Effects: Additionally, project activities pose no foreseeable cumulative adverse effects to the Resources 16 & 29.

Conclusion

In accordance with 36 CFR 800 and our 2005 Programmatic Agreement for Transportation Undertakings, I hereby request your signed concurrence with TxDOT's finding of **no adverse effect** to the P.A. Watson Cemetery and Chance Vought Electronics Commercial properties. We additionally notify you that SHPO is the designated official with jurisdiction over Section 4(f) resources protected under the provisions of 23 CFR 774 and that your comments on our Section 106 findings will be integrated into decision-making regarding prudent and feasible alternatives for purposes of Section 4(f) evaluations. Final determinations for the Section 4(f) process will be rendered by TxDOT pursuant to 23 U.S.C. 327 and the afore-mentioned MOU dated 12-16-14.

As part of this coordination, TxDOT determines that the proposed project meets the requirements for a Section 4(f) de minimis impact finding under 23 CFR 774. TxDOT bases its determinations based on the fact that the use for Resource 29 amounts to 11.1% of its overall acreage and the project will have **no adverse effect** on the eligible property.

We look forward to further consultation with your staff and hope to maintain a partnership that will foster effective and responsible solutions for improving transportation, safety and mobility in the state of Texas. Thank you for your cooperation in this federal review process. If you have any questions or comments concerning these evaluations, please call me at (512) 416-2555.

Sincerely,



Carolyn A. Nelson, MS
Architectural Historian
Historical Studies Branch
Environmental Affairs Division

cc: Bruce Jensen, Cultural Resources Section Director, 

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Appendix B, Page 15

CONCURRENCE WITH NON-ARCHEOLOGICAL SECTION 106 FINDINGS:
HISTORIC PROPERTIES PRESENT: P.A. WATSON CEMETERY & CHANCE VOUGHT ELECTRONICS
NO ADVERSE EFFECT: P.A. WATSON CEMETERY & CHANCE VOUGHT ELECTRONICS

NAME: _____ DATE: _____
for Mark Wolfe, State Historic Preservation Officer

NO COMMENTS ON DETERMINATION OF DE MINIMIS IMPACT UNDER SECTION 4(F) REGULATIONS
for CHANCE VOUGHT ELECTRONICS

NAME: _____ DATE: _____
for Mark Wolfe, State Historic Preservation Officer

Attachments: Report for Historical Studies Survey CSJ#1068-02-127, CHC/CLG Correspondence

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Kickapoo Tribe of Oklahoma

P.O.Box 70
407 N. Hwy 102
McLoud, Oklahoma 74851

Administration Department
Phone: 405-964-7053; Fax: 405-964-7065
Email: kwilson@kickapootribeofoklahoma.com

March 20, 2015

Texas Department of Transportation
ATTN: Sharon Dornheim
Staff Archeologist/Consultant Coord.
Cultural Resources Management Section
Environmental Affairs Division
125 E. 11th Street
Austin, TX 78701-2483

RE: Project #: CSJ: 1068-02-127; IH 30, from Cooper Street to SH 161, Roadway Improvements; Tarrant and Dallas Counties, Fort Worth District

Dear Mrs. Dornheim:

Thank you for consulting with the Kickapoo Tribe of Oklahoma in regard to the above referenced site(s). At this time, the Kickapoo Tribe of Oklahoma has no objections to the proposed project(s) at the intended site(s). However, in the event burial remains and/or artifacts are discovered during the development or construction process, the Kickapoo Tribe of Oklahoma would ask for immediate notification of such findings.

Should I be of any further assistance, please contact me at (405) 964-4227.

Sincerely,



Kent Collier
NAGPRA Contact
Kickapoo Tribe of Oklahoma

TXDOT-ENV
MAR 20 2015
CRM

Cc: File

Gilbert Salazar
APETOKA
CHAIRMAN

Nathan Gonzales
MAHMATOMA
VICE-CHAIRMAN

Patricia Gonzales
MOKITANOCA
SECRETARY

Jennell Downs
KISAKODICUA
TREASURER

Everett Suke
MOKITANOCA
COUNCILMAN

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March 17, 2015

SECTION 106 REVIEW: DETERMINATION OF NRHP ELIGIBILITY AND NO ADVERSE EFFECT

Dallas/Tarrant County / Fort Worth District
IH 30 from Cooper Street to SH 161
CSJ: 1068-02-127

Ms. Whitney Fowler
City of Grand Prairie HPO
317 College Street
Grand Prairie, Texas 75050

Dear Ms. Fowler,

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated 12-16-14, and executed by FHWA and TxDOT. In accordance with 36 CFR 800 and our first amended Programmatic Agreement for Transportation Undertakings (PA-TU 2005), this letter initiates Section 106 consultation on the effect the proposed undertaking poses for a historic property located within the project's area of potential effects (APE). As a consequence of these agreements, TxDOT's regulatory role for this project is that of the Federal action agency.

In your capacity as an official of Grand Prairie's Certified Local Government Program (CLG), the Texas Department of Transportation (TxDOT) seeks your comments regarding the above referenced federally-assisted undertaking and its potential to affect historic properties.

Project Description

The project proposes to reconstruct the IH 30/SH 360 interchange to provide direct connection ramps between the two facilities. It would also widen IH 30 to provide up to ten main lanes, several auxiliary lanes, and two reversible managed lanes. The proposed project will be carried out with federal funding provided through FHWA. The proposed project would require approximately 13.48 acres of new right-of-way (ROW) and approximately 0.3 acre of drainage and construction easements.

Determinations of Eligibility

Background research was conducted to identify properties listed on the National Register of Historic Places (NRHP) and State Archeological Landmarks (SAL), and Recorded Texas Historic Landmarks (RTHL). One property, the P.A. Watson Cemetery was previously determined NRHP-eligible within the project APE. TxDOT historians determined the area of potential effects (APE) for this project is 150 feet from the existing and proposed ROW and easements.

A March 2015 *Report for Historic Studies Survey* identified 58 historic-age resources at 51 locations (report attached). TxDOT historians determined two resources eligible for listing to the NRHP:

- Resource 16 - the previously determined eligible (THC concurred) P.A. Watson Cemetery under Criterion A (Events/Trends) for Exploration and Settlement at the local level.

Appendix B, Page 19

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- Resource 29 – the 1962 flat roof irregular form commercial property that was originally Chance Vought Electronics under Criterion C (Method of Construction) for its character-defining thin shell concrete hyperbolic paraboloids located at its north and south entrances.

Determinations of Effect

In accordance with 36 CFR 800.5, TxDOT Historians applied the *Criteria of Adverse Effect* and determine the proposed project poses **no adverse effect** to NRHP eligible Resources 16 and 29.

- Direct Effect: The project will have **no adverse effect** at the NRHP eligible locations.
 - Resource 16 requires no additional ROW. A continuous curb will be installed along the frontage road on the west side of the cemetery and thereby eliminating TxDOT ROW access to a secondary driveway. The driveway is not the primary gate or a historic entrance. There is still an additional secondary entrance on the north side of the cemetery. Consultation with the P.A. Watson Cemetery Society revealed no concerns or objections. There are **no adverse effects** to the historic cemetery's location, setting, feeling, association, design, workmanship, or materials.
 - Resource 29 requires approximately 1.79 acres of new ROW from the property's 16.07 acre parcel or 11.1% of its total acreage. The new ROW is located at the southwest corner at the intersection of Avenues E and F and along Avenue F on the north side of the property (see survey for a more detailed explanation on Page 35 and the survey form for the illustration of ROW needs). There is no direct effect to the character-defining hyperbolic paraboloid features. The needed ROW would be taken from grassy areas and large parking lots that separate the building from the roadway. At its closest points, Resource 29 is located approximately 500 feet from the existing ROW at the southwest corner and approximately 115 feet from the existing ROW along Avenue F to the north. The new ROW and pavement edge would move approximately 190 feet closer at the southwest corner, leaving a 301-foot buffer between the widened roadway and the south entrance's hyperbolic paraboloid. Along Avenue F, the new ROW and pavement edge would be approximately 30 feet closer, leaving an 85-foot buffer between the roadway and the north entrance's hyperbolic paraboloids. These changes pose **no adverse effect** to the historic property's location, setting, feeling, association, design, workmanship, or materials, as the property would still possess its significance following completion of the project.
- Indirect Effects: Project activities pose no indirect effects to Resources 16 and 29. The proposed project would not affect or diminish the qualities and characteristics that contribute to the historic significance of the property.
- Cumulative Effects: Additionally, project activities pose no foreseeable cumulative adverse effects to the Resources 16 & 29.

Consultation with Other Parties

Besides the Grand Prairie and Arlington Historic Preservation Officers (HPOs), the Dallas and Tarrant County Historical Chairs (CHC) were identified as a consulting party during survey efforts and contacted in January 2015 (Pg. 9 and 10, survey). No concerns or objections have been offered.

In addition, a TxDOT historian contacted the P.A. Watson Cemetery Society President David Isom on January 27, 2015 regarding the removal of the secondary driveway access on the west side of the cemetery. Plans were sent to Mr. Isom via email and during a phone conversation on February 2, 2015 and email February 6, 2015, Mr. Isom stated that the association has no objections to the removal of the driveway.

Appendix B, Page 20

TxDOT informally requested a concurrent review between your agency and the Texas Historical Commission regarding this proposed project and THC agreed this was the preference.

Conclusion

Pursuant to Stipulation VI, "Undertakings with Potential to Cause Effects" of the PA-TU, TxDOT Historians determined that the proposed project would have **no adverse effect** to NRHP eligible historic resources.

TxDOT is providing this information to the CLG and requesting signed concurrence with your agency as a consulting party, TxDOT hereby requests your signed concurrence with our determination of **no adverse effect** to Resources 16 and 29.

As previously discussed, we are requesting a 30-day concurrent review process with your agency and the Texas Historical Commission. To accommodate comment from both agencies please respond by April 24, 2015. We look forward to further consultation with your staff and hope to maintain a partnership that will foster effective and responsible solutions for improving transportation, safety and mobility in the state of Texas. Thank you for your cooperation in this federal review process. If you have any questions or comments concerning these evaluations, please call me at (512) 416-2555 or carolyn.nelson@txdot.gov.

Sincerely,



Carolyn A. Nelson, M.S.
Architectural Historian
Environmental Affairs Division

cc: Bruce Jensen, Cultural Resources Section Director, 

CLG CONCURRENCE: DETERMINATIONS OF NATIONAL REGISTER ELIGIBILITY - RESOURCES # 16 AND 29 NO ADVERSE EFFECT TO HISTORIC PROPERTIES	
NAME: 	DATE: <u>04/10/2015</u>
Grand Prairie Certified Local Government	

Attachments: March 2015 Historic Studies Survey

Walter Shumack
Director of Transportation
City of Grand Prairie

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From: Linda Henderson [<mailto:Linda.Henderson@thc.state.tx.us>]
Sent: Tuesday, April 21, 2015 9:28 AM
To: Carolyn Nelson
Subject: SHPO questions CSJ 1068-02-127

Carolyn,

I'm reviewing the IH 30 project in Dallas/Tarrant County, and I need some more information before I can complete my review. **I am concurring with your determinations of eligibility, but I need more information for reviewing effects.**

I am having a hard time finding illustrations that show the project effects on the historic PA Watson Cemetery and the Chance Vought Electronics building. The only drawings seem to be general sections that don't show the project relationship to these resources. The aerial photos show me an idea of proximity but not the elevation of the new construction, and I would like to see something that synthesizes that information—new elevations relative to historic resources to illustrate relative heights and views of and from the historic resources to the proposed new construction.

Specific to PA Watson Cemetery (Resource 16): it appears that there are graves up against the fence line/proposed NRHP boundary. What investigations have been conducted to determine there are not graves between the fence line and N Watson Road? Was this boundary discussed in 2004, and what files might have that discussion? The project materials indicate correspondence with the cemetery association, but I could not find copies of that.

For Chance Vought Electronics (Resource 29): Please provide information about project **vibration** impacts might be to the thin-shell concrete. This resource is NRHP eligible strictly because of the use of the construction method, and the new ROW and proposed new lanes get closer than I think is reasonable to a structure that may need special consideration.

For both Resource 16 and Resource 29: Please provide better illustrations as discussed above, with cross sections indicating new proposed construction relative to the historic resources and views of and from the historic resources from the proposed construction.

I have not yet talked to the other consulting parties, but I will want this information regardless. I wanted to email you first to see if we could get the information together prior to the end of my 30-day review, in hopes that we could still complete the review in that time period. if you would prefer I put this in a formal letter to you, I can do that, but I wanted to let you know as soon as I had looked through the materials and was ready to respond, just in case it's easy to pull the information together.

Best,

Linda

Linda Henderson
Historian, Federal Programs
History Programs Division
Texas Historical Commission
P.O. Box 12276
Austin, Texas 78711-2276
phone: 512/463-5851
www.thc.state.tx.us



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March 17, 2015

SECTION 106 REVIEW: DETERMINATION OF NRHP ELIGIBILITY AND NO ADVERSE EFFECT

Dallas/Tarrant County / Fort Worth District
IH 30 from Cooper Street to SH 161
CSJ: 1068-02-127

Mr. Clayton Husband
City of Arlington HPO
101 West Abram Street
Arlington, Texas 76010

Dear Mr. Husband,

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated 12-16-14, and executed by FHWA and TxDOT. In accordance with 36 CFR 800 and our first amended Programmatic Agreement for Transportation Undertakings (PA-TU 2005), this letter initiates Section 106 consultation on the effect the proposed undertaking poses for a historic property located within the project's area of potential effects (APE). As a consequence of these agreements, TxDOT's regulatory role for this project is that of the Federal action agency.

In your capacity as an official of Arlington's Certified Local Government Program (CLG), the Texas Department of Transportation (TxDOT) seeks your comments regarding the above referenced federally-assisted undertaking and its potential to affect historic properties.

Project Description

The project proposes to reconstruct the IH 30/SH 360 interchange to provide direct connection ramps between the two facilities. It would also widen IH 30 to provide up to ten main lanes, several auxiliary lanes, and two reversible managed lanes. The proposed project will be carried out with federal funding provided through FHWA. The proposed project would require approximately 13.48 acres of new right-of-way (ROW) and approximately 0.3 acre of drainage and construction easements.

Determinations of Eligibility

Background research was conducted to identify properties listed on the National Register of Historic Places (NRHP) and State Archeological Landmarks (SAL), and Recorded Texas Historic Landmarks (RTHL). One property, the P.A. Watson Cemetery was previously determined NRHP-eligible within the project APE. TxDOT historians determined the area of potential effects (APE) for this project is 150 feet from the existing and proposed ROW and easements.

A March 2015 *Report for Historic Studies Survey* identified 58 historic-age resources at 51 locations (report attached). TxDOT historians determined two resources eligible for listing to the NRHP:

- Resource 16 - the previously determined eligible (THC concurred) P.A. Watson Cemetery under Criterion A (Events/Trends) for Exploration and Settlement at the local level.

Appendix B, Page 25

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- Resource 29 – the 1962 flat roof irregular form commercial property that was originally Chance Vought Electronics under Criterion C (Method of Construction) for its character-defining thin shell concrete hyperbolic paraboloids located at its north and south entrances.

Determinations of Effect

In accordance with 36 CFR 800.5, TxDOT Historians applied the *Criteria of Adverse Effect* and determine the proposed project poses **no adverse effect** to NRHP eligible Resources 16 and 29.

- Direct Effect: The project will have **no adverse effect** at the NRHP eligible locations.
 - Resource 16 requires no additional ROW. A continuous curb will be installed along the frontage road on the west side of the cemetery and thereby eliminating TxDOT ROW access to a secondary driveway. The driveway is not the primary gate or a historic entrance. There is still an additional secondary entrance on the north side of the cemetery. Consultation with the P.A. Watson Cemetery Society revealed no concerns or objections. There are **no adverse effects** to the historic cemetery's location, setting, feeling, association, design, workmanship, or materials.
 - Resource 29 requires approximately 1.79 acres of new ROW from the property's 16.07 acre parcel or 11.1% of its total acreage. The new ROW is located at the southwest corner at the intersection of Avenues E and F and along Avenue F on the north side of the property (see survey for a more detailed explanation on Page 35 and the survey form for the illustration of ROW needs). There is no direct effect to the character-defining hyperbolic paraboloid features. The needed ROW would be taken from grassy areas and large parking lots that separate the building from the roadway. At its closest points, Resource 29 is located approximately 500 feet from the existing ROW at the southwest corner and approximately 115 feet from the existing ROW along Avenue F to the north. The new ROW and pavement edge would move approximately 190 feet closer at the southwest corner, leaving a 301-foot buffer between the widened roadway and the south entrance's hyperbolic paraboloid. Along Avenue F, the new ROW and pavement edge would be approximately 30 feet closer, leaving an 85-foot buffer between the roadway and the north entrance's hyperbolic paraboloids. These changes pose **no adverse effect** to the historic property's location, setting, feeling, association, design, workmanship, or materials, as the property would still possess its significance following completion of the project.
- Indirect Effects: Project activities pose no indirect effects to Resources 16 and 29. The proposed project would not affect or diminish the qualities and characteristics that contribute to the historic significance of the property.
- Cumulative Effects: Additionally, project activities pose no foreseeable cumulative adverse effects to the Resources 16 & 29.

Consultation with Other Parties

Besides the Arlington and Grand Prairie Historic Preservation Officers (HPOs), the Dallas and Tarrant County Historical Chairs (CHC) were identified as a consulting party during survey efforts and contacted in January 2015 (Pg. 9 and 10, survey). No concerns or objections have been offered.

In addition, a TxDOT historian contacted the P.A. Watson Cemetery Society President David Isom on January 27, 2015 regarding the removal of the secondary driveway access on the west side of the cemetery. Plans were sent to Mr. Isom via email and during a phone conversation on February 2, 2015 and email February 6, 2015, Mr. Isom stated that the association has no objections to the removal of the driveway.

Appendix B, Page 26

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IV #3



Texas Department of Transportation

125 EAST 11TH STREET | AUSTIN, TEXAS 78701-2483 | (512) 463-8588 | WWW.TXDOT.GOV

rcvd. 5/18/15

#3

Response signed by OWD

May 18, 2015

Linda Henderson
P.O. Box 12276
Austin, TX 78711-2276

RECEIVED

MAY 18 2015

Dear Ms. Henderson:

History Programs Division

RE: CSJ#1068-02-127 – Interstate Highway (IH) 30

This letter serves to provide information requested in your email dated April 21, 2015 regarding potential effects to the two eligible resources in the APE of the above referenced proposed project (Exhibit A).

- The P.A. Watson Cemetery (Resource 16) was referred to TxDOT Archeology Supervisor, Scott Pletka who responded on April 23, 2015 that they had also consulted with David Isom, President of the P.A. Watson Cemetery Association and TxDOT Archeology determined no further work to address Health & Safety Code issues will be needed. Attached is:
 - Requested plan detail sheet (Exhibit B).
 - Requested profile sheet (Exhibit C).
 - Email correspondence from Scott Pletka; TxDOT Archeology Supervisor (Exhibit D).

- The Voight Chance Electronic Building (Resource 29). TxDOT historians consulted with Fort Worth District staff regarding the construction activities occurring within 500 feet of the hyperbolic paraboloid entries; contributing features of the historic structure located on the north and south sides of the building. TxDOT staff used the National Cooperative Highway Research (NCHRP) publication 25-25/Task 72, *Current Practices to Address Construction Vibration and Potential Effects to Historic Buildings Adjacent to Transportation Projects* (September 2012) as guidance in the decision making process. Using the flowchart on the last page of the publication (Exhibit E) it was revealed that vibratory equipment was scheduled to be used in close proximity of the south entry and slightly more than 250 feet from the north entry. In an effort to avoid adverse effects to the contributing features of the historic structure:
 - A geotechnical engineer did an analysis of liquefaction potential of the soils to better understand the potential vibratory equipment might have on the historic structure and found that due to the “*in situ* clay in the area of concern” liquefaction of the soil is highly improbable (Exhibit F).
 - As we informally discussed, protection notes were placed on the plans to prohibit the use of vibratory equipment within 250 ft. of the hyperbolic paraboloid structures (Exhibit G) during

construction activities because the geotechnical engineer determined there was no liquefaction potential.

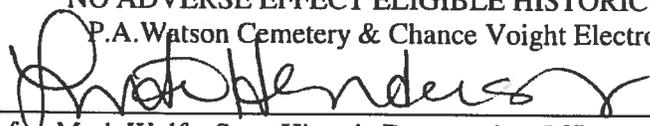
- Pavement removal will consist of saw-cutting the pavement and
 - Construction of new roadway will not use vibratory equipment (roe dams, vibratory pile drivers, drop or pneumatic hammers). Steam rollers will have vibratory equipment turned off.
- Plan sheet showing protection notes is attached (Exhibit H).
 - The requested plan detail attached (Exhibit I).
 - Requested profile sheet (Exhibit J).

We appreciate your time and collaboration discussing this proposed project. In accordance with 36 CFR 800 and our 2005 Programmatic Agreement for Transportation Undertakings, I hereby request your signed concurrence with TxDOT's findings of **NRHP eligibility** and **no adverse effect** to Resources # 16 & 29. Please feel free to call me at 512-416-2555 if you have any questions or need additional information.

Sincerely,



Carolyn A. Nelson, MS
Architectural Historian
TxDOT-Environmental Affairs Division

CONCUR: ELIGIBILITY & NO ADVERSE EFFECT ELIGIBLE HISTORIC PROPERTIES: P.A. Watson Cemetery & Chance Voight Electronics Building	
NAME: 	DATE: <u>20 May 2015</u>
for Mark Wolfe, State Historic Preservation Officer	

Attachments: Exhibits A through J

May 22, 2015

**SECTION 106 REVIEW: DETERMINATION OF NRHP ELIGIBILITY AND NO ADVERSE EFFECT
SECTION 4(f) REVIEW: NOTIFICATION OF INTENT TO RENDER *DE MINIMIS* SECTION 4(F)
FINDING**

Dallas and Tarrant County/Fort Worth District
Location IH 30 from Cooper Street to SH 161
CSJ: 1068-02-127

Ms. Linda Henderson
History Programs
Texas Historical Commission
Austin, TX 78711

Dear Ms. Henderson:

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated 12-16-14, and executed by FHWA and TxDOT. In accordance with 36 CFR 800 and our first amended Programmatic Agreement for Transportation Undertakings (PA-TU 2005), this letter continues coordination of Section 106 consultation on the effect the proposed undertaking poses for historic properties located within the project's area of potential effects (APE). As a consequence of these agreements, TxDOT's regulatory role for this project is that of the Federal action agency.

This letter serves to complete our consultation in regards to TxDOT's letter dated March 16, 2015 and your email requesting additional information dated April 21, 2015 (Exhibit A):

Below is a discussion of the two properties TxDOT determined eligible for listing on the National Register of Historic Places (NRHP).

- Resource 16 - The P.A. Watson Cemetery. This proposed project would remove a secondary driveway access within TxDOT ROW. Because the P.A. Watson Cemetery Association was a consulting party to a previous TxDOT undertaking, they were afforded an opportunity to comment. There is no taking or use of the cemetery and it is not in the APE.
 - This undertaking does not directly or indirectly impact contributing features of the historic cemetery. There are **no adverse effects** to the historic cemetery's location, setting, feeling, association, design, workmanship, or materials.
 - Regarding your email regarding additional information, the P.A. Watson Cemetery (Resource 16) was referred to TxDOT Archeology Supervisor, Scott Pletka who responded on April 23, 2015. TxDOT Archeologists also consulted with David Isom, President of the P.A. Watson Cemetery Association and TxDOT Archeology determined no further work to address Health & Safety Code issues will be needed. Attached is:
 - Requested plan detail sheet (Exhibit B).
 - Requested profile sheet (Exhibit C).

Appendix B, Page 31

OUR GOALS

MAINTAIN A SAFE SYSTEM ▪ ADDRESS CONGESTION ▪ CONNECT TEXAS COMMUNITIES ▪ BEST IN CLASS STATE AGENCY

An Equal Opportunity Employer

- Email correspondence from Scott Pletka; TxDOT Archeology Supervisor (Exhibit D).
 - Your office informally concurred there are no adverse effects to the historic cemetery in your April 29, 2015 email.
- Resource 29 - The Vought Chance Electronic Building. This proposed project would require approximately 1.79 acres of new ROW from the property's 16.07 acre parcel, or 11.1% of its total acreage. The new ROW is located at the southwest corner at the intersection of Avenues E and F and along Avenue F on the north side of the property (see survey for a more detailed explanation on Page 35 and the survey form for the illustration of ROW needs)..
 - There is no direct effect to the character-defining hyperbolic paraboloid features. The needed ROW would be taken from grassy areas and large parking lots that separate the building from the roadway. At its closest points, Resource 29 is located approximately 500 feet from the existing ROW at the southwest corner and approximately 115 feet from the existing ROW along Avenue F to the north. The new ROW and pavement edge would move approximately 190 feet closer at the southwest corner, leaving a 301-foot buffer between the widened roadway and the south entrance's hyperbolic paraboloid. Along Avenue F, the new ROW and pavement edge would be approximately 30 feet closer, leaving an 85-foot buffer between the roadway and the north entrance's hyperbolic paraboloids. These changes pose **no adverse effect** to the historic property's location, setting, feeling, association, design, workmanship, or materials.as the property would still possess its significance following completion of the project.
 - Your April 21, 2015 email requested information regarding a potential for indirect vibratory effects to the hyperbolic paraboloid entries, contributing features of the historic property.
 - TxDOT historians consulted with Fort Worth District staff regarding the construction activities occurring within 500 feet of the hyperbolic paraboloid entries located on the north and south sides of the building.
 - TxDOT staff used the National Cooperative Highway Research (NCHRP) publication 25-25/Task 72, *Current Practices to Address Construction Vibration and Potential Effects to Historic Buildings Adjacent to Transportation Projects* (September 2012) as guidance in the decision making process.
 - Using the flowchart on the last page of the publication (Exhibit E) it was revealed that vibratory equipment was scheduled to be used in close proximity of the south entry and slightly more than 250 feet from the north entry. In an effort to avoid adverse effects to the contributing features of the historic property.
 - A geotechnical engineer did an analysis of liquifaction potential of the soils to better understand the potential vibratory equipment might have on the historic structure and found that due to the "*in situ* clay in the area of concern" liquifaction of the soil is highly improbable (Exhibit F).
 - As we informally discussed, because the geotechnical engineer determined there was no liquifaction potential, protection notes were placed on the plans to prohibit the use of vibratory equipment within

Appendix B, Page 32

within 250 ft. of the hyperbolic paraboloid structures (Exhibit G) during construction activities

- Pavement removal will consist of saw-cutting the pavement instead of using vibratory equipment (roe dams, vibratory pile drivers, drop or pneumatic hammers).
- Construction of new roadway will not use vibratory equipment. Steam rollers will have vibratory equipment turned off.
- Plan sheet showing protection notes is attached (Exhibit H).
- The requested plan detail attached (Exhibit I).
- Requested profile sheet attached (Exhibit J).

In accordance with 36 CFR 800 and our 2005 Programmatic Agreement for Transportation Undertakings, I hereby request your signed concurrence with TxDOT's finding of **no adverse effects** to the NRHP Eligible P.A. Watson Cemetery and Chance Vought Electronics Building.

As part of this coordination, TxDOT determines that the proposed project meets the requirements for a Section 4(f) de minimis impact finding under 23 CFR 774. TxDOT bases its determinations based on the fact that the use for Chance Vought Electronics Building amounts to 11.1% of its overall acreage and the project will have **no adverse effect** on the eligible property.

We additionally notify you that SHPO is the designated official with jurisdiction over Section 4(f) resources protected under the provisions of 23 CFR 774 and that your comments on our Section 106 findings will be integrated into decision-making regarding prudent and feasible alternatives for purposes of Section 4(f) evaluations. Final determinations for the Section 4(f) process will be rendered by TxDOT pursuant to 23 U.S.C. 327 and the afore-mentioned MOU dated 12-16-14.

We appreciate your time and collaboration discussing this proposed project. Please feel free to call me at 512-416-2555 if you have any questions or need additional information.

Sincerely,



Carolyn A. Nelson, MS
Architectural Historian
TxDOT-Environmental Affairs Division

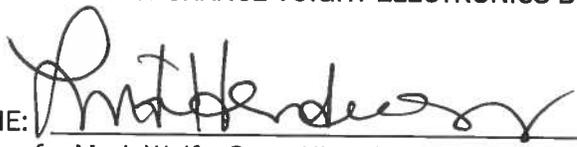
cc: Bruce Jensen, Cultural Resources Section Director, 

Appendix B, Page 33

CONCUR: NRHP ELIGIBILITY &
NO ADVERSE EFFECTS to ELIGIBLE HISTORIC PROPERTIES:
P.A.Watson Cemetery & Chance Vought Electronics Building

NAME:  DATE: 27 May 2015
for Mark Wolfe, State Historic Preservation Officer

NO COMMENTS ON DETERMINATION OF DE MINIMIS IMPACT UNDER SECTION 4(F) REGULATIONS
for CHANCE VOIGHT ELECTRONICS BUILDING

NAME:  DATE: 27 May 2015
for Mark Wolfe, State Historic Preservation Officer

Attachments: Exhibits A through J

From: Julia Ragsdale
Sent: Thursday, May 28, 2015 11:10 AM
To: TxDot@tceq.texas.gov
Cc: Jenise Walton; Elisa Garcia
Subject: FTW Tarrant and Dallas Counties, 1068-02-127 IH 30 from Cooper Street to SH 161, including the SH 360 interchange TCEQ Coordination
Attachments: 2015-05-19_02_42_16_rev_IH_30_EA_1068-02-076_etc_5-19-2015[1][1].pdf

To Whom It May Concern:

TxDOT requests the TCEQ evaluate this (project name) per 43 TAC 2.305. The proposed project would be improvements to IH 30 at SH 360. There will be up to ten general purpose lanes and auxiliary lanes on IH 30 from Cooper Street to SH 161. Two reversible managed lanes would be provided from Center Street to SH 161, tying into the existing two-lane reversible managed lane system in Dallas County.

We are requesting this/these TCEQ review(s) since the project meets MOU trigger for (1) Air quality - the project adds capacity in a nonattainment area of the State; and (2) Water Quality - (A) it requires a USACE permit and (C) it is located within five miles of an impaired assessment unit.

An electronic version of the (Environmental Assessment, Environmental Impact Statement) will be transmitted to your office using our FTP system. Please let me know if you have any questions.

Thank you,

Julia Ragsdale
Environmental Affairs Division
Texas Department of Transportation
Physical Address:
118 E. Riverside Dr., Austin, TX 78704
Mailing Address:
125 E. 11th Street, Austin, TX 78701
(O) 512-416-2612
Julia.Ragsdale@txdot.gov



Review Standard for Section 4(f) De Minimis Checklist for Historical Properties

Control Section Job Number (CSJ): 1068-02-127

District/County: Fort Worth/Tarrant

Property ID: 29

Property Name: Chance Vought Electronics

The following checklist was developed as a tool to assist in streamlining the Section 4(f) *De Minimis* process and to ensure that all necessary information is documented in the File of Record (ECOS). The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being or have been carried-out by TxDOT pursuant to 23 USC 327 and a Memorandum of Understanding dated 12-16-2014, and executed by FHWA and TxDOT

Note: This checklist is not all-inclusive and should be modified as appropriate with ENV approval.

For each of the following steps and/or items, check the appropriate box in the columns on the left. Check one box **ONLY**.

I. Section 4(f) Defining Criteria for Historical Properties

Yes No

- A. Is the property listed or eligible for the NRHP or NHL?

Comments: NRHP Eligible - Criterion C – Method of Construction

II. Establishing Section 4(f) Use of the Property

Yes No

- A. Does the project require a use (i.e. new right of way, new easement(s), etc.)?

III. Establishing Section 4(f) *De Minimis* Eligibility

Yes No

- A. Was it determined that the project will not adversely affect the features or attributes that make the property eligible for Section 4(f) protection?
- B. Did the Official with Jurisdiction concur that the project will not adversely affect the features or attributes that make the property eligible for Section 4(f) protection?



IV. Documentation

The following **MUST** be attached to this checklist to ensure proper documentation of the Section 4(f) *De Minimis*:

1. Brief project description with explanation of how the property will be used.
2. A detailed map of the Section 4(f) property including:
 - a. Current and proposed ROW (Exhibits I & G)
 - b. Property boundaries (Exhibits K)
 - c. Existing and planned facilities (Exhibits I & G)
3. Concurrence letter with the Official with Jurisdiction
 1. Signed Back TxDOT Response (May 22, 2015) by THC (OWJ)



V. TxDOT Approval Signatures

ENV Technical Expert Reviewer Certification

I reviewed this checklist and all attached documentation and confirm that the above property and proposed project meet the requirements of 23 CFR 774 for a Section 4(f) *De Minimis* finding.

 <hr/> <small>ENV Personnel Name</small>	 <hr/> <small>Date</small>
--	--

TxDOT-ENV Section 4(f) *De Minimis* Final Approval

Based upon the above considerations, this Section 4(f) *De Minimis* satisfies the requirements of 23 CFR 774.

 <hr/> <small>TxDOT-ENV, PD Director or designee</small>	 <hr/> <small>Date</small>
--	--



Review Standard for Section 4(f) De Minimis Checklist for Historical Properties

The following table shows the revision history for this document.

Revision History	
Effective Date Month, Year	Reason for and Description of Change

Attachment Omitted: The foregoing Review Standard for Section 4(f) De Minimis Checklist for Historical Properties includes a four-page letter dated May 22, 2015 from TxDOT to THC which is included in this appendix on pages 31 - 34.

IV #1

Project Description

- **Project Type:** Reconstruct the IH 30/SH 360 interchange to provide direct connecting ramps between the two facilities; widen IH 30 to provide up to ten main lanes, several auxiliary lanes, and two reversible managed lanes; reconstruct the one-way collector-distributor roadways between Ballpark Way and Six Flags Drive to facilitate local access.
- **Total Project Length:** 6.39 miles
- **New Right of Way (ROW) Acreage:** 13.48 acres
- **Easement Acreage:** 0.3 acre drainage and temporary construction easements
- **Project Description and Impacts:**

The proposed project would reconstruct the IH 30/SH 360 interchange to provide direct connecting ramps between the two facilities. It would also widen IH 30 to provide up to ten general purpose main lanes, several auxiliary lanes, and two reversible managed lanes. The one-way collector-distributor roadways between Ballpark Way and Six Flags Drive would be reconstructed to facilitate local access.

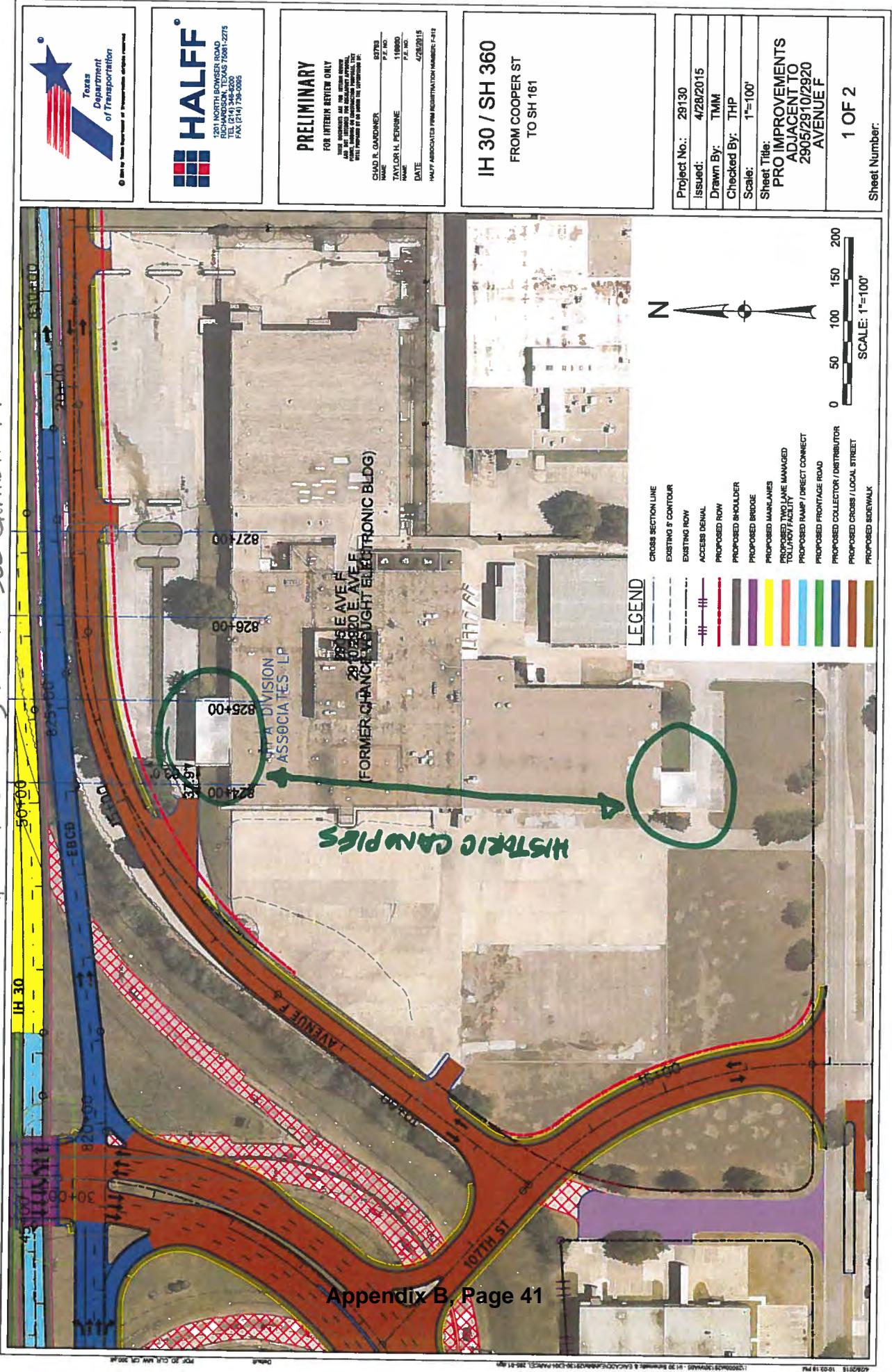
Description of Use - DeMinimis Property: Chance Vought Electronics Building:

- This proposed project would require approximately 1.79 acres of new ROW from the property's 16.07 acre parcel, or 11.1% of its total acreage. The new ROW is located at the southwest corner at the intersection of Avenues E and F and along Avenue F on the north side of the property (see survey for a more detailed explanation on Page 35 and the survey form for the illustration of ROW needs).
 - There is no direct effect to the two hyperbolic paraboloid entryways which are character-defining features on the north and south sides of the building. The needed ROW would be taken from grassy areas and large parking lots that separate the building from the roadway. At its closest points, Resource 29 is located approximately 500 feet from the existing ROW at the southwest corner and approximately 115 feet from the existing ROW along Avenue F to the north. The new ROW and pavement edge would move approximately 190 feet closer at the southwest corner, leaving a 301-foot buffer between the widened roadway and the south entrance's hyperbolic paraboloid. Along Avenue F, the new ROW and pavement edge would be approximately 30 feet closer, leaving an 85-foot buffer between the roadway and the north entrance's hyperbolic paraboloids. These changes pose **no adverse effect** to the historic property's location, setting, feeling, association, design, workmanship, or materials, as the property would still possess its significance following completion of the project.
 - There is no indirect effects to the character-defining hyperbolic paraboloid features because there will be no use to vibratory equipment within 250 ft of the character-defining hyperbolic paraboloid features. This is accomplished using protection notes (EPICS).

Exhibit I

Chance Vought Electronics Bldg - DeMinimis Property
Schematic Detail - see Exhibit G
Parcel Boundary Detail - see Exhibit K

IV #2



HALFF
 511 NORTH DUNGER ROAD
 RICHARDSON, TEXAS 75081-2275
 TEL: (214) 346-8200
 FAX: (214) 759-0895

PRELIMINARY
 FOR INTERIM REVIEW ONLY
 THIS DRAWING IS THE PROPERTY OF HALFF ASSOCIATES, LP. NO PART OF THIS DRAWING IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN PERMISSION OF HALFF ASSOCIATES, LP.
 CHAD R. GARDNER
 NAME
 TAYLOR H. PERRINE
 NAME
 02/28/15
 DATE
 118900
 P.E. NO.
 4728/2015
 P.E. NO.
 HALFF ASSOCIATES, LP. REGISTRATION NUMBER: 14-112

IH 30 / SH 360
 FROM COOPER ST
 TO SH 161

Project No.: 29130
 Issued: 4/28/2015
 Drawn By: TMM
 Checked By: THP
 Scale: 1"=100'
 Sheet Title:
**PRO IMPROVEMENTS
 ADJACENT TO
 2905/2910/2920
 AVENUE F**

1 OF 2
 Sheet Number:

LEGEND

- CROSS SECTION LINE
- EXISTING 5' CONTOUR
- EXISTING ROW
- ACCESS DENIAL
- PROPOSED ROW
- PROPOSED SHOULDER
- PROPOSED BRIDGE
- PROPOSED MANHOLE
- PROPOSED TWO LANE MANAGED FACILITY
- PROPOSED RAMP / DIRECT CONNECT
- PROPOSED FRONTAGE ROAD
- PROPOSED COLLECTOR / DISTRIBUTOR
- PROPOSED CROSS / LOCAL STREET
- PROPOSED SIDEWALK



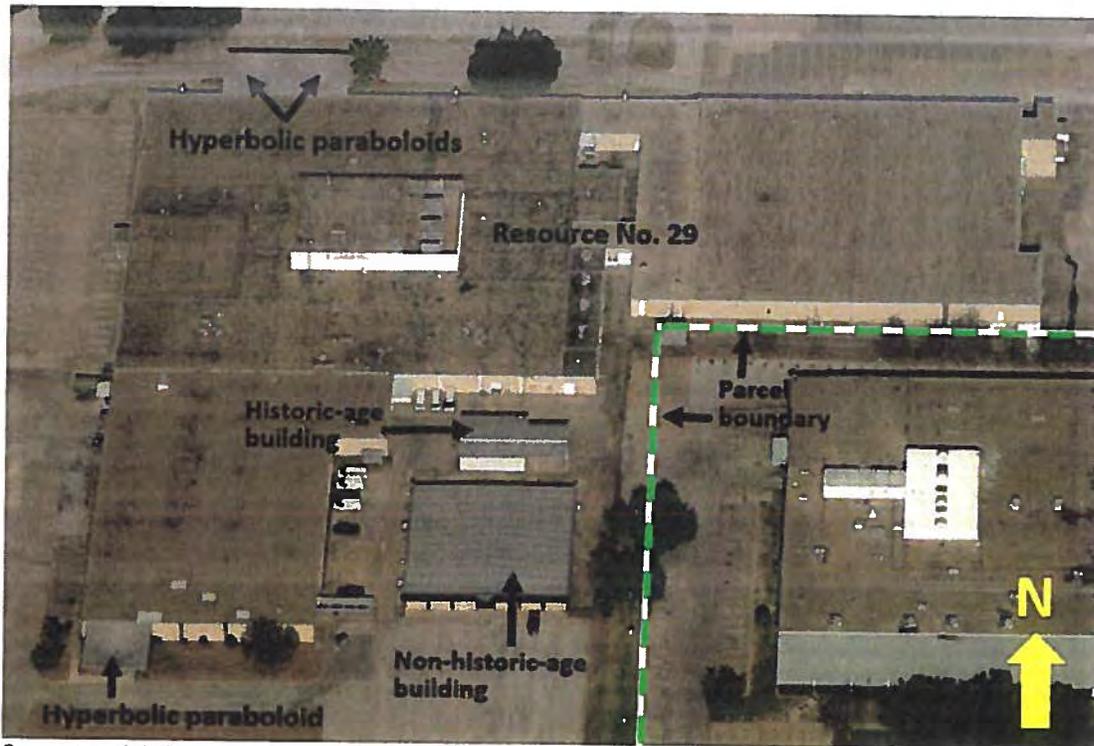
Survey Date: January 2015
 Resource No: 29
 Project Location: Tarrant and Dallas Counties
 Project Name and CSJ: IH 30 from Cooper Street to SH 161 (CSJ: 1068-02-127)
 Address: 2905 East Avenue E and 2910/2920 East Avenue F, Arlington, Texas
 Lat: 32.75824312 / Long: -97.05600737
 Function/
 Sub-function: Commercial/Business
 Form/Type: Flat roof/Irregular
 Architectural Style: No style
 Construction Date: 1962

*Parcel Boundary
 Chance Vought Electronics*

EXHIBIT K

Integrity Comments: This flat-roof brick commercial building was originally Chance Vought Electronics. Most of the building is nondescript with the exception of the character-defining thin shell concrete hyperbolic paraboloids. The north entrance features a double hyperbolic paraboloid, while the south entrance features a single hyperbolic paraboloid. This method of construction was pioneered by Felix Candela, O'Neil Ford, and Richard Colley. Some of its earliest uses occurred in the GSID, and Resource No. 29 appears to have the only extant examples in the GSID. The resource features a few historic-age additions, one architecturally-indistinct historic-age building outside of the APE, and one architecturally-indistinct non-historic-age, freestanding building on the southeast corner of the property. Resource No. 29 retains a high level of integrity of feeling, association, setting, location, design, workmanship, and materials.

NRHP Eligibility: NRHP-eligible under Criterion C



Current aerial view of Resource No. 29, courtesy of Bing.com

Appendix B, Page 43

From: NEPA [<mailto:NEPA@tceq.texas.gov>]

Sent: Friday, June 05, 2015 2:35 PM

To: Julia Ragsdale

Cc: NEPA

Subject: RE: FTW Tarrant and Dallas Counties, 1068-02-127 IH 30 from Cooper Street to SH 161, including the SH 360 interchange TCEQ Coordination

The Texas Commission on Environmental Quality (TCEQ) received a request from the Texas Department of Transportation (TxDOT) regarding the following project: **FTW Tarrant and Dallas Counties, 1068-02-127 IH 30 from Cooper Street to SH 161, including the SH 360 interchange TCEQ Coordination**

In accordance with the Memorandum of Understanding between TxDOT and TCEQ addressing environmental reviews, which is codified in Chapter 43, Subchapter I of the Texas Administrative Code (TAC) and 30 TAC § 7.119, TCEQ is responding to your request for review by providing the below comments.

Air Response

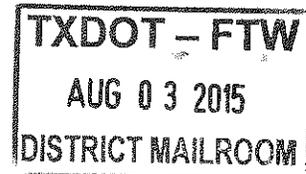
This project is in an area of Texas classified by the United States Environmental Protection Agency as moderate nonattainment for the 2008 ozone National Ambient Air Quality Standard. Air Quality staff has reviewed the document in accordance with transportation and general conformity regulations codified in 40 Code of Federal Regulations Part 93 Subparts A and B. We concur with TxDOT's assessment.

Water Response

No Comment.

TxDOT will still need to follow all other applicable laws related to this project, including applying for applicable permits.

If you have any questions, please feel free to contact Elizabeth McKeefer, CAPM, NEPA Coordinator at (512) 239-2997 or NEPA@tceq.texas.gov.



July 28, 2015

Brian Barth, P.E.
District Engineer
Texas Department of Transportation
2501 SW Loop 820
Fort Worth, TX 76133

RE: TxDOT Project 1068-02-127
IH 30/SH 360 Interchange
Parcel 32-2525 E. Lamar Boulevard also known as Trinity East Subarea Park,
City of Arlington Property along Johnson Creek (Parcel #554)

In response to your public hearing for planned improvements to Interstate Highway (IH) 30 and State Highway (SH) 360, the City of Arlington provided comments on July 10, 2015 explaining that the property at 2525 E. Lamar Boulevard was acquired as linear park land for the purpose of mitigation land for the Johnson Creek Ecosystem Restoration project. This property along Johnson Creek is Lot 6R1R, Block 3, of the Brookhollow/Arlington Addition Survey and is labeled Parcel #554 on the IH 30/SH 360 schematic. The parcel is approximately 4.8 acres in size, and is located entirely within the 100-year floodplain of Johnson Creek. As depicted on your public hearing display, we understand that portions of this property would be needed for your project.

This property has been left in its natural state since we acquired it in 2002 to preserve the existing ecosystem. Due to this property's isolation from other undeveloped city-owned properties and very limited access to the public, there have been no improvements provided to further develop this land for use as a park or recreation area. City ownership of the parcel effectively prevents the potential for urban development of the land, thereby preserving the Johnson Creek floodplain's ability to convey flood waters through this stream segment.

Land cover throughout the property is primarily mature or scrub riparian forest that is characterized by a dense understory of shrubs and vines. No amenities have been or are currently planned to be constructed on the property. The property is nearly surrounded by privately-owned property, which limits public access to the property to the Lamar Boulevard and SH 360 bridge crossings of Johnson Creek. Since this is undeveloped park land, there are no signs posted or identified access points within the property to advise the community that it is available for public use. As such, there is no information available indicating this property is being used by members of the public with any frequency. For these

Appendix B, Page 45

City of Arlington Parks and Recreation 717 W. Main, 76013. (817) 459.5474



reasons, the primary purpose of this property is for floodplain preservation, with incidental use by the public as an unimproved natural area.

In light of the isolated location of this property with respect to other Parks and Recreation Department-managed properties, and the other considerations discussed above, this property is not considered to be a locally significant park, recreation area, wildlife or waterfowl refuge.

Sincerely,

A handwritten signature in black ink, appearing to read "Lemuel P. Randolph". The signature is fluid and cursive, with a long horizontal stroke at the end.

Lemuel P. Randolph
Director of Parks and Recreation
City of Arlington, Texas

APPENDIX C
AIR CONFORMITY DOCUMENTATION

Description	Number of Pages
Mobility 2035 – 2014 Amendment excerpts regarding IH 30	3
Mobility 2035 – 2014 Amendment excerpts regarding SH 360	4
FY 2015-2018 Statewide Transportation Improvement Program excerpt regarding the IH 30/SH 360 interchange	1

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Roadway Corridor Fact Sheet 15 IH 30 – Tarrant County

Project Description

The IH 30 Tarrant County project will add general purpose lanes and reconstruct the existing concurrent HOV lanes as reversible tolled managed lanes. This project will provide a connection with planned improvements to general purpose and tolled managed lanes on IH 30 east of the President George Bush Turnpike - Western Extension (SH 161), enhancing the link between Arlington and downtown Dallas.

Corridor Information

ROUTE	LIMITS	COST
IH 30 - Tarrant County	Cooper Street to President George Bush Turnpike - Western Extension (SH 161)	\$40,400,000

Demographic Information Within One Mile of Corridor

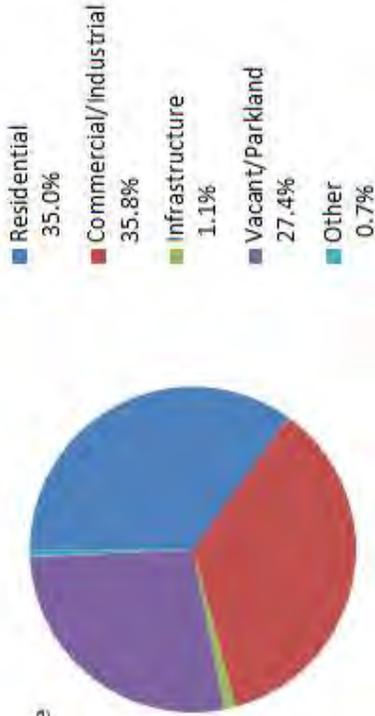
POPULATION PROFILE	MAJOR EMPLOYERS
Population	Six Flags Over Texas
Number of Households	Texas Rangers Ball Club
Population Below Poverty	Doskocil Manufacturing
Population over 65	Hurricane Harbor
African American	L-3 Communications
Hispanic	Pratt & Whitney
Asian/Pacific Islander	Siemens Dematic
American Indian/Native Alaskan	
Total Minority	

Source: NCTCOG Employment Database, 2010

Legislative Districts Within One Mile of Corridor

UNITED STATES HOUSE OF REPRESENTATIVES	TEXAS SENATE	TEXAS HOUSE OF REPRESENTATIVES
Joe Barton-6	Kelly Hancock-9	Jonathan Strickland-92
Marc Veasey-33	Wendy Davis-10	Matt Krause-93
		Diane Patrick-94
		Chris Turner-101
		Roberto Alonso-104
		Linda Harper-Brown-105

Land Use

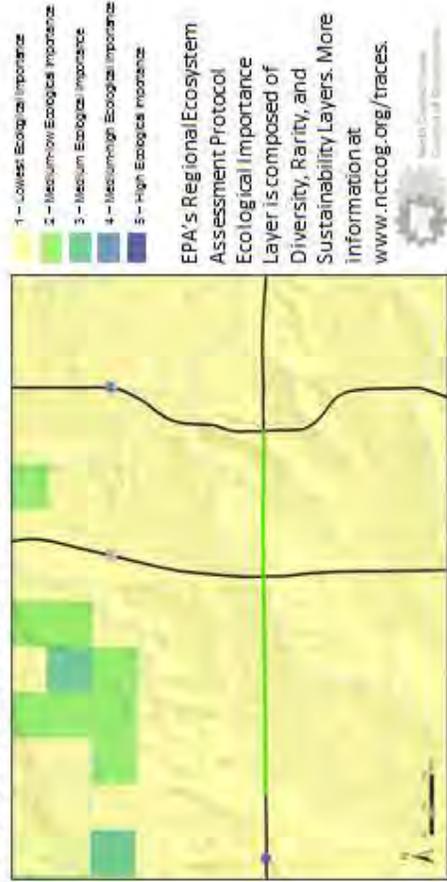


NCTCOG Regional Ecosystem Framework Score* (Range: 14 - 37)

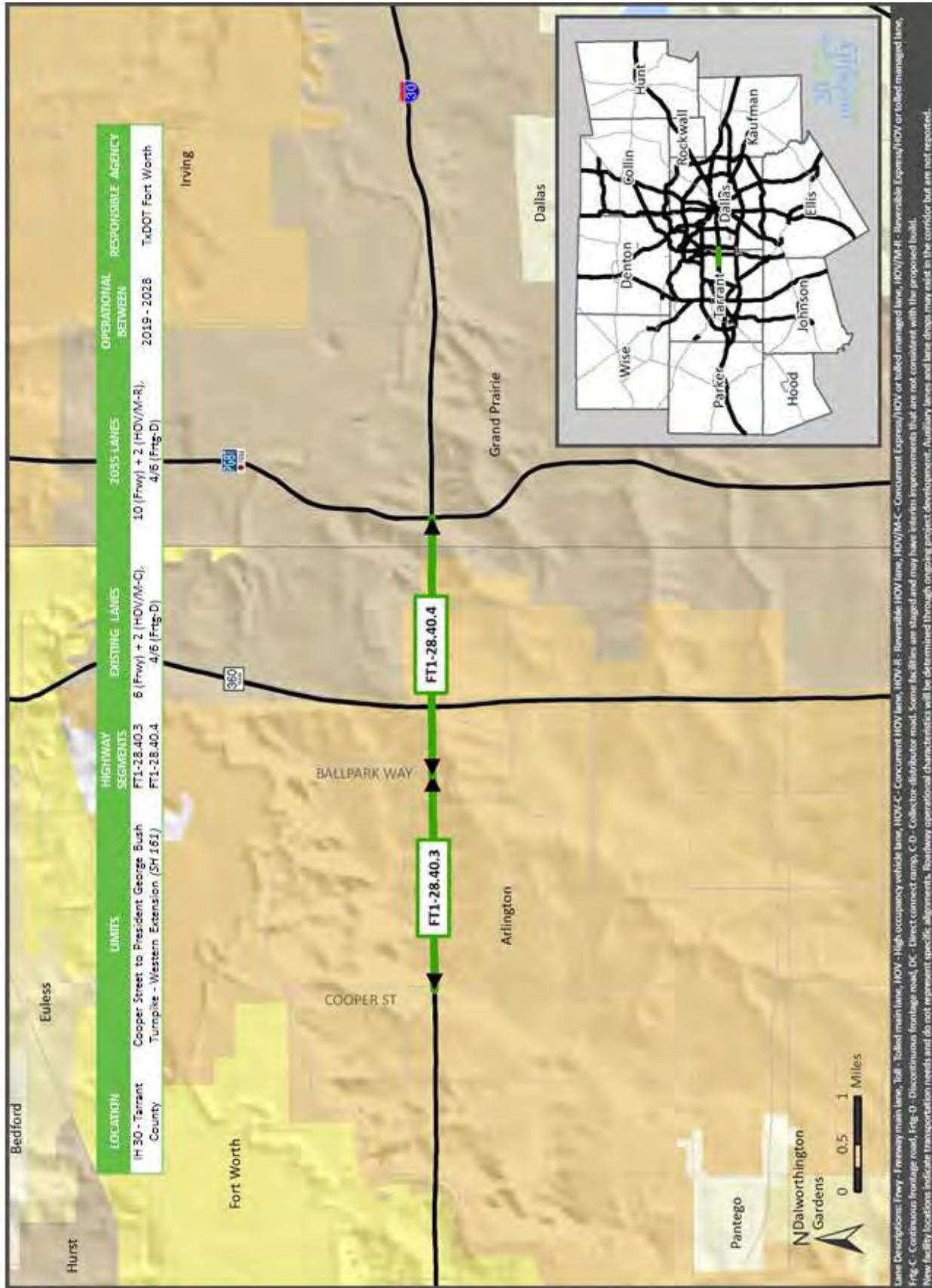
SUBWATERSHED NAME	REF COMPOSITE SCORE
Johnson Creek	14
Johnson Creek-West Fork Trinity River	26

*Lower REF score indicates less resource vulnerability, higher score indicates more resource vulnerability.

Ecological Importance in Corridor



IH 30 – Tarrant County



Lane Descriptions: Fwy - Freeway main lane, Toll - Tolloed main lane, HOV - High occupancy vehicle lane, HOV-4 - Concurrent HOV lane, HOV-3 - Concurrent HOV lane, HOV-2 - Concurrent HOV lane, HOV-1M-R - Reversible Express/HOV or tolled managed lane, Frg-C - Continuous frontage road, Frg-D - Discontinuous frontage road, DC - Direct connect ramp, CD - Collector-distributor road. Some facilities are staged and may have interim improvements that are not consistent with the proposed build. New facility locations indicate transportation needs and do not represent specific alignments. Roadway operational characteristics will be determined through ongoing project development. Auxiliary lanes and lane drops may exist in the corridor but are not reported.

Addendum: Mobility 2035 - 2014 Amendment

Fact Sheet ID	Project Corridor	Location	Limits	MTP ID	Lane Summary ¹		Year Operational Between	Responsible Agency	YOE Total Project Cost
					2013	2035			
10	Chisholm Trail Parkway	IH 30	Henderson Street to IH 35W	FT1-28.20.4	10 (Frwy)	10 (Reconstruct)	2013 - 2018	TxDOT Fort Worth	cost included above
10	Chisholm Trail Parkway	Chisholm Trail Parkway	IH 30 to IH 20	FT1-31.10.1	0	6 (Toll), 4/6 (Frtg-D)	2013 - 2018	NTTA	\$1,485,472,000
10	Chisholm Trail Parkway	Chisholm Trail Parkway	IH 20 to Altamesa Blvd.	FT1-31.20.1	0	6 (Toll), 4/6 (Frtg-D)	2013 - 2018	NTTA	cost included above
10	Chisholm Trail Parkway	Chisholm Trail Parkway	Altamesa Blvd. to FM 1187	FT1-31.20.2	0	4 (Toll)	2013 - 2018	NTTA	cost included above
10	Chisholm Trail Parkway	Chisholm Trail Parkway	FM 1187 to US 67	FT1-31.20.3	0	4 (Toll)	2029 - 2035 ²	NTTA	cost included above
11	Trinity Parkway	S.M. Wright Parkway	IH 45 to US 175/SH 310	FT1-29.10.1	6 (Frwy), 4 (Frtg-D)	6 (Art)	2019 -- 2028	TxDOT Dallas	\$47,730,000
11	Trinity Parkway	Trinity Parkway	IH 35E/SH 183 to Woodall Rodgers Freeway	FT1-26.10.1	0	6 (Toll)	2019 - 2028	NTTA	\$1,801,891,000
11	Trinity Parkway	Trinity Parkway	Woodall Rodgers Freeway to IH 45	FT1-26.10.2	0	6 (Toll), 4 (Frtg-D)	2019 - 2028	NTTA	cost included above
11	Trinity Parkway	Trinity Parkway	IH 45 to SH 310	FT1-26.20.1	0	6 (Frwy) + 4 DC, 6 (Frtg-D)	2019 2028 ²	NTTA/TxDOT Dallas	cost included above
12	Collin County Loop	Collin County Loop	Dallas North Tollway to US 75	FT1-110.20.1	0	6 (Toll), 4/6 (Frtg-C)	2019 - 2028 ²	Collin County Toll Road Authority	\$1,110,500,000
12	Collin County Loop	Collin County Loop	US 75 to SH 121	FT1-110.30.1	2 (Frtg-C)	6 (Toll), 4/6 (Frtg-C)	2019 - 2028 ²	Collin County Toll Road Authority	\$403,000,000
13	DNT Extension	Dallas North Tollway	CR 60 to FM 428	FT1-21.10.1	0	6 (Toll), 6 (Frtg-C)	2019 - 2028 ²	NTTA	\$561,000,000
13	DNT Extension	Dallas North Tollway	FM 428 to US 380	FT1-21.10.2	2 (Frtg-C)	6 (Toll), 6/8 (Frtg-C)	2019 - 2028 ²	NTTA	\$433,000,000
14	DNT Widening	Dallas North Tollway	Sam Rayburn Tollway (SH 121) to Parker Road	FT1-21.20.1	6 (Toll), 4/6 (Frtg-C)	8 (Toll), 4/6 (Frtg-C)	2013 - 2018	NTTA	\$211,000,000
14	DNT Widening	Dallas North Tollway	Parker Road to President George Bush Turnpike	FT1-21.20.2	6 (Toll), 4/6 (Frtg-C)	8 (Toll), 4/8 (Frtg-C)	2013 - 2018	NTTA	\$186,200,000
14	DNT Widening	Dallas North Tollway	President George Bush Turnpike to Royal Lane	FT1-21.20.3	6 (Toll), 4/10 (Frtg-D)	8 (Toll), 4/10 (Frtg-D)	2019 - 2028	NTTA	cost included above
15	IH 30 - Tarrant County	IH 30 - Tarrant County	Cooper Street to PGBT - Western Extension (SH 161)	FT1-28.40.3 FT1-28.40.4	6 (Frwy) + 2 (HOV/M-C), 4/6 (Frtg-D)	10 (Frwy) + 2 (HOV/M-R), 4/6 (Frtg-D)	2019 - 2028	TxDOT Fort Worth	\$40,400,000

(CDA) - Comprehensive Development Agreement

(HOV/M-C) - Concurrent Express/HOV or Tolloed Managed Lanes; (HOV/M-R) - Reversible Express/HOV or Tolloed Managed Lanes; (CD) - Collector Distributer; (DC) - Direct Connector; (Frwy) - Freeway; (Frtg-C/D) - Min/Max Lanes of Continuous or Discontinuous Frontage

¹ Auxiliary lanes and lane drops may exist in the corridor but are not included in the report.

² "Year-Operation Between" indicates the year range the final build will be open to traffic. Some facilities are staged and may have interim improvements that are not consistent with the proposed build. See individual Corridor Fact Sheets for more detail.

³ Includes inside-lane HOV operational transition area.

⁴ Staged Future Tollway indicates that tolled mainlanes in this corridor are not warranted by 2035, but frontage roads may be constructed and right-of-way preservation is encouraged for future needs.

Indicates a change to Mobility 2035 - 2013 Update staging or recommendations.

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Roadway Corridor Fact Sheet 30 SH 360

Project Description

The SH 360 project in eastern Tarrant County includes the reconstruction of general purpose lanes from Brown Boulevard to IH 30 and the expansion from six to eight freeway lanes between IH 30 and IH 20. A key element of this project will be the complete replacement of the junction at IH 30 with a fully directional interchange to better link these two regional roadways.

Corridor Information

ROUTE	LIMITS	COST
SH 360	Brown Boulevard/Avenue K to IH 20	\$334,000,000

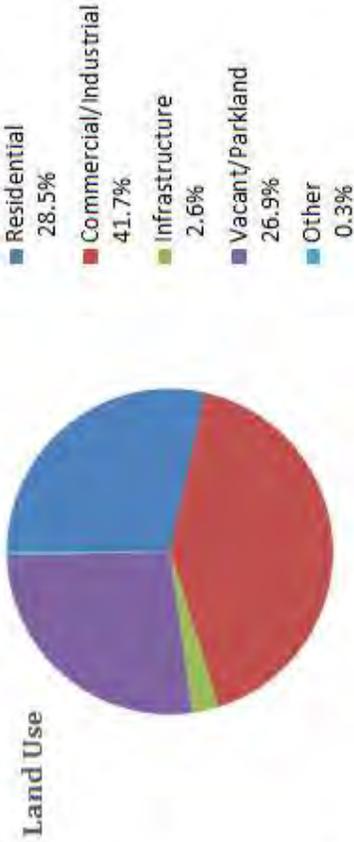
Demographic Information Within One Mile of Corridor

POPULATION PROFILE	MAJOR EMPLOYERS
Population	Six Flags Over Texas
Number of Households	General Motors Assembly Plant
Population Below Poverty	Bell Helicopter
Population over 65	L-3 Communications
African American	Chase Arlington Call Center
Hispanic	Siemens Energy and Automation
Asian/Pacific Islander	Syncreon Automotive
American Indian/Native Alaskan	American Eurocopter
Total Minority	

Source: Census 2010; 2007-2011 5-year ACS Estimates Source: NCTCOG Employment Database, 2010

Legislative Districts Within One Mile of Corridor

UNITED STATES HOUSE OF REPRESENTATIVES	TEXAS SENATE	TEXAS HOUSE OF REPRESENTATIVES
Joe Barton-6	Kelly Hancock-9	Jonathan Strickland-92
Marc Veasey-33	Brian Birdwell-22	Matt Krause-93
		Chris Turner-101



NCTCOG Regional Ecosystem Framework Score* (Range: 14 - 37)

SUBWATERSHED NAME	REF COMPOSITE SCORE
Johnson Creek	14
Cottonwood Creek-Mountain Creek Lake	20
Fish Creek-Mountain Creek Lake	21
Johnson Creek-West Fork Trinity River	26

*Lower REF score indicates less resource vulnerability, higher score indicates more resource vulnerability.

Ecological Importance in Corridor



Fact Sheet ID	Project Corridor	Location	Limits	MTP ID	Lane Summary ¹		Year Operational Between	Responsible Agency	YOE Total Project Cost
					2013	2035			
27	SH 161/SH 360 Toll Connector	SH 161/SH 360 Toll Connector	SH 360/Sublett Road to PGBT – Western Extension (SH 161)	FT1-41.10.1	0	4 CD (Toll)	2029 - 2035	NTTA	\$126,787,000
28	SH 170	SH 170	US 81/US 287 to IH 35W	FT1-10.10.2	0	4 (Art)	2029 - 2035	FTW/Tarrant County	
28	SH 170	SH 170	IH 35W to SH 114	FT1-10.20.1	4/6 (Frtg-C)	6 (Toll), 4/6 (Frtg-C)	2019 - 2028 ²	NTTA	\$298,900,000
29	SH 183 – Tarrant County	SH 183 (Seg 2E)	SH 121 to SH 360	FT1-22.10.1	6 (Frwy), 2/4 (Frtg-D)	6 (Frwy) + 6 (HOV/M-C), 2/8 (Frtg-C)	2029 - 2035 ²	TxDOT Fort Worth (CDA)	\$700,000,000
29	SH 183 – Tarrant/Dallas Counties	SH 183 (Seg 2E)	SH 360 to PGBT – Western Extension (SH 161)	FT1-22.20.1	6 (Frwy) + 4 CD (from SH 360 to International Pkwy.) + 6 (HOV/M-C), 2/6 (Frtg-D)	8 (Frwy) + 4 CD (from SH 360 to International Pkwy.) + 6 (HOV/M-C), 2/6 (Frtg-C)	2029 - 2035 ²	TxDOT Fort Worth (CDA)	cost included above
29	SH 183 – Dallas County	SH 183 – Dallas County	PGBT – Western Extension (SH 161) to Loop 12	FT1-22.30.1	6 (Frwy), 4/6 (Frtg-D)	8 (Frwy) + 4 (HOV/M-C), 4/6 (Frtg-C)	2029 - 2035 ²	TxDOT Dallas	\$1,220,313,000
29	SH 183 – Dallas County	SH 183 – Dallas County	Loop 12 to SH 114	FT1-22.40.1	6 (Frwy), 4 (Frtg-D)	6 (Frwy) + 4 (HOV/M-C), 4/8 (Frtg-C)	2029 - 2035 ²	TxDOT Dallas	cost included above
29	SH 183 – Dallas County	SH 183 – Dallas County	SH 114 to Empire Central	FT1-22.40.2	8 (Frwy), 4/6 (Frtg-D)	8 (Frwy) + 6 (HOV/M-C), 4/8 (Frtg-C)	2029 - 2035 ²	TxDOT Dallas	\$237,000,000
29	SH 183 – Dallas County	SH 183 – Dallas County	Empire Central to IH 35E	FT1-22.40.3	6 (Frwy), 4/6 (Frtg-C)	6 (Frwy) + 4 (HOV/M-C), 4/6 (Frtg-C)	2029 - 2035 ²	TxDOT Dallas	cost included above
30	SH 360 Widening	SH 360	Brown Blvd./Avenue K to IH 30	FT1-9.20.3	6 (Frwy), 4/6 (Frtg-C)	6 (Reconstruct Frwy), 6 (Frtg-C)	2019 - 2028	TxDOT Fort Worth	\$334,000,000
30	SH 360 Widening	SH 360	IH 30 to IH 20	FT1-9.30.1	6 (Frwy), 4/8 (Frtg-D)	8 (Frwy), 4/8 (Frtg-C)	2019 - 2028	TxDOT Fort Worth	cost included above
31	SH 360 Toll Road	SH 360 Toll Road	Sublett Road/Camp Wisdom Road to Debbie Lane	FT1-9.40.2	4 (Frtg-C)	8 (Toll), 4/6 (Frtg-C)	2029 - 2035 ²	TxDOT Fort Worth	\$604,000,000
31	SH 360 Toll Road	SH 360 Toll Road	Debbie Lane to Broad Street	FT1-9.40.3	4 (Frtg-C)	6 (Toll), 4/6 (Frtg-C)	2029 - 2035 ²	TxDOT Fort Worth	cost included above
31	SH 360 Toll Road	SH 360 Toll Road	Broad Street to south of Heritage Pkwy. (Ellis County line)	FT1-9.40.4	4 (Frtg-C)	6 (Toll), 4/6 (Frtg-C)	2029 - 2035 ²	TxDOT Fort Worth	cost included above
31	SH 360 Toll Road	SH 360 Toll Road	South of Heritage Pkwy. (Ellis County line) to US 287	FT1-9.40.5	2 (Frtg-C)	6 (Toll), 4 (Frtg-C)	2029 - 2035 ²	TxDOT Fort Worth	cost included above
31	SH 360 Toll Road	SH 360 Toll Road	US 287 to US 67	FT1-9.50.1	0	6 (Toll), 4/6 (Frtg-C)	2029 - 2035	TxDOT Fort Worth	cost included above

(CDA) - Comprehensive Development Agreement

(HOV/M-C) - Concurrent Express/HOV or Tolloed Managed Lanes; (HOV/M-R) - Reversible Express/HOV or Tolloed Managed Lanes; (CD) - Collector Distributer; (DC) - Direct Connector; (Frwy) - Freeway; (Frtg-C/D) - Min/Max Lanes of Continuous or Discontinuous Frontage

¹ Auxiliary lanes and lane drops may exist in the corridor but are not included in the report.

² "Year Operation Between" indicates the year range the final build will be open to traffic. Some facilities are staged and may have interim improvements that are not consistent with the proposed build. See individual Corridor Fact Sheets for more detail.

³ Includes inside-lane HOV operational transition area.

⁴ Staged Future Tollway indicates that tolled mainlanes in this corridor are not warranted by 2035, but frontage roads may be constructed and right-of-way preservation is encouraged for future needs.

Indicates a change to Mobility 2035 - 2013 Update staging or recommendations.

TxDOT Fort Worth District

June 5, 2015

MTP ID	Facility	Connection	Staging	Description	Year Operational Between	Study Reference
INI-31.38.1	Chisholm Trail Parkway (SH 121)	US 67		New Interchange	2013 - 2018	
INI-30.584.1	IH 20 Center Point Drive			Reconstruct	2019 - 2028	
INI-30.579.1	IH 20 FM 1187/FM 3325			Reconstruct	2013 - 2018	
INI-30.585.1	IH 20 Lakeshore Drive			Reconstruct	2013 - 2018	
INI-1.30.1	IH 20 US 287			Reconstruct	2019 - 2028	
INI-30.568.2	IH 20 Walsh Ranch Parkway (Minor 1)			New Interchange	2019 - 2028	
INI-30.161.1	IH 20 Walsh Ranch Parkway (Minor 2)			New Interchange	2019 - 2028	
INI-30.568.1	IH 20 Walsh Ranch Parkway			New Interchange	2019 - 2028	
INI-30.141.1	IH 20 Weatherford Loop (East)			New Interchange	2019 - 2028	
INI-30.143.1	IH 20 Weatherford Loop (West)		Complete	New Interchange	2014	
INI-28.580.1	IH 30 Academy Blvd.			Reconstruct	2013 - 2018	
INI-28.565.1	IH 30 Baird Farm Road		Under Construction	New Interchange	2013 - 2018	
INI-9.28.1	IH 30 SH 360			New Interchange	2019 - 2028	SH 360 CIS
INI-1.28.1	IH 30 US 287 (NTE)			Reconstruct	2013 - 2018	
INI-28.515.1	IH 30 Walsh Ranch Parkway (Minor 1)			New Interchange	2019 - 2028	
INI-28.569.1	IH 30 Walsh Ranch Parkway			New Interchange	2013 - 2018	
INI-5.150.1	IH 35W IH 820 NE			Reconstruct	2013 - 2018	
INI-5.11.1	IH 35W SH 121 (NTE)			Reconstruct	2013 - 2018	
INI-11.151.1	IH 820 SH 121/Trinity Blvd.			Reconstruct	2019 - 2028	
INI-1.151.1	IH 820 US 287			Reconstruct	2019 - 2028	
INI-1.10.1	SH 170 US 81/US 287			New Interchange	2019 - 2028	
INI-10.531.1	SH 170 Parish			New Interchange	2013 - 2018	
INI-14.571.1	SH 199 Hanger Cut-Off Road			Grade Separation	2013 - 2018	
INI-14.572.1	SH 199 Nine Mile Azle Road			Grade Separation	2013 - 2018	
INI-9.539.1	SH 360 Division Street		Complete	Reconstruct	2014	
INI-30.31.1	CH 121 Chisholm Trail Parkway (SH 121)			New Interchange	2013 - 2018	
INI-22.31.1	CH 121 Chisholm Trail Parkway (SH 121)			New Interchange	2013 - 2018	
INI-48.141.1	US 180 Weatherford Loop			Phased New Interchange	2013 - 2018	
INI-1.581.1	US 287 BU 81D (South Decatur)			New Interchange	2013 - 2018	
INI-1.581.2	US 287 CR 4227/CR 4228			New Interchange	2019 - 2028	

* "Year Operation Between" indicates the year range the final build will be open to traffic. Some facilities are staged and may have interim improvements that are not consistent with the proposed build. See individual Corridor Fact Sheets for more detail.

Indicates a change to Mobility 2035 - 2013 Update staging or recommendations.

STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM
DALLAS-FORT WORTH MPO - HIGHWAY PROJECTS
FY 2016

2015-2018 STIP		05/2015 Revision: Approved 06/24/2015							
DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST		
DALLAS	DALLAS-FORT WORTH	ROCKWALL	1290-02-017	SH 276	R,ACQ	ROCKWALL	\$ 4,000,000		
LIMITS FROM SH 205		PROJECT SPONSOR TXDOT-DALLAS							
LIMITS TO FM 549		REVISION DATE 05/2015							
PROJECT RECONSTRUCT AND WIDEN 2 LANE RURAL TO 4 LANE DIVIDED URBAN (ULTIMATE 6)							MPO PROJ NUM 2998		
DESCR							FUNDING CAT(S)		
REMARKS REVISE SCOPE; REVISE FUNDING				PROJECT HISTORY					
P7									
TOTAL PROJECT COST INFORMATION			AUTHORIZED FUNDING BY CATEGORY/SHARE						
PREL ENG \$	3,170,658	COST OF APPROVED PHASES	CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
ROW PURCH \$	4,000,000		S102	\$ 3,200,000	\$ 800,000	\$ 0	\$ 0	\$ 0	\$ 4,000,000
CONSTR \$	18,598,740		TOTAL	\$ 3,200,000	\$ 800,000	\$ 0	\$ 0	\$ 0	\$ 4,000,000
CONST ENG \$	852,329								
CONTING \$	1,231,142								
INDIRECT \$	926,197								
BOND FIN \$	0								
PT CHG ORD \$	0								
TOTAL CST \$	28,779,066								

2015-2018 STIP		05/2015 Revision: Approved 06/24/2015							
DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST		
FORT WORTH	DALLAS-FORT WORTH	TARRANT	1068-02-104	CS	C	ARLINGTON	\$ 6,500,000		
LIMITS FROM SIX FLAGS DR		PROJECT SPONSOR TXDOT-FORT WORTH							
LIMITS TO AT SH 360		REVISION DATE 05/2015							
PROJECT RECONSTRUCT BRIDGE AND PROVIDE TEMPORARY APPROACHES TO BRIDGE							MPO PROJ NUM 55063		
DESCR							FUNDING CAT(S) 2M		
REMARKS REVISE FUNDING SOURCES AND ADD PROJECT TO THE TIP/S				PROJECT HISTORY					
P7 TIP; CAT 2M-PROP1									
TOTAL PROJECT COST INFORMATION			AUTHORIZED FUNDING BY CATEGORY/SHARE						
PREL ENG \$	469,870	COST OF APPROVED PHASES	CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
ROW PURCH \$	0		2M	\$ 0	\$ 6,500,000	\$ 0	\$ 0	\$ 0	\$ 6,500,000
CONSTR \$	6,500,000		TOTAL	\$ 0	\$ 6,500,000	\$ 0	\$ 0	\$ 0	\$ 6,500,000
CONST ENG \$	498,706								
CONTING \$	0								
INDIRECT \$	0								
BOND FIN \$	0								
PT CHG ORD \$	0								
TOTAL CST \$	32,231,050								

2015-2018 STIP		05/2015 Revision: Approved 06/24/2015							
DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST		
FORT WORTH	DALLAS-FORT WORTH	TARRANT	1068-02-076	IH 30	C	ARLINGTON	\$ 247,500,000		
LIMITS FROM 1.0 MI W OF SH 360		PROJECT SPONSOR TXDOT-FORT WORTH							
LIMITS TO GREAT SOUTHWEST PKWY		REVISION DATE 05/2015							
PROJECT CONST DIR CONN INTCHG AT SH 360 & TRAFFIC MANAGEMENT SYSTEM							MPO PROJ NUM 11253.2		
DESCR							FUNDING CAT(S) 1,11,2M,3LC,4,5		
REMARKS REVISE FUNDING AND ADD PROJECT TO THE TIP/STIP; CAT				PROJECT HISTORY					
P7 1, 2, 4, AND 11 ARE PROP 1; CMAQ FOR INTERSECTION									
IMPROVEMENTS, SIGNALS, SIGNIFICANTLY REDUCED CIRCUI									
TY, AND PEDESTRIAN ELEMENTS									
TOTAL PROJECT COST INFORMATION			AUTHORIZED FUNDING BY CATEGORY/SHARE						
PREL ENG \$	2,000,000	COST OF APPROVED PHASES	CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
ROW PURCH \$	11,000,000		1	\$ 0	\$ 13,780,000	\$ 0	\$ 0	\$ 0	\$ 13,780,000
CONSTR \$	247,500,000		2M	\$ 0	\$ 130,192,000	\$ 0	\$ 0	\$ 0	\$ 130,192,000
CONST ENG \$	11,954,270		3LC	\$ 0	\$ 0	\$ 0	\$ 0	\$ 28,965,000	\$ 28,965,000
CONTING \$	7,621,166		4	\$ 0	\$ 38,653,000	\$ 0	\$ 0	\$ 0	\$ 38,653,000
INDIRECT \$	12,311,111		5	\$ 20,000,000	\$ 5,000,000	\$ 0	\$ 0	\$ 0	\$ 25,000,000
BOND FIN \$	0		11	\$ 0	\$ 10,910,000	\$ 0	\$ 0	\$ 0	\$ 10,910,000
PT CHG ORD \$	0		TOTAL	\$ 20,000,000	\$ 198,535,000	\$ 0	\$ 0	\$ 28,965,000	\$ 247,500,000
TOTAL CST \$	40,334,180								

Appendix C, Page 9

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